# SIMCom

a SUNSEA AIOT company

# MODULES FOR A
# CONNECTED WORLD

**SIMCom Wireless Solutions Limited**

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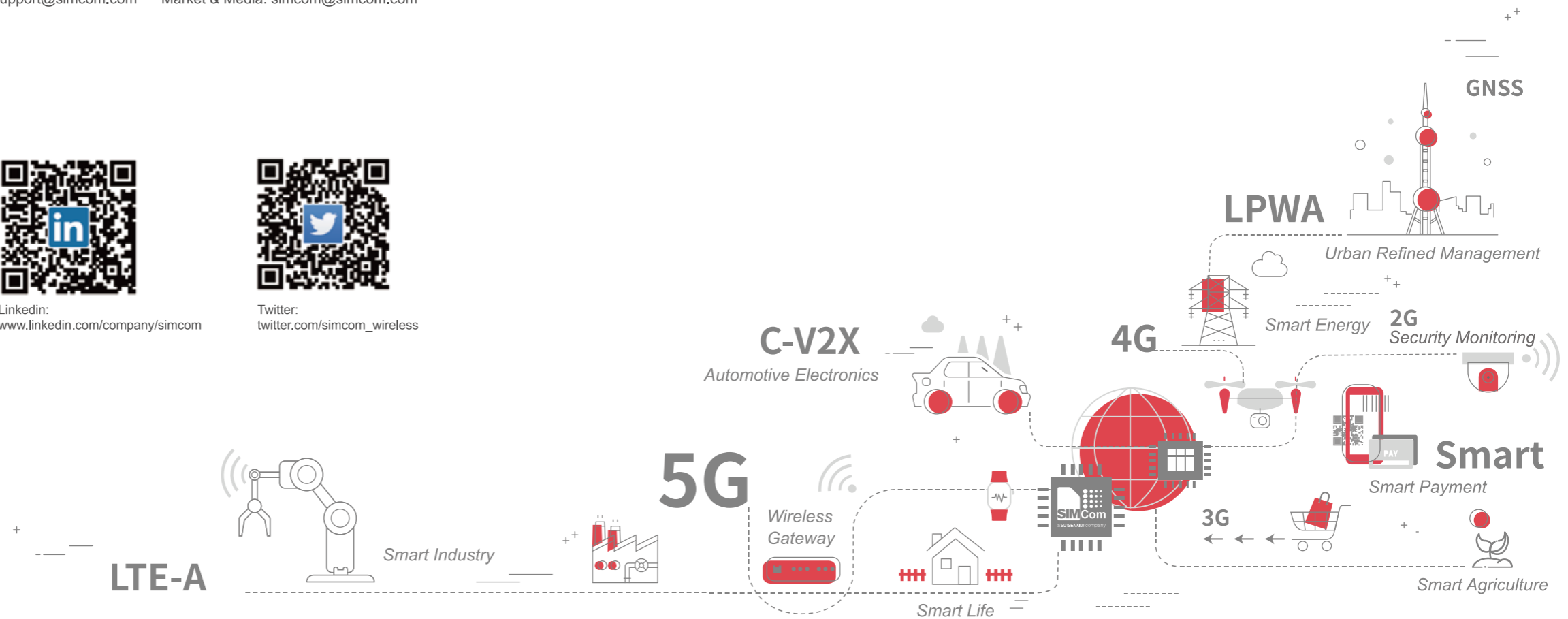
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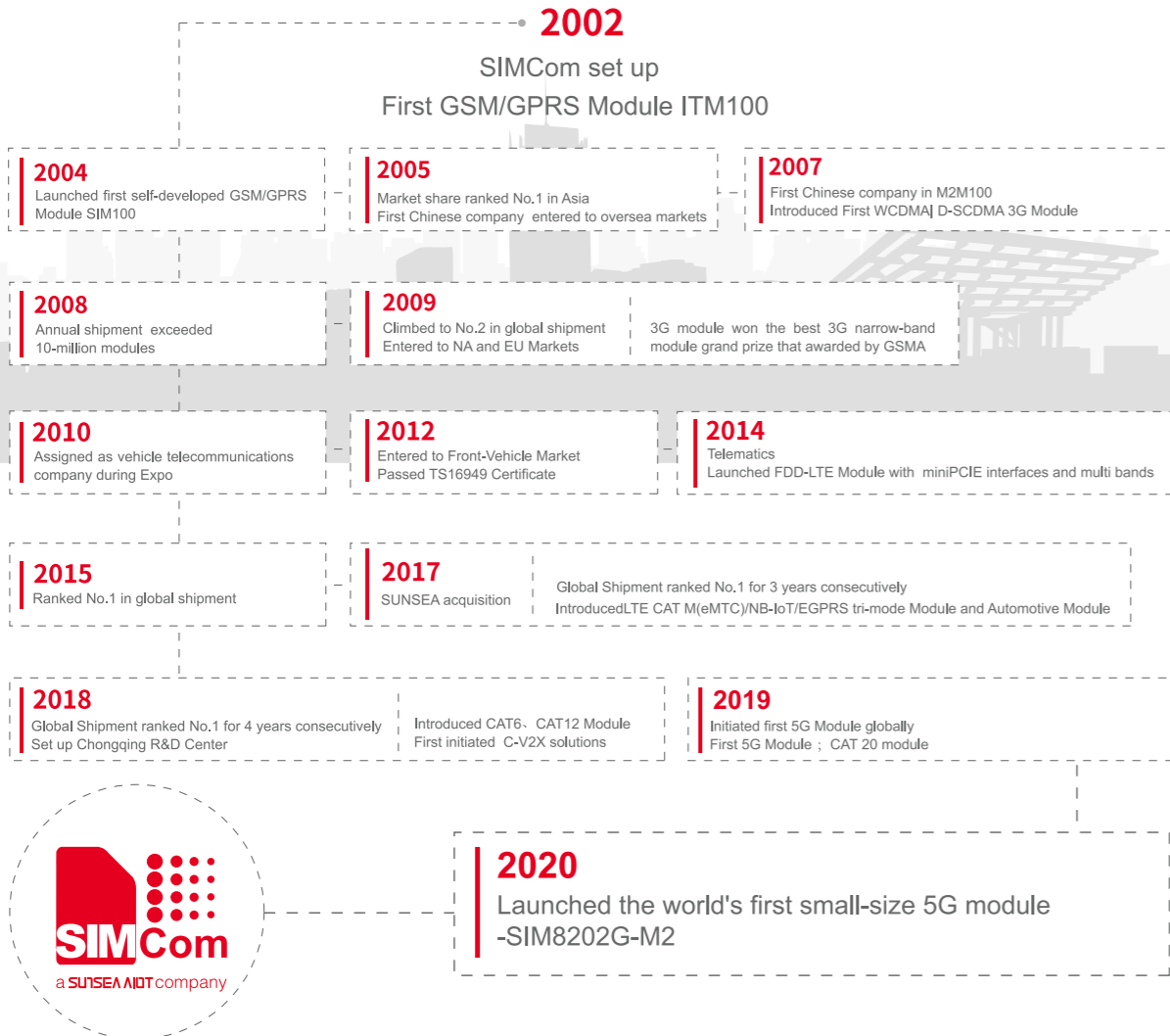Twitter:
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GNSS

LPWA

Urban Refined Management

C-V2X
Automotive Electronics

4G

Smart Energy

2G
Security Monitoring

5G

Smart

Smart Payment

Wireless
Gateway

3G

LTE-A

Smart Industry

Smart Life

Smart Agriculture

## About SIMCom

SIMCom Wireless Solutions Limited, holding subsidiary of SUNSEA AIOT (002313.SZ), is a global leading Machine-to-Machine (M2M) 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-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 18 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.

**2002**
SIMCom set up
First GSM/GPRS Module ITM100

**2004**
Launched first self-developed GSM/GPRS Module SIM100

**2005**
Market share ranked No.1 in Asia
First Chinese company entered to oversea markets

**2007**
First Chinese company in M2M100
Introduced First WCDMA| D-SCDMA 3G Module

**2008**
Annual shipment exceeded 10-million modules

**2009**
Climbed to No.2 in global shipment
Entered to NA and EU Markets

3G module won the best 3G narrow-band module grand prize that awarded by GSMA

**2010**
Assigned as vehicle telecommunications company during Expo

**2012**
Entered to Front-Vehicle Market
Passed TS16949 Certificate

**2014**
Telematics
Launched FDD-LTE Module with miniPCIE interfaces and multi bands

**2015**
Ranked No.1 in global shipment

**2017**
SUNSEA acquisition

Global Shipment ranked No.1 for 3 years consecutively
IntroducedLTE CAT M(eMTC)/NB-IoT/EGPRS tri-mode Module and Automotive Module

