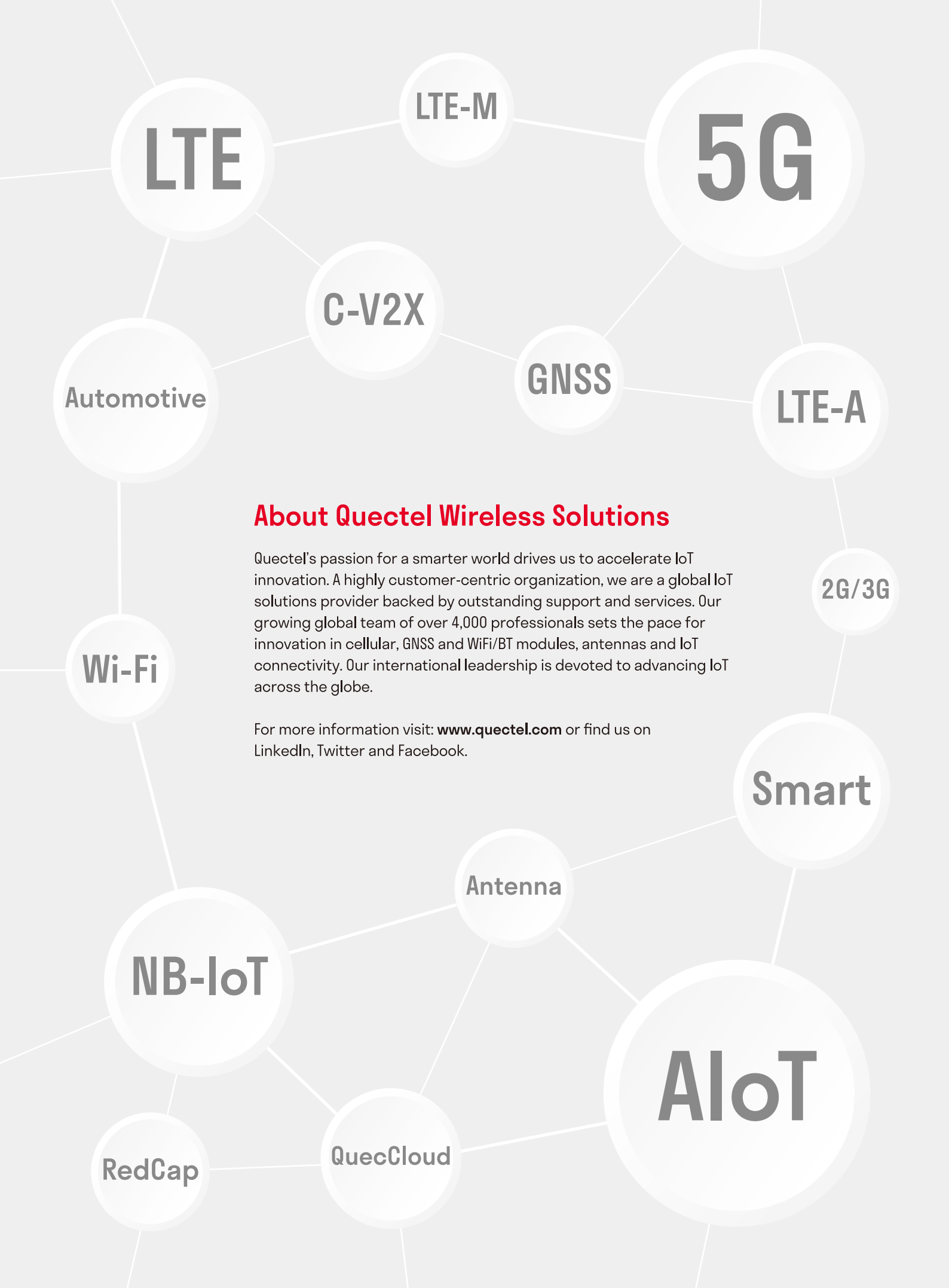
QUECTEL

Build a Smarter World

GLOBAL IOT SOLUTIONS PROVIDER

IoT Modules and Antenna Catalogue

For more information contact us at **www.quectel.com**



About Quectel Wireless Solutions

Quectel's passion for a smarter world drives us to accelerate IoT innovation. A highly customer-centric organization, we are a global IoT solutions provider backed by outstanding support and services. Our growing global team of over 4,000 professionals sets the pace for innovation in cellular, GNSS and WiFi/BT modules, antennas and IoT connectivity. Our international leadership is devoted to advancing IoT across the globe.

For more information visit: **www.quectel.com** or find us on LinkedIn, Twitter and Facebook.

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5G NR Modules

Product		RG520N	RG520F	RG525F	RG530F
					
Form Factor		LGA	LGA	LGA	LGA
Dimensions (mm)		44.0 x 41.0 x 2.75	44.0 x 41.0 x 2.75	45.0 × 48.0 × 2.85	45.0 × 48.0 × 2.85
5G		Sub-6 GHz	Sub-6 GHz	Sub-6 GHz	Sub-6 GHz & mmWave
Frequency Bands (MHz)	-EU(EMEA/ APAC[1]/ Brazil)	5G NR: n1/3/5/7/8/20/28/38/40/41/75/76/77/78; LTE-FDD: B1/3/5/7/8/20/28/32; LTE-TDD: B38/40/41/42/43; WCDMA: B1/5/8	5G NR: n1/3/5/7/8/20/28/38/40/41/75/76/77/78; LTE-FDD: B1/3/5/7/8/20/28/32; LTE-TDD: B38/40/41/42/43; WCDMA: B1/5/8	/	5G NR: n1/3/5/7/8/20/28/38/40/41/75/76/77/78/257/258/260/261; LTE-FDD: B1/3/5/7/8/20/28/32; LTE-TDD: B38/40/41/42/43; WCDMA: B1/5/8
	-EB(EMEA/ APAC[1]/ Brazil)	5G NR: n1/3/5/7/8/20/28/38/40/41/71/75/76/77/78; LTE-FDD: B1/3/5/7/8/20/28/32; LTE-TDD: B38/40/41/42/43/71; WCDMA: B1/5/8	5G NR: n1/3/5/7/8/20/28/38/40/41/71/75/76/77/78; LTE-FDD: B1/3/5/7/8/20/28/32/71; LTE-TDD: B38/40/41/42/43; WCDMA: B1/5/8	/	/
	-GT(Europe)	5G NR: n48/77/78; LTE-TDD: B42/43/48	/	/	/
	-NA (North America)	5G NR: n2/5/7/12/13/14/25/26/29/30/38/41/48/66/70/71/77/78; LTE-FDD: B2/4/5/7/12/13/14/17/25/26/29/30/66/71; LTE-TDD: B38/41/42/43/48; LAA: B46	5G NR: n2/5/7/12/13/14/25/26/29/30/38/41/48/66/70/71/77/78; LTE-FDD: B2/4/5/7/12/13/14/17/25/26/29/30/66/71; LTE-TDD: B38/41/42/43/48; LAA: B46	5G NR: n2/5/7/12/13/14/25/26/29/30/38/41/48[2]/66/70/71/77[2]/78[2]; LTE-FDD: B2/4/5/7/12/13/14/17/25/26/29/30/66/71; LTE-TDD: B38/41/42/43/48; LAA: B46	5G NR: n2/5/7/12/13/14/25/26/29/30/38/41/48/66/70/71/77/78/257/258/260/261; LTE-FDD: B2/4/5/7/12/13/14/17/25/26/29/30/66/71; LTE-TDD: B38/41/42/43/48; LAA: B46
	-LA (Latin America)	5G NR: n2/4/5/7/8/28/38*/40/66/71*/78; LTE-FDD: B2/4/5/7/8/26/28/66/71*; LTE-TDD: B38*/40/42/43*; WCDMA: B2/4/5	/	/	/
Weight (approx.) g		11	TBD	14.1	14.1
Operating Temperature		-30°C ~ +75°C	-30°C ~ +75°C	-30°C ~ +75°C	-30°C ~ +75°C
Extended Temperature		-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C
Control via AT Commands		3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands
Data Transmission[3]					
5G		5G SA Sub-6: Max. 2.4 Gbps (DL)/Max. 900 Mbps (UL); 5G NSA Sub-6: Max. 3.4 Gbps (DL)/Max. 550 Mbps (UL)	5G SA Sub-6: Max. 4.0 Gbps (DL)/Max. 900 Mbps (UL); 5G NSA Sub-6: Max. 4.0 Gbps (DL)/Max. 550 Mbps (UL)	5G SA Sub-6: Max. 4.0 Gbps (DL)/Max. 900 Mbps (UL) 5G NSA Sub-6: Max. 4.0 Gbps (DL)/Max. 550 Mbps (UL)	5G SA Sub-6: Max. 4.0 Gbps (DL)/Max. 900 Mbps (UL); 5G NSA Sub-6: Max. 4.0 Gbps (DL)/Max. 550 Mbps (UL); 5G NSA mmWave: Max. 8.8 Gbps (DL)/Max. 2.6Gbps (UL); 5G TDD+mmWave: Max. 8.0 Gbps (DL)/Max. 3.4Gbps (UL); 5G FDD+ mmWave: Max. 8.9 Gbps (DL)/Max. 2.7Gbps (UL)
LTE		LTE-FDD: Max. 1.6 Gbps (DL)/Max. 200 Mbps (UL)	LTE-FDD: Max. 2.0 Gbps (DL)/Max. 200 Mbps (UL)	LTE-FDD: Max. 2.0 Gbps (DL)/Max. 200 Mbps (UL)	LTE-FDD: Max. 2.0 Gbps (DL)/Max. 200 Mbps (UL)
UMTS(Mbps)		WCDMA: Max. 42 (DL)/Max. 5.76 (UL) (RG520N-EU/ RG520N-EB/RG520N-LA)	WCDMA: Max. 42 (DL)/Max. 5.76 (UL) (RG520F-EU)	/	WCDMA: Max. 42 (DL)/Max. 5.76 (UL)(RG530F-EU)
SMS		•	•	•	•
Protocols		TCP/UDP/FTP/HTTP/HTTPS/PING/SMS	TCP/UDP/FTP/HTTP/HTTPS/PING/SMS	TCP/UDP/FTP/HTTP/HTTPS/PING/SMS	TCP/UDP/FTP/HTTP/HTTPS/PING/SMS
Interfaces					
(U)SIM		× 2, 1.8 V/2.95 V	× 2, 1.8 V/2.95 V	× 2, 1.8 V/ 2.95 V	× 2, 1.8 V/2.95 V
UART		× 3	× 3	× 3	× 3
USB		2.0/3.0/3.1	2.0/3.0/3.1	2.0/3.0/3.1	2.0/3.0/3.1
PCIe		Gen3 × 2Lane	Gen3 × 2Lane	Gen3 × 2Lane	Gen3 × 2Lane
PCM		•	•	•	•
I2C		× 1	× 1	× 1	× 1
SPI		•	•	•	•
GPIO		•	•	•	•
ADC		× 2	× 2	× 2	× 2
SD Card		•	•	•	•
RESET_N		•	•	•	•
Antenna		Cellular: 4, GNSS: × 1(RG520N-EB/RG520N-NA/ RG520N-GT/RG520N-LA); Cellular: 4 + 2 (optional), GNSS: × 1(RG520N-EU)	Cellular: 4 + 2 (optional), GNSS: × 1 (RG520F-EU); Cellular: 4, GNSS: × 1 (RG520F-NA)	Cellular: sub6G: 8, GNSS: × 1	Cellular: sub6G x 4 + 2(optional), mmWave x 8, GNSS: × 1(RG530F-EU); Cellular: sub6G x 4, mmWave x 8, GNSS: × 1(RG530F-NA)
Enhanced Features					
MIMO		DL 4 × 4, UL 2 x 2	DL 4 x 4, UL 2 x 2	Sub-6: DL 4 x 4 , UL 2 x 2	Sub-6: DL 4 x 4, UL 2 x 2; mmWave: DL 2 x 2, UL 2 x 2
Digital Audio		•	•	•	•
VoLTE		Optional	Optional	Optional	Optional
DTMF		Dual-tone Multi-frequency	Dual-tone Multi-frequency	Dual-tone Multi-frequency	Dual-tone Multi-frequency
DFOTA		Delta Firmware over the Air	Delta Firmware over the Air	Delta Firmware over the Air	Delta Firmware over the Air
GNSS		GPS/GLONASS/BDS/Galileo/QZSS	GPS/GLONASS/BDS/Galileo/QZSS	GPS/GLONASS/BDS/Galileo/QZSS	GPS/GLONASS/BDS/Galileo/QZSS
(U)SIM Card Detection		•	•	•	•
Electrical Features					
Supply Voltage Range		3.3~4.4 V, typ. 3.8 V	3.3~4.4 V, typ. 3.8 V	3.3~4.4 V, typ. 3.8 V	3.3~4.4 V, typ. 3.8 V
Power Consumption		0.142 mA @ power off, 2.6 mA @ sleep (typ.)[3] (RG520N-EU/RG520N-EB/RG520N-GT/RG520N-NA); TBD(RG520N-LA)	TBD	TBD	TBD
Software Features					
USB Serial Driver		Windows 7/8/8.1/10/11, Linux 2.6~5.18, Android 4.x~12.x	Windows 7/8/8.1/10, Linux 3.18~5.12, Android 4.x~11.x	Windows 7/8/8.1/10, Linux 3.18~5.12, Android 4.x~11.x	Windows 7/8/8.1/10, Linux 3.18~5.12, Android 4.x~11.x
GNSS Driver		Android 4.x~12.x	Android 4.x~11.x	Android 4.x~11.x	Android 4.x~11.x
RIL Driver		Android 4.x~12.x	Android 4.x~11.x	Android 4.x~11.x	Android 4.x~11.x
NDIS Driver		Windows 7/8/8.1/10/11	Windows 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10
MBIM Driver		Windows 10/11, Linux 3.18~5.18	Windows 10, Linux 3.18~5.12	Windows 10, Linux 3.18~5.12	Windows 10, Linux 3.18~5.12
Gobinet Driver		Linux 2.6~5.18	Linux 3.18~5.12	Linux 3.18~5.12	Linux 3.18~5.12
QMI_WWAN Driver		Linux 3.4~5.18	Linux 3.18~5.12	Linux 3.18~5.12	Linux 3.18~5.12
PCIe Driver		Linux 3.10~5.18	Windows 10, Linux 3.18~5.12, Android 4.x~11.x	Windows 10, Linux 3.18~5.12, Android 4.x~11.x	Windows 10, Linux 3.18~5.12, Android 4.x~11.x
Certifications[4]		CE/RCM/FCC/IC/Anatel/GCF/PTCRB/Telstra*/ T-Mobile/AT&T*	CE*/RCM*/UKCA*	GCF*/PTCRB*/FCC*/IC*	TBD
Recommended Applications		Industrial routers, industrial PDAs, rugged tablet PCs and digital signage			

Note 1: Excl. China/Japan.
Note 2: n48/77/78 support 8RX.
Note 3: means the data transmission is theoretical data rate and depends on network conditions.
Note 4: May depend on modules' variant.

* Under development
• Supported

5G NR Modules

Product		RM520N	RM530N-GL	RM521F-GL*
				
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
5G		Sub-6 GHz	Sub-6 GHz/mmWave	Sub-6 GHz
Frequency Bands (MHz)	-GL (Global)	5G NR: n1/2/3/5/7/8/12/13/14/18/20/25/26/28/29/30/38/40/41/48/66/70/71/75/76/77/78/79; LTE-FDD: B1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/28/29/30/32/66/71; LTE-TDD: B34/38/39/40/41/42/43/48; LAA: B46; WCDMA: B1/2/4/5/8/19	5G NR: n1/2/3/5/7/8/12/13/14/18/20/25/26/28/29/30/38/40/41/48/66/70/71/75/76/77/78/79/257/258/260/261; LTE-FDD: B1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/28/29/30/32/66/71; LTE-TDD: B34/38/39/40/41/42/43/48; LAA: B46; WCDMA: B1/2/4/5/8/19	5G NR: n1/2/3/5/7/8/12/13/14/18/20/25/26/28/29/30/38/40/41/48/66/70/71/75/76/77/78/79; LTE-FDD: B1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/28/29/30/32/66/71; LTE-TDD: B34/38/39/40/41/42/43/48; LAA: B46; WCDMA: B1/2/4/5/8/19
	-EU(EMEA/ APAC[1]/ Brazil)	5G NR: n1/3/5/7/8/20/28/38/40/41/71/75/76/77/78; LTE-FDD: B1/3/5/7/8/20/28/32/71; LTE-TDD: B38/40/41/42/43; WCDMA: B1/5/8	/	/
Weight (approx.) g		8.7	TBD	TBD
Operating Temperature		-30°C ~ +75°C	-30°C ~ +75°C	-30°C ~ +75°C
Extended Temperature		-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C
Control via AT Commands		3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands
Data Transmission[2]				
5G		5G SA Sub-6: Max. 2.4 Gbps (DL)/Max. 900 Mbps (UL); 5G NSA Sub-6: Max. 3.4 Gbps (DL)/Max. 550 Mbps (UL)	5G SA Sub-6: Max. 2.4 Gbps (DL)/Max. 900 Mbps (UL); 5G NSA Sub-6: Max. 3.4 Gbps (DL)/Max. 550 Mbps (UL); 5G NSA mmWave: Max. 4.0 Gbps (DL)/Max. 1.4 Gbps (UL)	5G SA Sub-6: Max. 4.0 Gbps (DL)/Max. 900 Mbps (UL); 5G NSA Sub-6: Max. 4.0 Gbps (DL)/Max. 550 Mbps (UL)
LTE		LTE-FDD: Max. 1.6 Gbps (DL)/Max. 200 Mbps (UL)	LTE-FDD: Max. 1.6 Gbps (DL)/Max. 200 Mbps (UL)	LTE-FDD: Max. 2.0 Gbps (DL)/Max. 200 Mbps (UL)
UMTS(Mbps)		WCDMA: Max. 42 (DL)/Max. 5.76 (UL)	WCDMA: Max. 42 (DL)/Max. 5.76 (UL)	WCDMA: Max. 42 (DL)/Max. 5.76 (UL)
SMS		•	•	•
Protocols		TCP/UDP/FTP/HTTP/HTTPS/PING/SMS	TCP/UDP/FTP/HTTP/HTTPS/PING/SMS	TCP/UDP/FTP/HTTP/HTTPS/PING/SMS
Interfaces				
(U)SIM		× 2	× 2	× 2
USB		2.0/3.0/3.1	2.0/3.0/3.1	2.0/3.0/3.1
PCIe		PCIe 3.0	PCIe 3.0	PCIe 3.0
Antenna		Sub-6/GNSS x 4(RM520N-CN/RM520N-GL); Sub-6/GNSS: 4+1(optional)(RM520N-EU)	Sub-6/GNSS x 4, mmWave × 2	Sub-6/GNSS: 4+1(optional)
Enhanced Features				
MIMO		Sub-6: DL 4 × 4 , UL 2 × 2	Sub-6: DL 4 × 4 , UL 2 × 2 mmWave: DL 2 × 2, UL 2 × 2	Sub-6: DL 4 × 4 , UL 2 × 2
Digital Audio		*(RM520N-EU)	•	*
VoLTE		Optional	Optional	*
DTMF		Dual-tone Multi-frequency	Dual-tone Multi-frequency	*
DFOTA		Delta Firmware over the Air	Delta Firmware over the Air	Delta Firmware over the Air
GNSS		GPS/GLONASS/BDS/Galileo/QZSS	GPS/GLONASS/BDS/Galileo/QZSS	GPS/GLONASS/BDS/Galileo/QZSS
(U)SIM Card Detection		•	•	•
Electrical Features				
Supply Voltage Range		3.135~4.4 V, typ. 3.7 V	3.135~4.4 V, typ. 3.7 V	3.135~4.4 V, typ. 3.7 V
Power Consumption		195 μA @ Power down; 4.7 mA @ Sleep; 40mA @ USB 2.0, Idle; 60 mA @ USB 3.0, Idle	TBD	TBD
Software Features				
USB Serial Driver		Windows 7/8/8.1/10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Windows 7/8/8.1/10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Windows 7/8/8.1/10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10
GNSS Driver		Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Android 4.x/5.x/6.x/7.x/8.x/9.x/10
RIL Driver		Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Android 4.x/5.x/6.x/7.x/8.x/9.x/10
NDIS Driver		Windows 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10
MBIM Driver		Windows 10, Linux 3.18~5.12	Windows 10, Linux 3.18~5.12	Windows 10, Linux 3.18~5.12
Gobinet Driver		Linux 3.18~5.12	Linux 3.18~5.12	Linux 3.18~5.12
QMI_WWAN Driver		Linux 3.18~5.12	Linux 3.18~5.12	Linux 3.18~5.12
PCIe Driver		Windows 10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Windows 10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Windows 10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10
Certifications[3]		T-Mobile/Verizon*/AT&T/NTT DOCOMO*/Deutsche Telekom/Telstra/GCF/PTCRB/CE/Anatel/CCC/RCM/IC/FCC/JATE/TELEC/KC/NCC/Telefónica*	TBD	FCC*/IC*/GCF*/PTCRB*
Recommended Applications		Industrial routers, industrial PDAs, rugged tablet PCs and digital signage		

Note 1: Excl. China/Japan.
Note 2: means the data transmission is theoretical data rate and depends on network conditions.
Note 3: May depend on modules' variant.

* Under development
• Supported

Product	RG500Q-EA/RG502Q-EA	RG500Q-EU/RG501Q-EU/RG502Q-EU	RG500Q-GT/RG502Q-GT
			
Form Factor	LGA	LGA	LGA
Dimensions (mm)	44.0 × 41.0 × 2.75	44.0 × 41.0 × 2.75	44.0 × 41.0 × 2.75
5G	Sub-6 GHz	Sub-6 GHz	Sub-6 GHz
Frequency Bands (MHz)	5G NR: n41/77/78/79/1/3/5/7/8/20/28/38/40; LTE-FDD: B1/3/5/7/8/18/19/20/26/28/32; LTE-TDD: B34/38/39/40/41/42/43; WCDMA: B1/3/5/6/8/19	5G NR: n1/3/5/7/8/20/28/38/40/41/77/78; LTE-FDD: B1/3/5/7/8/20/28/32; LTE-TDD: B38/40/41/42/43; WCDMA: B1/5/8	5G NR: n78; LTE-TDD: B42/43
Region	EMEA/ APAC	EMEA/APAC(exclude China)/Brazil	global TDD Network
Weight (approx.) g	11	11	11
Operating Temperature	-30°C ~ +75°C	-30°C ~ +75°C	-30°C ~ +75°C
Extended Temperature	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C
Control via AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands
Data Transmission[1]			
5G	5G SA Sub-6: Max. 2.1 Gbps (DL)/Max. 900 Mbps (UL)(RG500Q-EA); Max. 4.2 Gbps (DL)/Max. 900 Mbps (UL) (RG502Q-EA) 5G NSA Sub-6: Max. 2.5 Gbps (DL)/Max. 600/650 Mbps (UL)[2](RG500Q-EA); Max. 5.0 Gbps (DL)/Max. 600/650 Mbps (UL)[2] (RG502Q-EA)	5G SA Sub-6: Max. 2.1 Gbps (DL)/Max. 900Mbps (UL)(RG500Q-EU/RG501Q-EU); Max. 4.2 Gbps (DL)/Max. 900Mbps (UL)(RG502Q-EU) 5G NSA Sub-6: Max. 2.5 Gbps (DL)/Max. 600/650 Mbps (UL)[2] (RG500Q-EU); Max. 3.3 Gbps (DL)/Max. 600/650 Mbps (UL)[2] (RG501Q-EU); Max. 5.0 Gbps (DL)/Max. 600/650 Mbps (UL)[2] (RG502Q-EU)	5G SA Sub-6: Max. 2.1 Gbps (DL)/Max. 900 Mbps (UL)(RG500Q-GT); Max. 4.2 Gbps (DL)/Max. 900 Mbps (UL)(RG502Q-GT)
LTE	LTE-FDD: Max. 1 Gbps (DL)/Max. 200 Mbps (UL)(RG500Q-EA); LTE-FDD: Max. 2 Gbps (DL)/Max. 200 Mbps (UL) (RG502Q-EA)	LTE-FDD: Max. 1 Gbps (DL)/Max. 200 Mbps (UL)(RG500Q-EU); LTE-FDD: Max. 2 Gbps (DL)/Max. 200 Mbps (UL)(RG501Q-EU/ RG502Q-EU)	LTE-TDD: Max. 700 Mbps (DL)/Max. 116 Mbps (UL)(RG500Q-GT); LTE-TDD: Max. 1.2 Gbps (DL)/Max. 116 Mbps (UL)(RG502Q-GT)
UMTS(Mbps)	WCDMA: Max. 42 (DL)/Max. 5.76 (UL)	WCDMA: Max. 42 (DL)/Max. 5.76 (UL)	/
SMS	•	•	•
Protocols	TCP/UDP/FTP/HTTP/HTTPS/PING/SMS	TCP/UDP/FTP/HTTP/HTTPS/PING/SMS	TCP/UDP/FTP/HTTP/HTTPS/PING/SMS
Interfaces			
(U)SIM	× 2, 1.8 V/2.95 V	× 2, 1.8 V/2.95 V	× 2, 1.8 V/2.95 V
UART	× 3	× 3	× 3
USB	2.0/3.0/3.1	2.0/3.0/3.1	2.0/3.0/3.1
PCIe	PCIe Gen3 × 2 Lane	PCIe Gen3 × 2 Lane	PCIe Gen3 × 2 Lane
RGMII	•	•	•
PCM	•	•	•
I2C	× 1	× 1	× 1
SPI	•	•	•
GPIO	•	•	•
ADC	× 2	× 2	× 2
SD Card	•	•	•
RESET_N	•	•	•
Antenna	Cellular: 6 + 2 (n79), GNSS: × 1	Cellular: 4+2(B32), GNSS: x 1	Cellular: 4
Enhanced Features			
MIMO	4 × 4 DL	4 × 4 DL	4 × 4 DL
Digital Audio	•	•	•
VoLTE	Optional	Optional	Optional
DTMF	Dual-tone Multi-frequency	Dual-tone Multi-frequency	Dual-tone Multi-frequency
DFOTA	Delta Firmware over the Air	Delta Firmware over the Air	Delta Firmware over the Air
GNSS	GPS/GLONASS/BDS/Galileo	GPS/GLONASS/BDS/Galileo	/
(U)SIM Card Detection	•	•	•
Electrical Features			
Supply Voltage Range	3.3~4.3 V, typ. 3.8 V	3.3~4.3 V, typ. 3.8 V	3.3~4.3 V, typ. 3.8 V
Power Consumption	0.045 mA @ Power off 1.5 mA @ Sleep, Typ. 25 mA @ Idle	0.045 mA @Power off 1.5 mA @Sleep, Typ. 25 mA @Idle	0.045 mA @Power off 1.5 mA @Sleep, Typ. 25 mA @Idle
Software Features			
USB Serial Driver	Windows 7/8/8.1/10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Windows 7/8/8.1/10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Windows 7/8/8.1/10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10
GNSS Driver	Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Android 4.x/5.x/6.x/7.x/8.x/9.x/10
RIL Driver	Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Android 4.x/5.x/6.x/7.x/8.x/9.x/10
NDIS Driver	Windows 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10
MBIM Driver	Windows 10, Linux 3.18~5.12	Windows 10, Linux 3.18~5.12	Windows 10, Linux 3.18~5.12
Gobinet Driver	Linux 3.18~5.12	Linux 3.18~5.12	Linux 3.18~5.12
QMI_WWAN Driver	Linux 3.18~5.12	Linux 3.18~5.12	Linux 3.18~5.12
PCIe Driver	Windows 10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Windows 10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Windows 10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10
Certifications[3]	China Telecom/China Mobile/China Unicom/KT/SKT/LGU+/CE/ SRRC/NAL/CCC/KC/JATE/TELEC/RCM	CE/RCM/GCF	CE
Recommended Applications	Industrial routers, industrial PDAs, rugged tablet PCs and digital signage		

Note 1: means the data transmission is theoretical data rate and depends on network condition.
Note 2: 600 Mbps is the typical value; while 650 Mbps is the theoretical data rate when the UL 256QAM of both LTE and 5G NR are enabled (LTE UL 256QAM in EN-DC is disabled by default and has not been deployed by operators, and it is not fully tested).
Note 3: May depend on modules' variant.

* Under development
• Supported

5G NR Modules

Product	RM500Q-AE/RM502Q-AE/RM505Q-AE	RM500Q-GL	RM510Q-GL
			
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
5G	Sub-6 GHz	Sub-6 GHz	Sub-6 GHz/ mmWave
Frequency Bands (MHz)	5G NR: n1/2/3/5/7/8/12/20/25/28/38/40/41/48/66/71/77/78/79; LTE-FDD: B1/2/3/4/5/7/8/12(17)/13/14/18/19/20/25/26/28/29/30/32/66/71; LTE-TDD: B34/38/39/40/41/42/43/48; LAA: B46[3]; WCDMA: B1/2/3/4/5/6/8/19	5G NR: n1/2/3/5/7/8/12/20/25/28/38/40/41/48*/66/71/77/78/79; LTE-FDD: B1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/28/29/30/32/66/71; LTE-TDD: B34/38/39/40/41/42/43/48; LAA: B46; WCDMA: B1/2/3/4/5/6/8/19;	5G NR: n1/2/3/5/7/8/12/20/25/28/38/40/41/48/66/71/77/78/79/257/258/260/261; LTE-FDD: B1/2/3/4/5/7/8/12(17)/13/14/18/19/20/25/26/28/29/30/32/66/71; LTE-TDD: B34/38/39/40/41/42/43/48; LAA: B46; WCDMA: B1/2/3/4/5/6/8/19
Region	Global (except for China)	Global (except for US)	Global
Weight (approx.) g	8.7	9	9.1
Operating Temperature	-30°C ~ +70°C	-30°C ~ +75°C	-30°C ~ +70°C
Extended Temperature	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C
Control via AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands
Data Transmission[1]			
5G	5G SA Sub-6: Max. 2.1Gbps (DL)/Max. 450Mbps (UL)(RM500Q-AE/RM505Q-AE); Max. 4.2 Gbps (DL)/Max. 450 Mbps (UL)(RM502Q-AE) 5G NSA Sub-6: Max. 2.5Gbps (DL)/Max. 650Mbps (UL)(RM500Q-AE/RM505Q-AE); Max. 5 Gbps (DL)/Max. 650 Mbps (UL)(RM502Q-AE)	5G SA Sub-6: Max. 2.1 Gbps (DL)/Max. 900 Mbps (UL); 5G NSA Sub-6: Max. 2.5 Gbps (DL)/Max. 600/650 Mbps (UL)[2]	5G SA Sub-6: Max. 4.2 Gbps (DL)/Max. 450 Mbps (UL); 5G NSA Sub-6: Max. 5.0 Gbps (DL)/Max. 600/650 Mbps (UL)[2]; 5G NSA mmWave: Max. 7.5 Gbps (DL)/Max. 2.9 Gbps (UL)
LTE	LTE-FDD: Max. 1 Gbps (DL)/Max. 200 Mbps (UL)(RM500Q-AE/RM505Q-AE); LTE-FDD: Max. 2 Gbps (DL)/Max. 200 Mbps (UL)(RM502Q-AE)	LTE-FDD: Max. 1 Gbps (DL)/Max. 200 Mbps (UL)	LTE-FDD: Max. 2 Gbps (DL)/Max. 200 Mbps (UL)
UMTS(Mbps)	WCDMA: Max. 42 (DL)/Max. 5.76 (UL)	WCDMA: Max. 42 (DL)/Max. 5.76 (UL)	WCDMA: Max. 42 (DL)/Max. 5.76 (UL)
SMS	•	•	•
Protocols	TCP/UDP/FTP/HTTP/HTTPS/PING/SMS	TCP/UDP/FTP/HTTP/HTTPS/PING/SMS	TCP/UDP/FTP/HTTP/HTTPS/PING/SMS
Interfaces			
(U)SIM	x 1, 1.8 V/3.0 V(RM500Q-AE/RM502Q-AE) x 2, 1,8 V/3.0 V(RM505Q-AE)	× 2, 1.8 V/ 3.0 V	× 1, 1.8 V/ 3.0 V
USB	2.0/3.0/3.1	2.0/3.0/3.1	2.0/3.0/3.1
PCIe	PCIe Gen3 × 1 Lane	PCIe Gen3 × 1 Lane	PCIe Gen3 × 1 Lane
PCM	x 1	× 1	•
GPIO	•	•	•
RESET_N	•	•	•
Antenna	Cellular: × 4, GNSS: × 1	Cellular: × 4, GNSS: × 1	Cellular: × 4, GNSS: × 1; mmWave IF *4 pairs
Enhanced Features			
MIMO	DL: 4 × 4, UL: 2 × 2(Only n41)	DL: 4 × 4, UL: 2 × 2	Sub-6: DL 4 × 4, UL 2 × 2 (Only n41); mmWave: DL 2 × 2, UL 2 × 2
Digital Audio	•	•	•
VoLTE	Optional	Optional	Optional
DTMF	Dual-tone Multi-frequency	Dual-tone Multi-frequency	Dual-tone Multi-frequency
DFOTA	Delta Firmware over the Air	Delta Firmware over the Air	Delta Firmware over the Air
GNSS	GPS/ GLONASS/ BeiDou/ Galileo	GPS/ GLONASS/ BeiDou/ Galileo	GPS/ GLONASS/ BeiDou/ Galileo
(U)SIM Card Detection	•	•	•
Electrical Features			
Supply Voltage Range	3.135~4.4 V, typ. 3.7 V	3.135~4.4 V, typ. 3.7 V	3.135~4.4 V, typ. 3.7 V
Power Consumption	82 μA @Power off 4.2 mA @Sleep, Typ. 32 mA, USB 2.0 @Idle 55 mA, USB 3.0 @Idle	70 μA @Power off 4.0 mA @Sleep, Typ. 32 mA, USB 2.0 @Idle 54 mA, USB 3.0 @Idle	82 μA @ Power down 5.11 mA @ Sleep 39 mA @ USB 2.0, Idle 54.5 mA @ USB 3.0, Idle
Software Features			
USB Serial Driver	Windows 7/8/8.1/10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Windows 7/8/8.1/10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Windows 7/8/8.1/10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10
GNSS Driver	Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Android 4.x/5.x/6.x/7.x/8.x/9.x/10
RIL Driver	Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Android 4.x/5.x/6.x/7.x/8.x/9.x/10
NDIS Driver	Windows 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10
MBIM Driver	Windows 10, Linux 3.18~5.12	Windows 10, Linux 3.18~5.12	Windows 10, Linux 3.18~5.12
Gobinet Driver	Linux 3.18~5.12	Linux 3.18~5.12	Linux 3.18~5.12
QMI_WWAN Driver	Linux 3.18~5.12	Linux 3.18~5.12	Linux 3.18~5.12
PCIe Driver	Windows 10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Windows 10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Windows 10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10
Certifications[4]	GCF/CE/PTCRB/FCC/IC/NCC/JATE/TELEC/RCM/Deutsche Telecom/AT&T/T-Mobile/Verizon/Telus/Telstra	GCF/CE/SRRC/NAL/CCC/KC/RCM/Deutsche Telecom/China Telecom/China Mobile/China Unicom/KT/SKT/LGU+	FCC/IC/GCF/PTCRB/CE/RCM
Recommended Applications	Industrial routers, industrial PDAs, rugged tablet PCs and digital signage		

Note 1: means the data transmission is theoretical data rate and depends on network conditions.
Note 2: 600 Mbps is the typical value; while 650 Mbps is the theoretical data rate when the UL 256QAM of both LTE and 5G NR are enabled. LTE UL 256QAM in EN-DC is disabled by default and has not been deployed by operators, and it is not fully tested.
Note 3: RM500Q-AE/RM505Q-AE: only support 2 × 2 MIMO.
Note 4: May depend on modules' variant.

* Under development
• Supported

5G NR Modules

Product		RG500L	RG620T
			
Form Factor		LGA	LGA
Dimensions (mm)		44.0 × 41.0 × 2.75	53.0 × 44.0 × 2.95
5G		Sub-6 GHz	Sub-6 GHz
Frequency Bands (MHz)	-EU (EMEA/Oceania/Brazil)	5G NR: n1/3/5/7/8/20/28/38/40/41/77/78; LTE-FDD: B1/3/5/7/8/20/28/32; LTE-TDD: B38/40/41/42/43; WCDMA: B1/5/8	5G NR: n2/5/7/12/13/14/25/26/29/30/38/41/48/66/70/71/77/78; LTE-FDD: B1/3/5/7/8/20/28/32; LTE-TDD: B38/40/41/42/43/46(Optional)/71(Optional); WCDMA: B1/5/8
	-NA (North America)	5G NR: n2/5/7/12/25/38/41/48/66/71/77/78; LTE-FDD: B2/4/5/7/12(17)/13/14/25/26/29/30/66/71; LTE-TDD: B38/41/42/43/48; LAA: B46	5G NR: n2/5/7/12/13/14/25/26/29/30/38/41/48/66/70/71/77/ 78; LTE-FDD: B2/4/5/7/12(17)/13/14/25/26/29/30/66/71; LTE-TDD: B38/41/42/43/48; LAA: B46;
Weight (approx.) g		13±0.3(RG500L-EU); TBD(RG500L-NA)	TBD
Operating Temperature		-30°C ~ +70°C	-30 °C ~ +70 °C
Extended Temperature		-40°C ~ +85°C	-40 °C ~ +85 °C
Control via AT Commands		3GPP Rel-15 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands
Data Transmission[1]			
5G		5G SA Sub-6: Max. 4.67 Gbps(DL)/Max. 1.25 Gbps (UL)(RG500L-EU); 5G SA Sub-6: Max. 4.67 Gbps(DL)/Max. 1.25 Gbps (UL)(RG500L-NA); 5G NSA Sub-6: Max. 3.74 Gbps(DL)/Max. 1.46 Gbps (UL)	5G SA Sub-6: Max. 7.01 Gbps(DL)/Max. 2.5 Gbps(UL): 5G NSA Sub-6: Max. 5.67 Gbps(DL)/Max. 1.46 Gbps(UL)
LTE		LTE-FDD: Max. 1.6 Gbps(DL)/Max. 211 Mbps(UL)(RG500L-EU); LTE-FDD: Max. 1.4 Gbps(DL)/Max. 211 Mbps(UL)(RG500L-NA)	LTE-FDD: Max. 1.6 Gbps(DL)/Max. 211 Mbps(UL) LTE-TDD: Max. 1.6 Gbps(DL)/Max. 211 Mbps(UL)
UMTS(Mbps)		WCDMA: Max. 42 (DL)/Max. 5.76 (UL)	WCDMA: Max. 42.2(DL)/Max. 11.5(UL) (RG620T-EU)
SMS		•	•
Protocols		HTTPS/TCP/UDP/FTP/HTTP/PING/FTPS/SSL/NTP(RG500L-EU); TCP/UDP/PPP/FTP/HTTP/HTTPS/FTPS/SSL/NTP (RG500L-NA)	HTTPS/TCP/UDP/FTP/HTTP/PING/FTPS/SSL/NTP
Interfaces			
(U)SIM		× 2, 1.8 V/ 3.0 V	× 2
UART		× 2(RG500L-NA)	× 3
USB		2.0/3.0(RG500L-EU); 2.0/3.0/3.1[2](RG500L-NA)	USB 3.1 × 1, USB 2.0 × 1
PCIe		PCIe Gen3 × 1 Lane	PCIe 4 × 1, PCIe 3 × 2
RGMII		/	× 2
PCM		•	× 2
I2C		× 1	× 4
SPI		•(RG500L-NA)	× 2
GPIO		•	•
ADC		× 3	×5
SD Card		•(RG500L-NA)	•
RESET_N		•	•
Antenna		Main, Diversity and GNSS	Cellular: × 8, GNSS(Optional): × 1(RG620T-EU); Cellular: × 8, GNSS: × 1(RG620T-NA);
Enhanced Features			
MIMO		DL: 4 × 4, UL: 2 × 2	DL: 4 × 4
Digital Audio		•	•
VoLTE		Optional	Optional
DTMF		Dual-tone Multi-frequency	Dual-tone Multi-frequency
FOTA		Delta Firmware over the Air	Delta Firmware over the Air
GNSS		GPS/BDS/GLONASS/Galileo, L1 only(RG500L-NA); GPS/BDS/GLONASS/Galileo, L1 + L5(RG500L-EU)	GPS/BDS/GLONASS/Galileo L1 + L5 (Optional)(RG620T-EU); GPS/BDS/GLONASS/Galileo L1+L5(RG620T-NA)
(U)SIM Card Detection		•	•
Electrical Features			
Supply Voltage Range		3.3~4.3 V, typ. 3.8 V	3.3~4.3 V, typ. 3.8 V
Power Consumption		80 μA @Power off, 6.5 mA @Sleep, Typ. ,125 mA @Idle (USB active)(RG500L-EU); 80 μA @Power off, 6.5 mA@Sleep, Typ. , 122 mA @Idle (RG500L-NA)	TBD @Power off TBD @Sleep TBD @Idle (USB active)
Software Features			
USB Serial Driver		Windows 7/8/8.1/10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x	Windows 7/8/8.1/10, Linux 3.18~5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x
GNSS Driver		Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x	Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x
RIL Driver		Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x	Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x
RNDIS Driver		Drive-free	Windows 7/8/8.1/10
Certifications[3]		GCF/CE/RCM/FCC/IC*	CE/RCM*/GCF*/FCC/IC*/ PTCRB*
Recommended Applications		Industrial routers, CPE, home gateways, industrial PDAs, rugged tablet PCs and digital signage	Industrial routers, CPE, home gateways, industrial PDAs, rugged tablet PCs and digital signage

Note 1: means the data transmission is theoretical data rate and depends on network conditions.
Note 2: USB 3.1 only supports 5 Gbps.
Note 3: May depend on modules' variant.

