



## SIMCom Wireless Solutions Limited

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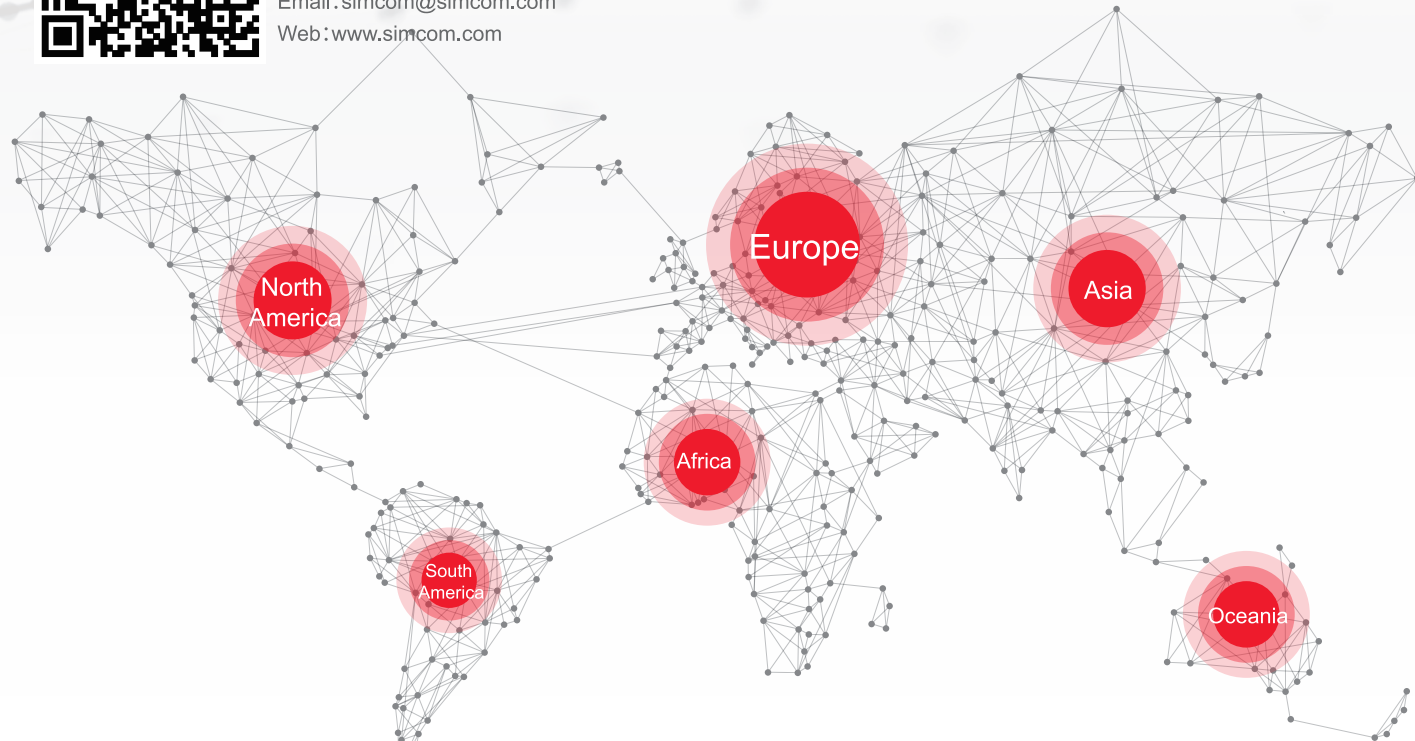
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INVENTING A SMART FUTURE



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### Contact Us

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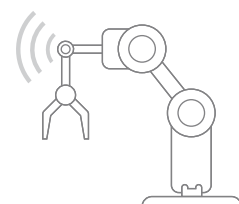


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LTE-A



Smart Industry



C-V2X  
Automotive Electronics

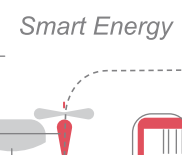
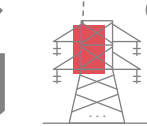


4G  
Wireless Gateway



Smart Life

5G



Smart Energy

2G  
Security Monitoring



Smart  
Smart Payment



3G



Smart Agriculture

GNSS



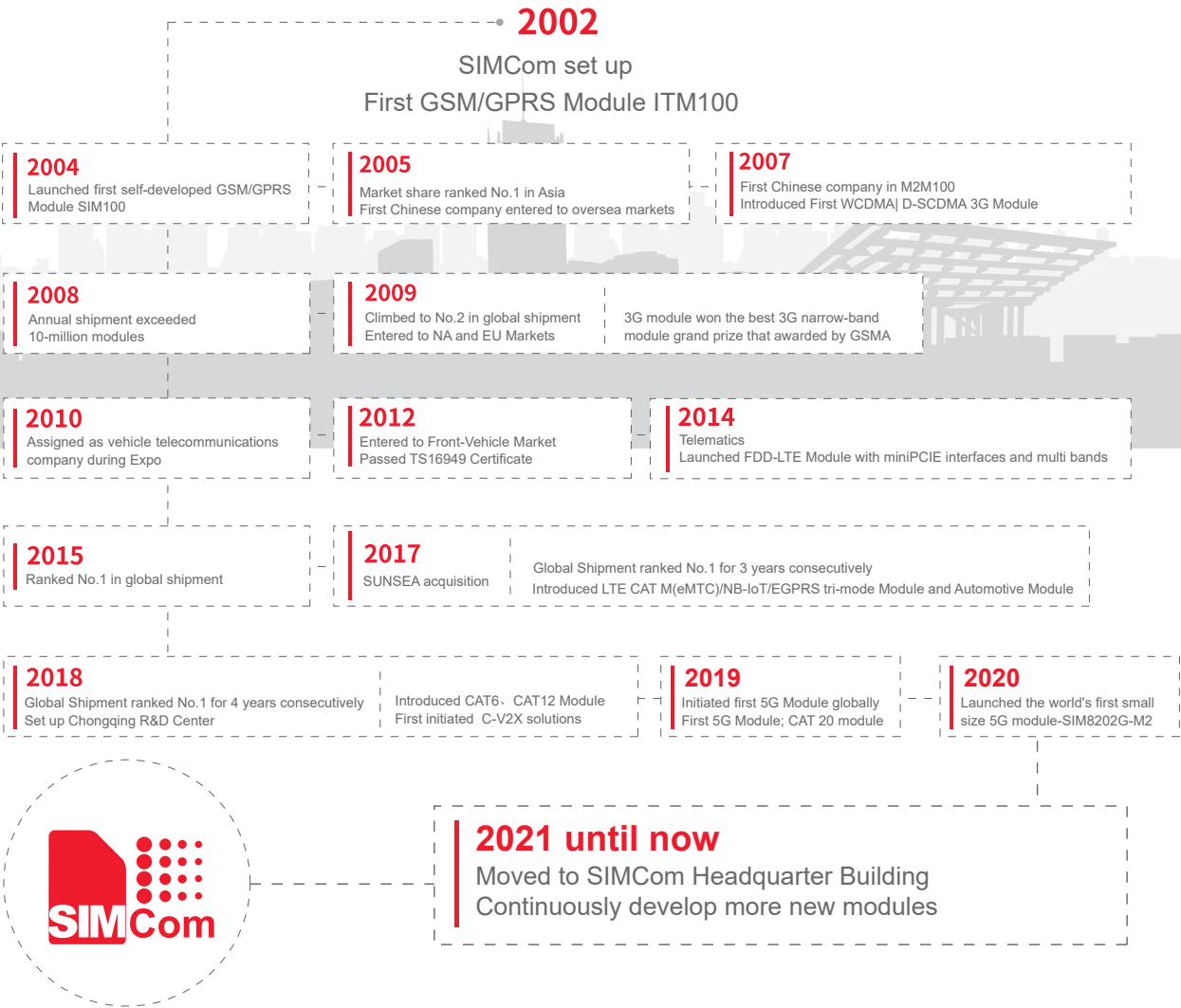
LPWA

Urban Refined Management

About SIMCom

SIMCom Wireless Solutions Limited is a global leading IoT wireless modules and solutions supplier. Since established in 2002, SIMCom has been fully committed to providing a variety of wireless modules and terminal level solutions worldwide, such as 5G, 4G, LTE-A, LTE-M(CAT-M1), NB-IoT, 3G, 2G, and GPS/GLONASS/BEIDOU satellite positioning technology.

SIMCom insists on providing high-quality modules and industry solutions. With 22 years of professional technical innovation and service experiences, it continuously meets the needs of customers in all industries of the Internet of Things. While deepening the vertical industry, we continue to define advantageous products and build core competitiveness. With the Group's continuous investment in research and development, technology and production, we will continue to innovate and enrich our technology roadmap, and promote the development of the industry in the next few years.



5G Module

| Technology                    |                | 3GPP R17                                                                            |                                                                                     |                                                                                     |
|-------------------------------|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product                       |                | SIM8270E                                                                            | SIM8270NA                                                                           | SIM8270SA                                                                           |
| Picture                       |                |  |  |  |
| Form Factor                   |                | LGA                                                                                 | LGA                                                                                 | LGA                                                                                 |
| Dimensions(mm)                |                | 46.0*53.0*3.0                                                                       | 46.0*53.0*3.0                                                                       | 46.0*53.0*3.0                                                                       |
| Weight(g)                     |                | TBD                                                                                 | TBD                                                                                 | TBD                                                                                 |
| Mode                          |                | NSA/SA                                                                              | NSA/SA                                                                              | NSA/SA                                                                              |
| Frequency Bands               | 5G NR (Sub6G)  | n1/n3/n5/n7/n8/n20/n26*/n28/n38/n40/n41/n75/n76/n77/n78                             | n2/n5/n7/n12/n13/n14/n25/n26/n29/n30/n38/n41/n48/n66/n70/n71/n77/n78                | n2/n4/n5/n7/n8/n28/n38/n40/n41*/n66/n71/n77*/n78                                    |
|                               | 5G NR (mmWave) |                                                                                     |                                                                                     |                                                                                     |
|                               | LTE-FDD        | B1/B3/B5/B7/B8/B18*/B19*/B20/B26*/B28/B32                                           | B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B29/B30/B66/B71                                 | B2/B4/B5/B7/B8/B18*/B19*/B25/B26/B28/B66/B71                                        |
|                               | LTE-TDD        | B38/B40/B41/B42/B43/B46*                                                            | B38/B41/B42/B43/B46/B48                                                             | B38/B40/B41*/B42/B43/B48*                                                           |
|                               | WCDMA          | B1/B5/B8                                                                            | B2*/B4*/B5*                                                                         | B1/B2/B4/B5                                                                         |
| GNSS                          |                | GPS/GLONASS/Beidou/Galileo/QZSS                                                     | GPS/GLONASS/Beidou/Galileo/QZSS                                                     | GPS/GLONASS/Beidou/Galileo/QZSS                                                     |
| Temperature                   |                | -30℃ ~ +70℃<br>(Extended temprature:-40℃ ~ +85℃)                                    | -30℃ ~ +70℃<br>(Extended temprature:-40℃ ~ +85℃)                                    | -30℃ ~ +70℃<br>(Extended temprature:-40℃ ~ +85℃)                                    |
| Electrical Features           |                |                                                                                     |                                                                                     |                                                                                     |
| Supply Voltge Range           |                | 3.3~4.4V                                                                            | 3.3~4.4V                                                                            | 3.3~4.4V                                                                            |
| Power Consumption (sleep)(mA) |                | TBD                                                                                 | TBD                                                                                 | TBD                                                                                 |
| Data Transfer                 |                |                                                                                     |                                                                                     |                                                                                     |
| mmWave                        |                |                                                                                     |                                                                                     |                                                                                     |
| Sub-6G                        |                | SA:5.3Gbps(DL)/1Gbps(UL)<br>NSA:5Gbps(DL)/600Mbps(UL)                               | SA:5.3Gbps(DL)/1Gbps(UL)<br>NSA:5Gbps(DL)/600Mbps(UL)                               | SA:5.3Gbps(DL)/1Gbps(UL)<br>NSA:5Gbps(DL)/600Mbps(UL)                               |
| LTE                           |                | 2Gbps(DL)/200Mbps(UL)                                                               | 2Gbps(DL)/200Mbps(UL)                                                               | 2Gbps(DL)/200Mbps(UL)                                                               |
| Software Features             |                |                                                                                     |                                                                                     |                                                                                     |
| Protocol                      |                | TCP/IP/IPV4/IPV6/Multi - PDP/FTPS /HTTPS/MQTT/DNS                                   | TCP/IP/IPV4/IPV6/Multi - PDP/FTPS /HTTPS/MQTT/DNS                                   | TCP/IP/IPV4/IPV6/Multi - PDP/FTPS /HTTPS/MQTT/DNS                                   |
| TLS                           |                | SSL3.0/TLS1.0/TLS1.2                                                                | SSL3.0/TLS1.0/TLS1.2                                                                | SSL3.0/TLS1.0/TLS1.2                                                                |
| DTMF                          |                | ● (Sending and Receiving)                                                           | ● (Sending and Receiving)                                                           | ● (Sending and Receiving)                                                           |
| FOTA                          |                | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| VoLTE/CSFB/VoNR*              |                | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Android RIL                   |                | Android 6.0/7.0/8.0/9.0                                                             | Android 6.0/7.0/8.0/9.0                                                             | Android 6.0/7.0/8.0/9.0                                                             |
| USB Driver                    |                | Microsoft Windows Win7/Win8/Win10/Linux /Android                                    | Microsoft Windows Win7/Win8/Win10/Linux /Android                                    | Microsoft Windows Win7/Win8/Win10/Linux /Android                                    |
| RNDIS                         |                | Linux/Win7/Win8/Win10                                                               | Linux/Win7/Win8/Win10                                                               | Linux/Win7/Win8/Win10                                                               |
| NDIS                          |                | Linux/Win7/Win8/Win10                                                               | Linux/Win7/Win8/Win10                                                               | Linux/Win7/Win8/Win10                                                               |
| PPP                           |                | Linux/Win7/Win8/Win10                                                               | Linux/Win7/Win8/Win10                                                               | Linux/Win7/Win8/Win10                                                               |
| MBIM                          |                | Win8/Win10                                                                          | Win8/Win10                                                                          | Win8/Win10                                                                          |
| Firmware Upgrade              |                | USB/FOTA                                                                            | USB/FOTA                                                                            | USB/FOTA                                                                            |
| Interface                     |                |                                                                                     |                                                                                     |                                                                                     |
| USB                           |                | 3.1 (2.0)                                                                           | 3.1 (2.0)                                                                           | 3.1 (2.0)                                                                           |
| UART                          |                | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| (U)SIM Card                   |                | 1.8V/2.95V                                                                          | 1.8V/2.95V                                                                          | 1.8V/2.95V                                                                          |
| PCM                           |                | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| GPIO                          |                | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| I2C                           |                | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| PCIe                          |                | *3                                                                                  | *3                                                                                  | *3                                                                                  |
| SPI                           |                |                                                                                     |                                                                                     |                                                                                     |
| RGMII                         |                | UXGMII*2                                                                            | UXGMII*2                                                                            | UXGMII*2                                                                            |
| SDIO3.0                       |                |                                                                                     |                                                                                     |                                                                                     |
| PMI                           |                |                                                                                     |                                                                                     |                                                                                     |
| ADC                           |                |                                                                                     |                                                                                     |                                                                                     |
| Antenna                       |                | 4 or 8(8RX)                                                                         | 4 or 8(8RX)                                                                         | 4 or 8(8RX)                                                                         |
| Certification                 |                |                                                                                     |                                                                                     |                                                                                     |
| Certification                 |                | RoHS*/REACH*/CE*/GCF*                                                               | RoHS*/REACH*/FCC*/PTCRB*                                                            | RoHS*/REACH*                                                                        |
| Typical Applications          |                | CPE,MIFI,PC,Gateway,Router,UAV                                                      |                                                                                     |                                                                                     |

o : Optional    \* : Under Developing/On-going/Planning

| 5G Module

| Technology                    |                | RedCap                                                                            |                                                                                   |                                                                                           |
|-------------------------------|----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Product                       |                | SIM8230C                                                                          | SIM8230E                                                                          | SIM8230G                                                                                  |
| Picture                       |                |  |  |        |
| Form Factor                   |                | LGA+LCC                                                                           | LGA+LCC                                                                           | LGA+LCC                                                                                   |
| Dimensions(mm)                |                | 30.0*30.0*2.5                                                                     | 30.0*30.0*2.5                                                                     | 30.0*30.0*2.5                                                                             |
| Weight(g)                     |                | TBD                                                                               | TBD                                                                               | TBD                                                                                       |
| Mode                          |                | SA                                                                                | SA                                                                                | SA                                                                                        |
| Frequency Bands               | 5G NR (Sub6G)  | n1/n3/n5/n8/n28/n40/n41/n78/n79                                                   | n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n77/n78                                        | n1/n2/n3/n5/n7/n8/n12/n13/n14/n18/n20/n25/n26/n28/n30/n38/n40/n41/n48/n66/n70/n71/n77/n78 |
|                               | 5G NR (mmWave) |                                                                                   |                                                                                   |                                                                                           |
|                               | LTE-FDD        | B1/B3/B5/B8                                                                       | B1/B3/B5/B7/B8/B20/B28                                                            | B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B30/B66/B71                  |
|                               | LTE-TDD        | B34/B38/B39/B40/B41                                                               | B40/B41/B42/B43                                                                   | B34/B38/B39/B40/B41/B42/B43/B48                                                           |
|                               | WCDMA          |                                                                                   |                                                                                   |                                                                                           |
| GNSS                          |                | GPS/GLONASS/BeiDou                                                                | GPS/GLONASS/BeiDou                                                                | GPS/GLONASS/BeiDou                                                                        |
| Temperature                   |                | -40℃ ~ +85℃                                                                       | -40℃ ~ +85℃                                                                       | -40℃ ~ +85℃                                                                               |
| Electrical Features           |                |                                                                                   |                                                                                   |                                                                                           |
| Supply Voltge Range           |                | 3.3~4.4V                                                                          | 3.3~4.4V                                                                          | 3.3~4.4V                                                                                  |
| Power Consumption (sleep)(mA) |                | TBD                                                                               | TBD                                                                               | TBD                                                                                       |
| Data Transfer                 |                |                                                                                   |                                                                                   |                                                                                           |
| mmWave                        |                |                                                                                   |                                                                                   |                                                                                           |
| Sub-6G                        |                | Up to 220Mbps(DL)/100Mbps(UL)                                                     | Up to 220Mbps(DL)/100Mbps(UL)                                                     | Up to 220Mbps(DL)/100Mbps(UL)                                                             |
| LTE                           |                | 150Mbps(DL)/50Mbps(UL)                                                            | 150Mbps(DL)/50Mbps(UL)                                                            | 150Mbps(DL)/50Mbps(UL)                                                                    |
| Software Features             |                |                                                                                   |                                                                                   |                                                                                           |
| Protocol                      |                | TCP/IP/IPV4/IPV6/Multi - PDP/FTPS /HTTPS/MQTTs/DNS                                | TCP/IP/IPV4/IPV6/Multi - PDP/FTPS /HTTPS/MQTTs/DNS                                | TCP/IP/IPV4/IPV6/Multi - PDP/FTPS /HTTPS/MQTTs/DNS                                        |
| TLS                           |                | SSL3.0/TLS1.0/TLS1.2                                                              | SSL3.0/TLS1.0/TLS1.2                                                              | SSL3.0/TLS1.0/TLS1.2                                                                      |
| DTMF                          |                | ● (Sending and Receiving)                                                         | ● (Sending and Receiving)                                                         | ● (Sending and Receiving)                                                                 |
| FOTA                          |                | ●                                                                                 | ●                                                                                 | ●                                                                                         |
| VoLTE/CSFB/VoNR*              |                | ●                                                                                 | ●                                                                                 | ●                                                                                         |
| Android RIL                   |                | Android 6.0/7.0/8.0/9.0                                                           | Android 6.0/7.0/8.0/9.0                                                           | Android 6.0/7.0/8.0/9.0                                                                   |
| USB Driver                    |                | Microsoft Windows Win7/Win8/Win10/ Linux /Android                                 | Microsoft Windows Win7/Win8/Win10/ Linux /Android                                 | Microsoft Windows Win7/Win8/Win10/ Linux /Android                                         |
| RNDIS                         |                | Linux/Win7/Win8/Win10                                                             | Linux/Win7/Win8/Win10                                                             | Linux/Win7/Win8/Win10                                                                     |
| NDIS                          |                | Linux/Win7/Win8/Win10                                                             | Linux/Win7/Win8/Win10                                                             | Linux/Win7/Win8/Win10                                                                     |
| PPP                           |                | Linux/Win7/Win8/Win10                                                             | Linux/Win7/Win8/Win10                                                             | Linux/Win7/Win8/Win10                                                                     |
| MBIM                          |                | Win8/Win10                                                                        | Win8/Win10                                                                        | Win8/Win10                                                                                |
| Firmware Upgrade              |                | USB/FOTA                                                                          | USB/FOTA                                                                          | USB/FOTA                                                                                  |
| Interface                     |                |                                                                                   |                                                                                   |                                                                                           |
| USB                           |                | 3.1 (2.0)                                                                         | 3.1 (2.0)                                                                         | 3.1 (2.0)                                                                                 |
| UART                          |                | ●                                                                                 | ●                                                                                 | ●                                                                                         |
| (U)SIM Card                   |                | 1.8V/2.95V                                                                        | 1.8V/2.95V                                                                        | 1.8V/2.95V                                                                                |
| PCM                           |                | ●                                                                                 | ●                                                                                 | ●                                                                                         |
| GPIO                          |                | ●                                                                                 | ●                                                                                 | ●                                                                                         |
| I2C                           |                | ●                                                                                 | ●                                                                                 | ●                                                                                         |
| PCIe                          |                | ●                                                                                 | ●                                                                                 | ●                                                                                         |
| SPI                           |                |                                                                                   |                                                                                   |                                                                                           |
| RGMII                         |                |                                                                                   |                                                                                   |                                                                                           |
| SDIO3.0                       |                |                                                                                   |                                                                                   |                                                                                           |
| PMI                           |                |                                                                                   |                                                                                   |                                                                                           |
| ADC                           |                |                                                                                   |                                                                                   |                                                                                           |
| Antenna                       |                | 2+1                                                                               | 2+1                                                                               | 2+1                                                                                       |
| Certification                 |                |                                                                                   |                                                                                   |                                                                                           |
| Certification                 |                | RoHS*/REACH*                                                                      | RoHS*/REACH*/CE*/GCF*                                                             | RoHS*/REACH*/CE*/FCC*/GCF*/PTCRB*                                                         |
| Typical Applications          |                | CPE,MIFI,PC,Gateway,Router,UAV                                                    |                                                                                   |                                                                                           |

o : Optional    \* : Under Developing/On-going/Planning

| 5G Module

| Technology                    |                | RedCap                                                                              |                                                                                     |                                                                                     |
|-------------------------------|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product                       |                | SIM8230JP                                                                           | SIM8230NA                                                                           | SIM8230SA                                                                           |
| Picture                       |                |  |  |  |
| Form Factor                   |                | LGA+LCC                                                                             | LGA+LCC                                                                             | LGA+LCC                                                                             |
| Dimensions(mm)                |                | 30.0*30.0*2.5                                                                       | 30.0*30.0*2.5                                                                       | 30.0*30.0*2.5                                                                       |
| Weight(g)                     |                | TBD                                                                                 | TBD                                                                                 | TBD                                                                                 |
| Mode                          |                | SA                                                                                  | SA                                                                                  | SA                                                                                  |
| Frequency Bands               | 5G NR (Sub6G)  | n3/n28/n41/n77/n78/n79                                                              | n2/n5/n7/n12/n13/n14/n25/n26/n30/n38/n41/n48/n66/n70/n71/n77/n78                    | n2/n5/n7/n8/n28/n38/n40/n66/n71/n78                                                 |
|                               | 5G NR (mmWave) |                                                                                     |                                                                                     |                                                                                     |
|                               | LTE-FDD        | B1/B3/B5/B8/B18/B19/B26/B28                                                         | B2/B4/B5/B7/B12/B13/B14/B17/B25/B26 /B30/B66/B71                                    | B2/B4/B5/B7/B8/B26/B28/B66                                                          |
|                               | LTE-TDD        | B41/B42                                                                             | B38/B41/B42/B43/B48                                                                 | B38/B40/B42/B43                                                                     |
|                               | WCDMA          |                                                                                     |                                                                                     |                                                                                     |
| GNSS                          |                | GPS/GLONASS/BeiDou                                                                  | GPS/GLONASS/BeiDou                                                                  | GPS/GLONASS/BeiDou                                                                  |
| Temperature                   |                | -40℃ ~ +85℃                                                                         | -40℃ ~ +85℃                                                                         | -40℃ ~ +85℃                                                                         |
| Electrical Features           |                |                                                                                     |                                                                                     |                                                                                     |
| Supply Voltge Range           |                | 3.3~4.4V                                                                            | 3.3~4.4V                                                                            | 3.3~4.4V                                                                            |
| Power Consumption (sleep)(mA) |                | TBD                                                                                 | TBD                                                                                 | TBD                                                                                 |
| Data Transfer                 |                |                                                                                     |                                                                                     |                                                                                     |
| mmWave                        |                |                                                                                     |                                                                                     |                                                                                     |
| Sub-6G                        |                | Up to 220Mbps(DL)/100Mbps(UL)                                                       | Up to 220Mbps(DL)/100Mbps(UL)                                                       | Up to 220Mbps(DL)/100Mbps(UL)                                                       |
| LTE                           |                | 150Mbps(DL)/50Mbps(UL)                                                              | 150Mbps(DL)/50Mbps(UL)                                                              | 150Mbps(DL)/50Mbps(UL)                                                              |
| Software Features             |                |                                                                                     |                                                                                     |                                                                                     |
| Protocol                      |                | TCP/IP/IPV4/IPV6/Multi - PDP/FTPS /HTTPS/MQTTs/DNS                                  | TCP/IP/IPV4/IPV6/Multi - PDP/FTPS /HTTPS/MQTTs/DNS                                  | TCP/IP/IPV4/IPV6/Multi - PDP/FTPS /HTTPS/MQTTs/DNS                                  |
| TLS                           |                | SSL3.0/TLS1.0/TLS1.2                                                                | SSL3.0/TLS1.0/TLS1.2                                                                | SSL3.0/TLS1.0/TLS1.2                                                                |
| DTMF                          |                | ● (Sending and Receiving)                                                           | ● (Sending and Receiving)                                                           | ● (Sending and Receiving)                                                           |
| FOTA                          |                | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| VoLTE/CSFB/VoNR*              |                | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Android RIL                   |                | Android 6.0/7.0/8.0/9.0                                                             | Android 6.0/7.0/8.0/9.0                                                             | Android 6.0/7.0/8.0/9.0                                                             |
| USB Driver                    |                | Microsoft Windows Win7/Win8/Win10/ Linux /Android                                   | Microsoft Windows Win7/Win8/Win10/ Linux /Android                                   | Microsoft Windows Win7/Win8/Win10/ Linux /Android                                   |
| RNDIS                         |                | Linux/Win7/Win8/Win10                                                               | Linux/Win7/Win8/Win10                                                               | Linux/Win7/Win8/Win10                                                               |
| NDIS                          |                | Linux/Win7/Win8/Win10                                                               | Linux/Win7/Win8/Win10                                                               | Linux/Win7/Win8/Win10                                                               |
| PPP                           |                | Linux/Win7/Win8/Win10                                                               | Linux/Win7/Win8/Win10                                                               | Linux/Win7/Win8/Win10                                                               |
| MBIM                          |                | Win8/Win10                                                                          | Win8/Win10                                                                          | Win8/Win10                                                                          |
| Firmware Upgrade              |                | USB/FOTA                                                                            | USB/FOTA                                                                            | USB/FOTA                                                                            |
| Interface                     |                |                                                                                     |                                                                                     |                                                                                     |
| USB                           |                | 3.1 (2.0)                                                                           | 3.1 (2.0)                                                                           | 3.1 (2.0)                                                                           |
| UART                          |                | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| (U)SIM Card                   |                | 1.8V/2.95V                                                                          | 1.8V/2.95V                                                                          | 1.8V/2.95V                                                                          |
| PCM                           |                | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| GPIO                          |                | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| I2C                           |                | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| PCIe                          |                | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| SPI                           |                |                                                                                     |                                                                                     |                                                                                     |
| RGMII                         |                |                                                                                     |                                                                                     |                                                                                     |
| SDIO3.0                       |                |                                                                                     |                                                                                     |                                                                                     |
| PMI                           |                |                                                                                     |                                                                                     |                                                                                     |
| ADC                           |                |                                                                                     |                                                                                     |                                                                                     |
| Antenna                       |                | 2+1                                                                                 | 2+1                                                                                 | 2+1                                                                                 |
| Certification                 |                |                                                                                     |                                                                                     |                                                                                     |
| Certification                 |                | RoHS*/REACH*                                                                        | RoHS*/REACH*/FCC*/PTCRB*                                                            | RoHS*/REACH*                                                                        |
| Typical Applications          |                | CPE,MIFI,PC,Gateway,Router,UAV                                                      |                                                                                     |                                                                                     |

o : Optional    \* : Under Developing/On-going/Planning

| 5G Module

| Technology                    |                | RedCap                                                                            |                                                                                   |                                                                                           |                                                                                     |
|-------------------------------|----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product                       |                | SIM8230C-M2                                                                       | SIM8230E-M2                                                                       | SIM8230G-M2                                                                               | SIM8230JP-M2                                                                        |
| Picture                       |                |  |  |         |  |
| Form Factor                   |                | M2                                                                                | M2                                                                                | M2                                                                                        | M2                                                                                  |
| Dimensions(mm)                |                | 42.0*31.4*3.4                                                                     | 42.0*31.4*3.4                                                                     | 42.0*31.4*3.4                                                                             | 42.0*31.4*3.4                                                                       |
| Weight(g)                     |                | TBD                                                                               | TBD                                                                               | TBD                                                                                       | TBD                                                                                 |
| Mode                          |                | SA                                                                                | SA                                                                                | SA                                                                                        | SA                                                                                  |
| Frequency Bands               | 5G NR (Sub6G)  | n1/n3/n5/n8/n28/n40/n41/n78/n79                                                   | n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n77/n78                                        | n1/n2/n3/n5/n7/n8/n12/n13/n14/n18/n20/n25/n26/n28/n30/n38/n40/n41/n48/n66/n70/n71/n77/n78 | n3/n28/n41/n77/n78/n79                                                              |
|                               | 5G NR (mmWave) |                                                                                   |                                                                                   |                                                                                           |                                                                                     |
|                               | LTE-FDD        | B1/B3/B5/B8                                                                       | B1/B3/B5/B7/B8/B20/B28                                                            | B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B30/B66/B71                  | B1/B3/B5/B8/B18/B19/B26/B28                                                         |
|                               | LTE-TDD        | B34/B38/B39/B40/B41                                                               | B40/B41/B42/B43                                                                   | B34/B38/B39/B40/B41/B42/B43/B48                                                           | B41/B42                                                                             |
|                               | WCDMA          |                                                                                   |                                                                                   |                                                                                           |                                                                                     |
| GNSS                          |                | GPS/GLONASS/BeiDou                                                                | GPS/GLONASS/BeiDou                                                                | GPS/GLONASS/BeiDou                                                                        | GPS/GLONASS/BeiDou                                                                  |
| Temperature                   |                | -40℃ ~ +85℃                                                                       | -40℃ ~ +85℃                                                                       | -40℃ ~ +85℃                                                                               | -40℃ ~ +85℃                                                                         |
| Electrical Features           |                |                                                                                   |                                                                                   |                                                                                           |                                                                                     |
| Supply Voltge Range           |                | 3.3~4.4V                                                                          | 3.3~4.4V                                                                          | 3.3~4.4V                                                                                  | 3.3~4.4V                                                                            |
| Power Consumption (sleep)(mA) |                | TBD                                                                               | TBD                                                                               | TBD                                                                                       | TBD                                                                                 |
| Data Transfer                 |                |                                                                                   |                                                                                   |                                                                                           |                                                                                     |
| mmWave                        |                |                                                                                   |                                                                                   |                                                                                           |                                                                                     |
| Sub-6G                        |                | Up to 220Mbps(DL)/100Mbps(UL)                                                     | Up to 220Mbps(DL)/100Mbps(UL)                                                     | Up to 220Mbps(DL)/100Mbps(UL)                                                             | Up to 220Mbps(DL)/100Mbps(UL)                                                       |
| LTE                           |                | 150Mbps(DL)/50Mbps(UL)                                                            | 150Mbps(DL)/50Mbps(UL)                                                            | 150Mbps(DL)/50Mbps(UL)                                                                    | 150Mbps(DL)/50Mbps(UL)                                                              |
| Software Features             |                |                                                                                   |                                                                                   |                                                                                           |                                                                                     |
| Protocol                      |                | TCP/IP/IPV4/IPV6/Multi - PDP/ FTPS /HTTPS/MQTTs/DNS                               | TCP/IP/IPV4/IPV6/Multi - PDP/ FTPS /HTTPS/MQTTs/DNS                               | TCP/IP/IPV4/IPV6/Multi - PDP/ FTPS /HTTPS/MQTTs/DNS                                       | TCP/IP/IPV4/IPV6/Multi - PDP/ FTPS /HTTPS/MQTTs/DNS                                 |
| TLS                           |                | SSL3.0/TLS1.0/TLS1.2                                                              | SSL3.0/TLS1.0/TLS1.2                                                              | SSL3.0/TLS1.0/TLS1.2                                                                      | SSL3.0/TLS1.0/TLS1.2                                                                |
| DTMF                          |                | ● (Sending and Receiving)                                                         | ● (Sending and Receiving)                                                         | ● (Sending and Receiving)                                                                 | ● (Sending and Receiving)                                                           |
| FOTA                          |                | ●                                                                                 | ●                                                                                 | ●                                                                                         | ●                                                                                   |
| VoLTE/CSFB/VoNR*              |                | ●                                                                                 | ●                                                                                 | ●                                                                                         | ●                                                                                   |
| Android RIL                   |                | Android 6.0/7.0/8.0/9.0                                                           | Android 6.0/7.0/8.0/9.0                                                           | Android 6.0/7.0/8.0/9.0                                                                   | Android 6.0/7.0/8.0/9.0                                                             |
| USB Driver                    |                | Microsoft Windows Win7/Win8/ Win10/ Linux /Android                                | Microsoft Windows Win7/Win8/ Win10/ Linux /Android                                | Microsoft Windows Win7/Win8/ Win10/ Linux /Android                                        | Microsoft Windows Win7/Win8/ Win10/ Linux /Android                                  |
| RNDIS                         |                | Linux/Win7/Win8/Win10                                                             | Linux/Win7/Win8/Win10                                                             | Linux/Win7/Win8/Win10                                                                     | Linux/Win7/Win8/Win10                                                               |
| NDIS                          |                | Linux/Win7/Win8/Win10                                                             | Linux/Win7/Win8/Win10                                                             | Linux/Win7/Win8/Win10                                                                     | Linux/Win7/Win8/Win10                                                               |
| PPP                           |                | Linux/Win7/Win8/Win10                                                             | Linux/Win7/Win8/Win10                                                             | Linux/Win7/Win8/Win10                                                                     | Linux/Win7/Win8/Win10                                                               |
| MBIM                          |                | Win8/Win10                                                                        | Win8/Win10                                                                        | Win8/Win10                                                                                | Win8/Win10                                                                          |
| Firmware Upgrade              |                | USB/FOTA                                                                          | USB/FOTA                                                                          | USB/FOTA                                                                                  | USB/FOTA                                                                            |
| Interface                     |                |                                                                                   |                                                                                   |                                                                                           |                                                                                     |
| USB                           |                | 3.1 (2.0)                                                                         | 3.1 (2.0)                                                                         | 3.1 (2.0)                                                                                 | 3.1 (2.0)                                                                           |
| UART                          |                | ●                                                                                 | ●                                                                                 | ●                                                                                         | ●                                                                                   |
| (U)SIM Card                   |                | 1.8V/2.95V                                                                        | 1.8V/2.95V                                                                        | 1.8V/2.95V                                                                                | 1.8V/2.95V                                                                          |
| PCM                           |                | ●                                                                                 | ●                                                                                 | ●                                                                                         | ●                                                                                   |
| GPIO                          |                | ●                                                                                 | ●                                                                                 | ●                                                                                         | ●                                                                                   |
| I2C                           |                | ●                                                                                 | ●                                                                                 | ●                                                                                         | ●                                                                                   |
| PCIe                          |                | ●                                                                                 | ●                                                                                 | ●                                                                                         | ●                                                                                   |
| SPI                           |                |                                                                                   |                                                                                   |                                                                                           |                                                                                     |
| RGMII                         |                |                                                                                   |                                                                                   |                                                                                           |                                                                                     |
| SDIO3.0                       |                |                                                                                   |                                                                                   |                                                                                           |                                                                                     |
| PMI                           |                |                                                                                   |                                                                                   |                                                                                           |                                                                                     |
| ADC                           |                |                                                                                   |                                                                                   |                                                                                           |                                                                                     |
| Antenna                       |                | 2+1                                                                               | 2+1                                                                               | 2+1                                                                                       | 2+1                                                                                 |
| Certification                 |                |                                                                                   |                                                                                   |                                                                                           |                                                                                     |
| Certification                 |                | RoHS*/REACH*                                                                      | RoHS*/REACH*/CE*/GCF*                                                             | RoHS*/REACH*/CE*/FCC*/GCF*/PTCRB*                                                         | RoHS*/REACH*                                                                        |
| Typical Applications          |                | CPE,MIFI,PC,Gateway,Router,UAV                                                    |                                                                                   |                                                                                           |                                                                                     |