**2018**
Global Shipment ranked No.1 for 4 years consecutively
Set up Chongqing R&D Center

Introduced CAT6、CAT12 Module
First initiated C-V2X solutions

**2019**
Initiated first 5G Module globally
First 5G Module ；CAT 20 module

**2020**
Launched the world's first small-size 5G module
-SIM8202G-M2

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## 5G Module

| Technology | 5G (Sub 6G) | | | 5G (Sub 6G & mmWave) |
|---|---|---|---|---|
| Product | SIM8202G-M2 | SIM8200EA-M2 | SIM8200G | SIM8300G-M2 |
| Picture | | | | |
| Form Factor | M.2 | M.2 | LGA | M.2 |
| Dimensions(mm) | 30.0*42.0*2.3 | 30.0*52.0*2.3 | 41.0*43.6*2.8 | 30.0*52.0*3.65 |
| Weight(g) | 6.8g±0.2 | 8.3g±0.2 | 11.17g±0.2 | 11.76g±0.2 |
| Mode | NSA/SA | NSA/SA | NSA/SA | NSA/SA |
| Frequency Bands · 5G NR (Sub6G) | n1,n2,n3,n5,n7,n8,n12,n20,n28,n38, n40,n41,n66,n71,n77,n78,n79 | n1,n2,n3,n5,n7,n8,n12,n20,n25,n28, n40,n41,n66,n71,n77,n78,n79* | n1,n2,n3,n5,n7,n8,n12,n20,n25,n28, n40,n41,n66,n71,n77,n78,n79 | n1,n2,n3,n5,n7,n8,n12,n20,n25,n28, n40,n41,n66,n71,n77,n78,n79 |
| 5G NR (mmWave) | | | | n257/n258/n260/261 |
| LTE-FDD | B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/ B17/B18/B19/ B20/B25/B26/B28/B29/ B30/B32/B66/B71 | B1/B2/B3/B4/B5/B7/B8/B12/B13/ B14/B17/B18/B19/B20/B25/B26/ B28/B29/B30/B66/B71 | B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/ B17/B18/B19/B20/B25/B26/B28/B29/ B30/B66/B71 | B1/B2/B3/B4/B5/B7/B8/B12/B13/ B14/B17/B18/B19/B20/B25/B26/ B28/B29/B30/B66/B71 |
| LTE-TDD | B34/B38/B39/B40/B41/B42/B43/B48 | B34/B38/B39/B40/B41/B42/B43/B48 | B34/B38/B39/B40/B41/B42/B43/B48 | B34/B38/B39/B40/B41/B42/B43/ B46/B48 |
| WCDMA | B1/B2/B3/B4/B5/B8 | B1/B2/B3/B4/B5/B8 | B1/B2/B3/B4/B5/B8 | B1/B2/B3/B4/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) | GPS/GLONASS/BeiDou (Dedicated GNSS L1 and L5) |
| Temperature | -30℃ ~ +70℃ | -30℃ ~ +70℃ | -30℃ ~ +70℃ | -30℃ ~ +70℃ |
| **Electrical Features** | | | | |
| Supply Voltge Range | 3.135～4.4V | 3.135～4.4V | 3.3V~ 4.4V | 3.135～4.4V |
| Power Consumption (sleep)(mA) | <5mA | <5mA | <5mA | TBD |
| **Data Transfer** | | | | |
| mmWave | | | | 7Gbps(DL)/3Gbps (UL) |
| Sub-6G | 2.4Gbps(DL)/1Gbps (UL) | 2.4Gbps(DL)/500Mbps (UL) (optional up to 4Gbps DL) | 2.4Gbps(DL)/1Gbps (UL) (optional up to 4Gbps DL) | 4Gbps(DL)/1Gbps (UL) |
| LTE CAT 20+ | 1Gbps(DL)/200Mbps (UL) | 1Gbps(DL)/200Mbps (UL) (optional up to 2Gbps DL) | 1Gbps(DL)/200Mbps (UL) (optional up to 2Gbps DL) | 2Gbps(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 | 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 | *4 | *6 | *8 | *14 |
| **Certification** | | | | |
| Certification | RoHS/REACH/CCC/CTA/SRRC/ JATE/Telec/RCM/GCF/CE(RED)* | RoHS/REACH/CCC/CTA/SRRC/ RCM/GCF/CE(RED)* | RoHS/REACH/CCC/CTA/SRRC/ JATE/Telec/RCM/GCF/CE(RED)* | RoHS/REACH/JATE/Telec/GCF/FCC/ PTCRB/IC/CE(RED)* |
| **Typical Applications** | CPE,MIFI,PC,Gateway,Router,UAV | | | |

*: Under Development

# | LPWA Module

| Technology | CAT-M&NB-IoT&GSM | | CAT-M & NB-IoT | |
|---|---|---|---|---|
| **Product** | **SIM7000X** | **SIM7070X** | **SIM7080G** | **SIM7090G** |
| Picture | | | | |
| Form Factor | LCC, 68PIN | LCC ,68PIN | LCC+LGA,77PIN | LGA, 77PIN |
| Dimensions(mm) | 24.0*24.0*2.6 | 24*24*2.3 | 17.6*15.7*2.4 | 14.8*12.8*2.0 |
| Weight(g) | 3.0 | 2.9 | 1.2 | 1.4 |
| Frequency Bands(MHz) - A (North America) | CAT-M1&CAT-NB1: B2/B4/B12/B13 | CAT-M1:B1/B2/B3/B4/B5/B8/B12/B13/B14/B18/B19/B20/B25/B26 /B27/B28/B31/B66/B72/B85 CAT-NB2:B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B28/B31/B66/B85 GSM/GPRS:850/900/1800/1900MHz | | |
| - E(Europe/Africa/Australia/Southeast Asia) | CAT-M1&CAT-NB1:B3/B8/B20/B28 GPRS/EDGE: 900/1800Mhz | | | |
| - JC(Japan) | CAT-M1:B1/B3/B5/B8/B18/B19/B26 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 CAT-NB1: B1/B2/B3/B5/B8/B12/B13/B17/B18/B19/B20/B26/B28 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 CAT-NB2:B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B28/B66/B71/B85 GSM/GPRS:850/900/1800/1900MHz | 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-M:B1/B2/B3/B4/B5/B8/B12/B13/B14/B18/B19/B20/B25/B26/B27/B28/B66/B85 CAT-NB:B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B28/B66/B71/B85 |
| GNSS | ○ | ○ | ○ | ○ |
| Temperature | -40℃~+85℃ | -40℃~+85℃ | -40℃~+85℃ | -40℃~+85℃ |
| **Electrical Features** | | | | |
| Supply Voltge Range | 3.0V~ 4.3V | 3.0V-4.6V | 2.7V~4.8V | 2.7V-4.8V |
| Power Consumption — PSM | 9uA@PSM | 3.2uA@PSM | 3.2uA@PSM | 3.2uA@PSM |
| Power Consumption — Sleep | 1.2mA@ LTE | 0.8mA | 0.8mA | 0.8mA |
| Power Consumption — Max Power | 138mA@ B5 | 114mA@ B5 | 114mA@ B5 | 114mA@ B5 |
| Network Registration Time(s) | 12(Prefered band) | 12(Prefered band) | 12(Prefered band) | 12(Prefered band) |
| Receive Sensitivity | -108dB@eMTC；-126dB@NB-IoT 15KHz | -108dB@eMTC -126dB@NB-IoT15KHz | -108dB@eMTC-126dB@NB-IoT15KHz | -108dB@eMTC-126dB@NB-IoT15KHz |
| **Data Transfer** | | | | |
| LTE CAT.NB (Kbps) | 34(DL)/66(UL) | 136(DL)/150(UL) | 136(DL)/150(UL) | 127(DL)/158.5(UL) |
| LTE CAT.M1(Kbps) | 300(DL)/375(UL) | 589(DL)/1119(UL) | 589(DL)/1119(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/FTP/HTTP/TLS/DTLS/NTP | TCP/UDP/HTTP/HTTPS/TLS/DTLS/PING/LWM2M/COAP/MQTT | TCP/UDP/HTTP/HTTPS/TLS/DTLS/PING/LWM2M/COAP/MQTT | TCP/UDP/HTTP/HTTPS/TLS/DTLS/PING/LWM2M/COAP/MQTT |
| VoLTE | ● | ● | ● | ● |
| GSM Voice | | ● | | |
| Embedded AT | ● | ● | ● | ● |
| FOTA | ● | ● | ● | ● |
| TLS | ● | ● | ● | ● |
| USB Driver | Microsoft Windows 2000/XP/Vista/Win7/Win8/Win10/Linux | Microsoft Windows 2000/XP/Vista/Win7/Win8/Win10/Linux | | |
| Firmware Upgrade | USB/FOTA | USB/FOTA | USB/FOTA | USB/FOTA |
| **Interfaces** | | | | |
| UART — Full Function Uart | ● | ● | ● | ● |
| UART — Flow Control Uart | ● | ● | ● | ● |
| USB | ● | ● | ● | ● |
| PCM | ● | ● | ● | ○ |
| Status Indicator | ● | ● | ● | ● |
| GPIO | ● | ● | ● | ● |
| SPI | ○ | ● | ● | ● |
| I2C | ● | ● | ● | ● |
| **Certification** | | | | |
| Certification | **A:** RoHS/REACH/GCF/FCC/PTCRB/AT&T/Verizon/GCF/IC/Rogers* **E:** RoHS/REACH/IMDA/RCM/Telstra/CE(RED)/GCF/ Deutsche Telekom/Vodafone* **JC:** RoHS/REACH/Telec/JATE/DoCoMo/KDDI **G:** RoHS/REACH/CCC/RCM/CE(RED)/GCF/Deutsche Telekom/FCC/IC/Anatel | **E:** RoHS/REACH/CE(RED)/FCC*/Anatel* **G:** RoHS/REACH/JATE/Telec/RCM/CE(RED)/GCF/Orange*/TIM*/Deutsche Telekom/Telefonica*/Vodafone*/FCC/PTCRB/AT&T/Verizon*/T-mobile/US Cellular*/IC | RoHS/REACH/JATE/Telec/DoCoMo*/KDDI*/Softbank/RCM/CE(RED)/GCF/Deutsche Telekom/FCC/PTCRB/AT&T/Verizon/T-mobile/US Cellular*/IC | RoHS/REACH/JATE/Telec/RCM/CE(RED)/GCF/FCC/PTCRB/AT&T/Verizon*/T-mobile*/US Cellular*/IC |
| **Typical Applications** | Home Security and Automation,Telematics,Smart Meters,Vending,Fleet Management,Asset Tracking | | | |