* Under development
• Supported

5G NR Modules

Product	RG500U-CN	RG500U-EA	RG500U-EA M.2	RM500U-CN	RG200U-CN	RG200U-CN Mini PCIe
						
Form Factor	LGA	LGA	M.2	M.2	LGA	Mini PCIe
Dimensions (mm)	44.0 × 41.0 × 2.85	44.0 × 41.0 × 2.85	52.0 × 52.0 × 3.6	30.0 × 52.0 × 2.3	30.0 × 41.0× 2.85	30.7 × 50.95 × 5.3
5G	Sub-6 GHz	Sub-6 GHz	Sub-6 GHz	Sub-6 GHz	Sub-6 GHz	Sub-6 GHz
Frequency Bands (MHz)	5G NR: n1/28/41/77/78/79; LTE-FDD: B1/2/3/5/7/8/20/28; LTE-TDD: B34/38/39/40/41; WCDMA: B1/2/5/8	5G NR: n1/3/5*/7/8/20/28/38/40/41/71*/77/78/79; LTE-FDD: B1/2/3/4/5/7/8/20/28A/28B/66; LTE-TDD: B38/40/41; WCDMA: B1/2/5/8	5G NR: n1/3/5*/7/8/20/28/38/40/41/71*/77/78/79; LTE-FDD: B1/2/3/4/5/7/8/20/28A/28B/66; LTE-TDD: B38/40/41; WCDMA: B1/2/5/8	5G NR: n1/28/n41/77/78/79; LTE-FDD: B1/2/3/5/7/8/20/28A/28B; LTE-TDD: B34/38/39/40/41; WCDMA: B1/2/5/8	5G NR:n1/3*/5*/8*/28/41/77/78/79; LTE-FDD: B1/3/5/8; LTE-TDD:B34/38/39/40/41; WCDMA: B1/5/8	5G NR:n1/3*/5*/8*/28/41/77/78/79; LTE-FDD: B1/3/5/8; LTE-TDD:B34/38/39/40/41; WCDMA: B1/5/8
Region	EMEA/APAC	EMEA/APAC/Latin America	EMEA/APAC/Latin America	EMEA/APAC	EMEA/APAC	EMEA/APAC
Weight (approx.) g	13	13	19.9	8.9	8.2	13.4
Operating Temperature	-30° C ~ +75° C	-30°C ~ +75°C	-30° C ~ +75° C	-30° C ~ +75° C	-30° C ~ +75° C	-30° C ~ +60° C
Extended Temperature	-40° C ~ +85° C	-40°C ~ +85°C	-40° C ~ +85° C	-40° C ~ +85° C	-40° C ~ +85° C	-40° C ~ +85° C
Control via AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands
Data Transmission[1]						
5G	5G SA Sub-6: Max. 2 Gbps (DL)/ Max. 1 Gbps (UL); 5G NSA Sub-6: Max. 2.2 Gbps (DL)/ Max. 575 Mbps (UL)	5G SA Sub-6: Max. 2 Gbps (DL)/ Max. 1 Gbps (UL); 5G NSA Sub-6: Max. 2.6 Gbps (DL)/Max. 650 Mbps (UL)	5G SA Sub-6: Max. 2 Gbps (DL)/ Max. 1 Gbps (UL); 5G NSA Sub-6: Max. 2.6 Gbps (DL)/Max. 650 Mbps (UL)	5G SA Sub-6: Max. 2 Gbps (DL)/ Max. 1 Gbps (UL); 5G NSA Sub-6: Max. 2.2 Gbps (DL)/ Max. 575 Mbps (UL)	5G SA Sub-6: Max. 2 Gbps (DL)/ Max. 1 Gbps (UL); 5G NSA Sub-6: Max. 2.2 Gbps (DL)/ Max. 575 Mbps (UL)	5G SA Sub-6: Max. 2 Gbps (DL)/ Max. 1 Gbps (UL); 5G NSA Sub-6: Max. 2.2 Gbps (DL)/ Max. 575 Mbps (UL)
LTE(Mbps)	LTE-FDD: Max. 600 (DL)/ Max. 150 (UL)	LTE-FDD: Max. 600 (DL)/ Max. 150 (UL)	LTE-FDD: Max. 600 (DL)/ Max. 150 (UL)	LTE-FDD: Max. 600 (DL)/ Max. 150 (UL)	LTE-FDD: Max. 600 (DL)/ Max. 150 (UL)	LTE-FDD: Max. 600 (DL)/ Max. 150 (UL)
UMTS(Mbps)	WCDMA: Max. 42.2 (DL)/ Max. 11 (UL)	WCDMA: Max. 42.2 (DL)/ Max. 11 (UL)	WCDMA: Max. 42.2 (DL)/ Max. 11 (UL)	WCDMA: Max. 42.2 (DL)/ Max. 11 (UL)	WCDMA: Max. 42.2 (DL)/ Max. 11 (UL)	WCDMA: Max. 42.2 (DL)/ Max. 11 (UL)
SMS	•	•	•	•	•	•
Protocols	TCP/UDP/PPP/FTP/HTTP/HTTPS/ FTPS/SSL/NTP	TCP/UDP/PPP/FTP/HTTP/HTTPS/ FTPS/SSL/NTP	TCP/UDP/PPP/FTP/HTTP/HTTPS/ FTPS/SSL/NTP	TCP/UDP/PPP/FTP/HTTP/HTTPS/ FTPS/SSL/NTP	TCP/UDP/PPP/FTP/HTTP/HTTPS/ FTPS/SSL/NTP	TCP/UDP/PPP/FTP/HTTP/HTTPS/ FTPS/SSL/NTP
Interfaces						
(U)SIM	× 2, 1.8 V/ 3.0 V	× 2, 1.8 V/3.0 V	× 2, 1.8 V/3.0 V	× 2, 1.8 V/3.0 V	× 2, 1.8 V/ 3.0 V	× 2, 1.8 V/ 3.0 V
USB	2.0/3.0	2.0/3.0	2.0/3.0	2.0/3.0	2.0/3.0	2.0/3.0
PCIe	PCIe Gen2 × 1 Lane	PCIe Gen2 × 1 Lane	PCIe Gen2 × 1 Lane	PCIe Gen2 × 1 Lane	PCIe Gen2 × 1 Lane	/
PCM	•	•	•	•	•	•
GPIO	•	•	•	•	•	•
RESET_N	•	•	•	•	•	•
Antenna	× 4	x 6	x 6	x 4	× 4	× 4
Enhanced Features						
MIMO	n41/n77/n78/n79 UL 2 × 2 N1/41/77/78/79 DL 4 × 4 N28 & LTE DL 2 × 2	n1/n3/n7/n38/n40/n41/n77/n78/n79 DL 4 × 4 N5*/8/20/28/71* & LTE DL 2 × 2	n1/n3/n7/n38/n40/n41/n77/n78/n79 DL 4 × 4 N5*/8/20/28/71* & LTE DL 2 × 2	n41/n77/n78/n79 UL 2 × 2 n1/41/77/78/79 DL 4 × 4 n28 & LTE DL 2 × 2	n41/n77/n78/n79 UL 2 × 2 N1/41/77/78/79 DL 4 × 4 N3*/5*/8*/28 & LTE DL 2 × 2	n41/n77/n78/n79 UL 2 × 2 N1/41/77/78/79 DL 4 × 4 N3*/5*/8*/28 & LTE DL 2 × 2
Digital Audio	•	•	•	•	•	•
VoLTE	Optional	Optional	Optional	Optional	Optional	/
DTMF	Dual-tone Multi-frequency	Dual-tone Multi-frequency	Dual-tone Multi-frequency	Dual-tone Multi-frequency	Dual-tone Multi-frequency	/
DFOTA	Delta Firmware over the Air	Delta Firmware over the Air	Delta Firmware over the Air	Delta Firmware over the Air	Delta Firmware over the Air	Delta Firmware over the Air
GNSS	/	/	/	/	/	/
(U)SIM Card Detection	•	•	•	•	•	•
Electrical Features						
Supply Voltage Range	3.3~4.3 V, typ. 3.8 V	3.3~4.3 V, typ. 3.8 V	3.3~4.4 V, typ. 3.7 V	3.3~4.4 V, typ. 3.7 V	3.3~4.3 V, typ. 3.8 V	3.3~4.3 V, typ. 3.8 V
Power Consumption	70 μA @ Power off 3.5 mA @ Sleep 68 mA @ USB 3.0, idle	70 μA @ Power off 4.0 mA @ Sleep 55 mA @ USB 2.0, idle 68 mA @ USB 3.0, idle	160 μA @ Power off 4 mA @ Sleep 61 mA @ USB 2.0, idle 76 mA @ USB 3.0, idle	90 μA @ Power off 4.0 mA @ Sleep 55 mA @ USB 2.0, idle 70 mA @ USB 3.0, idle	60 μA @ Power off 3.0 mA @ Sleep 65 mA @ USB 3.0, idle	3.3 mA @ Sleep 68 mA @ USB 3.0, idle
Software Features						
USB Serial Driver	Windows 7/8/8.1/10/11, Linux 2.6~5.18, Android 4.x~12.x	Windows 7/8/8.1/10/11, Linux 2.6~5.18, Android 4.x~12.x	Windows 7/8/8.1/10/11, Linux 2.6~5.18, Android 4.x~12.x	Windows 7/8/8.1/10/11, Linux 2.6~5.18, Android 4.x~12.x	Windows 7/8/8.1/10/11, Linux 2.6~5.18, Android 4.x~12.x	Windows 7/8/8.1/10/11, Linux 2.6~5.18, Android 4.x~12.x
GNSS Driver	/	/	/	/	/	/
RIL Driver	Android 4.x ~ 12.x	Android 4.x~12.x	Android 4.x~12.x	Android 4.x~12.x	Android 4.x ~ 12.x	Android 4.x ~ 12.x
RNDIS Driver	Windows 7/8/8.1/10/11, Linux 2.6~5.18	Windows 7/8/8.1/10/11, Linux 2.6~5.18	Windows 7/8/8.1/10/11, Linux 2.6~5.18	Windows 7/8/8.1/10/11, Linux 2.6~5.18	Windows 7/8/8.1/10/11, Linux 2.6~5.18	Windows 7/8/8.1/10/11, Linux 2.6~5.18
MBIM Driver	/	/	/	/	/	/
ECM Driver	Linux 2.6~ 5.18	Linux 2.6~5.18	Linux 2.6~5.18	Linux 2.6~5.18	Linux 2.6~ 5.18	Linux 2.6~ 5.18
NCM Driver	Linux 2.6~ 5.18	Linux 2.6~5.18	Linux 2.6~5.18	Linux 2.6~5.18	Linux 2.6~ 5.18	Linux 2.6~ 5.18
PCIe Driver	Linux 3.10~5.18, Android 4.x-12.x	Linux 3.10~5.18, Android 4.X~12.X	Linux 3.10~5.18, Android 4.X~12.X	Linux 3.10~5.18, Android 4.X~12.X	Linux 3.10~5.18, Android 4.x-12.x	Linux 3.10~5.18, Android 4.x-12.x
Certifications	SRRC/NAL/CCC/China Telecom/ China Mobile*/China Unicom*	CE/RCM/GCF*	CE/RCM/GCF*	SRRC/NAL/CCC/CE/RCM/China Telecom/China Mobile*/China Unicom*	SRRC/NAL/CCC/China Telecom/ China Mobile*/China Unicom*	SRRC/NAL/CCC/China Telecom/ China Mobile*/China Unicom*
Recommended Applications	5G wireless routers, CPE, industrial routers, home gateways, etc					

Note 1: means the data transmission is theoretical data rate and depends on network conditions.

* Under development
• Supported

LTE-A Modules

Product		EG06	EG060V-EA	EG060K	EG065K
					
Form Factor		LGA	LGA	LGA	LGA
Dimensions (mm)		39.5 × 37.0 × 2.8	39.5 x 37.0 x 3.05	39.5 × 37.0 × 2.8	31.0 × 28.0 × 2.4
4G		LTE Cat 6	LTE Cat 6	LTE Cat 6	LTE Cat 6
Frequency Bands (MHz)	-E (EMEA/ Australia/ Brazil)	LTE-FDD: B1/3/5/7/8/20/28/32[1]; LTE-TDD: B38/40/41; Up to 2 × CA: B1+B1/5/8/20/28; B3+B3/5/7/8/20/28; B7+B5/7/8/20/28; B20+B32; B38+B38; B40+B40; B41+B41; WCDMA: B1/3/5/8	/	/	/
	-EA (EMEA/ Australia/ Brazil)	LTE-FDD: B1/3/5/7/8/20/28/32[1]; LTE-TDD: B38/40/41; Up to 2 × CA: B1+B1/3/5/7/8/20/28; B3+B3/5/7/8/20/28; B7+B5/7/8/20/28; B20+B32[1]; B38+B38; B40+B40; B41+B41; WCDMA: B1/3/5/8	LTE-FDD: B1/3/5/7/8/20/28; LTE-TDD: B38/40/41; 2 × CA: B1+B1/3/5/8/20/28; B3+B3/5/7/8/20/28; B7+B5/7/8/20/28; B38+B38; B40+B40; B41+B41; WCDMA: B1/5/8	LTE-FDD: B1/3/5/7/8/20/28/32[1]; LTE-TDD: B38/40/41/42(Optional)/43(Optional); Up to 2 × CA: B1+B1/3/5/7/8/20/28; B3+B3/5/7/8/20/28; B7+B5/7/8/20/28; B20+B32[1]; B38+B38; B40+B40; B41+B41 WCDMA: B1/3/5/8	LTE-FDD: B1/2/3/4/5/7/8/20/28; LTE-TDD: B40; WCDMA*: B1/2/3/4/5/8
	-A /NA(North America)	-A(North America) LTE-FDD: B2/4/5/7/12/13/25/26/29[2]/30/66; Up to 2 × CA: B2+B2/5/12/13/29; B4+B4/5/12/13/29; B7+B5/7/12/26; B25+B5/12/25/26; B30+B5/12/29; B66+B5/12/13/29/66; WCDMA: B2/4/5	/	-NA(North America) LTE-FDD: B2/4/5/7/12/13/14/25/26/29/30/66/71; LTE-TDD: B41/48	-NA(North America) LTE-FDD: B2/4/5/7/12/13/14/25/26/30/66
	-GT(Global)	/	/	LTE-TDD: B40/41/42/43/48	/
	-LA(Latin America)	/	/	LTE-FDD: B2/4/5/7/8/28/66; LTE-TDD: B42(Optional)/ B43(Optional); WCDMA: B2/B4/B5/B8	/
Weight (approx.) g		9.1	6.7	9.1	5.3
Operating Temperature		-35°C ~ +75°C	-20°C ~ +55°C	-30°C ~ +75 °C	-30 °C ~ +75 °C
Extended Temperature		-40°C ~ +85°C	-25°C ~ +60°C	-40°C ~ +85°C	-40 °C ~ +85 °C
Control via AT Commands		3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands
Data Transmission					
LTE(Mbps)		LTE-FDD: Max. 300 (DL)/Max. 50 (UL); LTE-TDD: Max. 226 (DL)/Max. 28 (UL)	LTE-FDD: Max. 300 (DL)/Max. 50 (UL); LTE-TDD: Max. 220 (DL)/Max. 30 (UL)	LTE-FDD: Max. 300 (DL)/ Max. 50 (UL); LTE-TDD: Max. 226 (DL)/Max. 28 (UL)	LTE-FDD: Max. 300 (DL)/Max. 75 (UL)
UMTS		DC-HSDPA: Max. 42 Mbps (DL)/ HSUPA: Max. 5.76 Mbps (UL) WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA*: Max. 42 Mbps; HSDPA: Max. 21 Mbps; HSUPA: Max. 5.76 Mbps; WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA: Max. 42 Mbps (DL)/ HSUPA: Max. 5.76 Mbps (UL) WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA: Max. 42 Mbps (DL)/ HSUPA: Max. 5.76 Mbps (UL); WCDMA*: Max. 384 Kbps (DL/UL) (EG065K-EA)
SMS		•	•	•	•
Protocols		TCP/UDP/FTP/HTTP/HTTPS/PING/SMS	TCP/PPP/FTP/HTTP/SMTP*/MMS*/POP3/SSL/ HTTPS/SMTPS*	QMI/MBIM/NITZ/HTTP/HTTPS/FTP/LwM2M*/PING*	QMI/MBIM/NITZ/HTTP/HTTPS/FTP/LwM2M*/PING*
Interfaces					
USB		2.0/3.0, Supports Master* and Slave Modes	2.0, Support Slave and Master* Modes	2.0/3.0, Supports Master* and Slave Modes	2.0/3.0, Supports Master* and Slave Modes
PCM		•	•	•	•
I2S		/	/	× 1	× 1
SPI		× 2	/	× 1	× 1
SDIO		/	/	× 1	× 1
RFFE		/	/	TBD	× 1
GRFC		/	/	TBD	× 4
I2C		× 1	× 1	× 1	× 1
(U)SIM		1.8V/ 3.0V	× 1, 1.8 V/ 3.0 V	× 2, 1.8 V/ 3.0 V	× 2, 1.8 V/ 3.0 V
eSIM		/	/	Optional	/
GPIO		× 2	× 2	× 3	× 5
UART		× 3	× 2	× 3	× 2
ADC		× 2	× 2	× 2	× 1
RESET_N		•	•	•	× 1
PCIe		Optional	Optional	Optional	Optional
Antenna		× 3	Main, Diversity	Main, Diversity and GNSS	× 2(Main Antenna); × 2(Diversity Antennas)
Enhanced Features					
MIMO		2 × 2, 4 × 2, DL	2 × 2, 4 × 2, DL	2 × 2, 4 × 2, 4 × 4, DL	2 × 2, 4 × 2, DL
eCall		Emergency Service*	Emergency Service	Emergency Service	Emergency Service*
Digital Audio		•	•	•	Optional
VoLTE		Optional	Optional	Optional	Optional
DTMF		Dual-tone Multi-frequency	Dual-tone Multi-frequency	Dual-tone Multi-frequency	Dual-tone Multi-frequency*
DFOTA		Delta Firmware over the Air	/	Delta Firmware over the Air	Delta Firmware over the Air
FOTA		•	Firmware over the Air	•	/
GNSS		GPS/GLONASS/BeiDou/Galileo/QZSS	/	GPS/GLONASS/BeiDou/Galileo/QZSS	/
(U)SIM Card Detection		•	•	•	•
Electrical Features					
Supply Voltage Range		3.3~4.3 V, typ. 3.8V	3.3~4.3 V, typ. 3.8 V	3.3~4.4 V, typ. 3.8 V	3.3~4.5 V, typ. 3.8 V
Power Consumption		10μA @Power off; 1.5mA @LTE Sleep(PF=128); 1.5mA @LTE Sleep(PF=64); 18mA @Idle	10 μA@Power off; 3.7 mA@Sleep (PF=128); 5.0 mA@Sleep (PF=64); 30 mA@Idle	TBD@Power off; TBD@Sleep (PF=128); TBD@Sleep (PF=64); TBD@Idle	26 μA @ Power off, 3.1 mA @ Sleep (PF = 128), 4.0 mA @ Sleep (PF = 64),12.8 mA @ Idle (EG065K-NA); 26 μA @ Power off, 2.7 mA @ Sleep (PF = 128), 3.4 mA @ Sleep (PF = 64), 12.6 mA @ Idle (EG065K-EA)
Software Features					
USB Serial Driver		Windows 7/8/8.1/10, Linux 2.6/3.x/4.1~4.15, Android 4.x/5.x/6.x/7.x/8.x/9.x	Windows 7/8/8.1/10, Linux 2.6~5.9, Android 4.x~10.x	Windows 7/8/8.1/10, WinCE 5.0/6.0/7.0*, Linux 2.6/3.x/4.1~4.14, Android 4.x/5.x/6.x/7.x/8.x	Windows 7/8/8.1/10/11, Linux 2.6~5.18, Android 4.x~12.x
RIL Driver		Android 4.x/5.x/6.x/7.x/8.x/9.x	Android 4.x~10.x	Android 4.x/5.x/6.x/7.x/8.x	RIL Driver*: Android 4.x~12.x
NDIS Driver		Windows 7/8/8.1/10	/	Windows 7/8/8.1/10	Windows 7/8/8.1/10/11
RNDIS Driver		/	Windows 7/8/8.1/10; Linux 2.6~5.9	/	/
ECM Driver		Linux 2.6/3.x/4.1~4.14	Linux 2.6~5.9	Linux 2.6 or later	ECM Driver*: Linux 2.6~5.18
Gobinet Driver		Linux 2.6/3.x/4.x/5.x	/	Linux 2.6 or later	Linux 2.6~5.18
QMI_WWAN Driver		Linux 3.x (3.4 or later)/4.1~4.15	/	Linux 3.4 or later	Linux 3.4~5.18
Certifications[3]		Deutsche Telekom/Telstra/GCF/CE/KC/RCM/ FCC/CCC/PTCRB/IC/AT&T/Verizon/USCC/British Telekom	CE/NCC/RCM	CE/RCM/FCC/IC/PTCRB*/GCF*	GCF/PTCRB/FCC/IC/IFETEL*/Verizon*/AT&T/ Telus/CE/RCM/IMDA*/Anatel/British Telecom/ Telefónica/Telstra*/JATE*/TELEC*
Recommended Applications		Industrial routers, industrial PDAs, rugged tablet PCs and digital signage	Routers, home gateways, set-top boxes, PDAs, tablet PCs and digital signage		Routers, home gateways, set-top boxes, PDAs, tablet PCs and digital signage

Note 1: B32 is only for secondary component carrier.
Note 2: B29 is only for secondary component carrier.
Note 3: May depend on modules' variant.

* Under development
• Supported

LTE-A Modules

Product		EG12	EG120K	EG512R-EA	EG18
					
Form Factor		LGA	LGA	LGA	LGA
Dimensions (mm)		39.5 × 37.0 × 2.8	39.5 × 37.0 × 2.8	42.0 × 38.0 × 2.65	39.5 × 37.0 × 2.8
4G		LTE Cat 12	LTE Cat 12	LTE Cat 12	LTE Cat 18
Frequency Bands (MHz)	-GT (Global)	LTE-TDD: B42/43/48	/	/	/
	-EA (EMEA/ Australia/ Brazil)	LTE-FDD: B1/3/5/7/8/20/28; LTE-TDD: B38/40/41; Up to 3 × CA: Intra-band and Inter-band ; WCDMA: B1/3/5/8	LTE-FDD: B1/3/5/7/8/20/28/32(Optional); LTE-TDD: B38/40/41/42(Optional)/ 43(Optional); Up to 3 × CA: Intra-band and Inter-band; WCDMA: B1/3/5/8	LTE-FDD: B1/3/5/7/8/20/28/32; LTE-TDD: B38/41/42/43; Up to 3×CA: Intra-band and Inter-band; WCDMA: B1/3/5/8	LTE-FDD: B1/3/5/7/8/20/28; LTE-TDD: B38/40/41; Up to 3 × CA: Intra-band and Inter-band; WCDMA: B1/3/5/8
	-NA (North America)	/	-NA(North America) LTE-FDD: B2/4/5/7/12/13/14/25/26/29/30/66/71; LTE-TDD: B41/48	/	LTE-FDD: B2/4/5/7/12/13/14/17[1]/25/26/29/30/66/71; LTE-TDD: B41; Up to 5 × CA: Intra-band and Inter-band; WCDMA Bands: B2/4/5
	-LA* (Latin America) (planning)	/	LTE-FDD: B2/4/5/7/8/28/66; LTE-TDD: B42 (Optional)/43(Optional); WCDMA: B2/4/5/8	/	/
Weight (approx.) g		9	9.1	8.7	9
Operating Temperature		-30°C ~ +75°C	-30°C ~ +75°C	-30°C ~ +75°C	-30°C ~ +75°C
Extended Temperature		-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C
Control via AT Commands		3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands
Data Transmission					
LTE		LTE-FDD: Max. 600 Mbps (DL)/ Max. 150 Mbps(UL); LTE-TDD: Max. 430 Mbps (DL)/ Max. 90 Mbps(UL)	LTE-FDD: Max. 600 Mbps (DL)/ Max. 150 Mbps(UL); LTE-TDD: Max. 430 Mbps (DL)/ Max. 90 Mbps (UL)	LTE-FDD: Max. 600 Mbps (DL)/ Max. 75 Mbps (UL); LTE-TDD: Max. 310 Mbps (DL)/ Max. 90 Mbps (UL)	LTE-FDD: Max. 1.2 Gbps (DL)/ Max. 150 Mbps (UL); LTE-TDD: Max. 573 Mbps (DL)/ Max. 90 Mbps (UL)
UMTS		DC-HSDPA: Max. 42 Mbps (DL)/ HSUPA: Max. 11.2 Mbps (UL) WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA: Max. 42 Mbps (DL)/ HSUPA: Max. 11.2 Mbps (UL) WCDMA: Max. 384 Kbps (DL/UL)	WCDMA: Max. 42 Mbps (DL)/ Max. 5.76 Mbps(UL)	DC-HSDPA: Max. 42 Mbps (DL)/ HSUPA: Max. 11.2 Mbps (UL) WCDMA: Max. 384 Kbps (DL/UL)
SMS		•	•	•	•
Protocols		TCP/UDP/FTP/HTTP/HTTPS/PING/SMS	QMI/MBIM/NITZ/HTTP/HTTPS/FTP/LwM2M*/PING*	TCP/UDP/FTP/HTTP/HTTPS/PING/SMS	TCP/UDP/FTP/HTTP/HTTPS/PING/SMS
Interfaces					
USB		2.0/3.0, Slave Mode	2.0/3.0, Supports Master* and Slave Modes	2.0/3.0, Slave Mode	2.0/3.0, Slave Mode
PCM		•	× 1	•	•
I2C		× 1	× 1	× 1	× 1
(U)SIM		× 2, 1.8 V/ 3.0 V	1.8 V/ 3.0 V	x 2, 1.8 V/ 3.0 V	× 2, 1.8 V/ 3.0 V
eSIM		/	Optional	x 1/ built-in eSIM (optional)	/
GPIO		× 2	× 3	•	× 2
UART		× 3	× 2	*	× 3
ADC		× 2	•	× 2	× 2
SPI		× 1 (Optional)	× 1	•	× 1 (Optional)
SD Card		•	•	*	•
RESET_N		•	•	•	•
PCIe		Optional	Optional	PCIe Gen2 × 1 Lane	Optional
RGMII		/	/	•	/
Antenna		Main, Diversity and GNSS	Main, Diversity and GNSS	Main, Diversity and GNSS	Main, Diversity and GNSS
Enhanced Features					
MIMO		2 × 2, 4 × 2, 4 × 4, DL	2 × 2, 4 × 2, 4 x 4 DL	2 × 2, 4 × 2, 4 × 4 DL	2 × 2, 4 × 2, 4 × 4 DL
eCall		•	Emergency Service*	/	•
Digital Audio		•	•	•	•
VoLTE		Optional	Optional	Optional	Optional
DTMF		Dual-tone Multi-frequency	Dual-tone Multi-frequency	Dual-tone Multi-frequency	Dual-tone Multi-frequency
DFOTA		Delta Firmware over the Air	Delta Firmware over the Air	Delta Firmware over the Air	Delta Firmware over the Air
GNSS		GPS/ GLONASS/ BeiDou/ Galileo/ QZSS	GPS/ GLONASS/ BeiDou/ Galileo/ QZSS	GPS/ GLONASS/ BeiDou/ Galileo	GPS/ GLONASS/ BeiDou/ Galileo/ QZSS
(U)SIM Card Detection		•	•	•	•
Electrical Features					
Supply Voltage Range		3.3~4.3 V, typ. 3.8 V	3.3~4.3 V, typ. 3.8 V	3.3~4.3 V, typ. 3.8 V	3.3~4.3 V, typ. 3.8 V
Power Consumption		20 μA @Power off 1.83 mA @Sleep, Typ. 9.41 mA @Idle	TBD @Power off TBD @LTE Sleep(PF=128) TBD@LTE Sleep(PF=64) TBD@Idle	50 μA @Power off 2.15 mA @LTE Sleep(PF=64) 8 mA @Idle	20 μA @Power off 1.81 mA @Sleep, Typ. 9.38 mA @Idle
Software Features					
USB Serial Driver		Windows: 7/8/8.1/10, Linux: 2.6/3.x/4.x/5.x, Android 4.x/5.x/6.x/7.x/8.x/9.x	Windows 7/8/8.1/10, WinCE 5.0/6.0/7.0*, Linux 2.6/3.x/4.1~4.14, Android 4.x/5.x/6.x/7.x/8.x	Windows 7/8/8.1/10, Linux 2.6~5.4, Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Windows 7/8/8.1/10, Linux 2.6/3.x/4.x/5.x, Android 4.x/5.x/6.x/7.x/8.x/9.x
GNSS Driver		/	/	Android 4.x/5.x/6.x/7.x/8.x/9.x/10	/
RIL Driver		Android 4.x/5.x/6.x/7.x/8.x/9.x	Android 4.x/5.x/6.x/7.x/8.x	Android 4.x/5.x/6.x/7.x/8.x/9.x/10	Android 4.x/5.x/6.x/7.x/8.x/9.x
NDIS Driver		Windows: 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10
MBIM Driver		/	Windows 10; Linux 3.18~5.4	Windows 7/8/8.1/10, Linux 3.18~5.4	/
Gobinet Driver		Linux 2.6/3.x/4.x/5.x	Linux 2.6/3.x/4.x/5.x	Linux 2.6~5.4	Linux 2.6/3.x/4.x/5.x
QMI_WWAN Driver		Linux 3.x (3.4 or later)/4.x/5.x	Linux 3.x (3.4 or later)/4.x/5.x	Linux 3.4~5.4	Linux 3.x (3.4 or later)/4.x/5.x
PCIe Driver		/	/	Windows 10, Linux 2.6~5.4, Android 4.x/5.x/6.x/7.x/8.x/9.x/10	/
Certifications[2]		CE/RCM/FCC/GCF	CE/RCM/FCC/IC/PTCRB*/GCF*	GCF/CE/RCM/Telstra	CE/RCM/FCC/IC/GCF/PTCRB/AT&T/Verizon/ Telstra/USCC/T-Mobile
Recommended Applications		Industrial routers, industrial PDAs, rugged tablet PCs and digital signage	Routers, home gateways, set-top boxes, PDAs, tablet PCs and digital signage	Industrial routers, industrial PDAs, rugged tablet PCs and digital signage	

Note 1: LTE-FDD B17 is supported through MFBI+B12.
Note 2: May depend on modules' variant.

* Under development
• Supported

Product	EM05	EM06	EM060K	EP06
				
Form Factor	M.2	M.2	M.2	Mini PCIe
Dimensions (mm)	42.0 × 30.0 × 2.3	42.0 × 30.0 × 2.3	42.0 × 30.0 × 2.3	51.0 × 30.0 × 4.0
4G	LTE Cat 4	LTE Cat 6	LTE Cat 6	LTE Cat 6
Frequency Bands (MHz) -G/GL (Global)	-G(Global) LTE: B1/2/3/4/5/7/8/12/13/14/18/19/20/25/26/28/66/71/38/39/40/41; WCDMA: B1/2/4/5/6/8/19	/	-GL(Global) LTE-FDD: B1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/28/29[2]/30/32[1]/66/71; LTE-TDD: B34/38/39/40/41/42/43/46[1] (LAA)/48 (CBRS); Up to 2 ×CA: B2+B2/5/12/13/29[3];B4+B4/5/12/13/29[3]; B5+B5/7/25/30/66; B7+B7/12/26; B12+B12/25/30/66; B13+B66; B25+B25/26; B30+B29; B66+B29/66; B41+B41; WCDMA: B1/2/3/4/5/6/8/19	/
Frequency Bands (MHz) -E (EMEA/ Australia/New Zealand	LTE-FDD: B1/3/7/8/20/28; LTE-TDD: B38/41; WCDMA: B1/8	LTE-FDD: B1/3/5/7/8/20/28/32[1]; LTE-TDD: B38/40/41; Up to 2 × CA: B1+B1/5/8/20/28; B3+B3/5/7/8/20/28; B7+B5/7/8/20/28; B20+B32[3]; B38+B38; B40+B40; B41+B41; WCDMA: B1/3/5/8	/	-E (EMEA/Australia/Brazil) LTE-FDD: B1/3/5/7/8/20/28/32[1]; LTE-TDD: B38/40/41; Up to 2 × CA: B1+B1/5/8/20/28; B3+B3/5/7/8/20/28; B7+B5/7/8/20/28; B20+B32 ; B38+B38; B40+B40; B41+B41; WCDMA: B1/3/5/8
Frequency Bands (MHz) -A (North America)	/	LTE-FDD: B2/4/5/7/12/13/25/26/29[2]/30/66; LTE-TDD: B41; Up to 2 × CA: B2+B2/5/12/13/29[3]; B4+B4/5/12/13/29[3]; B5+B5/7/25/30/66; B7+B7/12/26; B12+B12/25/30/66; B13+B66; B25+B25/26; B30+B29; B66+B29/66; B41+B41; WCDMA: B2/4/5	-NA (North America) LTE-FDD: B2/4/5/7/12/13/14/17/25/26/29/30/66/71; LTE-TDD: B41/48	LTE-FDD: B2/4/5/7/12/13/25/26/29[2]/30/66; Up to 2 × CA: B2+B2/5/12/13/29; B4+B4/5/12/13/29; B7+B5/7/12/26; B25+B5/12/25/26; B30+B5/12/29; B66+B5/12/13/29/66; WCDMA: B2/4/5
Frequency Bands (MHz) -J (Japan)	/	LTE-FDD: B1/3/8/18/19/26/28; LTE-TDD: B41; Up to 2 × CA: B1+B1/8/18/19/26/28; B3+B3/8/18/19/26/28; B41+B41; WCDMA: B1/3/6/8/19	/	/
Frequency Bands (MHz) -CE (China/Thailand/ India)	LTE-FDD: B1/3/5/8; LTE-TDD: B38/39/40/41; WCDMA: B1/8; EVDO/CDMA: BC0	/	/	/
Weight (approx.) g	6.0	6.5	TBD	10.1
Operating Temperature	-30°C ~ +70°C	-30°C ~ +70°C	-25°C ~ +75°C	-35°C ~ +75°C
Extended Temperature	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C
Control via AT Commands	3GPP TS 27.005, 3GPP TS 27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands
Data Transmission				
LTE(Mbps)	LTE-FDD: Max. 150 (DL)/Max. 50 (UL); LTE-TDD: Max. 130 (DL)/Max. 30 (UL)	LTE-FDD: Max. 300 (DL)/Max. 50 (UL); LTE-TDD: Max. 226 (DL)/Max. 28 (UL)	LTE-FDD: Max. 300 (DL)/Max. 50 (UL); LTE-TDD: Max. 226 (DL)/Max. 28 (UL)	LTE-FDD: Max. 300 (DL)/Max. 50 (UL); LTE-TDD: Max. 226 (DL)/ Max. 28 (UL)
UMTS	DC-HSDPA: Max. 42 Mbps (DL)/ HSUPA: Max. 5.76 Mbps (UL) WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA: Max. 42 Mbps (DL)/ HSUPA: Max. 5.76 Mbps (UL) WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA: Max. 42 Mbps (DL)/ HSUPA: Max. 5.76 Mbps (UL) WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA: Max. 42 Mbps (DL)/ HSUPA: Max. 5.76 Mbps (UL) WCDMA: Max. 384 Kbps (DL/UL)
SMS	•	•	•	•
CDMA2000	EVDO: Max. 3.1 Mbps (DL)/Max. 1.8 Mbps (UL) 1X Advanced: Max. 307.2 Kbps (DL)/ Max. 307.2 Kbps (UL)	/	/	/
Protocols	TCP/UDP/PPP/FTP/HTTP/NTP/PING/QMI/NITZ/SMTP/MMS/FTPS/SMTPS/SSL/FILE	TCP/UDP/FTP/HTTP/HTTPS/PING/SMS	QMI/MBIM/NITZ/HTTP/HTTPS/FTP/LwM2M*/PING*	TCP/UDP/FTP/HTTP/HTTPS/PING/SMS
Interfaces				
USB	2.0 Hi-Speed	2.0/3.0*, Slave Mode	2.0/3.0*, Slave Mode	2.0/3.0, Slave Mode
PCM	•	•	•	•
I2C	× 1	× 1	× 1	× 1
(U)SIM	1.8 V/ 3.0 V	× 2, 1.8 V/ 3.0 V	× 2, 1.8 V/ 3.0 V	× 2, 1.8 V/ 3.0 V
eSIM	/	/	× 1/ built-in eSIM (optional)	/
GPIO	× 1	× 11	MIPI interface	× 4
RESET_N	•	•	•	•
PCIe	/	Optional	Optional	/
Antenna	Main, Diversity and GNSS	Main, Diversity and GNSS	Main, Diversity and GNSS	× 3
Enhanced Features				
MIMO	DL MIMO, support Rx-diversity Antenna	2 × 2, 4 × 2, DL	2 × 2, 4 × 2, DL	2 × 2, 4 × 2, DL
eCall*	/	Emergency Service	Emergency Service	Emergency Service
Digital Audio	•	•	•	•
VoLTE	/	Optional	Optional	Optional
DTMF	/	Dual-tone Multi-frequency	Dual-tone Multi-frequency	Dual-tone Multi-frequency
DFOTA	•	Delta Firmware over the Air	Delta Firmware over the Air	Delta Firmware over the Air
GNSS	Optional	GPS/ GLONASS/ BeiDou/ Galileo/ QZSS	GPS/ GLONASS/ BeiDou/ Galileo/ QZSS	GPS/GLONASS/BeiDou/Galileo/QZSS
FOTA	/	•	/	•
(U)SIM Card Detection	•	•	•	•
Electrical Features				
Supply Voltage Range	3.135~4.4 V, typ. 3.3 V	3.135~4.4 V, typ. 3.7 V	3.135~4.4 V, typ. 3.7 V	3.1~4.4 V, typ. 3.3 V .
Power Consumption	5 µA @Power off/3.3 mA(PF=128) @LTE Sleep/ 20 mA @Idle	50 µA @Power off/4.1 mA @Sleep, Typ./ 22.1 mA @Idle	TBD@Power off/TBD @Sleep, Typ./TBD @Idle	3.3 mA@Sleep, Typ./ 32.1 mA @Idle
Software Features				
USB Serial Driver	Windows 7/8/8.1/10, Linux 2.6~5.4, Android 4.x/5.x/6.x/7.x/9.x	Windows 7/8/8.1/10, Linux 2.6~5.4, Android 4.x/5.x/6.x/7.x/9.x	Windows 7/8/8.1/10, WinCE 5.0/6.0/7.0*, Linux 2.6/3.x/4.1~4.14, Android 4.x/5.x/6.x/7.x/8.x	Windows 7/8/8.1/10, Linux 2.6~5.4, Android 4.x/5.x/6.x/7.x/9.x
GNSS Driver	Android 4.x/5.x/6.x/7.x/8.x/9.x	Android 4.x/5.x/6.x/7.x/8.x/9.x	/	Android 4.x/5.x/6.x/7.x/8.x/9.x
RIL Driver	Android 4.x/5.x/6.x/7.x/8.x/9.x	Android 4.x/5.x/6.x/7.x/8.x/9.x	Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x	Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x
MBIM Driver	Windows 8/8.1/10, Linux3.18~5.4	Windows 8/8.1/10, Linux 3.18~5.4	Windows 10	Windows 8/8.1/10, Linux 3.18~5.4
NDIS Driver	Windows 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10
Gobinet Driver	Linux 2.6~5.4	Linux 2.6~5.4	Linux 2.6/3.x/4.x/5.x	Linux 2.6~5.4
QMI_WWAN Driver	Linux 3.4~5.4	Linux 3.4~5.4	Linux 3.x (3.4 or later)/4.x/5.x	Linux 3.4~5.4
Certifications[4]	CCC/SRRC/NAL/CE/RCM/FCC/PTCRB/GCF	GCF/CE/NCC/RCM/ICASA/FCC/PTCRB/IC/WHQL/Verizon/AT&T/Telstra/Deutsche Telekom/KDDI/JATE/TELEC/Sprint/KC	NCC/CE/RCM/FCC/IC/Verizon*/ AT&T*/T-Mobile*/KDDI*/NTT DOCOMO*/JATE*/TELEC*/GCF/PTCRB	Telstra/Deutsche Telekom/GCF/CE/NCC/RCM/FCC/IC/CCC/PTCRB/AT&T/Verizon/Telus/Sprint/Rogers/ICASA
Recommended Applications	Consumer laptops, industrial laptops, industrial routers, industrial PDAs, rugged tablet PCs and digital signage.			Industrial routers, industrial PDAs, rugged tablet PCs and digital signage

Note 1: B32 is only for secondary component carrier, B46 is only for secondary component carrier.
Note 2: B29 is only for secondary component carrier.
Note 3: means LTE-FDD B29 and B32 support receiving only, and are only for secondary component carrier in 2×CA.
Note 4: May depend on modules' variant.