o : Optional    \* : Under Developing/On-going/Planning

| 5G Module

| Technology                    |                | RedCap                                                                                            |                                                                                                   |                                                                                                   |                                                                                                   |
|-------------------------------|----------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Product                       |                | SIM8230C-PCIE                                                                                     | SIM8230E-PCIE                                                                                     | SIM8230G-PCIE                                                                                     | SIM8230JP-PCIE                                                                                    |
| Picture                       |                |                |                |                |                |
| Form Factor                   |                | PCIE                                                                                              | PCIE                                                                                              | PCIE                                                                                              | PCIE                                                                                              |
| Dimensions(mm)                |                | 50.8*31.0*3.6                                                                                     | 50.8*31.0*3.6                                                                                     | 50.8*31.0*3.6                                                                                     | 50.8*31.0*3.6                                                                                     |
| Weight(g)                     |                | TBD                                                                                               | TBD                                                                                               | TBD                                                                                               | TBD                                                                                               |
| Mode                          |                | SA                                                                                                | SA                                                                                                | SA                                                                                                | SA                                                                                                |
| Frequency Bands               | 5G NR (Sub6G)  | n1/n3/n5/n8/n28/n40/n41/n78/n79                                                                   | n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n77/n78                                                        | n1/n2/n3/n5/n7/n8/n12/n13/n14/n18/n20/n25/n26/n28/n30/n38/n40/n41/n48/n66/n70/n71/n77/n78         | n3/n28/n41/n77/n78/n79                                                                            |
|                               | 5G NR (mmWave) |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                   |
|                               | LTE-FDD        | B1/B3/B5/B8                                                                                       | B1/B3/B5/B7/B8/B20/B28                                                                            | B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B30/B66/B71                          | B1/B3/B5/B8/B18/B19/B26/B28                                                                       |
|                               | LTE-TDD        | B34/B38/B39/B40/B41                                                                               | B40/B41/B42/B43                                                                                   | B34/B38/B39/B40/B41/B42/B43/B48                                                                   | B41/B42                                                                                           |
|                               | WCDMA          |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                   |
| GNSS                          |                | GPS/GLONASS/BeiDou                                                                                | GPS/GLONASS/BeiDou                                                                                | GPS/GLONASS/BeiDou                                                                                | GPS/GLONASS/BeiDou                                                                                |
| Temperature                   |                | -40℃ ~ +85℃                                                                                       | -40℃ ~ +85℃                                                                                       | -40℃ ~ +85℃                                                                                       | -40℃ ~ +85℃                                                                                       |
| Electrical Features           |                |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                   |
| Supply Voltge Range           |                | 3.0 ~ 3.6,type 3.3(With DC-DC Boost Function)<br>3.3 ~ 4.4,type 3.8(Without DC-DC Boost Function) | 3.0 ~ 3.6,type 3.3(With DC-DC Boost Function)<br>3.3 ~ 4.4,type 3.8(Without DC-DC Boost Function) | 3.0 ~ 3.6,type 3.3(With DC-DC Boost Function)<br>3.3 ~ 4.4,type 3.8(Without DC-DC Boost Function) | 3.0 ~ 3.6,type 3.3(With DC-DC Boost Function)<br>3.3 ~ 4.4,type 3.8(Without DC-DC Boost Function) |
| Power Consumption (sleep)(mA) |                | TBD                                                                                               | TBD                                                                                               | TBD                                                                                               | TBD                                                                                               |
| Data Transfer                 |                |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                   |
| mmWave                        |                |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                   |
| Sub-6G                        |                | Up to 220Mbps(DL)/100Mbps(UL)                                                                     | Up to 220Mbps(DL)/100Mbps(UL)                                                                     | Up to 220Mbps(DL)/100Mbps(UL)                                                                     | Up to 220Mbps(DL)/100Mbps(UL)                                                                     |
| LTE                           |                | 150Mbps(DL)/50Mbps(UL)                                                                            | 150Mbps(DL)/50Mbps(UL)                                                                            | 150Mbps(DL)/50Mbps(UL)                                                                            | 150Mbps(DL)/50Mbps(UL)                                                                            |
| Software Features             |                |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                   |
| Protocol                      |                | TCP/IP/IPV4/IPV6/Multi - PDP/ FTPS /HTTPS/MQTTs/DNS                                               | TCP/IP/IPV4/IPV6/Multi - PDP/ FTPS /HTTPS/MQTTs/DNS                                               | TCP/IP/IPV4/IPV6/Multi - PDP/ FTPS /HTTPS/MQTTs/DNS                                               | TCP/IP/IPV4/IPV6/Multi - PDP/ FTPS /HTTPS/MQTTs/DNS                                               |
| TLS                           |                | SSL3.0/TLS1.0/TLS1.2                                                                              | SSL3.0/TLS1.0/TLS1.2                                                                              | SSL3.0/TLS1.0/TLS1.2                                                                              | SSL3.0/TLS1.0/TLS1.2                                                                              |
| DTMF                          |                | ● (Sending and Receiving)                                                                         | ● (Sending and Receiving)                                                                         | ● (Sending and Receiving)                                                                         | ● (Sending and Receiving)                                                                         |
| FOTA                          |                | ●                                                                                                 | ●                                                                                                 | ●                                                                                                 | ●                                                                                                 |
| VoLTE/CSFB/VoNR*              |                | ●                                                                                                 | ●                                                                                                 | ●                                                                                                 | ●                                                                                                 |
| Android RIL                   |                | Android 6.0/7.0/8.0/9.0                                                                           | Android 6.0/7.0/8.0/9.0                                                                           | Android 6.0/7.0/8.0/9.0                                                                           | Android 6.0/7.0/8.0/9.0                                                                           |
| USB Driver                    |                | Microsoft Windows Win7/Win8/ Win10/ Linux /Android                                                | Microsoft Windows Win7/Win8/ Win10/ Linux /Android                                                | Microsoft Windows Win7/Win8/ Win10/ Linux /Android                                                | Microsoft Windows Win7/Win8/ Win10/ Linux /Android                                                |
| RNDIS                         |                | Linux/Win7/Win8/Win10                                                                             | Linux/Win7/Win8/Win10                                                                             | Linux/Win7/Win8/Win10                                                                             | Linux/Win7/Win8/Win10                                                                             |
| NDIS                          |                | Linux/Win7/Win8/Win10                                                                             | Linux/Win7/Win8/Win10                                                                             | Linux/Win7/Win8/Win10                                                                             | Linux/Win7/Win8/Win10                                                                             |
| PPP                           |                | Linux/Win7/Win8/Win10                                                                             | Linux/Win7/Win8/Win10                                                                             | Linux/Win7/Win8/Win10                                                                             | Linux/Win7/Win8/Win10                                                                             |
| MBIM                          |                | Win8/Win10                                                                                        | Win8/Win10                                                                                        | Win8/Win10                                                                                        | Win8/Win10                                                                                        |
| Firmware Upgrade              |                | USB/FOTA                                                                                          | USB/FOTA                                                                                          | USB/FOTA                                                                                          | USB/FOTA                                                                                          |
| Interface                     |                |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                   |
| USB                           |                | 3.1 (2.0)                                                                                         | 3.1 (2.0)                                                                                         | 3.1 (2.0)                                                                                         | 3.1 (2.0)                                                                                         |
| UART                          |                | ●                                                                                                 | ●                                                                                                 | ●                                                                                                 | ●                                                                                                 |
| (U)SIM Card                   |                | 1.8V/2.95V                                                                                        | 1.8V/2.95V                                                                                        | 1.8V/2.95V                                                                                        | 1.8V/2.95V                                                                                        |
| PCM                           |                | ●                                                                                                 | ●                                                                                                 | ●                                                                                                 | ●                                                                                                 |
| GPIO                          |                | ●                                                                                                 | ●                                                                                                 | ●                                                                                                 | ●                                                                                                 |
| I2C                           |                | ●                                                                                                 | ●                                                                                                 | ●                                                                                                 | ●                                                                                                 |
| PCIe                          |                | ●                                                                                                 | ●                                                                                                 | ●                                                                                                 | ●                                                                                                 |
| SPI                           |                |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                   |
| RGMII                         |                |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                   |
| SDIO3.0                       |                |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                   |
| PMI                           |                |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                   |
| ADC                           |                |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                   |
| Antenna                       |                | 2+1                                                                                               | 2+1                                                                                               | 2+1                                                                                               | 2+1                                                                                               |
| Certification                 |                |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                   |
| Certification                 |                | RoHS*/REACH*                                                                                      | RoHS*/REACH*/CE*/GCF*                                                                             | RoHS*/REACH*/CE*/FCC*/GCF*/PTCRB*                                                                 | RoHS*/REACH*                                                                                      |
| Typical Applications          |                | CPE,MIFI,PC,Gateway,Router,UAV                                                                    |                                                                                                   |                                                                                                   |                                                                                                   |

o : Optional    \* : Under Developing/On-going/Planning

5G Module

| Technology                    |                | 3GPP R16                                                                          |                                                                                   |                                                                                     |
|-------------------------------|----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product                       |                | SIM8260E                                                                          | SIM8260A                                                                          | SIM8260C                                                                            |
| Picture                       |                |  |  |  |
| Form Factor                   |                | LGA                                                                               | LGA                                                                               | LGA                                                                                 |
| Dimensions(mm)                |                | 41.0*43.6*2.8                                                                     | 41.0*43.6*2.8                                                                     | 41.0*43.6*2.8                                                                       |
| Weight(g)                     |                | 11.17±0.1                                                                         | 11.17±0.1                                                                         | 11.17±0.1                                                                           |
| Mode                          |                | NSA/SA                                                                            | NSA/SA                                                                            | NSA/SA                                                                              |
| Frequency Bands               | 5G NR (Sub6G)  | n1/n3/n5/n7/n8/n20/n26/n28/n38/n40/n41/n48/n77/n78/n79                            | n1/n2/n5/n7/n12/n13/n14/n25/n26/n29/n30/n38/n41/n48/n66/n71/n77/n78/n79           | n1/n3/n5*/n7*/n8*/n20*/n28/n38*/n40*/n41/n48*/n77*/n78/n79                          |
|                               | 5G NR (mmWave) |                                                                                   |                                                                                   |                                                                                     |
|                               | LTE-FDD        | B1/B3/B5/B7/B8/B18/B19/B20/B26/B28/B32                                            | B1/B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B29/B30/B66/B71                            | B1/B3/B5/B7/B8/B20/B28                                                              |
|                               | LTE-TDD        | B38/B39/B40/B41/B42/B43/B46*/B48                                                  | B38/B41/B42/B43/B46*/B48                                                          | B34/B38/B39/B40/B41/B42*/B43*/B48*                                                  |
|                               | WCDMA          | B1/B5/B8                                                                          | B1/B2/B4/B5                                                                       | B1/B3*/B5/B8                                                                        |
| GNSS                          |                | GPS/GLONASS/BeiDou (Dedicated GNSS L1 and L5)                                     | GPS/GLONASS/BeiDou (Dedicated GNSS L1 and L5)                                     | GPS/GLONASS/BeiDou (Dedicated GNSS L1 and L5)                                       |
| Temperature                   |                | -30°C ~ +70°C<br>(Extended temprature:-40°C ~ +85°C )                             | -30°C ~ +70°C<br>(Extended temprature:-40°C ~ +85°C )                             | -30°C ~ +70°C<br>(Extended temprature:-40°C ~ +85°C )                               |
| Electrical Features           |                |                                                                                   |                                                                                   |                                                                                     |
| Supply Voltge Range           |                | 3.3 ~ 4.4V                                                                        | 3.3 ~ 4.4V                                                                        | 3.3 ~ 4.4V                                                                          |
| Power Consumption (sleep)(mA) |                | TBD                                                                               | TBD                                                                               | TBD                                                                                 |
| Data Transfer                 |                |                                                                                   |                                                                                   |                                                                                     |
| mmWave                        |                |                                                                                   |                                                                                   |                                                                                     |
| Sub-6G                        |                | 2.4Gbps(DL)/1Gbps(UL)                                                             | 2.4Gbps(DL)/1Gbps(UL)                                                             | 2.1Gbps(DL)/900Mbps(UL)                                                             |
| LTE                           |                | 1.6Gbps(DL)/200Mbps(UL)                                                           | 1.6Gbps(DL)/200Mbps(UL)                                                           | 1Gbps(DL)/200Mbps(UL)                                                               |
| Software Features             |                |                                                                                   |                                                                                   |                                                                                     |
| Protocol                      |                | TCP/IP/IPV4/IPV6/Multi-PDP/FTPS/HTTPS/MQTTs/DNS                                   | TCP/IP/IPV4/IPV6/Multi-PDP/FTPS/HTTPS/MQTTs/DNS                                   | TCP/IP/IPV4/IPV6/Mult-PDP/FTPS/HTTPS/MQTTs/DNS                                      |
| TLS                           |                | SSL3.0/TLS1.0/TLS1.2                                                              | SSL3.0/TLS1.0/TLS1.2                                                              | SSL3.0/TLS1.0/TLS1.2                                                                |
| DTMF                          |                | ● (Sending and Receiving)                                                         | ● (Sending and Receiving)                                                         | ● (Sending and Receiving)                                                           |
| FOTA                          |                | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| VoLTE/CSFB/VoNR*              |                | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| Android RIL                   |                | Android 6.0/7.0/8.0/9.0                                                           | Android 6.0/7.0/8.0/9.0                                                           | Android 6.0/7.0/8.0/9.0                                                             |
| USB Driver                    |                | Microsoft Windows Win7/Win8/Win10/Linux/Android                                   | Microsoft Windows Win7/Win8/Win10/Linux/Android                                   | Microsoft Windows Win7/Win8/Win10/Linux/Android                                     |
| RNDIS                         |                | Linux/Win7/Win8/Win10                                                             | Linux/Win7/Win8/Win10                                                             | Linux/Win7/Win8/Win10                                                               |
| NDIS                          |                | Linux/Win7/Win8/Win10                                                             | Linux/Win7/Win8/Win10                                                             | Linux/Win7/Win8/Win10                                                               |
| PPP                           |                | Linux/Win7/Win8/Win10                                                             | Linux/Win7/Win8/Win10                                                             | Linux/Win7/Win8/Win10                                                               |
| MBIM                          |                | Win8/Win10                                                                        | Win8/Win10                                                                        | Win8/Win10                                                                          |
| Firmware Upgrade              |                | USB/FOTA                                                                          | USB/FOTA                                                                          | USB/FOTA                                                                            |
| Interface                     |                |                                                                                   |                                                                                   |                                                                                     |
| USB                           |                | 3.1 (2.0)                                                                         | 3.1 (2.0)                                                                         | 3.1 (2.0)                                                                           |
| UART                          |                | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| (U)SIM Card                   |                | 1.8V/2.95V                                                                        | 1.8V/2.95V                                                                        | 1.8V/2.95V                                                                          |
| PCM                           |                | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| GPIO                          |                | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| I2C                           |                | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| PCIe                          |                | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| SPI                           |                |                                                                                   |                                                                                   |                                                                                     |
| RGMII                         |                |                                                                                   |                                                                                   |                                                                                     |
| SDIO3.0                       |                |                                                                                   |                                                                                   |                                                                                     |
| PMI                           |                |                                                                                   |                                                                                   |                                                                                     |
| ADC                           |                |                                                                                   |                                                                                   |                                                                                     |
| Antenna                       |                | 4                                                                                 | 4                                                                                 | 4                                                                                   |
| Certification                 |                |                                                                                   |                                                                                   |                                                                                     |
| Certification                 |                | CE(RED)/GCF/RoHS/REACH/TELEC/JATE/Deutsche Telekom/Orange*                        | PTCRB/GCF/IC/FCC/RoHS/REACH/T-Mobile/Verizon*                                     | CCC/SRRC/CTA                                                                        |
| Typical Applications          |                | CPE,MIFI,PC,Gateway,Router,UAV                                                    |                                                                                   |                                                                                     |

o : Optional    \* : Under Developing/On-going/Planning

5G Module

| Technology                    |                | 3GPP R16                                                                            |                                                                                     |                                                                                                           |
|-------------------------------|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Product                       |                | SIM8260E-M2 V2.01                                                                   | SIM8260A-M2 V2.01                                                                   | SIM8260G-M2 V2.01                                                                                         |
| Picture                       |                |  |  |                        |
| Form Factor                   |                | M.2                                                                                 | M.2                                                                                 | M.2                                                                                                       |
| Dimensions(mm)                |                | 30.0*52.0*2.3                                                                       | 30.0*52.0*2.3                                                                       | 30.0*52.0*2.3                                                                                             |
| Weight(g)                     |                | 8.3g±0.1g                                                                           | 8.3g±0.1g                                                                           | 8.3g±0.1g                                                                                                 |
| Mode                          |                | NSA/SA                                                                              | NSA/SA                                                                              | NSA/SA                                                                                                    |
| Frequency Bands               | 5G NR (Sub6G)  | n1/n3/n5/n7/n8/n20/n26/n28/n38/n40/n41/n48/n75/n76/n77/n78                          | n2/n5/n7/n12/n13/n14/n25/n26/n29/n30/n38/n41/n48/n66/n70/n71/n77/n78                | n1/n2/n3/n5/n7/n8/n12/n13/n14/n18/n20/n25/n26/n28/n29/n30/n38/n40/n41/n48/n66/n70/n71/n75/n76/n77/n78/n79 |
|                               | 5G NR (mmWave) |                                                                                     |                                                                                     |                                                                                                           |
|                               | LTE-FDD        | B1/B3/B5/B7/B8/B18/B19/B20/B26/B28/B32                                              | B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B29/B30/B66/B71                                 | B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/B32/B66/B71                          |
|                               | LTE-TDD        | B38/B40/B41/B42/B43/B48                                                             | B38/B41/B42/B43/B46/B48                                                             | B34/B38/B39/B40/B41/B42/B43/B46/B48                                                                       |
|                               | WCDMA          | B1/B5/B8                                                                            | B2/B4/B5                                                                            | B1/B2/B4/B5/B8/B19                                                                                        |
| GNSS                          |                | GPS/GLONASS/BeiDou (Dedicated GNSS L1 and L5)                                       | GPS/GLONASS/BeiDou (Dedicated GNSS L1 and L5)                                       | GPS/GLONASS/BeiDou (Dedicated GNSS L1 and L5)                                                             |
| Temperature                   |                | -30°C ~ +70°C<br>(Extended temprature:-40°C ~ +85°C )                               | -30°C ~ +70°C<br>(Extended temprature:-40°C ~ +85°C )                               | -30°C ~ +70°C<br>(Extended temprature:-40°C ~ +85°C )                                                     |
| Electrical Features           |                |                                                                                     |                                                                                     |                                                                                                           |
| Supply Voltge Range           |                | 3.135 ~ 4.4V                                                                        | 3.135 ~ 4.4V                                                                        | 3.135 ~ 4.4V                                                                                              |
| Power Consumption (sleep)(mA) |                | TBD                                                                                 | TBD                                                                                 | TBD                                                                                                       |
| Data Transfer                 |                |                                                                                     |                                                                                     |                                                                                                           |
| mmWave                        |                |                                                                                     |                                                                                     |                                                                                                           |
| Sub-6G                        |                | SA 2.4Gbps(DL)/0.9Gbps(UL)<br>NSA 3.4Gbps(DL)/550Mbps(UL)                           | SA 2.4Gbps(DL)/0.9Gbps(UL)<br>NSA 3.4Gbps(DL)/550Mbps(UL)                           | SA 2.4Gbps(DL)/0.9Gbps(UL)<br>NSA 3.4Gbps(DL)/550Mbps(UL)                                                 |
| LTE                           |                | 1.6Gbps(DL)/200Mbps(UL)                                                             | 1Gbps(DL)/150Mbps(UL)                                                               | 1.6Gbps(DL)/200Mbps(UL)                                                                                   |
| Software Features             |                |                                                                                     |                                                                                     |                                                                                                           |
| Protocol                      |                | TCP/IP/IPV4/IPV6/Multi-PDP/FTPS/HTTPS/MQTTs/DNS                                     | TCP/IP/IPV4/IPV6/Multi-PDP/FTPS/HTTPS/MQTTs/DNS                                     | TCP/IP/IPV4/IPV6/Mult-PDP/FTPS/HTTPS/MQTTs/DNS                                                            |
| TLS                           |                | SSL3.0/TLS1.0/TLS1.2                                                                | SSL3.0/TLS1.0/TLS1.2                                                                | SSL3.0/TLS1.0/TLS1.2                                                                                      |
| DTMF                          |                | ● (Sending and Receiving)                                                           | ● (Sending and Receiving)                                                           | ● (Sending and Receiving)                                                                                 |
| FOTA                          |                | ●                                                                                   | ●                                                                                   | ●                                                                                                         |
| VoLTE/CSFB/VoNR*              |                | ●                                                                                   | ●                                                                                   | ●                                                                                                         |
| Android RIL                   |                | Android 6.0/7.0/8.0/9.0                                                             | Android 6.0/7.0/8.0/9.0                                                             | Android 6.0/7.0/8.0/9.0                                                                                   |
| USB Driver                    |                | Microsoft Windows Win7/Win8/Win10/Linux/Android                                     | Microsoft Windows Win7/Win8/Win10/Linux/Android                                     | Microsoft Windows Win7/Win8/Win10/Linux/Android                                                           |
| RNDIS                         |                | Linux/Win7/Win8/Win10                                                               | Linux/Win7/Win8/Win10                                                               | Linux/Win7/Win8/Win10                                                                                     |
| NDIS                          |                | Linux/Win7/Win8/Win10                                                               | Linux/Win7/Win8/Win10                                                               | Linux/Win7/Win8/Win10                                                                                     |
| PPP                           |                | Linux/Win7/Win8/Win10                                                               | Linux/Win7/Win8/Win10                                                               | Linux/Win7/Win8/Win10                                                                                     |
| MBIM                          |                | Win8/Win10                                                                          | Win8/Win10                                                                          | Win8/Win10                                                                                                |
| Firmware Upgrade              |                | USB/FOTA                                                                            | USB/FOTA                                                                            | USB/FOTA                                                                                                  |
| Interface                     |                |                                                                                     |                                                                                     |                                                                                                           |
| USB                           |                | 3.1 (2.0)                                                                           | 3.1 (2.0)                                                                           | 3.1 (2.0)                                                                                                 |
| UART                          |                | ●                                                                                   | ●                                                                                   | ●                                                                                                         |
| (U)SIM Card                   |                | 1.8V/2.95V                                                                          | 1.8V/2.95V                                                                          | 1.8V/2.95V                                                                                                |
| PCM                           |                | ●                                                                                   | ●                                                                                   | ●                                                                                                         |
| GPIO                          |                | ●                                                                                   | ●                                                                                   | ●                                                                                                         |
| I2C                           |                | ●                                                                                   | ●                                                                                   | ●                                                                                                         |
| PCIe                          |                | ●                                                                                   | ●                                                                                   | ●                                                                                                         |
| SPI                           |                |                                                                                     |                                                                                     |                                                                                                           |
| RGMII                         |                |                                                                                     |                                                                                     |                                                                                                           |
| SDIO3.0                       |                |                                                                                     |                                                                                     |                                                                                                           |
| PMI                           |                |                                                                                     |                                                                                     |                                                                                                           |
| ADC                           |                |                                                                                     |                                                                                     |                                                                                                           |
| Antenna                       |                | 4                                                                                   | 5                                                                                   | 4                                                                                                         |
| Certification                 |                |                                                                                     |                                                                                     |                                                                                                           |
| Certification                 |                | CE*/RoHS*/REACH*                                                                    | FCC*/RoHS*/REACH*                                                                   | CE*/FCC*/RoHS*/REACH*                                                                                     |
| Typical Applications          |                | CPE,MIFI,PC,Gateway,Router,UAV                                                      |                                                                                     |                                                                                                           |

o : Optional    \* : Under Developing/On-going/Planning

5G Module

| Technology                    |                | 3GPP R16                                                                          |
|-------------------------------|----------------|-----------------------------------------------------------------------------------|
| Product                       |                | SIM8262E-M2                                                                       |
| Picture                       |                |  |
| Form Factor                   |                | M.2                                                                               |
| Dimensions(mm)                |                | 30.0*42.0*2.3                                                                     |
| Weight(g)                     |                | 6.8±0.1                                                                           |
| Mode                          |                | NSA/SA                                                                            |
| Frequency Bands               | 5G NR (Sub6G)  | n1/n3/n5/n7/n8/n18/n20/n26/n28/n38/n40/n41/n48/n66/n77/n78/n79                    |
|                               | 5G NR (mmWave) |                                                                                   |
|                               | LTE-FDD        | B1,B3,B4,B5,B7,B8,B18,B19,B20,B26,B28,B32,B66                                     |
|                               | LTE-TDD        | B38,B39,B40,B41,B42,B43,B48                                                       |
|                               | WCDMA          | B1,B5,B8                                                                          |
| GNSS                          |                | GPS/GLONASS/BeiDou (Dedicated GNSS L1 and L5)                                     |
| Temperature                   |                | -30℃ ~ +70℃ (Extended temprature:-40℃ ~ +85℃ )                                    |
| Electrical Features           |                |                                                                                   |
| Supply Voltge Range           |                | 3.135 ~ 4.4V                                                                      |
| Power Consumption (sleep)(mA) |                | TBD                                                                               |
| Data Transfer                 |                |                                                                                   |
| mmWave                        |                |                                                                                   |
| Sub-6G                        |                | 2.4Gbps(DL)/1Gbps(UL)                                                             |
| LTE                           |                | 1.6Gbps(DL)/200Mbps(UL)                                                           |
| Software Features             |                |                                                                                   |
| Protocol                      |                | TCP/IP/IPV4/IPV6/Multi - PDP/FTPS /HTTPS/MQTTs/DNS                                |
| TLS                           |                | SSL3.0/TLS1.0/TLS1.2                                                              |
| DTMF                          |                | ● (Sending and Receiving)                                                         |
| FOTA                          |                | ●                                                                                 |
| VoLTE/CSFB/VoNR*              |                | ●                                                                                 |
| Android RIL                   |                | Android 6.0/7.0/8.0/9.0                                                           |
| USB Driver                    |                | Microsoft Windows Win7/Win8/Win10/ Linux /Android                                 |
| RNDIS                         |                | Linux/Win7/Win8/Win10                                                             |
| NDIS                          |                | Linux/Win7/Win8/Win10                                                             |
| PPP                           |                | Linux/Win7/Win8/Win10                                                             |
| MBIM                          |                | Win8/Win10                                                                        |
| Firmware Upgrade              |                | USB/FOTA                                                                          |
| Interface                     |                |                                                                                   |
| USB                           |                | 3.1 (2.0)                                                                         |
| UART                          |                | ●                                                                                 |
| (U)SIM Card                   |                | 1.8V/2.95V                                                                        |
| PCM                           |                | ●                                                                                 |
| GPIO                          |                | ●                                                                                 |
| I2C                           |                | ●                                                                                 |
| PCIe                          |                | ●                                                                                 |
| SPI                           |                |                                                                                   |
| RGMII                         |                |                                                                                   |
| SDIO3.0                       |                |                                                                                   |
| PMI                           |                |                                                                                   |
| ADC                           |                |                                                                                   |
| Antenna                       |                | 4                                                                                 |
| Certification                 |                |                                                                                   |
| Certification                 |                | CE(RED)/RoHS/REACH/JATE/TELEC/GCF                                                 |
| Typical Applications          |                | CPE,MIFI,PC,Gateway,Router,UAVCPE,MIFI,PC,Gateway,Router,UAV                      |

o: Optional    \*: Under Developing/On-going/Planning

5G Module

| Technology                    |                | 3GPP R16                                                                                                                                                                |
|-------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product                       |                | SIM8260C-M2SIM8260G-M2                                                                                                                                                  |
| Picture                       |                |   |
| Form Factor                   |                | M.2                                                                                                                                                                     |
| Dimensions(mm)                |                | 30.0*52.0*2.3                                                                                                                                                           |
| Weight(g)                     |                | 8.3±0.1                                                                                                                                                                 |
| Mode                          |                | NSA/SA                                                                                                                                                                  |
| Frequency Bands               | 5G NR (Sub6G)  | n1/n3/n5*/n7*/n8*/n20*/n28/n38*/n40*/n41/n48*/n77*/n78/n79                                                                                                              |
|                               | 5G NR (mmWave) |                                                                                                                                                                         |
|                               | LTE-FDD        | B1/B3/B5/B7/B8/B20/B28                                                                                                                                                  |
|                               | LTE-TDD        | B34/B38/B39/B40/B41/B42*                                                                                                                                                |
|                               | WCDMA          | B1/B3*/B5/B8                                                                                                                                                            |
| GNSS                          |                | GPS/GLONASS/BeiDou (Dedicated GNSS L1 and L5*)GPS/GLONASS/BeiDou (Dedicated GNSS L1 and L5)                                                                             |
| Temperature                   |                | -30℃ ~ +70℃ (Extended temprature:-40℃ ~ +85℃ )-30℃ ~ +70℃ (Extended temprature:-40℃ ~ +85℃ )                                                                            |
| Electrical Features           |                |                                                                                                                                                                         |
| Supply Voltge Range           |                | 3.135 ~ 4.4V3.135 ~ 4.4V                                                                                                                                                |
| Power Consumption (sleep)(mA) |                | TBDTBD                                                                                                                                                                  |
| Data Transfer                 |                |                                                                                                                                                                         |
| mmWave                        |                |                                                                                                                                                                         |
| Sub-6G                        |                | 2.1Gbps(DL)/900Mbps(UL)SA:2.5Gbps(DL)/0.9Gbps(UL) NSA:3.25Gbps(DL)/460Mbps(UL)                                                                                          |
| LTE                           |                | 1Gbps(DL)/150Mbps(UL)1.6Gbps(DL)/200Mbps(UL)                                                                                                                            |
| Software Features             |                |                                                                                                                                                                         |
| Protocol                      |                | TCP/IP/IPV4/IPV6/Multi - PDP/FTPS /HTTPS/MQTTs/DNSTCP/IP/IPV4/IPV6/Multi - PDP/FTPS /HTTPS/MQTTs/DNS                                                                    |
| TLS                           |                | SSL3.0/TLS1.0/TLS1.2SSL3.0/TLS1.0/TLS1.2                                                                                                                                |
| DTMF                          |                | ● (Sending and Receiving)● (Sending and Receiving)                                                                                                                      |
| FOTA                          |                | ●●                                                                                                                                                                      |
| VoLTE/CSFB/VoNR*              |                | ●●                                                                                                                                                                      |
| Android RIL                   |                | Android 6.0/7.0/8.0/9.0Android 6.0/7.0/8.0/9.0                                                                                                                          |
| USB Driver                    |                | Microsoft Windows Win7/Win8/Win10/ Linux /AndroidMicrosoft Windows Win7/Win8/Win10/Linux/Android                                                                        |
| RNDIS                         |                | Linux/Win7/Win8/Win10Linux/Win7/Win8/Win10                                                                                                                              |
| NDIS                          |                | Linux/Win7/Win8/Win10Linux/Win7/Win8/Win10                                                                                                                              |
| PPP                           |                | Linux/Win7/Win8/Win10Linux/Win7/Win8/Win10                                                                                                                              |
| MBIM                          |                | Win8/Win10Win8/Win10                                                                                                                                                    |
| Firmware Upgrade              |                | USB/FOTAUSB/FOTA                                                                                                                                                        |
| Interface                     |                |                                                                                                                                                                         |
| USB                           |                | 3.1 (2.0)3.1 (2.0)                                                                                                                                                      |
| UART                          |                | ●●                                                                                                                                                                      |
| (U)SIM Card                   |                | 1.8V/2.95V1.8V/2.95V                                                                                                                                                    |
| PCM                           |                | ●●                                                                                                                                                                      |
| GPIO                          |                | ●●                                                                                                                                                                      |
| I2C                           |                | ●●                                                                                                                                                                      |
| PCIe                          |                | ●●                                                                                                                                                                      |
| SPI                           |                |                                                                                                                                                                         |
| RGMII                         |                |                                                                                                                                                                         |
| SDIO3.0                       |                |                                                                                                                                                                         |
| PMI                           |                |                                                                                                                                                                         |
| ADC                           |                |                                                                                                                                                                         |
| Antenna                       |                | 54                                                                                                                                                                      |
| Certification                 |                |                                                                                                                                                                         |
| Certification                 |                | CCC/SRRC/CTA/ChinaMobileCE(RED)/FCC/IC/RCM/UKCA/JATE/TELEC/RoHS/REACH                                                                                                   |
| Typical Applications          |                | CPE,MIFI,PC,Gateway,Router,UAVCPE,MIFI,PC,Gateway,Router,UAV                                                                                                            |

o: Optional    \*: Under Developing/On-going/Planning

| 5G Module

| Technology                    |                | 3GPP R16                                                                                              |
|-------------------------------|----------------|-------------------------------------------------------------------------------------------------------|
| Product                       |                | SIM8380G-M2                                                                                           |
| Picture                       |                |                      |
| Form Factor                   |                | M.2                                                                                                   |
| Dimensions(mm)                |                | 30.0*52.0*2.3                                                                                         |
| Weight(g)                     |                | 8.3±0.1                                                                                               |
| Mode                          |                | NSA/SA                                                                                                |
| Frequency Bands               | 5G NR (Sub6G)  | n1/n2/n3/n5/n7/n8/n12/n13/n14/n18/n20/n25/n26/n28/n29/n30/n38/n40/n41/n48/n66/n71/n75/n76/n77/n78/n79 |
|                               | 5G NR (mmWave) | n257/n258/n260/n261                                                                                   |
|                               | LTE-FDD        | B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/B32/B66/B71                      |
|                               | LTE-TDD        | B34/B38/B39/B40/B41/B42/B43/B46/B48                                                                   |
|                               | WCDMA          | B1/B2/B4/B5/B8/B19                                                                                    |
| GNSS                          |                | GPS/GLONASS/BeiDou (Dedicated GNSS L1 and L5)                                                         |
| Temperature                   |                | -30℃ ~ +70℃ (Extended temprature:-40℃ ~ +85℃)                                                         |
| Electrical Features           |                |                                                                                                       |
| Supply Voltge Range           |                | 3.135~4.4V                                                                                            |
| Power Consumption (sleep)(mA) |                | TBD                                                                                                   |
| Data Transfer                 |                |                                                                                                       |
| mmWave                        |                | 8.76Gbps(DL)/2.69Gbps(UL)                                                                             |
| Sub-6G                        |                | SA:6.2Gbps(DL)/0.9Gbps(UL) NSA:4.92Gbps(DL)/660Mbps(UL)                                               |
| LTE                           |                | 2Gbps(DL)/200Mbps(UL)                                                                                 |
| Software Features             |                |                                                                                                       |
| Protocol                      |                | TCP/IP/IPV4/IPV6/Multi - PDP/FTPS /HTTPS/MQTTs/DNS                                                    |
| TLS                           |                | SSL3.0/TLS1.0/TLS1.2                                                                                  |
| DTMF                          |                | ● (Sending and Receiving)                                                                             |
| FOTA                          |                | ●                                                                                                     |
| VoLTE/CSFB/VoNR*              |                | ●                                                                                                     |
| Android RIL                   |                | Android 6.0/7.0/8.0/9.0                                                                               |
| USB Driver                    |                | Microsoft Windows Win7/Win8/Win10/Linux/Android                                                       |
| RNDIS                         |                | Linux/Win7/Win8/Win10                                                                                 |
| NDIS                          |                | Linux/Win7/Win8/Win10                                                                                 |
| PPP                           |                | Linux/Win7/Win8/Win10                                                                                 |
| MBIM                          |                | Win8/Win10                                                                                            |
| Firmware Upgrade              |                | USB/FOTA                                                                                              |
| Interface                     |                |                                                                                                       |
| USB                           |                | 3.1 (2.0)                                                                                             |
| UART                          |                | ●                                                                                                     |
| (U)SIM Card                   |                | 1.8V/2.95V                                                                                            |
| PCM                           |                | ●                                                                                                     |
| GPIO                          |                | ●                                                                                                     |
| I2C                           |                | ●                                                                                                     |
| PCle                          |                | ●                                                                                                     |
| SPI                           |                |                                                                                                       |
| RGMII                         |                |                                                                                                       |
| SDIO3.0                       |                |                                                                                                       |
| PMI                           |                |                                                                                                       |
| ADC                           |                |                                                                                                       |
| Antenna                       |                | 8                                                                                                     |
| Certification                 |                |                                                                                                       |
| Certification                 |                | CE(RED)/FCC/IC/RCM/UKCA/JATE/TELEC/RoHS/REACH                                                         |
| Typical Applications          |                | CPE,MIFI,PC, Gateway,Router,UAV                                                                       |