o : Optional
* : Under Development

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# | LPWA Module

| Technology | NB-IoT&GNSS | | NB-IoT | |
|---|---|---|---|---|
| **Product** | **SIM7060G** | **SIM7060R** | **SIM7020E** | **SIM7020G** |
| Picture | | | | |
| Form Factor | LCC, 68PIN | LCC ,68PIN | LCC, 42PIN | LCC+LGA, 77PIN |
| Dimensions(mm) | 24.0*24.0*2.6 | 24*24*2.6 | 17.6*15.7*2.3 | 17.6*15.7*2.3 |
| Weight(g) | 3.0 | 3.0 | 1.3 | 1.3 |
| Frequency Bands(MHz) - A (North America) | | | | |
| - E(Europe/Africa/Australia/Southeast Asia) | | | CAT.NB1: B1/B3/B5/B8/B20/B28 | |
| - JC(Japan) | | | | |
| - G(Global) | CAT.NB2: B1/B2/B3/B4/B5/B8/B12/B13/B17/B18/B19/B20/B25/B26/B28/B66/B70/B85* | CAT.NB1: B1/B2/B3/B4/B5/B8/B12/B13/B17/B18/B19/B20/B25/B26/B28/B31/B66/B70 | | CAT.NB2: B1/B2/B3/B4/B5/B8/B12/B13/B17/B18/B19/B20/B25/B26/B28/B66/B70/B85* |
| GNSS | ● | | | |
| Temperature | -40℃~+85℃ | -40℃~+85℃ | -40℃~+85℃ | -40℃~+85℃ |
| **Electrical Features** | | | | |
| Supply Voltge Range | 2.1V-3.6V | 2.1V-3.6V | 2.1V-3.6V | 2.1V-3.6V |
| Power Consumption — PSM | 3.4uA@PSM | 3.4uA@PSM | 3.4uA@PSM | 3.4uA@PSM |
| Power Consumption — Sleep | 0.4mA | 0.4mA | 0.4mA | 0.4mA |
| Power Consumption — Max Power | 114mA@ B5 | 114mA@ B5 | 114mA@ B5 | 114mA@ B5 |
| Network Registration Time(s) | 12(Prefered band) | 12(Prefered band) | 12(Prefered band) | 12(Prefered band) |
| Receive Sensitivity | -126dB@NB-IoT 15KHz | -126dB@NB-IoT 15KHz | -126dB@NB-IoT 15KHz | -126dB@NB-IoT 15KHz |
| **Data Transfer** | | | | |
| LTE CAT.NB (Kbps) | 26.15(DL)/62.5(UL) | 26.15(DL)/62.5(UL) | 26.15(DL)/62.5(UL) | 136(DL)/150(UL) |
| LTE CAT.M1(Kbps) | | | | |
| EDGE(Kbps) | | | | |
| GPRS(Kbps) | | | | |
| SMS | ● | ● | ● | ● |
| **Software Features** | | | | |
| Protocols | TCP/UDP/LWM2M/COAP/MQTT/HTTP/HTTPS/TLS/DTLS/DNS/NTP/PING | TCP/UDP/LWM2M/COAP/MQTT/HTTP/HTTPS/TLS/DTLS/DNS/NTP/PING | TCP/UDP/LWM2M/COAP/MQTT/HTTP/HTTPS/TLS/DTLS/DNS/NTP/PING | TCP/UDP/LWM2M/COAP/MQTT/HTTP/HTTPS/TLS/DTLS/DNS/NTP/PING |
| VoLTE | | | | |
| GSM Voice | | | | |
| Embedded AT | ● | ● | ● | ● |
| FOTA | ● | ● | ● | ● |
| TLS | ● | ● | ● | ● |
| USB Driver | | | | |
| Firmware Upgrade | UART/FOTA | UART/FOTA | UART/FOTA | UART/FOTA |
| **Interfaces** | | | | |
| UART — Full Function Uart | ● | ● | ● | ● |
| UART — Flow Control Uart | ● | ● | ● | ● |
| USB | ● | ● | ● | ● |
| PCM | | | | |
| Status Indicator | ● | ● | ● | ● |
| GPIO | ● | ● | ● | ● |
| SPI | | | | |
| I2C | | | | |
| **Certification** | | | | |
| Certification | CE(RED)* | CE(RED)* | RoHS/REACH/IMDA/CE(RED)/ATEX/TIM/Deutsche Telekom/Vodafone | RoHS/REACH/RCM/Telstra/CE(RED)/GCF/ATEX/TIM*/Deutsche Telekom/Vodafone/FCC/PTCRM/T-mobile/IC |
| **Typical Applications** | Home Security and Automation,Telematics,Smart Meters,Vending,Fleet Management,Asset Tracking | | | |

o : Optional
* : Under Development

| Technology | LTE CAT12 | | LTE CAT6 |
|---|---|---|---|
| **Product** | SIM7912G-M2 | | A7906E-M2 |
| Picture | | | |
| Form Factor | M.2 | | M.2 |
| Dimensions(mm) | 42.0*30.0*2.3 | | 42.0*30.0*2.3 |
| Weight(g) | 6.1 | | 6.1 |
| Frequency LTE LTE - FDD | | B1/B2/B3/B4/B5/B7/B8/B12/B13/B17/B18/B19/B20/B25/B26/B28/B29/B30/B32/B66 | B1/B3/B5/B7/B8/B20/B28/B32 |
| LTE - TDD | | B38/B39/B40/B41 | B38/B40/B41 |
| DL 2XCA | | B1+B3/B5/B18/B19/B20/B26;B2+B2/B4/B5/B12/B13/B17/B29/B30/B66;B3+B3/B5/B7/B8/B19/B20/B28;B4+B4/B5/B12/B13/B17/B29/B30;B5+B7/B30/B66;B7+B7/B20/B28;B12+B30;B13+B66;B20+BB32;B29+B30;B38+B38;B40+B40;B41+B41;B66+B66 | B1+B1/B5/B8/B20;B3+B3/B5/B7/B8/B20/B28;B7+B5/B7/B8/B20/B28;B20+B32;B38+B38;B40+B40;B41+B41;(Note:B32 is only for secondary component carrier) |
| DL 3XCA | | DL inter-band 3CA:B1+B3+B7;B1+B3+B19;B1+B3+B20;B2+B4+B5;B2+B4+B13;B2+B5+B30;B2+B12+B30;B2+B29+B30;B3+B7+B20;B3+B7+B28;B4+B5+B30;B4+B12+B30;B4+B29+B30;B5+B66+B2;B13+B66+B2 DL 2 contiguous plus inter-band 3CA:B2+B2+B5;B2+B2+B13;B3+B3+B7;B3+B7+B7;B3+b3+B20;B4+B4+B5;B4+B4+B13;B5+B66+B66;B13+B66+B66;B66+B66+B2;B66+B66+B66 | N/A |
| UL 2XCA | | B1+B1;B2+B2;B3+B3;B4+B4;B7+B7;B38+B38;B40+B40;B41+B41;B66+B66 | N/A |
| WCDMA | | B1/B2/B3/B4/B5/B8/B19 | B1/B3/B5/B8 |
| GNSS | Beidou/GPS/GLONASS | | Beidou/GPS/GLONASS |
| Temperature | -30℃ ~ +70℃ | | -30℃ ~ +70℃ |
| **Electrical Features** | | | |
| Supply Voltge Range | 3.135V~ 4.4V，3.3V(typ) | | 3.1V~ 4.4V, Typ: 3.3V |
| Power Consumption (sleep)(mA) | 3.0 | | TBD |
| **Data Transfer** | | | |
| LTE CAT 6 | | | 300Mbps(DL)/50Mbps (UL) |
| LTE CAT 12 | 600Mbps(DL)/75Mbps (UL) | | |
| **Software Features** | | | |
| Protocol | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS /HTTP/HTTPS/DNS | | TCP/IP/IPV4/IPV6/Multi-PDP/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/FOTA | | |
| **Interface** | | | |
| USB3.0 | *1 | | *1 |
| PCIE | *1 | | *1 |
| PCM | *1 | | *1 |
| GPIO | *1 | | *1 |
| I2C | *1 | | *1 |
| Antenna | *3 | | *3 |
| **Certification** | | | |
| Certification | RoHS/REACH/JATE/Telec/RCM/CE(RED) | | CCC/CTA/SRRC/CE(RED)* |
| **Typical Applications** | Video Surveillance, Gateway, Industrail PDA, Router | | |