* Under development
• Supported

LTE-A Modules

Product	EM12-G	EM120K-GL	EM120R-GL	EM121R-GL	EM160R-GL
					
Form Factor	M.2	M.2	M.2	M.2	M.2
Dimensions (mm)	42.0 × 30.0 × 2.3	42.0 × 30.0 × 2.3	42.0 × 30.0 × 2.3	42.0 × 30.0 × 2.3	42.0 × 30.0 × 2.3
4G	LTE Cat 12	LTE Cat 12	LTE Cat 12	LTE Cat 12	LTE Cat 16
Frequency Bands (MHz) -G/GL (Global)	LTE-FDD: B1/2/3/4/5/7/8/9/12/13/14/17/18/19/20/21/25/26/28/29[2]/30/32/66; LTE-TDD: B38/39/40/41; Up to 3 × CA : Intra-band and Inter-band, B1+3+5/7/8/19/20/28, B2+4+5, B2+4+13, B2+5+30, B2+12+30, etc; WCDMA: B1/2/3/4/5/8/9/19	LTE-FDD: B1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/28/29[2]/30/32[1]/66/71; LTE-TDD: 34/38/39/40/41/42/43/46[3] (LAA)/48 (CBRS); Up to 3 × CA: Intra-band and Inter-band; WCDMA: B1/2/3/4/5/6/8/19	LTE-FDD: B1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/28/29[2]/30/32[1]/66; LTE-TDD: B38/39/40/41/42/43/46[3]/48(CBRS); Up to 3 × CA: Intra-band and Inter-band; WCDMA: B1/2/3/4/5/6/8/19	LTE-FDD: B1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/28/29[2]/30/32[1]/66; LTE-TDD: B38/39/40/41/42/43/46[3]/48(CBRS); Up to 3 × CA: Intra-band and Inter-band; WCDMA: B1/2/3/4/5/6/8/19	LTE-FDD: B1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/28/29[2]/30/32[1]/66; LTE-TDD: B38/39/40/41/42/43/46[3]/48(CBRS); Up to 5 × CA: Intra-band and Inter-band; WCDMA: B1/2/3/4/5/6/8/19
Weight (approx.) g	6.0	TBD	6.8	6.8	6.8
Operating Temperature	-30°C ~ +70°C , -10°C ~ +65°C (Only for UL CA test)	-25°C ~ +75°C	-25°C ~ +75°C	-25°C ~ +75°C	-25°C ~ +75°C
Extended Temperature	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C
Control via AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands	3GPP TS27.007 and Quectel Enhanced AT Commands
Data Transmission					
LTE	LTE-FDD: Max. 600 Mbps (DL)/ Max. 150 Mbps (UL); LTE-TDD: Max. 430 Mbps (DL)/ Max. 90 Mbps (UL)	LTE-FDD: Max. 600 Mbps (DL)/ Max. 150 Mbps (UL); LTE-TDD: Max. 408 Mbps (DL)/ Max. 90 Mbps (UL)	LTE-FDD: Max. 600 Mbps (DL)/ Max. 150 Mbps (UL); LTE-TDD: Max. 408 Mbps (DL)/ Max. 90 Mbps (UL)	LTE-FDD: Max. 600 Mbps (DL)/ Max. 150 Mbps (UL); LTE-TDD: Max. 408 Mbps (DL)/ Max. 90 Mbps (UL)	LTE-FDD: Max. 1.0 Gbps (DL)/ Max. 150 Mbps (UL); LTE-TDD: Max. 880 Mbps (DL)/ Max. 90 Mbps (UL)
UMTS	DC-HSDPA: Max. 42 Mbps (DL)/ HSUPA: Max. 5.76 Mbps (UL) WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA: Max. 42 Mbps (DL)/ HSUPA: Max. 11.2 Mbps (UL) WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA: Max. 42 Mbps (DL)/ HSUPA: Max. 11.2 Mbps (UL) WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA: Max. 42 Mbps (DL)/ HSUPA: Max.11.2 Mbps (UL) WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA: Max. 42 Mbps (DL)/ HSUPA: Max. 11.2 Mbps (UL) WCDMA: Max. 384 Kbps (DL/UL)
SMS	•	•	•	•	•
Protocols	QMI/MBIM/NITZ/HTTP/HTTPS/FTP/LwM2M/PING	QMI/MBIM/NITZ/HTTP/HTTPS/FTP/LwM2M*/PING*	TCP/UDP/FTP/HTTP/HTTPS/PING/SMS	TCP/UDP/FTP/HTTP/HTTPS/PING/SMS	TCP/UDP/FTP/HTTP/HTTPS/PING/SMS
Interfaces					
USB	2.0/3.0, Slave Mode	2.0/3.0, Slave Mode	2.0/3.0, Slave Mode	2.0/3.0, Slave Mode	2.0/3.0, Slave Mode
PCM	•	•	•	•	•
I2C	× 1	/	/	/	/
(U)SIM	× 2, 1.8 V/ 3.0 V	× 2, 1.8 V/ 3.0 V	× 2, 1.8 V/ 3.0 V	× 2, 1.8 V/ 3.0 V	× 2, 1.8 V/ 3.0 V
eSIM	/	× 1/ built-in eSIM (optional)	× 1/ built-in eSIM (optional)	× 1/ built-in eSIM (optional)	x 1/ built-in eSIM (optional)
GPIO	Optional	MIPI interface	MIPI interface	MIPI interface	MIPI interface
RESET_N	•	•	•	•	•
PCIe	Optional	Optional	PCIe Gen2 × 1 Lane	PCIe Gen2 × 1 Lane	PCIe Gen2 × 1 Lane
Antenna	Main, Diversity and GNSS	Main, Diversity and GNSS	Main, Diversity and GNSS	Main, Diversity and GNSS	Main, Diversity and GNSS, MIMO × 2
Enhanced Features					
MIMO	4× 2, 2 ×2, DL	2 × 2, 4 × 2 DL	2 × 2, 4 × 2 DL	2 × 2, 4 × 2 DL	2 × 2, 4 × 2, 4 × 4 DL
eCall*	Emergency Service	Emergency Service	Emergency Service	Emergency Service	Emergency Service
Digital Audio	•	•	•	•	•
VoLTE	Optional	Optional	/	/	/
DTMF	Dual-tone Multi-frequency	Dual-tone Multi-frequency	Dual-tone Multi-frequency	Dual-tone Multi-frequency	Dual-tone Multi-frequency
DFOTA	Delta Firmware over the Air	Delta Firmware over the Air	Delta Firmware over the Air	Delta Firmware over the Air	Delta Firmware over the Air
GNSS	GPS/GLONASS/BeiDou/Galileo/QZSS	GPS/GLONASS/BeiDou/Galileo/QZSS	GPS/GLONASS/BeiDou/Galileo/QZSS	GPS/GLONASS/BeiDou/Galileo/QZSS	GPS/GLONASS/BeiDou/Galileo/QZSS
(U)SIM Card Detection	•	•	•	•	•
Electrical Features					
Supply Voltage Range	3.135~4.4 V, typ. 3.7 V	3.135~4.4 V, typ. 3.7 V	3.135~4.4 V, typ. 3.7 V	3.135~4.4 V, typ. 3.7 V	3.135~4.4 V, typ. 3.7 V
Power Consumption	56 µA@Power down 2.53 mA@Sleep(AT+CFUN=0, USB disconnected), 19.32 mA@Idle(PF=64, USB Active)	USB Mode TBD @ Power down TBD @ Sleep (AT+CFUN=0, USB Suspend) TBD @ Idle (PF = 64, USB Active)	USB Mode 66 µA @ Power down 1.84 mA @ Sleep (AT+CFUN=0, USB Suspend) 24.48 mA @ Idle (PF = 64, USB Active); PCIe Only Mode 66 µA @ Power down 2.35 mA @ Sleep (AT+CFUN=0, Modem standby) 15.05 mA @ Idle (PF = 64, PCIe Active)	USB Mode 66 µA @ Power down 1.84 mA @ Sleep (AT+CFUN=0, USB Suspend) 24.48 mA @ Idle (PF = 64, USB Active); PCIe Only Mode 66 µA @ Power down 2.35 mA @ Sleep (AT+CFUN=0, Modem standby) 15.05 mA @ Idle (PF = 64, PCIe Active)	USB Mode 66 µA @ Power down 1.78 mA @ Sleep (AT+CFUN=0, USB Suspend) 24.75 mA @ Idle (PF = 64, USB Active); PCIe Only Mode 66 µA @ Power down 2.38 mA @ Sleep (AT+CFUN=0, Modem standby) 15.38 mA @ Idle (PF = 64, PCIe Active)
Software Features					
USB Serial Driver	Windows: 7/8/8.1/10/11 Linux: 2.6~5.X Android: 4.x~12.x	Windows 7/8/8.1/10, Linux 2.6/3.x/4.x/5.x, Android 4.x/5.x/6.x/7.x/8.x/9.x	Windows 7/8/8.1/10, Linux 2.6/3.x/4.x/5.x, Android 4.x/5.x/6.x/7.x/8.x/9.x	Windows 7/8/8.1/10, Linux 2.6/3.x/4.x/5.x, Android 4.x/5.x/6.x/7.x/8.x/9.x	Windows 7/8/8.1/10, Linux 2.6/3.x/4.x/5.x, Android 4.x/5.x/6.x/7.x/8.x/9.x
RIL Driver	Android: 4.x~12.x	Android 4.x/5.x/6.x/7.x/8.x/9.x	Android 4.x/5.x/6.x/7.x/8.x/9.x	Android 4.x/5.x/6.x/7.x/8.x/9.x	Android 4.x/5.x/6.x/7.x/8.x/9.x
NDIS Driver	Windows: 7/8/8.1/10/11	Windows 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10
Gobinet Driver	Linux 2.6/3.x/4.x/5.x	Linux 2.6/3.x/4.x/5.x	Linux 2.6/3.x/4.x/5.x	Linux 2.6/3.x/4.x/5.x	Linux 2.6/3.x/4.x/5.x
QMI_WWAN Driver	Linux 3.x (3.4 or later)/4.x/5.x	Linux 3.x (3.4 or later)/4.x/5.x	Linux 3.x (3.4 or later)/4.x/5.x	Linux 3.x (3.4 or later)/4.x/5.x	Linux 3.x (3.4 or later)/4.x/5.x
PCIe Driver	/	Linux 3.x/4.x/5.x	Linux 3.x/4.x/5.x	Linux 3.x/4.x/5.x	Linux 3.x/4.x/5.x
Certifications	CE/FCC/IC/NCC/RCM/ICASA/JETE/TELEC/GCF/PTCRB/Telstra/AT&T/Verizon/Telefónica/Vodafone/Deutsche Telekom/Docomo/British Telecom/UKCA/Anatel/KC/T-mobile/Sprint/Telus/Rogers/KDDI/TIM/WHQL	Verizon*/AT&T*/T-Mobile*/KDDI*/NTT DOCOMO*/JATE*/TELEC*/GCF/PTCRB/CE/RCM/FCC/IC/NCC	GCF/CE/PTCRB/FCC/IC/Anatel/IFETEL/SRRC/NAL/CCC/NCC/KC/JATE/TELEC/RCM/ICASA/Vodafone/British Telecom/Swisscom/Verizon/AT&T/T-Mobile/Sprint/China Mobile/China Unicom/NTT DOCOMO/SoftBank[4]/KDDI/Telstra*	GCF/CE/PTCRB/FCC/IC/RCM/Verizon/AT&T	GCF/CE/PTCRB/FCC/IC/Anatel/IFETEL/SRRC/NAL/CCC/NCC/KC/JATE/TELEC/RCM/ICASA/Vodafone/British Telecom/Swisscom/Verizon/AT&T/T-Mobile/Sprint/China Mobile/China Unicom/NTT DOCOMO/SoftBank[4]/KDDI/Telstra*
Recommended Applications	Consumer laptops, industrial laptops, industrial routers, industrial PDAs, rugged tablet PCs and digital signage.				

Note 1: B32 is only for secondary component carrier.
Note 2: B29 is only for secondary component carrier.
Note 3: B46 is only for secondary component carrier.
Note 4: Currently, SoftBank certification is only supported for PC applications.

* Under development
• Supported

Product		EC21/EC21 Mini PCIe	EC25/EC25 Mini PCIe	EC20 R2.1/EC20 R2.1 Mini PCIe
				
Form Factor		LCC (EC21); Mini PCIe (EC21 Mini PCIe)	LCC (EC25); Mini PCIe (EC25 Mini PCIe)	LCC (EC20 R2.1); Mini PCIe (EC20 R2.1 Mini PCIe)
Dimensions (mm)		32.0 × 29.0 × 2.4 (EC21); 51.0 × 30.0 × 4.9 (EC21 Mini PCIe)	32.0 × 29.0 × 2.4 (EC25); 51.0 × 30.0 × 4.9 (EC25 Mini PCIe)	32.0 × 29.0 × 2.4 (EC20 R2.1); 51.0 × 30.0 × 4.9 (EC20 R2.1 Mini PCIe)
LTE Category		LTE Cat 1	LTE Cat 4	LTE Cat 4
Frequency Bands(MHz)	-CE (China/India)	/	/	LTE-FDD: B1/3/5/8; LTE-TDD: B34/38/39/40/41; WCDMA: B1/8; TD-SCDMA: B34/39; EVDO/CDMA: BC0; GSM: B3/8
	-E (EMEA/South Korea/ Thailand/India)	(EMEA/Thailand/India) LTE-FDD: B1/3/5/7/8/20; WCDMA: B1/5/8; GSM: B3/8	(EMEA/South Korea/Thailand/India) LTE-FDD: B1/3/5/7/8/20; LTE-TDD: B38/40/41; WCDMA: B1/5/8; GSM: B3/8	/
	-EU (EMEA/Thailand)	LTE-FDD: B1/3/7/8/20/28A; WCDMA: B1/8; GSM: B3/8	LTE-FDD: B1/3/7/8/20/28A; LTE-TDD: B38/40/41; WCDMA: B1/8 ; GSM: B3/8	/
	-EUX (EMEA/Thailand)	LTE-FDD: B1/3/7/8/20/28A; WCDMA: B1/8; GSM: B3/8	LTE-FDD: B1/3/7/8/20/28A; LTE-TDD: B38/40/41; WCDMA: B1/8 ; GSM: B3/8	/
	-V (Verizon)	LTE-FDD: B4/13	LTE-FDD: B4/13	/
	-A (AT&T/T-Mobile/ Canada)	LTE-FDD: B2/4/12; WCDMA: B2/4/5	LTE-FDD: B2/4/12; WCDMA: B2/4/5	/
	-ADL(AT&T/T-mobile)	/	LTE-FDD: B2/4/12	/
	-AF(AT&T/Verizon/T-mobile)	/	LTE-FDD: B2/4/5/12/13/14/66/71; WCDMA: B2/4/5	/
	-AFDL (AT&T/Verizon/ T-mobile)	/	LTE-FDD: B2/4/5/12/13/14/66/71	/
	-AFX (AT&T/ Verizon)	/	LTE-FDD: B2/4/5/12/13/14/66/71; WCDMA: B2/4/5	/
	-AFXD (AT&T/Verizon/ T-mobile)	/	LTE-FDD: B2/4/5/12/13/14/66/71; WCDMA: B2/4/5	/
	-AU (Latin America/ANZ)	LTE-FDD: B1/2[2]/3/4/5/7/8/28; LTE-FDD: B40; WCDMA: B1/2/5/8; GSM: B2/3/5/8	LTE-FDD: B1/2[2]/3/4/5/7/8/28; LTE-TDD: B40; WCDMA: B1/2/5/8; GSM: B2/3/5/8	/
	-AUX (Latin America/ANZ)	LTE-FDD: B1/2[2]/3/4/5/7/8/28; LTE-TDD: B40; WCDMA: B1/2/4/5/8; GSM: B2/3/5/8	LTE-FDD: B1/2[2]/3/4/5/7/8/28; LTE-TDD: B40; WCDMA: B1/2/4/5/8 ; GSM: B2/3/5/8	/
	-AUT (Australia)[1]	LTE-FDD: B1/3/5/7/28; WCDMA: B1/5	/	/
	-J (Japan)	LTE-FDD: B1/3/8/18/19/26	LTE-FDD: B1/3/8/18/19/26; LTE-TDD: B41; WCDMA: B1/6/8/19	/
	-KL (Korea)	LTE-FDD: B1/3/5/7/8	/	/
Weight (approx.) g		4.9 (EC21); 9.8 (EC21 Mini PCIe)	4.9 (EC25); 9.8 (EC25 Mini PCIe)	5.3 (EC20 R2.1); 10.6 (EC20 R2.1 Mini PCIe)
Operating Temperature		–35°C ~ +75°C	–35°C ~ +75°C	–35°C ~ +75°C
Extended Temperature		–40°C ~ +85°C (EC21); –40°C ~ +80°C (EC21 Mini PCIe)	–40°C ~ +85°C (EC25); –40°C ~ +80°C (EC25 Mini PCIe)	–40°C ~ +85°C (EC20 R2.1); –40°C ~ +80°C (EC20 R2.1 Mini PCIe)
Data Transmission				
LTE data rate (Mbps)		LTE-FDD: Max. 10 (DL) /Max. 5 (UL); LTE-TDD: Max. 8.96 (DL) /Max. 3.1 (UL)	LTE-FDD: Max. 150 (DL) /Max. 50 (UL); LTE-TDD: Max. 130 (DL) /Max. 30 (UL)	LTE-FDD: Max. 150 (DL)/ Max. 50 (UL) LTE-TDD: Max. 130 (DL)/ Max. 30 (UL)
DC-HSPA+ data rate (Mbps)		Max. 42 (DL)/Max. 5.76 (UL)	Max. 42 (DL)/Max. 5.76 (UL)	Max. 42 (DL)/ Max. 5.76 (UL)
WCDMA data rate (Kbps)		Max. 384 (DL)/Max. 384 (UL)	Max. 384 (DL)/Max. 384 (UL)	Max. 384 (DL)/ Max. 384 (UL)
TD-SCDMA data rate (Mbps)		/	/	Max. 4.2 (DL)/ Max. 2.2 (UL)
EVDO data rate (Mbps)		/	/	Max. 3.1 (DL)/ Max. 1.8 (UL)
CDMA2000 data rate (Kbps)		/	/	Max. 307.2 (DL)/ Max. 307.2(UL)
EDGE data rate (Kbps)		Max. 296 (DL)/Max. 236.8 (UL)	Max. 296 (DL)/Max. 236.8 (UL)	Max. 296 (DL)/ Max. 236.8 (UL)
GPRS data rate (Kbps)		Max. 107 (DL)/Max. 85.6 (UL)	Max. 107 (DL)/Max. 85.6 (UL)	Max. 107 (DL)/ Max. 85.6 (UL)
SMS		•	•	•
CSD		•	•	•
Protocols		TCP/UDP/PPP/FTP/HTTP/NTP/PING/QMI/HTTPS/SMTP/MMS*/ FTPS*/SMTPS/SSL	TCP/UDP/PPP/FTP/HTTP/NTP/PING/QMI/HTTPS/SMTP/MMS*/FTPS*/SMTPS/SSL	TCP/UDP/PPP/FTP/HTTP/NTP/PING/QMI/NITZ/CMUX/ HTTPS/SMTP/MMS/FTPS/SMTPS/SSL/FILE
Interfaces				
(U)SIM		1.8 V/ 3.0 V	1.8 V/ 3.0 V	1.8 V/ 3.0 V
UART		× 2 (EC21); × 1 (EC21 Mini PCIe)	× 2 (EC25); × 1 (EC25 Mini PCIe)	× 2 (EC20 R2.1); × 1 (EC20 R2.1 Mini PCIe)
USB		USB 2.0 (Hi-Speed)	USB 2.0 (Hi-Speed)	USB 2.0 (Hi-Speed)
IIC		•	•	• (EC20 R2.1); Optional (EC20 R2.1 Mini PCIe)
Audio Digital (PCM)		Optional	Optional	• (EC20 R2.1); Optional (EC20 R2.1 Mini PCIe)
SD		• (EC21)	• (EC25)	• (EC20 R2.1)
ADC		× 2, 15bits (EC21)	× 2, 15bits (EC25)	× 2, 15bits (EC20 R2.1)
SGMII		• (EC21)	• (EC25)	• (EC20 R2.1)
GPIO		• (Only Supported on QuecOpen®)	• (Only Supported on QuecOpen®)	/
Antenna		Pads for Primary, Rx-diversity and GNSS	Pads for Primary, Rx-diversity and GNSS	Pads for Primary, Rx-diversity and GNSS
Enhanced Features				
GNSS		Optional	Optional	Optional
WiFi-Scan		/	/	/
BlueTooth		/	/	/
DTMF		•	•	•
DFOTA		•	•	•
QMI/ RmNet		•	•	•
Audio Playback/Audio Recording		Optional	Optional	Optional
QuecFile		•	•	• (EC20 R2.1)
USB Serial Driver		Windows 7/8/8.1/10, Linux 2.6~5.4, Android 4.x/5.x/6.x/7.x/9.x	Windows 7/8/8.1/10, Linux 2.6~5.4, Android 4.x/5.x/6.x/7.x/9.x	Windows 7/8/8.1/10, Linux 2.6~5.4, Android 4.x/5.x/6.x/7.x/9.x
GNSS Driver/ RIL Driver		Android 4.x/5.x/6.x/7.x/8.x/9.x	Android 4.x/5.x/6.x/7.x/8.x/9.x	Android 4.x/5.x/6.x/7.x/8.x/9.x
NDIS Driver		Windows 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10
MBIM Driver		Windows 8/8.1/10, Linux 3.8~5.4	Windows 8/8.1/10, Linux 3.8~5.4	Windows 8/8.1/10, Linux 3.8~5.4
GobiNet Driver		Linux 2.6~5.4	Linux 2.6~5.4	Linux 2.6~5.4
QMI_WWAN Driver		Linux 3.4~5.4	Linux 3.4~5.4	Linux 3.4~5.4
(U)SIM Card Detection		•	•	•
Firmware Update		Via USB/DFOTA	Via USB/DFOTA	Via USB/DFOTA
Electrical Features				
Supply Voltage Range		3.3 V~4.3 V, typ. 3.8 V (EC21); 3.0 V~3.6 V, typ. 3.3 V (EC21 Mini PCIe)	3.3 V~4.3 V, typ. 3.8 V (EC25); 3.0 V~3.6 V, typ. 3.3 V (EC25 Mini PCIe)	3.3 V~4.3 V, typ. 3.8 V (EC20 R2.1); 3.0 V~3.6 V, typ. 3.3 V (EC20 R2.1 Mini PCIe)
Power Consumption		20 μA @Power off/ 3 mA @Sleep, Typ. / 22 mA @Idle (EC21); 3.5 mA @Sleep, Typ. / 34 mA @Idle (EC21 Mini PCIe)	20 μA @Power off/ 3 mA @Sleep, Typ. / 22 mA @Idle (EC25); 3.6 mA @Sleep, Typ. / 35 mA @Idle (EC25 Mini PCIe)	11 μA @Power off/ 1.5 mA @Sleep (PF=256), Typ. / 20 mA @Idle (EC20 R2.1); 4 mA @Sleep (PF=128), 3.7 mA@Sleep (PF=256), Typ. / 30 mA @Idle (EC20 R2.1 Mini PCIe)
Certifications[3]		Carrier Certification: Vodafone/Deutsche Telekom/ British Telecom/Telefónica/Verizon/AT&T/T-Mobile/U.S. Cellular/ Rogers/SKT/KT/NTT DOCOMO/KDDI/Telstra[4]/LGU+/ Spark; Regulatory Certification: GCF/CE/FCC/PTCRB/IC/ Anatel/KC/ NCC/JATE/TELEC/RCM/UKCA; Others: WHQL	Carrier Certification: Vodafone/Deutsche Telekom/ British Telecom/Telefónica/ Verizon/AT&T/T-Mobile/U.S. Cellular/ Rogers/Telus/NTT DOCOMO/SoftBank/KDDI/ Bell*/SKT/ LGU+/Telstra/KT/Spark; Regulatory Certification: GCF/CE/FCC/PTCRB/IC/Anatel/KC/NCC/JATE/TELEC/RCM/ NBTC/ICASA/UKCA; Others: WHQL	Regulatory Certification: NAL/SRRC/CCC (China)
Recommended Applications		Telematics, smart metering, mobile POS terminals, gateways, safety, tracking and tracing, remote maintenance and control, networking, mobile computing, healthcare, etc.		

Note 1: Inapplicable to Mini PCIe.
Note 2: Rx-diversity not supported.
Note 3: May depend on modules' variant.
Note 4: Data only.
GNSS antenna not supported on EC21-KL.
EC25-ADL/EC25-AFDL/EC25-AFXD/EC25-ADL Mini PCIe/EC25-AFDL Mini PCIe/EC25-AFXD Mini PCIe are requested for data only device.

* Under development
• Supported

LTE Modules

Product		EG21-G/EG21-G Mini PCIe/EG21-GL	EG25-G/ EG25-G Mini PCIe/EG25-GL
			
Form Factor		LGA (EG21-G/GL); Mini PCIe (EG21-G Mini PCIe)	LGA (EG25-G/GL); Mini PCIe (EG25-G Mini PCIe)
Dimensions (mm)		32.0 × 29.0 × 2.4 (EG21-G/GL); 51.0 × 30.0 × 4.9 (EG21-G Mini PCIe)	32.0 × 29.0 × 2.4 (EG25-G/GL); 51.0 × 30.0 × 4.9 (EG25-G Mini PCIe)
LTE Category		LTE Cat 1	LTE Cat 4
Frequency Bands (MHz)	-G (Global)	LTE-FDD: B1/2/3/4/5/7/8/12/13/18/19/20/25/26/28; LTE-TDD: B38/39/40/41; WCDMA: B1/2/4/5/6/8/19; GSM: B2/3/5/8	LTE-FDD: B1/2/3/4/5/7/8/12/13/18/19/20/25/26/28; LTE-TDD: B38/39/40/41; WCDMA: B1/2/4/5/6/8/19; GSM: B2/3/5/8
	-GL (Global)	LTE-FDD B1/2/3/4/5/7/8/12/13/18/19/20/25/26/28/66;LTE-TDD B34/38/39/40/41; WCDMA B1/2/4/5/6/8/19; TD-SCDMA-GSM/EDGE: B2/3/5/8	LTE-FDD B1/2/3/4/5/7/8/12/13/18/19/20/25/26/28/66; LTE-TDD B34/38/39/40/41; WCDMA B1/2/4/5/6/8/19; TD-SCDMA-GSM/EDGE: B2/3/5/8
Weight (approx.) g		4.9 (EG21-G/GL); 9.8 (EG21-G Mini PCIe)	4.9 (EG25-G/GL); 9.8 (EG25-G Mini PCIe)
Operating Temperature		–35°C ~ +75°C	–35°C ~ +75°C
Extended Temperature		–40°C ~ +85°C (EG21-G/GL); –40°C ~ +80°C (EG21-G Mini PCIe)	–40°C ~ +85°C (EG25-G/GL); –40°C ~ +80°C (EG25-G Mini PCIe)
Data Transmission			
LTE data rate (Mbps)		LTE-FDD: Max. 10 (DL)/Max. 5 (UL); LTE-TDD: Max. 8.96 (DL)/Max. 3.1 (UL)	LTE-FDD: Max. 150 (DL)/Max. 50 (UL); LTE-TDD: Max. 130 (DL)/Max. 30(UL)
DC-HSPA+ data rate (Mbps)		Max. 42 (DL)/Max. 5.76 (UL)	Max. 42 (DL)/Max. 5.76 (UL)
WCDMA data rate (Kbps)		Max. 384 (DL)/Max. 384 (UL)	Max. 384 (DL)/Max. 384 (UL)
EDGE data rate (Kbps)		Max. 296 (DL)/Max. 236.8 (UL)	Max. 296 (DL)/Max. 236.8 (UL)
GPRS data rate (Kbps)		Max. 107 (DL)/Max. 85.6 (UL)	Max. 107 (DL)/Max. 85.6 (UL)
SMS		•	•
Protocols		TCP/UDP/PPP/FTP/HTTP/NTP/PING/QMI/NITZ/CMUX/HTTPS/SMTP/MMS*/FTPS*/SMTPS/SSL/FILE	TCP/UDP/PPP/FTP/HTTP/NTP/PING/QMI/NITZ/CMUX/HTTPS/SMTP/MMS*/FTPS*/SMTPS/SSL/FILE
Interfaces			
(U)SIM		1.8 V/ 3.0 V	1.8 V/ 3.0 V
UART		× 2 (EG21-G/GL); × 1 (EG21-G Mini PCIe)	× 2 (EG25-G/GL); × 1 (EG25-G Mini PCIe)
USB		USB 2.0 (Hi-Speed)	USB 2.0 (Hi-Speed)
IIC		•	•
Audio Digital (PCM)		Optional	Optional
SD		•(EG21-G/GL)	•(EG25-G/GL)
ADC		× 2, 15bits (EG21-G/GL)	× 2, 15bits (EG25-G/GL)
GPIO		• (Only Supported on QuecOpen®)	• (Only Supported on QuecOpen®)
Antenna		Pads for Primary, Rx-diversity and GNSS	Pads for Primary, Rx-diversity and GNSS
Enhanced Features			
GNSS		Optional	Optional
WiFi-Scan		/	/
BlueTooth		/	/
DTMF		•	•
DFOTA		•	•
QMI/ RmNet		•	•
Audio Playback/Audio Recording		Optional	Optional
USB Serial Driver		Windows 7/8/8.1/10, Linux 2.6~5.4, Android 4.x/5.x/6.x/7.x/9.x	Windows 7/8/8.1/10, Linux 2.6~5.4, Android 4.x/5.x/6.x/7.x/9.x
GNSS Driver		Android 4.x/5.x/6.x/7.x/8.x/9.x	Android 4.x/5.x/6.x/7.x/8.x/9.x
RIL Driver		Android 4.x/5.x/6.x/7.x/8.x/9.x	Android 4.x/5.x/6.x/7.x/8.x/9.x
NDIS Driver		Windows 7/8/8.1/10	Windows 7/8/8.1/10
MBIM Driver		Windows 8/8.1/10, Linux 3.8~5.4	Windows 8/8.1/10, Linux 3.8~5.4
GobiNet Driver		Linux 2.6~5.4	Linux 2.6~5.4
QMI_WWAN Driver		Linux 3.4~5.4	Linux 3.4~5.4
(U)SIM Card Detection		•	•
(U)SIM Card Connector		Optional (EG21-G Mini PCIe)	Optional (EG25-G Mini PCIe)
Firmware Update		Via USB/DFOTA	Via USB/DFOTA
Electrical Features			
Supply Voltage Range		3.3 V~4.3 V, typ. 3.8 V (EG21-G/GL); 3.0 V~3.6 V, typ. 3.3 V (EG21-G Mini PCIe)	3.3 V~4.3 V, typ. 3.8 V (EG25-G/GL); 3.0 V~3.6 V, typ. 3.3 V (EG25-G Mini PCIe)
Power Consumption		13 μA@Power off/1.7 mA@Sleep, Typ. /22 mA@Idle (EG21-G/GL)	13 μA@Power off/1.7 mA@Sleep, Typ. /22 mA@Idle (EG25-G/GL); 2.7 mA @Sleep, Typ. / 25 mA @Idle (EG25-G Mini PCIe)
Certifications		Carrier Certification: Verizon/AT&T/T-Mobile/Deutsche Telekom/Sprint/U.S.Cellular/Telus; Regulatory Certification: CE/FCC/IC/RCM/PTCRB/GCF/Anatel/JATE/TELEC/NCC/ICASA/IFETEL/KC; Others: WHQL	Carrier Certification: Deutsche Telekom/Verizon/AT&T/Sprint/U.S. Cellular/Telus/T-Mobile/Rogers*; Regulatory Certification: SRRC/NAL/CCC/GCF/CE/FCC/PTCRB/IC/Anatel/IFETEL/KC/NCC/JATE/TELEC/RCM/NBTC/ICASA/IMDA; Others: WHQL
Recommended Applications		Telematics, smart metering, mobile POS terminals, gateways, safety, tracking and tracing, remote maintenance and control, networking, mobile computing, healthcare, etc.	

* Under development
• Supported

LTE Modules

Product		EG91	EG95	EG950A-EL
				
Form Factor		LGA	LGA	LGA
Dimensions (mm)		25.0 × 29.0 × 2.45	25.0 × 29.0 × 2.45	25.0 × 29.0 × 2.4
LTE Category		LTE Cat 1	LTE Cat 4	LTE Cat 4
Frequency Bands (MHz)	-E (Europe)	LTE-FDD: B1/3/7/8/20/28A; WCDMA: B1/8; GSM: B3/8	LTE-FDD: B1/3/7/8/20/28A; WCDMA: B1/8; GSM: B3/8	/
	-EX (Europe)	LTE-FDD: B1/3/7/8/20/28; WCDMA: B1/8; GSM: B3/8	LTE-FDD: B1/3/7/8/20/28; WCDMA: B1/8; GSM: B3/8	/
	-EL (Europe/Asia-Pacific)	/	/	LTE-FDD: B1/3/5/7/8/20/28; WCDMA: B1/5/8
	-NAXD (North America)	LTE-FDD: B2/4/5/12/13/25/26; WCDMA: B2/4/5	LTE-FDD: B2/4/5/12/13/25/26; WCDMA: B2/4/5	/
	-NAX (North America)	LTE-FDD: B2/4/5/12/13/25/26; WCDMA: B2/4/5	LTE-FDD: B2/4/5/12/13/25/26; WCDMA: B2/4/5	/
	-NA (North America)	LTE-FDD: B2/4/5/12/13; WCDMA: B2/4/5	LTE-FDD: B2/4/5/12/13; WCDMA: B2/4/5	/
	-VX (Verizon)	LTE-FDD: B4/13	/	/
	-AUX (Latin America/ANZ)	LTE-FDD: B1/2/3/4/5/7/8/28/66; WCDMA: B1/2/5/8; GSM: B2/3/5/8	LTE-FDD: B1/2/3/4/5/7/8/28/66; WCDMA: B1/2/5/8; GSM: B2/3/5/8	/
	-JP (Japan)	LTE-FDD: B1/3/8/18/19/26	LTE-FDD: B1/3/8/18/19/26; LTE-TDD: B41	/
Weight (approx.) g		3.8	3.8	3.74
Operating Temperature		–35°C ~ +75°C	–35°C ~ +75°C	–35°C ~ +75°C
Extended Temperature		–40°C ~ +85°C	–40°C ~ +85°C	–40°C ~ +85°C
Data Transmission				
LTE data rate (Mbps)		Max. 10 (DL)/Max. 5 (UL)	Max. 150 (DL)/Max. 50 (UL)	Max. 150 (DL)/ Max. 50 (UL)
DC-HSPA+ data rate (Mbps)		Max. 42 (DL)/Max. 5.76 (UL)	Max. 42 (DL)/Max. 5.76 (UL)	Max. 21 (DL)/ Max. 5.76 (UL)
WCDMA data rate (Kbps)		Max. 384 (DL)/Max. 384 (UL)	Max. 384 (DL)/Max. 384 (UL)	Max. 384 (DL)/ Max. 384 (UL)
EDGE data rate (Kbps)		Max. 296 (DL)/Max. 236.8 (UL)	Max. 296 (DL)/Max. 236.8 (UL)	/
GPRS data rate (Kbps)		Max. 107(DL)/Max. 85.6 (UL)	Max. 107 (DL)/Max. 85.6 (UL)	/
SMS		•	•	/
Protocols		TCP/UDP/PPP/FTP/HTTP/NTP/PING/QMI/CMUX/HTTPS/SMTP/MMS*/ FTPS*/SMTPS/SSL/FILE	TCP/UDP/PPP/FTP/HTTP/NTP/PING/QMI/CMUX/HTTPS/SMTP/MMS*/ FTPS*/SMTPS/SSL/FILE	TCP/UDP/PPP/NTP/NITZ/FTP/HTTP/PING/ CMUX/HTTPS/FTPS/SSL/ FILE/MQTT/MMS/ SMTP/SMTPS
Interfaces				
(U)SIM		1.8 V/ 3.0 V	1.8 V/ 3.0 V	× 1
UART		× 2	× 2	× 2
USB		USB 2.0 (Hi-Speed)	USB 2.0 (Hi-Speed)	USB 2.0 (Highspeed)
IIC		•	•	•
Audio Digital (PCM)		Optional	Optional	•
SPI		•	•	•
GPIO		• (Only Supported on QuecOpen®)	• (Only Supported on QuecOpen®)	•
RESET_N		× 1	× 1	× 1
SD		/	/	•
ADC		× 1	× 1	× 1
Antenna		Pads for Primary, Rx-diversity and GNSS[1]	Pads for Primary, Rx-diversity and GNSS[1]	Primary, Rx-diversity Antennas and GNSS
Enhanced Features				
GNSS[1]		Optional	Optional	•
WiFi-Scan		/	/	/
BlueTooth		/	/	/
E911 (for North America)		•	•	/
Digital Audio/VoLTE		Optional	Optional	•
DTMF		•	•	/
DFOTA		•	•	•
QMI/ RmNet		•	•	/
Audio Playback/Audio Recording		Optional	Optional	•
QuecFile		•	•	•
USB Serial Driver		Windows 7/8/8.1/10, Linux 2.6~5.4, Android 4.x/5.x/6.x/7.x/9.x	Windows 7/8/8.1/10, Linux 2.6~5.4, Android 4.x/5.x/6.x/7.x/9.x	Windows 7/8/8.1/10/11, Linux 2.6~5.18, Android 4.x~12.x
GNSS Driver		Android 4.x/5.x/6.x/7.x/8.x/9.x	Android 4.x/5.x/6.x/7.x/8.x/9.x	Android 4.x~12.x
RIL Driver		Android 4.x/5.x/6.x/7.x/8.x/9.x	Android 4.x/5.x/6.x/7.x/8.x/9.x	Android 4.x~12.x
NDIS Driver		Windows 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10/11, Linux 2.6~5.18, Android 4.x~12.x
MBIM Driver		Windows 8/8.1/10, Linux 3.8~5.4	Windows 8/8.1/10, Linux 3.8~5.4	/
GobiNet Driver		Linux 2.6~5.4	Linux 2.6~5.4	/
QMI_WWAN Driver		Linux 3.4~5.4	Linux 3.4~5.4	/
(U)SIM Card Detection		•	•	•
Firmware Update		Via USB/DFOTA	Via USB/DFOTA	Via USB/DFOTA
Electrical Features				
Supply Voltage Range		3.3 V~4.3 V, typ. 3.8 V	3.3 V~4.3 V, typ. 3.8 V	3.4-4.5 V, typ.3.8 V
Power Consumption		15 μA@Power off/2.6 mA@Sleep, Typ./21 mA@Idle	15 μA@Power off/2.6 mA@Sleep, Typ. /21 mA@Idle	11 μA @Power off Mode /1.1 mA @LTE Sleep Mode (PF=256), Typ /18 mA @ Idle Mode
Certifications[2]		Carrier Certification: Deutsche Telekom/Verizon/AT&T/ U.S. Cellular/T-Mobile/Sprint/Rogers/Telus/Telstra[3]/ NTT DOCOMO*/KDDI*; Regulatory Certification: GCF/CE/FCC/PTCRB/IC/Anatel/NCC/ RCM/UKCA/JATE*/TELEC*; Others: WHQL	Carrier Certification: Deutsche Telekom/Verizon/AT&T/ U.S. Cellular/T-Mobile/Rogers/Telus/Sprint/Telstra[3]/ NTT DOCOMO*/KDDI*; Regulatory Certification: GCF/CE/FCC/PTCRB/IC/UKCA/JATE*/ TELEC*; Others: WHQL	Regulatory: CE*/RCM*/UKCA*
Recommended Applications		Telematics, smart metering, mobile POS terminals, gateways, safety, tracking and tracing, remote maintenance and control, networking, mobile computing, healthcare, etc.		Wildlife cameras

Note 1: GNSS antenna not supported on EG91-E/EG95-E.
Note 2: May depend on modules' variant.
Note 3: EG91-AUX/EG95-AUX (Data Only).
EG91-AUX does not support Rx-diversity.
EG91-NAXD and EG95-NAXD are requested for data only device.

* Under development
• Supported

LTE Modules

Product		EG800Q-EU	EG915Q-NA
			
Form Factor		LGA	LGA
Dimensions (mm)		15.8 × 17.7 × 2.4	19.9 × 23.6 × 2.4
LTE Category		LTE Cat1	LTE Cat 1 bis
Frequency Bands(MHz)	-NA (North America)	/	LTE-FDD: B2/4/5/12/13/14/66/71
	-EU (Europe)	B1/3/5/7/8/20/28	/
Weight (approx.) g		2.0	2.3
Operating Temperature		-35 °C ~ +75 °C	-35 °C ~ +75 °C
Extended Temperature		-40 °C ~ +85 °C	-40 °C ~ +85 °C
Data Transmission			
LTE data rate (Mbps)		Max.10 (DL)/ Max.5 (UL)	Max. 10 (DL)/Max. 5 (UL)
DC-HSPA+ data rate (Mbps)		/	/
WCDMA data rate (Kbps)		/	/
EDGE data rate (Kbps)		/	/
GPRS data rate (Kbps)		/	/
SMS		•	•
Protocols		TCP/UDP/NTP/NITZ/FTP/HTTP/PING/HTTPS/FTPS/SSL/MQTT/CMUX*/PPP/FILE/MMS*/SMTP*/SMTPS*	TCP/UDP/NTP/NITZ/FTP/HTTP/PING/HTTPS/FTPS/SSL/MQTT/CMUX*/PPP/FILE/MMS*/SMTP*/SMTPS*
Interfaces			
(U)SIM		1.8 V/ 3.0 V	1.8 V/3.0 V
UART		× 3 (Main, Debug and Auxiliary UART*)	× 2
USB		USB2.0(Highspeed)	USB2.0(Highspeed)
IIC		× 1	× 1
Audio Digital (PCM)		× 1	× 1
SD		/	/
ADC		× 2*	× 2
Antenna		Main Antenna	Main Antenna
Enhanced Features			
GNSS		/	/
WiFi-Scan		•	•
BlueTooth		/	/
DTMF		/	/
DFOTA		•	•
QMI/ RmNet		/	/
Audio Playback/Audio Recording		•	•
QuecFile		•	•
USB Serial Driver		Windows 7/8/8.1/10/11, Linux 2.6~5.18*, Android 4.x~12.x*	Windows 7/8/8.1/10/11, Linux 2.6~5.18*, Android 4.x~12.x*
GNSS Driver		/	/
RIL Driver		Android 4.x~12.x	Android 4.x~12.x*
NDIS Driver		/	/
MBIM Driver		/	/
GobiNet Driver		/	/
QMI_WWAN Driver		/	/
(U)SIM Card Detection		•	•
Firmware Update		Via USB/DFOTA	Via USB/DFOTA
Electrical Features			
Supply Voltage Range		3.3~4.3 V, typ. 3.8 V	3.3~4.3 V, typ. 3.8 V
Power Consumption		50 μA @ Power off Mode 0.06 mA @ Sleep Mode (AT+CFUN=0, USB disconnected) 0.16 mA @ Sleep Mode (AT+CFUN=4, USB disconnected) 4.50 mA @ Idle Mode (PF=64, USB disconnected) 22.30 mA @ Idle Mode (PF=64, USB connected)	0.4 μA @ Power off Mode 54 μA @ Sleep Mode (AT+CFUN = 0, USB disconnected) 130 μA @ Sleep Mode (AT+CFUN = 4, USB disconnected) 4.55 mA @ Idle Mode (PF = 64, USB disconnected) 28.22 mA @ Idle Mode (PF = 64, USB connected)
Certifications		CE/RCM/UKCA/Deutsche Telekom	FCC*/IC*/PTCRB*/GCF*/Verizon*/AT&T*/T-Mobile*
Recommended Applications		Asset management, commercial telematics, payment, RMAC (remote monitoring and control applications), security and automation, smart metering and smart grid	

* Under development
• Supported

Product	EC200U/EC200U Mini PCIe	EC200A/EC200A Mini PCIe
		
Form Factor	LCC (EC200U); Mini PCIe-C(EC200U-CN Mini PCIe-C); Mini PCIe(EC200U-EU/-AU Mini PCIe)	LCC (EC200A); Mini PCIe (EC200A Mini PCIe); Mini PCIe-C(EC200A-CN Mini PCIe-C)
Dimensions (mm)	31.0 × 28.0 × 2.4 (EC200U); 51.0 × 30.0 × 3.4 (EC200U-CN Mini PCIe-C); 51.0 × 30.0 × 4.9 (EC200U-EU/-AU Mini PCIe)	32.0 × 29.0 × 2.4 (EC200A); 51.0 × 30.0 × 4.9 (EC200A Mini PCIe); 51.0 × 30.0 × 3.5 (EC200A-CN Mini PCIe-C)
LTE Category	LTE Cat 1	LTE Cat 4
Frequency Bands (MHz) -CN (China/India)	LTE-FDD: B1/3/5/8; LTE-TDD: B34/38/39/40/41; GSM: B3/8	LTE-FDD: B1/3/5/8; LTE-TDD: B34/38/39/40/41; WCDMA: B1/5/8; GSM:B3/8
Frequency Bands (MHz) -EU (Europe/Asia-Pacific)	LTE-FDD: B1/3/5/7/8/20/28; LTE-TDD: B38/40/41; GSM: B2/3/5/8	LTE-FDD: B1/3/5/7/8/20/28; LTE-TDD: B38/40/41; WCDMA: B1/5/8; GSM: B3/8
Frequency Bands (MHz) -EN (EMEA/APAC)	/	/
Frequency Bands (MHz) -EL (Europe/Asia-Pacific)	/	LTE-FDD: B1/3/5/7/8/20/28; LTE-TDD: B38/40/41; WCDMA: B1/5/8
Frequency Bands (MHz) -AU (Australia/New Zealand/Latin America)	LTE-FDD: B1/2/3/4/5/7/8/28/66; LTE-TDD: B38/40/41; GSM: B2/3/5/8	LTE-FDD: B1/2/3/4/5/7/8/28/66; LTE-TDD: B40; WCDMA: B1/2/4/5/8; GSM: B2/3/5/8
Weight (approx.) g	4.1(EC200U); 7.2(EC200U-CN Mini PCIe-C); 9.25(EC200U-EU/-AU Mini PCIe)	4.3 (EC200A); 9.7(EC200A Mini PCIe); 8.5(EC200A Mini PCIe-C)
Operating Temperature	-35°C ~ +75°C	-35°C ~ +75°C
Extended Temperature	-40°C ~ +85°C(EC200U); -40°C ~ +80°C(EC200U-CN Mini PCIe-C/EC200U-EU/-AU Mini PCIe)	-40°C ~ +85°C(EC200A); -40°C ~ +80°C(EC200A Mini PCIe/EC200A-CN Mini PCIe-C)
Data Transmission		
LTE data rate (Mbps)	Max. 10 (DL)/Max. 5 (UL)(EC200U); LTE-FDD: Max. 10 (DL)/Max. 5 (UL), LTE-TDD: Max. 8.96 (DL)/Max. 3.1(UL)(EC200U-CN Mini PCIe-C, EC200U-EU/-AU Mini PCIe)	LTE-FDD: Max. 150 (DL)/Max. 50 (UL); LTE-TDD: Max. 130 (DL)/Max. 30 (UL)
DC-HSPA+ data rate (Mbps)	/	Max. 21 (DL)/Max. 5.76 (UL)
WCDMA data rate (Kbps)	/	Max. 384 (DL)/Max. 384 (UL)
EDGE data rate (Kbps)	/	Max. 236.8 (DL)/Max. 236.8 (UL)
GPRS data rate (Kbps)	Max. 85.6 (DL)/Max. 85.6 (UL)	Max. 85.6 (DL)/Max. 85.6 (UL)
SMS	•	•
CSD	/	*
Protocols	TCP/UDP/PPP/FTP/HTTP/NTP/PING/NITZ/CMUX/HTTPS/SMTP/MMS/FTPS/SMTPS/SSL/FILE (EC200U); TCP/UDP/PPP/NITZ/PING/FILE/MQTT/NTP/HTTP/HTTPS/SSL/FTP/FTPS/CMUX/MMS(EC200U-CN Mini PCIe-C, EC200U-EU/-AU Mini PCIe)	TCP/UDP/PPP/NTP/NITZ/FTP/HTTP/PING/CMUX/HTTPS/FTPS/SSL/FILE/MQTT/MMS/SMTP/SMTPS
Interfaces		
(U)SIM	1.8 V/ 3.0 V	1.8 V/ 3.0 V
UART	× 3(EC200U); × 1(EC200U-CN Mini PCIe-C, EC200U-EU/-AU Mini PCIe)	× 2(EC200A); × 1(EC200A Mini PCIe/EC200A-CN Mini PCIe-C)
USB	USB 2.0 (Hi-Speed)	USB 2.0 (Hi-Speed)
PCIe	/	/
Audio Digital (PCM)	• (EC200U/EC200U-EU/-AU Mini PCIe)	Optional
IIC	× 2(EC200U); × 1(EC200U-EU/-AU Mini PCIe)	•
GPIO	• (Only Supported on QuecOpen®)(EC200U-CN Mini PCIe-C, EC200U-EU/-AU Mini PCIe)	•
RESET_N	• (EC200U)	•
SD	• (EC200U)	• (EC200A)
ADC	• (EC200U)	× 2, 12bits (EC200A)
Antenna	Pads for Primary, Rx-diversity	Pads for Primary, Rx-diversity
Enhanced Features		
GNSS	Optional	Optional
WiFi-Scan	Optional	/
BlueTooth	Optional	/
Digital Audio/VoLTE	•	•
DTMF	•	•
DFOTA	•	•
Audio Playback/Audio Recording	•	•
QuecFile	•	•
USB Serial Driver	Windows 7/8/8.1/10/11,Linux 2.6~5.18, Android 4.x~12.x	Windows 7/8/8.1/10, Linux 2.6~5.15, Android 4.x~12.x
GNSS Driver	Android 4.x~12.x	/
RIL Driver	Android 4.x~12.x	Android 4.x~12.x
RNDIS Driver	Windows 7/8/8.1/10/11,Linux 2.6~5.18	Windows 7/8/8.1/10, Linux 2.6~5.15
ECM Driver	Linux 2.6~5.18	Linux 2.6~5.15
(U)SIM Card Detection	•	•
Firmware Update	• (USB or DFOTA)(EC200U); Via USB/DFOTA (EC200U-CN Mini PCIe-C, EC200U-EU/-AU Mini PCIe)	Via USB/DFOTA
Electrical Features		
Supply Voltage Range	3.3 V~4.3 V, typ. 3.8 V (EC200U/EC200U-CN Mini PCIe-C); 3.0 V~3.6 V, typ. 3.3 V (EC200U-EU/-AU Mini PCIe)	3.4 V~4.5 V, typ. 3.8 V (EC200A/EC200A Mini PCIe-C); 3.0 V~3.6 V, typ. 3.3 V (EC200A Mini PCIe)
Power Consumption	30 μA @Power off Mode/1.35 mA @LTE Sleep Mode(PF=256), Typ/13 mA @Idle Mode(EC200U); 4.13 mA @ LTE sleep (PF = 128)/3.94 mA @ LTE sleep (PF = 256)/29 mA @ Idle (PF = 64, USB connection)/18 mA @ Idle (PF = 64, USB disconnection)(EC200U-CN Mini PCIe-C); 4.54 mA @ LTE sleep (PF = 128)/4.31 mA @ LTE sleep (PF = 256)/ 37.17 mA @ Idle (PF = 64, USB connection)/22.40 mA @ Idle (PF = 64, USB disconnection)(EC200U-EU/-AU Mini PCIe)	11 μA @Power off Mode/1.1 mA @LTE Sleep Mode(PF=256), Typ/18 mA @Idle Mode(EC200A); 19 μA @Power off Mode, Typ/27.6 mA @LTE Sleep Mode (EC200A Mini PCIe); 1.59 mA@LTE sleep(PF=256)/28.6 mA@Idle(PF=64)(EC200A Mini PCIe-C)
Certifications[1]	NAL/SRRC/CCC/CE/RCM/FCC/Anatel	CCC/SRRC/NAL/CE/RCM/UKCA/NCC/FCC/Anatal/KC
Recommended Applications	POS/POC/ETC, shared equipment, data cards, energy control and monitoring, safety and protection, industrial PDAs.	Automotive aftermarket, transportation, green energy, wireless payment, safety, smart cities, mobile gateways, smart industry, personal tracking, medical monitoring, agriculture and environmental monitoring.