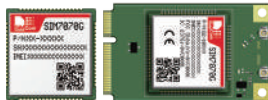
o : Optional    \* : Under Developing/On-going/Planning

| 5G Module

| Technology                    |                | 3GPP R15                                                                            |
|-------------------------------|----------------|-------------------------------------------------------------------------------------|
| Product                       |                | SIM8202E-M2                                                                         |
| Picture                       |                |  |
| Form Factor                   |                | M.2                                                                                 |
| Dimensions(mm)                |                | 30.0*42.0*2.3                                                                       |
| Weight(g)                     |                | 6.8±0.1                                                                             |
| Mode                          |                | NSA/SA                                                                              |
| Frequency Bands               | 5G NR (Sub6G)  | n1/n3/n5/n7/n8/n12/n20/n28/n38/n40/n41/n48/n71/n77/n78/n79                          |
|                               | 5G NR (mmWave) |                                                                                     |
|                               | LTE-FDD        | B1/B3/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B26/B28/B29/B71                          |
|                               | LTE-TDD        | B34/B38/B39/B40/B41/B42/B43/B48                                                     |
|                               | WCDMA          | B1/B3/B5/B8                                                                         |
| GNSS                          |                | GPS/GLONASS/BeiDou/QZSS/Compass                                                     |
| Temperature                   |                | -30℃ ~ +70℃ (Extended temprature:-40℃ ~ +85℃)                                       |
| Electrical Features           |                |                                                                                     |
| Supply Voltge Range           |                | 3.135~4.4V                                                                          |
| Power Consumption (sleep)(mA) |                | <5mA                                                                                |
| Data Transfer                 |                |                                                                                     |
| mmWave                        |                |                                                                                     |
| Sub-6G                        |                | 2.4Gbps(DL)/500Mbps(UL)                                                             |
| LTE                           |                | 1Gbps(DL)/200Mbps (UL)                                                              |
| Software Features             |                |                                                                                     |
| Protocol                      |                | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS/HTTP/HTTPS/MQTTs/DNS/SSL3.0                     |
| TLS                           |                | SSL3.0/TLS1.0/TLS1.2                                                                |
| DTMF                          |                | ● (Sending and Receiving)                                                           |
| FOTA                          |                | ●                                                                                   |
| VoLTE/CSFB/VoNR*              |                | ●                                                                                   |
| Android RIL                   |                | Android 6.0/7.0/8.0/9.0                                                             |
| USB Driver                    |                | Microsoft Windows Win7/Win8/Win10/ Linux /Android                                   |
| RNDIS                         |                | Linux/Win7/Win8/Win10                                                               |
| NDIS                          |                | Linux/Win7/Win8/Win10                                                               |
| PPP                           |                | Linux/Win7/Win8/Win10                                                               |
| MBIM                          |                | Win8/Win10                                                                          |
| Firmware Upgrade              |                | USB/FOTA                                                                            |
| Interface                     |                |                                                                                     |
| USB                           |                | 3.1 (2.0)                                                                           |
| UART                          |                | ●                                                                                   |
| (U)SIM Card                   |                | 1.8V/2.95V                                                                          |
| PCM                           |                | ●                                                                                   |
| GPIO                          |                | ●                                                                                   |
| I2C                           |                | ●                                                                                   |
| PCle                          |                | ●                                                                                   |
| SPI                           |                |                                                                                     |
| RGMII                         |                |                                                                                     |
| SDIO3.0                       |                |                                                                                     |
| PMI                           |                |                                                                                     |
| ADC                           |                |                                                                                     |
| Antenna                       |                | 4                                                                                   |
| Certification                 |                |                                                                                     |
| Certification                 |                | RoHS/REACH/CE(RED)/Deutsche Telekom                                                 |
| Typical Applications          |                | CPE,MIFI,PC, Gateway,Router,UAV                                                     |

o : Optional    \* : Under Developing/On-going/Planning

| LPWA Module

| Technology                   |                                               |                                                                                                                                                       | eMTC & NB-IoT & GSM                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                         |
|------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product                      |                                               |                                                                                                                                                       | SIM7000X                                                                                                                                                                                                                                                                                                          | SIM7070X                                                                                                                                                                                                                                                |
| Picture                      |                                               |                                                                                                                                                       |                                                                                                                                                                                                                                  |                                                                                                                                                                       |
| Form Factor                  |                                               |                                                                                                                                                       | LCC, 68PIN                                                                                                                                                                                                                                                                                                        | LCC ,68PIN                                                                                                                                                                                                                                              |
| Dimensions(mm)               |                                               |                                                                                                                                                       | 24.0*24.0*2.6                                                                                                                                                                                                                                                                                                     | 24.0*24.0*2.3                                                                                                                                                                                                                                           |
| Weight(g)                    |                                               |                                                                                                                                                       | 3±0,1                                                                                                                                                                                                                                                                                                             | 2.9±0,1                                                                                                                                                                                                                                                 |
| Frequency Bands(MHz)         | - A (North America)                           | CAT-M1&CAT-NB1: B2/B4/B12/B13                                                                                                                         |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                         |
|                              | - E(Europe/ Africa/Australia/Southeast Asia ) | CAT-M1&CAT-NB1:B3/B8/B20/B28 GPRS/EDGE: 900/1800Mhz                                                                                                   | CAT-M1:B1/B2/B3/B4/B5/B8/B12/B13/B14/B18/ B19/B20/B25/B26/B27/B28/B31/B66/B72/B73/ B85/B87/B88<br>CAT-NB2:B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/ B20/B25/B26/B28/B31/B66/B73/B85/B87/B88<br>GSM/GPRS: 850/900/1800/1900MHz                                                                                            |                                                                                                                                                                                                                                                         |
|                              | - JC(Japan)                                   | CAT-M1:B1/B3/B5/B8/B18/B19/B26<br>CAT-NB1:B1/B3/B5/B8/B18/B19/B26 (no GPRS)                                                                           |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                         |
|                              | - G(Global)                                   | CAT-M1: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/ B20/B26/B28/B39;<br>CAT-NB1: B1/B2/B3/B5/B8/B12/B13/B17/B18/ B19/B20/B26/B28;<br>GSM: 850/900/1800/1900MHz | CAT-M1:B1/B2/B3/B4/B5/B8/B12/B13/B14/B18/ B19/B20/B25/B26/B27/B28/B66/B85<br>CAT-NB2:B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/ B20/B25/B26/B28/B66/B71/B85<br>GSM/GPRS:850/900/1800/1900MHz                                                                                                                              |                                                                                                                                                                                                                                                         |
| RF Power Class               |                                               |                                                                                                                                                       | PC3                                                                                                                                                                                                                                                                                                               | PC5                                                                                                                                                                                                                                                     |
| GNSS                         |                                               |                                                                                                                                                       | ○                                                                                                                                                                                                                                                                                                                 | ○                                                                                                                                                                                                                                                       |
| Temperature                  |                                               |                                                                                                                                                       | -40℃~-+85℃                                                                                                                                                                                                                                                                                                        | -40℃~-+85℃                                                                                                                                                                                                                                              |
| Electrical Features          |                                               |                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                         |
| Supply Voltge Range          |                                               |                                                                                                                                                       | 3.2V-4.3V                                                                                                                                                                                                                                                                                                         | SIM7070G:3V-4.6V      SIM7070E:3.2V-4.2V                                                                                                                                                                                                                |
| Power Consumption            | PSM                                           | 9uA@PSM                                                                                                                                               | 3.2uA@PSM                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                         |
|                              | Sleep                                         | 1.2mA                                                                                                                                                 | CFUN0:2.1mA/CFUN1:0.45mA                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                         |
| Network Registration Time(s) |                                               |                                                                                                                                                       | 12(Prefered band)                                                                                                                                                                                                                                                                                                 | 12(Prefered band)                                                                                                                                                                                                                                       |
| Receive Sensitivity          |                                               |                                                                                                                                                       | -108dB@eMTC<br>-126dB@NB-IoT 15KHz                                                                                                                                                                                                                                                                                | -108dB@eMTC<br>-126dB@NB-IoT 15KHz                                                                                                                                                                                                                      |
| Data Transfer                |                                               |                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                         |
| LTE CAT.NB(Kbps)             |                                               |                                                                                                                                                       | 34(DL)/66(UL)                                                                                                                                                                                                                                                                                                     | 127(DL)/158.5(UL)                                                                                                                                                                                                                                       |
| LTE CAT.M1(Kbps)             |                                               |                                                                                                                                                       | 300(DL)/375(UL)                                                                                                                                                                                                                                                                                                   | 589(DL)/1119(UL)                                                                                                                                                                                                                                        |
| EDGE(Kbps)                   |                                               |                                                                                                                                                       | 236.8(DL)/236.8(UL)                                                                                                                                                                                                                                                                                               | 236.8(DL)/236.8(UL)                                                                                                                                                                                                                                     |
| GPRS(Kbps)                   |                                               |                                                                                                                                                       | 85.6(DL)/85.6(UL)                                                                                                                                                                                                                                                                                                 | 85.6(DL)/85.6(UL)                                                                                                                                                                                                                                       |
| SMS                          |                                               |                                                                                                                                                       | ●                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                       |
| Software Features            |                                               |                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                         |
| Protocols                    |                                               |                                                                                                                                                       | TCP/UDP/LWM2M/COAP/MQTT/<br>FTP/HTTP/TLS/DTLS/NTP/Ayla Cloud                                                                                                                                                                                                                                                      | TCP/UDP/HTTP/HTTPS/TLS/DTLS/PING/LWM2M/<br>COAP/MQTT/Ayla Cloud                                                                                                                                                                                         |
| VoLTE                        |                                               |                                                                                                                                                       | ○                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                       |
| Embedded AT                  |                                               |                                                                                                                                                       | ●                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                       |
| FOTA                         |                                               |                                                                                                                                                       | ●                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                       |
| TLS                          |                                               |                                                                                                                                                       | ●                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                       |
| USB Driver                   |                                               |                                                                                                                                                       | Microsoft Windows<br>2000/XP/Vista/Win7/Win8/Win10/Linux                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                         |
| Firmware Upgrade             |                                               |                                                                                                                                                       | USB                                                                                                                                                                                                                                                                                                               | USB                                                                                                                                                                                                                                                     |
| Interfaces                   |                                               |                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                         |
| UART                         | Two wire serial port                          |                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                         |
|                              | Full Function Uart                            | ●                                                                                                                                                     | ●                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                         |
| USB                          |                                               |                                                                                                                                                       | ●                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                       |
| PCM                          |                                               |                                                                                                                                                       | ○                                                                                                                                                                                                                                                                                                                 | ○                                                                                                                                                                                                                                                       |
| Status Indicator             |                                               |                                                                                                                                                       | ●                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                       |
| GPIO                         |                                               |                                                                                                                                                       | ●                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                       |
| SPI                          |                                               |                                                                                                                                                       | ○                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                       |
| I2C                          |                                               |                                                                                                                                                       | ●                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                       |
| Certification                |                                               |                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                         |
| Certification                |                                               |                                                                                                                                                       | A: RoHS/REACH/GCF/FCC/PTCRB/AT&T/Verizon/IC<br>C: RoHS/REACH/CCC/NAL/SRRC/Mobile/Unicom/Telecom<br>E: RoHS/REACH/KC/KT/LGU+*/IMDA/RCM/Telstra/Spark/CE(RED)/GCF/<br>Deutsche Telekom/Vodafone*<br>JC: RoHS/REACH/JATE/Telec/Docomo/KDDI<br>G: RoHS/REACH/RCM/CE(RED)/GCF/Deutsche Telekom/UKCA/FCC/IC/OCD(Anatel) | E:RoHS/REACH/CE(RED)/GCF/FCC*/OCD(Anatel)<br>G:RoHS/REACH/CCC/NAL/SRRC/NCC/JATE/Telec/KC*/<br>LGU+*/RCM/Telstra*/CE(RED)/GCF/Orange*/TIM*/Deutsche Telekom<br>/Telefonica*/Vodafone*/UKCA/FCC/PTCRB/AT&T/Verizon/T-mobile<br>/US Celluar/IC/OCD(Anatel) |
| Typical Applications         |                                               |                                                                                                                                                       | Home Security and Automation,Telematics,Smart Meters,Vending,Fleet Management,Asset Tracking                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                         |

o : Optional    \* : Under Developing/On-going/Planning

| LPWA Module

| Technology                   |                      | eMTC & NB-IoT & IoT-NTN                                                                                                                                                                                                                                                                                                                                  |  |
|------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Product                      |                      | SIM7070G-HP                                                                                                                                                                                                                                                                                                                                              |  |
| Picture                      |                      |                                                                                                                                                                                                                                                                       |  |
| Form Factor                  |                      | LCC, 68PIN                                                                                                                                                                                                                                                                                                                                               |  |
| Dimensions(mm)               |                      | 24.0*24.0*2.3                                                                                                                                                                                                                                                                                                                                            |  |
| Weight(g)                    |                      | 2.8±0.1                                                                                                                                                                                                                                                                                                                                                  |  |
| Frequency Bands(MHz)         |                      | CAT-M:<br>B1/B2/B3/B4/B5/B8/B12/B13/B14/B18/B19/B20/B25/B26/B27/B28/B66/B85*<br>CAT-NB:<br>B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B28/B66/B71*/B85*<br><br>-S<br>CAT-M:<br>B1/B2/B3/B4/B5/B8/B12/B13/B14/B18/B19/B20/B25/B26/B27/B28/B66/B85*<br>CAT-NB:<br>B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B28/B66/B71*/B85*<br>NTN: B23/B255/B256 |  |
| RF Power Class               |                      | PC3                                                                                                                                                                                                                                                                                                                                                      |  |
| GNSS                         |                      | ○                                                                                                                                                                                                                                                                                                                                                        |  |
| Temperature                  |                      | -40°C~+85°C                                                                                                                                                                                                                                                                                                                                              |  |
| Electrical Features          |                      |                                                                                                                                                                                                                                                                                                                                                          |  |
| Supply Voltge Range          |                      | 2.9V-4.5V                                                                                                                                                                                                                                                                                                                                                |  |
| Power Consumption            | PSM                  | 3.5uA@PSM                                                                                                                                                                                                                                                                                                                                                |  |
|                              | Sleep                | 0.35mA                                                                                                                                                                                                                                                                                                                                                   |  |
| Network Registration Time(s) |                      | 12(Preferred band)                                                                                                                                                                                                                                                                                                                                       |  |
| Receive Sensitivity          |                      | -108dB@eMTC; -126dB@NB-IoT 15KHz                                                                                                                                                                                                                                                                                                                         |  |
| Data Transfer                |                      |                                                                                                                                                                                                                                                                                                                                                          |  |
| LTE CAT.NB(Kbps)             |                      | 127(DL)/158.5(UL)                                                                                                                                                                                                                                                                                                                                        |  |
| LTE CAT.M1(Kbps)             |                      | 589(DL)/1119(UL)                                                                                                                                                                                                                                                                                                                                         |  |
| EDGE(Kbps)                   |                      | NA                                                                                                                                                                                                                                                                                                                                                       |  |
| GPRS(Kbps)                   |                      | NA                                                                                                                                                                                                                                                                                                                                                       |  |
| SMS                          |                      | ●                                                                                                                                                                                                                                                                                                                                                        |  |
| Software Features            |                      |                                                                                                                                                                                                                                                                                                                                                          |  |
| Protocols                    |                      | TCP/UDP/HTTP/HTTPS/FTP/TLS/DTLS/PING/LWM2M/COAP/MQTT                                                                                                                                                                                                                                                                                                     |  |
| VoLTE                        |                      | ○                                                                                                                                                                                                                                                                                                                                                        |  |
| Embedded AT                  |                      | ●                                                                                                                                                                                                                                                                                                                                                        |  |
| FOTA                         |                      | ●                                                                                                                                                                                                                                                                                                                                                        |  |
| TLS                          |                      | ●                                                                                                                                                                                                                                                                                                                                                        |  |
| USB Driver                   |                      |                                                                                                                                                                                                                                                                                                                                                          |  |
| Firmware Upgrade             |                      | USB                                                                                                                                                                                                                                                                                                                                                      |  |
| Interfaces                   |                      |                                                                                                                                                                                                                                                                                                                                                          |  |
| UART                         | Two wire serial port |                                                                                                                                                                                                                                                                                                                                                          |  |
|                              | Full Function Uart   | ●                                                                                                                                                                                                                                                                                                                                                        |  |
| USB                          |                      | ●                                                                                                                                                                                                                                                                                                                                                        |  |
| PCM                          |                      | ○                                                                                                                                                                                                                                                                                                                                                        |  |
| Status Indicator             |                      | ●                                                                                                                                                                                                                                                                                                                                                        |  |
| GPIO                         |                      | ●                                                                                                                                                                                                                                                                                                                                                        |  |
| SPI                          |                      | ○                                                                                                                                                                                                                                                                                                                                                        |  |
| I2C                          |                      | ●                                                                                                                                                                                                                                                                                                                                                        |  |
| Certification                |                      |                                                                                                                                                                                                                                                                                                                                                          |  |
| Certification                |                      | RoHS/REACH/KC/LGU+*/RCM/Telstra/CE(RED)*/GCF                                                                                                                                                                                                                                                                                                             |  |
| Typical Applications         |                      | Home Security and Automation,Telematics,Smart Meters,Vending,Fleet Management,Asset Tracking                                                                                                                                                                                                                                                             |  |

o : Optional    \* : Under Developing/On-going/Planning

| LPWA Module

| Technology                   |                      | NB-IoT&GNSS                                                                                                                  | NB-IoT&2G                                                                          |
|------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Product                      |                      | Y7080E                                                                                                                       | R7072                                                                              |
| Picture                      |                      |                                             |  |
| Form Facter                  |                      | LCC+LGA,77PIN                                                                                                                | LCC 68PIN                                                                          |
| Dimensions(mm)               |                      | 17.6*15.7*2.4                                                                                                                | 24*24*2.5                                                                          |
| Weight(g)                    |                      | 1.2±0.1                                                                                                                      | 2.7±0.1g                                                                           |
| Frequency Bands(MHz)         |                      | - E(Europe/ Africa/Austral-ia/Southeast Asia )<br>Cat-NB1/NB2 B3/B5/B8/B20/B28                                               | Cat-NB B3/B5/B8/B20/B28<br>GSM 900/1800MHz                                         |
| RF Power Class               |                      | PC3                                                                                                                          | PC3                                                                                |
| GNSS                         |                      | ◦                                                                                                                            | N/A                                                                                |
| Temperature                  |                      | -40°C~-+85°C                                                                                                                 | -20 C~-+70 C                                                                       |
| Electrical Features          |                      |                                                                                                                              |                                                                                    |
| Supply Voltge Range          |                      | 3.0V-4.2V(NB+GNSS) 2.2V-4.2V(NB only)                                                                                        | 3.4V ~ 4.2V                                                                        |
| Power Consumption            | PSM                  | 1.7 uA@PSM                                                                                                                   | 4.5 uA@PSM                                                                         |
|                              | Sleep                | /                                                                                                                            | 0.78mA                                                                             |
| Network Registration Time(s) |                      | 12(Prefered band)                                                                                                            | 12(Prefered band)                                                                  |
| Receive Sensitivity          |                      | -128dbm@NBlot 15kHz                                                                                                          | -128dbm@NBlot 15kHz                                                                |
| Data Transfer                |                      |                                                                                                                              |                                                                                    |
| LTE CAT.NB(Kbps)             |                      | 127(DL)/159(UL)                                                                                                              | 21.25(DL)/15.625(UL)                                                               |
| LTE CAT.M1(Kbps)             |                      | N/A                                                                                                                          | N/A                                                                                |
| EDGE(Kbps)                   |                      | N/A                                                                                                                          | N/A                                                                                |
| GPRS(Kbps)                   |                      | N/A                                                                                                                          | 171.2(DL)/171.2(UL)                                                                |
| SMS                          |                      | •                                                                                                                            | •                                                                                  |
| Software Features            |                      |                                                                                                                              |                                                                                    |
| Protocols                    |                      | TCP/UDP/HTTP/DNS/NTP/PING/TLS*/DTLS*/LWM2M*/COAP/MQTT/OneNET/AEP/DFOTA                                                       | TCP/UDP/HTTP/HTTPS/LS/DTLS/PING/LWM2M/COAP/MQTT/FOTA                               |
| VoLTE                        |                      |                                                                                                                              |                                                                                    |
| Embedded AT                  |                      | •                                                                                                                            |                                                                                    |
| FOTA                         |                      | •                                                                                                                            | •                                                                                  |
| TLS                          |                      | •                                                                                                                            | •                                                                                  |
| USB Driver                   |                      |                                                                                                                              |                                                                                    |
| Firmware Upgrade             |                      | UART                                                                                                                         | UART                                                                               |
| Interfaces                   |                      |                                                                                                                              |                                                                                    |
| UART                         | Two wire serial port | •                                                                                                                            |                                                                                    |
|                              | Full Function Uart   |                                                                                                                              | •                                                                                  |
| USB                          |                      |                                                                                                                              |                                                                                    |
| PCM                          |                      |                                                                                                                              |                                                                                    |
| Status Indicator             |                      | •                                                                                                                            | •                                                                                  |
| GPIO                         |                      | •                                                                                                                            | •                                                                                  |
| SPI                          |                      | ◦                                                                                                                            | •                                                                                  |
| I2C                          |                      | •                                                                                                                            | •                                                                                  |
| Certification                |                      |                                                                                                                              |                                                                                    |
| Certification                |                      | RoHS/REACH/NAL/SRRC/Mobile*/Unicom*/Telecom/CE(RED)/GCF/Orange*/TIM*/Deutsche Telekom*/Telefonica/Vodafone Spain/UKCA/Anatel | RoHS/REACH/CE                                                                      |
| Typical Applications         |                      | Home Security and Automation,Telematics,Smart Meters,Vending,Fleet Management,Asset Tracking                                 |                                                                                    |

◦ : Optional   \* : Under Developing/On-going/Planning

| LPWA Module

| Technology                   |                      | CAT-M & NB-IoT                                                                                                                                                             |                                                                                                                                                     | NB-IoT                                                                                                                      |                                                                                     |
|------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product                      |                      | SIM7080G                                                                                                                                                                   | SIM7090G                                                                                                                                            | SIM7022                                                                                                                     | Y7028                                                                               |
| Picture                      |                      |                                                                                         |                                                                  |                                          |  |
| Form Facter                  |                      | LCC+LGA,77PIN                                                                                                                                                              | LGA, 101PIN                                                                                                                                         | LCC, 42PIN                                                                                                                  | LCC 44PIN                                                                           |
| Dimensions(mm)               |                      | 17.6*15.7*2.4                                                                                                                                                              | 14.8*12.8*2.0                                                                                                                                       | 17.6*15.7*2.3                                                                                                               | 17.6*15.7*2.1                                                                       |
| Weight(g)                    |                      | 1.4±0.1                                                                                                                                                                    | 0.8±0.1                                                                                                                                             | 1.3±0.1                                                                                                                     | 1.0±0.2                                                                             |
| Frequency Bands(MHz)         |                      | - E(Europe/ Africa/Austral-ia/Southeast Asia )<br>- G(Global)                                                                                                              |                                                                                                                                                     |                                                                                                                             | CAT-NB1/NB2 B3/B5/B8/B20/B28                                                        |
|                              |                      | CAT.NB2&CAT.M1: B1/B2/B3/B4/B5/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B27/B28/B39/B66/B71/B85                                                                              | CAT-M1: B1/B2/B3/B4/B5/B8/B12/B13/B14/B18/B19/B20/B25/B26/B27/B28/B66/B85<br>CAT-NB2: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B28/B66/B71/B85 | CAT-NB2: B1/B2/B3/B4/B5/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B66/B70/B85                                              |                                                                                     |
| RF Power Class               |                      | PC5                                                                                                                                                                        | PC5                                                                                                                                                 | PC3                                                                                                                         | PC3                                                                                 |
| GNSS                         |                      | ◦                                                                                                                                                                          | ◦                                                                                                                                                   | N/A                                                                                                                         | N/A                                                                                 |
| Temperature                  |                      | -40°C~-+85°C                                                                                                                                                               | -40°C~-+85°C                                                                                                                                        | -40°C~-+85°C                                                                                                                | -40°C~-+85°C                                                                        |
| Electrical Features          |                      |                                                                                                                                                                            |                                                                                                                                                     |                                                                                                                             |                                                                                     |
| Supply Voltge Range          |                      | 2.7V-4.8V                                                                                                                                                                  | 2.7V-4.8V                                                                                                                                           | 2.2V-4.3V                                                                                                                   | 2.2V ~ 4.2V                                                                         |
| Power Consumption            | PSM                  | 3uA@PSM                                                                                                                                                                    | 3uA@PSM                                                                                                                                             | 0.8uA@PSM                                                                                                                   | 1 uA@PSM                                                                            |
|                              | Sleep                | 1.2mA                                                                                                                                                                      | 0.78mA                                                                                                                                              | 2uA                                                                                                                         | /                                                                                   |
| Network Registration Time(s) |                      | 12(Prefered band)                                                                                                                                                          | 12(Prefered band)                                                                                                                                   | 12(Prefered band)                                                                                                           | 12(Prefered band)                                                                   |
| Receive Sensitivity          |                      | -108dB@eMTC-126dB@NB-IoT15KHz                                                                                                                                              | -108dB@eMTC-126dB@NB-IoT15KHz                                                                                                                       | -126dB@NB-IoT 15KHz                                                                                                         | -128dbm@NBlot 15kHz                                                                 |
| Data Transfer                |                      |                                                                                                                                                                            |                                                                                                                                                     |                                                                                                                             |                                                                                     |
| LTE CAT.NB(Kbps)             |                      | 127(DL)/158.5(UL)                                                                                                                                                          | 127(DL)/158.5(UL)                                                                                                                                   | 127Kbps(DL)/159Kbps(UL)                                                                                                     | 127(DL)/159(UL)                                                                     |
| LTE CAT.M1(Kbps)             |                      | 589(DL)/1119(UL)                                                                                                                                                           | 589(DL)/1119(UL)                                                                                                                                    | N/A                                                                                                                         | N/A                                                                                 |
| EDGE(Kbps)                   |                      | N/A                                                                                                                                                                        | N/A                                                                                                                                                 | N/A                                                                                                                         | N/A                                                                                 |
| GPRS(Kbps)                   |                      | N/A                                                                                                                                                                        | N/A                                                                                                                                                 | N/A                                                                                                                         | N/A                                                                                 |
| SMS                          |                      | •                                                                                                                                                                          | •                                                                                                                                                   | •                                                                                                                           | •                                                                                   |
| Software Features            |                      |                                                                                                                                                                            |                                                                                                                                                     |                                                                                                                             |                                                                                     |
| Protocols                    |                      | TCP/UDP/HTTP/HTTPS/TLS/DTLS/PING/LWM2M/COAP/MQTT/Ayla Cloud                                                                                                                | TCP/UDP/HHTTP/HTTPS/TLS/DTLS/PING/LWM2M/COAP/MQTT/Ayla Cloud                                                                                        | TCP/UDP/HTTP/TLS*/DTLS*/DNS/NTP/PING/LWM2M/COAP/MQTT/DFOTA*                                                                 | TCP/UDP/HTTP/DNS/NTP/PING/TLS*/DTLS*/LWM2M*/COAP/MQTT/OneNET/AEP/DFOTA              |
| VoLTE                        |                      | •                                                                                                                                                                          | •                                                                                                                                                   |                                                                                                                             |                                                                                     |
| Embedded AT                  |                      | •                                                                                                                                                                          | •                                                                                                                                                   | •                                                                                                                           | •                                                                                   |
| FOTA                         |                      | •                                                                                                                                                                          | •                                                                                                                                                   | •                                                                                                                           | •                                                                                   |
| TLS                          |                      | •                                                                                                                                                                          | •                                                                                                                                                   | •                                                                                                                           | •                                                                                   |
| USB Driver                   |                      |                                                                                                                                                                            |                                                                                                                                                     |                                                                                                                             |                                                                                     |
| Firmware Upgrade             |                      | USB                                                                                                                                                                        | USB                                                                                                                                                 | UART                                                                                                                        | UART                                                                                |
| Interfaces                   |                      |                                                                                                                                                                            |                                                                                                                                                     |                                                                                                                             |                                                                                     |
| UART                         | Two wire serial port | •                                                                                                                                                                          | •                                                                                                                                                   | •                                                                                                                           | •                                                                                   |
|                              | Full Function Uart   |                                                                                                                                                                            |                                                                                                                                                     |                                                                                                                             |                                                                                     |
| USB                          |                      | •                                                                                                                                                                          | •                                                                                                                                                   |                                                                                                                             |                                                                                     |
| PCM                          |                      | ◦                                                                                                                                                                          | ◦                                                                                                                                                   |                                                                                                                             |                                                                                     |
| Status Indicator             |                      | •                                                                                                                                                                          | •                                                                                                                                                   | •                                                                                                                           | •                                                                                   |
| GPIO                         |                      | •                                                                                                                                                                          | •                                                                                                                                                   |                                                                                                                             | •                                                                                   |
| SPI                          |                      | ◦                                                                                                                                                                          | ◦                                                                                                                                                   |                                                                                                                             | •                                                                                   |
| I2C                          |                      | •                                                                                                                                                                          | •                                                                                                                                                   |                                                                                                                             | •                                                                                   |
| Certification                |                      |                                                                                                                                                                            |                                                                                                                                                     |                                                                                                                             |                                                                                     |
| Certification                |                      | RoHS/REACH/NCC/JATE/Telec/Docomo*/KDDI/Softbank/KC/RCM/CE(RED)/GCF/Orange*/TIM/Deutsche Telekom/Telefonica/UKCA/FCC/PTCRB/AT&T/Verizon/T-mobile/US Cellular/IC/OCD(Anatel) | RoHS/REACH/JATE/Telec/RCM/CE(RED)/GCF/Orange/Deutsche Telekom/FCC/PTCRB/AT&T/Verizon*/T-mobile/US Cellular/IC/OCD(Anatel)                           | RoHS/REACH/NCC/RCM/CE/GCF/Orange/TIM/Deutsche Telekom/Telefonica/TIM/Vodafone Spain/UKCA/FCC/PTCRB/AT&T*/Verizon*/T-mobile* | RoHS/REACH/CE                                                                       |
| Typical Applications         |                      | Home Security and Automation,Telematics,Smart Meters,Vending,Fleet Management,Asset Tracking                                                                               |                                                                                                                                                     |                                                                                                                             |                                                                                     |