* : Under Development

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| Technology | LTE CAT6 | | |
|---|---|---|---|
| **Product** | SIM7906SA-M2 | SIM7906E-M2 | SIM7906E-PCIE |
| Picture | | | |
| Form Factor | M.2 | M.2 | miniPCIe |
| Dimensions(mm) | 42.0*30.0*2,3 | 42.0*30.0*2.3 | 30.0*51.0*4.3 |
| Weight(g) | 6.1 | 6.1 | 6.0 |
| Frequency LTE LTE - FDD | B1/B2/B3/B4/B5/B7/B12/B17/B26/B27/B28/B66 | B1/B3/B5/B7/B8/B20/B28/B32 | B1/B3/B5/B7/B8/B20/B28/B32 |
| LTE - TDD | B38/B41 | B38/B40/B41 | B38/B39/B40/B41 |
| DL 2XCA | B1+B1/B5/B28;B2+B2/B5/B28;B3+B3/B5/B28;B4+B4/B5/B7/B27/B28;B5+B7/B38/B41/B66;B7+B7/B28;B12+B66;B26+B38/B41;B28+B28/B66;B38+B38;B41+B41;B66+B66; | B1+B1/B5/B8/B20/B28;B3+B3/B5/B7/B8/B20/B28;B7+B5/B7/B8/B20/B28;B20+B32;B38+B38;B40+B40;B41+B41;(Note:B32 is only for secondary component carrier) | B1+B1/B5/B8/B20/B28;B3+B3/B5/B7/B8/B20/B28;B7+B5/B7/B8/B20/B28;B20+B32;B38+B38;B39+B39;B40+B40;B41+B41;(Note:B32 is only for secondary component carrier) |
| DL 3XCA | N/A | N/A N/A | N/A |
| UL 2XCA | N/A | N/A | N/A |
| WCDMA | B1/B2/B4/B5 | B1/B3/B5/B8 | B1/B3/B5/B8 |
| GNSS | Beidou/GPS/GLONASS/Galileo/QZSS | Beidou/GPS/GLONASS | Beidou/GPS/GLONASS/Galileo/QZSS |
| Temperature | -30℃ ~ +70℃ | -30℃ ~ +70℃ | -30℃ ~ +70℃ |
| **Electrical Features** | | | |
| Supply Voltge Range | 3.135V~ 4.4V，3.7V(typ) | 3.135V~ 4.4V，3.3V(typ) | 3.1V~ 4.4V, Typ: 3.3V |
| Power Consumption (sleep)(mA) | 2.4 | 2.4 | 2.4 |
| **Data Transfer** | | | |
| LTE CAT 6 | 300Mbps(DL)/75Mbps (UL) | 300Mbps(DL)/75Mbps (UL) | 300Mbps(DL)/75Mbps (UL) |
| LTE CAT 12 | | | |
| **Software Features** | | | |
| Protocol | TCP/IP/IPV4/IPV6/Multi-PDP/DNS | 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 | SSL3.0/TLS1.0/TLS1.2 |
| FOTA | ● | ● | ● |
| Android RIL | Android 6/7/8/9 | Android 2.3/4.0/5.0/6.0/7.0 | Android 6/7/8/9 |
| USB Driver | Microsoft Windows 2000/XP/Vista/Win7/Win8/Win10/Linux /Android | 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 | USB/FOTA |
| **Interface** | | | |
| USB3.0 | *1 | *1 | *1 |
| PCIE | *1 | *1 | *1 |
| PCM | *1 | *1 | *1 |
| GPIO | *1 | *1 | *1 |
| I2C | *1 | *1 | *1 |
| Antenna | *3 | *3 | *3 |
| **Certification** | | | |
| Certification | RoHS/REACH/RCM* | RoHS/REACH/RCM/CE(RED) | RoHS/REACH/RCM*/CE(RED)* |
| **Typical Applications** | Video Surveillance, Gateway, Industrail PDA, Router | | |

* : Under Development

| Technology | | LTE CAT4 | LTE CAT3 | LTE CAT1 |
|---|---|---|---|---|
| Product | | SIM7600X-H | SIM7100X | A7600E |
| Picture | | | | |
| Form Factor | | LCC, 87PIN | LCC, 87PIN | LCC+LGA,119PIN |
| Dimensions(mm) | | 30.0*30.0*2.9 | 30.0*30.0*2.9 | 30.0*30.0*2.5 |
| Weight(g) | | 5.7 | 5.7 | 4.6 |
| Frequency Bands | -A(North America(AT&T) | LTE-FDD: B2/B4/B12 WCDMA: B2/B5 | LTE-FDD: B2/B4/B5/B17 WCDMA: B2/B5 | |
| | -V(North America (Verizon)) | V: LTE-FDD: B2/B4/B5/B13 | | |
| | -E(Europe/Middle East/Africa/Korea /Thailand) | LTE-FDD: B1/B3/B5/B7/B8/B20 LTE-TDD: B38/B40/B41 WCDMA: B1/B5/B8　GSM: 900/1800MHz | LTE-FDD: B1/B3/B7/B8/B20 LTE-TDD: B38/B40 WCDMA: B1/B8　GSM: 900/1800 MHz | LTE-FDD: B1/B3/B5/B7/B8/B20 LTE-TDD: B38/B40/B41 GSM: 900/1800 MHz |
| | -SA(New Zealand /Australia/South America) | LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B28 LTE-TDD: B40　WCDMA: B1/B2/B5/B8 GSM: 850/900/1800/1900MHz | | |
| | -JC/JE(Japan) | JC: LTE-FDD: B1/B3/B8/B18/B19/B26 | JC: LTE-FDD: B1/B3/B8/B18/B19　LTE-TDD: B41 WCDMA: B1/B6/B8　GSM: 900/1800 MHz JE: LTE-FDD: B1/B8　WCDMA: B1/B8 GSM: 900/1800 MHz | |
| | -G(Global) | LTE-FDD:B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/ B19/B20/B25/B26/B28/B66 LTE-TDD: B34/B38/B39/B40/B41 WCDMA: B1/B2/B4/B5/B6/B8/B19 GSM: 850/900/1800/1900MHz | | |
| | -NA(North America) | LTE-FDD: B2/B4/B5/B12/B13/B14/B25/B26/ B66/B71　LTE-TDD: B41 | | |
| 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) | | 2.8@GSM,BS_PA_MFRMS=2 3.3@WCDMA, DRX=9　　2.3@LTE | 4.3@GSM,BS_PA_MFRMS=2 2.1@WCDMA, DRX=9　　1.9@LTE | 3.5@GSM,BS_PA_MFRMS=2 3.8@LTE |
| **Data Transfer** | | | | |
| LTE(Mbps) | | 150(DL)/50(UL) | 100(DL)/50(UL) | 10(DL)/5(UL) |
| WCDMA/HSPA+(Mbps) | | 42(DL)/5.76(UL) | 42(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/ HTTP/ HTTPS/DNS | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS/ HTTP/ HTTPS/SMTP/SMTPS/DNS | 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 | | Android 5.0/6.0/7.0/8.0/9.0 | Android 5.0/6.0/7.0/8.0/9.0 | Android 5.0/6.0/7.0/8.0/9.0 |
| USB Driver | | Microsoft Windows 7/8/10 Linux/Android | Microsoft Windows 7/8/10 Linux/Android | Microsoft Windows 7/8/10 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 | USB/FOTA |
| **Interfaces** | | | | |
| SIM Card | | 1.8V/3.0V | 1.8V/3.0V | 1.8V/3.0V |
| UART | | ● | ● | ● |
| USB | | ● | ● | ● |
| PCM | | ○ | ○ | ○ |
| ADC | | ● | ● | ● |
| GPIO | | ● | ● | ● |
| SD Card | | ● | ● | ● |
| SPI | | ○ | ● | |
| I2C | | ● | ● | ● |
| Diversity Receiver | | ● | ● | |
| **Certification** | | | | |
| Certification | | A: RoHS/REACH/FCC/PTCRB/AT&T/IC/Rogers* E: RoHS/REACH/IMDA/CE(RED)/GCF/ Deutsche Telekom/Vodafone JC: RoHS/REACH/Telec/JATE/DoCoMo/KDDI/Softbank SA: RoHS/REACH/RCM/CE(RED)/Anatel V: RoHS/REACH/GCF/FCC/Verizon NA: RoHS/REACH/GCF/FCC/PTCRB/AT&T/Verizon/ T-mobile/US Cellular*/IC G: RoHS/REACH/CCC/JATE/Telec/KC*/RCM/Telstra*/ CE(RED)/GCF/Deutsche Telekom/ICASA*/FCC/PTCRB/ AT&T*/Verizon*/T-mobile*/US Cellular*/IC/FAC/Anatel | A: RoHS/REACH/FCC/PTCRB/AT&T/IC/Rogers E: RoHS/REACH/CE(RED)/GCF*/ICASA JC: RoHS/REACH/Telec/JATE/DoCoMo/KDDI JE: RoHS/REACH/Telec/JATE/Softbank | RoHS*/REACH*/CE(RED) |
| **Typical Applications** | | Fleet Management,Telematics,Security,Tracking,Agriculture,Smart Meters,Router,Gateway | | |