Note 1: May depend on modules' variant.

* Under development
• Supported

LTE Modules

Product		EG915U	EG912U-GL	EG915N	EG912N
					
Form Factor		LGA	LGA	LGA	LGA
Dimensions (mm)		19.9 × 23.6 × 2.4	25.0 × 29.0 × 2.4	19.9 × 23.6 × 2.4	25.0 × 29.0 × 2.4
LTE Category		LTE Cat 1	LTE Cat 1	LTE Cat 1	LTE Cat 1
Frequency Bands (MHz)	-CN (China/India)	LTE-FDD: B1/3/5/8; LTE-TDD: B34/38/39/40/41; GSM: B3/8	/	/	/
	-EU (Europe)	LTE-FDD: B1/3/5/7/8/20/28; GSM: B2/3/5/8	/	LTE-FDD: B1/3/7/8/20; GSM: B3/8	/
	-GL(Global)	/	LTE-FDD: B1/2/3/4/5/7/8/12/13/17/18/19/20/25/26/28/66; LTE-TDD: B34/38/39/40/41 GSM: B2/3/5/8	/	/
	-LA (Latin America)	LTE-FDD: B2/3/4/5/7/8/28/66; GSM: B2/3/5/8	/	LTE-FDD: B2/3/4/5/7/8/28/66; GSM: B2/3/5/8	/
	-EN(Europe)	/	/	/	LTE-FDD: B1/3/5/7/8/20/28/31/72; GSM: B3/8
	-EA(Europe/Asia)	/	/	LTE-FDD: B1/3/7/8/20/28; GSM: B3/8	/
Weight (approx.) g		2.48	3.67	2.46	3.5
Operating Temperature		–35°C ~ +75°C	–35°C ~ +75°C	–35°C ~ +75°C	–35°C ~ +75°C
Extended Temperature		–40°C ~ +85°C	–40°C ~ +85°C	–40°C ~ +85°C	–40°C ~ +85°C
Data Transmission					
LTE data rate (Mbps)		Max. 10 (DL)/Max. 5 (UL)	Max. 10 (DL)/Max. 5 (UL)	Max. 10 (DL)/Max. 5 (UL)	Max. 10 (DL)/Max. 5 (UL)
DC-HSPA+ data rate (Mbps)		/	/	/	/
WCDMA data rate (Kbps)		/	/	/	/
EDGE data rate (Kbps)		/	/	Max. 236.8 (DL)/Max. 236.8 (UL)	Max. 236.8 (DL)/Max. 236.8 (UL)
GPRS data rate (Kbps)		Max. 85.6 (DL)/Max. 85.6 (UL)	Max. 85.6 (DL)/ Max. 85.6 (UL)	Max. 85.6 (DL)/Max. 85.6 (UL)	Max. 85.6 (DL)/Max. 85.6 (UL)
SMS		•	•	•	•
Protocols		TCP/UDP/PPP/FTP/HTTP/NTP/PING/NITZ/CMUX/HTTPS/SMTP/MMS/FTPS/SMTPS/SSL/FILE	TCP/UDP/PPP/FTP/HTTP/NTP/PING/NITZ/CMUX/HTTPS/SMTP/MMS/FTPS/SMTPS/SSL/FILE	TCP/UDP/PPP/NTP/NITZ/FTP/HTTP/PING/CMUX/HTTPS/FTPS/SSL/FILE/MQTT/MMS/SMTP/SMTPS	TCP/UDP/PPP/NITZ/PING/MQTT/NTP/HTTP/HTTPS/SSL/FTP/SMTPS/SMTP
Interfaces					
(U)SIM		1.8V/ 3.0V	1.8 V/ 3.0 V	1.8 V/ 3.0 V	1.8 V/ 3.0 V
UART		× 3	× 3	× 3 (main, debug and auxiliary*)	× 2
USB		USB 2.0 (Hi-Speed)	USB 2.0 (Hi-Speed)	USB 2.0 (Hi-Speed)	USB 2.0 (Hi-Speed)
IIC		× 1	× 1	•	× 1
Audio Digital (PCM)		•	× 1	Optional	× 1
GPIO		/	/	/	/
ADC		× 2	× 2	/	× 2
SD		*	*	/	/
PWRKEY		•	•	•	•
Antenna		Main Antenna, WiFi-Scan/Bluetooth Antenna (Optional)	Main Antenna, GNSS Antenna (Optional), WiFi-Scan/ Bluetooth Antenna (Optional)	Main Antenna and GNSS Antenna (Optional)	Main Antenna
Enhanced Features					
GNSS		/	Optional	Optional	/
WiFi-Scan		Optional	Optional	•	Optional
BlueTooth		Optional	Optional	/	/
VoLTE		•	•	/	•
DTMF		•	•	•	•
DFOTA		•	•	•	•
Audio Playback/Audio Recording		•	•	Optional	•
QuecFile		•	•	•	•
USB Serial Driver		Windows 7/8/8.1/10/11,Linux 2.6~5.18, Android 4.x~12.x	Windows 7/ 8/ 8.1/ 10/ 11, Linux 2.6~5.18, Android 4.x~12.x	Windows 7/8/8.1/10, Linux 2.6~5.15, Android 4.x~12.x	Windows 7/8/8.1/10/11, Linux 2.6~5.18, Android 4.x~12.x
GNSS Driver		Android 4.x~12.x	Android 4.x~12.x	Android 4.x~12.x	/
RIL Driver		Android 4.x~12.x	Android 4.x~12.x	Android 4.x~12.x	Android 4.x~12.x
USB RNDIS Driver		Windows 7/8/8.1/10/11,Linux 2.6~5.18	Windows 7/8/8.1/10/11, Linux 2.6~5.18	Windows 7/8/8.1/10, Linux 2.6~5.15	Windows 7/8/8.1/10, Linux 2.6~5.12
USB ECM Driver		Linux 2.6~5.18	Linux 2.6~5.18	Linux 2.6~5.15	Linux 2.6~5.12
(U)SIM Card Detection		•	•	•	•
Firmware Update		USB or DFOTA	USB or DFOTA	Via USB/DFOTA	USB or DFOTA
Electrical Features					
Supply Voltage Range		3.3 V~4.3 V, typ. 3.8V	3.3 V~4.3 V, typ. 3.8 V	3.4~4.5 V, typ. 3.8 V	3.3 V~4.3 V, typ. 3.8 V
Power Consumption		30 μA @ power off/1.3 mA @ sleep/13 mA @ idle	34 μA@ Power off 1.7 mA @ LTE Sleep (PF = 128) 1.5 mA @ LTE Sleep (PF = 256) 30 mA @ Idle (PF = 64, USB Connected) 14 mA @ Idle (PF = 64, USB Disconnected)	24 μA@Power off/1.4mA@Sleep, Typ./20.97 mA@Idle	30 μA@Power off Mode 1.28 mA@LTE Sleep Mode (PF = 128) 1.19 mA@LTE Sleep Mode (PF = 256) 20.65 mA @Idle Mode(PF = 64, USB Disconnect) 29.83 mA @ Idle Mode(PF = 64, USB Active)
Certifications[1]		CE/RCM/GCF/Anatel/NCC	SRRC*/NAL*/CCC/CE*/FCC*/Anatel*/NCC*/RCM*	CE/RCM/UKCA/FCC/Anatel	CE
Recommended Applications		POS/POC/ETC, shared equipment, data cards, energy control and monitoring, safety and protection, industrial PDAs.		Telematics, smart metering, mobile POS terminals, gateways, safety, tracking and tracing, remote maintenace and control, networking, mobile computing, healthcare	POS/POC/ETC, shared equipment, data cards, energy control and monitoring, safety and protection, industrial PDAs.

Note 1: May depend on modules' variant.
EG915N-EA does not support GNSS.

* Under development
• Supported

Product		SC20 (Android)	SC20 (Linux)	SC20 (Linux, small memory)	SC200R
					
Form Factor		LCC+LGA	LCC+LGA	LCC+LGA	LCC+LGA
Dimensions (mm)		40.5 × 40.5 × 2.8	40.5 × 40.5 × 2.8	40.5 × 40.5 × 2.8	40.5 × 40.5 × 2.8
LTE Feature		LTE Cat 4; 3GPP E-UTRA Release 10 Compliant, Support DL MIMO 2 × 2	LTE Cat 4; 3GPP E-UTRA Release 10 Compliant, Support DL MIMO 2 × 2	LTE Cat 4; 3GPP E-UTRA Release 10 Compliant, Support DL MIMO 2 × 2	LTE Cat 4; 3GPP E-UTRA Release 10 Compliant, Support DL MIMO 2 × 2
Frequency Bands (MHz)	-CE/CEL (China)	-CE (China) LTE-FDD: B1/3/5/8; LTE-TDD: B38/ 39/40/41; WCDMA: B1/8; TD-SCDMA: B34/39; CDMA: BC0; GSM: 900/1800MHz	-CEL (China) LTE-FDD: B1/3/5/8; LTE-TDD: B38/ 39/40/41; WCDMA: B1/8; TD-SCDMA: B34/39; CDMA: BC0; GSM: 900/1800MHz	/	-CE (China) LTE-FDD: B1/3/5/8; LTE-TDD: B34/38/ 39/40/41; WCDMA: B1/8; CDMA: BC0; GSM: 900/1800MHz
	-E/EL/EX/EM(EMEA/Korea/ Thailand/India/Vietnam/ Africa/Southeast Asia/ Australia/South America)	-E (EMEA/Korea/Thailand/India/Vietnam) LTE-FDD: B1/3/5/7/8/20; LTE-TDD: B38/40/41; WCDMA: B1/5/8; GSM: 850/900/1800/1900MHz	-EL (EMEA/Korea/Thailand/India/Vietnam) LTE-FDD: B1/3/5/7/8/20; LTE-TDD: B38/40/41; WCDMA: B1/5/8; GSM: 850/900/1800/1900MHz	-EX(EMEA/Korea/Thailand/India/Vietnam) LTE-FDD: B1/3/5/7/8/20; LTE-TDD:B38/40/41; WCDMA: B1/5/8; GSM: 850/900/1800/1900MHz	-EM (EMEA/Africa/Southeast Asia/Australia/ South America) LTE-FDD: B1/2/3/4/5/7/8/20/28; LTE-TDD: B38/40/41; WCDMA: B1/2/4/5/8; GSM: 850/900/1800/1900MHz
	-A/AL/AX/NA(North America)	-A (North America) LTE-FDD: B2/4/5/7/12/13/25/26 ; WCDMA: B1/2/4/5/8; GSM: 850/1900MHz	-AL (North America) LTE-FDD: B2/4/5/7/12/13/25/26; WCDMA: B1/2/4/5/8; GSM: 850/1900MHz	-AX(North America) LTE-FDD: B2/4/5/7/12/13/25/26	-NA (North America) LTE-FDD: B2/4/5/7/12/13/14/17/25/26/66/71; LTE-TDD: B41; WCDMA: B2/4/5
	-AU/AUL(ANZ/Brazil)	-AU (ANZ/Brazil)LTE-FDD: B1/3/5/7/8/28; LTE-TDD: B40; WCDMA: B1/2/5/8; GSM: 850/900/1800/1900MHz	-AUL (ANZ/Brazil)LTE-FDD: B1/3/5/7/8/28; LTE-TDD: B40; WCDMA: B1/2/5/8; GSM: 850/900/1800/1900MHz	/	/
	-J/JL/JP[1] (Japan)	-J (Japan) LTE-FDD: B1/3/8/18/19/26; LTE-TDD: B41; WCDMA: B1/6/8/19	-JL (Japan) LTE-FDD: B1/3/8/18/19/26; LTE-TDD: B41; WCDMA: B1/6/8/19	/	-JP[1] (Japan) LTE-FDD: B1/3/5/8/11/18/19/21/ 26/28; LTE-TDD: B41; WCDMA: B1/6/8/19
	-W/WL/WF* (Global)	-W (Wi-Fi) Only Wi-Fi & BT	-WL (Wi-Fi) Only Wi-Fi & BT	/	-WF (Global) Only Wi-Fi & BT
CPU		Qualcomm MSM8909 ARM Coretex 4 x A7@ 1.1GHz	Qualcomm MSM8909 ARM Coretex 4 x A7@ 1.1GHz	Qualcomm MSM8909 ARM Coretex 4xA7@1.1GHz	Qualcomm QCM2150 ARM Coretex 4 x A53@ 1.3GHz
GPU		Qualcomm® Adreno™ 304 Graphics Processing Unit (GPU), up to 409.6 MHz	Qualcomm® Adreno™ 304 Graphics Processing Unit (GPU), up to 409.6 MHz	Qualcomm Adreno 304 Graphics Processing Unit(GPU), up to 409.6MHz	Qualcomm® Adreno™ 308 Graphics Processing Unit (GPU) with 64-bit addressing, up to 485 MHz
Memory		1 GB LPDDR3 + 8 GB eMMC; 2 GB LPDDR3 + 16 GB eMMC	1GB LPDDR3+ 8GB eMMC	512MB NAND+ 512MB DDR2	1 GB LPDDR3 + 8 GB eMMC; 2 GB LPDDR3 + 16 GB eMMC
Operating System		Android 7.1/ 8.1 in SC20-E/-A/-J/-AU/-CE/-W	Yocto Linux (Kernel 3.18) in SC20-EL/-AL/-JL/-AUL/-WL	Yocto Linux(Kernel 3.18) in SC20-AX/-EX	Android 10
Supply Voltage Range		3.5 V ~ 4.2 V, typ. 3.8 V	3.5 V ~ 4.2 V, typ. 3.8 V	3.5~4.2 V, typ. 3.8 V	3.55 V ~ 4.2 V, typ. 3.8 V
Weight (approx.) g		9.8	9.8	9.8	10.2
Operating Temperature		-35 °C ~ +75 °C	-35 °C ~ +75 °C	-35 °C to +75 °C	-35 °C ~ +75 °C
Data Transmission					
LTE (Mbps)		LTE-FDD: Max. 150 (DL)/Max. 50(UL) LTE-TDD: Max. 130 (DL)/Max. 30 (UL)	LTE-FDD: Max. 150 (DL)/Max. 50 (UL) LTE-TDD: Max. 130 (DL)/Max. 30 (UL)	-AX: LTE-FDD: Max. 150 (DL)/Max. 50 (UL); LTE-TDD: Max. 130 (DL)/Max. 30 (UL) -EX: LTE-FDD: Max. 150 (DL)/Max. 50 (UL)	LTE-FDD: Max. 150 (DL)/Max. 50 (UL) LTE-TDD: Max. 130 (DL)/Max. 30 (UL)
UMTS		DC-HSDPA: Max. 42 Mbps (DL); HSUPA: Max. 5.76 Mbps (UL); WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA: Max. 42 Mbps (DL); HSUPA: Max. 5.76 Mbps (UL); WCDMA: Max. 384 Kbps (DL/UL)	-EX: DC-HSDPA: Max. 42 Mbps (DL); HSUPA: Max. 5.76 Mbps (UL); WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA: Max. 42 Mbps (DL); HSUPA: Max. 5.76 Mbps (UL); WCDMA: Max. 384 Kbps (DL/UL)
TD-SCDMA(Mbps)		Max. 4.2 (DL)/Max. 2.2 (UL)	Max. 4.2 (DL)/Max. 2.2 (UL)	/	/
CDMA2000		EVDO: Max. 3.1 Mbps (DL)/Max. 1.8 Mbps (UL) 1X Advanced: Max. 307.2 Kbps (DL/UL)	EVDO: Max. 3.1 Mbps (DL)/Max. 1.8 Mbps (UL); 1X Advanced: Max. 307.2 Kbps (DL/UL)	/	EVDO: Max. 3.1 Mbps (DL)/Max. 1.8 Mbps(UL); 1X Advanced: Max. 307.2 Kbps (DL/UL)
GSM(Kbps)		EDGE: Max. 296 (DL)/236.8 (UL); GPRS: Max. 107 (DL)/85.6 (UL)	EDGE: Max. 296 (DL)/236.8 (UL); GPRS: Max. 107 (DL)/85.6 (UL)	-EX: EDGE: 296 (DL)/236.8 (UL); GPRS: 107 (DL)/85.6 (UL)	EDGE: Max. 296 (DL)/236.8 (UL) ; GPRS: Max. 107 (DL)/85.6 (UL)
Interfaces					
LCM		4-lane MIPI_DSI, 1.5 Gbps/lane, HD (1280 x 720) @ 60 fps	4-lane MIPI_DSI, 1.5 Gbps/lane, HD (1280 x 720) @ 60 fps	4-lane MIPI_DSI, up to 1.5 Gbps/ lane, HD (720P) @ 60 fps	4-lane MIPI_DSI, HD+ (1440 × 720) @ 60 fps; Wi-Fi display: 1080P @ 30 fps (UBWC)
Camera		2-lane rear camera and 1-lane front camera or 4-lane rear camera only; MIPI_CSI, 1.5 Gbps/ lane, up to 8 MP, Bayer/ YUV format	2-lane rear camera and 1-lane front camera or 4-lane rear camera only; MIPI_CSI, 1.5 Gbps/ lane, up to 8 MP, Bayer/ YUV format	Uses MIPI_CSI, up to 1.5 Gbps/ lane, supports two cameras: 2-lane MIPI_CSI for rear camera, up to 8 MP; 1-lane MIPI_CSI for front camera, up to 2 MP	2 groups of 4-lane MIPI_CSI, up to 2.1 Gbps/ lane, 2 × ISP; Support 2 or 3 cameras, up to 13 MP with dual ISP
Touch Panel		Capacitive touchscreen, I2C controls	Capacitive touchscreen, I2C controls	Capacitive touch panel	Capacitive touch panel, I2C controls
Audio		Analog channels: Two inputs: MIC1, MIC2; Three outputs: speaker, earpiece, headphone	Analog channels: Two inputs: MIC1, MIC2; Three outputs: speaker, earpiece, headphone	Analog channels: Two inputs: MIC1, MIC2; Three outputs: speaker, earpiece, headphone	Analog channels: 3 inputs: MIC1, MIC2, MIC3 (including one noise-canceling MIC); 3 outputs: speaker, earpiece, headphone
Video		Encode: 720P (H.264) @ 30 fps; WVGA (MPEG-4/ VP8) @ 30 fps Decode: 1080P (H.264/ MPEG-4/ VP8/H.265/ DivX4/5/6) @ 30 fps; WVGA (H.263) @ 30 fps	Encode: 720P (H.264) @ 30 fps; WVGA (MPEG-4/ VP8) @ 30 fps Decode: 1080P (H.264/ MPEG-4/ VP8/H.265/ DivX4/5/6) @ 30 fps; WVGA (H.263) @ 30 fps	Encoding: 720P (H.264) @ 30 fps; WVGA (MPEG-4/VP8) @ 30 fps Decoding: 1080P (H.264/MPEG-4/VP8/ H.265/DivX4/5/6) @ 30 fps; WVGA (H.263) @ 30 fps	Encode: 1080P (H.264) @ 30 fps; WVGA (MPEG-4/ VP8) @ 30 fps Decode: 1080P (H.264/MPEG-4/VP8/H.265/ DivX4/5/6) @ 30 fps; WVGA (H.263) @ 30 fps
USB		× 1, USB 2.0, supports USB OTG, High Speed 480 Mbps	× 1, USB 2.0, supports USB OTG, High Speed 480 Mbps	Supports high speed mode, up to 480 Mbps; Supports USB 2.0 OTG, USB OTG + charge and USB to Ethernet functions	× 1, USB 2.0, supports USB OTG
I2C		Supported	Supported	× 3	Supported
(U)SIM		× 2, Support 1.8/ 3 V (U)SIM cards, with (U)SIM card detection function, DSDS supported	× 2, Support 1.8/ 3 V (U)SIM cards, with (U)SIM card detection function, DSDS supported	× 2, supports 1.8/ 3 V (U)SIM cards, (U)SIM card detection function and DSDS	× 2, Support 1.8/ 2.95 V (U)SIM cards, with (U) SIM card detection function, DSDS supported
UART		× 2, Support up to 4 Mbps with hardware flow control	× 2, Support up to 4 Mbps with hardware flow control	× 2, UART1 supports hardware flow control, up to 4 Mbps	× 3, Support 4Mbps, One of them supports Hardware Flow Control
SD Card		× 1, SD 3.0, 4-bit SDIO	× 1, SD 3.0, 4-bit SDIO	× 1, SD 3.0, 4-bit SDIO	× 1, SD 3.0, 4-bit SDIO
PWRKEY/ SPI/ ADC/ GPIO		Supported	Supported	Supported	Supported
PWM/ Motor Driver		× 1	× 1	× 1	× 1
Antenna		× 4, Main/ Rx-diversity/ GNSS/ Wi-Fi & Bluetooth	× 4, Main/ Rx-diversity/ GNSS/ Wi-Fi & Bluetooth	× 4, main antenna, Rx-diversity antenna, GNSS antenna and Wi-Fi/ Bluetooth antenna interface respectively	4 Solder Pads for Main/Rx-diversity/ GNSS/ Wi-Fi&BT Antenna, Respectively
Enhanced Features					
BT		Bluetooth 2.1 EDR/3.0 HS/4.2 LE; Support a maximum of 10 ACL/BEL/SCO links	Bluetooth 2.1 EDR/3.0 HS/4.2 LE; Support a maximum of 10 ACL/BEL/SCO links	Bluetooth 2.1 EDR/ 3.0 HS/ 4.2 LE; Support a maximum of 10 ACL/BEL/SCO links	Bluetooth 2.1 EDR/3.0 HS/4.2 LE; Support a maximum of 10 ACL/BEL/SCO links
Wi-Fi		2.4 & 5 GHz; 802.11a/b/g/n ; 150 Mbps; STA/AP/P2P	2.4 & 5 GHz; 802.11a/ b/ g/ n; 150 Mbps; STA/AP/P2P	2.4/ 5 GHz, 802.11a/b/g/n; 150 Mbps; STA/AP/P2P	2.4 & 5 GHz, 802.11a/b/g/n; 150 Mbps; STA/AP/ P2P
GNSS		GNSS[2]: GPS/BDS/GLONASS	GNSS[2]: GPS/BDS/GLONASS	GPS/BDS/GLONASS	GNSS[3]: GPS/BDS/GLONASS or GPS/BDS/Galileo
Charge Function		Build-in Charge IC	Build-in Charge IC	Build-in Charge IC	Build-in Charge IC
Dual LCD		Only support single LCD Display	Only support single LCD Display	Only support single LCD Display	Only support single LCD Display
DSDS		Support Dual SIM Dual Standby	Support Dual SIM Dual Standby	Support Dual SIM Dual Standby	Support Dual SIM Dual Standby
Firmware Upgrade		Firmware Upgrade via USB or OTA	Firmware Upgrade via USB or OTA	Firmware Upgrade via USB or OTA	Firmware Upgrade via USB or OTA
Certifications[4]		CE/GCF/RCM/FCC/IC/PTCRB/AT&T/Verizon/ Telstra/T-Mobile*/Telus*/JATE/TELEC/KDDI/ NTT-DOCOMO/CCC/SRRC/NAL/NCC/KC/ Softbank/Anatel	CE/GCF/RCM/FCC/IC/PTCRB/AT&T/Verizon/ Telstra*/T-Mobile*/Telus*/JATE*/TELEC*/CCC*/ SRRC*/NAL*/NCC*/KC*/Anatel	GCF/IC/FCC/PTCRB/AT&T/Verizon/CE/UKCA/ RCM	GCF/CE/RCM/FCC/PTCRB/AT&T/Verizon/Telstra*/ IC/JATE*/TELEC*/CCC/KC/SRRC
Recommended Applications		Smart POS, gateways, robots, wearables, safety, PDAs & tablets, vending machines, delivery lockers, telematics, mobile computing, video streaming and entertainment systems, etc.			

Note 1: TBD.
Note 2: GNSS is not supported on SC20-W/ -WL.
Note 3: GNSS is not supported on SC200R-WF.
Note 4: May depend on modules' variant.
SC20-E LTE-TDD B41 does not support full-frequency and the bandwith of it is 2555-2655MHz.

* Planning/Under development

Smart Modules

Product		SC200L	SC200E	SC206E
				
Form Factor		LCC+LGA	LCC+LGA	LCC+LGA
Dimensions (mm)		40.5 × 40.5 × 2.85	40.5 × 40.5 × 2.85	40.5 × 40.5 × 2.85
LTE Feature		LTE Cat 4 3GPP E-UTRA Release 10 Compliant, Support DL MIMO 2 × 2	LTE Cat 4(SC200E-CE/EM/NA/JP/WF/GL*)	LTE Cat 4(SC206E-EM/NA)
Frequency Bands(MHz)	-CE (China)	LTE-FDD: B1/3/5/8; LTE-TDD: B34/38/39/40/41; WCDMA: B1/8; GSM: 900/1800MHz	LTE-FDD: B1/3/5/8; LTE-TDD: B34/38/39/40/41(140M); WCDMA: B1/8; CDMA: BC0; GSM: 900/1800MHz	/
	-EU/EM (EMEA/Africa/ South America/Korea/ South Asia/Latin America/Australia/India/ New Zealand/South Africa)	-EU (EMEA/South Africa/southeast Asia/India/Latin America) LTE-FDD: B1/3/5/7/8/20/28; LTE-TDD: B38/40/41; WCDMA: B1/5/8; GSM: 900/1800MHz	-EM(EMEA/ Korea/ South Asia/ Latin America/ India/ Australia/ New Zealand/ South Africa) LTE-FDD: B1/2/3/4/5/7/8/20/28(A+B); LTE-TDD: B38/40/41 (200M); WCDMA: B1/2/4/5/8; GSM: 850/900/1800/1900MHz	-EM(EMEA/ Korea/ South Asia/ Latin America/ India/ Australia/ New Zealand/ South Africa) LTE-FDD: B1/2/3/4/5/7/8/20/28(A+B); LTE-TDD: B38/40/41 (200M); WCDMA: B1/2/4/5/8; GSM: 850/900/1800/1900MHz
	-AU (ANZ/Brazil)	LTE-FDD: B1/2/3/4/5/7/8/28; LTE-TDD: B38 ; WCDMA: B1/2/4/5/8; GSM: 850/900/1800/1900 MHz	/	/
	-GL* (Global)	/	LTE-FDD: B1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/28/66/71; LTE-TDD: B34/38/39/40/41; WCDMA: B1/2/4/5/6/8/19; GSM: 850/900/1800/1900MHz	/
	-NA (North America)	/	LTE-FDD: B2/4/5/7/12/13/14/17/25/26/66/71; LTE-TDD: B41(200M)	LTE-FDD: B2/4/5/7/12/13/14/ 17/25/26/66/71; LTE-TDD: B41(200M)
	-JP (Japan)	/	LTE-FDD: B1/3/5/8/11/18/19/21/26/28; LTE-TDD: B41(200M); WCDMA: B1/6/8/19	/
	-WF(Global)	-WF(Wi-Fi)2.4G & 5G Wi-Fi, 2.4G BT	-WF (Wi-Fi) 2.4G & 5G Wi-Fi, 2.4G BT	-WF (Wi-Fi) 2.4G & 5G Wi-Fi, 2.4G BT
CPU		Unisoc SL8541E ARM Coretex 4 x A53@ 1.4GHz	QCM2290, Quad-core ARM Cortex-A53 64-bit CPU @ 2.0 GHz	QCM2290, Quad-core ARM Cortex-A53 64-bit CPU @ 2.0 GHz
GPU		ARM Mali-T820 as 3D graphics accelerator, up to 680 MHz	Qualcomm® Adreno™ 702 Graphics Processing Unit (GPU) with 64-bit addressing	Qualcomm® Adreno™ 702 Graphics Processing Unit (GPU) with 64-bit addressing
Memory		1 GB LPDDR3 + 8 GB eMMC; 2 GB LPDDR3 + 16 GB eMMC	32GB eMMC + 2GB LPDDR4X; 32GB eMMC + 3GB LPDDR4X	32GB eMMC + 2GB LPDDR4X
Operating System		Android 10.0	Android 12/13*/14*	Yocto Linux (Kernel 5.4)*
Supply Voltage Range		3.55 V ~ 4.2 V, typ. 3.8 V	3.55 V ~ 4.4 V, typ. 3.8 V	3.55 V ~ 4.4 V, typ. 3.8 V
Weight (approx.) g		10	/	/
Operating Temperature		-30 °C ~ +75 °C	-35 °C ~ +75 °C	-35 °C ~ +75 °C
Data Transmission				
LTE (Mbps)		LTE-FDD: Max. 150 (DL)/ Max. 50 (UL) LTE-TDD: Max. 130 (DL)/ Max. 30 (UL)	Cat 4: LTE-FDD: Max. 150 (DL)/ Max. 50 (UL) LTE-TDD: Max. 130 (DL)/ Max. 30 (UL)	Cat 4: LTE-FDD: Max. 150 (DL)/ Max. 50 (UL) LTE-TDD: Max. 130 (DL)/ Max. 30 (UL)
UMTS		DC-HSDPA: Max. 42 Mbps (DL); HSUPA: Max. 5.76 Mbps (UL) WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA: Max. 42 Mbps (DL); DC-HSUPA: Max. 5.76 Mbps (UL) WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA: Max. 42 Mbps (DL); DC-HSUPA: Max. 5.76 Mbps (UL) WCDMA: Max. 384 Kbps (DL/UL)
CDMA2000		EVDO: Max. 3.1 Mbps (DL)/ Max. 1.8 Mbps (UL) , 1X Advanced: Max. 307.2 Kbps (DL/UL)	EVDO: Max. 3.1 Mbps (DL)/ 1.8 Mbps (UL) 1X Advanced: Max. 307.2 Kbps (DL/UL)	EVDO: Max. 3.1 Mbps (DL)/ 1.8 Mbps (UL) 1X Advanced: Max. 307.2 Kbps (DL/UL)
GSM(Kbps)		EDGE: Max. 296 (DL)/ 236.8 (UL) , GPRS: Max. 107 (DL)/ 85.6 (UL)	EDGE: Max. 296 (DL)/ 236.8 (UL) GPRS: Max. 107 (DL)/ 85.6 (UL)	EDGE: Max. 296 Kbps (DL)/ 236.8 Kbps (UL) GPRS: Max. 107 Kbps (DL)/ 85.6 Kbps (UL)
Interfaces				
LCM		4-lane MIPI_DSI, HD+ (1440 × 720) @ 60 fps	1 group of 4-lane MIPI DSI, HD+ (1680 × 720) @ 60 fps	1 group of 4-lane MIPI DSI, HD+ (1680 × 720) @ 60 fps
Camera		2 groups of MIPI_CSI (2-lane + 1-lane), up to 1.5 Gbps/lane 1 × ISP, 8 MP for rear camera (2-lane) and 2 MP for front camera (1-lane)	2 groups of 4-lane MIPI CSI, up to 2.5 Gbps/lane 2 or 3 cameras supported, up to 25 MP or 13 MP + 13 MP with dual ISP	2 groups of 4-lane MIPI CSI, up to 2.5 Gbps/lane 2 or 3 cameras supported, up to 25 MP or 13 MP + 13 MP with dual ISP
Touch Panel		Capacitive touch panel, I2C controls	Capacitive Touch Panel	Capacitive Touch Panel
Audio		Analog channels: 3 inputs: MIC1, MIC2, MIC3 (including one noise-canceling MIC); 3 outputs: speaker, earpiece, headphone	3 analog inputs: MIC1, MIC2, MIC3 (including one noise-canceling MIC); 3 analog outputs: Line Out, earpiece, headphone	3 analog inputs: MIC1, MIC2, MIC3 (including one noise-canceling MIC); 3 analog outputs: Line Out, earpiece, headphone
Video		Encode: 1080P (H.264) @ 30 fps; WVGA (MPEG-4/VP8) @ 30 fps Decode: 1080P (H.264/MPEG-4/VP8/H.265/DivX4/5/6) @ 30 fps; WVGA (H.263) @ 30 fps	Encoder: 1080P 8-bit H.264/H.265(HEVC) @ 30 fps Decoder: 1080P 8-bit H.264/H.265(HEVC)/VP9 @ 30 fps	Encoder: 1080P 8-bit H.264/H.265(HEVC) @ 30 fps; Decoder: 1080P 8-bit H.264/H.265(HEVC)/VP9 @ 30 fps
USB		× 2, USB 2.0 USB1 supports USB OTG, does not support USB hub; up to 480 Mbps; USB2 supports USB Host mode and USB hub; up to 100 Mbps	× 1, compliant with USB 2.0/ 3.1, supports USB OTG, charge, etc.	× 1, compliant with USB 2.0/ 3.1, supports USB OTG, charge, etc.
I2C		Supported	× 4	× 4
(U)SIM		× 2, support 1.8/2.95 V (U)SIM cards, with (U)SIM card detection function, DSDS supported	× 2 (1.8V/2.95V)	× 2 (1.8V/2.95V)
UART		× 2, up to 3.25 Mbps, UART0 supports hardware flow control	× 3, up to 4 Mbps, supports hardware flow control	× 3, up to 4 Mbps, supports hardware flow control
SDIO		/	× 1 (3.0, 4-bit SDIO)	× 1 (3.0, 4-bit SDIO)
SD Card		× 1, SD 3.0, 4-bit SDIO	× 1, SD 3.0, 4-bit SDIO	× 1, SD 3.0, 4-bit SDIO
PWRKEY		Supported	Pulled up internally to 1.1 V	Pulled up internally to 1.1 V
SPI		Supported	× 1 (multiplexed)	× 1 (multiplexed)
ADC		Supported	× 1, general-purpose ADC interface	× 1, general-purpose ADC interface
GPIO		Supported	× 33	× 33
PWM		× 1	× 1	× 1
Motor Driver		× 1	× 1	× 1
Antenna		× 4, Main/Rx-diversity/GNSS/Wi-Fi & Bluetooth	× 4, Main/Rx-diversity/GNSS/Wi-Fi & Bluetooth antenna interface respectively (SC200E-WF: × 1, Wi-Fi & Bluetooth antenna interface)	× 4, Main/Rx-diversity/GNSS/Wi-Fi & Bluetooth antenna interface respectively (SC206E-WF: × 1, Wi-Fi & Bluetooth antenna interface)
Enhanced Features				
BT		Bluetooth 2.1 EDR/3.0 HS/4.2 LE/5.0 LE; Support a maximum of 10 ACL/EL/SCO links	2.1 EDR/3.0 HS/4.2 LE/5.0 LE	2.1 EDR/3.0 HS/4.2 LE/5.0 LE
Wi-Fi		2.4 & 5 GHz, 802.11a/b/g/n/ac; 433 Mbps; STA/AP/P2P	2.4/5 GHz 802.11a/b/g/n/ac	2.4/5 GHz 802.11a/b/g/n/ac
GNSS		GPS/GLONASS or GPS/BDS	GPS/BeiDou/GLONASS/Galileo/QZSS/SBAS	GPS/BeiDou/GLONASS/Galileo/QZSS/SBAS
Charge Function		Build-in Charge IC	Build-in Charge IC & Fuel Gauge Qualcomm Quick Charge technology	Build-in Charge IC & Fuel Gauge Qualcomm Quick Charge technology
Dual LCD		Only support single LCD Display	Only support single LCD Display	Only support single LCD Display
DSDS		Support Dual SIM Dual Standby	Support Dual SIM Dual Standby	Support Dual SIM Dual Standby
Firmware Upgrade		Firmware Upgrade via USB or OTA	Firmware Upgrade via USB and OTA	Firmware Upgrade via USB and OTA
Certifications[1]		GCF/CE/Anatel/CCC/SRRC*/NAL*	CCC/SRRC/NAL/CE/UKCA/RCM/GCF/KC/FCC/IC/PTCRB*/AT&T*/ Verizon*/T-Mobile*/JATE/TELEC/DCM*/KDDI*/Anatel*/NCC/NBTC*	CE/UKCA/RCM/GCF/KC/FCC/IC/PTCRB*/AT&T*/Verizon*/T-Mobile*
Recommended Applications		Smart POS, smart home gateways, smart robots, smart wearables, safety, PDAs & tablets, vending machines, delivery lockers, telematics, mobile computing, in-car video streaming and entertainment systems, etc.	Telematics, mobile POS terminals, gateways, safety, networking, mobile computing, etc.	

Note 1: May depend on modules' variant.
SC200L can't be promote to US, Canada, Australia, New Zealand, Japan or South Korea.