◦ : Optional   \* : Under Developing/On-going/Planning

| LTE-A Module

| Technology                    |                                             |  | LTE CAT12                                                                                                                                                                         |                                                                                                                     |
|-------------------------------|---------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Product                       |                                             |  | SIM7912X(E/A/G)-M2(X12)                                                                                                                                                           | SIM7912X(E/A)(X12)                                                                                                  |
| Picture                       |                                             |  |                                                                                                  |                                   |
| Form Factor                   |                                             |  | M.2                                                                                                                                                                               | LGA                                                                                                                 |
| Dimensions(mm)                |                                             |  | 42.0*30.0*2.3                                                                                                                                                                     | 39.5*37.0*2.8                                                                                                       |
| Weight(g)                     |                                             |  | 6.1±0.1                                                                                                                                                                           | 6.1±0.1                                                                                                             |
| Frequency Bands               | - E(Europe/Africa/Australia/Southeast Asia) |  | LTE-FDD: B1/B3/B5/B7/B8/B20/B28/B32<br>LTE-TDD: B34/B38/B39/B40/B41/B42*/B43*/B46*/B48*<br>WCDMA: B1/B3/B5/B8                                                                     | LTE-FDD: B1/B3/B5/B7/B8/B20/B28/B32<br>LTE-TDD: B34/B38/B39/B40/B41/B42*/B43*/B46*/B48*<br>WCDMA: B1/B3/B5/B8       |
|                               | -SA(New Zealand/Australia/South America)    |  | LTE-FDD: B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B28/B66<br>LTE-TDD: B40/B41/B42*/B43*/B46*/B48*<br>WCDMA: B2/B4/B5                                                                   | LTE-FDD: B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B28/B66/B71<br>LTE-TDD: B40/B41/B42*/B43*/B46*/B48*<br>WCDMA: B2/B4/B5 |
|                               | -G(Global)                                  |  | LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/B32/B66/B71*<br>LTE-TDD: B34/B38/B39/B40/B41/B42*/B43*/B46*/B48*<br>WCDMA: B1/B2/B3/B4/B5/B8/B9/B19 |                                                                                                                     |
| GNSS                          |                                             |  | Beidou/GPS/GLONASS/QZSS                                                                                                                                                           | Beidou/GPS/GLONASS/Galileo/QZSS                                                                                     |
| Temperature                   |                                             |  | -30°C ~ +70°C<br>(Extended temperature: -40°C ~ +85°C)                                                                                                                            | -30°C ~ +70°C<br>(Extended temperature: -40°C ~ +85°C)                                                              |
| Electrical Features           |                                             |  |                                                                                                                                                                                   |                                                                                                                     |
| Supply Voltge Range           |                                             |  | 3.135V~ 4.4V, 3.7V(typ)                                                                                                                                                           | 3.1V~ 4.4V, 3.3V(typ)                                                                                               |
| Power Consumption (sleep)(mA) |                                             |  | TBD                                                                                                                                                                               | TBD                                                                                                                 |
| Data Transfer                 |                                             |  |                                                                                                                                                                                   |                                                                                                                     |
| LTE CAT 6                     |                                             |  |                                                                                                                                                                                   |                                                                                                                     |
| LTE CAT 12                    |                                             |  | 600Mbps(DL)/150Mbps (UL)                                                                                                                                                          | 600Mbps(DL)/150Mbps (UL)                                                                                            |
| Software Features             |                                             |  |                                                                                                                                                                                   |                                                                                                                     |
| Protocol                      |                                             |  | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS/HTTP/HTTPS/DNS*                                                                                                                               | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS/HTTP/HTTPS/DNS*                                                                 |
| TLS                           |                                             |  | SSL3.0/TLS1.0/TLS1.2                                                                                                                                                              | SSL3.0/TLS1.0/TLS1.2                                                                                                |
| FOTA                          |                                             |  | •                                                                                                                                                                                 | •                                                                                                                   |
| Android RIL                   |                                             |  | Android 2.3/4.0/5.0/6.0/7.0                                                                                                                                                       | Android 6/7/8/9                                                                                                     |
| USB Driver                    |                                             |  | Microsoft Windows2000/XP/Vista/Win7/Win8/Win10/ Linux /Android                                                                                                                    | Microsoft Windows2000/XP/Vista/Win7/Win8/Win10/ Linux /Android                                                      |
| Firmware Upgrade              |                                             |  | USB                                                                                                                                                                               | USB/FOTA                                                                                                            |
| Interface                     |                                             |  |                                                                                                                                                                                   |                                                                                                                     |
| USB3.0                        |                                             |  | 1                                                                                                                                                                                 | 1                                                                                                                   |
| PCIE                          |                                             |  | 1                                                                                                                                                                                 | 1                                                                                                                   |
| PCM                           |                                             |  | 1                                                                                                                                                                                 | 1                                                                                                                   |
| GPIO                          |                                             |  | 1                                                                                                                                                                                 | 1                                                                                                                   |
| I2C                           |                                             |  | 1                                                                                                                                                                                 | 1                                                                                                                   |
| Antenna                       |                                             |  | 3                                                                                                                                                                                 | 5                                                                                                                   |
| Certification                 |                                             |  |                                                                                                                                                                                   |                                                                                                                     |
| Certification                 |                                             |  | FCC/CE(RED)/RoHS/REACH/PTCRB/GCF                                                                                                                                                  | FCC/CE(RED)/RoHS/REACH/PTCRB/GCF                                                                                    |
| Typical Applications          |                                             |  | Video Surveillance, Gateway, Industrail PDA, Router                                                                                                                               |                                                                                                                     |

o : Optional   \* : Under Developing/On-going/Planning

| LTE-A Module

| Technology                    |                                             |  | LTE CAT6                                                                                                            |                                                                                                                                                                                   |
|-------------------------------|---------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product                       |                                             |  | SIM7906X(E/A)(X12)                                                                                                  | SIM7906X(E/A/G)-M2(X12)                                                                                                                                                           |
| Picture                       |                                             |  |                                  |                                                                                                |
| Form Factor                   |                                             |  | LGA                                                                                                                 | M.2                                                                                                                                                                               |
| Dimensions(mm)                |                                             |  | 39.5*37.0*2.8                                                                                                       | 42.0*30.0*2.3                                                                                                                                                                     |
| Weight(g)                     |                                             |  | 6.1±0.1                                                                                                             | 6.1±0.1                                                                                                                                                                           |
| Frequency Bands               | - E(Europe/Africa/Australia/Southeast Asia) |  | LTE-FDD: B1/B3/B5/B7/B8/B20/B28/B32<br>LTE-TDD: B34/B38/B39/B40/B41/B42*/B43*/B46*/B48*<br>WCDMA: B1/B3/B5/B8       | LTE-FDD: B1/B3/B5/B7/B8/B20/B28/B32<br>LTE-TDD: B34/B38/B39/B40/B41/B42*/B43*/B46*/B48*<br>WCDMA: B1/B3/B5/B8                                                                     |
|                               | -SA(New Zealand/Australia/South America)    |  | LTE-FDD: B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B28/B66/B71<br>LTE-TDD: B40/B41/B42*/B43*/B46*/B48*<br>WCDMA: B2/B4/B5 | LTE-FDD: B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B28/B66<br>LTE-TDD: B40/B41/B42*/B43*/B46*/B48*<br>WCDMA: B2/B4/B5                                                                   |
|                               | - G(Global)                                 |  |                                                                                                                     | LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/B32/B66/B71*<br>LTE-TDD: B34/B38/B39/B40/B41/B42*/B43*/B46*/B48*<br>WCDMA: B1/B2/B3/B4/B5/B8/B9/B19 |
| GNSS                          |                                             |  | Beidou/GPS/GLONASS/Galileo/QZSS                                                                                     | Beidou/GPS/GLONASS/Galileo/QZSS                                                                                                                                                   |
| Temperature                   |                                             |  | -30°C ~ +70°C<br>(Extended temperature: -40°C ~ +85°C)                                                              | -30°C ~ +70°C<br>(Extended temperature: -40°C ~ +85°C)                                                                                                                            |
| Electrical Features           |                                             |  |                                                                                                                     |                                                                                                                                                                                   |
| Supply Voltge Range           |                                             |  | 3.1V~ 4.4V, 3.3V(typ)                                                                                               | 3.1V~ 4.4V, 3.3V(typ)                                                                                                                                                             |
| Power Consumption (sleep)(mA) |                                             |  | TBD                                                                                                                 | TBD                                                                                                                                                                               |
| Data Transfer                 |                                             |  |                                                                                                                     |                                                                                                                                                                                   |
| LTE CAT 6                     |                                             |  | 300Mbps(DL)/50Mbps (UL)                                                                                             | 300Mbps(DL)/50Mbps (UL)                                                                                                                                                           |
| LTE CAT 12                    |                                             |  |                                                                                                                     |                                                                                                                                                                                   |
| Software Features             |                                             |  |                                                                                                                     |                                                                                                                                                                                   |
| Protocol                      |                                             |  | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS / HTTP/HTTPS/DNS*                                                               | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS / HTTP/HTTPS/DNS*                                                                                                                             |
| TLS                           |                                             |  | SSL3.0/TLS1.0/TLS1.2                                                                                                | SSL3.0/TLS1.0/TLS1.2                                                                                                                                                              |
| FOTA                          |                                             |  | •                                                                                                                   | •                                                                                                                                                                                 |
| Android RIL                   |                                             |  | Android 6/7/8/9                                                                                                     | Android 6/7/8/9                                                                                                                                                                   |
| USB Driver                    |                                             |  | Microsoft Windows2000/XP/Vista/Win7/Win8/Win10/Linux /Android                                                       | Microsoft Windows 2000/XP/Vista/Win7/Win8/Win10/Linux /Android                                                                                                                    |
| Firmware Upgrade              |                                             |  | USB/FOTA                                                                                                            | USB/FOTA                                                                                                                                                                          |
| Interface                     |                                             |  |                                                                                                                     |                                                                                                                                                                                   |
| USB3.0                        |                                             |  | 1                                                                                                                   | 1                                                                                                                                                                                 |
| PCIE                          |                                             |  | 1                                                                                                                   | 1                                                                                                                                                                                 |
| PCM                           |                                             |  | 1                                                                                                                   | 1                                                                                                                                                                                 |
| GPIO                          |                                             |  | 1                                                                                                                   | 1                                                                                                                                                                                 |
| I2C                           |                                             |  | 1                                                                                                                   | 1                                                                                                                                                                                 |
| Antenna                       |                                             |  | 5                                                                                                                   | 3                                                                                                                                                                                 |
| Certification                 |                                             |  |                                                                                                                     |                                                                                                                                                                                   |
| Certification                 |                                             |  | FCC/CE(RED)/RoHS/REACH/PTCRB*/GCF                                                                                   | FCC/CE(RED)/RoHS/REACH/PTCRB*/GCF                                                                                                                                                 |
| Typical Applications          |                                             |  | Video Surveillance, Gateway, Industrail PDA, Router                                                                 |                                                                                                                                                                                   |

o : Optional   \* : Under Developing/On-going/Planning

| LTE-A Module

| Technology                    |                                             |  | LTE CAT6                                                                                 |                                                                                          |
|-------------------------------|---------------------------------------------|--|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Product                       |                                             |  | A7908E/SA-M2                                                                             | A7908E/SA                                                                                |
| Picture                       |                                             |  |         |        |
| Form Factor                   |                                             |  | M.2                                                                                      | LGA                                                                                      |
| Dimensions(mm)                |                                             |  | 42.0*30.0*2.3                                                                            | 39.5*37.0*2.8                                                                            |
| Weight(g)                     |                                             |  | 6.1±0.1                                                                                  | 6.1±0.1                                                                                  |
| Frequency Bands               | - E(Europe/Africa/Australia/Southeast Asia) |  | LTE-FDD: B1/B3/B5/B7/B8/B20/B28/B32<br>LTE-TDD: B38/B40/B41/B42*/B43*<br>WCDMA: B1/B5/B8 | LTE-FDD: B1/B3/B5/B7/B8/B20/B28/B32<br>LTE-TDD: B38/B40/B41/B42*/B43*<br>WCDMA: B1/B5/B8 |
|                               | -SA(New Zealand/Australia/South America)    |  | LTE-FDD: B2/B4/B5/B7/B8/B28/B66<br><br>LTE-TDD: B38/B40/B42*/B43*<br><br>WCDMA: B2/B4/B5 | LTE-FDD: B2/B4/B5/B7/B8/B28/B66<br><br>LTE-TDD: B38/B40/B42*/B43*<br><br>WCDMA: B2/B4/B5 |
|                               |                                             |  |                                                                                          |                                                                                          |
|                               | -G(Global)                                  |  |                                                                                          |                                                                                          |
| GNSS                          |                                             |  | NA                                                                                       | NA                                                                                       |
| Temperature                   |                                             |  | -30°C ~ +70°C<br>(Extended temperature: -40°C ~ +85°C)                                   | -30°C ~ +70°C<br>(Extended temprature: -40°C ~ +85°C)                                    |
| Electrical Features           |                                             |  |                                                                                          |                                                                                          |
| Supply Voltge Range           |                                             |  | 3.3 ~ 4.3V                                                                               | 3.3 ~ 4.3V                                                                               |
| Power Consumption (sleep)(mA) |                                             |  |                                                                                          |                                                                                          |
| Data Transfer                 |                                             |  |                                                                                          |                                                                                          |
| LTE CAT 6                     |                                             |  | 300Mbps(DL)/50Mbps(UL)                                                                   | 300Mbps(DL)/50Mbps(UL)                                                                   |
| LTE CAT 12                    |                                             |  | NA                                                                                       | NA                                                                                       |
| Software Features             |                                             |  |                                                                                          |                                                                                          |
| Protocol                      |                                             |  | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS/HTTP/HTTPS/MQTTs/DNS                                 | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS/HTTP/HTTPS/MQTTs/DNS                                 |
| TLS                           |                                             |  | SSL3.0                                                                                   | SSL3.0                                                                                   |
| FOTA                          |                                             |  | •                                                                                        | •                                                                                        |
| Android RIL                   |                                             |  | Android 6/7/8/9                                                                          | Android 6/7/8/9                                                                          |
| USB Driver                    |                                             |  | Microsoft Windows 2000/XP/Vista/Win7/Win8/Win10 /Linux /Android                          | Microsoft Windows 2000/XP/Vista/Win7/Win8/Win10 /Linux /Android                          |
| Firmware Upgrade              |                                             |  | USB                                                                                      | USB                                                                                      |
| Interface                     |                                             |  |                                                                                          |                                                                                          |
| USB3.0                        |                                             |  | •                                                                                        | •                                                                                        |
| PCIE                          |                                             |  | •                                                                                        | •                                                                                        |
| PCM                           |                                             |  | •                                                                                        | •                                                                                        |
| GPIO                          |                                             |  | •                                                                                        | •                                                                                        |
| I2C                           |                                             |  | •                                                                                        | •                                                                                        |
| Antenna                       |                                             |  | •                                                                                        | •                                                                                        |
| Certification                 |                                             |  |                                                                                          |                                                                                          |
| Certification                 |                                             |  | ROHS*/Anatel*/REACH*/CE*/UKCA*/RCM*                                                      | ROHS*/REACH*/Anatel/CE*/UKCA*/RCM*                                                       |
| Typical Applications          |                                             |  | Video Surveillance, Gateway, Industrail PDA, Router                                      |                                                                                          |

o : Optional    \* : Under Developing/On-going/Planning

| Automotive Module

| Technology                    |  | 5G+C-V2X                                                                                                                                                                                                                                                                                                     | ITS AP                                                                              |
|-------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product                       |  | SIM8800(CE/E)                                                                                                                                                                                                                                                                                                | SIM8150                                                                             |
| Picture                       |  |                                                                                                                                                                                                                           |  |
| Form Factor                   |  | LGA, 524PIN                                                                                                                                                                                                                                                                                                  | LGA , 208PIN                                                                        |
| Dimensions(mm)                |  | 53*54.5*3.45                                                                                                                                                                                                                                                                                                 | 33.0 *33.5* 3.3                                                                     |
| Weight(g)                     |  | TBD                                                                                                                                                                                                                                                                                                          | TBD                                                                                 |
| Frequency Bands               |  | CE: 5G FDD: n1/n3/n8/n28 5G TDD: n41/n77/n78/n79 LTE-FDD: B1/B3/B5/B7/B8 LTE-TDD: B34/B38/B39/B40/B41 WCDMA: B1/B8 GSM: 900/1800MHz C-V2X-B47 E: 5G FDD: n1/n3/n8/n20/n28 5G TDD: n41/n78/n79 LTE-FDD: B1/B3/B5/B7/B8/B20/B28/B32 LTE-TDD: B38/B40/B41/B42 WCDMA: B1/B3/B5/B6/B8 GSM: 900/1800 MHz C-V2X-B47 | N/A                                                                                 |
| GNSS                          |  | GPS/ GLONASS/ BeiDou/ Galileo/QZSS                                                                                                                                                                                                                                                                           | N/A                                                                                 |
| Bluetooth                     |  | BT5.2(with BT module)                                                                                                                                                                                                                                                                                        | N/A                                                                                 |
| Temperature                   |  | -40 C ~ +85 C                                                                                                                                                                                                                                                                                                | -40 C ~ +85 C                                                                       |
| Electrical Features           |  |                                                                                                                                                                                                                                                                                                              |                                                                                     |
| Supply Voltage Range          |  | 3.3V~ 4.3V                                                                                                                                                                                                                                                                                                   | 3.3V~4.3V                                                                           |
| Power Consumption (sleep)(mA) |  | 3mA@WCDMA DRX~2.56s 2.14mA@LTE-FDD DRX~2.56s 2.14mA@LTE-TDD DRX~2.56s 3.5mA@NR-FDD DRX~2.56s 3.5mA@NR-TDD DRX~2.56s                                                                                                                                                                                          | TBD                                                                                 |
| Data Transfer                 |  |                                                                                                                                                                                                                                                                                                              |                                                                                     |
| GPRS Slot                     |  | class 12                                                                                                                                                                                                                                                                                                     | N/A                                                                                 |
| 5G(Gbps)                      |  | 2.4Gbps (DL)/ 550 Mbps (UL)                                                                                                                                                                                                                                                                                  | N/A                                                                                 |
| LTE(Mbps)                     |  | LTE-FDD: 1.6 Gbps (DL)/ 200 Mbps (UL) LTE-TDD: 1.4 Gbps (DL)/ 120 Mbps (UL)                                                                                                                                                                                                                                  | N/A                                                                                 |
| WCDMA/HSPA/HSPA+(Mbps)        |  | DC-HSDPA: MAX 42 Mbps HSUPA: MAX 5.76 Mbps WCDMA: MAX 384 kbps (DL/UL)                                                                                                                                                                                                                                       | N/A                                                                                 |
| TD-SCDMA(Mbps)                |  | /                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| CDMA EV-DO(Mbps)              |  | /                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| EDGE(Kbps)                    |  | 296(DL)/236.8(UL)                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| Software Features             |  |                                                                                                                                                                                                                                                                                                              |                                                                                     |
| Protocol                      |  | TCP/ UDP/ PPP/ PING/ FTP(S)/ HTTP(S)/ SMTP/ SSL/ TLS/ MMS/ NTP/ FILE/ QMI                                                                                                                                                                                                                                    | N/A                                                                                 |
| eCall                         |  | •                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| Open Linux                    |  | •                                                                                                                                                                                                                                                                                                            | •                                                                                   |
| Multi-APN                     |  | •                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| SDIO                          |  | •                                                                                                                                                                                                                                                                                                            | •                                                                                   |
| UART2                         |  | •                                                                                                                                                                                                                                                                                                            | •                                                                                   |
| FOTA                          |  | •                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| Temperature Control           |  | •                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| TLS                           |  | •                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| File System                   |  | •                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| Audio Record/Play             |  | •                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| TTS                           |  | •                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| DTMF                          |  | •                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| LBS                           |  | •                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| ECM                           |  | •                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| QMI_WWAN Driver               |  | •                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| RIL Driver                    |  | Android 6.0/7.0/8.0/9.0/10.0                                                                                                                                                                                                                                                                                 | N/A                                                                                 |
| Security                      |  | SELinux/Trustzone/Secure boot                                                                                                                                                                                                                                                                                | •                                                                                   |
| Routing policy                |  | 5G,WIFI and Ethernet port                                                                                                                                                                                                                                                                                    | N/A                                                                                 |
| USB Driver                    |  | Microsoft Windows/2000/XP/Vista/Win7/Win8/Win10/ Linux /Android                                                                                                                                                                                                                                              | N/A                                                                                 |
| NDIS/RNDIS                    |  | •                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| Embedded AT                   |  | •                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| Firmware Upgrade              |  | USB /FOTA                                                                                                                                                                                                                                                                                                    | USB                                                                                 |
| Wi-Fi                         |  | 2.4G/5G                                                                                                                                                                                                                                                                                                      | N/A                                                                                 |
| Interfaces                    |  |                                                                                                                                                                                                                                                                                                              |                                                                                     |
|                               |  | N/A                                                                                                                                                                                                                                                                                                          | N/A                                                                                 |
| RGMII                         |  | 10M/100M/1000M base-T1/Tx                                                                                                                                                                                                                                                                                    | 10M/100M/1000M base-T1/Tx                                                           |
| UART                          |  | 3*UART                                                                                                                                                                                                                                                                                                       | •                                                                                   |
| USB                           |  | 1*2.0/3.1                                                                                                                                                                                                                                                                                                    | 1*2.0/3.1; 1* USB2.0 only for debug                                                 |
| ADC                           |  | 2*ADC                                                                                                                                                                                                                                                                                                        | 2*ADC                                                                               |
| OTG                           |  | •                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| HSIC                          |  | •                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| PCIE                          |  | •                                                                                                                                                                                                                                                                                                            | •                                                                                   |
| PCM                           |  | 1                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| Analog Audio                  |  | o                                                                                                                                                                                                                                                                                                            | N/A                                                                                 |
| GPIO                          |  | 11*GPIO                                                                                                                                                                                                                                                                                                      | 10*GPIO                                                                             |
| SDIO                          |  | •                                                                                                                                                                                                                                                                                                            | •                                                                                   |
| SD Card                       |  | SD card(1.8V or 3.0V)                                                                                                                                                                                                                                                                                        | SD3.0                                                                               |
| SPI                           |  | 1*SPI                                                                                                                                                                                                                                                                                                        | 2*SPI                                                                               |
| I2C                           |  | 1*I2C                                                                                                                                                                                                                                                                                                        | 2*I2C                                                                               |
| Antenna                       |  | 4*Main&1*2*V2X&1*GNSS&2*DSDA                                                                                                                                                                                                                                                                                 | N/A                                                                                 |
| Certification                 |  |                                                                                                                                                                                                                                                                                                              |                                                                                     |
| Certification                 |  | CE: 3C*/SRRC*/CTA*/RoHS*/REACH* E: CE(RED)*/RoHS*/REACH*                                                                                                                                                                                                                                                     | RoHS*/REACH*                                                                        |
| Typical Applications          |  | Vehicle Tracking, OBD,Vehicle DVR, T-BOX                                                                                                                                                                                                                                                                     |                                                                                     |

o : Optional    \* : Under Developing/On-going/Planning

| Automotive Module

| Technology                    | 4G                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product                       | A7805X(E/C)                                                                                                                                                                               | SIM7805X(CE/E/SA)                                                                                                                                                                                                                                                                                                                           | SIM7800X(CE/E)                                                                                                                                                                                 |
| Picture                       |                                                                                                          |                                                                                                                                                                                                                                                            |                                                                                                             |
| Form Factor                   | LGA, 299PIN                                                                                                                                                                               | LGA, 299PIN                                                                                                                                                                                                                                                                                                                                 | LGA, 282 PIN                                                                                                                                                                                   |
| Dimensions(mm)                | 33.0*37.5*3.0                                                                                                                                                                             | 33.0*37.5*2.95                                                                                                                                                                                                                                                                                                                              | 34.0*40.0*3.1                                                                                                                                                                                  |
| Weight(g)                     | 8.0±0.1                                                                                                                                                                                   | 8.0±0.1                                                                                                                                                                                                                                                                                                                                     | 7.8±0.1                                                                                                                                                                                        |
| Frequency Bands               | C: LTE FDD: B1/B3/B5/B8 LTE-TDD: B34/B38/B39/B40/B41 WCDMA: B1/B8 GSM: 900/1800MHz E: TDD-LTE: B38/B40/B41 FDD-LTE: B1/B3/B5/B7/B8/B20/B28 UMTS/HSPA+ B1/B5/B8 GSM/GPRS/EDGE 900/1800 MHz | CE: LTE FDD: B1/B3/B5/B8 LTE-TDD: B34/B38/B39/B40/B41 WCDMA: B1/B8 TD-SCDMA B34/B39 CDMA: BC1 CS8 900/1800 MHz E: TDD-LTE: B38/B40/B41 FDD-LTE: B1/B3/B5/B7/B8/B20/B28 UMTS/HSPA+ B1/B5/B8 GSM/GPRS/EDGE 900/1800 MHz SA-TDD-LTE B40 FDD-LTE FDD: B1/B2/B3/B4/B5/B7/B8/B28/B66 UMTS/HSPA+ B1/B2/B4/B5/B8 GSM/GPRS/EDGE 850/900/1800/1900MHz | CE-LTE-FDD: B1/B3/B5/B8 LTE-TDD: B38/B39/B40/B41 WCDMA: B1/B8 TD-SCDMA-B34/B39 CDMA:BC0 GSM: 900/1800 MHz E-LTE-FDD: B1/B3/B5/B7/B8/B20 LTE-TDD: B38/B40/B41 WCDMA: B1/B5/B8 GSM: 900/1800 MHz |
| GNSS                          | GPS/GLONASS/Beidou                                                                                                                                                                        | BeiDou/GPS/GLONASS/Galileo/QZSS                                                                                                                                                                                                                                                                                                             | BeiDou/GPS/GLONASS/Galileo/QZSS                                                                                                                                                                |
| Bluetooth                     | BT 4.2(with EWN-8821CSB1AA)                                                                                                                                                               | BT4.2(with W55)                                                                                                                                                                                                                                                                                                                             | BLE4.2(with W59)                                                                                                                                                                               |
| Temperature                   | -40 C ~ +85 C                                                                                                                                                                             | -40 C ~ +85 C                                                                                                                                                                                                                                                                                                                               | -40 C ~ +85 C                                                                                                                                                                                  |
| Electrical Features           |                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                |
| Supply Voltge Range           | 3.3V~4.3V                                                                                                                                                                                 | 3.3V~4.3V                                                                                                                                                                                                                                                                                                                                   | 3.3V~ 4.3V                                                                                                                                                                                     |
| Power Consumption (sleep)(mA) | 1.29mA@GSM DRX =9 1.52mA@WCDMA PF=256 1.35mA@LTE-FDD PF=256                                                                                                                               | 1.8mA@GSM.BS_PA_MFRMS=2 3.3mA@WCDMA, DRX=9 1.84mA@LTE-FDD                                                                                                                                                                                                                                                                                   | 1.8mA@GSM.BS_PA_MFRMS=2 3.3mA@WCDMA, DRX=9: 1.84mA@LTE-FDD                                                                                                                                     |
| Data Transfer                 |                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                |
| GPRS Slot                     | class 12                                                                                                                                                                                  | class 12                                                                                                                                                                                                                                                                                                                                    | class 12                                                                                                                                                                                       |
| 5G(Gbps)                      | N/A                                                                                                                                                                                       | N/A                                                                                                                                                                                                                                                                                                                                         | N/A                                                                                                                                                                                            |
| LTE(Mbps)                     | LTE CAT 4: 150 (DL)/50(UL)                                                                                                                                                                | LTE CAT 4: 150 (DL)/50(UL)                                                                                                                                                                                                                                                                                                                  | LTE CAT 4: 150 (DL)/50(UL)                                                                                                                                                                     |
| WCDMA/HSPA/HSPA+(Mbps)        | 21.1(DL)/5.76(UL)                                                                                                                                                                         | 42.2(DL)/11.5(UL)                                                                                                                                                                                                                                                                                                                           | 42.2(DL)/11.5(UL)                                                                                                                                                                              |
| TD-SCDMA(Mbps)                | N/A                                                                                                                                                                                       | 2.8(DL)/2.2(UL)                                                                                                                                                                                                                                                                                                                             | 2.8(DL)/2.2(UL)                                                                                                                                                                                |
| CDMA EV-DO(Mbps)              | N/A                                                                                                                                                                                       | 3.1(DL)/1.8(UL)                                                                                                                                                                                                                                                                                                                             | 3.1(DL)/1.8(UL)                                                                                                                                                                                |
| EDGE(Kbps)                    | 296(DL)/236.8(UL)                                                                                                                                                                         | 296(DL)/236.8(UL)                                                                                                                                                                                                                                                                                                                           | 296(DL)/236.8(UL)                                                                                                                                                                              |
| Software Features             |                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                |
| Protocol                      | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS / HTTP/HTTPS/DNS                                                                                                                                      | TCP/UDP/PPP/PING/FTP(S)/HTTP(S)/SMTP/ SSL/TLS/MMS/NTP/DTMF*/FILE/QMI                                                                                                                                                                                                                                                                        | TCP/IP/IPV4/IPV6/MultiPDP/FTP/FTPS/HTTP/ HTTPS/DNS/SMTP/SMTPS/NTP/PING/SSL                                                                                                                     |
| eCall                         | •                                                                                                                                                                                         | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| Open Linux                    | • (Open WRT)                                                                                                                                                                              | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| Multi-APN                     | •                                                                                                                                                                                         | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| SDIO                          | •                                                                                                                                                                                         | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| UART2                         | •                                                                                                                                                                                         | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| FOTA                          | •                                                                                                                                                                                         | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| Temperature Control           | •                                                                                                                                                                                         | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| TLS                           | •                                                                                                                                                                                         | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| File System                   | •                                                                                                                                                                                         | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| Audio Record/Play             | •                                                                                                                                                                                         | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| TTS                           | ◦                                                                                                                                                                                         | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| DTMF                          | ◦                                                                                                                                                                                         | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| LBS                           | •                                                                                                                                                                                         | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| ECM                           | •                                                                                                                                                                                         | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| QMI_WWAN Driver               | N/A                                                                                                                                                                                       | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| RIL Driver                    | Android 6.0/7.0/8.0/9.0/10.0                                                                                                                                                              | Android 6.0/7.0/8.0/9.0/10.0                                                                                                                                                                                                                                                                                                                | Android 6.0/7.0/8.0/9.0/10.0                                                                                                                                                                   |
| Security                      | SELinux/Trustzone/Secure boot                                                                                                                                                             | SELinux/Trustzone/Secure boot                                                                                                                                                                                                                                                                                                               | SELinux/Trustzone/Secure boot                                                                                                                                                                  |
| Routing policy                | 4G,WIFI and Ethernet port                                                                                                                                                                 | 4G,WIFI and Ethernet port                                                                                                                                                                                                                                                                                                                   | 4G,WIFI and Ethernet port                                                                                                                                                                      |
| USB Driver                    | Microsoft Windows 7/8/10/Linux/Android                                                                                                                                                    | Microsoft Windows 7/8/10/Linux/Android                                                                                                                                                                                                                                                                                                      | Microsoft Windows2000/X- P/Vista/Win7/Win8/Win10/ Linux /Android                                                                                                                               |
| NDIS/RNDIS                    | •                                                                                                                                                                                         | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| Embedded AT                   | ◦                                                                                                                                                                                         | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| Firmware Upgrade              | USB /FOTA                                                                                                                                                                                 | USB /FOTA                                                                                                                                                                                                                                                                                                                                   | USB /FOTA                                                                                                                                                                                      |
| Wi-Fi                         | 2.4G/5G(with EWN-8821CSB1AA)                                                                                                                                                              | 2.4G/5G(with W55)                                                                                                                                                                                                                                                                                                                           | 2.4G/5G(with W59)                                                                                                                                                                              |
| Interfaces                    |                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                |
| SGMII                         | N/A                                                                                                                                                                                       | 10M/100M/100M Ethernet                                                                                                                                                                                                                                                                                                                      | 10M/100M/1000M base-T1/Tx                                                                                                                                                                      |
| RGMII                         | •                                                                                                                                                                                         | N/A                                                                                                                                                                                                                                                                                                                                         | N/A                                                                                                                                                                                            |
| UART                          | 3*UART                                                                                                                                                                                    | 4*UART                                                                                                                                                                                                                                                                                                                                      | 3*UART                                                                                                                                                                                         |
| USB                           | 1*2.0                                                                                                                                                                                     | 1*2.0                                                                                                                                                                                                                                                                                                                                       | 1*2.0                                                                                                                                                                                          |
| ADC                           | 3*ADC                                                                                                                                                                                     | 3*ADC                                                                                                                                                                                                                                                                                                                                       | 3*ADC                                                                                                                                                                                          |
| OTG                           | •                                                                                                                                                                                         | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| HSIC                          | N/A                                                                                                                                                                                       | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                              |
| PCIE                          | N/A                                                                                                                                                                                       | N/A                                                                                                                                                                                                                                                                                                                                         | N/A                                                                                                                                                                                            |
| PCM                           | 1*12S                                                                                                                                                                                     | 1                                                                                                                                                                                                                                                                                                                                           | 1*12S                                                                                                                                                                                          |
| Analog Audio                  | •                                                                                                                                                                                         | ◦                                                                                                                                                                                                                                                                                                                                           | ◦                                                                                                                                                                                              |
| GPIO                          | 8*GPIO                                                                                                                                                                                    | 8*GPIO                                                                                                                                                                                                                                                                                                                                      | 5*GPIO                                                                                                                                                                                         |
| SDIO                          | 2*SDIO                                                                                                                                                                                    | 1*SDIO                                                                                                                                                                                                                                                                                                                                      | SDIO3.0 (200MHz Max)                                                                                                                                                                           |
| SD Card                       | SD3.0                                                                                                                                                                                     | SD3.0                                                                                                                                                                                                                                                                                                                                       | SD3.0 (128G Max)                                                                                                                                                                               |
| SPI                           | 1*SPI                                                                                                                                                                                     | 2*SPI(configured via UART)                                                                                                                                                                                                                                                                                                                  | 1*SPI                                                                                                                                                                                          |
| I2C                           | 2*I2C                                                                                                                                                                                     | 1*I2C                                                                                                                                                                                                                                                                                                                                       | 1*I2C                                                                                                                                                                                          |
| Antenna                       | 1*Main&1*Diversity&1*GNSS                                                                                                                                                                 | 1*Main&1*Diversity&1*GNSS                                                                                                                                                                                                                                                                                                                   | 1*Main&1*Diversity&1*GNSS                                                                                                                                                                      |
| Certification                 |                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                |
| Certification                 | CE: CCC/ TA/CTA*/RoHS*/REACH* E:CE(RED)*/RoHS/REACH                                                                                                                                       | CE: CCC/ TA/CTA*/RoHS*/REACH* E:CE(RED)*/RoHS/REACH                                                                                                                                                                                                                                                                                         | CE: 3C/SRRC/CTA*/RoHS*/REACH E: CE(RED)*/RoHS/REACH                                                                                                                                            |
| Typical Applications          | Vehicle Tracking, OBD,Vehicle DVR, T-BOX                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                |