○ : Optional　* : Under Development

| Technology | | LTE CAT1 | | |
|---|---|---|---|---|
| Product | | SIM7600X | SIM7500X | A7670X |
| Picture | | | | |
| Form Factor | | LCC, 87PIN | LGA, 56PIN | LGA, 68PIN |
| Dimensions(mm) | | 30.0*30.0*2.9 | 24.0*27.0*2.75 | 24.0*24.0*2.3 |
| Weight(g) | | 5.7 | 4 | 3.08 |
| Frequency Bands | -A(North America(AT&T) | LTE-FDD: B2/B4/B12 WCDMA: B2/B5 | LTE-FDD: B2/B4/B12 WCDMA: B2/B5 | |
| | -V(North America (Verizon) | | LTE-FDD B4/B13 | |
| | -E(Europe/Middle East/Africa/Korea /Thailand) | LTE-FDD: B1/B3/B5/B7/B8/B20 LTE-TDD: B38/B40/B41 WCDMA: B1/B5/B8　GSM: 900/1800 MHz | LTE-FDD: B1/B3/B7/B8/B20 WCDMA: B1/B8 GSM: 900/1800MHz | LTE-FDD: B1/B3/B5/B7/B8/B20 GSM: 900/1800 MHz |
| | -SA(New Zealand /Australia/South America) | LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B28 LTE-TDD: B40　WCDMA: B1/B2/B5/B8 GSM: 850/900/1800/1900 MHz | LTE-FDD: B1/B3/B5/B7/B8/B28 WCDMA: B1/B5 | LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B28/B66 GSM: 850/900/1800/1900 MHz |
| | -JC/JE(Japan) | | JC: LTE-FDD: B1/B18/B19/B26 JE: LTE-FDD: B1/B3/B8 | |
| | -G(Global) | LTE-FDD:B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/ B19/B20/B25/B26/B28/B66 LTE-TDD: B34/B38/B39/B40/B41 WCDMA: B1/B2/B4/B5/B6/B8/B19 GSM: 850/900/1800/1900MHz | | |
| | -NA(North America) | LTE-FDD: B2/B4/B5/B12/B13/B14/B25/ B26/B66/B71　LTE-TDD: B41 | | |
| | -C(China) | | | LTE-FDD: B1/B3/B5/B8　LTE-TDD: B34/B38/ B39/B40/B41　GSM: 900/1800 MHz |
| 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) | | 2.8@GSM,BS_PA_MFRMS=2 3.3@WCDMA, DRX=9　2.3@LTE | 2.8@GSM,BS_PA_MFRMS=2 3.3@WCDMA, DRX=9　1.6@LTE | 3.5@GSM,BS_PA_MFRMS=2 3.8@LTE |
| **Data Transfer** | | | | |
| LTE(Mbps) | | 10(DL)/5(UL) | 10(DL)/5(UL) | 10(DL)/5(UL) |
| WCDMA/HSPA+(Mbps) | | 42(DL)/5.76(UL) | 42(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/ HTTP/HTTPS/DNS | TCP/IP/IPV4/IPV6/Multi-PDP/FTP/FTPS/ HTTP/HTTPS/DNS | 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 | | Android 5.0/6.0/7.0/8.0/9.0 | Android 5.0/6.0/7.0/8.0/9.0 | Android 5.0/6.0/7.0/8.0/9.0 |
| USB Driver | | Microsoft Windows 7/8/10 Linux/Android | Microsoft Windows 7/8/10 Linux/Android | Microsoft Windows 7/8/10 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 | USB/FOTA |
| **Interfaces** | | | | |
| SIM Card | | 1.8V/3.0V | 1.8V/3.0V | 1.8V/3.0V |
| UART | | ● | ● | ● |
| USB | | ● | ● | ● |
| PCM | | ○ | ○ | ○ |
| ADC | | ● | ● | ● |
| GPIO | | ● | ● | ● |
| SD Card | | ● | | ● |
| SPI | | ○ | | |
| I2C | | ● | ● | ● |
| Diversity Receiver | | ● | ● | |
| **Certification** | | | | |
| Certification | | A: RoHS/REACH/FCC/PTCRB/AT&T/IC/Rogers/Anatel E: RoHS/REACH/KC/IMDA/CE(RED)/GCF/ Deutsche Telekom/Vodafone/ SA: RoHS/REACH/RCM/Telstra/CE(RED)/GCF/Anatel NA: RoHS/REACH/GCF/FCC/PTCRB/AT&T/Verizon/ T-mobile/US Cellular*/IC G: RoHS/REACH/CE(RED)/JATE/Telec/FCC/RCM/ GCF/PTCRB/AT&T*/Verizon*/T-mobile*/US Cellular*/IC | A: RoHS/REACH/FCC/PTCRB/AT&T/IC/Rogers E: RoHS/REACH/SRRC/CE(RED)/Deutsche Telekom JC: RoHS/REACH/Telec/JATE/DoCoMo/KDDI JE: RoHS/REACH/Telec/JATE/Softbank SA: RoHS/REACH/RCM/Telstra*/CE(RED) V: RoHS/REACH/GCF/FCC/Verizon | C: RoHS*/REACH*/CCC/CTA/SRRC/CMCC*/ China Unicom*/China Telecom* E: RoHS*/REACH*/CE(RED) SA: RoHS*/REACH*/CE(RED)*/RCM*/FCC*/Anatel* |
| **Typical Applications** | | Fleet Management,Telematics,Security,Tracking,Agriculture,Smart Meters,Router,Gateway | | |

○ : Optional　* : Under Development

# Smart Module

| Technology | Smart Module | |
|---|---|---|
| Product | SIM8905X | SIM8950X |
| Picture | | |
| Form Factor | LCC+LGA 210PIN | LCC+LGA 210PIN |
| Dimensions(mm) | 40.5*40.5*2.8 | 44.1*45.6*2.8 |
| Weight(g) | 10.6 | 12.5 |
| Frequency Bands -A(North America) | LTE-FDD: B2/B4/B5/B7/B12/B13/B17/B25/B26<br>LTE-TDD: B41<br>WCDMA: B1/B2/B4/B5/B8<br>EDGE/GPRS/GSM: 850/900/1900 MHz | 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 |
| Frequency Bands -E(Europe) | LTE-FDD: B1/B3/B5/B7/B8/B20<br>LTE-TDD: B38/B40/B41<br>WCDMA: B1/B2/B5/B8<br>GSM: 850/900/1800/1900 MHz | LTE-FDD: B1/B3/B5/B7/B8/B20<br>LTE-TDD: B38/B40/B41<br>WCDMA: B1/B5/B8<br>GSM: 900/1800 MHz |
| GNSS | BeiDou/GPS/GLONASS | BeiDou/GPS/GLONASS |
| WLAN | 2.4G/5G, 802.11 b/g/n/a | 2.4G/5G, 802.11a/b/g/n/ac |
| Application Processor | Quad ARM Cortex-A7 cores up to 1.1 GHz | Octa ARM Cortex-A53 cores up to 1.8GHz |
| Memory | 1GB LPDDR3 RAM +8GB eMMC Flash | 2GB LPDDR3 RAM +16GB eMMC Flash |
| Supply Voltge Range | 3.4V~ 4.4V | 3.4V~ 4.4V |
| Temperature | -35℃ ~ +75℃ | -25℃ ~ +75℃ |
| **Data Transfer** | | |
| LTE(Mbps) | LTE CAT 4 - 150(DL)/50(UL) | LTE CAT 4 - 150(DL)/50(UL) |
| WCDMA/HSPA/HSPA+(Mbps) | 42.2(DL)/5.76(UL) | 42.2(DL)/5.76(UL) |
| TD-SCDMA(Mbps) | 2.8(DL)/2.2(UL) | 2.8(DL)/2.2(UL) |
| CDMA EV-DO(Mbps) | 3.1(DL)/1.8(UL) | 3.1(DL)/1.8(UL) |
| CDMA 1xRTT(Kbps) | 153.6(DL)/153.6(UL) | 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 | 4-lane MIPI_DSI * 2<br>FHD 1920*1200 60fps |
| 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 * 2<br>Primary camera: 4-lane MIPI_CSI，up to 21MP<br>Secondary camera: 2-lane MIPI_CSI，up to 8MP |
| Video Performance | Encode：<br>H.264 BP/MP－720p，30 fps；MPEG-4 SP/H.263<br>P0－WVGA，30 fps；VP8－WVGA，30 fps；<br>Decode：<br>H.264 BP/MP/HP－1080p，30 fps；MPEG-4<br>SP/ASP－1080p，30 fps；DivX 4x/5x/6x－1080p，<br>30 fps；H.263 P0－WVGA，30 fps；VP8－1080p，<br>30 fps；(HEVC) H.265 MP 8 bit－1080p，30 fps； | 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 |
| Analog Audio | 2 Inputs&3 Outputs | 2 Inputs &4 Outputs |
| Audio Codec | G711；Raw PCM；QCELP；EVRC、EVRC-B、<br>EVRC-WB；AMR-NB、AMR-WB；GSM-EFR、<br>GSM-FR、GSM-HR<br>MP3；AAC、AAC+、eAAC；AMR-NB、ARM-WB；<br>G.711、WMA 9/10 Pro | G711;QCELP;EVRC;EVRC-B、EVRC-WB;<br>AMR-NB、AMR-WB;GSM-EFT、GSM-FT、<br>GSM-HR |
| **Interfaces** | | |
| UART | *2 | *4 |
| USB | USB2.0 | USB3.0/2.0/Type-C/OTG |
| UIM | *2 | *2 |
| GPIO | At Least 21*GPIO | At Least 22*GPIO |
| SD Card | ● | ● |
| SPI | ● | ● |
| I2C | *3 | *3 |
| ADC | *1 | *1 |
| Motor Drive | *1 | ○ |
| WLED Sink | | ○ |
| Flash Drive | | ○ |
| Antenna | Main&Diversity&GNSS&Wi-Fi/BT ANT | Main&Diversity&GNSS&Wi-Fi/BT |
| **Software Features** | | |
| Operating System | Android 5.1/7.1/8.1/Linux 4.9 | Android 7.1/8.1 |
| USB Driver | Microsoft Windows 2000/XP/Vista/Win7/Win8/Win10/Linux | Microsoft Windows 2000/XP/Vista/Win7/Win8/Win10/Linux |
| Bluetooth | BT 2.1+EDR/3.0/4.1 LE | 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 | A: RoHS/REACH/FCC/PTCRB/IC/AT&T<br>E: RoHS/REACH/CE(RED) | RoHS/REACH/CE(RED) |
| **Typical Applications** | POS, Security, Networking, Telematics,Retail | |