* Planning/Under development

Product	SC600Y	SC680A	SC686A
			
Form Factor	LCC+LGA	LCC+LGA	LCC+LGA
Dimensions (mm)	44.0 × 43.0 × 2.85	44.0 × 43.0 × 2.85	44.0 × 43.0 × 2.85
LTE Feature	LTE Cat 6 3GPP E-UTRA Release 10 Compliant, Support DL MIMO 2 × 2	LTE Cat 6 3GPP E-UTRA Release 10 Compliant, Support DL MIMO 2 × 2	LTE Cat 6 3GPP E-UTRA Release 10 Compliant, Support DL MIMO 2 × 2
Frequency Bands(MHz) -EM (EMEA/ India/ Korea/ South Asia/ Latin America/ Australia/ ANZ/ South Africa)	LTE-FDD: B1/2/3/4/5/7/8/20/28; LTE-TDD: B38/39/40/41; WCDMA: B1/2/4/5/8; GSM: 850/900/1800/1900MHz	-EM (EMEA/ India/ Korea/ South Asia/ Latin America/ Australia/ ANZ/ South Africa) LTE-FDD: B1/2/3/4/5/7/8/20/28; LTE-TDD: B38/40/41; WCDMA: B1/2/4/5/8; GSM: 850/900/1800/1900MHz	-EM (EMEA/ India/ Korea/ South Asia/ Latin America/ Australia/ ANZ/ South Africa) LTE-FDD: B1/2/3/4/5/7/8/20/28; LTE-TDD: B38/40/41; WCDMA: B1/2/4/5/8; GSM: 850/900/1800/1900MHz
Frequency Bands(MHz) -NA (North America)	LTE-FDD: B2/4/5/7/12/13/14/17/25/26/66/71; LTE-TDD: B41; WCDMA: B2/4/5	-NA (North America) LTE-FDD: B2/4/5/7/12/13/14/17/25/26/66/71; LTE-TDD: B41	-NA (North America) LTE-FDD: B2/4/5/7/12/13/14/17/25/26/66/71; LTE-TDD: B41
Frequency Bands(MHz) -JP (Japan)	LTE-FDD: B1/3/5/8/11/18/19/21/26/28; LTE-TDD: B41; WCDMA: B1/6/8/19	-JP[1] (Japan) LTE-FDD: B1/3/5/8/11/18/19/21/26/28; LTE-TDD: B41; WCDMA: B1/6/8/19	-JP[1] (Japan) LTE-FDD: B1/3/5/8/11/18/19/21/26/28; LTE-TDD: B41; WCDMA: B1/6/8/19
Frequency Bands(MHz) -WF (Global)	Only Wi-Fi & BT	-WF (Global) Only Wi-Fi & BT	-WF (Global) Only Wi-Fi & BT
CPU	Qualcomm SDM450 ARM Coretex 8 x A53@ 1.8GHz	Qualcomm QCM4290 ARM Coretex technology 4 x Kryo 260@ 2.0 GHz + 4 x Kryo 260@ 1.8GHz	Qualcomm QCM4290 ARM Coretex technology 4 x Kryo 260@ 2.0 GHz + 4 x Kryo 260@ 1.8GHz
GPU	Qualcomm® Adreno™ 506 graphics processing unit (GPU) with 64-bit addressing	Qualcomm® Kryo™ 610 graphics processing unit (GPU) at 950 MHz	Qualcomm® Kryo™ 610 graphics processing unit (GPU) at 950 MHz
Memory	2GB LPDDR3 + 16GB eMMC	4 GB LPDDR4X + 64 GB eMMC	4 GB LPDDR4X + 64 GB eMMC; 2 GB LPDDR4X + 16 GB eMMC
Operating System	Android 9/10	Android 12/ 13[1]/ 14[1]	Linux
Supply Voltage Range	3.55 V ~ 4.4 V, typ. 3.8 V	3.55 V ~ 4.4 V, typ. 3.8 V	3.55 V ~ 4.4 V, typ. 3.8 V
Weight (approx.) g	13.0	11.8	11.8
Operating Temperature	-35 °C ~ +75 °C	-35 °C ~ +75 °C	-35 °C ~ +75 °C
Data Transmission			
LTE (Mbps)	Cat 6: LTE-FDD: Max. 300 (DL)/Max. 50 (UL); LTE-TDD: Max. 265 (DL)/Max. 35 (UL) Cat 4: LTE-FDD: Max. 150 (DL)/Max. 50 (UL); LTE-TDD: Max. 130 (DL)/Max. 30 (UL)	Cat 6: LTE-FDD: Max. 300 (DL)/Max. 50 (UL); LTE-TDD: Max. 265 (DL)/Max. 35 (UL) Cat 4: LTE-FDD: Max. 150 (DL)/Max. 50 (UL); LTE-TDD: Max. 130 (DL)/Max. 30 (UL)	Cat 6: LTE-FDD: Max. 300 (DL)/Max. 50 (UL); LTE-TDD: Max. 265 (DL)/Max. 35 (UL) Cat 4: LTE-FDD: Max. 150 (DL)/Max. 50 (UL); LTE-TDD: Max. 130 (DL)/Max. 30 (UL)
UMTS	DC-HSDPA: Max. 42 Mbps (DL); DC-HSUPA: Max. 11.2 Mbps (UL); WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA: Max. 42 Mbps (DL); DC-HSUPA: Max. 11.2 Mbps (UL); WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA: Max. 42 Mbps (DL); DC-HSUPA: Max. 11.2 Mbps (UL); WCDMA: Max. 384 Kbps (DL/UL)
GSM(Kbps)	EDGE: Max. 296 (DL)/236.8 (UL); GPRS: Max. 107 (DL)/85.6 (UL)	EDGE: Max. 296 (DL)/236.8 (UL); GPRS: Max. 107 (DL)/85.6 (UL)	EDGE: Max. 296 (DL)/236.8 (UL); GPRS: Max. 107 (DL)/85.6 (UL)
Interfaces			
LCM	2 x 4-lane MIPI_DSI; WUXGA (1920 × 1200) @ 60 fps for primary display and FHD (1920 × 1080) @ 60 fps for secondary display; Wi-Fi display: 1080P @ 30 fps (UBWC)	4-lane MIPI_DSI; DSI D-PHY 1.2; Split link supported; FHD+ (1080 × 2520) aspect ratio, up to 10 bpc; QSEED4, 4 L, Q-SYNC, SVI, CABL, and FOSS	4-lane MIPI_DSI; DSI D-PHY 1.2; Split link supported; FHD+ (1080 × 2520) aspect ratio, up to 10 bpc; QSEED4, 4 L, Q-SYNC, SVI, CABL, and FOSS
Camera	3 groups of 4-lane MIPI_CSI, up to 2.1 Gbps per lane. 2 × ISP; Support three cameras (4-lane + 4-lane + 4-lane) or four cameras (4-lane + 4-lane + 2-lane + 1-lane); Up to 21 MP with dual ISP	3 × ISP, (13 MP + 13 MP) or (25 MP + 5 MP) at 30 fps or (16 MP + 16 MP) @ 24 fps; 3 groups of 4-lane MIPI_CSI, up to 2.1 Gbps/ lane; Support 3 or 4 cameras, up to 25 MP with dual ISP	3 × ISP, (13 MP + 13 MP) or (25 MP + 5 MP) at 30 fps or (16 MP + 16 MP) @ 24 fps; 3 groups of 4-lane MIPI_CSI, up to 2.1 Gbps/ lane; Support 3 or 4 cameras, up to 25 MP with dual ISP
Touch Panel	× 2, Capacitive touchscreen, I2C controls	Capacitive touch panel, I2C controls	Capacitive touch panel, I2C controls
Audio	Analog channels: Three inputs: MIC1, MIC2, MIC3 (including one noise-canceling MIC); Three outputs: speaker, earpiece, headphone	Analog channels: 3 inputs: MIC1, MIC2, MIC3 (including one noise-canceling MIC); 3 outputs: speaker, earpiece, headphone	Analog channels: 3 inputs: MIC1, MIC2, MIC3 (including one noise-canceling MIC); 3 outputs: speaker, earpiece, headphone
Video	Encode and Decode: Up to 1080P @ 60 fps High frame rate encoder; 720P @ 120 fps; 60 Mbps; Maximum 972000 macro block/s; 1080P @ 60 fps decode + 1080P @ 30 fps encode;	Encode: 1080p60 8 bit HEVC (H.265); 1080p60 8 bit H.264 Decode: 1080p60 8 bit HEVC (H.265), VP9; 1080p60 8 bit H.264	Encode: 1080p60 8 bit HEVC (H.265); 1080p60 8 bit H.264 Decode: 1080p60 8 bit HEVC (H.265), VP9; 1080p60 8 bit H.264
USB	× 1, USB 2.0/3.0 (Type-C), USB OTG + Charge	× 1, USB 2.0/3.1 (Type-C)	× 1, USB 2.0/3.1 (Type-C)
I2C	Supported	× 5	× 5
(U)SIM	× 2, Support 1.8/ 2.95 V (U)SIM cards, with (U)SIM card detection function, DSDS supported	× 2, Support 1.8/ 2.95 V (U)SIM cards, with (U)SIM card detection function, DSDS supported	× 2, Support 1.8/ 2.95 V (U)SIM cards, with (U)SIM card detection function, DSDS supported
UART	×4, up to 4 Mbps, two of them support hardware flow control	× 4 (supports 115200 bps hardware flow control)	× 4 (supports 115200 bps hardware flow control)
SD Card	SD 3.0, 4-bit SDIO	× 1, SD 3.0, 4-bit SDIO	× 1, SD 3.0, 4-bit SDIO
PWRKEY	Supported	Pulled up internally to 1.8 V	Pulled up internally to 1.8 V
SPI	Supported	× 3	× 3
ADC	Supported	× 2	× 2
GPIO	Supported	× 21	× 21
PWM	× 2	× 2	× 2
Motor Driver	× 1	× 1	× 1
Flashlight Driver	× 2	× 2	× 2
WLED Sink	× 4	× 4	× 4
Antenna	× 4, Main/Rx-diversity/GNSS/Wi-Fi & Bluetooth	× 4, Main/Rx-diversity/GNSS/Wi-Fi & Bluetooth	× 4, Main/Rx-diversity/GNSS/Wi-Fi & Bluetooth
Enhanced Features			
BT	Bluetooth 2.1 EDR/3.0 HS/4.2 LE; Support a maximum of 10 ACL/BEL/SCO links	Bluetooth 2.1 EDR/3.0 HS/4.2 LE/5.1 LE	Bluetooth 2.1 EDR/3.0 HS/4.2 LE/5.1 LE
Wi-Fi	2.4 & 5 GHz, 802.11a/b/g/n/ac; 433 Mbps, STA/AP/P2P	2.4 & 5 GHz, 802.11a/b/g/n/ac/ax-ready	2.4 & 5 GHz, 802.11a/b/g/n/ac/ax-ready
GNSS	GNSS[2]: GPS/BDS/GLONASS or GPS/BDS/Galileo	GNSS[3]: GPS/BDS/GLONASS/Galileo/NavIC/QZSS/SBAS; L1 + L5	GNSS[3]: GPS/BDS/GLONASS/Galileo/NavIC/QZSS/SBAS; L1 + L5
Charge Function	Build-in Charge IC & Fuel Gauge Qualcomm Quick Charge 3.0 technology	Build-in Charge IC & Fuel Gauge Qualcomm Quick Charge 3.0 technology	Build-in Charge IC & Fuel Gauge Qualcomm Quick Charge 3.0 technology
Dual LCD	support independent display for 2 LCDs	only support single LCD display	only support single LCD display
DSDS	Support Dual SIM Dual Standby	Support Dual SIM Dual Standby	Support Dual SIM Dual Standby
Firmware Upgrade	Firmware Upgrade via USB or OTA	Firmware Upgrade via USB or OTA	Firmware Upgrade via USB or OTA
Certifications[4]	CE/RCM/GCF/NCC/Telstra/FCC/IC/PTCRB/AT&T/Verizon/ T-Mobile/JATE/TELEC/KDDI/NTT DOCOMO/IFETEL/Anatel/KC	CE*/RCM*/GCF*/NCC*/Telstra*/FCC*/IC*/PTCRB*/AT&T*/ Verizon*/T-Mobile*/JATE*/TELEC*/KDDI*/NTT DOCOMO*/ IFETEL*/Anatel*/KC*	CE*/RCM*/GCF*/NCC*/Telstra*/FCC*/IC*/PTCRB*/AT&T*/ Verizon*/T-Mobile*/JATE*/TELEC*/KDDI*/NTT DOCOMO*/ IFETEL*/Anatel*/KC*
Recommended Applications	Smart POS, smart home gateways, smart robots, smart wearables, safety, PDAs & tablets, vending machines, delivery lockers, telematics, mobile computing, in-car video streaming and entertainment systems, etc.		

Note 1: TBD.
Note 2: GNSS is not supported on SC600Y-WF.
Note 3: GNSS is not supported on SC680A-WF.
Note 4: May depend on modules' variant.

* Planning/Under development

Smart Modules

Product		SC200K
		
Form Factor		LCC+LGA
Dimensions (mm)		40.5 × 40.5 × 2.85
LTE Feature		LTE Cat 4 3GPP E-UTRA Release 12 Compliant, Support DL MIMO 2 × 2
Frequency Bands(MHz)	-CE (China)	LTE-FDD: B1/3/5/8; LTE-TDD: B34/38/39/40/41; WCDMA: B1/8; GSM: 900/1800MHz
	-WF(Global)	only Wi-Fi & BT
CPU		Unisoc UIS8581E ARM Coretex 4 x A55@ 1.6 GHz + 4 x A55@ 1.2GHz
GPU		PowerVR Fentale GE8322
Memory		2 GB LPDDR4X + 32 GB eMMC; 3 GB LPDDR4X + 32 GB eMMC; 4 GB LPDDR4X + 64 GB eMMC
Operating System		Android 10.0
Supply Voltage Range		3.55 V~4.2 V, typ. 3.8 V
Weight (approx.) g		10.5
Operating Temperature		-30 °C ~ +75 °C
Data Transmission		
LTE (Mbps)		Cat 4: LTE FDD: Max. 150 (DL)/ Max. 50 (UL) LTE TDD: Max. 130 (DL)/ Max. 30 (UL)
UMTS		DC-HSDPA: Max. 42 Mbps (DL) DC-HSUPA: Max. 11.2 Mbps (DL) WCDMA: Max. 384 Kbps (DL)/ Max. 384 Kbps (UL)
GSM(Kbps)		EDGE: Max. 296 (DL) /Max. 236.8 (UL) GPRS: Max. 107 (DL) /Max. 85.6 (UL)
Interfaces		
LCM		4-lane MIPI_DSI, FHD+ (2160 × 1080) @ 60 fps
Camera		2 groups of 4-lane MIPI_CSI, Support 2 or 3 cameras, up to 16 MP with dual ISP
Touch Panel		Capacitive touch panel, I2C controls
Audio		Analog channels: 3 inputs: MIC1, MIC2, MIC3 (including one noise-canceling MIC); 3 outputs: speaker, earpiece, headphone
Video		Encode: 1080P (H.264) @ 30 fps; WVGA (MPEG-4/ VP8) @ 30 fps; Decode: 1080P (H.264/ MPEG-4/ VP8/ H.265/ DivX4/ 5/ 6) @ 30 fps; WVGA (H.263) @ 30 fps
USB		× 2, USB 2.0 USB1 supports USB OTG, does not support USB hub, up to 480 Mbps; USB2 only supports USB Host mode, supports USB hub, up to 100 Mbps
I2C		Supported
(U)SIM		× 2, Support 1.8/ 2.95 V (U)SIM cards, with (U)SIM card detection function, DSDS supported
UART		× 3, up to 3 Mbps, one of them supports hardware flow control
SD Card		× 1, SD 3.0, 4-bit SDIO
PWRKEY		Supported
SPI		Supported
ADC		Supported
GPIO		Supported
PWM		× 1
Antenna		× 4, Main/Rx-diversity/GNSS/Wi-Fi & Bluetooth
Enhanced Features		
BT		Bluetooth 2.1 EDR/3.0 HS/4.2 LE/5.0 LE
Wi-Fi		2.4 & 5 GHz, 802.11a/b/g/n/ac
GNSS		GPS/GLONASS or GPS/BDS
Charge Function		Built-in charging function
Dual LCD		only support single LDC display
DSDS		Support dual card dual standby
Firmware Upgrade		Firmware Upgrade via USB or OTA
Certifications[1]		SRRC/ NAL/ CCC
Recommended Applications		Smart POS, smart home gateways, smart robots, smart wearables, safety, PDAs & tablets, vending machines, delivery lockers, telematics, mobile computing, in-car video streaming and entertainment systems, etc.

Note 1: May depend on modules' variant.
SC200K can't be promote to US, Canada, Australia, New Zealand, Japan or South Korea .

* Planning/Under development

Product		SC600T	SC606T
			
Form Factor		LCC+LGA	LCC+LGA
Dimensions (mm)		44.0 × 43.0 × 2.85	44.0 × 43.0 × 2.85
LTE Feature		LTE Cat 6 3GPP E-UTRA Release 10 Compliant, Support DL MIMO 2 × 2	LTE Cat 6 3GPP E-UTRA Release 10 Compliant, Support DL MIMO 2 × 2
Frequency Bands(MHz)	-EM (EMEA/ India/ Korea/ South Asia/ Latin America/ Australia/ ANZ/ South Africa)	LTE-FDD: B1/2/3/4/5/7/8/20/28; LTE-TDD: B38/39/40/41; WCDMA: B1/2/4/5/8; GSM: 850/900/1800/1900MHz	LTE-FDD: B1/2/3/4/5/7/8/20/28; LTE-TDD: B38/40/41; WCDMA: B1/2/4/5/8; GSM: 850/900/1800/1900MHz
	-NA (North America)	LTE-FDD: B2/4/5/7/12/13/14/17/25/26/66/71; LTE-TDD: B41; WCDMA: B2/4/5	LTE-FDD: B2/4/5/7/12/13/14/17/25/26/66/71; LTE-TDD: B41; WCDMA: B2/4/5
	-JP (Japan)	LTE-FDD: B1/3/5/8/11/18/19/21/26/28; LTE-TDD: B41; WCDMA: B1/6/8/19	/
	-WF (Global)	Only Wi-Fi & BT	Only Wi-Fi & BT
CPU		Qualcomm MSM8953 ARM Coretex 8 x A53@ 2.0 GHz	Qualcomm MSM8953 ARM Coretex 8 x A53@ 2.0 GHz
GPU		Qualcomm® Adreno™ 506 graphics processing unit (GPU) with 64-bit addressing	Qualcomm® Adreno™ 506 graphics processing unit (GPU) with 64-bit addressing
Memory		2GB LPDDR3 + 16GB eMMC	2GB LPDDR3 + 16GB eMMC
Operating System		Android 9/10	Yocto Linux (kernel 4.9)
Supply Voltage Range		3.55 V ~ 4.4 V, typ. 3.8 V	3.55 V ~ 4.4 V, typ. 3.8 V
Weight (approx.) g		13.0	13.0
Operating Temperature		-35 °C ~ +75 °C	-35 °C ~ +75 °C
Data Transmission			
LTE (Mbps)		Cat 6: LTE-FDD: Max. 300 (DL)/Max. 50 (UL); LTE-TDD: Max. 265 (DL)/Max. 35 (UL) Cat 4: LTE-FDD: Max. 150 (DL)/Max. 50 (UL); LTE-TDD: Max. 130 (DL)/Max. 30 (UL)	Cat 6: LTE-FDD: Max. 300 (DL)/Max. 50 (UL); LTE-TDD: Max. 265 (DL)/Max. 35 (UL) Cat 4: LTE-FDD: Max. 150 (DL)/Max. 50 (UL); LTE-TDD: Max. 130 (DL)/Max. 30 (UL)
UMTS		DC-HSDPA: Max. 42 Mbps (DL); DC-HSUPA: Max. 11.2 Mbps (UL); WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA: Max. 42 Mbps (DL); DC-HSUPA: Max. 11.2 Mbps (UL); WCDMA: Max. 384 Kbps (DL/UL)
GSM(Kbps)		EDGE: Max. 296 (DL)/236.8 (UL); GPRS: Max. 107 (DL)/85.6 (UL)	EDGE: Max. 296 (DL)/236.8 (UL); GPRS: Max. 107 (DL)/85.6 (UL)
Interfaces			
LCM		2 x 4-lane MIPI_DSI; WUXGA (1920 × 1200) @ 60 fps for primary display and FHD (1920 × 1080) @ 60 fps for secondary display; Wi-Fi display: 1080P @ 30 fps (UBWC)	2 x 4-lane MIPI_DSI; WUXGA (1920 × 1200) @ 60 fps for primary display and FHD (1920 × 1080) @ 60 fps for secondary display; Wi-Fi display: 1080P @ 30 fps (UBWC)
Camera		3 groups of 4-lane MIPI_CSI, up to 2.1 Gbps per lane. 2 × ISP; Support three cameras (4-lane + 4-lane + 4-lane) or four cameras (4-lane + 4-lane + 2-lane + 1-lane); Up to 24 MP with dual ISP	3 groups of 4-lane MIPI_CSI, up to 2.1 Gbps per lane. 2 × ISP; Support three cameras (4-lane + 4-lane + 4-lane) or four cameras (4-lane + 4-lane + 2-lane + 1-lane); Up to 24 MP with dual ISP
Touch Panel		× 2, Capacitive touchscreen, I2C controls	× 2, Capacitive touchscreen, I2C controls
Audio		Analog channels: Three inputs: MIC1, MIC2, MIC3 (including one noise-canceling MIC); Three outputs: speaker, earpiece, headphone	Analog channels: Three inputs: MIC1, MIC2, MIC3 (including one noise-canceling MIC); Three outputs: speaker, earpiece, headphone
Video		Encode and Decode: Up to 4K @ 30 fps; High frame rate encode: 720P @ 120 fps; 60 Mbps; Maximum 972000 macro block/s; 1080P @ 60 fps Decode + 1080P @ 30 fps Encode	Encode and Decode: Up to 4K @ 30 fps; High frame rate encode: 720P @ 120 fps; 60 Mbps; Maximum 972000 macro block/s; 1080P @ 60 fps Decode + 1080P @ 30 fps Encode
USB		× 1, USB 2.0/3.0 (Type-C), USB OTG + Charge	× 1, USB 2.0/3.0 (Type-C), USB OTG + Charge
I2C		Supported	Supported
(U)SIM		× 2, Support 1.8/ 2.95 V (U)SIM cards, with (U)SIM card detection function, DSDS supported	× 2, Support 1.8/ 2.95 V (U)SIM cards, with (U)SIM card detection function, DSDS supported
UART		×4, up to 4 Mbps, two of them support hardware flow control	×4, up to 4 Mbps, two of them support hardware flow control
SD Card		SD 3.0, 4-bit SDIO	SD 3.0, 4-bit SDIO
PWRKEY		Supported	Supported
SPI		Supported	Supported
ADC		Supported	Supported
GPIO		Supported	Supported
PWM		× 2	×2
Motor Driver		× 1	/
Flashlight Driver		× 2	/
WLED Sink		× 4	/
Antenna		× 4, Main/Rx-diversity/GNSS/Wi-Fi & Bluetooth	× 4, Main/Rx-diversity/GNSS/Wi-Fi & Bluetooth
Enhanced Features			
BT		Bluetooth 2.1 EDR/ 3.0 HS/ 4.2 LE; Support a maximum of 10 ACL/ EL/ SCO links	Bluetooth 2.1 EDR/3.0 HS/4.2 LE; Support a maximum of 10 ACL/EL/SCO links
Wi-Fi		2.4 & 5 GHz, 802.11a/b/g/n/ac; 433 Mbps, STA/AP/P2P	2.4 & 5 GHz, 802.11a/b/g/n/ac; 433 Mbps, STA/AP/P2P
GNSS		GNSS[1]: GPS/BDS/GLONASS or GPS/BDS/Galileo	GNSS[2]: GPS/BDS/GLONASS or GPS/BDS/Galileo
Charge Function		Build-in Charge IC & Fuel Gauge Qualcomm Quick Charge 3.0 technology	/
Dual LCD		support independent display for 2 LCDs	support independent display for 2 LCDs
DSDS		Support Dual SIM Dual Standby	Support Dual SIM Dual Standby
Firmware Upgrade		Firmware Upgrade via USB or OTA	Firmware Upgrade via USB or OTA
Certifications[3]		CE/RCM/GCF/NCC/Telstra/FCC/IC/PTCRB/AT&T/Verizon/T-Mobile/JATE/TELEC/KDDI/NTT DOCOMO/ IFETEL/Anatel/KC	CE/RCM/GCF/FCC/IC/PTCRB/AT&T/Verizon
Recommended Applications		Smart POS, smart home gateways, smart robots, smart wearables, safety, PDAs & tablets, vending machines, delivery lockers, telematics, mobile computing, in-car video streaming and entertainment systems, etc.	

Note 1: GNSS is not supported on SC600T-WF.
Note 2: GNSS is not supported on SC606T-WF.
Note 3: May depend on modules' variant.

Smart Modules

Product		SC66	SC668S	SG560D
				
Form Factor		LCC+LGA	LCC+LGA	LGA
Dimensions(mm)		44.0 × 43.0 × 2.85	44.0 × 43.0 × 2.85	56.5×42.5× 2.95
5G Feature		/	/	3GPP Release 15, DL 4 × 4 MIMO/UL 2 × 2 MIMO
LTE Feature		LTE Cat 6	LTE Cat 4	LTE Cat 15, 3GPP Release 15, DL MIMO 4 × 4
Frequency Bands(MHz)	-CE/CN (China)	-CE(China) LTE-FDD: B1/3/5/8; LTE-TDD: B34/38/39/40/41(120M); WCDMA: B1/8; TD-SCDMA: B34/39; CDMA: BC0; GSM: 900/1800MHz	-CE(China) LTE-FDD: B1/3/5/8; LTE-TDD: B34/38/39/40/41; WCDMA: B1/8; CDMA: BC0; GSM: 900/1800MHz	-CN (China) 5G SA/NSA: n1/3/5/8/28/41/78/79; LTE: B1/3/5/8/34/38/39/40/41; WCDMA: B1/5/8
	-E/EU/EM (EMEA/Europe/ India/Korea/South Asia/ Latin America/Australia/ South Africa)	-E(Europe/India/Korea/South Asia/Latin America/Australia/ South Africa) LTE-FDD: B1/2/3/4/5/7/8/20/28 (A+B); LTE-TDD: B38/39/40/ 41(200M); WCDMA: B1/2/4/5/8; GSM: 850/900/1800/1900MHz	-EM (Europe/ India/ Korea/ South Asia/ Latin America/ Australia/ South Africa) LTE-FDD: B1/2/3/4/5/7/8/20/28; LTE-TDD: B38/39/40/41(200M); WCDMA: B1/2/4/5/8; GSM: GSM850/EGSM900/DCS1800/PCS1900	-EU (EMEA) 5G SA/NSA: n1/3/5/7/8/20/28/38/40/41/77/78; LTE: B1/3/5/7/8/20/28/32/38/39/40/41/42; WCDMA: B1/5/8; GSM/EDGE: 900/1800 MHz
	-A/NA (North America)	-A(North America) LTE-FDD: B2/4/5/7/12/13/14/17/25/26/66/71; LTE-TDD: B41(200M); WCDMA: B2/4/5	-NA (North America) LTE-FDD:B2/4/5/7/12/13/14/17/25/26/66/71; LTE-TDD: B41	-NA[1] (North America)5G SA/NSA: n2/5/7/12/13/14/25/26/29/ 30/38/41/48/66/70/71/77/78; LTE: B2/4/5/7/12/13/14/17/25/2 6/29/30/38/41/42/43/46/48/66/71
	-J (Japan)	LTE-FDD: B1/3/5/8/11/18/19 21/26/28 (A+B); LTE-TDD: B41(120M); WCDMA: B1/6/8/19	/	N/A
	-MW/WF (Global)	-MW (Wi-Fi) only Wi-Fi & BT	-WF Only Wi-Fi/BT	-WF(Wi-Fi) only Wi-Fi & BT
CPU		Qualcomm SDM660 ARM Coretex technology 4 x Kryo260 Gold@2.2 GHz + 4 x Kryo260 Silver@1.843 GHz	QCM6125 Kryo Gold: high-performance quad-core processor @ 2.0 GHz; Kryo Silver: low-power quad-core processor @ 1.8 GHz	Qualcomm QCM6490 ARM Coretex technology 1 x Kryo670 Goldplus@ 2.7 GHz + 3 x Kryo670 Gold@ 2.4GHz + 4 x Kryo670 Silver@ 1.9GHz
GPU		Qualcomm® Adreno 512 @ 650 MHz, OpenGL ES3.1 + AEP, DX12_FL12, Vulkan, OpenCL2.0 FP, RenderScript	Qualcomm high-performance Adreno™ 610 graphics engine	Qualcomm® Adreno™ 643 @ 812 MHz
Memory		3 GB LPDDR4X + 32 GB eMMC; 4 GB LPDDR4X + 64 GB eMMC	32GB eMMC+3GB LPDDR4X ; 64GB eMMC+4GB LPDDR4X; 128GB UFS+8GB LPDDR4X	4 GB LPDDR4X + 64 GB UFS
Operating System		Android 9/10	Android 10.0/Android 11.0	Android 12/13/14/15[1]
Supply Voltage Range		3.55 V ~ 4.4 V, typ. 4.0 V	3.55 V ~ 4.4 V, typ. 3.8 V	3.55 V ~ 4.4 V, typ. 4.0 V
Weight (approx.) g		12.0	12.0	17.5
Operating Temperature		-35 °C ~ +75 °C	-35 ° C ~ +75 ° C	-35 °C ~ +75 °C
Data Transmission				
5G		/	/	5G SA: 2.1 Gbps (DL)/900 Mbps (UL); 5G NSA: 2.5 Gbps (DL)/650 Mbps (UL)
LTE (Mbps)		Cat 6*: LTE-FDD: Max. 300 (DL)/Max. 50 (UL); LTE-TDD: Max. 265 (DL)/Max. 30 (UL) Cat 4: LTE-FDD: Max. 150 (DL)/Max. 50 (UL); LTE-TDD: Max. 130 (DL)/Max. 30 (UL)	Cat 4: LTE-FDD: Max. 150 (DL)/Max. 50 (UL); LTE-TDD: Max. 130 (DL)/Max. 30 (UL)	Cat18: 1.2 (DL)/200 (UL)
UMTS		DC-HSDPA: Max. 42 Mbps (DL); DC-HSUPA: Max. 5.76 Mbps (UL); WCDMA: Max. 384 Kbps (DL/UL)	DC-HSDPA: Max. 42 Mbps (DL); DC-HSUPA: Max. 5.76 Mbps (UL); WCDMA: Max. 384 Kbps (DL/UL)	DC-HSPA+: 42 Mbps (DL)/5.76 Mbps (UL); WCDMA: 384 Kbps (DL)/384 Kbps(UL)
TD-SCDMA		Max. 4.2 Mbps (DL)/2.2 Mbps (UL)	N/A	/
CDMA2000		EVDO: Max. 3.1 Mbps (DL)/1.8 Mbps (UL); 1X Advanced: Max. 307.2 Kbps (DL/UL)	EVDO : Max. 3.1 Mbps (DL)/1.8 Mbps (UL) 1X Advanced: Max. 307.2 Kbps (DL/UL)	/
GSM(Kbps)		EDGE: Max. 296 (DL)/236.8 (UL) ; GPRS: Max. 107 (DL)/85.6 (UL)	EDGE: Max. 296 (DL)/236.8 (UL); GPRS: Max. 107 (DL)/85.6 (UL)	SG560D-EU: EDGE: 296 (DL)/236.8 (UL); GPRS: 107 (DL)/85.6 (UL)
Interfaces				
LCM		2 × 4-lane MIPI DSI Default: MIPI_DSI (2560 × 1600 @ 60 fps) + DP over USB Type-C (4096 × 2160 @ 30 fps) ; Optional: MIPI_DSI0 (1920 × 1080 @ 60 fps) + MIPI_DSI1 (1920 × 1080 @ 60 fps) ; Wi-Fi display: 1080P @ 30 fps	4-lane MIPI DSI, supports up to 1920 × 1200 @ 60 fps or 1080 × 2520 @ 60 fps	1 × 4-lane MIPI_DSI, support up to 2.5 Gbps/ lane, 1200 × 2520 @ 144 fps; 1 × DP over Type C, support up to 4K (3840 × 2160) @ 60 fps; Support Wi-Fi Miracast 4K @ 60fps
Camera		3 × 4-lane CSIs (4/ 4/ 4 or 4/ 4/ 2/ 1) D-PHY 1.2 @ 2.1 Gbps/ lane, or 3 × 3-lane C-PHY 1.0 at 17 Gbps (2.5 G symbols per trio per second); 2 × ISP: 16 MP (30 fps ZSL) @ 1 × ISP + 16 MP (30 fps ZSL) @ 1 × ISP; Max. 24 MP (30 fps ZSL) @ 2 × ISP	3 groups of 4-lane MIPI CSI, up to 2.1 Gbps per lane; Each group of 4-lane can be divided into (2-lane + 1-lane), supports up to 6 cameras, supports 2 concurrently working cameras; Dual-ISP, supports up to (16 MP + 16 MP) or up to 24 MP	4 × 4-lane MIPI_CSI, Supports up to 2.5 Gbps/ lane; 3 × ISP, 3 × 27 MP @ 24 fps; or 3 × 22MP @ 30 fps ; or 36 MP + 27 MP @24 fps; or 36MP + 22MP @ 30 fps; or Max. 1×64 MP @ 30 fps
Touch Panel		Capacitive touch panel, I2C controls	Capacitive touch panel	Capacitive touchscreen, I2C controls
Audio		Analog channels: 3 inputs: MIC1, MIC2, MIC3 (including one noise-canceling MIC); 3 outputs: speaker, earpiece, headphone	Analog audio: speakers, handsets, headphones, 3-way microphones	Needs external audio codec
Video		Decode: 4K @ 30 fps; H.264, VP8, VP9 and HEVC; Encode: 4K @ 30 fps; HEVC, H264, VP8 and MPEG-4	Encode: 4K @ 30 fps; HEVC/ H.264/ VP8 Decode: 4K @ 30 fps; HEVC/ H.264/ VP8/ VP9 1080P @ 30 fps, MPEG-2	Encode: 4K (H.264/ H.265) @ 30 fps Decode: 4K (H.264/ H.265/ VP9) @ 60 fps
USB		× 2 ; USB 3.1, supports DP over Type-C, compatible with USB 2.0; USB 2.0, only supports USB Host mode	× 1, supports USB 3.1 Type-C interface, compatible with USB 2.0	× 2, USB 3.1 Type-C with DisplayPort 1.4, compatible with USB 2.0; USB 2.0 Host
I2C		Supported	× 2	Supported
(U)SIM		× 2, Support 1.8/ 2.95 V (U)SIM cards, with (U)SIM card detection function, DSDS supported	× 2; supports 1.8/ 2.95 V (U)SIM cards; supports (U)SIM card hot swap detection and dual-SIM dual-standby	× 2, Support 1.8/ 2.95 V (U)SIM cards, with (U)SIM card detection function; Support DSDS
UART		× 3, Up to 3 Mbps, one of them is used for debugging only	× 3 (Debug UART: 2-wire serial port, specialized for debugging use; UART03: 2-wire serial port; UART00: 4-wire serial port, supports RTS and CTS hardware flow control with maximum data rate of 4 Mbps)	× 3, supports 4 Mbps with Hardware Flow Control
SD Card		× 1, SD 3.0, 4-bit SDIO	× 1 (3.0, 4-bit SDIO)	× 1, SD 3.0, 4-bit SDIO
PWRKEY		Supported	Supported	Supported
SPI		Supported	Supported	Supported
ADC/ GPIO		Supported	Supported	Supported
PWM		× 1	× 1	× 1
Motor Driver		/	/	× 1
Flashlight Driver		/	/	× 1
Antenna		× 4, Main/Rx-diversity/GNSS/Wi-Fi & Bluetooth	× 4, Main, Rx-diversity, GNSS, Wi-Fi/Bluetooth antennas respectively (SC668S-WF: × 1, Wi-Fi/ Bluetooth antenna)	Cellular antenna × 4, Wi-Fi/Bluetooth antenna × 1, Wi-Fi MIMO antenna × 1, GNSS antenna × 1
Enhanced Features				
BT		Bluetooth 2.1 EDR/3.0 HS/4.2 LE/5.0 LE;	BT2.1+EDR/3.0/4.1 LE/4.2 BLE/5.0	Bluetooth 2.1 EDR/3.0 HS/4.2 LE/5.2 LE
Wi-Fi		Wi-Fi[2]: 2.4 & 5 GHz, 802.11a/b/g/n/ac; 2 × 2 MIMO Wi-Fi	2.4G/5G, 802.11a/b/g/n/ac	2.4 & 5 & 6 GHz, 802.11a/b/g/n/ac/ax; Wi-Fi 6E, 2 × 2 MU-MIMO, DBS
GNSS		GNSS[3]: GPS/GLONASS/BDS/Galileo/QZSS/SBAS	GPS/GLONASS/BeiDou/Galileo/QZSS	GNSS[4]: GPS/GLONASS/BDS/NavIC/Galileo/QZSS/SBAS; L1 + L5
Charge Function		Build-in Charge IC & Fuel Gauge Qualcomm Quick Charge technology	Need external third-party charging chips and meters	Build-in Charge IC & Fuel Gauge Qualcomm Quick Charge technology
Dual LCD		support independent display for 2 LCDs	Supports dual screen display, 1920 × 1200 or 1080 × 2520 (MIPI screen) 1920 × 1080 (DP screen)	/
DSDS		Support Dual SIM Dual Standby	Support Dual-SIM Dual-Standby	Support Dual SIM Dual Standby
Firmware Upgrade		Firmware Upgrade via USB or OTA	Firmware Upgrade via USB or OTA	Firmware Upgrade via USB or OTA
Certifications[5]		CE/GCF/FCC/PTCRB/NCC/AT&T/Verizon/RCM/IC/JATE/TELEC/CCC/ SRRC/NAL/KC/UKCA	CCC/SRRC/NAL/CE/RCM/UKCA/FCC*/IC*/GCF/PTCRB	CE*/GCF*/UKCA*/CCC/ SRRC/ NAL/FCC*/IC*/PTCRB*/Verizon*/ AT&T*/T-Mobile*
Recommended Applications		Smart POS, smart home gateways, smart robots, smart wearables, safety, PDAs & tablets, vending machines, delivery lockers, telematics, mobile computing, in-car video streaming and entertainment systems, etc.		

Note 1: TBD.
Note 2: 2 × 2 MIMO Wi-Fi is not supported on SC66-CE.
Note 3: GNSS is not supported on SC66-MW.
Note 4: GNSS is not supported on SG560D-WF.
Note 5: May depend on modules' variant.

* Planning/Under development

Product		SA800U	SG865W
			
Form Factor		B2B Connector	LGA
Dimensions(mm)		60.0 × 37.0 × 6.55	42.0 × 46.0 × 2.95
Frequency Bands (MHz)	-WF(Global)	- WF (Wi-Fi) only Wi-Fi & BT	- WF* (Wi-Fi) only Wi-Fi & BT
	-AP(Global)	/	/
CPU		Qualcomm SDA845 ARM Coretex technology 4 x Kryo385 Gold@2.649 GHz + 4 x Kryo385 Silver@1.766 GHz	Qualcomm QCS8250 ARM Coretex technology 1 x Kryo585 Goldprime@ 2.842 GHz + 3 x Kryo585 Gold@2.419 GHz + 4 x Kryo585 Silver@ 1.805GHz
GPU		Adreno 630 – 4K 60 fps UI or 2 × 2K 90 fps UI	Adreno 650 at 587 MHz– 4K 60 fps UI or 2 × 2K 60 fps UI
Memory		4 GB LPDDR4X + 64 GB UFS; 8 GB LPDDR4X + 256 GB UFS	8 GB LPDDR5 + 64 GB UFS 2.1
Operating System		Android 10	Android 10
Supply Voltage Range		3.55 V ~ 4.4 V, typ. 3.8 V	3.55 V ~ 4.4 V, typ. 3.8 V
Weight (approx.) g		15.0	TBD
Operating Temperature		-35 °C ~ +75 °C	-35 °C ~ +75 °C
Data Transmission			
LTE (Mbps)		/	/
UMTS		/	/
TD-SCDMA		/	/
CDMA2000		/	/
GSM		/	/
Interfaces			
LCM		2 × 4-lane MIPI DSI; 3840 × 2400 @ 60 fps primary display; 4K @ 60 fps over DP; Wi-Fi display: 4K @ 30 fps	2 × 4-lane MIPI DSI; 5040 × 2160 @ 60 fps with 8-lane MIPI; 2 × (2560 × 2560 @ 60 fps with 4-lane MIPI); 2 × 4K @ 60 fps over DP (MST Mode); Wi-Fi display: 4K @ 60 fps
Camera		3 × 4-lane CSI with C-PHY/ D-PHY + 1 × 2-lane CSI with D-PHY ; 2 × ISP + 1 × Lite ISP: 16 MP (30 fps ZSL) @ 1 × ISP + 16 MP (30 fps ZSL) @ 1 × ISP; Max. 32 MP (30 fps ZSL) @ 2 × ISP	6 × 4-lane MIPI CSI; 2 × Full ISP + 2 × Lite ISP; 2 × Front-end input: 25 MP (4:3 aspect ratio) or 18 MP (16:9 aspect ratio); 2 × Front-end input: Mono/ YUV interface; Max. 64 MP @ 30 fps ZSL @ 2 × ISP
Touch Panel		Capacitive-screen, I2C controls	Capacitive-screen, I2C controls
Audio		Needs external audio codec	Needs external audio codec
Video		Decode: 4K @ 60 fps; H.264 High Profile, H.265 Main 10 Profile and VP9 Profile 2; Encode: 4K @ 60 fps; H.264 High Profile, H.265 Main 10 Profile; Encode: 4K @ 30 fps; VP8; Supports HDR 10-bit video playback (HLG, HDR10); Supports HDR 10-bit capture (HLG)	Encode: 4K @ 120 fps; 8K @ 30 fps; Decode: 4K @ 240 fps; 8K @ 60 fps; H.264 High Profile, H.265 Main 10 Profile,VP8, HDR 10-bit video playback (HLG, HDR10), HDR 10-bit capture (HLG)
USB		× 2 1 × USB 3.1, supports DP over Type-C; 1 × USB 3.1, only supports USB Host mode	2 × USB 3.1, compatible wsplayPor× 2; USB 3.1, compatible with USB 2.0, one of them supports DisplayPort v1.4
I2C		Supported	Supported
UART		× 3, up to 3 Mbps, one of them is used for debugging only	× 3, Up to 3 Mbps, one of them is used for debugging only
SD Card		× 1, SD 3.0, 4-bit SDIO	× 1, SD 3.0, 4-bit SDIO
PWRKEY		Supported	Supported
SPI		Supported	Supported
ADC		Supported	Supported
GPIO		Supported	Supported
PWM		× 2	/
Motor Driver		× 1	× 1
Flashlight Driver		× 3	3 high-current flash LED drivers, which support both flash and torch modes; Up to 1.5 A in total for FLASH_LED1/FLASH_LED2 in flash mode; Up to 0.75 A for FLASH_LED3 in flash mode
WLED Sink		not support	not support
Antenna		× 2, Wi-Fi & Bluetooth antenna connector respectively	× 2, Wi-Fi & Bluetooth antenna connectors
Enhanced Features			
BT		Bluetooth 2.1 EDR/3.0 HS/4.2 LE/5.0 LE	Bluetooth 2.1 EDR/3.0 HS/4.2 LE/5.1 LE
WLAN		2.4 & 5 GHz, 2 × 2 MIMO, 802.11a/b/g/n/ac, DBS	2.4 & 5 GHz, 2 × 2 MIMO, 802.11a/b/g/n/ac/ax, Wi-Fi 6, DBS
GNSS		NA, can be supported by using Quectel 4G/5G/GNSS modules	NA, can be supported by using Quectel 4G/5G/GNSS modules
Charge Function		Build-in Charge IC & Fuel Gauge Qualcomm Quick Charge technology	Used for battery voltage detection, fuel gauge, battery temperature detection
Dual LCD		support independent display for 2 LCDs	support independent display for 2 LCDs
Firmware Upgrade		Firmware Upgrade via USB or OTA	Firmware Upgrade via USB or OTA
Certifications		KC	TBD
Recommended Applications		Infotainment, live video, robotics, gaming, VR, unmanned aerial vehicle control, 3D scanners, gym equipment, virtual coin mining diggers, ARM based computers and servers, etc.	