◦ : Optional \* : Under Developing/On-going/Planning

| Smart Module

| Technology             | Smart Module                                                                                                                                   |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Product                | SIM9650L-W                                                                                                                                     |
| Picture                |                                                             |
| Form Factor            | LGA 636PIN                                                                                                                                     |
| Dimensions(mm)         | 42.5*56.5*2.95                                                                                                                                 |
| Weight(g)              | 15±0.1                                                                                                                                         |
| Frequency Bands        | WIFI 6E(2.4G/5G, 2x2 MU MIMO, 802.11 a/b/g/n/ac/ax)<br>BT 5.X                                                                                  |
| GNSS                   |                                                                                                                                                |
| WLAN                   | WIFI 6E(2.4G/5G, 2x2 MU MIMO, 802.11 a/b/g/n/ac/ax)                                                                                            |
| CPU                    | QCS6490 ,Octa ARM V-8 cores up to 2.7GHz                                                                                                       |
| GPU                    | Adreno 643 GPU at 812MHz                                                                                                                       |
| Memory                 | 8GB LPDDR4 RAM +128GB UFS Flash                                                                                                                |
| Supply Voltage Range   | 3.5V~ 4.4V                                                                                                                                     |
| Temperature            | -30 C ~ +75 C                                                                                                                                  |
| Data Transfer          |                                                                                                                                                |
| LTE(Mbps)              |                                                                                                                                                |
| WCDMA/HSPA/HSPA+(Mbps) |                                                                                                                                                |
| TD-SCDMA(Mbps)         |                                                                                                                                                |
| CDMA EV-DO(Mbps)       |                                                                                                                                                |
| CDMA 1xRTT(Kbps)       |                                                                                                                                                |
| GPRS(Kbps)             |                                                                                                                                                |
| EDGE(Kbps)             |                                                                                                                                                |
| Media                  |                                                                                                                                                |
| Display                | 4-lane MIPI_DSI, DP over USB Type-C<br>FHD 2520*1200 60fps                                                                                     |
| Camera                 | MIPI_CSI*4<br>Support 3 or 4 Cameras Up to 27MP@24 fps with 3* ISP                                                                             |
| Video Performance      | Encode: 4K@30 H.264/H.265<br>Decode: 4K@60 H.264/H.265/VP9<br>Wireless display(decode + encode):<br>1080p60 D +1080p60 E or 4K30 D + 1080p30 E |
| Analog Audio           | 2 Digit MIC                                                                                                                                    |
| Audio Codec            | EVRC, EVRC-B, EVRC-WB, G.711, G.729, PCM,EVS;<br>GSM-FR, GSM-EFR, GSM-HR;<br>AMR-NB, AMR-WB, QCELP                                             |
| Interfaces             |                                                                                                                                                |
| PCIe                   | *1, 2-lane PCIe Gen 3. NVMe                                                                                                                    |
| UART                   | *2                                                                                                                                             |
| USB                    | USB3.1/2.0/Type-C/OTG                                                                                                                          |
| UIM                    | *1                                                                                                                                             |
| GPIO                   | 35                                                                                                                                             |
| SD Card                | •                                                                                                                                              |
| SPI                    | •                                                                                                                                              |
| I2C                    | *8                                                                                                                                             |
| ADC                    | *4                                                                                                                                             |
| Motor Drive            | •                                                                                                                                              |
| WLED Sink              | •                                                                                                                                              |
| Flash Drive            | •                                                                                                                                              |
| Antenna                | Wi-Fi/BT                                                                                                                                       |
| Software Features      |                                                                                                                                                |
| Operating System       | Android 14                                                                                                                                     |
| USB Driver             | Microsoft Windows<br>2000/XP/Vista/Win7/Win8/Win10/Linux                                                                                       |
| Bluetooth              | BT 5.x BLE                                                                                                                                     |
| Dual LCD               | •                                                                                                                                              |
| DSDS                   | •                                                                                                                                              |
| Charge Function        | •                                                                                                                                              |
| Firmware Upgrade       | USB/OTA/TF card                                                                                                                                |
| Certification          |                                                                                                                                                |
| Certification          | RoHS*/REACH*/CE(RED)*                                                                                                                          |
| Typical Applications   | POS, Security, Networking, Telematics,Retail                                                                                                   |

◦ : Optional \* : Under Developing/On-going/Planning

Smart Module

| Technology            | Smart Module                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                    |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product               | SIM8905X(C/E/A-R2)                                                                                                                                                                                                                                                                                                                                                                                                | SIM8400CE/EU                                                                                                                                                                                                                                       |
| Picture               |                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                  |
| Form Factor           | LCC+LGA 210PIN                                                                                                                                                                                                                                                                                                                                                                                                    | LCC+LGA 168PIN                                                                                                                                                                                                                                     |
| Dimensions(mm)        | 40.5*40.5*2.8                                                                                                                                                                                                                                                                                                                                                                                                     | 30*40*2.65                                                                                                                                                                                                                                         |
| Weight(g)             | 10.6±0.1                                                                                                                                                                                                                                                                                                                                                                                                          | 9.6±0.1                                                                                                                                                                                                                                            |
| Frequency Bands       | CE (China)<br>LTE-FDD: B1/B3/B5/B8 LTE-TDD: B34/B38/B39/B40/B41 WCDMA: B1/B5/B8 TD-SCDMA:B34/B39 EVDO/CDMA:BC0 EDGE/GPRS/GSM: 850/900/1800 MHz A/NA(North America)<br>LTE-FDD: B2/B4/B5/B7/B12/B13/B17/B25/B26 LTE-TDD: B41<br>E (Europe/Middle East/Africa/Korea/Thailand)<br>LTE-FDD: B1/B3/B5/B7/B8/B20 LTE-TDD: B38/B40/B41 WCDMA: B1/B2/B5/B8 GSM: 850/900/1800/1900 MHz<br>W: 2.4G/5G, 802.11 b/g/n/a BT4.1 | CE (China)<br>LTE-FDD: B1/B3/B5/B8 LTE-TDD: B34/B38/B39/B40/B41 WCDMA: B1/B5/B8 EDGE/GPRS/GSM: 900/1800 MHz<br>EU (Europe/Middle East/Africa/Korea/Thailand)<br>LTE-FDD: B1/B3/B5/B7/B8/B20 LTE-TDD: B38/B40/B41 WCDMA: B1/B5/B8 GSM: 900/1800 MHz |
| GNSS                  | BeiDou/GPS/GLONASS                                                                                                                                                                                                                                                                                                                                                                                                | BeiDou/GPS/GLONASS                                                                                                                                                                                                                                 |
| WLAN                  | 2.4G/5G, 802.11 b/g/n/a                                                                                                                                                                                                                                                                                                                                                                                           | 2.4G 802.11 b/g/n                                                                                                                                                                                                                                  |
| CPU                   | MSM8909, Quad ARM Cortex-A7 cores up to 1.1GHz                                                                                                                                                                                                                                                                                                                                                                    | SL8521E, Dual Arm Cortex-A53 cores up to 1.3GHz                                                                                                                                                                                                    |
| GPU                   |                                                                                                                                                                                                                                                                                                                                                                                                                   | Mali T820 MP1 at 384MHz                                                                                                                                                                                                                            |
| Memory                | 1GB LPDDR3 RAM +8GB eMMC Flash                                                                                                                                                                                                                                                                                                                                                                                    | 4GB eMMC + 2GB LPDDR2                                                                                                                                                                                                                              |
| Supply Voltge Range   | 3.4V~ 4.4V                                                                                                                                                                                                                                                                                                                                                                                                        | 3.4V~ 4.4V                                                                                                                                                                                                                                         |
| Temperature           | -35°C ~ +75°C                                                                                                                                                                                                                                                                                                                                                                                                     | -35 C ~ +75 C                                                                                                                                                                                                                                      |
| Data Transfer         |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                    |
| LTE(Mbps)             | LTE CAT 4 - 150(DL)/50(UL)                                                                                                                                                                                                                                                                                                                                                                                        | LTE CAT 4 - 150(DL)/50(UL)                                                                                                                                                                                                                         |
| WCDMAHSPA/HSPA+(Mbps) | 42.2(DL)/5.76(UL)                                                                                                                                                                                                                                                                                                                                                                                                 | 21(DL)/11(UL)                                                                                                                                                                                                                                      |
| TD-SCDMA(Mbps)        | 2.8(DL)/2.2(UL)                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                    |
| CDMA EV-DO(Mbps)      | 3.1(DL)/1.8(UL)                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                    |
| CDMA 1xRTT(Kbps)      | 153.6(DL)/153.6(UL)                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                    |
| GPRS(Kbps)            | Max 107(DL)/85.6(UL)                                                                                                                                                                                                                                                                                                                                                                                              | Max 107(DL)/85.6(UL)                                                                                                                                                                                                                               |
| EDGE(Kbps)            | Max 296(DL)/236.8(UL)                                                                                                                                                                                                                                                                                                                                                                                             | Max 296(DL)/236.8(UL)                                                                                                                                                                                                                              |
| Media                 |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                    |
| Display               | 4-lane MIPI_DSI<br>HD(720P), 60fps                                                                                                                                                                                                                                                                                                                                                                                | SPI port supports QVGA 320*240 Max<br>MIPI port supports VGA 800*480 Max                                                                                                                                                                           |
| Camera                | MIPI_CSI * 2<br>Primary camera: 2-lane MIPI_CSI, up to 8MP<br>Secondary camera: 1-lane MIPI_CSI, up to 5MP                                                                                                                                                                                                                                                                                                        | MIPI_CSI *1<br>up to 5MP                                                                                                                                                                                                                           |
| Video Performance     | Encode: H.264 BP/MP – 720p, 30 fps; MPEG-4 SP/H.263 P0 – WVGA, 30 fps; VP8 –WVGA, 30 fps;<br>Decode: H.264 BP/MP/HP – 1080p, 30 fps; MPEG-4 SP/ASP –1080p, 30 fps; DivX 4x/5x/6x –1080p, 30 fps; H.263 P0 – WVGA, 30 fps; VP8 –1080p, 30 fps; (HEVC) H.265 MP 8 bit –1080p, 30 fps;                                                                                                                               | Encode: 720p 30fps(H.264,MPEG4)<br>Decode: 720p 30fps(H.264,MPEG4,H263,VP8)                                                                                                                                                                        |
| Analog Audio          | 2 Inputs &3 Outputs                                                                                                                                                                                                                                                                                                                                                                                               | 3 Inputs &3 Outputs                                                                                                                                                                                                                                |
| Audio Codec           | G711; Raw PCM; QCELP; EVRC; EVRC-B; EVRC-WB; AMR-NB; AMR-WB; GSM-EFR; GSM-FR; GSM-HR<br>MP3; AAC; AAC+, eAAC; AMR-NB; ARM-WB; G.711、WMA 9/10 Pro                                                                                                                                                                                                                                                                  | Support MP3/AAC/AAC+/ AMR-NB/AMR WB/PCM/ADPCM decoding<br>Audio recording codec support MP3/AMR/ACC format                                                                                                                                         |
| Interfaces            |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                    |
| UART                  | *2                                                                                                                                                                                                                                                                                                                                                                                                                | *3                                                                                                                                                                                                                                                 |
| USB                   | USB2.0                                                                                                                                                                                                                                                                                                                                                                                                            | USB2.0                                                                                                                                                                                                                                             |
| UIM                   | *2                                                                                                                                                                                                                                                                                                                                                                                                                | *2                                                                                                                                                                                                                                                 |
| GPIO                  | At Least 21*GPIO                                                                                                                                                                                                                                                                                                                                                                                                  | At Least 40*GPIO                                                                                                                                                                                                                                   |
| SD Card               | ●                                                                                                                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                  |
| SPI                   | ●                                                                                                                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                  |
| I2C                   | *3                                                                                                                                                                                                                                                                                                                                                                                                                | *1                                                                                                                                                                                                                                                 |
| ADC                   | *1                                                                                                                                                                                                                                                                                                                                                                                                                | *2                                                                                                                                                                                                                                                 |
| Motor Drive           | *1                                                                                                                                                                                                                                                                                                                                                                                                                | *1                                                                                                                                                                                                                                                 |
| WLED Sink             |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                    |
| Flash Drive           |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                    |
| Antenna               | Main&Diversity&GNSS&Wi-Fi/BT                                                                                                                                                                                                                                                                                                                                                                                      | Main&Diversity&GNSS&Wi-Fi/BT                                                                                                                                                                                                                       |
| Software Features     |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                    |
| Operating System      | Android 5.1/7.1/8.1/Linux 3.18                                                                                                                                                                                                                                                                                                                                                                                    | Linux(Yocto)                                                                                                                                                                                                                                       |
| USB Driver            | Microsoft Windows<br>2000/XP/Vista/Win7/Win8/Win10/Linux                                                                                                                                                                                                                                                                                                                                                          | Microsoft Windows<br>2000/XP/Vista/Win7/Win8/Win10/Linux                                                                                                                                                                                           |
| Bluetooth             | BT 2.1+EDR/3.0/4.1 LE                                                                                                                                                                                                                                                                                                                                                                                             | BT 4.2                                                                                                                                                                                                                                             |
| Dual LCD              |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                    |
| DSDS                  | ●                                                                                                                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                  |
| Charge Function       | ●                                                                                                                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                  |
| Firmware Upgrade      | USB/OTA/TF card                                                                                                                                                                                                                                                                                                                                                                                                   | USB/OTA/TF card                                                                                                                                                                                                                                    |
| Certification         |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                    |
| Certification         | A-R2:RoHS/REACH/FCC/PTCRB E:RoHS/REACH/CE(RED)                                                                                                                                                                                                                                                                                                                                                                    | RoHS/REACH/CE                                                                                                                                                                                                                                      |
| Typical Applications  | POS, Security, Networking, Telematics,Retail                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                    |

○ : Optional \* : Under Developing/On-going/Planning

Smart Module

| Technology            | Smart Module                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product               | SIM8500E/CE                                                                                                                                                                                                                                                                  | SIM8502X(CE/EA/SA)                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Picture               |                                                                                                        |                                                                                                                                                                                                                                                                  |
| Form Factor           | LCC+LGA 286PIN                                                                                                                                                                                                                                                               | LCC+LGA 286PIN                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Dimensions(mm)        | 40.5*40.5*2.85                                                                                                                                                                                                                                                               | 40.5*40.5*2.85                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Weight(g)             | 10.6±0.1                                                                                                                                                                                                                                                                     | 10.6±0.1                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Frequency Bands       | CE (China)<br>LTE-FDD: B1/B3/B5/B8 LTE-TDD: B34/B38/B39/B40/B41 UMTS/HSDPA/HSPA+: B1/B5/B8 EDGE/GPRS/GSM: 900/1800 MHz<br>E (Europe/Middle East/Africa/Korea/Thailand)<br>LTE-FDD: B1/B3/B5/B7/B8/B20/B28 LTE-TDD: B38/B40/B41 WCDMA: B1/B2/B5/B8 GSM: 850/900/1800/1900 MHz | CE (China)<br>LTE-FDD: B1/B3/B5/B8 LTE-TDD: B34/B38/B39/B40/B41 UMTS/HSDPA/HSPA+: B1/B5/B8 EDGE/GPRS/GSM: 900/1800 MHz<br>EA (Europe/Middle East/Africa/Korea/Thailand)<br>LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B20/B28 LTE-TDD: B38/B40/B41 WCDMA: B1/B2/B4/B5/B8 GSM: 850/900/1800/1900 MHz<br>SA (New Zealand/Australia/South America)<br>LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B28/B66 LTE-TDD: B40 WCDMA: B1/B2/B5/B8 GSM: 850/900/1800/1900 MHz |
| GNSS                  | BeiDou/GPS/GLONASS                                                                                                                                                                                                                                                           | BeiDou/GPS/GLONASS                                                                                                                                                                                                                                                                                                                                                                                                                     |
| WLAN                  | 2.4G 802.11 b/g/n(a,ac Optional)                                                                                                                                                                                                                                             | 2.4G/5G, 802.11a/b/g/n/ac                                                                                                                                                                                                                                                                                                                                                                                                              |
| CPU                   | SL8541E, Quad ARM Cortex-A53 cores up to 1.4GHz                                                                                                                                                                                                                              | SL8541E, Quad ARM Cortex-A53 cores up to 1.4GHz                                                                                                                                                                                                                                                                                                                                                                                        |
| GPU                   | Mali-T820 MP1 GPU at 680 MHz                                                                                                                                                                                                                                                 | Mali-T820 MP1 GPU at 680 MHz                                                                                                                                                                                                                                                                                                                                                                                                           |
| Memory                | 1GB LPDDR3 RAM +8GB eMMC Flash                                                                                                                                                                                                                                               | 1GB LPDDR3 RAM +8GB eMMC Flash                                                                                                                                                                                                                                                                                                                                                                                                         |
| Supply Voltge Range   | 3.5V~ 4.2V                                                                                                                                                                                                                                                                   | 3.5V~ 4.2V                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Temperature           | -35 C ~ +75 C                                                                                                                                                                                                                                                                | -35 C ~ +75 C                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Data Transfer         |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| LTE(Mbps)             | LTE CAT 4 - 150(DL)/50(UL)                                                                                                                                                                                                                                                   | LTE CAT 4 - 150(DL)/50(UL)                                                                                                                                                                                                                                                                                                                                                                                                             |
| WCDMAHSPA/HSPA+(Mbps) | 21(DL)/11(UL)                                                                                                                                                                                                                                                                | 21(DL)/11(UL)                                                                                                                                                                                                                                                                                                                                                                                                                          |
| TD-SCDMA(Mbps)        |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| CDMA EV-DO(Mbps)      |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| CDMA 1xRTT(Kbps)      |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| GPRS(Kbps)            | Max 107(DL)/85.6(UL)                                                                                                                                                                                                                                                         | Max 107(DL)/85.6(UL)                                                                                                                                                                                                                                                                                                                                                                                                                   |
| EDGE(Kbps)            | Max 296(DL)/236.8(UL)                                                                                                                                                                                                                                                        | Max 296(DL)/236.8(UL)                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Media                 |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Display               | 4-lane MIPI_DSI<br>HD(720P), 60fps                                                                                                                                                                                                                                           | 4-lane MIPI_DSI<br>HD(720P), 60fps                                                                                                                                                                                                                                                                                                                                                                                                     |
| Camera                | MIPI_CSI * 2<br>Primary camera: : 4-lane MIPI_CSI, up to 13MP<br>Secondary camera: 4-lane MIPI_CSI, up to 8MP                                                                                                                                                                | MIPI_CSI * 2<br>Primary camera: : 4-lane MIPI_CSI, up to 13MP<br>Secondary camera: 4-lane MIPI_CSI, up to 8MP                                                                                                                                                                                                                                                                                                                          |
| Video Performance     | Encode: 1080p 30fps(H.264,MPEG4,H.263)<br>Decode: 1080p 30fps(H.264,MPEG4,VP8)                                                                                                                                                                                               | Encode: 1080p 30fps(H.264,MPEG4,H.263)<br>Decode: 1080p 30fps(H.264,MPEG4,VP8)                                                                                                                                                                                                                                                                                                                                                         |
| Analog Audio          | 3 Inputs &3 Outputs                                                                                                                                                                                                                                                          | 3 Inputs &3 Outputs                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Audio Codec           | Voice Codec: GSM-FR、GSM-EFR、GSM-HR; AMR-NB、AMR-WB; EVS-NB、EVS-WB、EVS-SWB<br>Audio Codec: MP3 AAC、AAC+ AMR-NB                                                                                                                                                                 | Voice Codec: GSM-FR、GSM-EFR、GSM-HR; AMR-NB、AMR-WB; EVS-NB、EVS-WB、EVS-SWB<br>Audio Codec: MP3 AAC、AAC+ AMR-NB                                                                                                                                                                                                                                                                                                                           |
| Interfaces            |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| UART                  | *2                                                                                                                                                                                                                                                                           | *2                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| USB                   | USB2.0                                                                                                                                                                                                                                                                       | USB2.0                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| UIM                   | *2                                                                                                                                                                                                                                                                           | *2                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| GPIO                  | At Least 25*GPIO                                                                                                                                                                                                                                                             | At Least 25*GPIO                                                                                                                                                                                                                                                                                                                                                                                                                       |
| SD Card               | ●                                                                                                                                                                                                                                                                            | ●                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| SPI                   | ●                                                                                                                                                                                                                                                                            | ●                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| I2C                   | *4                                                                                                                                                                                                                                                                           | *4                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| ADC                   | *1                                                                                                                                                                                                                                                                           | *1                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Motor Drive           | *1                                                                                                                                                                                                                                                                           | *1                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| WLED Sink             |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Flash Drive           |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Antenna               | Main&Diversity&GNSS&Wi-Fi/BT                                                                                                                                                                                                                                                 | Main&Diversity&GNSS&Wi-Fi/BT                                                                                                                                                                                                                                                                                                                                                                                                           |
| Software Features     |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Operating System      | Android 10                                                                                                                                                                                                                                                                   | Android 10                                                                                                                                                                                                                                                                                                                                                                                                                             |
| USB Driver            | Microsoft Windows<br>2000/XP/Vista/Win7/Win8/Win10/Linux                                                                                                                                                                                                                     | Microsoft Windows<br>2000/XP/Vista/Win7/Win8/Win10/Linux                                                                                                                                                                                                                                                                                                                                                                               |
| Bluetooth             | BT 2.1+EDR/3.0/4.1 LE/4.2 BLE                                                                                                                                                                                                                                                | BT 2.1+EDR/3.0/4.1 LE/4.2 BLE                                                                                                                                                                                                                                                                                                                                                                                                          |
| Dual LCD              |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| DSDS                  | ●                                                                                                                                                                                                                                                                            | ●                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Charge Function       | ●                                                                                                                                                                                                                                                                            | ●                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Firmware Upgrade      | USB/OTA/TF card                                                                                                                                                                                                                                                              | USB/OTA/TF card                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Certification         |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Certification         | RoHS/REACH/CCC/CE                                                                                                                                                                                                                                                            | RoHS*/REACH*/CCC*/CE                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Typical Applications  | POS, Security, Networking, Telematics,Retail                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                        |

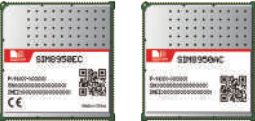
○ : Optional \* : Under Developing/On-going/Planning

| Smart Module

| Technology             | Smart Module                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                       |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product                | SIM8580X(CE/EA)                                                                                                                                                                                                                                                                  | SIM6600X(CE/EA)                                                                                                                                                                                                                                                                                       |
| Picture                |                                                                                                                                                                                                 |                                                                                                                                                                                                                     |
| Form Factor            | LCC+LGA 344PIN                                                                                                                                                                                                                                                                   | LCC+LGA 286PIN                                                                                                                                                                                                                                                                                        |
| Dimensions(mm)         | 44.1*45.6*2.9                                                                                                                                                                                                                                                                    | 40.5*40.5*2.85                                                                                                                                                                                                                                                                                        |
| Weight(g)              | 12.0±0.1                                                                                                                                                                                                                                                                         | 10.6±0.1                                                                                                                                                                                                                                                                                              |
| Frequency Bands        | CE (China)<br>LTE-FDD: B1/B3/B5/B8<br>LTE-TDD: B34/B38/B39/B40/B41<br>UMTS/HSDPA/HSPA+: B1/B5/B8<br>GSM: 900/1800MHz<br><br>EA (Europe/Middle East/Africa/Korea/Thailand)<br>LTE-FDD: B1/B3/B5/B7/B8/B20/B28<br>LTE-TDD: B38/B40/B41<br>WCDMA: B1/B5/B8<br>GSM: 850/900/1800 MHz | CE (China)<br>LTE-FDD: B1/B3/B5/B8<br>LTE-TDD: B34/B38/B39/B40/B41<br>UMTS/HSDPA/HSPA+: B1/B8<br>EDGE/GPRS/GSM: 900/1800 MHz<br><br>EA (Europe/Middle East/Africa/Korea/Thailand)<br>LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B20/B28<br>LTE-TDD: B38/B40/B41<br>WCDMA: B1/B2/B4/B5/B8<br>GSM: 850/900/1800/1900 |
| GNSS                   | BeiDou/GPS/GLONASS                                                                                                                                                                                                                                                               | BeiDou/GPS/GLONASS                                                                                                                                                                                                                                                                                    |
| WLAN                   | 2.4G/5G, 802.11a/b/g/n/ac                                                                                                                                                                                                                                                        | 2.4G/5G, 802.11a/b/g/n/ac                                                                                                                                                                                                                                                                             |
| CPU                    | SL8581E, Octa ARM Cortex-A55 cores up to 1.6GHz.                                                                                                                                                                                                                                 | MTK8766,Quad ARM Cortex-A53 cores up to 2.0GHz                                                                                                                                                                                                                                                        |
| GPU                    | PowerVR Fentale GE8322 at 550 MHz                                                                                                                                                                                                                                                | GE8300 GPU at 660MHz                                                                                                                                                                                                                                                                                  |
| Memory                 | 2GB LPDDR4 RAM +16GB eMMC Flash                                                                                                                                                                                                                                                  | 2GB LPDDR3 RAM +16GB eMMC Flash                                                                                                                                                                                                                                                                       |
| Supply Voltge Range    | 3.5V~ 4.2V                                                                                                                                                                                                                                                                       | 3.4V~ 4.4V                                                                                                                                                                                                                                                                                            |
| Temperature            | -35 C ~ +75 C                                                                                                                                                                                                                                                                    | -35 C ~ +75 C                                                                                                                                                                                                                                                                                         |
| Data Transfer          |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                       |
| LTE(Mbps)              | LTE CAT 4 - 150(DL)/50(UL)                                                                                                                                                                                                                                                       | LTE CAT 4 - 150(DL)/50(UL)                                                                                                                                                                                                                                                                            |
| WCDMA/HSPA/HSPA+(Mbps) | 21(DL)/11(UL)                                                                                                                                                                                                                                                                    | 42.2(DL)/5.76(UL)                                                                                                                                                                                                                                                                                     |
| TD-SCDMA(Mbps)         |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                       |
| CDMA EV-DO(Mbps)       |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                       |
| CDMA 1xRTT(Kbps)       |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                       |
| GPRS(Kbps)             | Max 107(DL)/85.6(UL)                                                                                                                                                                                                                                                             | Max 107(DL)/85.6(UL)                                                                                                                                                                                                                                                                                  |
| EDGE(Kbps)             | Max 296(DL)/236.8(UL)                                                                                                                                                                                                                                                            | Max 296(DL)/236.8(UL)                                                                                                                                                                                                                                                                                 |
| Media                  |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                       |
| Display                | 4-lane MIPI_DSI<br>FHD 2160*1080 60fps                                                                                                                                                                                                                                           | 4-lane MIPI_DSI<br>HD+(1280*800), 60fps                                                                                                                                                                                                                                                               |
| Camera                 | MIPI_CSI * 3<br>Primary camera:: 4-lane MIPI_CSI, up to16MP<br>Secondary camera: : 4-lane MIPI_CSI, up to16MP                                                                                                                                                                    | MIPI_CSI * 2<br>Primary camera: 4-lane MIPI_CSI, up to 13MP<br>Secondary camera: 4-lane MIPI_CSI, up to 8MP                                                                                                                                                                                           |
| Video Performance      | Encode: 1080p60, H.264, H.265, VP8<br>Decode: 1080p60, H.264, H.265, VP8, VP9<br>Wireless Display (Encode+Decode) :<br>1080p60 Dec + 1080p30 Enc                                                                                                                                 | Encode: 1080p 30fps(H.264)<br>Decode: 1080p 30fps(H.264,MPEG4,VP9,HEVC)<br>--<br>Encode+Decode: 1080p 30 fps + 720p 30 fps                                                                                                                                                                            |
| Analog Audio           | 3 Inputs &3 Outputs                                                                                                                                                                                                                                                              | 3 Inputs &3 Outputs                                                                                                                                                                                                                                                                                   |
| Audio Codec            | G711;QCELP;EVRC;EVRC-B、 EVRC-WB;AMR-NB、 AMR-WB;GSM-EFT、 GSM-FT、 GSM-HR                                                                                                                                                                                                           | Voice codec: AMR FR, AMR HR, AMR-WB, EVS_WB, FR,HR,EFR<br>Audio encode: AMR-NB, AMR-WB,AAC,OGG,ADPCM<br>Audio decode: WAV, MP3, MP2, AAC, AMR-NB, AMR-WB, MIDI, Vorbis, APE, AAC-plus v1, v2; FLAC, WMA, ADPCM                                                                                        |
| Interfaces             |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                       |
| UART                   | *4                                                                                                                                                                                                                                                                               | *2                                                                                                                                                                                                                                                                                                    |
| USB                    | *2 USB 2.0                                                                                                                                                                                                                                                                       | USB2.0                                                                                                                                                                                                                                                                                                |
| UIM                    | *2                                                                                                                                                                                                                                                                               | *2                                                                                                                                                                                                                                                                                                    |
| GPIO                   | At Least 40*GPIO                                                                                                                                                                                                                                                                 | At Least 25*GPIO                                                                                                                                                                                                                                                                                      |
| SD Card                | ●                                                                                                                                                                                                                                                                                | ●                                                                                                                                                                                                                                                                                                     |
| SPI                    | ●                                                                                                                                                                                                                                                                                | ●                                                                                                                                                                                                                                                                                                     |
| I2C                    | *5                                                                                                                                                                                                                                                                               | *5                                                                                                                                                                                                                                                                                                    |
| ADC                    | *1                                                                                                                                                                                                                                                                               | *1                                                                                                                                                                                                                                                                                                    |
| Motor Drive            | *1                                                                                                                                                                                                                                                                               | *1                                                                                                                                                                                                                                                                                                    |
| WLED Sink              | ●                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                       |
| Flash Drive            | ●                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                       |
| Antenna                | Main&Diversity&GNSS&Wi-Fi/BT                                                                                                                                                                                                                                                     | Main&Diversity&GNSS&Wi-Fi/BT                                                                                                                                                                                                                                                                          |
| Software Features      |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                       |
| Operating System       | Android 10                                                                                                                                                                                                                                                                       | Android 11                                                                                                                                                                                                                                                                                            |
| USB Driver             | Microsoft Windows<br>2000/XP/Vista/Win7/Win8/Win10/Linux                                                                                                                                                                                                                         | Microsoft Windows<br>2000/XP/Vista/Win7/Win8/Win10/Linux                                                                                                                                                                                                                                              |
| Bluetooth              | BT 5.0                                                                                                                                                                                                                                                                           | BT 5.0                                                                                                                                                                                                                                                                                                |
| Dual LCD               |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                       |
| DSDS                   | ●                                                                                                                                                                                                                                                                                | ●                                                                                                                                                                                                                                                                                                     |
| Charge Function        | ●                                                                                                                                                                                                                                                                                | ●                                                                                                                                                                                                                                                                                                     |
| Firmware Upgrade       | USB/OTA/TF card                                                                                                                                                                                                                                                                  | USB/OTA/TF card                                                                                                                                                                                                                                                                                       |
| Certification          |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                       |
| Certification          | RoHS/REACH/CCC*/CE*                                                                                                                                                                                                                                                              | RoHS*/REACH*/CCC*/CE*                                                                                                                                                                                                                                                                                 |
| Typical Applications   | POS, Security, Networking, Telematics,Retail                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                       |