○：Optional   * : Under Development

# Automotive Module

| Technology | LTE CAT4 | C-V2X |
|---|---|---|
| Product | SIM7800E | SIM8100 |
| Picture | | |
| Form Factor | LGA，282 PIN | LGA，189 PIN |
| Dimensions(mm) | 34.0*40.0*3.1 | 30.0*32.0*2.75 |
| Weight(g) | 7.8g±0.2 | 5.8 |
| Frequency Bands | LTE-FDD: B1/B3/B5/B7/B8/B20   LTE-TDD: B38/B40/B41<br>WCDMA: B1/B5/B8   GSM: 900/1800 MHz | B47, B46D |
| GNSS | BeiDou/GPS/GLONASS/Galileo/QZSS | BeiDou/GPS/GLONASS/Galileo |
| Bluetooth | BLE4.2(with W59) | N/A |
| Temperature | -40℃ ~ +85℃ | -40℃ ~ +85℃ |
| **Electrical Features** | | |
| Supply Voltge Range | 3.3V~ 4.3V | 4.75V~ 5.25V |
| Power Consumption (sleep)(mA) | 1.8mA@GSM,BS_PA_MFRMS=2  3.3mA@WCDMA,<br>DRX=9  1.84mA@LTE-FDD | TBD |
| **Data Transfer** | | |
| GPRS Slot | class 12 | |
| LTE(Mbps) | LTE CAT 4: 150 (DL)/50(UL) | |
| WCDMA/HSPA/HSPA+(Mbps) | 42.2(DL)/11.5(UL) | 3GPP Release 14 C-V2X PC-5 mode |
| TD-SCDMA(Mbps) | 2.8(DL)/2.2(UL) | |
| CDMA EV-DO(Mbps) | 3.1(DL)/1.8(UL) | |
| EDGE(Kbps) | 236.8(DL)/236.8(UL) | |
| **Software Features** | | |
| Protocol | TCP/IP/IPV4/IPV6/MultiPDP/FTP/FTPS/HTTP/ HTTPS/DNS/SMTP/<br>SMTPS/NTP/PING/SSL | PC5 |
| eCall | ● | N/A |
| Open Linux | ● | N/A |
| Multi-APN | ● | N/A |
| SDIO | ● | N/A |
| UART2 | ● | N/A |
| 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 2.3/4.0/5.0/6.0/7.0 | N/A |
| Security | SELinux/Trustzone/Secure boot | N/A |
| Routing policy | 4G,WIFI and Ehternet port | N/A |
| Android RIL | Android 2.4.0/4.0/5.0/6.0/7.0 | 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 | N/A |
| Wi-Fi | 2.4G/5G(with W59) | N/A |
| **Interfaces** | | |
| SGMII | 10M/100M/1000M Ehternet | N/A |
| UART | 3*UART | 2*UART |
| USB | 1*2.0 | 1*3.0, 1*2.0 |
| ADC | 3*ADC | N/A |
| OTG | ● | N/A |
| HSIC | ● | N/A |
| PCIE | | PCIe Gen 2 (PCIe GEN1 compatible) |
| PCM | 1*I2S | N/A |
| Analog Audio | ○ | N/A |
| GPIO | 5*GPIO | ● |
| SDIO | SDIO3.0（200MHz Max） | N/A |
| SD Card | SD3.0（128G Max） | 8-bit EMMC 4.51 at up to 100MHz SDR(1.8V) or 4-bit dual voltage SD 3.0<br>up to 50MHz DDR(1.8/2.85V).1-bit or 4-bit SD card up to 200MHz SDR mode. |
| SPI | 1*SPI | 1*SPI |
| I2C | 1*I2C | N/A |
| Antenna | 1*Main&1*Diversity&1*GNSS | 2*V2X&1*GNSS |
| **Certification** | | |
| Certification | RoHS/REACH/CE(RED)* | |
| **Typical Applications** | Vehicle Tracking, OBD,Vehicle DVR, T-BOX | |

○：Optional   * : Under Development

# WCDMA/HSPA/HSPA+ Module

| Technology | WCDMA/HSDPA | |
|---|---|---|
| Product | SIM5320X | |
| Picture |  | |
| Form Factor | LCC, 80PIN | |
| Dimensions(mm) | 30.0*30.0*2.9 | |
| Weight(g) | 5.6 | |
| Frequency Bands | -A(North America) | WCDMA: B2/B5    GSM: 850/900/1800/1900MHz |
| | -E(China/ Europe) | WCDMA: B1/B8    GSM: 850/900/1800/1900MHz |
| | -JE (Japan) | WCDMA: B1/B8 GSM: 850/900/1800/1900MHz |
| | -J(South Asia /Australia) | WCDMA: B1/B5(B6)  GSM: 850/900/1800/1900MHz |
| GNSS | GPS | |
| Temperature | -40℃ ~ +85℃ | |
| **Electrical Features** | | |
| Supply Voltge Range | 3.4V~4.2V | |
| Power Consumption(mA) | 2.3@GSM, DRX=9   2.7@WCDMA, DRX=8 | |
| **Data Transfer** | | |
| WCDMA/HSPA/HSPA+ | 3.6Mbps(DL)  384Kbps(UL) | |
| GPRS（Kbps） | 85.6(DL)/85.6(UL) | |
| EDGE（Kbps） | 236.8(DL)/236.8(UL) | |
| SMS | ● | |
| CSD | ● | |
| **Software Features** | | |
| Protocol | TCP/IP/FTP/FTPS/HTTP/HTTPS/SMTP/DNS | |
| eCall | | |
| MMS | ● | |
| TLS | ● | |
| File System | ● | |
| Audio Record/Play | | |
| TTS | | |
| DTMF | O | |
| LBS | ● | |
| FOTA | ● | |
| Jamming Detection | ● | |
| Network Scanning | ● | |
| Android RIL | Android 2.4/4.0/5.0/6.0/7.0 | |
| USB Driver | Microsoft Windows 2000/XP/Vista/Win7/Win8/ Win10/ Linux /Android | |
| Embedded AT | ● | |
| Firmware Upgrade | USB | |
| **Interfaces** | | |
| UART | ● | |
| USB | ● | |
| SIM | 1.8V/3.0V | |
| PCM | O | |
| ADC | ● | |
| GPIO | At Least 7*GPIO | |
| SD卡 | | |
| SPI | ● | |
| I2C | ● | |
| **Certification** | | |
| Certification | A: RoHS/REACH/RCM/FCC/PTCRB/AT&T/IC/Rogers<br>E: RoHS/REACH/CCC/IMDA*/RCM/CE(RED)/GCF/Orange/TIM/Deutsche Telekom/Vodafone/ICASA<br>J: RoHS/REACH/Telec/JATE/Docomo/RCM<br>JE: RoHS/REACH/Telec/JATE/Softbank | |
| **Typical Applications** | Telematics,Fleet Management,Tracking,Smart Meters,Security,RMAC | |