* Under development

LPWA Modules

Product	BG96	BG95 Series[1]	BG95xA-GL Series
			
Form Factor	LGA	LGA	LGA
Dimensions (mm)	22.5 × 26.5 × 2.3	19.9 × 23.6 × 2.2	19.9 × 23.6 × 2.2 (BG950A-GL/BG951A-GL/BG952A-GL/ BG953A-GL/BG955A-GL)
RAT	LTE Cat M1/ NB1/ EGPRS	LTE Cat M1/Cat NB2/EGPRS	LTE Cat M1/Cat NB1/NB2*; LTE Cat M1/NB1/NB2*/GPRS (BG955A-GL)
Frequency Bands (MHz)	LTE-FDD: B1/2/3/4/5/8/12/13/18/19/20/26*/28; EGPRS: 850/900/1800/1900MHz	LTE-FDD: B1/2/3/4/5/8/12/13/18/19/20/25/26(Cat M1 Only)/27 (Cat M1 Only)/28/31/66/71 (Cat NB2 Only)/72/73/85/ 86[2](Cat NB2 only)/87[2]/88[2]; EGPRS: 850/900/1800/1900MHz	LTE-FDD: B1/2/3/4/5/8/12/13/17(Cat NB1/NB2* Only)/18/19/ 20/25/26(Cat M1 Only)/27 (Cat M1 Only)/28/66 (BG950A-GL/ BG951A-GL/BG952A-GL/BG953A-GL); LTE-FDD: B1/2/3/4/5/8/12/13/17(Cat NB1/NB2 Only)/ 18/19/20/25/26(Cat M1 Only)/27 (Cat M1 Only)/28/66; GPRS: 850/900/1800/1900MHz(BG955A-GL)
Weight (approx.) g	3.1	2.15	2.15 (BG950A-GL/BG951A-GL/BG952A-GL/BG953A-GL); 2.05 (BG955A-GL)
Operating Temperature	-35°C ~ +75°C	-35°C ~ +75°C	-35°C ~ +75°C
Extended Temperature	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C
Data Transmission			
LTE Cat M1 data rate (Kbps)	Max. 375 (DL), Max. 375 (UL)	Max. 588 (DL), Max. 1119 (UL)	Max. 588 (DL), Max. 1119 (UL)
LTE Cat NB1 data rate (Kbps)	Max. 32 (DL), Max. 70 (UL)	Max. 32 (DL), Max. 70 (UL)	Max. 27.2 (DL), Max. 62.5 (UL)
LTE Cat NB2 data rate (Kbps)	/	Max. 127 (DL), Max. 158.5 (UL)	Max. 127 (DL), Max. 158.5 (UL)
EDGE data rate (Kbps)	Max. 296 (DL), Max. 236.8 (UL)	Max. 296 (DL), Max. 236.8 (UL)	/
GPRS data rate (Kbps)	Max. 107 (DL), Max. 85.6 (UL)	Max. 107 (DL), Max. 85.6 (UL)	Max. 85.6 (DL), Max. 42.8 (UL)(BG955A-GL)
SMS	•	Point-to-point MO and MT; Text and PDU Mode; SMS Cell Broadcast	Point-to-point MO and MT; Text and PDU Mode; SMS Cell Broadcast
Protocols	PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/NITZ/PING/MQTT(S)/ LwM2M/CoAP(S)/IPv6/DNS/NTP	PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/NITZ/PING/MQTT(S)/ MQTT-SN/LwM2M/CoAP(S)/IPv6/DNS/NTP	PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/NITZ/ PING/MQTT/LwM2M
Interfaces			
(U)SIM	1.8 V/ 3 V	1.8 V	1.8 V
UART	× 3 (MAIN, DEBUG, NMEA)	× 3 (MAIN, DEBUG, NMEA)	× 3 (MAIN, DEBUG, GNSS)(BG950A-GL/BG951A-GL/BG953A-GL/ BG955A-GL); × 2 (BG952A-GL)
USB	USB 2.0 × 1	USB 2.0 × 1	USB 2.0 × 1
I2C	I2C[3] × 1	I2C[3] × 1	I2C* × 2 (BG952A-GL)
ADC	ADC × 2	ADC × 1	ADC × 2
GPIO	GPIO × 2 (I2C and NMEA can be re-configured as GPIO)	GPIO[4] × 9	GPIO × 9 (BG950A-GL/BG951A-GL/BG953A-GL/BG955A-GL); GPIO Max. × 15 (BG952A-GL)
RESET	RESET × 1	RESET × 1	RESET × 1
PCM	PCM[3] × 1	PCM[3] × 1	/
Antenna	Primary, GNSS	Antenna[5]: 2 (for Main Antenna and GNSS Antenna, respectively)	2 (for Main Antenna and GNSS Antenna, respectively)
Enhanced Features			
QuecOpen®	Simplifies the Development of Embedded Applications	Simplifies the Development of Embedded Applications	Simplifies the Development of Embedded Applications (BG952A-GL)
iSIM	/	/	•(BG953A-GL)
DFOTA	•	•	•
GNSS/RIL Driver	Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x/12.x	Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x/12.x	/
NDIS	Windows 7/8/8.1/10/11	/	/
USB Serial Driver	Windows 7/8/8.1/10/11, Linux 2.6 or later, Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x/12.x	Windows 7/8/8.1/10/11, Linux 2.6~5.15, Android 4.x/5.x/6.x/7.x/ 8.x/9.x/10.x/11.x/12.x	/
SIM Detection	•	•	•
GNSS	Optional	Optional	GPS, GLONASS(BG950A-GL/BG952A-GL/BG953A-GL/BG955A-GL); GPS/GLONASS/Galileo/Beidou/QZSS, LTE & GNSS concurrency(BG951A-GL);
Firmware Update	via USB Interface	via USB Interface	via UART/USB*/DFOTA
Electrical Features			
Supply Voltage Range	3.3 ~ 4.3 V, typ. 3.8 V	typ. 3.8 V / typ. 3.3 V [6]	2.2–4.35 V, typ. 3.3 V . (BG950A-GL/BG951A-GL/BG952A-GL/ BG953A-GL); 3.3–4.3 V, typ. 3.8 V (BG955A-GL)
Power Consumption	10 μA@PSM	3.9 μA@PSM[7]	1.5 μA@ PSM (BG950A-GL/BG951A-GL/BG952A-GL/BG955A-GL); TBD (BG953A-GL)
Max Output Power	Power Class 3 23dBm @ LTE Bands	Power Class5 21dBm @ LTE Bands / Power Class3 23dBm@ LTE Bands[8] / Power Class 2 26dBm@ LTE B31/72/73 of BG95-M4/Power Class 2 26dBm@LTE B31*/72*/73*/87*/88* and 23dBm@other LTE Bands of BG95-M9	Power Class 3 23dBm @ LTE Bands
Certifications[9]	Vodafone/Deutsche Telekom/Telefónica/ Verizon/AT&T/ T-Mobile/Telus/Rogers/ SKT/LGU+/NTT DOCOMO/SoftBank/ KDDI/ Telstra/GCF/CE/FCC/PTCRB/IC/IFETEL/CCC/KC/ NCC/JATE/ TELEC/RCM/NBTC/IMDA/ICASA/U.S._Cellular	Vodafone/Deutsche Telekom/Verizon/AT&T/T-Mobile/SKT/NTT DOCOMO/SoftBank*/KDDI/Telstra/CCC/GCF/CE/FCC/PTCRB/IC/ Anatel/KC/NCC/JATE/TELEC/RCM/NBTC*/IMDA/RoHS/ATEX/PEN/ KT/UKCA/LGU+/Telefónica/U.S.Celluar/Telus/Orange/Rogers/ IMDA/IFETEL	Vodafone /Deutsche Telekom/Verizon*/AT&T/T-Mobile*/SKT*/ LGU+/NTT DOCOMO*/KDDI*/Telstra*/GCF/CE/FCC/PTCRB/IC/KC/ JATE/TELEC/RCM/KT
Recommended Applications	Gas detectors, soil PH testers, optical sensors, machinery alarm systems, irrigation controllers, elevators, asset tracking electronics, person/pet tracking, water/gas metering, smart parking systems, fire hydrants, smoke alarms, smart bins, street lighting		

Note 1: For different variants, please refer to the BG95 specification.
Note 2: BG95-M9 support B86/B87/B88.
Note 3: For Voice Call only.
Note 4: BG95-MF provides 7 GPIO Interfaces, please refer to HD for details.
Note 5: BG95-MF provides 3 antenna interfaces, please refer to HD for details.
Note 6: For the supply voltage of different variants, please refer to the BG95 Hardware Design document.
Note 7: For the power consumption of different variants, please refer to the BG95 Hardware Design document.
Note 8: For the max output power of different variant, please refer to BG95 Hardware Design document.
Note 9: May depend on modules' variant.

* Under development
• Supported

Product	BG600L-M3	BG77	BG77xA-GL Series
			
Form Factor	LGA	LGA	LGA
Dimensions (mm)	16.0 × 18.7 × 2.1	12.9 × 14.9 × 1.7	12.9 × 14.9 × 1.9
RAT	LTE Cat M1/Cat NB2/EGPRS	LTE Cat M1/Cat NB2	LTE Cat M1/Cat NB1/NB2*
Frequency Bands (MHz)	LTE-FDD: B1/2/3/4/5/8/12/13/18/19/20/25/26(Cat M1 Only)/ 27 (Cat M1 Only)/28/66/71 (Cat NB2 Only)/85; EGPRS: 850/900/1800/1900MHz	LTE-FDD: B1/2/3/4/5/8/12/13/18/19/20/25/26(Cat M1 Only)/ 27 (Cat M1 Only)/28/66/71 (Cat NB2 Only)/85*	LTE-FDD: B1/2/3/4/5/8/12/13/17 (Cat NB1/NB2*Only)/18/19/ 20/25/26 (Cat M1 Only)/27 (Cat M1 Only)/28/66
Weight (approx.) g	1.25	0.73	0.85
Operating Temperature	-35°C ~ +75°C	-35°C ~ +75°C	-35°C ~ +75°C
Extended Temperature	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C
Data Transmission			
LTE Cat M1 data rate (Kbps)	Max. 588 (DL), Max. 1119 (UL)	Max. 588 (DL), Max. 1119 (UL)	Max. 588 (DL), Max. 1119 (UL)
LTE Cat NB1 data rate (Kbps)	Max. 32 (DL), Max. 70 (UL)	Max. 32 (DL), Max. 70 (UL)	Max. 27.2 (DL), Max. 62.5 (UL)
LTE Cat NB2 data rate (Kbps)	Max. 127 (DL), Max. 158.5 (UL)	Max. 127 (DL), Max. 158.5 (UL)	Max. 127 (DL), Max. 158.5 (UL)
EDGE data rate (Kbps)	Max. 296 (DL), Max. 236.8 (UL)	/	/
GPRS data rate (Kbps)	Max. 107 (DL), Max. 85.6 (UL)	/	/
SMS	Point-to-point MO and MT; SMS Cell Broadcast; Text and PDU Mode	Point-to-point MO and MT; SMS Cell Broadcast; Text and PDU Mode	Point-to-point MO and MT; SMS Cell Broadcast; Text and PDU Mode
Protocols	PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/NITZ/PING/MQTT(S)/ MQTT-SN/LwM2M/CoAP(S)/IPv6/DNS/NTP	PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/NITZ/PING/MQTT(S)/ MQTT-SN/LwM2M/CoAP(S)/IPv6/DNS/NTP	TCP/PPP/UDP/SSL/MQTT/FTP(S)/HTTP(S)/LwM2M/IPv4/IPv6/TLS/ DTLS/CoAP/NITZ/Polte(BG770A-GL/BG772A-GL); PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/NITZ/PING/MQTT/ LwM2M(BG773A-GL)
Interfaces			
(U)SIM	1.8 V	1.8 V	1.8 V
UART	× 3 (MAIN, DEBUG, NMEA)	× 3 (MAIN, DEBUG, NMEA)	× 3 (MAIN, DEBUG, AUX)(BG770A-GL); × 3 (MAIN, DEBUG, GNSS) (BG772A-GL/BG773A-GL)
USB	USB 2.0 × 1	USB 2.0 × 1	USB 2.0 × 1
I2C	I2C[1] × 1	I2C[1] × 1	I2C* × 2(BG772A-GL)
ADC	ADC × 1	ADC × 2	ADC × 2
GPIO	GPIO × 6	GPIO × 7	GPIO × 7(BG770A-GL/BG773A-GL); GPIO Max. x 15 (BG772A-GL)
RESET	RESET × 1	RESET × 1	RESET × 1
PCM	PCM[1] × 1	PCM[1] × 1	/
Antenna	2 (for Main Antenna and GNSS Antenna, respectively)	2 (for Main Antenna and GNSS Antenna, respectively)	2 (for Main Antenna and GNSS Antenna, respectively)
Enhanced Features			
QuecOpen®	Simplifies the Development of Embedded Applications	Simplifies the Development of Embedded Applications	Simplifies the Development of Embedded Applications (BG772A-GL)
iSIM	/	/	•(BG773A-GL)
DFOTA	•	•	•
GNSS/RIL Driver	Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x/12.x	Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x/12.x	/
USB Serial Driver	Windows 7/8/8.1/10/11, Linux 2.6~5.15, Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x/12.x	Windows 7/8/9/10/11, Linux 2.6~5.15, Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x/12.x	/
SIM Detection	•	•	•
GNSS	Optional	Optional	GPS, GLONASS
RAI	/	/	/
Firmware Update	via USB Interface	via USB Interface	via UART/USB*/DFOTA
Electrical Features			
Supply Voltage Range	3.3 V~4.3 V, typ. 3.8 V	2.6 V~4.8 V, typ. 3.3 V[2]	VBAT_BB: 2.2~4.35 V, typ. 3.3 V VBAT_RF: 3.1~4.2 V, typ. 3.3 V
Power Consumption	4.0 μA@PSM	3.44 μA@PSM	1.4 μA@PSM (BG770A-GL/BG772A-GL); TBD(BG773A-GL)
Max Output Power	Power Class 5 21dBm @ LTE Bands	Power Class 5 21dBm @ LTE Bands	Power Class 3 23dBm @ LTE Bands
Certifications[3]	Vodafone/Deutsche Telekom/Telefónica*/Verizon*/AT&T*/ T-Mobile/CCC*/GCF/CE/FCC/RCM/PTCRB/IC/RoHS/Anatel/UKCA	Vodafone/Deutsche Telekom/Verizon/AT&T/T-Mobile/GCF/ CE/FCC/PTCRB/IC/KC*/NCC/JATE/TELEC/RCM/NBTC*/Telus/USCC/ RoHS/UKCA	FCC/CE/IC/RCM/KC/TELEC/JATE/Deutsche Telekom/SKT/ Vodafone/PTCRB/GCF/AT&T/Verizon/RoHS/KT/LGU+/NTT DOCOMO/KDDI*/Telstra*/ICASA/Softbank*/T-Mobile*
Recommended Applications	Gas detectors, soil PH testers, optical sensors, machinery alarm systems, irrigation controllers, elevators, asset tracking electronics, person/pet tracking, water/gas metering, smart parking systems, fire hydrants, smoke alarms, smart bins, street lighting		

Note 1: For Voice Call only.
Note 2: please refer to the Hardware Design manual for more specific requirements on the minimum power supply voltage.
Note 3: May depend on modules' variant.

* Under development
• Supported

LPWA Modules

Product	BC660K-GL	BC65	BC92
			
Form Factor	LCC	LCC	LCC
Dimensions (mm)	15.8 × 17.7 × 2.0	15.8 × 17.7 × 2.2	19.9 × 23.6 × 2.2
RAT	LTE Cat NB2	LTE Cat NB2	LTE Cat NB2/GSM
Frequency Bands (MHz)	LTE Cat NB2: B1/2/3/4/5/8/12/13/17/18/19/20/25/28/66/70/85	LTE Cat NB2: B1*/3/5/8/20/28	LTE Cat NB2: B3/5/8/20/28; GSM: 850/900/1800/1900MHz
Weight (approx.) g	1.0±0.2	1.2±0.2	1.8±0.1
Operating Temperature	-35°C ~ +75°C	-25°C ~ +75°C	-25°C ~ +75°C
Extended Temperature	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C
Data Transmission			
LTE Cat NB1 data rate (Kbps)	Single-tone: 25.5 (DL) /16.7 (UL) Multi-tone: 127 (DL) /158.5 (UL)	Single-Tone: Max. 25.5 (DL)/16.7 (UL) Multi-Tone: Max. 25.5 (DL)/62.5 (UL)	Single-Tone: Max. 25.5 (DL)/16.7 (UL) Multi-Tone: Max. 25.5 (DL)/62.5 (UL)
LTE Cat NB2 data rate (Kbps)	Max. 127 (DL)/158.5 (UL)	Max. 127 (DL)/158.5 (UL)	Max. 127 (DL)/158.5 (UL)
GPRS data rate (Kbps)	/	/	GPRS Class 12: Max. 85.6 (DL)/85.6 (UL)
SMS	•	•	•
Protocols	UDP/TCP/PING/LwM2M/SNTP/MQTT/MQTTS/SSL/TLS	UDP/TCP/SNTP/MQTT/CoAP/PPP/TLS/DTLS/CoAPS/HTTP/HTTPS	UDP/TCP/SNTP/PPP/MQTT/CoAP/HTTP/HTTPS/FTP/CoAPS
Interfaces			
(U)SIM	1.8 V/3.0 V	1.8 V/3.0 V	1.8 V/3.0 V
UART	UART × 2 (for QuecOpen® version, × 3)	× 3 (MAIN, DEBUG, AUX)	× 2 (MAIN, DEBUG)
I2C	× 1 (QuecOpen Version only)	/	/
ADC	ADC × 1 (for QuecOpen® version, × 2)	× 1	× 1
GPIO	GPIO × 4 (for QuecOpen® version, × 13)	/	/
RESET(RESET_N)	× 1	× 1	× 1
SPI	SPI× 1 (for QuecOpen® version only)	/	/
PWM	× 1 (QuecOpen Version Only)	/	/
RI	× 1	× 1	× 1
PSM_EINT	PSM_ENIT × 1 (for QuecOpen® version, × 2)	× 1	× 1
I2S	/	/	/
NETLIGHT	× 1	/	/
WAKEUP_OUT	/	/	/
Antenna	Primary	Primary	Primary
Enhanced Features			
QuecOpen®	•	/	/
DFOTA	•	•	•
BLE 5.0	/	/	/
Firmware Update	via UART/DFOTA	via UART/DFOTA	via UART/DFOTA
RAI	•	•	•
Location Based Service	/	ECID, OTDOA	ECID, OTDOA
eSIM*	Optional	Optional	Optional
Electrical Features			
Supply Voltage Range	2.2~4.3 V, typ. 3.3 V	3.2 V~4.2 V, typ. 3.8 V	3.4 V~4.2 V, typ. 3.8 V
Power Consumption	800 nA @ PSM	4 μA @PSM	4 μA @PSM
Certifications[1]	GCF/CE/PTCRB/FCC/IC/Anatel/KC/RCM/IMDA/NBTC/ICASA/ATEX/JATE*/TELEC*/Vodafone/Deutsche Telekom/Verizon/AT&T/T-Mobile/KT/LGU+/Telefónica/Orange/Optus/Telstra*	CE/RCM/GCF/Deutsche Telekom/Vodafone/Telefónica	CE/RCM/GCF/Vodafone/MTN/ICASA/Vodacom/Anatel/Deutsche Telekom
Recommended Applications	Gas detectors, soil PH testers, optical sensors, machinery alarm systems, irrigation controllers, elevators, asset tracking, electronics, person/pet tracking, water/gas metering, smart parking systems, fire hydrants, smoke alarms, smart bins, street lighting		

Note 1: May depend on modules' variant.

* Under development
• Supported

Automotive Modules

Product	AG15	AG18
		
Form Factor	LGA	LGA
Dimensions (mm)	32.0 × 28.0 × 2.85	32.0 × 28.0 × 2.85
C-V2X TDD	B47 for Global	B47
	B46D for Japan (optional)	B47
Frequency Bands (MHz) -(Global)	/	B47
Weight (approx.) g	5.735	TBD
Operating Temperature	-35 °C ~ +75 °C	-35 °C ~ +75 °C
Data Transmission		
LTE data rate (Mbps)	C-V2X TDD: Max. 26 (TX)/Max. 26 (RX)	/
Interfaces		
UART	× 2	×2
USB	USB2.0/3.0×1	×1 (USB 3.0/ 2.0)
PCIe	× 1	×1
SPI	× 2	×1
I2C	× 2	×1
1PPS	× 1	×1
ADC	× 2	×2
GPIO	× 4	×4
Antenna	Main/Rx-diversity/GNSS Antenna Interfaces	× 3 (C-V2X (× 2) and GNSS Antenna Interfaces)
Enhanced Features		
High Security	•	*
Secure Boot	•	•
SELinux*	•	*
ESD/EMI Protection	•	/
QDR(optional)	/	•
PPE(RTK)(optional)	/	*
Temperature Management	/	•
DFOTA	/	•
GNSS	•	•
Code/User Data Backup	/	•
Realized through Internal Specific Circuits and Components	•	/
Software Features		
USB Serial Driver	/	•
Windows 7/8/8.1/10, Windows CE 5.0/6.0/7.0*	/	•
Linux 2.6/3.x/4.1~4.14	/	•
PCIe Driver	•	TBD
Protocol	QMI (Qualcomm MSM Interface)	/
Electrical Features		
Output Power	Class 3 (23dBm±2dB) for C-V2X	Class 3 (23dBm±2dB) for C-V2X
Supply Voltage	VBAT_BB: 3.3 V~4.3 V, typ. 3.8 V VBAT_RF: 4.75 V~5.25 V, typ. 5.0 V	VBAT_BB: 3.3~4.3 V, typ. 3.8 V VBAT_RF: 4.75~5.25 V, typ. 5.0 V
Power Consumption	80 μA@PowerOff	TBD
Sensitivity	C-V2X TDD B47: -96dBm ; C-V2X TDD B46D: -96dBm	2RX: -97.5dBm SISO: TBD
Certifications	SRRC	SRRC*, CE*
Recommended Applications	Automotive	V-boxes, T-boxes

Product	AG215S
	
Form Factor	LGA
Dimensions (mm)	AG215S-CN/ -GL: 33.0 × 33.5 × 3.25 ; AG215S-GLR: 35.0 × 33.5 × 3.25
Weight (approx.) g	7.07
Operating Temperature	-40 °C ~ +85 °C
Application Processor Module	Based on Automotive Grade Application Processor for C-V2X and Telematics
Interfaces	
SDIO	•
PCIe	PCIe Gen2*
USB	USB 3.0*1 and USB2.0*1
RGMII	RGMII up to 1 Gbps
UART	•
SPI	•
I2C	•
1PPS (Input),	•
ADC	•
Enhanced Features	
Powerful Cores	64-bit ARM Cortex-A53 Microprocessor Cores, 1.4 GHz Dual-Core Processor (Quad-Core Processor Optional), Optimized communication performance with Quectel AG520R/AG550Q/AG553Q, Dedicated AP for ITS stack and applications
Embedded ECDSA Hardware Engine	Supports NIST p-384, NIST p-256, Brainpool p-384, Brainpool p-256, SM2 256 bit Curves
Scalable ECDSA Capability	Up to 2500TPS through embedded engine and CPU (based on NIST p-256 and SM2)
Hardware Crypto Engine Embedded(Optional)	Secret key generation and storage, digital signature and verification, Up to 2000TPS ECSDA capability (based on NIST p-256 and SM2)

* Under development
• Supported

Automotive Modules

Product		AG35
		
Form Factor		LGA
Dimensions (mm)		37.5 × 33.0 × 3.0
4G		LTE Cat 4
Frequency Bands (MHz)	-E (EMEA/Korea/Australia/ India/Southeast Asia)	LTE-FDD: B1/3/5/7/8/20/28; LTE-TDD: B38/40; WCDMA: B1/5/8; GSM: B3/8
	-CE (China/India)	LTE-FDD: B1/3/5/8; LTE-TDD: B34/38/39/40/41; WCDMA: B1/8; TD-SCDMA: B34/39; CDMA2000 1X/EVDO(Optional): BC0; GSM: B3/8
	-NA (North America)	LTE-FDD: B2/4/5/7/12(B17)/13; WCDMA: B2/4/5; GSM: B2/5
	-J (Japan)	LTE-FDD: B1/3/5/8/9/19/21/28; LTE-TDD: B41; WCDMA: B1/3/5/6/8/19
	-LA (Latin America)	LTE-FDD: B1/2/3/4/5/7/8/28; WCDMA: B1/2/3/4/5/8; GSM: B2/3/5/8
Weight (approx.) g		8.1
Operating Temperature		-40°C ~ +85°C
Data Transmission		
LTE data rate (Mbps)		LTE-FDD: Max. 150 (DL)/ Max. 50 (UL) ; LTE-TDD: Max. 130 (DL)/ Max. 30 (UL)
DC-HSPA+ data rate (Mbps)		Max. 42 (DL)/ Max. 5.76 (UL)
WCDMA data rate (Kbps)		Max. 384 (DL)/ Max. 384 (UL)
TD-SCDMA data rate (Mbps)		Max. 4.2 (DL)/ Max. 2.2 (UL)
EDGE data rate (Kbps)		Max. 296 (DL)/ Max. 236.8 (UL)
GPRS data rate (Kbps)		Max. 107 (DL)/ Max. 85.6 (UL)
SMS		Point-to-point MO/MT, SMS Cell Broadcast, Text and PDU Mode
Protocols		TCP/UDP/PPP/PING/FTP(S)/HTTP(S)/SMTP/SSL/TLS/MMS/NTP/FILE/QMI
Interfaces		
(U)SIM		× 1 (Support 1.8 V/ 3 V USIM/ SIM Cards)
UART		× 3 (for Main UART/ BT/ Debug Functions)
HSIC		× 1
USB		USB 2.0 × 1 (with High Speed up to 480Mbps)
IIC		× 2 (1 for PCM)
SGMII		× 1
SDIO		× 2 for Wi-Fi and eMMC
SPI		SPI > 1 (for QuecOpen Version Only)
Audio Digital (PCM)		× 1
ADC		× 3, 15bits
GPIO		GPIO >15 (for QuecOpen Version Only)
Antenna		Main, Rx-diversity and GNSS
Enhanced Features		
QuecOpen® (Open Linux)		•
eCall		•
Era Glonass		•
Multi-APN		•
Temperature Management		•
DFOTA		•
Voice over USB (USB Audio)		•
QDR		Optional
PPE (RTK)		Optional (Support only in China)
GNSS		GPS/GLONASS/Beidou/Galileo/QZSS
Advanced Security Feature		
TrustZone		•
Secure Boot		•
Code/User Data Backup		•
Software Features		
RIL Driver/ GNSS Driver		Android 4.x~9.x
RNDIS Driver		Windows 7/8/8.1/10, Linux 2.6~5.4
ECM Driver/ Gobinet Driver		Linux 2.6~5.4
QMI_WWAN Driver		Linux 3.4~5.4
USB Serial Driver		Windows 7/8/8.1/10, Linux 2.6~5.4, Android 4.x~9.x
Electrical Features		
Supply Voltage Range		3.3 V~4.3 V, typ. 3.8 V
Power Consumption		20 μA @Power off/ 1.9 mA @LTE Sleep, PF=128/1.6 mA @LTE Sleep, PF=256/ 22 mA @Idle, Typ.
Certifications[1]		CCC/SRRC/NAL/GCF/CE/FCC/KC/RCM/Anatel/KT/STK*/LGU+*/PTCRB/IC/AT&T/ Rogers/T-Mobile/Verizon/JATE/TELEC/NTT DOCOMO
Recommended Applications		Automotive

Note 1: May depend on modules' variant.

* Under development
• Supported

Product		AG52xR (x=0, 1, 5, 9)
		
Form Factor		LGA
Dimensions (mm)		42.0 × 38.0 × 2.65
4.5G		-CN Cat 6; -EU/NA/JP Cat 12, Cat 16, Cat 9, Cat 6 as option
Frequency Bands (MHz)	-CN(China)	LTE: B1/3/5/7/8/34/38/39/40/41; UMTS: B1/8; CDMA(Optional): BC0; GSM: 1800MHz/900MHz
	-EU(EMEA/ Korea/ Brazil/ India/ Australia)	LTE: B1/3/5/7/8/20/28/32(DL)/38/40/41; UMTS: B1/3/5/8; GSM: 1800MHz/900MHz
	-NA(North America)	LTE-FDD: B2/4/5/7/12/13/14/25/26/29[1]/30*[1]/66/71
	-JP(Japan)	LTE-FDD: B1/3/5/8/9/11/18/19/21/28; LTE-TDD: B41; WCDMA: B1/3/5/8/9/19
	-GL(Global)	LTE-FDD: B1/2/3/4/5/7/8/9/11/12/13/18/19/20/21/25/26/28/29[1]/30[1 2]/32[1]/66/71; LTE-TDD: B34/38/39/40/41; WCDMA: B1/2/3/4/5/6/8/19; GSM: 850/900/1800/1900MHz
Weight (approx.) g		9.23
Operating Temperature		-40°C ~ +85°C (eCall: +95°C)
Data Transmission		
LTE data rate (Mbps)		AG521R series/AG525R series: LTE Cat 12: LTE-FDD: Max. 600 (DL)/150 (UL), LTE-TDD: Max. 410 (DL)/90 (UL) LTE Cat 6: LTE-FDD: Max. 300 (DL)/50 (UL), LTE-TDD: Max. 226 (DL)/28 (UL) AG520R series: LTE Cat 12: LTE-FDD: Max. 600 (DL)/75 (UL), LTE-TDD: Max. 410 (DL)/45 (UL) LTE Cat 6: LTE-FDD: Max. 300 (DL)/50 (UL), LTE-TDD: Max. 226 (DL)/28 (UL)
DC-HSPA+ data rate (Mbps)		Max. 42 (DL)/Max. 5.76 (UL)
WCDMA data rate (Kbps)		Max. 384 (DL)/Max. 384 (UL)
TD-SCDMA data rate (Mbps)		/
EDGE data rate (Kbps)		Max. 296 (DL)/Max. 236.8 (UL)
GPRS data rate (Kbps)		Max. 107 (DL)/Max. 85.6 (UL)
C-V2X data rate (Mbps)		Max. 30 (Tx)/Max. 30(Rx)
SMS		Point-to-point MO and MT, SMS Cell Broadcast, Text and PDU Mode
Protocols		TCP/UDP/PPP/PING/FTP(S)/HTTP(S)/SMTP/SSL/TLS/MMS/NTP/DTMF*/FILE/QMI
Interfaces		
(U)SIM		/
USIM		× 1 (default), × 2 (optional)
UART		3 × UARTs
USB		× 1
SDIO		× 1 (eMMC)
SPI		× 1
I2S/PCM		× 1 I2S, × 1 PCM
I2C		× 1
RGMII		× 1
ADC		× 2
PCIe		× 1
GPIO		× 8 (Only Open)
JTAG/QDSS		Yes
RESET		Yes
Antenna		5 (2 × 2 MIMO), Reserve for 7 antennas(4 × 4 MIMO) as option
Enhanced Features		
QuecOpen® (Open Linux)		•
PCIe for WLAN Function		•
UART/PCM for Bluetooth Function		•
Gigabit Ethernet		Optional
eCall		•
Multi-APN		•
Temperature Management		•
DFOTA		•
eSIM (eUICC)		Optional
(U)SIM Detection		•
QDR		Optional
PPE (RTK)		Optional
GNSS		GPS/GLONASS/BeiDou/Galileo/QZSS
ESD/EMI Protection		Realized through Internal Specific Circuits and Components (Electrostatic Discharge Conforms to ±10KV air discharge and ±6KV of contact discharge)
C-V2X		Optional
QDR 3.0 (External IMU Required)		Optional
Multi-Frequency GNSS (L1/L5)		Optional
Advanced Security Feature		
TrustZone		TrustZone*/ TPM*: •
Secure Boot		Secure Boot*: •
SE-Linux		•
Code/User Data Backup		•
Software Features		
RNDIS Driver		Windows 7/8/8.1/10, Linux 2.6~5.12
ECM Driver/ Gobinet Driver		Linux 2.6~5.12
QMI_WWAN Driver		Linux 3.4~5.12
USB Serial Driver		Windows 7/8/8.1/10, Linux 2.6~5.12
Electrical Features		
Supply Voltage Range		VBAT_BB/VBAT_RF: 3.3 V~4.3 V (typ. 3.8 V) , VBAT_C-V2X: 4.75 V~5.25 V (typ. 5.0 V)
Power Consumption		0.021 mA@Power off/ 2.03 mA@LTE Sleep, PF=128/1.61 mA @LTE Sleep, PF=256; 15.9 mA@Idle, PF=64/27.2 mA@Idle, PF=64, USB Active
Certifications[3]		CCC/SRRC/NAL/FCC/IC/PTCRB/GCF/CE/RCM/Verizon/AT&T/T-Mobile/Telus/KT/NTT DOCOMO/Telstra/UKCA/IFETEL/KC/NCC/JATE/TELEC
Recommended Applications		Automotive

Note 1: LTE-FDD B29, B30 and B32 support Rx only.
Note 2: LTE-FDD B30 is subject to carrier's deployment.
Note 3: May depend on modules' variant.

* Under development
• Supported

Automotive LTE-A Modules

Product		AG519M
		
Form Factor		LGA
Dimensions (mm)		42.0 × 38.0 × 3.05
4G		LTE Cat 6
Frequency Bands (MHz)	-CN (China/India)	LTE-FDD: B1/3/5/8; LTE-TDD: B34/38/39/40/41; WCDMA: B1/8; GSM: 900/1800MHz
	-EU (EMEA/ Korea/ Australia/Southeast Asia/ Brazil)	LTE-FDD: B1/3/5/7/8/20/28; LTE-TDD: B38/41; WCDMA: B1/5/8; GSM: 900/1800MHz
	-NA (North America/ Mexico/Latin America)	LTE-FDD: B2/4/5/7/12/13/17/28/29[1]/30[1]/66/71; WCDMA: B2/4/5; GSM: 850/1900MHz
	-JP (Japan)	LTE-FDD: B1/3/5/7/8/9/11/19/21/28; LTE-TDD: B41; WCDMA:B1/3/5/8/9/19
Weight (approx.) g		10
Operating Temperature		-40 °C ~ +85 °C (eCall: +95 °C)
Data Transmission		
LTE FDD Data Rate (Mbps)		Max. 300 (DL)/ Max. 50 (UL)
LTE TDD Data Rate (Mbps)		Max. 240 (DL)/ Max. 30 (UL)
DC-HSDPA/HSUPA Data Rate (Mbps)		Max. 42 (DL)/ Max. 5.76 (UL)
WCDMA Data Rate (Kbps)		Max. 384 (DL)/ Max. 384 (UL)
EDGE Data Rate (Kbps)		Max. 236.8 (DL)/ Max. 236.8 (UL)
GPRS Data Rate (Kbps)		Max. 85.6 (DL)/ Max. 85.6 (UL)
SMS		Point-to-point MO and MT; SMS Cell Broadcast; Text and PDU Mode
Protocols		TCP/UDP/PPP/PING/FTP(S)/HTTP(S)/SMTP/SSL/TLS/MMS/NTP/DTMF*/FILE
Interfaces		
(U)SIM		× 2
UART		× 3
USB 2.0/3.1		× 1
PCIe/USB 3.0 (PCIe by default)		× 1
IIC		× 2
RGMII		× 1
SDIO		× 1
SPI		× 3
ADC		× 3
GPIO		× 15
RESET_N		× 1
Antenna		Main × 1; Diversity × 1; Wi-Fi/BT × 1; GNSS × 1
Enhanced Features		
QuecOpen® (Open Linux)		•
eCall		•
Dual/AB System*		•
eSIM (eUICC)		•
(U)SIM Detection		•
Temperature Management		•
GNSS		GPS/ GLONASS/ BeiDou/ Galileo
ESD/EMI Protection		Realized through Internal Specific Circuits and Components (Electrostatic Discharge Conforms to ±12KV air discharge and ±8KV of contact discharge)
Gigabit Ethernet		Optional
RTK/ADR		Optional
Multi-Frequency GNSS (L1/L5)		Optional
UART Interface for BT Function		Optional
Advanced Security Feature		
TrustZone/ TPM*		•
Secure Boot		•
SE-Linux		•
Software Features		
RIL Driver		Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x
GNSS Driver		Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x
RNDIS		Windows 7/8/8.1/10, Linux 2.6~5.0
ECM		Linux 2.6~5.0
Gobinet		Linux 2.6~5.0, Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x
QMI_WWAN Driver		Linux 3.4~5.0, Android 4.x/5.x/6.x/7.x/8.x/9.x
USB Serial Driver		Windows 7/8/8.1/10, Linux 2.6~5.0, Android 4.x/5.x/6.x/7.x/8.x/9.x
Electrical Features		
Supply Voltage Range		VBAT_BB/VBAT_RF: 3.8 V~4.3 V (typ. 4.0 V)
Power Consumption		TBD @Power off TBD @Sleep, Typ. TBD @Idle
Certifications[2]		CCC/SRRC/NAL/FCC*/IC*/PTCRB*/GCF*/AT&T*/CE*/KC*/JATE*/TELEC*/RCM*
Recommended Applications		Automotive

Note 1: LTE-FDD B29 and B30 support Rx only.
Note 2: May depend on modules' variant.

* Under development
• Supported

Product		AG55xQ
		
Form Factor		LGA
Dimensions (mm)		53.0 × 54.5 × 3.45
5G		Sub-6G
4G		LTE Cat 19
Frequency Bands (MHz)	-CN (China)	5G-FDD: n1[1]/3[1]/28[1]; 5G-TDD: n41/78/79; LTE-FDD: B1/3/5/7/8; LTE-TDD: B34/38/39/40/41; WCDMA: B1/8; GSM: 900/1800 MHz; C-V2X: B47 (For AG550Q/AG553Q Series)
	-EU (EMEA/Australia, Korea/India/ Southeast Asia/Latin America exl. Mexico)	5G-FDD: n1/3/8/20/28; 5G-TDD: n41/78; LTE-FDD: B1/2/3/4/5/7/8/20/28/32[2]; LTE-TDD: B38/40/41/42; WCDMA: B1/3/5/6/8; GSM: 900/1800/850/1900 MHz; C-V2X: B47 (For AG550Q/AG553Q Series)
	-NA (North America/ Mexico)	5G-FDD: n2/5/25/66/71; 5G-TDD: n41/48/77/78; LTE-FDD: B2/4/5/7/12/13/14/17/25/26/28/29[2]/30[2]/66/71; LTE-TDD: B41/48; WCDMA: B2/4/5; GSM: 1900 MHz; C-V2X: B47 (For AG550Q/AG553Q Series)
	-JP* (Japan)	5G-FDD: n1/3; 5G-TDD: n77/78/79; LTE-FDD: B1/3/5/7/8/9/11/19/21/28; LTE-TDD: B41; WCDMA: B1/3/5/8/9/19; C-V2X: B47 (For AG550Q/AG553Q Series)
Weight (approx.) g		21
Operating Temperature		-40°C ~ +85°C (eCall: +95°C)
Data Transmission		
5G SA		Max. 2.0 Gbps (DL)/450 Mbps (UL)
5G NSA		Max. 2.4 Gbps (DL)/550 Mbps (UL)
LTE FDD Data Rate		Max. 1.6 Gbps (DL)/ Max. 200 Mbps (UL)
LTE TDD Data Rate		Max. 1.4 Gbps (DL)/ Max. 120 Mbps (UL)
DC-HSDPA/HSUPA Data Rate(Mbps)		Max. 42 (DL)/ Max. 5.76 (UL)
WCDMA Data Rate (Kbps)		Max. 384 (DL)/ Max. 384 (UL)
EDGE Data Rate (Kbps)		Max. 296 (DL)/ Max. 236.8 (UL)
GPRS Data Rate (Kbps)		Max. 107 (DL)/ Max. 85.6 (UL)
C-V2X Data Rate (Mbps)		Max. 48 (Tx)/ Max. 48(Rx)
SMS		Point-to-point MO and MT; SMS Cell Broadcast; Text and PDU Mode
Protocols		TCP/UDP/PPP/PING/FTP(S)/HTTP(S)/SMTP/SSL/TLS/MMS/NTP/DTMF*/FILE/QMI
Interfaces		
(U)SIM		× 2 (Support 1.8 V/ 3 V USIM/ SIM Cards)
UART		× 3 (Main/Debug/BT UART)
USB 2.0/3.1		× 1
PCIe 3.0		× 1
IIC		× 1
IIS		× 1
RGMII		× 1
SDIO		× 1 (for eMMC)
SPI		× 2
Audio Digital (PCM)		× 1
ADC		× 2 (15-bit)
GPIO		× 15 (For QuecOpen® version only)
RESET_N		× 1 (Reset the module)
Antenna		Main × 1; Diversity × 1; MIMO 3 × 1; MIMO 4 × 1; C-V2X × 2; GNSS × 1; DSDA × 2
Enhanced Features		
QuecOpen® (Open Linux)		•
eCall		•
DFOTA		•
eSIM (eUICC)		Optional
(U)SIM Detection		•
Temperature Management		•
GNSS		GPS/ GLONASS/ BeiDou/ Galileo /QZSS
ESD/EMI Protection		Realized through Internal Specific Circuits and Components (Electrostatic Discharge Conforms to ±12KV air discharge and ±8KV of contact discharge)
Gigabit Ethernet		Optional
C-V2X TDD B47		Optional
DSDA (Dual SIM Dual Activation)		Optional
QDR 3.0 (External IMU Required)		Optional
RTK/PPE		Optional
Multi-Frequency GNSS (L1/L5)		Optional
UART Interface for BT Function		Optional
Advanced Security Feature		
TrustZone/ TPM*		•
Secure Boot		•
SE-Linux		•
Software Features		
RIL Driver		/
GNSS Driver		/
USB ECM Driver		Linux 2.6~5.12
USB RNDIS Driver		Windows 7/8/8.1/10, Linux 2.6~5.12
USB GobiNet Driver		Linux 2.6~5.12
USB QMI_WWAN Driver		Linux 3.4~5.12
USB Serial Driver		Windows 7/8/8.1/10, Linux 2.6~5.12
Electrical Features		
Supply Voltage Range		VBAT_BB/VBAT_RF: 3.3 V~4.3 V (typ. 3.8 V) ; VBAT_C-V2X: 4.75 V~5.25 V (typ. 5.0 V)
Power Consumption		0.04 mA @Power off; 1.4 mA @Sleep(Typ.); 25.0 mA @Idle
Certifications[3]		CCC/SRRC/NAL/FCC*/IC*/PTCRB*/GCF*/AT&T*/CE(AG551Q-EU)/KC*/JATE*/TELEC*/RCM(AG551Q-EU)
Recommended Applications		Automotive

Note 1: n1/n3/n28 for AG55xQ-CN supports SA only.
Note 2: LTE-FDD B29/B30/B32 supports Rx only.
Note 3: May depend on modules' variant.

* Under development
• Supported

Automotive 5G Modules

Product		AG57xQ
		
Form Factor		LGA
Dimensions (mm)		53.0 × 54.5 × 3.45
5G		Sub-6G
4G		LTE Cat 15
Frequency Bands (MHz)	-CN (China)	5G-FDD: n1/3/28A[1]; 5G-TDD: n41/77/78/79[2]; LTE-FDD: B1/3/5/7/8; LTE-TDD: B34/38/39/40/41; WCDMA: B1/8; GSM: 900/1800MHz
	-EU (EMEA/Australia, Korea/India/ Southeast Asia/Latin America exl. Mexico)	5G-FDD: n1/3/5[2]or n71[2]/8/20/28A; 5G-TDD: n38[2]/40[2]/41/78; LTE-FDD: B1/3/5[2]or B71[2]/7/8/20/28A/32[3]; LTE-TDD: B38/40/41/42[2]; WCDMA: B1/3/5[2]/8; GSM: 900/1800MHz
	-NA (North America/ Mexico)	5G-FDD: n2/5/12/25/66/71; 5G-TDD: n41/78; LTE-FDD: B2/4/5/7/12/13/14/17/25/26/29[3]/30[3]/66/71; LTE-TDD: N41; WCDMA: B41
	-ROW (Japan, Latin America)	5G-FDD: n1/3/28; 5G-TDD: n41/77/78/79[2]; LTE-FDD: B1/2/3/4/5/7/8/9/11[2]/18/19/21/26/28; WCDMA: B1/3/5/6/7/8/9/19; GSM: 900/1800/850/1900MHz
Weight (approx.) g		TBD
Operating Temperature		-40 °C ~ +85 °C (eCall: +95 °C)
Data Transmission		
5G SA		2.0 Gbps (DL)/450 Mbps (UL)
5G NSA		2.2 Gbps (DL)/550 Mbps (UL)
LTE FDD Data Rate		800 Mbps (DL)/200 Mbps (UL)
LTE TDD Data Rate		500 Mbps (DL)/120 Mbps (UL)
DC-HSDPA/HSUPA Data Rate(Mbps)		42 Mbps/5.76 Mbps
WCDMA Data Rate (Kbps)		384 kbps (DL)/384 kbps (UL)
EDGE Data Rate (Kbps)		296 kbps (DL)/236.8 kbps (UL)
GPRS Data Rate (Kbps)		107 kbps (DL)/85.6 kbps (UL)
C-V2X Data Rate (Mbps)		48 Mbps (Tx)/48 Mbps (Rx)
SMS		Point-to-point MO and MT, SMS Cell Broadcast, Text and PDU Mode
Protocols		TCP/UDP/PPP/PING/FTP(S)/HTTP(S)/SMTP/SSL/TLS/MMS/NTP/FILE/QMI
Interfaces		
(U)SIM		×2
UART		×3 (Main/Debug/BT UART)
USB 2.0/3.1		×1
PCIe 3.0		×1
IIC		×1
IIS		×1
RGMII		×1
SDIO		×1 (for eMMC/SD)
SPI		×2
Audio Digital (PCM)		×1
ADC		×2 (15-bit)
GPIO		×15 (For QuecOpen® version only)
RESET_N		×1 (Reset the module)
Antenna		Main × 1; Diversity × 1; MIMO 3 × 1; MIMO 4 × 1; C-V2X × 2; GNSS × 1; DSDA × 2
Enhanced Features		
QuecOpen® (Open Linux)		•
eCall		•
DFOTA		•
eSIM (eUICC)		Optional
(U)SIM Detection		•
Temperature Management		•
GNSS		GPS/GLONASS/BeiDou/Galileo/QZSS
ESD/EMI Protection		Realized through Internal Specific Circuits and Components
Gigabit Ethernet		Optional
C-V2X TDD B47		Optional
DSDA (Dual SIM Dual Activation)		Optional
QDR 3.0 (External IMU Required)		Optional
RTK/PPE		Optional
Multi-Frequency GNSS (L1/L5)		Optional
UART Interface for BT Function		Optional
Advanced Security Feature		
TrustZone/ TPM*		•
Secure Boot		•
SE-Linux		•
Software Features		
RIL Driver		Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x
GNSS Driver		Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x
USB ECM Driver		Linux 2.6~5.0
USB RNDIS Driver		Windows 7/8/8.1/10, Linux 2.6~5.0
USB GobiNet Driver		Linux 2.6~5.0, Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x
USB QMI_WWAN Driver		Linux 3.4~5.0, Android 4.x/5.x/6.x/7.x/8.x/9.x
USB Serial Driver		Windows 7/8/8.1/10, Linux 2.6~5.0, Android 4.x/5.x/6.x/7.x/8.x/9.x
Electrical Features		
Supply Voltage Range		VBAT_BB/VBAT_RF: 3.3 V~4.3 V (typ. 3.8 V) VBAT_C-V2X: 4.75 V~5.25 V (typ. 5.0 V)
Power Consumption		TBD @Power off, TBD @Sleep, Typ., TBD @Idle
Certifications[4]		CCC*/SRRC*/NAL*/FCC*/IC*/PTCRB*/GCF*/AT&T*/CE*/KC*/JATE*/TELEC*/RCM*
Recommended Applications		Automotive

Note 1: n28A supports Tx: 703~733 MHz, Rx:758~788 MHz.
Note 2: Optional.
Note 3: LTE-FDD B29/B30/B32 supports Rx only.
Note 4: May depend on modules' variant.