○ : Optional \* : Under Developing/On-going/Planning

| Smart Module

| Technology             | Smart Module                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product                | SIM8950X(EC/AC)                                                                                                                                                                                                                                                                                                   | SIM8970X (CE/EU/NA/W)                                                                                                                                                                                                                                                                                                                                                                                                          |
| Picture                |                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                             |
| Form Factor            | LCC+LGA 232PIN                                                                                                                                                                                                                                                                                                    | LCC+LGA 344PIN                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Dimensions(mm)         | 44.1*45.6*2.8                                                                                                                                                                                                                                                                                                     | 44.1*45.6*2.85                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Weight(g)              | 12.5±0.1                                                                                                                                                                                                                                                                                                          | 12.5±0.1                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Frequency Bands        | AC (North America)<br>LTE-FDD: B2/B4/B5/B12/B13/B14/B25/B26<br>LTE-TDD: B41<br>WCDMA: B2/B4/B5<br>EDGE/GPRS/GSM: 850/1900 MHz<br><br>EC (Europe/Middle East/Africa/Korea/Thailand)<br>LTE-FDD: B1/B3/B5/B7/B8/B20 LTE-TDD: B38/B40/B41<br>WCDMA: B1/B5/B8 GSM: 900/1800 MHz<br>W: 2.4G/5G, 802.11a/b/g/n/ac BT4.2 | CE (China)<br>LTE-FDD: B1/B3/B5/B8 LTE-TDD: B34/B38/B39/B40/B41<br>WCDMA: B1/B8 TD-SCDMA:B34/B39 EDGE/GPRS/GSM: 900/1800 MHz<br>NA (North America)<br>LTE-FDD: B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B66/B71<br>LTE-TDD: B41 WCDMA: B2/B4/B5<br>EU (Europe/Middle East/Africa/Korea/Thailand)<br>LTE-FDD: B1/B3/B5/B7/B8/B20/B28 LTE-TDD: B38/B40/B41<br>WCDMA: B1/B5/B8 GSM: 900/1800 MHz<br>W: 2.4G/5G, 802.11a/b/g/n/ac BT5.0 |
| GNSS                   | BeiDou/GPS/GLONASS                                                                                                                                                                                                                                                                                                | BeiDou/GPS/GLONASS                                                                                                                                                                                                                                                                                                                                                                                                             |
| WLAN                   | 2.4G/5G, 802.11a/b/g/n/ac                                                                                                                                                                                                                                                                                         | 2.4G/5G, 802.11a/b/g/n/ac                                                                                                                                                                                                                                                                                                                                                                                                      |
| CPU                    | SDM450 ,Octa ARM Cortex-A53 cores up to 1.8GHz                                                                                                                                                                                                                                                                    | QCM6125 ,Octa ARM V-8 cores up to 2.0GHz                                                                                                                                                                                                                                                                                                                                                                                       |
| GPU                    | Adreno 506 GPU at 680MHz                                                                                                                                                                                                                                                                                          | Adreno 610 GPU at 950MHz                                                                                                                                                                                                                                                                                                                                                                                                       |
| Memory                 | 2GB LPDDR3 RAM +16GB eMMC Flash                                                                                                                                                                                                                                                                                   | 4GB LPDDR4 RAM +64GB eMMC Flash                                                                                                                                                                                                                                                                                                                                                                                                |
| Supply Voltage Range   | 3.4V~ 4.4V                                                                                                                                                                                                                                                                                                        | 3.5V~ 4.4V                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Temperature            | -35 C ~ +75 C                                                                                                                                                                                                                                                                                                     | -30 C ~ +75 C                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Data Transfer          |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                |
| LTE(Mbps)              | LTE CAT 4 - 150(DL)/50(UL)                                                                                                                                                                                                                                                                                        | LTE CAT 6 - 300(DL)/50(UL)                                                                                                                                                                                                                                                                                                                                                                                                     |
| WCDMA/HSPA/HSPA+(Mbps) | 42.2(DL)/5.76(UL)                                                                                                                                                                                                                                                                                                 | 42.2(DL)/5.76(UL)                                                                                                                                                                                                                                                                                                                                                                                                              |
| TD-SCDMA(Mbps)         |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                |
| CDMA EV-DO(Mbps)       |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                |
| CDMA 1xRTT(Kbps)       |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                |
| GPRS(Kbps)             | Max 107(DL)/85.6(UL)                                                                                                                                                                                                                                                                                              | Max 107(DL)/85.6(UL)                                                                                                                                                                                                                                                                                                                                                                                                           |
| EDGE(Kbps)             | Max 296(DL)/236.8(UL)                                                                                                                                                                                                                                                                                             | Max 296(DL)/236.8(UL)                                                                                                                                                                                                                                                                                                                                                                                                          |
| Media                  |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Display                | 4-lane MIPI_DSI * 2<br>FHD 1920*1200 60fps                                                                                                                                                                                                                                                                        | 4-lane MIPI_DSI, DP over USB Type-C<br>FHD 2520*1080 60fps                                                                                                                                                                                                                                                                                                                                                                     |
| Camera                 | MIPI_CSI * 2<br>Primary camera: 4-lane MIPI_CSI, up to 21MP<br>Secondary camera: 2-lane MIPI_CSI, up to 8MP                                                                                                                                                                                                       | MIPI_CSI*3<br>Support 3 or 4 Cameras Up to 25MP with Dual ISPs                                                                                                                                                                                                                                                                                                                                                                 |
| Video Performance      | Encode: 1080p60, H.264, H.265, VP8<br>Decode: 1080p60, H.264, H.265, VP8, VP9<br>Wireless Display (Decode+Encode) :<br>1080p60 Dec + 1080p30 Enc                                                                                                                                                                  | Encode:<br>4K30 HEVC/H264/VP8/MPEG4<br>Decode:<br>4K30 8-bit: H.264/VP8/VP9<br>4K30 10-bit: HEVC<br>Wireless display(decode + encode):<br>4Kp30 Dec + 1080p30 Enc                                                                                                                                                                                                                                                              |
| Analog Audio           | 2 Inputs &4 Outputs                                                                                                                                                                                                                                                                                               | 3 Inputs &4 Outputs                                                                                                                                                                                                                                                                                                                                                                                                            |
| Audio Codec            | G711;QCELP;EVRC;EVRC-B、 EVRC-WB;AMR-NB、 AMR-WB;GSM-EFT、 GSM-FT、 GSM-HR                                                                                                                                                                                                                                            | G.711, G.729A/AB; EVRC, EVRC-B, EVRC-WB;<br>AMR-NB, AMR-WB, AMR-eAMR, AMR-BeAMR; GSM-EFR/-FR/-HR;<br>MP3; AAC; He-AAC v1, v2; WMA 9/Pro; Dolby AC-3, eAC-3, DTS-HD, FLAC, APE, ALAC, AIFF                                                                                                                                                                                                                                      |
| Interfaces             |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                |
| UART                   | *4                                                                                                                                                                                                                                                                                                                | *6                                                                                                                                                                                                                                                                                                                                                                                                                             |
| USB                    | USB3.0/2.0/Type-C/OTG                                                                                                                                                                                                                                                                                             | USB3.1/2.0/Type-C/OTG                                                                                                                                                                                                                                                                                                                                                                                                          |
| UIM                    | *2                                                                                                                                                                                                                                                                                                                | *2                                                                                                                                                                                                                                                                                                                                                                                                                             |
| GPIO                   | At Least 22*GPIO                                                                                                                                                                                                                                                                                                  | At Least 40*GPIO                                                                                                                                                                                                                                                                                                                                                                                                               |
| SD Card                | ●                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                                                                                                                                                                                              |
| SPI                    | ●                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                                                                                                                                                                                              |
| I2C                    | *3                                                                                                                                                                                                                                                                                                                | *9                                                                                                                                                                                                                                                                                                                                                                                                                             |
| ADC                    | *1                                                                                                                                                                                                                                                                                                                | *2                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Motor Drive            | ○                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                                                                                                                                                                                              |
| WLED Sink              | ○                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Flash Drive            | ○                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Antenna                | Main&Diversity&GNSS&Wi-Fi/BT                                                                                                                                                                                                                                                                                      | Main&Diversity&GNSS&Wi-Fi/BT                                                                                                                                                                                                                                                                                                                                                                                                   |
| Software Features      |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Operating System       | Android 7.1/8.1/9.1/10.1                                                                                                                                                                                                                                                                                          | Android 10/11/13                                                                                                                                                                                                                                                                                                                                                                                                               |
| USB Driver             | Microsoft Windows<br>2000/XP/Vista/Win7/Win8/Win10/Linux                                                                                                                                                                                                                                                          | Microsoft Windows<br>2000/XP/Vista/Win7/Win8/Win10/Linux                                                                                                                                                                                                                                                                                                                                                                       |
| Bluetooth              | BT 2.1+EDR/3.0/4.1 LE/4.2 BLE                                                                                                                                                                                                                                                                                     | BT 5.x BLE                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Dual LCD               | ●                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                                                                                                                                                                                              |
| DSDS                   | ●                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Charge Function        | ○                                                                                                                                                                                                                                                                                                                 | ●                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Firmware Upgrade       | USB/OTA/TF card                                                                                                                                                                                                                                                                                                   | USB/OTA/TF card                                                                                                                                                                                                                                                                                                                                                                                                                |
| Certification          |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Certification          | RoHS/REACH/CE(RED)                                                                                                                                                                                                                                                                                                | EU:RoHS/REACH/CE(RED) CE:CCC                                                                                                                                                                                                                                                                                                                                                                                                   |
| Typical Applications   | POS, Security, Networking, Telematics,Retail                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                |

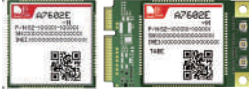
○ : Optional \* : Under Developing/On-going/Planning

| Smart Module

| Technology             | Smart Module                                                                                                                               |                                                                                                                                                                    |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product                | SIM8918X(CE/EA/NA/SA/JP/W)                                                                                                                 |                                                                                                                                                                    |
| Picture                |                                                           |                                                                                                                                                                    |
| Form Factor            | LCC+LGA 286PIN                                                                                                                             |                                                                                                                                                                    |
| Dimensions(mm)         | 40.5*40.5*2.8                                                                                                                              |                                                                                                                                                                    |
| Weight(g)              | 10.5±0.1                                                                                                                                   |                                                                                                                                                                    |
| Frequency Bands        | CE (China)<br>LTE-FDD: B1/B3/B5/B8 LTE-TDD: B34/B38/B39/B40/B41<br>WCDMA: B1/B8 EDGE/GPRS/GSM: 900/1800 MHz                                | EA (Europe/Middle East/Africa/Korea/Thailand)<br>LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B20/B28<br>LTE-TDD: B38/B40/B41<br>WCDMA: B1/B2/B4/B5/B8 GSM: 850/900/1800/1900 MHz |
| GNSS                   | BeiDou/GPS/GLONASS                                                                                                                         |                                                                                                                                                                    |
| WLAN                   | 2.4G/5G, 802.11a/b/g/n/ac                                                                                                                  |                                                                                                                                                                    |
| CPU                    | QCM2290 ,Quad ARM Cortex-A53 cores up to 2.0GHz                                                                                            |                                                                                                                                                                    |
| GPU                    | Adreno 702 GPU at 845MHz                                                                                                                   |                                                                                                                                                                    |
| Memory                 | 2GB LPDDR4 RAM +16GB eMMC Flash                                                                                                            |                                                                                                                                                                    |
| Supply Voltge Range    | 3.4V~ 4.4V                                                                                                                                 |                                                                                                                                                                    |
| Temperature            | -35 C ~ +75 C                                                                                                                              |                                                                                                                                                                    |
| Data Transfer          |                                                                                                                                            |                                                                                                                                                                    |
| LTE(Mbps)              | LTE CAT 4 - 150(DL)/50(UL)                                                                                                                 |                                                                                                                                                                    |
| WCDMA/HSPA/HSPA+(Mbps) | 42.2(DL)/5.76(UL)                                                                                                                          |                                                                                                                                                                    |
| TD-SCDMA(Mbps)         |                                                                                                                                            |                                                                                                                                                                    |
| CDMA EV-DO(Mbps)       |                                                                                                                                            |                                                                                                                                                                    |
| CDMA 1xRTT(Kbps)       |                                                                                                                                            |                                                                                                                                                                    |
| GPRS(Kbps)             | Max 107(DL)/85.6(UL)                                                                                                                       |                                                                                                                                                                    |
| EDGE(Kbps)             | Max 296(DL)/236.8(UL)                                                                                                                      |                                                                                                                                                                    |
| Media                  |                                                                                                                                            |                                                                                                                                                                    |
| Display                | 4-lane MIPI_DSI<br>HD(720P), 60fps                                                                                                         |                                                                                                                                                                    |
| Camera                 | MIPI_CSI * 2<br>Primary camera: 4-lane MIPI_CSI, up to 13MP<br>Secondary camera: 4-lane MIPI_CSI, up to 13MP                               |                                                                                                                                                                    |
| Video Performance      | Encode:<br>1080p 30 fps (H.264)<br>Decode:<br>1080p 30 fps(HEVC,H.264 and VP8)<br>Encode+Decode: 1080p 30 fps + 720p 30 fps                |                                                                                                                                                                    |
| Analog Audio           | 3 Inputs &3 Outputs                                                                                                                        |                                                                                                                                                                    |
| Audio Codec            | EVS, EVRC, EVRC-B, EVRC-WB G.711 and G.729A/AB GSM-FR, GSM-EFR, and GSM-HR AMR-NB and AMR-WB MP3; AAC; HE AAC v1, v2; FLAC; APE; ALAC; AIF |                                                                                                                                                                    |
| Interfaces             |                                                                                                                                            |                                                                                                                                                                    |
| UART                   | *3                                                                                                                                         |                                                                                                                                                                    |
| USB                    | USB3.1/2.0/Type-C/OTG                                                                                                                      |                                                                                                                                                                    |
| UIM                    | *2                                                                                                                                         |                                                                                                                                                                    |
| GPIO                   | At Least 25*GPIO                                                                                                                           |                                                                                                                                                                    |
| SD Card                | ●                                                                                                                                          |                                                                                                                                                                    |
| SPI                    | *2                                                                                                                                         |                                                                                                                                                                    |
| I2C                    | *10                                                                                                                                        |                                                                                                                                                                    |
| ADC                    | *1                                                                                                                                         |                                                                                                                                                                    |
| Motor Drive            | *1                                                                                                                                         |                                                                                                                                                                    |
| WLED Sink              |                                                                                                                                            |                                                                                                                                                                    |
| Flash Drive            |                                                                                                                                            |                                                                                                                                                                    |
| Antenna                | Main&Diversity&GNSS&Wi-Fi/BT                                                                                                               |                                                                                                                                                                    |
| Software Features      |                                                                                                                                            |                                                                                                                                                                    |
| Operating System       | Android 11/12                                                                                                                              |                                                                                                                                                                    |
| USB Driver             | Microsoft Windows<br>2000/XP/Vista/Win7/Win8/Win10/Linux                                                                                   |                                                                                                                                                                    |
| Bluetooth              | BT5.0                                                                                                                                      |                                                                                                                                                                    |
| Dual LCD               |                                                                                                                                            |                                                                                                                                                                    |
| DSDS                   | ●                                                                                                                                          |                                                                                                                                                                    |
| Charge Function        | ●                                                                                                                                          |                                                                                                                                                                    |
| Firmware Upgrade       | USB/OTA/TF card                                                                                                                            |                                                                                                                                                                    |
| Certification          |                                                                                                                                            |                                                                                                                                                                    |
| Certification          | RoHS/REACH/CE(RED)/UKCA/FCC/IC/Jate&Telec                                                                                                  |                                                                                                                                                                    |
| Typical Applications   | POS, Security, Networking, Telematics,Retail                                                                                               |                                                                                                                                                                    |

○ : Optional \* : Under Developing/On-going/Planning

| LTE Module

| Technology            | LTE CAT4                                                                                                                                                                                                     |                                                                                                                |                                                                                                               |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Product               | A7608SA-H                                                                                                                                                                                                    | A7602E-H                                                                                                       | A7606E-H                                                                                                      |
| Picture               |                                                                                                                           |                             |                            |
| Form Factor           | LCC+LGA, 172PIN                                                                                                                                                                                              | LCC+LGA, 172PIN                                                                                                | LCC+LGA, 185PIN                                                                                               |
| Dimensions(mm)        | 30.0*30.0*2.5                                                                                                                                                                                                | 30.0*30.0*2.5                                                                                                  | 30.0*30.0*2.5                                                                                                 |
| Weight(g)             | 4.6±0.1                                                                                                                                                                                                      | 4.6±0.1                                                                                                        | 4.6±0.1                                                                                                       |
| Frequency Bands       | -A(North America(AT&T)<br>-V(North America (Verizon))<br><br>-E(Europe/Middle East/Africa)<br><br>-SA(New Zealand /Australia/South America)<br><br>~JC/JE(Japan)<br><br>-G(Global)<br><br>-NA(North America) | LTE-FDD: B1/B3/B5/B7/B8/B20/B28*<br>LTE-TDD: B38/B40/B41<br>UMTS/HSPA+ B1/B5*/B8<br>GSM/GPRS/EDGE:900/1800 MHz | LTE-FDD: B1/B3/B5/B7/B8/B20/B28*<br>LTE-TDD: B38/B40/B41<br>UMTS/HSPA+ B1/B5/B8<br>GSM/GPRS/EDGE:900/1800 MHz |
| GNSS                  | ○                                                                                                                                                                                                            | ○                                                                                                              | ○                                                                                                             |
| Temperature           | -40°C ~ +85°C                                                                                                                                                                                                | -40°C ~ +85°C                                                                                                  | -40°C ~ +85°C                                                                                                 |
| Electrical Features   |                                                                                                                                                                                                              |                                                                                                                |                                                                                                               |
| Supply Voltage Range  | 3.4V~ 4.2V                                                                                                                                                                                                   | 3.4V~ 4.2V                                                                                                     | 3.4V~ 4.2V                                                                                                    |
| Power Consumption(mA) | 2.8@GSM,BS_PA_MFRMS=2<br>3.3@WCDMA, DRX=9 2.5@LTE                                                                                                                                                            | 2.8@GSM,BS_PA_MFRMS=2<br>3.3@WCDMA, DRX=9 2.5@LTE                                                              | 2.9@GSM,BS_PA_MFRMS=2<br>2.7@WCDMA, DRX=9 3.0@LTE                                                             |
| Data Transfer         |                                                                                                                                                                                                              |                                                                                                                |                                                                                                               |
| LTE(Mbps)             | 150(DL)/50(UL)                                                                                                                                                                                               | 150(DL)/50(UL)                                                                                                 | 150(DL)/50(UL)                                                                                                |
| WCDMA/HSPA+(Mbps)     | 21(DL)/5.76(UL)                                                                                                                                                                                              | 21(DL)/5.76(UL)                                                                                                | 21(DL)/5.76(UL)                                                                                               |
| GPRS/EDGE(Kbps)       | 236.8(DL)/236.8(UL)                                                                                                                                                                                          | 236.8(DL)/236.8(UL)                                                                                            | 236.8(DL)/236.8(UL)                                                                                           |
| SMS                   | ●                                                                                                                                                                                                            | ●                                                                                                              | ●                                                                                                             |
| Software Features     |                                                                                                                                                                                                              |                                                                                                                |                                                                                                               |
| Protocol              | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS/<br>HTTP/HTTPS/DNS                                                                                                                                                       | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS/<br>HTTP/HTTPS/DNS                                                         | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS/<br>HTTP/HTTPS/DNS                                                        |
| TLS                   | ●                                                                                                                                                                                                            | ●                                                                                                              | ●                                                                                                             |
| File System           | ●                                                                                                                                                                                                            | ●                                                                                                              | ●                                                                                                             |
| Audio Record/Play     | ●                                                                                                                                                                                                            | ●                                                                                                              | ●                                                                                                             |
| TTS                   | ○                                                                                                                                                                                                            | ○                                                                                                              | ○                                                                                                             |
| DTMF                  | ●                                                                                                                                                                                                            | ●                                                                                                              | ●                                                                                                             |
| LBS                   | ●                                                                                                                                                                                                            | ●                                                                                                              | ●                                                                                                             |
| FOTA                  | ●                                                                                                                                                                                                            | ●                                                                                                              | ●                                                                                                             |
| Jamming Detection     |                                                                                                                                                                                                              |                                                                                                                |                                                                                                               |
| Android RIL           | Android 6.0/7.0/8.0/9.0/10.0/11.0/12.0                                                                                                                                                                       | Android 6.0/7.0/8.0/9.0/10.0/11.0/12.0                                                                         | Android 6.0/7.0/8.0/9.0/10.0/11.0/12.0                                                                        |
| USB Driver            | Microsoft Windows 7/8/10<br>Linux/Android                                                                                                                                                                    | Microsoft Windows 7/8/10<br>Linux/Android                                                                      | Microsoft Windows 7/8/10<br>Linux/Android                                                                     |
| WWAN                  | ●                                                                                                                                                                                                            | ●                                                                                                              | ●                                                                                                             |
| ECM                   | ●                                                                                                                                                                                                            | ●                                                                                                              | ●                                                                                                             |
| MBIM                  | ●                                                                                                                                                                                                            | ●                                                                                                              | ●                                                                                                             |
| NDIS                  |                                                                                                                                                                                                              |                                                                                                                |                                                                                                               |
| Embedded AT           | ○                                                                                                                                                                                                            | ○                                                                                                              | ○                                                                                                             |
| Firmware Upgrade      | USB/FOTA                                                                                                                                                                                                     | USB/FOTA                                                                                                       | USB/FOTA                                                                                                      |
| Interfaces            |                                                                                                                                                                                                              |                                                                                                                |                                                                                                               |
| SIM Card              | 1.8V/3.0V                                                                                                                                                                                                    | 1.8V/3.0V                                                                                                      | 1.8V/3.0V                                                                                                     |
| UART                  | ●                                                                                                                                                                                                            | ●                                                                                                              | ●                                                                                                             |
| USB                   | ●                                                                                                                                                                                                            | ●                                                                                                              | ●                                                                                                             |
| PCM                   | ○                                                                                                                                                                                                            | ○                                                                                                              | ○                                                                                                             |
| Mic/Reciever          | ●                                                                                                                                                                                                            | ●                                                                                                              | ●                                                                                                             |
| ADC                   | ●                                                                                                                                                                                                            | ●                                                                                                              | ●                                                                                                             |
| GPIO                  | ●                                                                                                                                                                                                            | ●                                                                                                              | ●                                                                                                             |
| SD Card               | ●                                                                                                                                                                                                            | ●                                                                                                              | ●                                                                                                             |
| SPI                   | ●                                                                                                                                                                                                            | ●                                                                                                              | ●                                                                                                             |
| I2C                   | ●                                                                                                                                                                                                            | ●                                                                                                              | ●                                                                                                             |
| Diversity Receiver    | ○                                                                                                                                                                                                            | ○                                                                                                              | ○                                                                                                             |
| Certification         |                                                                                                                                                                                                              |                                                                                                                |                                                                                                               |
| Certification         | SA:Anatel/FCC/RoHS/REACH                                                                                                                                                                                     | E:CE(RED)/RCM/RoHS/REACH/UKCA/<br>Deutsche Telekom                                                             | CE*/RoHS*/REACH*                                                                                              |
| Typical Applications  | Fleet Management,Telematics,Security,Tracking,Agriculture,Smart Meters,Router,Gateway                                                                                                                        |                                                                                                                |                                                                                                               |

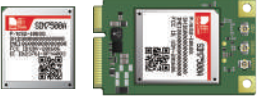
○ : Optional \* : Under Developing/On-going/Planning

| LTE Module

| Technology            | LTE CAT4                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                               |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product               | SIM7600X-H                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                               |
| Picture               |                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                               |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                               |
| Form Factor           | LCC, 87PIN                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                               |
| Dimensions(mm)        | 30.0*30.0*2.9                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                               |
| Weight(g)             | 5.7±0.1                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                               |
| Frequency Bands       | -A(North America(AT&T)                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                               |
|                       | -V(North America (Verizon))                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                               |
|                       | -E(Europe/Middle East/Africa/Korea /Thailand)                                                                                                                                                                                                                                                                                                                                                                                        | LTE-FDD: B1/B3/B5/B7/B8/B20<br>LTE-TDD: B38/B40/B41<br>WCDMA: B1/B5/B8 GSM: 900/1800MHz                                                                       |
|                       | -SA(New Zealand /Australia/South America)                                                                                                                                                                                                                                                                                                                                                                                            | LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B28/B66<br>LTE-TDD: B40 WCDMA: B1/B2/B5/B8<br>GSM: 850/900/1800/1900MHz                                                         |
|                       | -JC/JE(Japan)                                                                                                                                                                                                                                                                                                                                                                                                                        | JC: LTE-FDD: B1/B3/B8/B18/B19/B26                                                                                                                             |
|                       | -G(Global)                                                                                                                                                                                                                                                                                                                                                                                                                           | LTE-FDD:B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28/B66<br>LTE-TDD: B34/B38/B39/B40/B41<br>WCDMA: B1/B2/B4/B5/B6/B8/B19<br>GSM: 850/900/1800/1900MHz |
|                       | -NA(North America)                                                                                                                                                                                                                                                                                                                                                                                                                   | LTE-FDD: B2/B4/B5/B12/B13/B14/B25/B26/<br>B66/B71 LTE-TDD: B41                                                                                                |
| GNSS                  | ○                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| Temperature           | -40℃ ~ +85℃                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                               |
| Electrical Features   |                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                               |
| Supply Voltege Range  | 3.4V~ 4.2V                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                               |
| Power Consumption(mA) | 2.8@GSM,BS_PA_MFRMS=2<br>3.3@WCDMA, DRX=9 2.3@LTE                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| Data Transfer         |                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                               |
| LTE(Mbps)             | 150(DL)/50(UL)                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                               |
| WCDMA/HSPA+(Mbps)     | 42(DL)/5.76(UL)                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                               |
| GPRS/EDGE(Kbps)       | 296(DL)/236.8(UL)                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| SMS                   | ●                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| Software Features     |                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                               |
| Protocol              | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS/<br>HTTP/HTTPS/SMTP/SMTPS/DNS                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| TLS                   | ●                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| File System           | ●                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| Audio Record/Play     | ○                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| TTS                   | ○                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| DTMF                  | ○                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| LBS                   | ●                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| FOTA                  | ●                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| Jamming Detection     | ●                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| Android RIL           | Android6.0/7.0/8.0/9.0/10.0/11.0/12.0                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                               |
| USB Driver            | Microsoft Windows 7/8/10<br>Linux/Android                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                               |
| WWAN                  | ●                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| ECM                   | ●                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| MBIM                  | Win8/Win10                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                               |
| NDIS                  | Linux/Windows 7/8/10                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                               |
| Embedded AT           | ○                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| Firmware Upgrade      | USB/FOTA                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                               |
| Interfaces            |                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                               |
| SIM Card              | 1.8V/3.0V                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                               |
| UART                  | ●                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| USB                   | ●                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| PCM                   | ○                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| ADC                   | ●                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| GPIO                  | ●                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| SD Card               | ●                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| SPI                   | ○                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| I2C                   | ●                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| Diversity Receiver    | ●                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| Certification         |                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                               |
| Certification         | E: RoHS/REACH/NCC/IMDA/CE(RED)/UKCA/GCF/Deutsche Telekom/Vodafone*/NBTC<br>JC: RoHS/REACH/JATE/Telec/Docomo/KDDI/Softbank<br>SA: RoHS/REACH/NCC/RCM/CE(RED)/OCD(Anatel)/FCC<br>NA: RoHS/REACH/FCC/IC/GCF/PTCRB/AT&T/Verizon/T-Mobile/US Cellular/Rogers*<br>G: RoHS/REACH/CE(RED)/FCC/IC/CCC/SRRC/JATE/Telec/KC/IMDA/RCM/CASA/FAC*/Anatel/UKCA/NBTC/GCF/PTCRB<br>/Deutsche Telekom/AT&T/ Verizon/T-Mobile/US Cellular/Telstra/Orange |                                                                                                                                                               |
| Typical Applications  | Fleet Management,Telematics,Security,Tracking,Agriculture,Smart Meters                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                               |

○: Optional \* : Under Developing/On-going/Planning

| LTE Module

| Technology            | LTE CAT1                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product               | SIM7600X                                                                                                                                                                                                                                                                                                                                                                    | SIM7500X                                                                                                                                                                                                      |
| Picture               |                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                               |
|                       |                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                               |
| Form Factor           | LCC, 87PIN                                                                                                                                                                                                                                                                                                                                                                  | LGA, 56PIN                                                                                                                                                                                                    |
| Dimensions(mm)        | 30.0*30.0*2.9                                                                                                                                                                                                                                                                                                                                                               | 24.0*27.0*2.75                                                                                                                                                                                                |
| Weight(g)             | 5.7±0.1                                                                                                                                                                                                                                                                                                                                                                     | 4.0±0.1                                                                                                                                                                                                       |
| Frequency Bands       | -A(North America(AT&T)                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                               |
|                       | -V(North America (Verizon))                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                               |
|                       | -E(Europe/Middle East/Africa/Korea /Thailand)                                                                                                                                                                                                                                                                                                                               | LTE-FDD: B1/B3/B5/B7/B8/B20<br>LTE-TDD: B38/B40/B41<br>WCDMA: B1/B5/B8 GSM: 900/1800 MHz                                                                                                                      |
|                       | -SA(New Zealand /Australia/South America)                                                                                                                                                                                                                                                                                                                                   | LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B28/B66<br>LTE-TDD: B40 WCDMA: B1/B2/B5/B8<br>GSM: 850/900/1800/1900 MHz                                                                                                        |
|                       | -JC/JE(Japan)                                                                                                                                                                                                                                                                                                                                                               | JC: LTE-FDD: B1/B18/B19/B26<br>JE: LTE-FDD: B1/B3/B8                                                                                                                                                          |
|                       | -G(Global)                                                                                                                                                                                                                                                                                                                                                                  | LTE-FDD:B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/<br>B19/B20/B25/B26/B28/B66<br>LTE-TDD: B34/B38/B39/B40/B41<br>WCDMA: B1/B2/B4/B5/B6/B8/B19<br>GSM: 850/900/1800/1900MHz                                             |
|                       | -NA(North America)                                                                                                                                                                                                                                                                                                                                                          | LTE-FDD: B2/B4/B5/B12/B13/B14/B25/<br>B26/B66/B71 LTE-TDD: B41                                                                                                                                                |
| GNSS                  | ○                                                                                                                                                                                                                                                                                                                                                                           | ○                                                                                                                                                                                                             |
| Temperature           | -40℃ ~ +85℃                                                                                                                                                                                                                                                                                                                                                                 | -40℃ ~ +85℃                                                                                                                                                                                                   |
| Electrical Features   |                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                               |
| Supply Voltage Range  | 3.4V~ 4.2V                                                                                                                                                                                                                                                                                                                                                                  | 3.4V~ 4.2V                                                                                                                                                                                                    |
| Power Consumption(mA) | 2.8@GSM,BS_PA_MFRMS=2<br>3.3@WCDMA, DRX=9 2.3@LTE                                                                                                                                                                                                                                                                                                                           | 2.8@GSM,BS_PA_MFRMS=2<br>3.3@WCDMA, DRX=9 1.6@LTE                                                                                                                                                             |
| Data Transfer         |                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                               |
| LTE(Mbps)             | 10(DL)/5(UL)                                                                                                                                                                                                                                                                                                                                                                | 10(DL)/5(UL)                                                                                                                                                                                                  |
| WCDMA/HSPA+(Mbps)     | 42(DL)/5.76(UL)                                                                                                                                                                                                                                                                                                                                                             | 42(DL)/5.76(UL)                                                                                                                                                                                               |
| GPRS/EDGE(Kbps)       | 296(DL)/236.8(UL)                                                                                                                                                                                                                                                                                                                                                           | 296(DL)/236.8(UL)                                                                                                                                                                                             |
| SMS                   | ●                                                                                                                                                                                                                                                                                                                                                                           | ●                                                                                                                                                                                                             |
| Software Features     |                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                               |
| Protocol              | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS/<br>HTTP/HTTPS/DNS                                                                                                                                                                                                                                                                                                                      | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS/<br>HTTP/HTTPS/DNS                                                                                                                                                        |
| TLS                   | ●                                                                                                                                                                                                                                                                                                                                                                           | ●                                                                                                                                                                                                             |
| File System           | ●                                                                                                                                                                                                                                                                                                                                                                           | ●                                                                                                                                                                                                             |
| Audio Record/Play     | ○                                                                                                                                                                                                                                                                                                                                                                           | ○                                                                                                                                                                                                             |
| TTS                   | ○                                                                                                                                                                                                                                                                                                                                                                           | ○                                                                                                                                                                                                             |
| DTMF                  | ○                                                                                                                                                                                                                                                                                                                                                                           | ○                                                                                                                                                                                                             |
| LBS                   | ●                                                                                                                                                                                                                                                                                                                                                                           | ●                                                                                                                                                                                                             |
| FOTA                  | ●                                                                                                                                                                                                                                                                                                                                                                           | ●                                                                                                                                                                                                             |
| Jamming Detection     | ●                                                                                                                                                                                                                                                                                                                                                                           | ●                                                                                                                                                                                                             |
| Android RIL           | Android6.0/7.0/8.0/9.0/10.0                                                                                                                                                                                                                                                                                                                                                 | Android6.0/7.0/8.0/9.0/10.0                                                                                                                                                                                   |
| USB Driver            | Microsoft Windows 7/8/10<br>Linux/Android                                                                                                                                                                                                                                                                                                                                   | Microsoft Windows 7/8/10<br>Linux/Android                                                                                                                                                                     |
| WWAN                  | ●                                                                                                                                                                                                                                                                                                                                                                           | ●                                                                                                                                                                                                             |
| ECM                   | ●                                                                                                                                                                                                                                                                                                                                                                           | ●                                                                                                                                                                                                             |
| MBIM                  | Win8/Win10                                                                                                                                                                                                                                                                                                                                                                  | Win8/Win10                                                                                                                                                                                                    |
| NDIS                  | Linux/Windows 7/8/10                                                                                                                                                                                                                                                                                                                                                        | Linux/Windows 7/8/10                                                                                                                                                                                          |
| Embedded AT           |                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                               |
| Firmware Upgrade      | USB/FOTA                                                                                                                                                                                                                                                                                                                                                                    | USB/FOTA                                                                                                                                                                                                      |
| Interfaces            |                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                               |
| SIM Card              | 1.8V/3.0V                                                                                                                                                                                                                                                                                                                                                                   | 1.8V/3.0V                                                                                                                                                                                                     |
| UART                  | ●                                                                                                                                                                                                                                                                                                                                                                           | ●                                                                                                                                                                                                             |
| USB                   | ●                                                                                                                                                                                                                                                                                                                                                                           | ●                                                                                                                                                                                                             |
| PCM                   | ○                                                                                                                                                                                                                                                                                                                                                                           | ○                                                                                                                                                                                                             |
| ADC                   | ●                                                                                                                                                                                                                                                                                                                                                                           | ●                                                                                                                                                                                                             |
| GPIO                  | ●                                                                                                                                                                                                                                                                                                                                                                           | ●                                                                                                                                                                                                             |
| SD Card               | ●                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                               |
| SPI                   | ○                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                               |
| I2C                   | ●                                                                                                                                                                                                                                                                                                                                                                           | ●                                                                                                                                                                                                             |
| Diversity Receiver    | ●                                                                                                                                                                                                                                                                                                                                                                           | ●                                                                                                                                                                                                             |
| Certification         |                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                               |
| Certification         | E: RoHS/REACH/KC/IMDA/CE(RED)/UKCA/GCF/Deutsche Telekom<br>/Vodafone*/Orange<br>SA: RoHS/REACH/NCC/RCM/Telstra/CE(RED)/GCF/OCD(Anatel)<br>NA: RoHS/REACH/FCC/IC/GCF/PTCRB/AT&T/Verizon/T-Mobile/US Cellular<br>G: RoHS/REACH/CE(RED)/FCC/IC/CCC/SRRC/JATE/Telec/IMDA/RCM/CASA<br>/FAC*/Anatel/UKCA/GCF/PTCRB/Deutsche Telekom/ AT&T/Verizon/T-Mobile/<br>US Cellular/Orange | A: RoHS/REACH/FCC/PTCRB/AT&T/IC/Rogers<br>E: RoHS/REACH/SRRC/CE(RED)/Deutsche Telekom<br>JC: RoHS/REACH/Telec/JATE/DoCoMo/KDDI<br>JE:RoHS/REACH/Telec/JATE/Softbank<br>SA: RoHS/REACH/RCM/Telstra/CE(RED)/NCC |
| Typical Applications  | Fleet Management,Telematics,Security,Tracking,Agriculture,Smart Meters                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                               |