o: Optional    * : Under Development

# GSM/GPRS Module

| Technology | GSM/GPRS | | |
|---|---|---|---|
| Product | SIM800C | SIM800F | SIM800H |
| Picture |  |  |  |
| Form Factor | LCC, 42PIN | LCC, 68PIN | LGA,88PIN |
| Dimensions(mm) | 17.6*15.7*2.3 | 24.0*24.0*3.0 | 17.8*15.8*2.4 |
| Weight(g) | 1.3 | 3.1 | 1.35 |
| Frequency Bands | GSM: 850/900/1800/1900MHz | GSM: 850/900/1800/1900MHz | GSM: 850/900/1800/1900MHz |
| Bluetooth | BT 3.0 | BT 3.0 | BT 3.0 |
| GNSS | | | |
| Temperature | -40℃~+85℃ | -40℃~+85℃ | -40℃~+85℃ |
| **Electrical Features** | | | |
| Supply Voltge Range | 3.4V~4.4V | 3.4V~4.4V | 3.4V~4.4V |
| Power Consumption(mA) | 1.50@GSM, DRX=2 0.90@GSM, DRX=9 | 1.30@GSM, DRX=2 0.85@GSM, DRX=9 | 1.50@GSM, DRX=2 0.90@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/ POP3/SMTP/PPP | TCP/UDP/HTTP/FTP/ POP3/SMTP/PPP | TCP/UDP/HTTP/FTP/ 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  3*GPIO |
| SD | ● | ● | ● |
| SPI | | ○ | ○ |
| I2C | | ● | ● |
| **Certification** | | | |
| Certification | RoHS/REACH/CCC/CTA/SRRC/CMCC/ China Unicom/RCM/CE(RED)/GCF/TIM/ Deutsche Telekom/ICASA/FCC/Anatel//BQB | RoHS/REACH/CCC/CTA/SRRC/CMCC/CE(RED)/ GCF/Orange/ICASA/FCC | RoHS/REACH/CCC/RCM/CE(RED)/GCF/Orange/ ICASA/FCC/PTCRB/Anatel |
| **Typical Applications** | Telematics,Fleet Management,Smart Meters,Security,RMAC | | |

o: Optional    * : Under Development

# GSM/GPRS Module

| Technology | GSM/GPRS | GSM/GPRS&GNSS | |
|---|---|---|---|
| **Product** | **SIM800C-DS** | **SIM868** | **SIM868E** |
| Picture | | | |
| Form Factor | LCC& LGA, 77PIN | LCC&LGA,77PIN | LCC&LGA,77PIN |
| Dimensions(mm) | 17.6*15.7*2.3 | 17.6*15.7*2.3 | 17.6*15.7*2.3 |
| Weight(g) | 1.3 | 1.5 | 1.5 |
| Frequency Bands | GSM: 850/900/1800/1900MHz | GSM: 850/900/1800/1900MHz | GSM: 850/900/1800/1900MHz |
| Bluetooth | BT 3.0 | BT 3.0 | BT 3.0&4.0 |
| GNSS | | BeiDou/GPS/GLONASS | BeiDou/GPS/GLONASS |
| Temperature | -40℃~+85℃ | -40℃~+85℃ | -40℃ ~ +85℃ |
| **Electrical Features** | | | |
| Supply Voltge Range | 3.4V~4.4V | 3.4V~4.4V | 3.4V~ 4.4V |
| Power Consumption(mA) | 1.60@GSM, DRX=2 0.93@GSM, DRX=9 | | 1.42@GSM, DRX=2 0.86@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/ POP3/SMTP/PPP | TCP/UDP/HTTP/FTP/ POP3/SMTP/PPP | TCP/UDP/HTTP/FTP/ 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&2 Output | 1 Input&2 Output |
| ADC | ● | ● | ● |
| GPIO | At Least 4*GPIO | At Least 4*GPIO | At Least 4*GPIO |
| SD卡 | ● | ● | ● |
| SPI | ○ | ○ | ○ |
| I2C | ● | ● | ● |
| **Certification** | | | |
| Certification | CE/RoHS/REACH | RoHS/REACH/CCC/CTA/SRRC/CMCC/ CE(RED)/GCF/Deutsche Telekom/ICASA/FCC | CE/RoHS/REACH/BQB/Deutsche Telekom |
| **Typical Applications** | Telematics,Fleet Management,Smart Meters,Security,RMAC | | |

o: Optional    * : Under Development

# GNSS Module

| Technology | GNSS | | | |
|---|---|---|---|---|
| **Product** | **SIM28M** | **SIM28ML** | **SIM68M** | **SIM68ML** |
| Picture | | | | |
| Form Factor | LCC, 18PIN | LCC, 18PIN | LCC, 18PIN | LCC, 18PIN |
| Dimensions(mm) | 9.7*10.1*2.5 | 9.7*10.1*2.5 | 10.1*9.7*2.5 | 9.7*10.1*2.5 |
| Weight(g) | 0.5 | 0.5 | 0.5 | 0.5 |
| Temperature | -40℃~+85℃ | -40℃~+85℃ | -40℃~+85℃ | -40℃~+85℃ |
| **Electrical Features** | | | | |
| Supply Voltge Range | 2.8~4.3V | 2.8~4.3V | 2.8~4.3V | 2.8~4.3V |
| I/O Voltage | 2.8V | 2.8V | 2.8V | 2.8V |
| Power Consumption — Acquisition | 17mA | 17mA | 25mA | 25mA |
| Power Consumption — Tracking | 16mA | 16mA | 21mA | 18mA |
| Power Consumption — Sleep | 150µA | 150µA | 340µA | 350uA |
| Power Consumption — Backup | 8µA | 8µA | 14µA | 14uA |
| **GNSS** | | | | |
| GNSS | GPS | GPS | GPS/GLONASS/Galileo/QZSS | GPS/GLONASS/Galileo/QZSS |
| A-GPS | ● | | ● | ● |
| Channel Number | 22 Track/66 Acq | 22 Track/66 Acq | 33 Track/99 Acq | 33 Track/99 Acq |
| SBAS | WAAS/EGNOS/GAGAN/MSAS | WAAS/EGNOS/GAGAN/MSAS | WAAS/EGNOS/GAGAN/MSAS | WAAS/EGNOS/GAGAN/MSAS |
| Sensivity — Tracking | -165 dBm | -165 dBm | -165 dBm | -165 dBm |
| Sensivity — Cold Start | -148 dBm | -148 dBm | -148 dBm | -148 dBm |
| Sensivity — Reacquisition | -160 dBm | -160 dBm | -160 dBm | -160 dBm |
| TTFF (Time to First Fix) — Cold Start | 32s | 32s | 28s | 28s |
| TTFF (Time to First Fix) — Warm Start | 30s | 30s | 26s | 26s |
| TTFF (Time to First Fix) — Hot Start | <1s | <1s | <1s | <1s |
| Accuracy — Position | <2.5m CEP | <2.5m CEP | <2.5m CEP | <2.5m CEP |
| Accuracy — Velocity | 0.1m/s | 0.1m/s | 0.1m/s | 0.1m/s |
| Max Update Rate | 10Hz | 5Hz | 10Hz | 10Hz |
| Baud Rate(default) | 9600/115200 | 9600/115200 | 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 | Active/passive |
| Antenna Power | External or internal | External or internal | External or internal | External or internal |
| **Certification** | | | | |
| Certification | RoHS/REACH/CE(RED) | RoHS/REACH/CE(RED) | RoHS/REACH/CE(RED) | RoHS/REACH/CE(RED) |
| **Typical Applications** | Pet Tracking, Asset Tracking | | | |

o: Optional    * : Under Development

## | GNSS Module

| Technology | GNSS | | | |
|---|---|---|---|---|
| **Product** | **SIM33ELA** | **SIM68E** | **SIM68D** | **SIM68I** |
| Picture |  |  |  |  |
| Form Factor | LCC, 31PIN | LCC, 22PIN | LCC, 24PIN | LCC, 24PIN |
| Dimensions(mm) | 14.0*9.6*2.15 | 13.0*15.0*2.3 | 16*12.2*2.4 | 16*12.2*2.4 |
| Weight(g) | 0.5 | 0.5 | 1 | 1 |
| Temperature | -40℃~+85℃ | -40℃~+85℃ | -40℃ ~ +85℃ | -40℃ ~ +85℃ |
| **Electrical Features** | | | | |
| Supply Voltge Range | 2.8~4.3V | 2.8~4.3V | 2.8~4.5V | 2.8~4.5V |
| I/O Voltage | 2.8V | 2.8V | 2.8V | 2.8V |
| Power Consumption — Acquisition | 25mA | 25mA | 32mA | 32mA |
| Power Consumption — Tracking | 20mA | 20mA | 23mA | 23mA |
| Power Consumption — Sleep | 320µA | 340µA | 353uA | 353uA |
| Power Consumption — Backup | 14µA | 14µA | 78uA | 78uA |
| **GNSS** | | | | |
| GNSS | GPS/GLONASS/Galileo/QZSS | GPS/GLONASS/Galileo/QZSS | L1: GPS/Beidou/GLONASS/Galileo/QZSS L5: GPS/Beidou/Galileo/QZSS/ | L1: GPS/Beidou/GLONASS/Galileo L5: NavIC |
| A-GPS | ● | ● | ● | ● |
| Channel Number | 33 Track/99 Acq | 33 Track/99 Acq | L1:75+L5:60 | L1:75+L5:7 |
| SBAS | WAAS/EGNOS/GAGAN/MSAS | WAAS, EGNOS, GAGAN,MSAS | WAAS/EGNOS/GAGAN/MSAS/SDCM | WAAS/EGNOS/GAGAN/MSAS/SDCM |
| Sensivity — Tracking | -165 dBm | -165 dBm | -165 dBm | -165 dBm |
| Sensivity — Cold Start | -147 dBm | -148 dBm | -148 dBm | -148 dBm |
| Sensivity — Reacquisition | -160 dBm | -160 dBm | TBD | TBD |
| TTFF (Time to First Fix) — Cold Start | 28s | 28s | TBD | TBD |
| TTFF (Time to First Fix) — Warm Start | 26s | 26s | 24S | 24S |
| TTFF (Time to First Fix) — Hot Start | <1s | <1s | <1S | <1S |
| Accuracy — Position | <2.5m CEP | <2.5m CEP | <1m CEP | <1m CEP |
| Accuracy — Velocity | 0.1m/s | 0.1m/s | TBD | TBD |
| Max Update Rate | 10Hz | 10Hz | 10Hz | 10Hz |
| Baud Rate(default) | 9600/115200 | 9600/115200 | 9600/115200 | 9600/115200 |
| Jamming Detection | ● | ● | ● | ● |
| Anti-jamming | ● | ● | ● | ● |
| Built-in LNA | ● | ● | ● | ● |
| **Interfaces** | | | | |
| UART | ● | ● | ● | ● |
| Reset | | ● | ● | ● |
| Time Pulse | ● | ● | ● | ● |
| Digital I/O | ● | ● | ● | ● |
| **Antenna** | | | | |
| Antenna Type | Passive | Active/passive | Active/passive | Active/passive |
| Antenna Power | Internal | Internal | External or internal | External or internal |
| **Certification** | | | | |
| Certification | RoHS/REACH/CE(RED) | RoHS/REACH/CE(RED) | RoHS*/REACH*/CE(RED)* | RoHS*/REACH*/CE(RED)* |
| **Typical Applications** | **Pet Tracking, Asset Tracking** | | | |