* Under development
• Supported

Automotive 5G Modules

Product		AG568N	AG569N
			
Form Factor		LGA	LGA
Dimensions (mm)		46.9 × 45.0 × 3.25	53.0 × 54.5 × 3.65
5G		Sub-6G	Sub-6G
4G		LTE Cat 18	LTE Cat 18
Frequency Bands (MHz)	-CN (China)	5G-FDD: n1/3/28A[1]; 5G-TDD: n41/78; LTE-FDD: B1/3/5/7/8; LTE-TDD: B34/38/39/40/41; WCDMA: B1/8; GSM: 900/1800MHz	5G-FDD: n1/3/28A[1]; 5G-TDD: n41/78; LTE-FDD: B1/3/5/7/8; LTE-TDD: B34/38/39/40/41; WCDMA: B1/8; GSM: 900/1800MHz
	-EU (EMEA/ Korea/ Australia/ India/ Southeast Asia)	5G-FDD: n1/3/7/8/20/28; 5G-TDD: n77/78; LTE-FDD: B1/3/5/7/8/20/28/32[2]; LTE-TDD: B38/40; WCDMA: B1/3/5/8; GSM: 900/1800MHz	5G-FDD: n1/3/7/8/20/28; 5G-TDD: n77/78; LTE-FDD: B1/3/5/7/8/20/28/32[2]; LTE-TDD: B38/40; WCDMA: B1/3/5/8; GSM: 900/1800MHz
	-NA (North America)	5G-FDD: n2/5/12/25/66/71; 5G-TDD: n41/78; LTE-FDD: B2/4/5/7/12/13/14/17/25/26/29[2]/30[2]/66/71; LTE-TDD: B38/41/48; WCDMA: B2/4/5	5G-FDD: n2/5/12/25/66/71; 5G-TDD: n41/78; LTE-FDD: B2/4/5/7/12/13/14/17/25/26/29[2]/30[2]/66/71; LTE-TDD: B38/41/48; WCDMA: B2/4/5
	-ROW (Japan/ Latin America/ Brazil/ Mexico/...)	5G-FDD: n1/3/20/28; 5G-TDD: n41/77/78/79; LTE-FDD: B1/3/4/5/7/8/9/11[3]/18/19/20/21/26/28; LTE-TDD: B38/40/41; WCDMA: B1/3/5/6/8/9/19; GSM: 900/1800/850/1900 MHz	5G-FDD: n1/3/20/28; 5G-TDD: n41/77/78/79; LTE-FDD: B1/3/4/5/7/8/9/11[3]/18/19/20/21/26/28; LTE-TDD: B38/40/41; WCDMA: B1/3/5/6/8/9/19; GSM: 900/1800/850/1900 MHz
Weight (approx.) g		16	22
Operating Temperature		-40 °C ~ +85 °C (eCall: +95 °C)	-40 °C ~ +85 °C (eCall: +95 °C)
Data Transmission			
5G SA		Max. 4.0 Gbps (DL)/450 Mbps (UL)	Max. 4.0 Gbps (DL)/450 Mbps (UL)
5G NSA		Max. 2.2 Gbps (DL)/480 Mbps (UL)	Max. 2.2 Gbps (DL)/480 Mbps (UL)
LTE FDD Data Rate		Cat18: Max. 1.4 Gbps (DL)/ Max. 200 Mbps (UL) Cat6: Max. 300 Mbps (DL)/ Max. 50 Mbps (UL)	Cat18: Max. 1.4 Gbps (DL)/ Max. 200 Mbps (UL) Cat6: Max. 300 Mbps (DL)/ Max. 50 Mbps (UL)
LTE TDD Data Rate		Cat18: Max. 1.4 Gbps (DL)/ Max. 200 Mbps (UL) Cat6: Max. 300 Mbps (DL)/ Max. 50 Mbps (UL)	Cat18: Max. 1.4 Gbps (DL)/ Max. 200 Mbps (UL) Cat6: Max. 300 Mbps (DL)/ Max. 50 Mbps (UL)
DC-HSDPA/HSUPA Data Rate (Mbps)		Max. 42 (DL)/ Max. 5.76 (UL)	Max. 42 (DL)/ Max. 5.76 (UL)
WCDMA Data Rate (Kbps)		Max. 384 (DL)/ Max. 384 (UL)	Max. 384 (DL)/ Max. 384 (UL)
EDGE Data Rate (Kbps)		Max. 296 (DL)/ Max. 236.8 (UL)	Max. 296 (DL)/ Max. 236.8 (UL)
GPRS Data Rate (Kbps)		Max. 107 (DL)/ Max. 85.6 (UL)	Max. 107 (DL)/ Max. 85.6 (UL)
C-V2X Data Rate (Mbps)		/	TBD
SMS		Point-to-point MO and MT; SMS Cell Broadcast; Text and PDU Mode	Point-to-point MO and MT; SMS Cell Broadcast; Text and PDU Mode
Protocols		TCP/UDP/PPP/PING/FTP(S)/HTTP(S)/SMTP/SSL/TLS/MMS/NTP/DTMF*/FILE	TCP/UDP/PPP/PING/FTP(S)/HTTP(S)/SMTP/SSL/TLS/MMS/NTP/DTMF*/FILE
Interfaces			
(U)SIM		× 2	× 2
UART		× 4	× 3
USB 2.0/3.1		× 1	× 1
PCIe 3.0		× 1	× 1
IIC		× 2	× 2
IIS		× 1	× 1
RGMII		× 1	× 1
SGMII		× 1	× 1
SDIO		× 1	× 1
SPI		× 3	× 2
Audio Digital (PCM)		× 1	× 1
ADC		× 6	× 6
GPIO		× 24	× 21
RESET_N		× 1	× 1
Antenna		Main × 1; Diversity × 1; MIMO 3 × 1; MIMO 4 × 1; GNSS × 1	Main × 1; Diversity × 1; MIMO 3 × 1; MIMO 4 × 1; C-V2X × 2; GNSS × 1
Enhanced Features			
QuecOpen® (Open Linux)		•	•
eCall		•	•
Dual/AB System*		•	•
eSIM (eUICC)		•	•
(U)SIM Detection		•	•
Temperature Management		•	•
GNSS		GPS/ GLONASS/ BeiDou/ Galileo	GPS/ GLONASS/ BeiDou/ Galileo
ESD/EMI Protection		Realized through Internal Specific Circuits and Components (Electrostatic Discharge Conforms to ±12KV air discharge and ±8KV of contact discharge)	Realized through Internal Specific Circuits and Components (Electrostatic Discharge Conforms to ±12KV air discharge and ±8KV of contact discharge)
Gigabit Ethernet		Optional	Optional
C-V2X TDD B47		/	•
RTK/ADR		Optional	Optional
Multi-Frequency GNSS (L1/L5)		Optional	Optional
UART Interface for BT Function		Optional	Optional
Advanced Security Feature			
TrustZone/ TPM*		•	•
Secure Boot		•	•
SE-Linux		•	•
Software Features			
RIL Driver		Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x	Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x
GNSS Driver		Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x	Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x
RNDIS		Windows 7/8/8.1/10, Linux 2.6~5.0	Windows 7/8/8.1/10, Linux 2.6~5.0
ECM		Linux 2.6~5.0	Linux 2.6~5.0
Gobinet		Linux 2.6~5.0, Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x	Linux 2.6~5.0, Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x
QMI_WWAN Driver		Linux 3.4~5.0, Android 4.x/5.x/6.x/7.x/8.x/9.x	Linux 3.4~5.0, Android 4.x/5.x/6.x/7.x/8.x/9.x
USB Serial Driver		Windows 7/8/8.1/10, Linux 2.6~5.0, Android 4.x/5.x/6.x/7.x/8.x/9.x	Windows 7/8/8.1/10, Linux 2.6~5.0, Android 4.x/5.x/6.x/7.x/8.x/9.x
Electrical Features			
Supply Voltage Range		VBAT_BB/VBAT_RF: 3.3 V~4.3 V (typ. 3.8 V)	VBAT_BB/VBAT_RF: 3.3 V~4.3 V (typ. 3.8 V) VBAT_C-V2X: 4.75 V~5.25 V (typ. 5.0 V)
Power Consumption		TBD @Power off TBD @Sleep, Typ. TBD @Idle	TBD @Power off TBD @Sleep, Typ. TBD @Idle
Certifications[4]		CCC/SRRC/NAL/FCC*/IC*/PTCRB*/GCF*/AT&T*/CE*/KC*/JATE*/TELEC*/RCM*	CCC/SRRC/NAL/FCC*/IC*/PTCRB*/GCF*/AT&T*/CE*/KC*/JATE*/TELEC*/RCM*
Recommended Applications		Automotive	Automotive

Note 1: 5G FDD n28A supports Tx at 703~733 MHz and Rx at 758~788 MHz.
Note 2: LTE-FDD B29, B30 and B32 support Rx only.
Note 3: Optional bands. Not supported by default.
Note 4: May depend on modules' variant.

* Under development
• Supported

Wi-Fi & BT Modules

	Automotive Wi-Fi & BT Modules			
Product	**AF20**	**AF50T**	**AF51Y**	**AF56C***
				
Band	2.4/5	2.4/5	2.4/5	2.4/5
MIMO	/	2 × 2 + 2 × 2, Dual MAC, support DBS	2 × 2 + 1 × 1, Dual MAC	2 × 2
WLAN Standard	IEEE 802.11a/b/g/n/ac	IEEE 802.11a/b/g/n/ac/ax	IEEE 802.11a/b/g/n/ac	IEEE 802.11a/b/g/n/ac/ax
BT Standard	BT 5.0	BT 5.2	BT 5.2	BT 5.2
Form Factor	LGA	LGA	LGA	LGA
Dimensions (mm)	15.2 × 17.2 × 2.26	21.5 × 19.5 × 2.3	21.5 × 19.5 × 2.5	23.5 × 21.5 × 2.85
Operating Temperature	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C
Weight (approx.) g	1.26	2.1	2.32	3.11
General Features				
Function	Wi-Fi 2.4GHz + 5GHz & BT 5.0	Wi-Fi 2.4GHz + 5GHz & BT 5.2	Wi-Fi 2.4GHz + 5GHz & BT 5.2	Wi-Fi 2.4GHz + 5GHz & BT 5.2
Modulation Mode	CCK/BPSK/QPSK/16QAM/64QAM/256QAM	CCK/BPSK/QPSK/16QAM/64QAM/256QAM/ 1024QAM	CCK/BPSK/QPSK/16QAM/64QAM/ 256QAM	CCK/BPSK/QPSK/16QAM/64QAM/256QAM/ 1024QAM
Encryption Mode	WEP/TKIP/AES/WPA-PSK/WPA2-PSK	WPA3	WPA3	WPA3
AP (Max Access Point)	16	32	32	16
Operator Mode	AP/STA	AP/STA	AP/STA	AP/STA
I/O Interfaces				
PCIe	/	1 (PCIe 2.0)	1 (PCIe 2.0)	1 (PCIe 2.0)
SDIO	1 (SDIO 3.0)	/	/	1 (optional)
UART	1	1	1	1
PCM	1	1	1	1
Antenna	1 (Wi-Fi & BT Antenna)	2 × Wi-Fi Ant with shared BT Ant, independent ant is optional	2 × Wi-Fi Ant with shared BT Ant, independent ant is optional	2 X Wi-Fi Ant with shared BT Ant, independent BT ant is optional
Electrical Characteristics				
Supply Voltage Range	Core Supply Voltage : 3.3 V; I/O Supply Voltage : 1.8 V	Core Supply Voltage : 0.95 V, 1.35 V, 1.95 V; I/O Supply Voltage : 1.8 V; RF Supply Voltage : 3.85 V	PA Supply Voltage: 2.2 V I/O Supply Voltage: 1.8 V Core Supply Voltage: 1.8 V	Core Supply Voltage: 3.3 V I/O Supply Voltage: 1.8 V
Data Transmission				
802.11a	Max. 54 Mbps	Max. 54 Mbps	Max. 54 Mbps	Max. 54 Mbps
802.11b	Max. 11 Mbps	Max. 11 Mbps	Max. 11 Mbps	Max. 11 Mbps
802.11g	Max. 54 Mbps	Max. 54 Mbps	Max. 54 Mbps	Max. 54 Mbps
802.11n	Max. 135 Mbps	Max. 600 Mbps	Max. 300 Mbps	Max. 600 Mbps
802.11ac	Max. 433 Mbps	Max. 866 Mbps	Max. 866 Mbps	Max. 866 Mbps
802.11ax	/	Max. 1774.5 Mbps	/	Max. 1.2 Gbps
BLE	Max. 1 Mbps	Max. 2 Mbps	Max. 2 Mbps	Max. 2 Mbps
Recommended Applications	Automotive	Automotive	Automotive	Automotive

AF20 can work with Quectel AG35 module to provide Wi-Fi/BT function.
AF50T/AF51Y can work with Quectel AG52xR and AG55xQ module to provide Wi-Fi/BT function.
AF56C* can work with Quectel AG56xN module to provide Wi-Fi/BT function.

* Under development

	Automotive Wi-Fi & BT Modules			
Product	AH20C	AF31G	AF66T	AF68E*
				
Band	2.4	/	/	2.4/5/6
MIMO	/	/	/	2 × 2 + 2 × 2, Dual MAC, support BDS
WLAN Standard	/	IEEE 802.11 a/b/g/n/ac	IEEE 802.11 a/b/g/n/ac/ax	IEEE 802.11a/b/g/n/ac/ax
BT Standard	BT 5.2	/	/	BT 5.3
Form Factor	LGA	LGA	LGA	LGA
Dimensions (mm)	13.0 × 13.0 × 2.45	23.0 × 23.0 × 3.0	23.0 × 23.0 × 3.0	23.0 × 23.0 × 3.0
Operating Temperature	-40°C ~ +85°C	-40 °C ~ +85 °C	-40 °C ~ +85 °C	-40° C ~ +85°C
Weight (approx.) g	0.71	3.11	3.36	TBD
General Features				
Function	BT 5.0	Wi-Fi 2.4 GHz/5 GHz	Wi-Fi 2.4 GHz/5 GHz	Wi-Fi 2.4GHz + 5GHz + 6GHz & BT 5.3
Modulation Mode	GFSK/π/4-DQPSK/8-DPSK/Gaussia	CCK/DSSS/OFDM/BPSK/QPSK/QAM	Wi-Fi: DSSS/CCK/OFDM/OFDMA/BPSK/QPSK/QAM/ BT: GFSK/Π/4 DQPSK/8DPSK	CCK/BPSK/QPSK/16QAM/64QAM/256QAM/ 1024QAM/4096QAM
Encryption Mode	/	WPA 3	WPA 3	WPA 3
AP (Max Access Point)	/	10	32	32
Operator Mode	/	AP/STA	AP/STA	AP/STA
I/O Interfaces				
PCIe	/	1	1	PCIe Gen3
SDIO	/	/	/	/
UART	1	1	1	1
PCM	1	1	1	1
Antenna	1 BT Ant	2×Wi-Fi Ant with shared BT Ant, independent ant is optional	2×Wi-Fi Ant with shared BT Ant, independent ant is optional	2×Wi-Fi Ant with shared BT Ant, independent ant is optional
Electrical Characteristics				
Supply Voltage Range	Core Supply Voltage: 3.3 V I/O Supply Voltage: 1.8 V	VDD_RF: 3.14–3.46 V, typ. 3.3 V VDD_IO: 1.71–1.89 V, typ. 1.8 V	VDD_RF: 3.3–4.25 V, typ. 3.85 V VDD_CORE: 1.90 V, 1. 35 V, 0.95 V VDD_IO: 1.71–1.89 V, typ. 1.8 V	VDD_PA_A: 3.3 V VDD_PA_B: 1.8 V VDD_CORE: 1.90 V, 1. 35 V, 0.95 V
Data Transmission				
802.11a	/	Max. 54 Mbps	Max. 54 Mbps	Max. 54 Mbps
802.11b	/	Max. 11 Mbps	Max. 11 Mbps	Max. 11 Mbps
802.11g	/	Max. 54 Mbps	Max. 54 Mbps	Max. 54 Mbps
802.11n	/	Max. 300 Mbps	Max. 300 Mbps	Max. 600 Mbps
802.11ac	/	Max. 866 Mbps	Max. 866 Mbps	/
802.11ax	/	/	2G Max. 573.5 Mbps, 5G Max. 120 Mbps	Max. 3.6 Gbps
BLE	Max. 2Mbps	TBD	Max. 2 Mbps	Max. 2 Mbps
Recommended Applications	Automotive	Automotive	Automotive	Automotive

* Under development

Wi-Fi & BT Modules

	Non-Automotive Wi-Fi & BT Modules (Wi-Fi 4)	
Product	FC30R	FC909A
		
Band	2.4GHz	2.4GHz
MIMO	1 × 1	1 × 1
WLAN Standard	IEEE 802.11b/g/n	802.11b/g/n
BT Standard	/	BT 5.2
Form Factor	LCC	LCC
Dimensions (mm)	12.0 × 12.0 × 2.1	12.0 × 12.0 × 1.95
Operating Temperature	-30° C ~ +85°C	-30°C ~ +85°C
Weight (approx.) g	0.58	0.6
General Features		
Function	Wi-Fi 2.4GHz	Wi-Fi 2.4GHz & BT 5.2
Modulation Mode	BPSK/QPSK/CCK/16QAM/64QAM	DSSS/OFDM/DBPSK/DQPSK/CCK/BPSK/QPSK/16QAM/64QAM
Encryption Mode	TKIP/AES/WPA-PSK/WPA2-PSK	WPA3
Operator Mode	AP/STA	AP/ STA
I/O Interfaces		
SDIO	1 (SDIO 3.0)	1 (SDIO 2.0)
UART	/	1
PCM	/	1
Antenna	1 (Wi-Fi Antenna)	1 (Wi-Fi & BT Antenna)
Electrical Characteristics		
Supply Voltage Range	VBAT: 3.0 ~3 .6 V, typ. 3.3 V VDDIO: 1.75 ~ 1.89 V, typ. 1.8 V	VBAT: 3.0~4.8 V, typ. 3.3 V VDDIO: 1.71~3.63 V, typ. 1.8/3.3 V
Power Consumption	OFF State: 31 μA @ VDD3V3 power supply 1 μA @ VDD_SDIO power supply Idle (no connection): 60 mA @ VDD3V3 power supply 2 mA @ VDD_SDIO power supply	Max. current at Tx mode: 300 mA @ VBAT 0.7 mA @ VIO
Data Transmission		
802.11a	/	/
802.11b	Max. 11 Mbps	Max. 11 Mbps
802.11g	Max. 54 Mbps	Max. 54 Mbps
802.11n	Max. 150 Mbps	Max. 72 Mbps
802.11ac	/	/
802.11ax	/	/
Recommended Applications	Telematics, smart metering, mobile POS terminals, gateways, safety, tracking and tracing, remote maintenance and control, networking, mobile computing, healthcare, etc.	OTT, smart speakers, projectors, POS, IPC

FC30R can work with Quectel EC20 R2.1/EC21/EC25/EC200A module to provide Wi-Fi/BT function.

* Under development

	Non-Automotive Wi-Fi & BT Modules (Wi-Fi 5)			
Product	**FC20**	**FC21**	**FC80A**	**FC905A**
				
Band	2.4GHz+5GHz	2.4GHz+5GHz	2.4GHz+5GHz	2.4GHz+5GHz
MIMO	1 × 1	1 × 1	2 × 2 or 1 × 1+1 × 1 in RSDB (Real Simultaneous Dual Band) mode	1 × 1
WLAN Standard	IEEE 802.11a/b/g/n/ac	IEEE 802.11a/b/g/n/ac	IEEE 802.11a/b/g/n/ac	IEEE 802.11a/b/g/n/ac
BT Standard	BT 5.0	BT 5.0	BT 5.1	BT 5.0
Form Factor	LCC	LCC	LCC	LCC
Dimensions (mm)	13.0 × 16.6 × 2.05	13.0 × 16.6 × 2.05	13.0 × 15.0 × 2.2	12.0 × 12.0 × 1.55
Operating Temperature	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C	-30°C ~ +85°C
Weight (approx.) g	0.81	0.73	0.86	0.6
General Features				
Function	Wi-Fi 2.4GHz+5GHz & BT 5.0	Wi-Fi 2.4GHz + 5GHz & BT 5.0	Wi-Fi 2.4GHz + 5GHz & BT 5.1	Wi-Fi 2.4GHz+5GHz & BT 5.0
Modulation Mode	DSSS/CCK/BPSK/QPSK/DBPSK/DQPSK/16QAM/64QAM/256QAM	DSSS/CCK/BPSK/QPSK/DBPSK/DQPSK/16QAM/64QAM/256QAM	BPSK/QPSK/CCK/16QAM/64QAM/256QAM	DSSS/CCK/BPSK/QPSK/DBPSK/DQPSK/16QAM/64QAM/256QAM
Encryption Mode	WPA3	WPA3	WPA3	WPA3
Operator Mode	AP/STA	AP/STA	AP/STA	AP/STA
I/O Interfaces				
SDIO	1 (SDIO 3.0)	1 (SDIO 3.0)	1 (SDIO 3.0)	1 (SDIO 3.0)
UART	1	1	1	1
PCM	1	1	1	1
Antenna	1 (Wi-Fi & BT Antenna)	1 (Wi-Fi & BT Antenna)	2 × Wi-Fi Ant with shared BT Ant, independent BT ant is optional*	1 (Wi-Fi & BT Antenna)
Electrical Characteristics				
Supply Voltage Range	VBAT: 3.14 ~3 .46 V, typ. 3.3 V VDDIO: 1.71 ~ 3.46 V, typ. 1.8 V/3.3 V	VBAT: 3.14 ~3 .46 V, typ. 3.3 V VDDIO: 1.71 ~ 3.46 V, typ. 1.8 V/3.3 V	VBAT: 3.2–4.5 V, typ. 3.3 V VDDIO: 1.7–3.6 V, typ. 1.8/3.3 V	VBAT: 3.13–4.8 V, typ. 3.6 V VDDIO: 1.71–3.63 V, typ. 1.8/3.3 V
Power Consumption	OFF State (Wi-Fi is disabled): 2 μA @3.3 V WLAN power supply 554 μA @1.8 V I/O Pins power supply Idle (Wi-Fi is enabled without any device connected): 66 mA @3.3 V WLAN power supply 6.5 mA @1.8 V I/O Pins power supply	OFF State (Wi-Fi is disabled): 0 μA @3.3 V WLAN power supply 179 μA @1.8 V I/O Pins power supply Idle (Wi-Fi is enabled without any device connected): 31 mA @3.3 V WLAN power supply 2.8 mA @1.8 V I/O Pins power supply	Max. current at Tx mode: 627 mA @ VBAT 0.7 mA @ VIO	Max. current at Tx mode: 380 mA @ VBAT 0.7 mA @ VIO
Data Transmission				
802.11a	Max. 54 Mbps	Max. 54 Mbps	Max. 54 Mbps	Max. 54 Mbps
802.11b	Max. 11 Mbps	Max. 11 Mbps	Max. 11 Mbps	Max. 11 Mbps
802.11g	Max. 54 Mbps	Max. 54 Mbps	Max. 54 Mbps	Max. 54 Mbps
802.11n	Max. 150 Mbps	Max. 150 Mbps	Max. 300 Mbps	Max. 72 Mbps
802.11ac	Max. 433 Mbps	Max. 433 Mbps	Max. 866 Mbps	Max. 433.3 Mbps
802.11ax	/	/	/	/
Recommended Applications	Telematics, smart metering, mobile POS terminals, gateways, safety, tracking and tracing, remote maintenance and control, networking, mobile computing, healthcare, etc.		Smart homes, industrial control	Various commercial/industrial applications e.g. POS machines and speaker boxes

FC20 can work with Quectel EC20 R2.0/EC20 R2.1/EC21/EC25 modules to provide Wi-Fi/BT function.
FC21 can work with Quectel EC20 R2.0/EC20 R2.1/EC21/EC25 modules to provide Wi-Fi/BT function.

* Under development

Wi-Fi & BT Modules

	Non-Automotive Wi-Fi & BT Modules (Wi-Fi 6)		Non-Automotive Wi-Fi & BT Modules (Wi-Fi 6E)	Standalone Wi-Fi & BT Modules	
Product	FG50V	FC62E*/FC64E*	FC65E*/FC66E*	FC41D	FCM100D
					
Band	2.4GHz + 5GHz	2.4GHz + 5GHz	2.4GHz + 5GHz + 6GHz	2.4GHz	2.4GHz
MIMO	2 × 2(support DBS)	2 × 2 (FC64E support DBS, FC62E not support DBS)	2 × 2 (FC66E support DBS, FC65E not support DBS)	/	/
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/ax	IEEE 802.11 b/g/n	IEEE 802.11 b/g/n
BT Standard	BT 5.2	BT 5.2	BT 5.2	BT 5.2	BT 5.2
Form Factor	LGA	LCC	LCC	LCC	LCC
Dimensions (mm)	21.5 × 19.5 × 2.1	19.9 × 18.0 × 2.1	19.9 × 18.0 × 2.1	18.0 × 20.0 × 2.6	16.0 × 24.0 × 2.6
Operating Temperature	-30°C ~ +85°C	-30°C ~ +75°C	-30°C ~ +75°C	-40°C ~ +85°C	-40°C ~ +85°C
Weight (approx.) g	2.3	1.63	1.63	1.51	1.55
General Features					
Function	Wi-Fi 2.4GHz + 5GHz & BT 5.2	Wi-Fi 2.4GHz + 5GHz & BT 5.2	Wi-Fi 2.4GHz + 5GHz + 6GHz & BT 5.2	Wi-Fi 2.4G+ BLE5.2	WIFI 2.4G+ BLE5.2
Modulation Mode	BPSK/QPSK/CCK/16QAM/64QAM/ 256QAM/1024QAM	DBPSK/DQPSK/CCK/BPSK/QPSK/QAM	DBPSK/DQPSK/CCK/BPSK/QPSK/QAM	BPSK/QPSK/CCK/16QAM/ 64QAM	CCK/BPSK/QPSK/16QAM/ 64QAM
Encryption Mode	WPA3	WPA3	WPA3	WPA3	WPA3
AP (Max Access Point)	/	32	32	TBD	/
Operator Mode	AP/STA	AP/STA	AP/STA	AP/STA	AP/STA
I/O Interfaces					
PCIe	1(PCIe 3.0)	1(PCIe 3.0)	1(PCIe 3.0)	/	/
UART	1	1	1	2	2
PCM	1	1	1	/	/
Antenna	2 × Wi-Fi Ant with shared BT Ant, independent BT ant is optional	2 × Wi-Fi Ant with shared BT Ant, independent BT ant is optional	2 × Wi-Fi Ant with shared BT Ant, independent BT ant is optional	× 1 (Built-out Pin antenna, IPEX antenna, PCB antenna)	× 1 (Built-out Pin antenna, IPEX antenna, PCB antenna)
Electrical Characteristics					
Supply Voltage Range	Core Supply Voltage : 0.95 V, 1.35 V, 1.95 V; I/O Supply Voltage: 1.8 V; RF Supply Voltage: 3.85 V	Core Supply Voltage: 0.95, 1.35, 1.95, 1.8, 2.2, 3.3(Optional) I/O Supply Voltage: 1.8 V;	Core Supply Voltage: 0.95, 1.35, 1.95, 1.8, 2.2, 3.3(Optional) I/O Supply Voltage: 1.8 V;	Power Supply Voltage: 3.3 V	3.3 V
Power Consumption	Max. current in 802.11ax DBSmode (transmitting in FTMmode): 517 mA @ 0.95 V 1116 mA @ 3.85 V 147 mA @ 1.95 V 276 mA @ 1.35 V 3 mA @ 1.8 V	TBD	TBD	TBD	/
Data Transmission					
802.11a	Max. 54 Mbps	Max. 54 Mbps	Max. 54 Mbps	/	/
802.11b	Max. 11 Mbps	Max. 11 Mbps	Max. 11 Mbps	Max. 11 Mbps	/
802.11g	Max. 54 Mbps	Max. 54 Mbps	Max. 54 Mbps	Max. 54 Mbps	/
802.11n	Max. 600 Mbps	Max. 600 Mbps	Max. 600 Mbps	Max. 72 Mbps	/
802.11ac	Max. 866 Mbps	Max. 866 Mbps	Max. 1732 Mbps	/	/
802.11ax	Max. 1774.5 Mbps	Max. 1200 Mbps(FC62E*) Max. 1774.5 Mbps(FC64E*)	Max. 2400 Mbps(FC65E*) Max. 3000 Mbps(FC66E*)	/	/
BLE	/	Max. 2 Mbps	Max. 2 Mbps	Max. 1 Mbps	/
Recommended Applications	CPE, OTT, smart TVs		CPE, OTT, smart TVs	Smart homes, industrial control	Smart homes, industrial control

FG50V can work with Quectel RG500Q module to provide Wi-Fi/BT function.

* Under development

		DR and High Precison GNSS							
Product		L26-ADR	L26-UDR	L26-DR(AA)	LC29H(BA)	LC29H(CA)	LC29H(DA)	LC29H(EA)*	LC29H(BS) *
									
GNSS		GPS/Galileo/GLONASS/ BDS/QZSS	GPS/Galileo/GLONASS/ BDS/QZSS	GPS: L1 C/A; GLONASS: L1; Galileo: E1; BDS: B1I; QZSS: L1 C/A	GPS/QZSS: L1 C/A, L5; GLONASS: L1; Galileo: E1, E5a; BDS: B1I, B2a	GPS/QZSS: L1 C/A, L5; GLONASS: L1; Galileo: E1, E5a; BDS: B1I, B2a	GPS/QZSS: L1 C/A, L5; GLONASS: L1; Galileo: E1, E5a; BDS: B1I, B2a	GPS/QZSS: L1 C/A, L5; GLONASS: L1; Galileo: E1, E5a; BDS: B1I, B2a	GPS/QZSS: L1 C/A, L5; GLONASS: L1; Galileo: E1, E5a; BDS: B1I, B2a
Form Factor		LCC	LCC	LCC	LCC	LCC	LCC	LCC	LCC
Dimensions (mm)		16.0 × 12.2 × 2.3	16.0 × 12.2 × 2.3	16.0 ×12.2 ×2.3	16.0 × 12.2 × 2.5	16.0 × 12.2 × 2.5	16.0 × 12.2 × 2.5	16.0 × 12.2 × 2.5	16.0 × 12.2 × 2.5
Weight (approx.) g		0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Operating Temperature		-40 °C ~ +85 °C	-40 °C ~ +85 °C	-40 °C ~ +85 °C	-40 ° C ~ +85 ° C	-40 ° C ~ +85 ° C	-40 ° C ~ +85 ° C	-40 ° C ~ +85 ° C	-40 ° C ~ +85 ° C
Storage Temperature		-40 °C ~ +90 °C	-40 °C ~ +90 °C	-40 °C ~ +90 °C	-40 ° C ~ +90 ° C	-40 ° C ~ +90 ° C	-40 ° C ~ +90 ° C	-40 ° C ~ +90 ° C	-40 ° C ~ +90 ° C
General Features									
Working Mode		4wheels-ADR	4wheels-UDR	PVT	DR+RTK	DR	RTK	RTK	RTK base station
Chip Solution		Teseo III	Teseo III	Teseo III	AG3335A/T	AG3335A/T	AG3335A/T	AG3335AA/B	AG3335M
L1 Band Receiver (C/A Code) Channel Number		48 Track/2 Fast Acq	48 Track/2 Fast Acq	48 Track/2 Fast Acq	Tracking and Acquisition total:135	Tracking and Acquisition total:135	Tracking and Acquisition total:135	Tracking and Acquisition total:135	Tracking and Acquisition total:135
L1 Band Receiver (C/A Code) SBAS		WAAS/EGNOS/MSAS/ GAGAN	WAAS/EGNOS/MSAS/ GAGAN	WAAS/EGNOS/MSAS/ GAGAN	Developing	Developing	Developing	Developing	/
A-GNSS		Supported	Supported	Supported	Supported	Supported	Supported	Supported	/
Sensitivity	Autonomous Acquisition	-145 dBm	-145 dBm	-145 dBm	-147 dBm	-147 dBm	-147 dBm	-147 dBm	-147 dBm
	Reacquisition	-152 dBm	-152 dBm	-152 dBm	-157 dBm	-157 dBm	-157 dBm	-157 dBm	-157 dBm
	Tracking	-162 dBm	-162 dBm	-162 dBm	-165 dBm	-165 dBm	-165 dBm	-165 dBm	-165 dBm
TTFF (Time To First Fix)	Cold Start	32 s, Autonomous	32 s, Autonomous	32 s, Autonomous	26 s	26 s	26 s	26 s	/
	Warm Start	25 s, Autonomous	25 s, Autonomous	27 s, Autonomous	16 s	16 s	16 s	16 s	/
	Hot Start	2 s	2 s	2 s	1 s	1 s	1 s	1 s	/
Position Accuracy (autonomous)		1.5 m CEP	1.5 m CEP	1.5 m CEP	Autonomous: 1 m	Autonomous: 1 m	Autonomous: 1 m	Autonomous: 1 m RTK: 1 cm + 1 ppm	/
Position Accuracy(RTK)		/	/	/	RTK: < 0.1 m + 1 ppm	/	RTK: 1 cm + 1 ppm	RTK: 1 cm + 1 ppm	/
Velocity Accuracy (without aid)		0.1m/s	0.1m/s	0.1m/s	0.03 m/s	0.03 m/s	0.03 m/s	0.03 m/s	/
Convergence Time (RTK)		/	/	/	RTK: < 10 s	/	RTK: < 10 s	RTK: < 10 s	/
Maximum Acceleration Accuracy (without aid)		0.1 m/s²	0.1 m/s²	0.1 m/s²	/	/	/	/	/
Timing Accuracy		50 ns @ RMS	50 ns @ RMS	50 ns @ RMS	20 ns	20 ns	20 ns	20 ns	20 ns
Max Update Rate		10 Hz	10 Hz	10 Hz	GNSS : 1 Hz IMU : 100 Hz(MAX)	GNSS : 1 Hz IMU : 100 Hz(MAX)	GNSS: 1 Hz RTK: 1 Hz	GNSS: 10 Hz RTK: 1~10 Hz	1 Hz
Baud Rate (default)		115200 bps	115200 bps	115200 bps	115200 bps	115200 bps	115200 bps	460800 bps	115200 bps
Geo-fence		/	/	/	Developing	Developing	Developing	Developing	/
Jamming Detection		/	•	/	•	•	•	•	/
Anti-jamming		/	/	/	/	/	/	/	/
Built-in LNA		•	•	•	•	•	•	•	•
Electrical Data									
Power Supply		3.0 V to 3.6 V	3.0 V to 3.6 V	3.0 V~3.6 V, typ. 3.3 V	3.1 V to 3.6 V	3.1 V to 3.6 V	3.1 V to 3.6V	3.1 V to 3.6V	3.1 V to 3.6 V
I/O Voltage		3.0 V to 3.6 V	3.0 V to 3.6 V	Same as VCC	2.8 V	2.8 V	2.8 V	2.8 V	2.8 V
Power Consumption (Acquisition)		72 mA (GPS) 79 mA (GPS+GLONASS+ Galileo)	84mA (GPS+GLONASS+ Galileo)	81 mA	30 mA	28 mA	25 mA	25 mA	24 mA
Power Consumption (Tracking)		58 mA (GPS) 74 mA (GPS+GLONASS+ Galileo)	81mA (GPS+GLONASS+ Galileo)	81 mA	30 mA	28 mA	25 mA	25 mA	24 mA
Power Consumption (Backup/Low Power mode)		1.7 mA @ Standby Mode, 8 μA @ Backup Mode	1.7 mA @ Standby Mode, 8 μA @ Backup Mode	1.7 mA @ Standby Mode, 8 μA @ Backup Mode	25 μA	25 μA	25 μA	25 μA	25 μA
Interfaces									
UART		•	•	•	Adjustable: 9600-3000000 bps Default: 115200 bps	Adjustable: 9600-3000000 bps Default: 115200 bps	Adjustable: 9600-3000000 bps Default: 115200 bps	Adjustable: 9600-3000000 bps Default: 460800 bps	Adjustable: 9600-3000000 bps Default: 115200 bps
I2C (NMEA)		/	/	/	•	•	•	•	•
Reset		•	•	•	•	•	•	•	•
Time Pulse		•	•	•	•	•	•	•	•
Antenna									
Short-Circuit Protection & Open-Circuit Detection		•	•	•	/	/	/	/	/
Antenna Type		Active or passive	Active or passive	Passive or Active	Active or passive	Active or passive	Active or passive	Active or passive	Active
Antenna Power		External or internal	External or internal	External or Internal (through VDD_RF)	External or internal	External or internal	External or internal	External or internal	External
Certifications		CE	CE	CE	CE	CE	CE	CE	CE
Recommended Applications		Automotive tracking , OBD			Trackers, high-precision navigation, delivery robots				

* Under development
• Supported

GNSS Modules

		DR and High Precison GNSS									
Product		LG69T(AA)	LG69T(AD)	LG69T(AB)*	LG69T(AM)	LG69T(AJ)	LG69T(AI)	LG69T (AQ)*	LG69T (AS)	LG69T (AF)	LG69T(AP-Q)*
		Compatible									
											
GNSS		GPS/QZSS: L1 C/A; L5 Galileo: E1; E5a BDS: B1I; B2a	GPS/QZSS: L1 C/A; L5 Galileo: E1; E5a BDS: B1I; B2a	GPS/QZSS: L1 C/A; L2C or L5 Galileo: E1; E5b or E5a BDS: B1I; B2I or B2a GLONASS: L1 or L2	GPS/QZSS: L1 C/A; L5 Galileo: E1; E5a BDS: B1I; B2a	GPS/QZSS: L1 C/A; L5 Galileo: E1; E5a BDS: B1I; B2a	GPS/QZSS: L1 C/A; L2C or L5 Galileo: E1; E5b or E5a BDS: B1I; B2I or B2a GLONASS: L1 or L2	GPS: L1 C/A; L5 Galileo: E1; E5a BDS: B1I; B2a	GPS/QZSS: L1 C/A; L5 Galileo: E1; E5a BDS: B1I; B2a	GPS/QZSS: L1 C/A; L5 Galileo: E1; E5a BDS: B1I; B2a	GPS/QZSS: L1 C/A; L5 Galileo: E1; E5a BDS: B1I; B2a
Form Factor		LGA	LGA	LGA	LGA	LGA	LGA	LGA	LGA	LGA	LGA
Dimensions (mm)		17.0 × 22.0 × 3.1	17.0 × 22.0 × 3.1	17.0 × 22.0 × 3.3	17.0 × 22.0 × 3.3	17.0 × 22.0 × 3.3	17.0 × 22.0 × 3.3	17.0 × 22.0 × 3.3	17.0 × 22.0 × 3.3	17.0 × 22.0 × 3.3	17.0 × 22.0 × 3.3
Weight (approx.) g		1.9	1.9	2.7	2.6	2.5	2.7	2.7	2.7	2.7	2.7
Operating Temperature		-40 °C ~ +85 °C	-40 °C ~ +85 °C	-40 °C to +105 °C	-40 °C ~ +85 °C	-40 °C ~ +105 °C	-40 °C ~ +105 °C	-40 °C ~ +85 °C	-40 °C ~ +85 °C	-40 °C ~ +85 °C	-40 °C ~ +85 °C
Storage Temperature		-40 °C ~ +95 °C	-40 °C ~ +95 °C	-40 °C to +105 °C	-40 °C ~ +95 °C	-40 °C ~ +105 °C	-40 °C ~ +105 °C	-40 °C ~ +95 °C	-40 °C ~ +95 °C	-40 °C ~ +95 °C	-40 °C ~ +95 °C
General Features											
Working Mode		Raw	PVT/Raw	Raw	RTK	RAW	RAW	DR+RTK	Base station	IMU raw data + DR	DR+RTK
Chip Solution		TESEO V	TESEO V	TESEO APP	TESEO V	TESEO V	TESEO V	TESEO V	TESEO V	TESEO V	TESEO V
L1 Band Receiver (C/A Code) Channel Number		80 Tracking Channels, 4 Fast Acquisition Channels	80 Tracking Channels, 4 Fast Acquisition Channels	80 Tracking Channels, 4 Fast Acquisition Channels	80 Tracking Channels, 4 Fast Acquisition Channels	80 Tracking Channels, 4 Fast Acquisition Channels	80 Tracking Channels, 4 Fast Acquisition Channels	80 Tracking Channels, 4 Fast Acquisition Channels	80 Tracking Channels, 4 Fast Acquisition Channels	80 Tracking Channels, 4 Fast Acquisition Channels	80 Tracking Channels, 4 Fast Acquisition Channels
L1 Band Receiver (C/A Code) SBAS		•	•	•	/	•	•	/	/	•	/
A-GNSS		•	•	/	/	•	•	/	/	•	/
Sensitivity	Autonomous Acquisition	-145 dBm	-145 dBm	-144 dBm*	-145 dBm	-145 dBm	-145 dBm	TBD	-145 dBm	-145 dBm	TBD
	Reacquisition	-153 dBm	-153 dBm	-153 dBm*	-153 dBm	-153 dBm	-153 dBm	TBD	-153 dBm	-153 dBm	TBD
	Tracking	-160 dBm	-160 dBm	-159 dBm*	-160 dBm	-160 dBm	-160 dBm	TBD	-159 dBm	-160 dBm	TBD
TTFF (Time To First Fix)	Cold Start	36 s	36 s	36 s*	40 s	36 s	36 s	TBD	/	36 s	TBD
	Warm Start	30 s	30 s	30 s*	/	30 s	30 s	TBD	/	30 s	TBD
	Hot Start	3 s	3 s	3 s*	4.5 s	3 s	3 s	TBD	/	3 s	TBD
Position Accuracy (autonomous)		1.0 m CEP	1.0 m CEP	1.0 m CEP	1.0 m CEP	1.0 m CEP	1.0 m CEP	1.0 m CEP	/	1.0 m CEP	1.0 m CEP
Position Accuracy (RTK)		cm [1]	cm [1]	cm [1]	0.01 m+ppm CEP	cm [1]	cm [1]	0.01 m+ppm CEP	/	/	0.01 m+ppm CEP
Velocity Accuracy (without aid)		0.1 m/s	0.1 m/s	0.1 m/s	0.1 m/s	0.1 m/s	0.1 m/s	0.1 m/s	/	0.1m/s	0.1 m/s
Convergence Time (RTK)		/	/	/	<10 s	/	/	TBD	/	/	TBD
Maximum Acceleration Accuracy (without aid)		0.1 m/s²	0.1 m/s²	0.1 m/s²	0.1 m/s²	0.1 m/s²	0.1 m/s²	0.1 m/s²	/	0.1 m/s²	0.1 m/s²
Timing Accuracy		100 ns	100 ns	100 ns	100 ns	100 ns	100 ns	100 ns	100 ns	100 ns	100 ns
Max Update Rate		RAW: 10 Hz; IMU: 100 Hz	RAW: 10 Hz; PVT: 1 Hz	RAW: 10 Hz	PVT: 10 Hz	RAW: 10 Hz IMU: 100 Hz	RAW: 10 Hz	PVT: 10 Hz IMU raw data: 26 Hz	RAW: 1 Hz	IMU raw data: 150 Hz; PVT (DR): 30 Hz	PVT: 10 Hz IMU raw data: 100 Hz
Baud Rate(default)		460800 bps	460800 bps	460800 bps	460800 bps	460800 bps	460800 bps	460800 bps	460800 bps	460800 bps	460800 bps
Geo-fence		/	/	/	/	/	/	/	/	/	/
Jamming Detection		/	/	/	/	/	/	/	/	/	/
Built-in LNA		•	•	/	•	•	•	•	•	•	•
Electrical Data											
Power Supply		3.0 V to 3.6 V	3.0 V to 3.6 V	3.0 V to 3.6 V	3.0 V to 3.6 V	3.0 V to 3.6 V	3.0 V to 3.6 V	3.0 V to 3.6 V	3.0 V to 3.6 V	3.0~3.6 V, typ. 3.3 V	3.0 V to 3.6 V
I/O Voltage		3.0 V to 3.6 V	3.0 V to 3.6 V	3.0 V to 3.6 V	3.0 V to 3.6 V	3.0 V to 3.6 V	3.0 V to 3.6 V	3.0 V to 3.6 V	3.0 V to 3.6 V	3.0 V to 3.6 V	3.0 V to 3.6 V
Power Consumption (Acquisition)		242 mA	235 mA	VCC: 65 mA, VCC_CORE: 210 mA	340 mA	245 mA	295 mA	TBD	360 mA	275 mA	TBD
Power Consumption (Tracking)		237 mA	232 mA	VCC: 65 mA, VCC_CORE: 210 mA	345 mA	245 mA	295 mA	TBD	360 mA	274 mA	TBD
Power Consumption (Backup/Low power mode)		55 µA	55 µA	55µA	55 µA	55 µA	55 µA	TBD	55 µA	55 µA	TBD
Interfaces											
UART		•	•	•	•	•	•	•	•	•	•
Reset		•	•	•	•	•	•	•	•	•	•
Time Pulse		•	•	•	•	•	•	•	•	•	•
Antenna											
Antenna Type		Active	Active	Active	Active	Active	Active	Active	Active	Active	Active
Antenna Power		External or internal	External or internal	External or internal	External or internal	External or internal	External or internal	External or internal	External or internal	External or internal	External or internal
Certifications		CE	CE	CE*/ ASIL-B*	CE	/	/	CE*	CE	CE*	CE*
Recommended Applications		Automotive, high-precision navigation, delivery robots									

Note 1: Depending on external Precision Positioning Engine.