○:Optional \* : Under Developing/On-going/Planning

| LTE Module

| Technology            | LTE CAT1                                                                              |                                                                                   |                                                                                                                                                                                          |
|-----------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product               | A7676E                                                                                | A7602E                                                                            | SIM7672X(E NA G)                                                                                                                                                                         |
| Picture               |      |  |                    |
| Form Factor           | LCC+LGA, 124PIN                                                                       | LCC+LGA,119PIN                                                                    | LCC+LGA, 124PIN                                                                                                                                                                          |
| Dimensions(mm)        | 24.0*24.0*2.4                                                                         | 30.0*30.0*2.5                                                                     | 24.0*24.0*2.4                                                                                                                                                                            |
| Weight(g)             | 2.8±0.1                                                                               | 4.6±0.1                                                                           | 2.8±0.1                                                                                                                                                                                  |
| Frequency Bands       | -A(North America(AT&T)                                                                |                                                                                   |                                                                                                                                                                                          |
|                       | -V(North America (Verizon))                                                           |                                                                                   |                                                                                                                                                                                          |
|                       | -E(Europe/Middle East/Africa)                                                         | LTE-FDD:B1/B3/B8/B20/B31/B72<br>GSM/GPRS/EDGE:900/1800MHz                         | LTE-FDD:B1/B3/B5/B7/B8/B20<br>GSM/GPRS/EDGE:900/1800MHz                                                                                                                                  |
|                       | -SA(New Zealand /Australia/South America)                                             |                                                                                   |                                                                                                                                                                                          |
|                       | -JC/JE(Japan)                                                                         |                                                                                   |                                                                                                                                                                                          |
|                       | -G(Global)                                                                            |                                                                                   | LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/<br>B14*/B18/B19/B20/B25/B26/B28/B66/B71*<br>LTE-TDD: B34/B38/B39/B40/B41                                                                          |
|                       | -NA(North America)                                                                    |                                                                                   | LTE-FDD: B2/B4/B5/B12/B13/B66                                                                                                                                                            |
| GNSS                  |                                                                                       | ○                                                                                 | ○                                                                                                                                                                                        |
| Temperature           | -40℃ ~ +85℃                                                                           | -40℃ ~ +85℃                                                                       | -40℃ ~ +85℃                                                                                                                                                                              |
| Electrical Features   |                                                                                       |                                                                                   |                                                                                                                                                                                          |
| Supply Voltge Range   | 3.4V~ 4.2V                                                                            | 3.4V~ 4.2V                                                                        | 3.4V~ 4.2V                                                                                                                                                                               |
| Power Consumption(mA) | 2.5@GSM,BS_PA_MFRMS=2<br>1.5@LTE                                                      | 2.5@GSM,BS_PA_MFRMS=2<br>1.5@LTE                                                  | 1.2@LTE                                                                                                                                                                                  |
| Data Transfer         |                                                                                       |                                                                                   |                                                                                                                                                                                          |
| LTE(Mbps)             | 10(DL)/5(UL)                                                                          | 10(DL)/5(UL)                                                                      | 10(DL)/5(UL)                                                                                                                                                                             |
| WCDMA/HSPA+(Mbps)     |                                                                                       |                                                                                   |                                                                                                                                                                                          |
| GPRS/EDGE(Kbps)       | 236.8(DL)/236.8(UL)                                                                   | 236.8(DL)/236.8(UL)                                                               |                                                                                                                                                                                          |
| SMS                   | ●                                                                                     | ●                                                                                 |                                                                                                                                                                                          |
| Software Features     |                                                                                       |                                                                                   |                                                                                                                                                                                          |
| Protocol              | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS/<br>HTTP/HTTPS/DNS                                | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS /HTTP<br>HTTP/HTTPS/DNS                       | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS /HTTP/<br>HTTPS/DNS                                                                                                                                  |
| TLS                   | ●                                                                                     | ●                                                                                 | ●                                                                                                                                                                                        |
| File System           | ●                                                                                     | ●                                                                                 | ●                                                                                                                                                                                        |
| Audio Record/Play     | ○                                                                                     | ○                                                                                 |                                                                                                                                                                                          |
| TTS                   | ○                                                                                     | ○                                                                                 |                                                                                                                                                                                          |
| DTMF                  | ○                                                                                     | ○                                                                                 |                                                                                                                                                                                          |
| LBS                   | ●                                                                                     | ●                                                                                 | ●                                                                                                                                                                                        |
| FOTA                  | ●                                                                                     | ●                                                                                 | ●                                                                                                                                                                                        |
| Jamming Detection     |                                                                                       | ○                                                                                 | ●                                                                                                                                                                                        |
| Android RIL           | Android6.0/7.0/8.0/9.0/10.0                                                           | Android6.0/7.0/8.0/9.0/10.0                                                       | Android6.0/7.0/8.0/9.0/10.0                                                                                                                                                              |
| USB Driver            | Microsoft Windows 7/8/10<br>Linux/Android                                             | Microsoft Windows 7/8/10<br>Linux/Android                                         | Microsoft Windows 7/8/10<br>Linux/Android                                                                                                                                                |
| WWAN                  | ●                                                                                     | ●                                                                                 | ●                                                                                                                                                                                        |
| ECM                   | ●                                                                                     | ●                                                                                 | ●                                                                                                                                                                                        |
| MBIM                  |                                                                                       |                                                                                   |                                                                                                                                                                                          |
| NDIS                  |                                                                                       |                                                                                   |                                                                                                                                                                                          |
| Embedded AT           | ○                                                                                     | ○                                                                                 | ○                                                                                                                                                                                        |
| Firmware Upgrade      | USB/FOTA                                                                              | USB/FOTA                                                                          | USB/FOTA                                                                                                                                                                                 |
| Interfaces            |                                                                                       |                                                                                   |                                                                                                                                                                                          |
| SIM Card              | 1.8V/3.0V                                                                             | 1.8V/3.0V                                                                         | 1.8V/3.0V                                                                                                                                                                                |
| UART                  | ●                                                                                     | ●                                                                                 | ●                                                                                                                                                                                        |
| USB                   | ●                                                                                     | ●                                                                                 | ●                                                                                                                                                                                        |
| PCM                   | ○                                                                                     | ○                                                                                 | ●                                                                                                                                                                                        |
| Mic/Reciever          | ●                                                                                     | ●                                                                                 |                                                                                                                                                                                          |
| ADC                   | ●                                                                                     | ●                                                                                 | ●                                                                                                                                                                                        |
| GPIO                  | ●                                                                                     | ●                                                                                 | ●                                                                                                                                                                                        |
| SD Card               |                                                                                       |                                                                                   |                                                                                                                                                                                          |
| SPI                   | ●                                                                                     | ●                                                                                 |                                                                                                                                                                                          |
| I2C                   | ●                                                                                     | ●                                                                                 | ●                                                                                                                                                                                        |
| Diversity Receiver    |                                                                                       |                                                                                   |                                                                                                                                                                                          |
| Certification         |                                                                                       |                                                                                   |                                                                                                                                                                                          |
| Certification         | E:RoHS/REACH/CE(RED)                                                                  | E: RoHS/REACH/CE(RED)/Deutsche Telekom                                            | E:RoHS/REACH/CE(RED)/RCM*/GCF*<br>NA:RoHS/REACH/FCC/CE(RED)/GCF/IC/PTCRB<br>G:CCC*/CTA*/SRRC*/FCC/CE(RED)/RoSH/REACH/<br>GCF/PTCRB/RCM*/IC/TELEC/JATE/NCC*/KC/<br>AT&T/Verizon*/T-Mobile |
| Typical Applications  | Fleet Management,Telematics,Security,Tracking,Agriculture,Smart Meters,Router,Gateway |                                                                                   |                                                                                                                                                                                          |

○ : Optional   \* : Under Developing/On-going/Planning

| LTE Module

| Technology            | LTE CAT1                                                                                                                                                                |                                                                                                                                        |                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product               | A7672X(E S SA G)                                                                                                                                                        | A7682E                                                                                                                                 | A7683E                                                                              |
| Picture               |   |                                                     |  |
| Form Factor           | LCC+LGA, 124PIN                                                                                                                                                         | LGA, 85PIN                                                                                                                             | LGA, 85PIN                                                                          |
| Dimensions(mm)        | 24.0*24.0*2.4                                                                                                                                                           | 19.6*19.6*2.4                                                                                                                          | 15.6*17.6*2.4                                                                       |
| Weight(g)             | 2.8±0.1                                                                                                                                                                 | 1.9±0.1                                                                                                                                | 1.4±0.1                                                                             |
| Frequency Bands       | -A(North America(AT&T)                                                                                                                                                  |                                                                                                                                        |                                                                                     |
|                       | -V(North America (Verizon))                                                                                                                                             |                                                                                                                                        |                                                                                     |
|                       | -E(Europe/Middle East/Africa)                                                                                                                                           | LTE-FDD: B1/B3/B5/B7/B8/B20/B28*<br>GSM/GPRS/EDGE: 900/1800 MHz                                                                        | LTE-FDD: B1/B3/B5/B7/B8/B20<br>GSM/GPRS/EDGE: 900/1800 MHz                          |
|                       | -SA(New Zealand /Australia/South America)                                                                                                                               | LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B28/B66<br>GSM: 850/900/1800/1900 MHz                                                                    |                                                                                     |
|                       | -S(Vitnam/India)                                                                                                                                                        | LTE-FDD: B1/B3/B5/B8/<br>LTE-TDD: B34/B38/B39/B40/B41<br>GSM: 900/1800 MHz                                                             |                                                                                     |
|                       | -JC/JE(Japan)                                                                                                                                                           |                                                                                                                                        |                                                                                     |
|                       | -G(Global)                                                                                                                                                              | LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/<br>B17/B18/B19/B20/B25/B26/B28/B66<br>LTE-TDD: B34/B38/B39/B40/B41<br>GSM: 850/900/1800/1900MHz |                                                                                     |
| GNSS                  | ○                                                                                                                                                                       |                                                                                                                                        | ●                                                                                   |
| Temperature           | -40℃ ~ +85℃                                                                                                                                                             | -40℃ ~ +85℃                                                                                                                            | -40℃ ~ +85℃                                                                         |
| Electrical Features   |                                                                                                                                                                         |                                                                                                                                        |                                                                                     |
| Supply Voltge Range   | 3.4V~ 4.2V                                                                                                                                                              | 3.4V~ 4.2V                                                                                                                             | 3.4V~ 4.2V                                                                          |
| Power Consumption(mA) | 2.5@GSM,BS_PA_MFRMS=2<br>1.5@LTE                                                                                                                                        | 2.5@GSM,BS_PA_MFRMS=2<br>1.5@LTE                                                                                                       | 1.5@LTE                                                                             |
| Data Transfer         |                                                                                                                                                                         |                                                                                                                                        |                                                                                     |
| LTE(Mbps)             | 10(DL)/5(UL)                                                                                                                                                            | 10(DL)/5(UL)                                                                                                                           | 10(DL)/5(UL)                                                                        |
| WCDMA/HSPA+(Mbps)     |                                                                                                                                                                         |                                                                                                                                        |                                                                                     |
| GPRS/EDGE(Kbps)       | 236.8(DL)/236.8(UL)                                                                                                                                                     | 236.8(DL)/236.8(UL)                                                                                                                    |                                                                                     |
| SMS                   | ●                                                                                                                                                                       | ●                                                                                                                                      | ●                                                                                   |
| Software Features     |                                                                                                                                                                         |                                                                                                                                        |                                                                                     |
| Protocol              | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS/<br>HTTP/HTTPS/DNS                                                                                                                  | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS /<br>HTTP/HTTPS/DNS                                                                                | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS /HTTP/<br>HTTPS/DNS                             |
| TLS                   | ●                                                                                                                                                                       | ●                                                                                                                                      | ●                                                                                   |
| File System           | ●                                                                                                                                                                       | ●                                                                                                                                      | ●                                                                                   |
| Audio Record/Play     | ○                                                                                                                                                                       | ○                                                                                                                                      | ○                                                                                   |
| TTS                   | ○                                                                                                                                                                       | ○                                                                                                                                      | ○                                                                                   |
| DTMF                  | ○                                                                                                                                                                       | ○                                                                                                                                      | ○                                                                                   |
| LBS                   | ●                                                                                                                                                                       | ●                                                                                                                                      | ●                                                                                   |
| FOTA                  | ●                                                                                                                                                                       | ●                                                                                                                                      | ●                                                                                   |
| Jamming Detection     | ○                                                                                                                                                                       | ○                                                                                                                                      | ○                                                                                   |
| Android RIL           | Android6.0/7.0/8.0/9.0/10.0                                                                                                                                             | Android6.0/7.0/8.0/9.0/10.0                                                                                                            | Android6.0/7.0/8.0/9.0/10.0                                                         |
| USB Driver            | Microsoft Windows 7/8/10<br>Linux/Android                                                                                                                               | Microsoft Windows 7/8/10<br>Linux/Android                                                                                              | Microsoft Windows 7/8/10<br>Linux/Android                                           |
| WWAN                  | ●                                                                                                                                                                       | ●                                                                                                                                      | ●                                                                                   |
| ECM                   | ●                                                                                                                                                                       | ●                                                                                                                                      | ●                                                                                   |
| MBIM                  |                                                                                                                                                                         |                                                                                                                                        |                                                                                     |
| NDIS                  |                                                                                                                                                                         |                                                                                                                                        |                                                                                     |
| Embedded AT           | ○                                                                                                                                                                       | ○                                                                                                                                      | ○                                                                                   |
| Firmware Upgrade      | USB/FOTA                                                                                                                                                                | USB/FOTA                                                                                                                               | USB/FOTA                                                                            |
| Interfaces            |                                                                                                                                                                         |                                                                                                                                        |                                                                                     |
| SIM Card              | 1.8V/3.0V                                                                                                                                                               | 1.8V/3.0V                                                                                                                              | 1.8V/3.0V                                                                           |
| UART                  | ●                                                                                                                                                                       | ●                                                                                                                                      | ●                                                                                   |
| USB                   | ●                                                                                                                                                                       | ●                                                                                                                                      | ●                                                                                   |
| PCM                   | ○                                                                                                                                                                       | ○                                                                                                                                      | ○                                                                                   |
| Mic/Reciever          | ●                                                                                                                                                                       | ●                                                                                                                                      | ●                                                                                   |
| ADC                   | ●                                                                                                                                                                       | ●                                                                                                                                      | ●                                                                                   |
| GPIO                  | ●                                                                                                                                                                       | ●                                                                                                                                      | ●                                                                                   |
| SD Card               |                                                                                                                                                                         |                                                                                                                                        |                                                                                     |
| SPI                   | ●                                                                                                                                                                       |                                                                                                                                        |                                                                                     |
| I2C                   | ●                                                                                                                                                                       | ●                                                                                                                                      | ●                                                                                   |
| Diversity Receiver    |                                                                                                                                                                         |                                                                                                                                        |                                                                                     |
| Certification         |                                                                                                                                                                         |                                                                                                                                        |                                                                                     |
| Certification         | E:RoHS/REACH/CE(RED)<br>SA:RoHS/REACH/RCM/CE(RED)/FCC/Anatel*<br>G:CCC*/CTA*/SRRC*/FCC/CE(RED)/<br>RoSH/REACH                                                           | RoHS/REACH/CE(RED)                                                                                                                     | RoHS/REACH/CE(RED)/Anatel*                                                          |
| Typical Applications  | Fleet Management,Telematics,Security,Tracking,Agriculture,Smart Meters,Router,Gateway                                                                                   |                                                                                                                                        |                                                                                     |

○ : Optional   \* : Under Developing/On-going/Planning

## | LTE Module

| Technology            |                                               | LTE CAT1                                                                          |  |  |
|-----------------------|-----------------------------------------------|-----------------------------------------------------------------------------------|--|--|
| Product               |                                               | A7663E                                                                            |  |  |
| Picture               |                                               |  |  |  |
| Form Factor           |                                               | LGA, 85PIN                                                                        |  |  |
| Dimensions(mm)        |                                               | 19.6*19.6*2.4                                                                     |  |  |
| Weight(g)             |                                               | 1.9±0.1                                                                           |  |  |
| Frequency Bands       | -A(North America(AT&T)                        |                                                                                   |  |  |
|                       | -V(North America (Verizon))                   |                                                                                   |  |  |
|                       | -E(Europe/Middle East/Africa/Korea /Thailand) | LTE-FDD: B1/B3/B5/B7/B8/B20/B28                                                   |  |  |
|                       | -SA(New Zealand /Australia/South America)     |                                                                                   |  |  |
|                       | -JC/JE(Japan)                                 |                                                                                   |  |  |
|                       | -G(Global)                                    |                                                                                   |  |  |
|                       | -NA(North America)                            |                                                                                   |  |  |
| GNSS                  | ●                                             |                                                                                   |  |  |
| Temperature           | -40℃ ~ +85℃                                   |                                                                                   |  |  |
| Electrical Features   |                                               |                                                                                   |  |  |
| Supply Voltge Range   |                                               | 3.4V~ 4.2V                                                                        |  |  |
| Power Consumption(mA) |                                               | 1.5@LTE                                                                           |  |  |
| Data Transfer         |                                               |                                                                                   |  |  |
| LTE(Mbps)             |                                               | 10(DL)/5(UL)                                                                      |  |  |
| WCDMA/HSPA+(Mbps)     |                                               |                                                                                   |  |  |
| GPRS/EDGE(Kbps)       |                                               |                                                                                   |  |  |
| SMS                   |                                               | ●                                                                                 |  |  |
| Software Features     |                                               |                                                                                   |  |  |
| Protocol              |                                               | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS /HTTP/HTTPS/DNS                               |  |  |
| TLS                   |                                               | ●                                                                                 |  |  |
| File System           |                                               | ●                                                                                 |  |  |
| Audio Record/Play     |                                               | ○                                                                                 |  |  |
| TTS                   |                                               | ○                                                                                 |  |  |
| DTMF                  |                                               | ○                                                                                 |  |  |
| LBS                   |                                               | ●                                                                                 |  |  |
| FOTA                  |                                               | ●                                                                                 |  |  |
| Jamming Detection     |                                               | ○                                                                                 |  |  |
| Android RIL           |                                               | Android6.0/7.0/8.0/9.0/10.0                                                       |  |  |
| USB Driver            |                                               | Microsoft Windows 7/8/10<br>Linux/Android                                         |  |  |
| WWAN                  |                                               | ●                                                                                 |  |  |
| ECM                   |                                               | ●                                                                                 |  |  |
| MBIM                  |                                               |                                                                                   |  |  |
| NDIS                  |                                               |                                                                                   |  |  |
| Embedded AT           |                                               | ○                                                                                 |  |  |
| Firmware Upgrade      |                                               | USB/FOTA                                                                          |  |  |
| Interfaces            |                                               |                                                                                   |  |  |
| SIM Card              |                                               | 1.8V/3.0V                                                                         |  |  |
| UART                  |                                               | ●                                                                                 |  |  |
| USB                   |                                               | ●                                                                                 |  |  |
| PCM                   |                                               | ○                                                                                 |  |  |
| ADC                   |                                               | ●                                                                                 |  |  |
| GPIO                  |                                               | ●                                                                                 |  |  |
| SD Card               |                                               |                                                                                   |  |  |
| SPI                   |                                               |                                                                                   |  |  |
| I2C                   |                                               | ●                                                                                 |  |  |
| Diversity Receiver    |                                               |                                                                                   |  |  |
| Certification         |                                               |                                                                                   |  |  |

Certification RoHS/REACH/CE(RED)/Anatel\*

|                      |                                                                             |
|----------------------|-----------------------------------------------------------------------------|
| Typical Applications | Fleet Management, Telematics, Security, Tracking, Agriculture, Smart Meters |
|----------------------|-----------------------------------------------------------------------------|

○ : Optional   \* : Under Developing/On-going/Planning

## | LTE Module

| Technology            |  | LTE CAT1                                                                            |  |
|-----------------------|--|-------------------------------------------------------------------------------------|--|
| Product               |  | A7673 (E/SA)                                                                        |  |
| Picture               |  |  |  |
| Form Factor           |  | LCC+LGA, 134PIN                                                                     |  |
| Dimensions(mm)        |  | 24.0*24.0*2.4                                                                       |  |
| Weight(g)             |  | 2.8±0.1                                                                             |  |
| Frequency Bands       |  | -A(North America(AT&T))                                                             |  |
|                       |  | -V(North America (Verizon))                                                         |  |
|                       |  | -E(Europe/Middle East/Africa/Korea /Thailand)                                       |  |
|                       |  | -SA(New Zealand /Australia/South America)                                           |  |
|                       |  | -JC/JE(Japan)                                                                       |  |
|                       |  | -G(Global)                                                                          |  |
|                       |  | -NA(North America)                                                                  |  |
| GNSS                  |  | ○                                                                                   |  |
| Temperature           |  | -40℃ ~ +85℃                                                                         |  |
| Electrical Features   |  |                                                                                     |  |
| Supply Voltage Range  |  | 3.4V~ 4.2V                                                                          |  |
| Power Consumption(mA) |  | 1.5@LTE                                                                             |  |
| Data Transfer         |  |                                                                                     |  |
| LTE(Mbps)             |  | 10(DL)/5(UL)                                                                        |  |
| WCDMA/HSPA+(Mbps)     |  |                                                                                     |  |
| GPRS/EDGE(Kbps)       |  |                                                                                     |  |
| SMS                   |  | ●                                                                                   |  |
| Software Features     |  |                                                                                     |  |
| Protocol              |  | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS /HTTP/HTTPS/DNS                                 |  |
| TLS                   |  | ●                                                                                   |  |
| File System           |  | ●                                                                                   |  |
| Audio Record/Play     |  | ○                                                                                   |  |
| TTS                   |  | ●                                                                                   |  |
| DTMF                  |  | ●                                                                                   |  |
| LBS                   |  | ●                                                                                   |  |
| FOTA                  |  | ●                                                                                   |  |
| Jamming Detection     |  | ○                                                                                   |  |
| Android RIL           |  | Android6.0/7.0/8.0/9.0/10.0                                                         |  |
| USB Driver            |  | Microsoft Windows 7/8/10<br>Linux/Android                                           |  |
| WWAN                  |  | ●                                                                                   |  |
| ECM                   |  | ●                                                                                   |  |
| MBIM                  |  |                                                                                     |  |
| NDIS                  |  |                                                                                     |  |
| Embedded AT           |  | ○                                                                                   |  |
| Firmware Upgrade      |  | USB/FOTA                                                                            |  |
| Interfaces            |  |                                                                                     |  |
| SIM Card              |  | 1.8V/3.0V                                                                           |  |
| UART                  |  | ●                                                                                   |  |
| USB                   |  | ●                                                                                   |  |
| PCM                   |  | ○                                                                                   |  |
| ADC                   |  | ●                                                                                   |  |
| GPIO                  |  | ●                                                                                   |  |
| SD Card               |  |                                                                                     |  |
| SPI                   |  |                                                                                     |  |
| I2C                   |  | ●                                                                                   |  |
| Diversity Receiver    |  |                                                                                     |  |
| Certification         |  |                                                                                     |  |

Certification RoHS/REACH/CE(RED)/Anatel\*

|                      |                                                                             |
|----------------------|-----------------------------------------------------------------------------|
| Typical Applications | Fleet Management, Telematics, Security, Tracking, Agriculture, Smart Meters |
|----------------------|-----------------------------------------------------------------------------|

○ : Optional   \* : Under Developing/On-going/Planning

| 3G Module

| Technology            | 3G                                                                                    |
|-----------------------|---------------------------------------------------------------------------------------|
| Product               | A5360G                                                                                |
| Picture               |      |
| Form Factor           | LCC+LGA, 163PIN                                                                       |
| Dimensions(mm)        | 30.0*30.0*2.5                                                                         |
| Weight(g)             | 4.6±0.1                                                                               |
| Frequency Bands       | -A(North America(AT&T)                                                                |
|                       | -V(North America (Verizon))                                                           |
|                       | -E(Europe/Middle East/Africa/Korea /Thailand)                                         |
|                       | -SA(New Zealand /Australia/South America)                                             |
|                       | -JC/JE(Japan)                                                                         |
|                       | -G(Global)                                                                            |
|                       | WCDMA: B1/B2/B5/B8<br>GSM: 850/900/1800/1900MHz                                       |
|                       | -NA(North America)                                                                    |
| GNSS                  |                                                                                       |
| Temperature           | -40°C ~ +85°C                                                                         |
| Electrical Features   |                                                                                       |
| Supply Voltge Range   | 3.4V~ 4.2V                                                                            |
| Power Consumption(mA) | 2.8@GSM,BS_PA_MFRMS=2<br>3.3@WCDMA, DRX=9                                             |
| Data Transfer         |                                                                                       |
| WCDMA/HSPA+(Mbps)     | 21(DL)/5.76(UL)                                                                       |
| GPRS/EDGE(Kbps)       | 236.8(DL)/236.8(UL)                                                                   |
| SMS                   | ●                                                                                     |
| Software Features     |                                                                                       |
| Protocol              | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS/<br>HTTP/HTTPS/DNS                                |
| TLS                   | ●                                                                                     |
| File System           | ●                                                                                     |
| Audio Record/Play     | ●                                                                                     |
| TTS                   | ○                                                                                     |
| DTMF                  | ●                                                                                     |
| LBS                   | ●                                                                                     |
| FOTA                  | ●                                                                                     |
| Jamming Detection     |                                                                                       |
| Android RIL           | Android6.0/7.0/8.0/9.0/10.0                                                           |
| USB Driver            | Microsoft Windows 7/8/10<br>Linux/Android                                             |
| WWAN                  | ●                                                                                     |
| ECM                   | ●                                                                                     |
| MBIM                  | ●                                                                                     |
| NDIS                  |                                                                                       |
| Embedded AT           |                                                                                       |
| Firmware Upgrade      | USB/FOTA                                                                              |
| Interfaces            |                                                                                       |
| SIM Card              | 1.8V/3.0V                                                                             |
| UART                  | ●                                                                                     |
| USB                   | ●                                                                                     |
| PCM                   | ○                                                                                     |
| ADC                   | ●                                                                                     |
| GPIO                  | ●                                                                                     |
| SD Card               | ●                                                                                     |
| SPI                   | ●                                                                                     |
| I2C                   | ●                                                                                     |
| Diversity Receiver    |                                                                                       |
| Certification         |                                                                                       |
| Certification         |                                                                                       |
| Typical Applications  | Fleet Management,Telematics,Security,Tracking,Agriculture,Smart Meters,Router,Gateway |

○ : Optional   \* : Under Developing/On-going/Planning

| GSM/GPRS Module

| Technology               | GSM/GPRS                                                                                                                |                                                                                     |                                                                                     |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product                  | SIM800C                                                                                                                 | SIM800F                                                                             | SIM800C-DS                                                                          |
| Picture                  |                                      |  |  |
| Form Factor              | LCC, 42PIN                                                                                                              | LCC, 68PIN                                                                          | LCC& LGA, 77PIN                                                                     |
| Dimensions(mm)           | 17.6*15.7*2.3                                                                                                           | 24.0*24.0*3.0                                                                       | 17.6*15.7*2.3                                                                       |
| Weight(g)                | 1.3±0.1                                                                                                                 | 3.1±0.1                                                                             | 1.3±0.1                                                                             |
| Frequency Bands          | GSM:<br>850/900/1800/1900MHz                                                                                            | GSM:<br>850/900/1800/1900MHz                                                        | GSM:<br>850/900/1800/1900MHz                                                        |
| Bluetooth                | BT 3.0                                                                                                                  | BT 3.0                                                                              | BT 3.0                                                                              |
| GNSS                     |                                                                                                                         |                                                                                     |                                                                                     |
| Temperature              | -40°C~+85°C                                                                                                             | -40°C~+85°C                                                                         | -40°C~+85°C                                                                         |
| Electrical Features      |                                                                                                                         |                                                                                     |                                                                                     |
| Supply Voltage Range     | 3.4V~4.4V                                                                                                               | 3.4V~4.4V                                                                           | 3.4V~4.4V                                                                           |
| Power Consumption(mA)    | 1.50@GSM, DRX=2<br>0.90@GSM, DRX=9                                                                                      | 1.30@GSM, DRX=2<br>0.85@GSM, DRX=9                                                  | 1.60@GSM, DRX=2<br>0.93@GSM, DRX=9                                                  |
| Data Transfer            |                                                                                                                         |                                                                                     |                                                                                     |
| GPRS Slot                | Class 10/12                                                                                                             | Class 10/12                                                                         | Class 10/12                                                                         |
| Data Rate(kbps)          | 85.6 (DL&UL)                                                                                                            | 85.6 (DL&UL)                                                                        | 85.6 (DL&UL)                                                                        |
| Software Features        |                                                                                                                         |                                                                                     |                                                                                     |
| Protocols                | TCP/UDP/HTTP/FTP/<br>POP3/SMTP/PPP                                                                                      | TCP/UDP/HTTP/FTP/<br>POP3/SMTP/PPP                                                  | TCP/UDP/HTTP/FTP/<br>POP3/SMTP/PPP                                                  |
| MMS                      | ●                                                                                                                       | ●                                                                                   | ●                                                                                   |
| TLS                      | ○                                                                                                                       | ○                                                                                   | ○                                                                                   |
| Audio Record/Play        | ●                                                                                                                       | ●                                                                                   | ●                                                                                   |
| TTS                      | ○                                                                                                                       | ○                                                                                   | ○                                                                                   |
| DTMF                     | ●                                                                                                                       | ●                                                                                   | ●                                                                                   |
| LBS                      | ○                                                                                                                       | ○                                                                                   | ○                                                                                   |
| Jamming Detection        | ●                                                                                                                       | ●                                                                                   | ●                                                                                   |
| Network Scanning         | ●                                                                                                                       | ●                                                                                   | ●                                                                                   |
| MUX                      | ●                                                                                                                       | ●                                                                                   | ●                                                                                   |
| Embedded AT              | ○                                                                                                                       | ○                                                                                   | ○                                                                                   |
| Firmware Upgrade         | USB/UART                                                                                                                | USB/UART                                                                            | USB/UART                                                                            |
| Specifications for Voice |                                                                                                                         |                                                                                     |                                                                                     |
| Speech Codec Modes       | AMR/HR/FR/EFR                                                                                                           | AMR/HR/FR/EFR                                                                       | AMR/HR/FR/EFR                                                                       |
| Echo Arithmetic          | AEC/EES                                                                                                                 | AEC/EES                                                                             | AEC/EES                                                                             |
| Interfaces               |                                                                                                                         |                                                                                     |                                                                                     |
| UART                     | ●                                                                                                                       | ●                                                                                   | ●                                                                                   |
| USB                      | ●                                                                                                                       | ●                                                                                   | ●                                                                                   |
| SIM Card                 | 1.8V/3.0V                                                                                                               | 1.8V/3.0V                                                                           | 1.8V/3.0V                                                                           |
| PCM                      |                                                                                                                         | ○                                                                                   | ○                                                                                   |
| Analog Audio             | 1 Input&1 Output                                                                                                        | 1 Input&1 Output                                                                    | 1 Input&1 Output                                                                    |
| ADC                      | ●                                                                                                                       | ●                                                                                   | ●                                                                                   |
| GPIO                     | At Least  2*GPIO                                                                                                        | At Least  3*GPIO                                                                    | At Least  4*GPIO                                                                    |
| SD                       | ●                                                                                                                       | ●                                                                                   | ●                                                                                   |
| SPI                      |                                                                                                                         | ○                                                                                   | ○                                                                                   |
| I2C                      |                                                                                                                         | ●                                                                                   | ●                                                                                   |
| Certification            |                                                                                                                         |                                                                                     |                                                                                     |
| Certification            | RoHS/REACH/CCC/CTA/SRRC/Mobile/<br>Unicom/RCM/CE(RED)/GCF/BQB(Bluetooth)/<br>TIM/Deutsche Telekom/ICASA/FCC/OCD(Anatel) | RoHS/REACH/CE(RED)/GCF/Orange/ICASA/FCC                                             | CE(RED)/RoHS/REACH                                                                  |
| Typical Applications     | Telematics,Fleet Management,Smart Meters,Security,RMAC                                                                  |                                                                                     |                                                                                     |

○ : Optional   \* : Under Developing/On-going/Planning

| GSM/GPRS Module

| Technology               | GSM/GPRS                                                                          |                                                                                    |
|--------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Product                  | SIM868                                                                            | SIM868E                                                                            |
| Picture                  |  |  |
| Form Factor              | LCC&LGA,77PIN                                                                     | LCC&LGA,77PIN                                                                      |
| Dimensions(mm)           | 17.6*15.7*2.3                                                                     | 17.6*15.7*2.3                                                                      |
| Weight(g)                | 1.5±0.1                                                                           | 1.5±0.1                                                                            |
| Frequency Bands          | GSM:<br>850/900/1800/1900MHz                                                      | GSM:<br>850/900/1800/1900MHz                                                       |
| Bluetooth                | BT 3.0                                                                            | BT 3.0&4.0                                                                         |
| GNSS                     | BeiDou/GPS/GLONASS                                                                | BeiDou/GPS/GLONASS                                                                 |
| Temperature              | -40℃~-+85℃                                                                        | -40℃ ~ +85℃                                                                        |
| Electrical Features      |                                                                                   |                                                                                    |
| Supply Voltge Range      | 3.4V~4.4V                                                                         | 3.4V~4.4V                                                                          |
| Power Consumption(mA)    | 1.42@GSM, DRX=2<br>0.86@GSM, DRX=9                                                | 1.42@GSM, DRX=2<br>0.86@GSM, DRX=9                                                 |
| Data Transfer            |                                                                                   |                                                                                    |
| GPRS Slot                | Class 10/12                                                                       | Class 10/12                                                                        |
| Data Rate(kbps)          | 85.6 (DL&UL)                                                                      | 85.6 (DL&UL)                                                                       |
| Software Features        |                                                                                   |                                                                                    |
| Protocols                | TCP/UDP/HTTP/FTP/<br>POP3/SMTP/PPP                                                | TCP/UDP/HTTP/FTP/<br>POP3/SMTP/PPP                                                 |
| MMS                      | ●                                                                                 | ●                                                                                  |
| TLS                      | ○                                                                                 | ○                                                                                  |
| Audio Record/Play        | ●                                                                                 | ●                                                                                  |
| TTS                      | ○                                                                                 | ○                                                                                  |
| DTMF                     | ●                                                                                 | ●                                                                                  |
| LBS                      | ○                                                                                 | ○                                                                                  |
| Jamming Detection        | ●                                                                                 | ●                                                                                  |
| Network Scanning         | ●                                                                                 | ●                                                                                  |
| MUX                      | ●                                                                                 | ●                                                                                  |
| Embedded AT              | ○                                                                                 | ○                                                                                  |
| Firmware Upgrade         | USB/UART                                                                          | USB/UART                                                                           |
| Specifications for Voice |                                                                                   |                                                                                    |
| Speech Codec Modes       | AMR/HR/FR/EFR                                                                     | AMR/HR/FR/EFR                                                                      |
| Echo Arithmetic          | AEC/EES                                                                           | AEC/EES                                                                            |
| Interfaces               |                                                                                   |                                                                                    |
| UART                     | ●                                                                                 | ●                                                                                  |
| USB                      | ●                                                                                 | ●                                                                                  |
| SIM Card                 | 1.8V/3.0V                                                                         | 1.8V/3.0V                                                                          |
| PCM                      | ○                                                                                 | ○                                                                                  |
| Analog Audio             | 1 Input&2 Output                                                                  | 1 Input&2 Output                                                                   |
| ADC                      | ●                                                                                 | ●                                                                                  |
| GPIO                     | At Least 4*GPIO                                                                   | At Least 4*GPIO                                                                    |
| SD                       | ●                                                                                 | ●                                                                                  |
| SPI                      | ○                                                                                 | ○                                                                                  |
| I2C                      | ●                                                                                 | ●                                                                                  |
| Certification            |                                                                                   |                                                                                    |
| Certification            | RoHS/REACH/CCC/CTA/SRRC/Mobile/<br>CE(RED)/GCF*/Deutsche Telekom/ICASA/FCC        | BQB(Bluetooth)/CE(RED)/Deutsche Telekom/<br>RoHS/REACH/TIM                         |
| Typical Applications     | Telematics,Fleet Management,Smart Meters,Security,RMAC                            |                                                                                    |