o: Optional    * : Under Development

## | GNSS Module

| Technology | GNSS | | | |
|---|---|---|---|---|
| **Product** | **SIM33EAU** | **SIM39EAU** | **SIM39EA** | **SIM39EAR** |
| Picture |  |  |  |  |
| Form Factor | LCC, 16PIN | LCC, 16PIN | LCC, 13PIN | LCC, 13PIN |
| Dimensions(mm) | 22.0*22.0*7.5 | 22.0*22.0*7.5 | 16.0*16.0*6.2 | 16.0*16.0*6.2 |
| Weight(g) | 8.5 | 8.5 | 5.8 | 5.8 |
| Temperature | -40℃~+85℃ | -40℃~+85℃ | -40℃~+85℃ | -40℃~+85℃ |
| **Electrical Features** | | | | |
| Supply Voltge Range | 2.8~4.3V | 2.8~4.3V | 2.8~4.3V | 2.8~4.3V |
| I/O Voltage | 2.8V | 2.8V | 2.8V | 2.8V |
| Power Consumption — Acquisition | 38mA | 27mA | 32mA | 32mA |
| Power Consumption — Tracking | 32mA | 24mA | 27mA | 27mA |
| Power Consumption — Sleep | 520µA | 24µA | 400µA | 400µA |
| Power Consumption — Backup | 13µA | | 8µA | 8µA |
| **GNSS** | | | | |
| GNSS | GPS/GLONASS/Galileo/QZSS | GPS | GPS | GPS |
| A-GPS | ● | ● | ● | ● |
| Channel Number | 33 Track/99 Acq | 22 Track/66 Acq | 22 Track/66 Acq | 22 Track/66 Acq |
| SBAS | WAAS/EGNOS/GAGAN/MSAS | WAAS, EGNOS, GAGAN,MSAS | WAAS/EGNOS/GAGAN/MSAS | WAAS/EGNOS/GAGAN/MSAS |
| Sensivity — Tracking | -165 dBm | -165 dBm | -165 dBm | -165 dBm |
| Sensivity — Cold Start | -146 dBm | -147 dBm | -147 dBm | -147 dBm |
| Sensivity — Reacquisition | -160 dBm | -160 dBm | -160 dBm | -160 dBm |
| TTFF (Time to First Fix) — Cold Start | 31s | 32s | 32s | 32s |
| TTFF (Time to First Fix) — Warm Start | 26s | 30s | 30s | 30s |
| TTFF (Time to First Fix) — Hot Start | <1s | <1s | <1s | <1s |
| Accuracy — Position | <2.5m CEP | 2.5m CEP | <2.5m CEP | <2.5m CEP |
| Accuracy — Velocity | 0.1m/s | 0.1m/s | 0.1m/s | 0.1m/s |
| Max Update Rate | 10Hz | 10Hz | 10Hz | 10Hz |
| Baud Rate(default) | 9600/115200 | 9600/115200 | 9600/115200 | 9600/115200 |
| Jamming Detection | ● | ● | ● | ● |
| Anti-jamming | ● | ● | ● | ● |
| Built-in LNA | ● | ● | ● | ● |
| **Interfaces** | | | | |
| UART | ● | ● | ● | ● |
| Reset | | | | |
| Time Pulse | ● | ● | ● | ● |
| Digital I/O | ● | ● | ● | ● |
| **Antenna** | | | | |
| Antenna Type | Passive | Passive | Passive | Passive |
| Antenna Power | Internal | Internal | Internal | Internal |
| **Certification** | | | | |
| Certification | RoHS/REACH/CE(RED) | RoHS/REACH/CE(RED) | RoHS/REACH/CE(RED) | RoHS/REACH/CE(RED)* |
| **Typical Applications** | **Pet Tracking, Asset Tracking** | | | |

o: Optional    * : Under Development

# | Wi-Fi Module

| Technology | Wi-Fi | | |
|---|---|---|---|
| **Product** | **W58** | **W59** | **W80** |
| Picture | | | |
| Form Factor | LCC, 32PIN | LCC, 40PIN | LCC+LGA, 90PIN |
| Dimensions(mm) | 16.6 *13.0*2.1 | 16.0 *18.3*2.3 | 17.0 *24*2.9 |
| Weight(g) | 1.0 | 1.2 | TBD |
| Bluetooth | BT 3.0& BLE4.1 | BT 3.0& BLE4.2 | BT 5.1&BLE5.0 |
| Temperature | -40℃ to +85℃ | -40℃ to +85℃ | -40℃ ~ +85℃ |
| **General Features** | | | |
| Frequency band | 2.412 ~ 2.484 GHz | 2.412 ~ 2.484 GHz    5.17~5.825GHz | 2.412 ~ 2.484 GHz    5.17~5.825GHz |
| Supply Voltage | 3.2V~ 3.4V | 3.2V~ 3.4V | 3.3V ~ 4.25V |
| WLAN Standard | IEEE 802.11 b/g/n | IEEE 802.11a/b/g/n/ac | IEEE 802.11a/b/g/n/ac/ax |
| Modulation Mode | CCK/BPSK/QPSK/16QAM/64QAM | DSSS/CCK/OFDM/BPSK/QPSK/16QAM/64QAM/256QAM | CCK/BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM |
| Encryption Mode | WEP/TKIP/AES/WPA-PSK/WPA2-PSK | WEP/TKIP/AES/WPA-PSK/WPA2-PSK | 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) | 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 | |
| 802.11ac_HT80 (Mbps) | | Max. 433.3Mbps | |
| 802.11ax_HT80 （Mbps） | | | Max.1.775Gbps |
| BT 4.1 (Mbps) | Max. 24 | Max. 24 | |
| **Transmitting Power** | | | |
| 802.11b/11Mbps | 18dBm | TBD | TBD |
| 802.11g/54Mbps | 15dBm | TBD | TBD |
| 802.11n_HT20/65Mbps | 15dBm | TBD | TBD |
| 802.11n_HT40/135Mbps | 14dBm | TBD | TBD |
| **Rx Sensitivity** | | | |
| 802.11b/1Mbps | -95dBm | TBD | TBD |
| 802.11b/11Mbps | -94dBm | TBD | TBD |
| 802.11g/6Mbps | -91dBm | TBD | TBD |
| 802.11g/54Mbps | -78dBm | TBD | TBD |
| 802.11n_HT20 MCS0 | -90dBm | TBD | TBD |
| 802.11n_HT40 MCS7 | -75dBm | TBD | TBD |
| **Interfaces** | | | |
| SDIO 3.0 | *1 | *1 | |
| UART | *1 | *1 | *1 |
| LTE coexistence | *2 | *2 | *2 |
| BT_EN | *1 | *1 | *1 |
| WLAN_EN | *1 | *1 | *1 |
| Antenna | WiFi & BT Antenna | WiFi & BT Antenna *2 | WiFi & BT Antenna *2 |
| **Certification** | | | |
| Certification | CE*/RoHS*/REACH* | | |
| **Typical Applications** | Fleet Management,Telematics,Security,Tracking,Agriculture,Smart City, Smart Health, Router,Gateway | | |

o: Optional    * : Under Development
W58： Must be worked together with SIM7600X-H.
W59： Must be worked together with SIM7800E.
W80： Must be worked together with SIM8200G.

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