○: Optional    \*: Under Developing/On-going/Planning

| GNSS Module

| Technology                  | GNSS                                                                                |                                                                                     |                                                                                     |
|-----------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product                     | SIM66MD                                                                             | SIM66MD(R)                                                                          | SIM66D(R)                                                                           |
| Picture                     |  |  |  |
| Form Factor                 | LCC, 18PIN                                                                          | LCC, 18PIN                                                                          | LCC, 24PIN                                                                          |
| Dimensions(mm)              | 9.7*10.1*2.5                                                                        | 9.7*10.1*2.5                                                                        | 16.0*12.2*2.4                                                                       |
| Weight(g)                   | 0.5                                                                                 | 0.5                                                                                 | 1                                                                                   |
| Temperature                 | -40 C ~+85 C                                                                        | -40 C ~+85 C                                                                        | -40 C ~+85 C                                                                        |
| Electrical Features         |                                                                                     |                                                                                     |                                                                                     |
| Supply Voltage Range        | 2.1~4.0V                                                                            | 2.1~4.0V                                                                            | 2.7~3.6V                                                                            |
| I/O Voltage                 | Vin-0.3V                                                                            | Vin-0.3V                                                                            | 3.3V                                                                                |
| Power Consumption           | Acquisition                                                                         | 25mA                                                                                | 25mA                                                                                |
|                             | Tracking                                                                            | 25mA                                                                                | 25mA                                                                                |
|                             | Sleep                                                                               | NC                                                                                  | NC                                                                                  |
|                             | Backup                                                                              | 60uA                                                                                | 60uA                                                                                |
| GNSS                        |                                                                                     |                                                                                     |                                                                                     |
| GNSS                        | L1: GPS/BeiDou/GLONASS/Galileo/QZSS<br>L5: GPS/BeiDou/ Galileo/QZSS/NavIC           | L1: GPS/BeiDou/GLONASS/Galileo/QZSS<br>L5: GPS/BeiDou/ Galileo/QZSS/NavIC           | L1: GPS/BeiDou/GLONASS/Galileo/QZSS<br>L5: GPS/BeiDou/ Galileo/QZSS/NavIC           |
| A-GPS                       | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Channel Number              | L1:75+L5:60                                                                         | L1:75+L5:60                                                                         | L1:75+L5:60                                                                         |
| SBAS                        | WAAS/EGNOS/GAGAN/MSAS/SDCM                                                          | WAAS/EGNOS/GAGAN/MSAS/SDCM                                                          | WAAS/EGNOS/GAGAN/MSAS/SDCM                                                          |
| Sensitivity                 | Tracking                                                                            | -166 dBm                                                                            | -166 dBm                                                                            |
|                             | Cold Start                                                                          | -150 dBm                                                                            | -150 dBm                                                                            |
|                             | Reacquisition                                                                       | -156 dBm                                                                            | -156 dBm                                                                            |
| TTFF<br>(Time to First Fix) | Cold Start                                                                          | 25s                                                                                 | 25s                                                                                 |
|                             | Warm Start                                                                          | 25s                                                                                 | 25s                                                                                 |
|                             | Hot Start                                                                           | <1s                                                                                 | <1s                                                                                 |
| Accuracy                    | Position                                                                            | <1.5m CEP                                                                           | <5cm CEP                                                                            |
|                             | Velocity                                                                            | 0.1m/s                                                                              | 0.1m/s                                                                              |
| Max Update Rate             | 10Hz                                                                                | 10Hz                                                                                | 10Hz                                                                                |
| Baud Rate(default)          | 115200                                                                              | 115200                                                                              | 115200                                                                              |
| Jamming Detection           | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Anti-jamming                | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Built-in LNA                | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| RTK                         |                                                                                     | ●                                                                                   | ●                                                                                   |
| Interfaces                  |                                                                                     |                                                                                     |                                                                                     |
| UART                        | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Reset                       | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Time Pulse                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Digital I/O                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Antenna                     |                                                                                     |                                                                                     |                                                                                     |
| Antenna Type                | Active/passive                                                                      | Active/passive                                                                      | Active/passive                                                                      |
| Antenna Power               | External or internal                                                                | External or internal                                                                | External or internal                                                                |
| Certification               |                                                                                     |                                                                                     |                                                                                     |
| Certification               | RoHS*/REACH*/CE(RED)*                                                               | RoHS/REACH/CE(RED)                                                                  | RoHS/REACH/CE(RED)                                                                  |
| Typical Applications        | Pet Tracking, Asset Tracking                                                        |                                                                                     |                                                                                     |

○: Optional    \*: Under Developing/On-going/Planning

| GNSS Module

| Technology                  |               | GNSS                                                                              |                                                                                   |                                                                                     |
|-----------------------------|---------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product                     |               | SIM68AD                                                                           | SIM68D                                                                            | SIM68I                                                                              |
| Picture                     |               |  |  |  |
| Form Factor                 |               | LCC, 24PIN                                                                        | LCC, 24PIN                                                                        | LCC, 24PIN                                                                          |
| Dimensions(mm)              |               | 16.0*12.2*2.4                                                                     | 16.0*12.2*2.4                                                                     | 16.0*12.2*2.4                                                                       |
| Weight(g)                   |               | 1                                                                                 | 1                                                                                 | 1                                                                                   |
| Temperature                 |               | -40℃~+85℃                                                                         | -40℃~+85℃                                                                         | -40℃~+85℃                                                                           |
| Electrical Features         |               |                                                                                   |                                                                                   |                                                                                     |
| Supply Voltage Range        |               | 2.8~4.3V                                                                          | 2.8~4.5V                                                                          | 2.8~4.5V                                                                            |
| I/O Voltage                 |               | 2.8V/1.8V                                                                         | 2.8V/1.8V                                                                         | 2.8V/1.8V                                                                           |
| Power Consumption           | Acquisition   | 30mA                                                                              | 30mA                                                                              | 30mA                                                                                |
|                             | Tracking      | 32mA                                                                              | 32mA                                                                              | 32mA                                                                                |
|                             | Sleep         | 340uA                                                                             | 340uA                                                                             | 340uA                                                                               |
|                             | Backup        | 50uA                                                                              | 50uA                                                                              | 50uA                                                                                |
| GNSS                        |               |                                                                                   |                                                                                   |                                                                                     |
| GNSS                        |               | L1: GPS/Beidou/GLONASS/Galileo/QZSS<br>L5: GPS/Beidou/ Galileo/QZSS               | L1: GPS/Beidou/GLONASS/Galileo/QZSS<br>L5: GPS/Beidou/ Galileo/QZSS               | L1: GPS/Beidou/GLONASS/Galileo<br>L5: NavIC                                         |
| A-GPS                       |               | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| Channel Number              |               | L1:75+L5:60                                                                       | L1:75+L5:60                                                                       | L1:75+L5:7                                                                          |
| SBAS                        |               | WAAS/EGNOS/GAGAN/MSAS/SDCM                                                        | WAAS/EGNOS/GAGAN/MSAS/SDCM                                                        | WAAS/EGNOS/GAGAN/MSAS/SDCM                                                          |
| Sensitivity                 | Tracking      | -165 dBm                                                                          | -165 dBm                                                                          | -165 dBm                                                                            |
|                             | Cold Start    | -148 dBm                                                                          | -148 dBm                                                                          | -148 dBm                                                                            |
|                             | Reacquisition | -160 dBm                                                                          | -160 dBm                                                                          | -160 dBm                                                                            |
| TTFF<br>(Time to First Fix) | Cold Start    | 27s                                                                               | 27s                                                                               | 27s                                                                                 |
|                             | Warm Start    | 24s                                                                               | 24s                                                                               | 24s                                                                                 |
|                             | Hot Start     | <1s                                                                               | <1s                                                                               | <1s                                                                                 |
| Accuracy                    | Position      | <1.5m CEP                                                                         | <1.5m CEP                                                                         | <1.5m CEP                                                                           |
|                             | Velocity      | 0.1m/s                                                                            | 0.1m/s                                                                            | 0.1m/s                                                                              |
| Max Update Rate             |               | 1Hz                                                                               | 10Hz                                                                              | 10Hz                                                                                |
| Baud Rate(default)          |               | 115200                                                                            | 115200                                                                            | 115200                                                                              |
| Jamming Detection           |               | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| Anti-jamming                |               | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| Built-in LNA                |               | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| DR                          |               | ●                                                                                 |                                                                                   |                                                                                     |
| Interfaces                  |               |                                                                                   |                                                                                   |                                                                                     |
| UART                        |               | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| Reset                       |               | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| Time Pulse                  |               | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| Digital I/O                 |               | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| Antenna                     |               |                                                                                   |                                                                                   |                                                                                     |
| Antenna Type                |               | Active/passive                                                                    | Active/passive                                                                    | Active/passive                                                                      |
| Antenna Power               |               | External or internal                                                              | External or internal                                                              | External or internal                                                                |
| Certification               |               |                                                                                   |                                                                                   |                                                                                     |
| Certification               |               | RoHS*/REACH*/CE(RED)*                                                             | RoHS/REACH/CE(RED)/UKCA                                                           | RoHS/REACH/CE(RED)*                                                                 |
| Typical Applications        |               | Pet Tracking, Asset Tracking                                                      |                                                                                   |                                                                                     |

o: Optional    \*: Under Developing/On-going/Planning

| GNSS Module

| Technology                  |               | GNSS                                                                                |                                                                                     |                                                                                     |
|-----------------------------|---------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product                     |               | SIM68MD                                                                             | SIM68M                                                                              | SIM66M                                                                              |
| Picture                     |               |  |  |  |
| Form Factor                 |               | LCC, 18PIN                                                                          | LCC, 18PIN                                                                          | LCC, 18PIN                                                                          |
| Dimensions(mm)              |               | 9.7*10.1*2.5                                                                        | 9.7*10.1*2.5                                                                        | 9.7*10.1*2.5                                                                        |
| Weight(g)                   |               | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Temperature                 |               | -40℃~+85℃                                                                           | -40℃~+85℃                                                                           | -40℃~+85℃                                                                           |
| Electrical Features         |               |                                                                                     |                                                                                     |                                                                                     |
| Supply Voltge Range         |               | 2.8~4.3V                                                                            | 2.8~4.3V                                                                            | 3.2~4.0V                                                                            |
| I/O Voltage                 |               | 2.8V/1.8V                                                                           | 2.8V                                                                                | Vin-0.3V                                                                            |
| Power Consumption           | Acquisition   | 30mA                                                                                | 25mA                                                                                | 27mA                                                                                |
|                             | Tracking      | 32mA                                                                                | 21mA                                                                                | 28mA                                                                                |
|                             | Sleep         | 340uA                                                                               | 340μA                                                                               | NC                                                                                  |
|                             | Backup        | 50uA                                                                                | 14μA                                                                                | 78uA                                                                                |
| GNSS                        |               |                                                                                     |                                                                                     |                                                                                     |
| GNSS                        |               | L1: GPS/Beidou/GLONASS/Galileo/QZSS<br>L5: GPS/Beidou/ Galileo/QZSS                 | GPS/GLONASS/Galileo/QZSS                                                            | GPS/GLONASS                                                                         |
| A-GPS                       |               | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Channel Number              |               | L1:75+L5:60                                                                         | 33 Track/99 Acq                                                                     | 46 Track/64 Acq                                                                     |
| SBAS                        |               | WAAS/EGNOS/GAGAN/MSAS/SDCM                                                          | WAAS/EGNOS/GAGAN/MSAS                                                               | WAAS/EGNOS/GAGAN/MSAS                                                               |
| Sensitivity                 | Tracking      | -157 dBm                                                                            | -165 dBm                                                                            | -160 dBm                                                                            |
|                             | Cold Start    | -141 dBm                                                                            | -148 dBm                                                                            | -147 dBm                                                                            |
|                             | Reacquisition | -151 dBm                                                                            | -160 dBm                                                                            | -158 dBm                                                                            |
| TTFF<br>(Time to First Fix) | Cold Start    | 27s                                                                                 | 28s                                                                                 | 29s                                                                                 |
|                             | Warm Start    | 24s                                                                                 | 26s                                                                                 | 24s                                                                                 |
|                             | Hot Start     | <1s                                                                                 | <1s                                                                                 | <1s                                                                                 |
| Accuracy                    | Position      | <1.5m CEP                                                                           | <2.5m CEP                                                                           | <2.5m CEP                                                                           |
|                             | Velocity      | 0.1m/s                                                                              | 0.1m/s                                                                              | 0.1m/s                                                                              |
| Max Update Rate             |               | 10Hz                                                                                | 10Hz                                                                                | 1Hz                                                                                 |
| Baud Rate(default)          |               | 115200                                                                              | 9600/115200                                                                         | 9600/115200                                                                         |
| Jamming Detection           |               | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Anti-jamming                |               | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Built-in LNA                |               |                                                                                     | ●                                                                                   | ●                                                                                   |
| Interfaces                  |               |                                                                                     |                                                                                     |                                                                                     |
| UART                        |               | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Reset                       |               | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Time Pulse                  |               | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Digital I/O                 |               | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Antenna                     |               |                                                                                     |                                                                                     |                                                                                     |
| Antenna Type                |               | Active/passive                                                                      | Active/passive                                                                      | Active/passive                                                                      |
| Antenna Power               |               | External or internal                                                                | External or internal                                                                | External or internal                                                                |
| Certification               |               |                                                                                     |                                                                                     |                                                                                     |
| Certification               |               | RoHS*/REACH*/CE(RED)*                                                               | RoHS/REACH/CE(RED)/ Deutsche Telekom                                                | RoHS/REACH/CE(RED)/UKCA                                                             |
| Typical Applications        |               | Pet Tracking, Asset Tracking                                                        |                                                                                     |                                                                                     |

o: Optional    \*: Under Developing/On-going/Planning

| GNSS Module

| Technology                  |               | GNSS                                                                              |                                                                                   |                                                                                     |
|-----------------------------|---------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product                     |               | SIM33EAU                                                                          | SIM33ELA                                                                          | SIM32ELA                                                                            |
| Picture                     |               |  |  |  |
| Form Factor                 |               | LCC, 16PIN                                                                        | LCC, 31PIN                                                                        | LCC, 31PIN                                                                          |
| Dimensions(mm)              |               | 22.0*22.0*7.5                                                                     | 14.0*9.6*2.15                                                                     | 14.0*9.6*2.15                                                                       |
| Weight(g)                   |               | 8.5                                                                               | 0.5                                                                               | 0.5                                                                                 |
| Temperature                 |               | -40℃~+85℃                                                                         | -40℃~+85℃                                                                         | -40℃~+85℃                                                                           |
| Electrical Features         |               |                                                                                   |                                                                                   |                                                                                     |
| Supply Voltage Range        |               | 2.8~4.3V                                                                          | 2.8~4.3V                                                                          | 2.8~4.3V                                                                            |
| I/O Voltage                 |               | 2.8V                                                                              | 2.8V                                                                              | 2.8V                                                                                |
| Power Consumption           | Acquisition   | 38mA                                                                              | 25mA                                                                              | 13mA                                                                                |
|                             | Tracking      | 32mA                                                                              | 20mA                                                                              | 13mA                                                                                |
|                             | Sleep         | 520μA                                                                             | 320μA                                                                             | 210uA                                                                               |
|                             | Backup        | 13μA                                                                              | 14μA                                                                              | 15μA                                                                                |
| GNSS                        |               |                                                                                   |                                                                                   |                                                                                     |
| GNSS                        |               | GPS/GLONASS/Galileo/QZSS                                                          | GPS/GLONASS/Galileo/QZSS                                                          | GPS/GLONASS/BEIDOU/Galileo/QZSS                                                     |
| A-GPS                       |               | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| Channel Number              |               | 33 Track/99 Acq                                                                   | 33 Track/99 Acq                                                                   | 47                                                                                  |
| SBAS                        |               | WAAS/EGNOS/GAGAN/MSAS                                                             | WAAS/EGNOS/GAGAN/MSAS                                                             | WAAS/EGNOS/GAGAN/MSAS                                                               |
| Sensitivity                 | Tracking      | -165 dBm                                                                          | -165 dBm                                                                          | -166 dBm                                                                            |
|                             | Cold Start    | -146 dBm                                                                          | -147 dBm                                                                          | -148 dBm                                                                            |
|                             | Reacquisition | -160 dBm                                                                          | -160 dBm                                                                          | -158 dBm                                                                            |
| TTFF<br>(Time to First Fix) | Cold Start    | 31s                                                                               | 28s                                                                               | 20s                                                                                 |
|                             | Warm Start    | 26s                                                                               | 26s                                                                               | 20s                                                                                 |
|                             | Hot Start     | <1s                                                                               | <1s                                                                               | <1s                                                                                 |
| Accuracy                    | Position      | <2.5m CEP                                                                         | <2.5m CEP                                                                         | <2m CEP                                                                             |
|                             | Velocity      | 0.1m/s                                                                            | 0.1m/s                                                                            | 0.1m/s                                                                              |
| Max Update Rate             |               | 10Hz                                                                              | 10Hz                                                                              | 10Hz                                                                                |
| Baud Rate(default)          |               | 9600/115200                                                                       | 9600/115200                                                                       | 115200                                                                              |
| Jamming Detection           |               | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| Anti-jamming                |               | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| Built-in LNA                |               | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| Interfaces                  |               |                                                                                   |                                                                                   |                                                                                     |
| UART                        |               | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| Reset                       |               |                                                                                   |                                                                                   | ●                                                                                   |
| Time Pulse                  |               | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| Digital I/O                 |               | ●                                                                                 | ●                                                                                 | ●                                                                                   |
| Antenna                     |               |                                                                                   |                                                                                   |                                                                                     |
| Antenna Type                |               | Passive                                                                           | Passive                                                                           | Passive                                                                             |
| Antenna Power               |               | Internal                                                                          | Internal                                                                          | Internal                                                                            |
| Certification               |               |                                                                                   |                                                                                   |                                                                                     |
| Certification               |               | RoHS/REACH/CE(RED)                                                                | RoHS/REACH/CE(RED)/ Deutsche Telekom                                              | RoHS/REACH/CE(RED)/UKCA                                                             |
| Typical Applications        |               | Pet Tracking, Asset Tracking                                                      |                                                                                   |                                                                                     |

o: Optional    \*: Under Developing/On-going/Planning

| GNSS Module

| Technology                  |               | GNSS                                                                                |                                                                                     |                                                                                     |
|-----------------------------|---------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product                     |               | SIM65M                                                                              | SIM65M(U)                                                                           | SIM65M(W)                                                                           |
| Picture                     |               |  |  |  |
| Form Factor                 |               | LCC, 18PIN                                                                          | LCC, 18PIN                                                                          | LCC, 18PIN                                                                          |
| Dimensions(mm)              |               | 9.7*10.1*2.5                                                                        | 9.7*10.1*2.5                                                                        | 9.7*10.1*2.5                                                                        |
| Weight(g)                   |               | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Temperature                 |               | -40℃~+85℃                                                                           | -40℃~+85℃                                                                           | -40℃~+85℃                                                                           |
| Electrical Features         |               |                                                                                     |                                                                                     |                                                                                     |
| Supply Voltage Range        |               | 2.8~4.3V                                                                            | 3.0~4.3V                                                                            | 1.75~1.95V                                                                          |
| I/O Voltage                 |               | 2.8V                                                                                | 3.0V                                                                                | 1.8V                                                                                |
| Power Consumption           | Acquisition   | 12mA                                                                                | 11mA                                                                                | 15mA                                                                                |
|                             | Tracking      | 12mA                                                                                | 11mA                                                                                | 15mA                                                                                |
|                             | Sleep         | 210uA                                                                               | 210uA                                                                               | 210uA                                                                               |
|                             | Backup        | 15μA                                                                                | 15μA                                                                                | 15μA                                                                                |
| GNSS                        |               |                                                                                     |                                                                                     |                                                                                     |
| GNSS                        |               | GPS/GLONASS/BEIDOU/Galileo/QZSS                                                     | GPS/GLONASS/BEIDOU/Galileo/QZSS                                                     | GPS/GLONASS/BEIDOU/Galileo/QZSS                                                     |
| A-GPS                       |               | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Channel Number              |               | 47                                                                                  | 47                                                                                  | 47                                                                                  |
| SBAS                        |               | WAAS/EGNOS/GAGAN/MSAS                                                               | WAAS/EGNOS/GAGAN/MSAS                                                               | WAAS/EGNOS/GAGAN/MSAS                                                               |
| Sensitivity                 | Tracking      | -166 dBm                                                                            | -166 dBm                                                                            | -166 dBm                                                                            |
|                             | Cold Start    | -147 dBm                                                                            | -147 dBm                                                                            | -147 dBm                                                                            |
|                             | Reacquisition | -158 dBm                                                                            | -158 dBm                                                                            | -158 dBm                                                                            |
| TTFF<br>(Time to First Fix) | Cold Start    | 30s                                                                                 | 30s                                                                                 | 30s                                                                                 |
|                             | Warm Start    | 25s                                                                                 | 25s                                                                                 | 25s                                                                                 |
|                             | Hot Start     | <1s                                                                                 | <1s                                                                                 | <1s                                                                                 |
| Accuracy                    | Position      | <2m CEP                                                                             | <2m CEP                                                                             | <2m CEP                                                                             |
|                             | Velocity      | 0.1m/s                                                                              | 0.1m/s                                                                              | 0.1m/s                                                                              |
| Max Update Rate             |               | 10Hz                                                                                | 10Hz                                                                                | 10Hz                                                                                |
| Baud Rate(default)          |               | 115200                                                                              | 115200                                                                              | 115200                                                                              |
| Jamming Detection           |               | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Anti-jamming                |               | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Built-in LNA                |               | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Interfaces                  |               |                                                                                     |                                                                                     |                                                                                     |
| UART                        |               | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Reset                       |               | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Time Pulse                  |               | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Digital I/O                 |               | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Antenna                     |               |                                                                                     |                                                                                     |                                                                                     |
| Antenna Type                |               | Active/passive                                                                      | Active/passive                                                                      | Active/passive                                                                      |
| Antenna Power               |               | External or internal                                                                | External or internal                                                                | External or internal                                                                |
| Certification               |               |                                                                                     |                                                                                     |                                                                                     |
| Certification               |               | RoHS/REACH/CE(RED)/UKCA                                                             | RoHS/REACH/CE(RED)/UKCA                                                             | RoHS/REACH/CE(RED)/UKCA                                                             |
| Typical Applications        |               | Pet Tracking, Asset Tracking                                                        |                                                                                     |                                                                                     |

o: Optional    \*: Under Developing/On-going/Planning

| Wi-Fi Module

| Technology            | Wi-Fi                                                                                              |                                                                                   |
|-----------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Product               | W58                                                                                                | W59                                                                               |
| Picture               |                   |  |
| Form Factor           | LCC, 32PIN                                                                                         | LCC, 40PIN                                                                        |
| Dimensions(mm)        | 16.6 *13.0*2.1                                                                                     | 16.0 *18.3*2.3                                                                    |
| Weight(g)             | 1.0                                                                                                | 1.2                                                                               |
| Bluetooth             | BT 3.0& BLE4.1                                                                                     | BT 3.0& BLE4.2                                                                    |
| Temperature           | -40°C ~ +85°C                                                                                      | -40°C ~ +85°C                                                                     |
| General Features      |                                                                                                    |                                                                                   |
| Frequency band        | 2.412 ~ 2.484 GHz<br>5.15~5.35GHz,5.47~5.85MHz                                                     | 2.412 ~ 2.484 GHz    5.17~5.825GHz                                                |
| Supply Voltage        | 3.2V~ 3.4V                                                                                         | 3.2V~ 3.4V                                                                        |
| WLAN Standard         | IEEE 802.11 b/g/n/ac                                                                               | IEEE 802.11a/b/g/n/ac                                                             |
| Modulation Mode       | DSSS,CCK, OFDM,BPSK,QPSK,16QAM,64QAM,256QAM                                                        | DSSS/CCK/OFDM/BPSK/QPSK/16QAM/64QAM/256QAM                                        |
| Encryption Mode       | WEP/TKIP/AES/WPA-PSK/WPA2-PSK                                                                      | WEP/TKIP/AES/WPA-PSK/WPA2-PSK                                                     |
| AP (Max Access Point) | 30                                                                                                 | 30                                                                                |
| Operator Mode         | AP/STA                                                                                             | AP/STA                                                                            |
| BT Protocol           | SPP(BT 4.0)/GATT(BLE 4.1)                                                                          | SPP(BT 3.0)/GATT(BLE 4.1)                                                         |
| Data Rate             |                                                                                                    |                                                                                   |
| 802.11b (Mbps)        | Max. 11                                                                                            | Max. 11                                                                           |
| 802.11g (Mbps)        | Max. 54                                                                                            | Max. 54                                                                           |
| 802.11n_HT20 (Mbps)   | Max. 65                                                                                            | Max. 65                                                                           |
| 802.11n_HT40 (Mbps)   | Max. 135                                                                                           | Max. 135                                                                          |
| 802.11ac_HT40 (Mbps)  | Max. 200                                                                                           | Max. 200                                                                          |
| 802.11ac_HT80 (Mbps)  | Max. 433.3                                                                                         | Max. 433.3                                                                        |
| 802.11ax_HT80 (Mbps)  |                                                                                                    |                                                                                   |
| BT 4.1 (Mbps)         | Max. 24                                                                                            | Max. 24                                                                           |
| Transmitting Power    |                                                                                                    |                                                                                   |
| 802.11b/11Mbps        | 18dBm                                                                                              | 17.75dBm                                                                          |
| 802.11g/54Mbps        | 15dBm                                                                                              | TBD                                                                               |
| 802.11n_HT20/65Mbps   | 15dBm                                                                                              | 16dBm                                                                             |
| 802.11n_HT40/135Mbps  | 14dBm                                                                                              | 15.78dBm                                                                          |
| Rx Sensitivity        |                                                                                                    |                                                                                   |
| 802.11b/1Mbps         | -95dBm                                                                                             | TBD                                                                               |
| 802.11b/11Mbps        | -94dBm                                                                                             | TBD                                                                               |
| 802.11g/6Mbps         | -91dBm                                                                                             | TBD                                                                               |
| 802.11g/54Mbps        | -78dBm                                                                                             | TBD                                                                               |
| 802.11n_HT20 MCS0     | -90dBm                                                                                             | TBD                                                                               |
| 802.11n_HT40 MCS7     | -75dBm                                                                                             | TBD                                                                               |
| Interfaces            |                                                                                                    |                                                                                   |
| SDIO 3.0              | *1                                                                                                 | *1                                                                                |
| UART                  | *1                                                                                                 | *1                                                                                |
| LTE coexistence       | *2                                                                                                 | *2                                                                                |
| BT_EN                 | *1                                                                                                 | *1                                                                                |
| WLAN_EN               | *1                                                                                                 | *1                                                                                |
| Antenna               | WiFi & BT Antenna                                                                                  | WiFi & BT Antenna *2                                                              |
| Certification         |                                                                                                    |                                                                                   |
| Certification         | CE(RED)/FCC/RCM/Anatel/RoHS/REACH                                                                  | RoHS*/REACH*/CE(RED)*                                                             |
| Typical Applications  | Fleet Management,Telematics,Security,Tracking,Agriculture,Smart City, Smart Health, Router,Gateway |                                                                                   |

o: Optional    \*: Under Developing/On-going/Planning

W58:    Must be working together with SIM7600X-H.

W59:    Must be working together with SIM7800E

| Wi-Fi Module

| Technology            | Wi-Fi                                                                                              |                                                                                     |                                                                                     |
|-----------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product               | W80                                                                                                | W82                                                                                 | W74                                                                                 |
| Picture               |                 |  |  |
| Form Factor           | LCC+LGA, 90PIN                                                                                     | LCC+LGA, 90PIN                                                                      | LCC+LGA, 90PIN                                                                      |
| Dimensions(mm)        | 17.0 *24.0*2.9                                                                                     | 17.0 *24.0*2.9                                                                      | 17.0 *24.0*2.6                                                                      |
| Weight(g)             | 2.1                                                                                                | 2.1                                                                                 | 2.1                                                                                 |
| Bluetooth             | BT 5.1&BLE5.0                                                                                      | BT 5.2&BLE5.0                                                                       | BT 5.0&BLE5.0                                                                       |
| Temperature           | -40°C ~ +85°C                                                                                      | -40°C ~ +85°C                                                                       | -30 C to +70 C                                                                      |
| General Features      |                                                                                                    |                                                                                     |                                                                                     |
| Frequency band        | 2.412 ~ 2.484 GHz    5.17~5.825GHz                                                                 | 2.412 ~ 2.484 GHz    5.17~5.825GHz                                                  | 2.412 ~ 2.484 GHz    5.17~5.825GHz                                                  |
| Supply Voltage        | 3.3V ~ 4.25V                                                                                       | 3.3V ~ 4.25V                                                                        | 3.3V ~ 4.25V                                                                        |
| WLAN Standard         | IEEE 802.11a/b/g/n/ac/ax                                                                           | IEEE 802.11a/b/g/n/ac/ax                                                            | IEEE 802.11a/b/g/n/ac                                                               |
| Modulation Mode       | CCK, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM                                                     | CCK, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM                                      | CCK, BPSK, QPSK, 16QAM, 64QAM, 256QAM                                               |
| Encryption Mode       | WPA3                                                                                               | WPA3                                                                                | WPA3                                                                                |
| AP (Max Access Point) | 30                                                                                                 | 30                                                                                  | 30                                                                                  |
| Operator Mode         | AP/STA                                                                                             | AP/STA                                                                              | AP/STA                                                                              |
| BT Protocol           | SPP(BT 3.0)/GATT(BLE 4.1)                                                                          | SPP(BT 3.0)/GATT(BLE 4.1)                                                           | SPP(BT 3.0)/GATT(BLE 4.1)                                                           |
| Data Rate             |                                                                                                    |                                                                                     |                                                                                     |
| 802.11b (Mbps)        |                                                                                                    |                                                                                     |                                                                                     |
| 802.11g (Mbps)        |                                                                                                    |                                                                                     |                                                                                     |
| 802.11n_HT20 (Mbps)   |                                                                                                    |                                                                                     |                                                                                     |
| 802.11n_HT40 (Mbps)   |                                                                                                    |                                                                                     |                                                                                     |
| 802.11ac_HT40 (Mbps)  |                                                                                                    |                                                                                     |                                                                                     |
| 802.11ac_HT80 (Mbps)  |                                                                                                    |                                                                                     |                                                                                     |
| 802.11ax_HT80 (Mbps)  | Max.1.775Gbps                                                                                      | Max.3.6Gbps                                                                         |                                                                                     |
| BT 4.1 (Mbps)         |                                                                                                    | Max. 2Mbps                                                                          | Max. 2Mbps                                                                          |
| Transmitting Power    |                                                                                                    |                                                                                     |                                                                                     |
| 802.11b/11Mbps        | TBD                                                                                                | TBD                                                                                 | TBD                                                                                 |
| 802.11g/54Mbps        | TBD                                                                                                | TBD                                                                                 | TBD                                                                                 |
| 802.11n_HT20/65Mbps   | TBD                                                                                                | TBD                                                                                 | TBD                                                                                 |
| 802.11n_HT40/135Mbps  | TBD                                                                                                | TBD                                                                                 | TBD                                                                                 |
| Rx Sensitivity        |                                                                                                    |                                                                                     |                                                                                     |
| 802.11b/1Mbps         | TBD                                                                                                | TBD                                                                                 | TBD                                                                                 |
| 802.11b/11Mbps        | TBD                                                                                                | TBD                                                                                 | TBD                                                                                 |
| 802.11g/6Mbps         | TBD                                                                                                | TBD                                                                                 | TBD                                                                                 |
| 802.11g/54Mbps        |                                                                                                    | TBD                                                                                 | TBD                                                                                 |
| 802.11n_HT20 MCS0     | TBD                                                                                                | TBD                                                                                 | TBD                                                                                 |
| 802.11n_HT40 MCS7     | TBD                                                                                                | TBD                                                                                 | TBD                                                                                 |
| Interfaces            |                                                                                                    |                                                                                     |                                                                                     |
| SDIO 3.0              |                                                                                                    |                                                                                     |                                                                                     |
| UART                  | *1                                                                                                 | *1                                                                                  | *1                                                                                  |
| LTE coexistence       | *2                                                                                                 | *2                                                                                  | *2                                                                                  |
| BT_EN                 | *1                                                                                                 | *1                                                                                  | *1                                                                                  |
| WLAN_EN               | *1                                                                                                 | *1                                                                                  | *1                                                                                  |
| Antenna               | WiFi & BT Antenna *2                                                                               | WiFi & BT Antenna *2                                                                | WiFi & BT Antenna *2                                                                |
| Certification         |                                                                                                    |                                                                                     |                                                                                     |
| Certification         | CE(RED)/RoHS*/REACH*                                                                               | RoHS*/REACH*/CE(RED)/FCC*                                                           | RoHS*/REACH*/CE(RED)*                                                               |
| Typical Applications  | Fleet Management,Telematics,Security,Tracking,Agriculture,Smart City, Smart Health, Router,Gateway |                                                                                     |                                                                                     |

o: Optional    \*: Under Developing/On-going/Planning

W82:    Must be working together with SIM8260X

W80:    Must be working together with SIM8200G.

W74:    Must be working together with SIM7906X/SIM7912X