* Under development
• Supported

		High Precison GNSS
Product		**LC02H(BA)***
		
GNSS		GPS/GLONASS/Galileo/BDS/QZSS
Form Factor		LCC
Dimensions (mm)		22.0 × 24.0 × 3.0
Weight (approx.) g		2.5
Operating Temperature		-40 ° C ~ +85 ° C
Storage Temperature		-40 ° C ~ +90 ° C
General Features		
Chip Solution		AG3335M
L1 Band Receiver (C/A Code) Channel Number		75
L1 Band Receiver (C/A Code) SBAS		Supported
A-GNSS		Supported
Sensitivity	Autonomous Acquisition	-148 dBm
	Reacquisition	-160 dBm
	Tracking	-165 dBm
Orientation Accuracy		Heading angle accuracy: 0.2°/m (1 m Baseline) Tilt angle accuracy: 0.3° Roll angle accuracy: 0.3°
TTFF (Time To First Fix)	Cold Start	26 s, Autonomous
	Warm Start	18 s, Autonomous
	Hot Start	1 s
Position Accuracy (autonomous)		Horizontal: 1.5 m CEP Vertical: 3.5 m CEP
Velocity Accuracy (without aid)		/
Maximum Acceleration Accuracy (without aid)		/
Timing Accuracy		/
Max Update Rate		1 Hz
Baud Rate(default)		115200 bps
Geo-fence		/
Jamming Detection		•
Anti-jamming		•
Built-in LNA		•
Electrical Data		
Power Supply		3.1 V-3.6 V, typ. 3.3 V
I/O Voltage		2.8 V
Power Consumption (Acquisition)		82 mA
Power Consumption (Tracking)		82 mA
Power Consumption (Backup/Low power mode)		50 μA
Interfaces		
UART		•
I2C (NMEA)		•
Reset		•
Time Pulse		•
Antenna		
Short-Circuit Protection & Open-Circuit Detection		/
Antenna Type		Active or passive
Antenna Power		Internal
Certifications		CE*
Recommended Applications		Communication station antennas, precision agriculture, construction machinery attitude control, vehicle/ship positioning & orientation, etc.

* Under development
• Supported

GNSS Modules

		Timing			
Product		**L26-T**	**LC29T***	**LC98S**	**LC26G-T***
					
GNSS		GPS/Galileo/GLONASS/BDS/QZSS	GPS/Galileo/GLONASS/BDS/QZSS	GPS/BDS/GLONASS/Galileo/QZSS	GPS/GLONASS/Galileo/BDS/QZSS
Form Factor		LCC	LCC	LCC	LCC
Dimensions (mm)		16.0 × 12.2 × 2.3	16.0 × 12.2 × 3.1	17.0 × 22.4 × 2.6	16.0 × 12.2 × 2.4
Weight (approx.) g		0.9	1.1	1.68	0.85
Operating Temperature		-40 °C ~ +85 °C	-40 °C ~ +85 °C	-40 °C ~ +85 °C	-40 ° C ~ +85 ° C
Storage Temperature		-40 °C ~ +90 °C	-40 °C ~ +90 °C	-40 °C ~ +90 °C	-40 ° C ~ +90 ° C
General Features					
Working Mode		Timing Static Mode	Timing Static Mode	Timing Static Mode	Timing Static Mode
Chip Solution		Teseo III	Teseo V	Teseo III	AG3352
L1 Band Receiver (C/A Code) Channel Number		48 Track/2 Fast Acq	80 Track/4 Fast Acq	48 Track/2 Fast Acq	47 Track
L1 Band Receiver (C/A Code) SBAS		WAAS/EGNOS/MSAS/GAGAN	WAAS/ EGNOS/ MSAS/ GAGAN	WAAS/EGNOS/MSAS/GAGAN	WAAS/EGNOS/MSAS/GAGAN
A-GNSS		Supported	Supported	Supported	Supported
Sensitivity	Autonomous Acquisition	-147 dBm	-145 dBm	-146 dBm[1]	-148 dBm
	Reacquisition	-153 dBm	-154 dBm	-155 dBm[1]	-160 dBm
	Tracking	-162 dBm	-161 dBm	-161 dBm[1]	-165 dBm
TTFF (Time To First Fix)	Cold Start	32 s, Autonomous	35 s, Autonomous	29 s, Autonomous	28 s, Autonomous
	Warm Start	30 s, Autonomous	24 s, Autonomous	28 s, Autonomous	25 s, Autonomous
	Hot Start	2 s	2 s, Autonomous	2 s	1 s
Position Accuracy(autonomous)		1.5 m CEP	1.1 m CEP	1.5 m CEP	1.5 m CEP
Timing Accuracy (1σ)		< 13.6 (±6.8) ns	< 12 (±6) ns	< 13.6 (±6.8) ns	≤ 16(±8) ns
Frequency of Time Pulse Signal		/	10 MHz	/	/
Max Update Rate		5 Hz	10 Hz	10 Hz	10 Hz
Baud Rate (default)		9600/115200 bps	115200 bps	115200 bps	115200 bps
Geo-fence		/	/	/	•
Jamming Detection		•	•	•	•
Anti-jamming		/	/	/	•
Built-in LNA		•	•	/	•
Electrical Data					
Power Supply		3.0 V to 3.6 V	3.0 V to 3.6 V	3.0 V to 3.6 V	1.75–1.98 V, typ. 1.8 V
I/O Voltage		typ. 3.3 V	3.0 V to 3.6 V	3.0 V to 3.6 V	1.8 V
Power Consumption (Acquisition)		80 mA (GPS+GLONASS+Galileo)	222 mA (GPS+BDS+GLONASS+Galileo+QZSS)	78 mA (GPS + GLONASS)	36 mA
Power Consumption (Tracking)		75 mA (GPS+GLONASS+Galileo)	232 mA (GPS+BDS+GLONASS+Galileo+QZSS)	74 mA (GPS + GLONASS)	36 mA
Power Consumption (Backup/Low Power mode)		7 μA	55 μA	/	13 μA
Interfaces					
UART		•	•	•	•
I2C (NMEA)		/	*	*	•
Reset		•	•	•	•
Time Pulse		•	•	•	•
Antenna					
Short-Circuit Protection & Open-Circuit Detection		•	•	•	•
Antenna Type		Active or passive	Active	Active or passive	Internal
Antenna Power		External or internal	External or internal	External or internal	Active or passive
Certifications		CE	/	CE	CE*
Recommended Applications		High-precision timing	High-precision timing for base stations		High-precision timing: financial services, power synchronization, communication base stations, railway dispatching

Note 1: Demonstrated with a good external LNA.

* Under development
• Supported

		Standard Precision GNSS-Single Band						
Product		LG77L(IC)	L76-L	LC76F	LC76G(AB)	LC76G(PA)	LC76G(PB)	LC26G(AB)
			Compatible					
								
GNSS		GPS/GLONASS/Galileo/BDS/QZSS	GPS/GLONASS/Galileo/BDS/QZSS	GPS/GLONASS/Galileo/QZSS	GPS/GLONASS/Galileo/BDS/QZSS	GPS/GLONASS/Galileo/BDS/QZSS	GPS/GLONASS/Galileo/BDS/QZSS	GPS/GLONASS/Galileo/BDS/QZSS
Form Factor		LCC	LCC	LCC	LCC	LCC	LCC	LCC
Dimensions (mm)		7.0 × 7.0 × 2.0	9.7 × 10.1 × 2.5	9.7 × 10.1 × 2.3	9.7 × 10.1 × 2.4	9.7 × 10.1 × 2.4	9.7 × 10.1 × 2.4	16.0 × 12.2 × 2.4
Weight (approx.) g		0.2	0.6	0.3	0.5	0.6	0.6	0.5
Operating Temperature		-40 °C ~ +85 °C	-40 °C ~ +85 °C	-40 °C ~ +85 °C	-40 °C ~ +85 °C	-40 °C ~ +85 °C	-40 °C~+85 °C	-40 °C ~ +85 °C
Storage Temperature		-40 °C ~ +90 °C	-40 °C ~ +90 °C	-45 °C ~ +90 °C	-40 °C ~ +90 °C	-40 °C ~ +90 °C	-40 °C~+90 °C	-40 °C ~ +90 °C
General Features								
Working Mode		Standard	Standard	Standard	Standard	Standard	Standard	Standard
Chip Solution		MT3333	MT3333	GK9501	AG3352Q	AG3352Q	AG3352Q	AG3352Q
L1 Band Receiver (C/A Code) Channel Number		33 Track/ 99 Acq	33 Track/ 99 Acq.	24 track	47track	47 track	47 track	47track
L1 Band Receiver (C/A Code) SBAS		WAAS/EGNOS/MSAS/GAGAN	WAAS/EGNOS/MSAS/GAGAN	Supported	Supported	Supported	Supported	Supported
A-GNSS		Supported	Supported	Supported	Supported	Supported	Supported	Supported
Sensitivity	Autonomous Acquisition	-146 dBm	-149 dBm	-148 dBm	-147 dBm	-147 dBm	-147 dBm	-147 dBm
	Reacquisition	-156 dBm	-161 dBm	-165 dBm	-159 dBm	-159 dBm	-159 dBm	-159 dBm
	Tracking	-163 dBm	-167 dBm	-162 dBm	-166 dBm	-166 dBm	-166 dBm	-166 dBm
TTFF (Time To First Fix)	Cold Start	25 s, Autonomous 17 s, With EASY ™	32 s, Autonomous 15 s, With EASY™	30 s, Autonomous 6 s, With AGNSS	28s,Autonomous 15s, with EASY ™ 5s, with EPO™	28 s, Autonomous 15 s, with EASY ™ 5 s, with EPO™	28 s, Autonomous 15 s, with EASY ™ 5 s, with EPO™	28 s, Autonomous 15 s, with EASY ™ 5 s, with EPO™
	Warm Start	23 s, Autonomous 5 s, With EASY ™	30 s, Autonomous 5 s, With EASY™	2 s	25s, Autonomous 2s, with ESAY™	25 s, Autonomous 2 s, with ESAY™	25 s, Autonomous 2 s, with ESAY™	25 s, Autonomous 2 s, with ESAY™
	Hot Start	2 s	2 s	2 s	1 s	1 s	1 s	1 s
Position Accuracy (autonomous)		2.5 m CEP	2.5 m CEP	2 m CEP	1.5 m CEP	1.5 m CEP	1.5 m CEP	1.5 m CEP
Velocity Accuracy (without aid)		0.1 m/s	0.1 m/s	0.1 m/s	0.1 m/s	0.1 m/s	0.1 m/s	0.1 m/s
Maximum Acceleration Accuracy (without aid)		0.1 m/s²	0.1 m/s²	0.1 m/s²	0.1 m/s²	0.1 m/s²	0.1 m/s²	0.1 m/s²
Timing Accuracy		50 ns	100 ns	100 ns	30 ns @RMS	30 ns @RMS	30 ns @RMS	35 ns @RMS
Max Update Rate		10 Hz	10 Hz	10 Hz	10 Hz	1 Hz	1 Hz	10 Hz
Baud Rate(default)		9600 bps	9600 bps	9600 bps	115200 bps	115200 bps	115200 bps	115200 bps
Geo-fence		•	•	•	•	•	•	•
Jamming Detection		•	•	•	•	•	•	•
Anti-jamming		•	•	•	•	•	•	•
Built-in LNA		/	•	•	•	•	•	•
Electrical Data								
Power Supply		2.8 V to 4.3 V	2.8 V to 4.3 V	2.8 V to 4.3 V	2.55 V to 3.6 V	2.55 V to 3.6 V	1.75 V to 1.98 V	2.55 V to 3.6 V
I/O Voltage		1.7 V to 1.9 V/ 2.7 V to 2.9 V	2.7 V to 2.9 V	2.8 V	typ. 3.3 V	typ. 3.3 V	typ 1.8V	typ. 3.3 V
Power Consumption (Acquisition)		24 mA (GPS+GLONASS)	31 mA (GPS+GLONASS)	30 mA(GPS+GLONASS)	36 mA(G3B)	10 mA(G3B)	15 mA(G3B)	36 mA(G3B)
Power Consumption (Tracking)		23.0 mA (GPS+GLONASS)	31 mA (GPS+GLONASS)	30 mA(GPS+GLONASS)	36 mA(G3B)	10 mA(G3B)	15 mA(G3B)	36 mA(G3B)
Power Consumption (Backup/Low power mode)		6 μA	8 μA	30 μA	13 μA	13 μA	13 μA	15 μA
Interfaces								
UART		•	•	•	•	•	•	•
I2C (NMEA)		•	•	•	•	•	•	•
Reset		•	•	•	•	•	•	•
Time Pulse		•	•	•	•	•	•	•
Antenna								
Short-Circuit Protection & Open-Circuit Detection		•	/	•	•	•	•	•
Antenna Type		Active or passive	Active or passive	Active or passive	Active or passive	Active or passive	Active or passive	Active or passive
Antenna Power		External	External or internal	External or internal	External or internal	External or internal	External or internal	External or internal
Certifications		CE	CE	CE	CE	CE	CE*	CE
Recommended Applications		Vehicle trackers, asset trackers, safety, industrial PDAs & PNDs, digital cameras, etc.						

* Under development
• Supported

GNSS Modules

		Standard Precison GNSS-Dual band	
Product		**LC79H(AL)**	**LC29H(AA)**
			
GNSS		GPS/QZSS: L1 C/A, L5 GLONASS: L1 Galileo: E1, E5a BDS: B1I, B2a	GPS/QZSS: L1 C/A, L5 GLONASS: L1 Galileo: E1, E5a BDS: B1I, B2a
Form Factor		LCC	LCC
Dimensions (mm)		9.7 × 10.1 × 2.4	16.0 × 12.2 × 2.5
Weight (approx.) g		0.5	0.9
Operating Temperature		-40 ° C ~ +85 ° C	-40 ° C ~ +85 ° C
Storage Temperature		-40 ° C ~ +90 ° C	-40 ° C ~ +90 ° C
General Features			
working mode		standard mode	standard mode
Chip Solution		AG3335M	AG3335M
L1 Band Receiver (C/A Code) Channel Number		Tracking and Acquisition total:135	Tracking and Acquisition total:135
L1 Band Receiver (C/A Code) SBAS		WAAS, EGNOS, MSAS,GAGAN	WAAS, EGNOS, MSAS,GAGAN
A-GNSS		Supported	Supported
Sensitivity	Autonomous Acquisition	-148 dBm	-147 dBm
	Reacquisition	-159 dBm	-159 dBm
	Tracking	-166 dBm	-165 dBm
TTFF (Time To First Fix)	Cold Start	26 s	26 s
	Warm Start	18 s	16 s
	Hot Start	1 s	1 s
Position Accuracy (autonomous)		1.0 m CEP	1.0 m CEP
Position Accuracy (RTK)		/	/
Velocity Accuracy (without aid)		0.03 m/s	0.03 m/s
Velocity Accuracy (RTK)		/	/
Convergence Time (RTK)		/	/
Maximum Acceleration Accuracy (without aid)		/	/
Timing Accuracy		20 ns	20 ns
Max Update Rate		PVT: 1 Hz	PVT: 1 Hz
Baud Rate(default)		115200 bps	115200 bps
Geo-fence		Developing	Developing
Jamming Detection		•	•
Anti-jamming		/	/
Built-in LNA		•	•
Electrical Data			
Power Supply		1.75 to 1.98 V	3.1 to 3.6 V
I/O Voltage		2.8 V	2.8 V
Power Consumption (Acquisition)		33 mA	24 mA
Power Consumption (Tracking)		33 mA	24 mA
Power Consumption (Backup/Low power mode)		20 μA	25 μA
Interfaces			
UART		9600~921600 bps(Default:115200 bps)	9600~3000000 bps(Default:115200 bps)
I2C (NMEA)		•	•
Reset		•	•
Time Pulse		•	•
Antenna			
Antenna Type		Active or passive	Active or passive
Antenna Power		External or internal	External or internal
Certifications		CE	CE
Recommended Applications		Shared mobility, delivery robots, GIS	

* Under development
• Supported

		Integrated Antenna						
Product		LC86L (C)	LC86G(AA)	LC86G(AB)	LC86G(LA)	L86	L89 R2.0	L96
		Compatible						
								
GNSS		GPS/GLONASS/Galileo/ BDS/QZSS	GPS/BDS/Galileo	GPS/GLONASS/Galileo	GPS/GLONASS/BDS/ Galileo/QZSS	GPS/GLONASS/BDS/ Galileo/QZSS	GPS/GLONASS/BDS/ Galileo/IRNSS/QZSS	GPS/GLONASS/BDS/ Galileo/QZSS
Form Factor		LCC	LCC	LCC	LCC	LCC	LCC	LCC
Dimensions (mm)[1]		16.0 × 16.0 × 6.95	16.0 × 16.0 × 6.95	16.0 × 16.0 × 6.95	18.4 × 18.4 × 6.95	18.4 × 18.4 × 6.45	18.4 × 26.4 × 6.8	9.6 × 14.0 × 2.0
Weight (approx.) g		6	6.5	6.5	7	7.6	8.2	0.6
Operating Temperature		-40 °C ~ +85 °C	-40 ° C ~ +85 °C	-40 ° C ~ +85 ° C	-40 °C ~ +85 °C	-40 °C ~ +85 °C	-40 °C ~ +85 °C	-40 °C ~ +85 °C
Storage Temperature		-40 °C ~ +90 °C	-40 ° C - +90 °C	-40 ° C ~ +90 ° C	-40 °C ~ +90 °C	-40 °C ~ +90 °C	-40 °C ~ +90 °C	-40 °C ~ +90 °C
General Features								
Chip Solution		MT3333	AG3352	AG3352	AG3352	MT3333	AG3335	MT3333
L1 Band Receiver (C/A Code) Channel Number		33 Track/ 99 Acq	47 Track	47 Track	47 Track	33 Track/ 99 Acq	33 Track/ 99 Acq	33 Track/ 99 Acq.
L1 Band Receiver (C/A Code) SBAS		WAAS/EGNOS/MSAS/GAGAN	WAAS/EGNOS/MSAS/GAGAN	Supported	WAAS/EGNOS/MSAS/GAGAN	WAAS/EGNOS/MSAS/GAGAN	WAAS/EGNOS/MSAS/GAGAN	WAAS/EGNOS/MSAS/GAGAN
A-GNSS		Supported	Supported	Supported	Supported	Supported	Supported	Supported
Sensitivity	Autonomous Acquisition	-148 dBm	-147 dBm	-147 dBm	-147 dBm	-149 dBm	-148 dBm	-148 dBm
	Reacquisition	-162 dBm	-160 dBm	-160 dBm	-160 dBm	-161 dBm	-157 dBm	-160 dBm
	Tracking	-166 dBm	-166 dBm	-166 dBm	-166 dBm	-167 dBm	-165 dBm	-165 dBm
TTFF (Time To First Fix)	Cold Start	35 s, Autonomous 15 s, With AGNSS	<30 s, Autonomous <12 s, With EASY ™	<30 s, Autonomous <12 s, With EASY ™	30 s, Autonomous 12 s, With EASY ™	35 s, Autonomous 15 s, With AGNSS	<35 s, Autonomous <15 s, With EASY™	35 s, Autonomous 15 s, With EASY™
	Warm Start	30 s, Autonomous 5 s, With AGNSS	<27 s, Autonomous <2 s, With EASY ™	<27 s, Autonomous <2 s, With EASY ™	27 s, Autonomous 2 s, With EASY ™	30 s, Autonomous 5 s, With AGNSS	<30 s, Autonomous <5 s, With EASY™	30 s, Autonomous 5 s, With EASY™
	Hot Start	2 s	<1 s	<1 s	<1s	1 s	<1 s	1 s
Position Accuracy(autonomous)		2.5 m CEP	1.5 m CEP	1.5 m CEP	1.5 m CEP	2.5 m CEP	1.8 m CEP	2.5 m CEP
Velocity Accuracy(without aid)		0.1 m/s	0.1 m/s	0.1 m/s	0.1 m/s	0.1 m/s	0.03 m/s	0.1 m/s
Maximum Acceleration Accuracy (without aid)		0.1 m/s²	0.1 m/s²	0.1 m/s²	0.1 m/s²	0.1 m/s²	/	0.1 m/s²
Timing Accuracy		100 ns	100 ns	100 ns	100 ns	100 ns	100 ns	100 ns
Max Update Rate		10 Hz	10 Hz	10 Hz	1 Hz	10 Hz	1 Hz	10 Hz
Baud Rate(default)		9600 bps	115200 bps	115200 bps	115200 bps	9600 bps	9600 bps	9600 bps
Geo-fence		•	•	•	•	•	•	•
Jamming Detection		•	•	•	•	•	•	•
Anti-jamming		•	•	•	•	•	/	•
Built-in LNA		•	•	•	•	•	•	•
Electrical Data								
Power Supply		2.8 V to 4.3 V	2.55 V to 3.6 V	2.55 V to 3.6 V	2.55 V to 3.6 V	2.8 V to 4.3 V	3.1 V to 4.3 V	2.8 V to 4.3 V
I/O Voltage		2.7 V to 2.9 V	2.55 V to 3.6 V	2.55 V to 3.6 V	2.55 V to 3.6 V	2.7 V to 2.9 V	3.0 V	2.7 V to 2.9 V
Power Consumption (Acquisition)		32 mA (GPS+GLONASS)	29 mA	29 mA	33 mA	32 mA (GPS+GLONASS)	32 mA	25 mA (GPS+GLONASS) 22 mA (GPS)
Power Consumption (Tracking)		30 mA (GPS+GLONASS)	29 mA	29 mA	33 mA	30 mA (GPS+GLONASS)	32 mA	20 mA (GPS+GLONASS)/ 20 mA (GPS)
Power Consumption (Backup)		7 μA	14 μA	14 μA	14 μA	7 μA	51 μA	7 μA
Interfaces								
UART		•	•	•	•	•	•	•
I2C (NMEA)		/	/	/	/	/	•	•
Reset		•	•	•	•	•	•	•
Time Pulse		•	•	•	•	•	•	•
Antenna								
Short-Circuit Protection & Open-Circuit Detection		•	/	/	/	•	•	/
Antenna Automatic Switch		•	/	/	/	•	•	/
Antenna Type		Embeded patch antenna or external active antenna	Embeded patch antenna or external active antenna	Embeded patch antenna or external active antenna	Embeded patch antenna or external active antenna	Embeded patch antenna or external active antenna	Embeded patch antenna and chip antenna, external active antenna	Embeded chip antenna or external active antenna
Antenna Power		Internal	Internal	Internal	Internal	Internal	Internal	Internal
Certifications		CE	CE	CE	CE	CE	CE	CE
Recommended Applications		Vehicle or asset trackers, DVRs, connected PNDs & PDAs, safety, digital cameras, etc.					(Dedicated for India market) Standard tracking	Asset tracking, digital cameras

Note 1: Please refer to the design document for footprint size.

* Under development
• Supported

UMTS/HSPA(+) Modules

Product	UC200A-GL
	
Form Factor	LCC
Dimensions (mm)	32.0 × 29.0 × 2.4
3G	UMTS/HSPA+
Frequency Bands (MHz)	UMTS: B1/2/5/8; GSM: 850/900/1800/1900MHz
Region	Global
Weight (approx.) g	4.3
Operating Temperature	-35°C ~ +75°C
Extended Temperature	-40°C ~ +85°C
Data Transmission	
HSPA data rate (Mbps)	Max. 21 (DL)/ Max. 5.76 (UL)
UMTS data rate (Kbps)	Max. 384 (DL/UL)
GPRS data rate (Kbps)	Max. 85.6 (DL/UL)
EDGE data rate (Kbps)	Max. 236.8 (DL/UL)
SMS	•
CSD	•
Protocols	TCP/UDP/PPP/NTP/NITZ/FTP/HTTP/PING/CMUX/HTTPS/FTPS/SSL/FILE/MQTT/MMS/SMTP/SMTPS
Interfaces	
SIM	1.8V/ 3V
UART	2
USB	2.0 Hi-Speed
Audio Digital (PCM)	•
RTC Backup	•
ADC	× 2, 12bits
Antenna	Pads for Primary
Enhanced Features	
DTMF	•
QuecFOTA®	•
DFOTA	•
RIL Driver	Android 4.x~12.x
USB Serial Driver	Windows 7/8/8.1/10/11, Linux 2.6~5.15, Android 4.x~12.x
SIM Detection	•
Firmware Update	via USB/ DFOTA
Electrical Features	
Supply Voltage Range	3.4V~4.5V, typ. 3.8V
Power Consumption	17 μA @ Power Off 1 mA @ Sleep
Certifications	CE/FCC/Anatel/ RCM
Recommended Applications	Telematics, smart metering, mobile POS terminals, gateways, safety, tracking and tracing, remote maintenance and control, networking, mobile computing, healthcare, etc.

* Under development
• Supported

GSM/GPRS Modules

Product	M66	M65	M95	M95-R	MC60/ MC60E
					
Form Factor	LCC	LCC	LCC	LCC	LCC
Dimensions (mm)	15.8 × 17.7 × 2.3	15.8 × 17.7 × 2.3	19.9 × 23.6 × 2.65	19.9 × 23.6 × 2.65	16.0 × 18.7 × 2.1
Frequency Range (MHz)	850/900/1800/1900	850/900/1800/1900	850/900/1800/1900	850/900/1800/1900	850/900/1800/1900
Weight (approx.) g	1.3	1.1	3.0	3.0	1.3
Operating Temperature	-35 °C ~ +75 °C	-35 °C ~ +75 °C	-35 °C ~ +75 °C	-35 °C ~ +75 °C	-35 °C ~ +75 °C
Extended Temperature	-40 °C ~ +85 °C	-40 °C ~ +85 °C	-40 °C ~ +85 °C	-40 °C ~ +85 °C	-40 °C ~ +85 °C
Data Transmission					
GPRS Multi-slot Class	12, 1-12 configurable	12, 1-12 configurable	12, 1-12 configurable	12, 1-12 configurable	12, 1-12 configurable
Data Rate (kbps)	85.6 (DL & UL)	85.6 (DL & UL)	85.6 (DL & UL)	85.6 (DL & UL)	85.6 (DL & UL)
SMS	•	•	•	•	•
Protocols	TCP/UDP/PPP/FTP/HTTP/SMTP/NITZ/ PING/NTP/SSL/MQTT/HTTPS/SMTPS	TCP/UDP/PPP/FTP/HTTP/NITZ/PING/ NTP/SSL/MQTT/HTTPS/IPv6*	TCP/UDP/PPP/FTP/HTTP/SMTP/NITZ/ PING/NTP/SSL/MQTT	TCP/UDP/PPP/FTP/HTTP/NITZ/PING/ NTP/SSL/MQTT/IPv6*	TCP/UDP/PPP/FTP/HTTP/NITZ/PING/ NTP/SSL/HTTPS/MQTT
Specifications for Voice					
Speech Codec Modes	HR/FR/EFR/AMR	HR/FR/EFR/AMR	HR/FR/EFR/AMR	HR/FR/EFR/AMR	HR/FR/EFR/AMR
Echo Arithmetic	Echo cancellation Echo suppression Noise reduction	Echo cancellation Echo suppression Noise reduction	Echo cancellation Echo suppression Noise reduction	Echo cancellation Echo suppression Noise reduction	Echo cancellation Echo suppression Noise reduction
Interfaces					
SIM	1.8 V/3 V	1.8 V/3 V	1.8 V/ 3 V	1.8 V/3 V	1.8 V/3 V
Audio Analog	1 input/2 outputs	1 input/2 outputs	2 inputs/ 2 outputs	2 inputs/ 2 outputs	1 input/ 2 outputs
Audio Digital (PCM)	•	/	•	•	•
RTC Backup	•	•	•	•	•
UART	3	3	2	2	4
ADC	× 1, 10bit	× 1, 10bit	/	/	× 1, 10bit
SD Card Interface	•	/	/	/	•
GPIO	/	/	/	/	•
Temperature Detection	/	/	•	/	•
Enhanced Features					
eCall	•	/	•	/	•
Jamming Detection	•	/	•	/	•
DTMF	•	o	•	•	•
Audio Playback/ Audio Recording	•	•	•	•	•
Dual-SIM	/	/	•	/	•
QuecFOTA®	•	DFOTA	•	•	•
QuecCell	•	•	•	•	•
QuecFile	•	•	/	/	•/ o
QuecOpen®	•	•	/	/	•
MUX	•	•	•	•	•
Bluetooth	•	/	/	/	BT 3.0 (MC60) BT 3.0/ BT4.0 (MC60E)
GNSS	/	/	/	/	BEIDOU/GPS/GLONASS/Galileo/QZSS
Electrical Features					
Power Supply	3.3 ~ 4.6V	3.45 ~ 4.25V	3.3 ~ 4.6V	3.45 ~ 4.25V	3.3 ~ 4.6V
Low Power Consumption	1.3mA @DRX=5 1.2mA @DRX=9	1.2mA @DRX=5 1.1mA @DRX=9	1.3mA @DRX=5 1.2mA @DRX=9	1.4mA @DRX=5 1.3mA @DRX=9	1.2mA @DRX=5 0.8mA @DRX=9
Certifications	CE/ Anatel/ ICASA/ GCF/ UCRF/ FCC/ Vodafone/ Deutsche Telekom	CE/ Anatel	CE/ GCF/ Vodafone/ PTCRB/ FCC/ IC/ Anatel/ Rogers/ RCM/ NCC/ UCRF/ ICASA/ Telenor	CE/ Anatel	CE/ FCC/ Anatel/ ICASA/ GCF/ UCRF
Recommended Applications	Telematics, smart metering, mobile POS terminals, gateways, safety, tracking and tracing, remote maintenance and control, networking, mobile computing, healthcare, etc.				

o & * Under development
• Supported

5G Antennas

Product	YE0001BA	YE0003AA	YE0007AA	YE0025AA	YECN009AA
					
Frequency Bands (MHz)	600-6000	699-5000	600-6000	698-960,1710-5000	600-6000
Technology	5G	5G	5G	5G	5G
Cable Length (mm)	n/a	n/a	n/a	n/a	n/a
Connector Type	SMA Male (center pin)	SMA Male (center pin)	SMA Male (center pin)	SMA Male (center pin)	SMA Male (center pin)
Mounting Type	Terminal	Terminal	Terminal	Terminal	Terminal
Dimensions (mm)	221 × 27.30 × 13.45	190 × Φ 16	152.4 × 21.79 × 14.49	199 × Φ 22	200 × 21
Matched Quectel Modules	5G/4G/3G/2G/LPWA				

Product	YECN009BA	YE0028AA	YE0037AA
			
Frequency Bands (MHz)	600-6000	700-2700, 3300-5000	700-5000
Technology	5G	5G	5G
Cable Length (mm)	n/a	1500	1000
Connector Type	RP-SMA Male (center receptacle)	SMA Male (center pin)	SMA Male (center pin)
Mounting Type	Terminal	Magnetic	Magnetic
Dimensions (mm)	200 × 21	234 × Φ 60	88 × Φ 30
Matched Quectel Modules	5G/4G/3G/2G/LPWA		

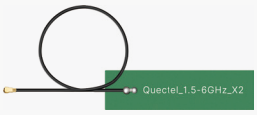
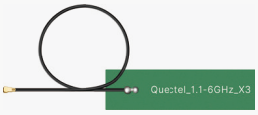
Product	YXH001AA	YB0016AA	YBY00A0KA	YGL001AA
				
Frequency Bands (MHz)	700-960, 1710-2690, 3300-5000	698-960, 1710-2700, 3300-6000	700-960, 1710-2690, 3300-5000	600-960, 1710-2690, 3300-5000
Technology	5G	5G	5G	5G
Cable Length (mm)	1000	3000	n/a	n/a
Connector Type	SMA Male (center pin)	SMA Male (center pin)	N-J (center pin)	SMA Male (center pin)
Mounting Type	Magnetic	Screw	N-J	Terminal
Dimensions (mm)	285 × 45	54 × 91	Φ 20 × 300	196.2 × 16 × 13
Matched Quectel Modules	5G/4G/3G/2G/LPWA			

Product	YPCS001AA	YPCS001AAEVB	YFCA010AA	YPCA006AA
				
Frequency Bands (MHz)	1427-5850	1427-5850	410-470; 700-960; 1400-6000	410-470; 700-960; 1400-6000
Technology	5G	5G	5G	5G
Cable Length (mm)	NA	NA	101	101
Connector Type	NA	NA	IPEX I	IPEX I
Mounting Type	SMT	NA	Adhesive	Adhesive
Dimensions (mm)	20 × 10 × 3	60 × 20	138.8 × 16.2	150 × 16.2 × 0.6
Matched Quectel Modules	5G/4G/3G/2G/LPWA			

The parameters shall be subject to the Specification.

5G Antennas

Product	YC0018CA	YC0018CAEVB	YF0017FA	YF0017GA	YF0020EA
					
Frequency Bands (MHz)	600–960; 1427–1707; 1710–2170; 2300–2700; 3300–5000; 5100–6000	600–960; 1427–1707; 1710–2170; 2300–2700; 3300–5000; 5100–6000	1500–6000	1100–6000	600–6000
Technology	5G	5G	5G	5G	5G
Cable Length (mm)	NA	NA	201	201	202
Connector Type	NA	NA	IPEX IV	IPEX IV	IPEX IV
Mounting Type	SMT	NA	Adhesive	Adhesive	Adhesive
Dimensions (mm)	40 × 7 × 3	141 × 40.4 × 0.8	49 × 13 × 0.13	49 × 13 × 0.13	90.3 × 15.3
Matched Quectel Modules	5G/4G/3G/2G/LPWA				

Product	YP0009MA	YP0009NA	YP0009OA
			
Frequency Bands (MHz)	1500–6000	1100–6000	600–6000
Technology	5G	5G	5G
Cable Length (mm)	203	203	202
Connector Type	IPEX IV	IPEX IV	IPEX IV
Mounting Type	Adhesive	Adhesive	Adhesive
Dimensions (mm)	49 × 13 × 0.95	49 × 13 × 0.95	78.5 × 14.2 × 0.95
Matched Quectel Modules	5G/4G/3G/2G/LPWA		

Cellular (4G/3G/2G) Antennas

Product	YC0001CA	YC0001CAEVB	YC0002BA	YC0002BAEVB	YC0003BA	YC0003BAEVB
						
Frequency Bands (MHz)	700–2690	700–2690	700–2690	700–2690	700–2690	700–2690
Technology	4G	4G	4G	4G	4G	4G
Cable Length (mm)	NA	NA	NA	NA	NA	NA
Connector Type	NA	NA	NA	NA	NA	NA
Mounting Type	SMT	NA	SMT	NA	SMT	NA
Dimensions (mm)	35 × 8.5 × 3	121.4 × 65 × 1	42 × 10 × 3	131 × 60 × 0.8	40 × 7 × 3	136.5 × 43 × 1
Matched Quectel Modules	4G/3G/2G/LPWA					

Product	YC0017DA	YC0017DAEVB	YC0017EA	YC0017EAEVB	YPCP001AA	YPCP001AAEVB
						
Frequency Bands (MHz)	698–3800	698–3800	698–3800	698–3800	600–960,1710–2690	600–960,1710–2690
Technology	4G	4G	4G	4G	4G	4G
Cable Length (mm)	NA	NA	NA	NA	NA	NA
Connector Type	NA	NA	NA	NA	NA	NA
Mounting Type	SMT	NA	SMT	NA	SMT	NA
Dimensions (mm)	25 × 7 × 3	140 × 36 × 0.8	25 ×7 ×3	140 × 36 × 0.8	36 × 9 × 3	110 × 45.5 × 0.8
Matched Quectel Modules	4G/3G/2G/LPWA					

The parameters shall be subject to the Specification.

Cellular (4G/3G/2G) Antennas

Product	YF0022DA	YF0007KA	YPCA004AA	YFCA002HA	YF0006PA	YF0028AA
						
Frequency Bands (MHz)	700–960, 1710–2170, 2300–2690	600–960, 1427.9–1495.9, 1710–2170, 2300–2700	700–2690, 1710–2690	700–2690	700–2690	698–960, 1710–2690
Technology	LTE (4G)	LTE (4G)	LTE (4G)	LTE (4G)	LTE (4G)	LTE (4G)
Cable Length (mm)	75	75	100	86.5	90	150
Connector Type	IPEX 1	IPEX 1	IPEX I	IPEX 1	IPEX I	IPEX I
Mounting Type	Adhesive	Adhesive	Adhesive	Adhesive	Adhesive	Adhesive
Dimensions (mm)	40 × 15 × 2	50 × 25 × 0.85	40 ×10 × 1	30 × 20 × 0.12	50 × 25 × 0.13	94 × 21 × 0.12
Matched Quectel Modules	4G/3G/2G/LPWA					

Product	YECT002AA	YECT003AA	YE0009AA	YPR00A0AA	YCN001AA	YDX001AA	YE0013CA
							
Frequency Bands (MHz)	700–960,1710–2690	690–2690	824–2700	700–2700	700–960, 1560–1610, 1710–2700	824–2690	700–960, 1710–2170; 2300–2700
Technology	LTE (4G)	LTE (4G)	LTE (4G)	LTE (4G)	LTE (4G)	LTE (4G)	LTE (4G)
Cable Length (mm)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Connector Type	SMA Male (center pin)	SMA Male (center pin)	SMA Male (center pin)	SMA Male (center pin)	SMA Male (center pin)	SMA Male (center pin)	SMA Male (center pin)
Mounting Type	Terminal	Terminal	Terminal	Terminal	Terminal	Terminal	Screw
Dimensions (mm)	196.2 × 16 × 13	113× Φ 10	190 × 16	194.3 ×15.95	144 × Φ 13	208 × Φ 12	Φ 10.2 × 115.4
Matched Quectel Modules	4G/3G/2G/LPWA						

Product	YE0010AA	YB0010AA	YE0012AA	YE0006AA	YECT007AA
					
Frequency Bands (MHz)	698–2700	698–960, 1710–2690	824–960, 1710–2690	700–2700	698–960 , 1710–2690
Technology	LTE (4G)	LTE (4G)	LTE (4G)	LTE (4G)	LTE (4G)
Cable Length (mm)	1000	2000	250	1500	n/a
Connector Type	SMA Male (center pin)	SMA Male (center pin)	SMA Male (center pin)	SMA Male (center pin)	N-J
Mounting Type	Adhesive	Magnetic	Adhesive	Magnetic	Bracket
Dimensions (mm)	152 × 18 × 5.9	Φ 84 × 81.5 × 15.5	116.5 × 21.7 × 5.6	318 × Φ 30	Φ 20 × 300
Matched Quectel Modules	4G/3G/2G/LPWA				

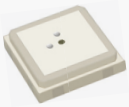
Product	YE0021KA	YE0029FA	YE0008BA	YE0011BA
				
Frequency Bands (MHz)	700–960, 1710–2170, 2300–2700	700–2700	698–960, 1710–2690	820–960, 1710–2690
Technology	LTE (4G)	LTE (4G)	LTE (4G)	LTE (4G)
Cable Length (mm)	1500	1000	n/a	n/a
Connector Type	SMA Male (center pin)	SMA Male (center pin)	SMA Male (center pin)	SMA Male (center pin)
Mounting Type	Magnetic	Magnetic	Terminal	Terminal
Dimensions (mm)	110 × Φ 30	88 × Φ 30	53 × Φ 10.5	50 × 16.4
Matched Quectel Modules	4G/3G/2G/LPWA			

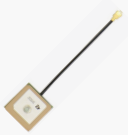
The parameters shall be subject to the Specification.

GNSS Antennas

Product	YC0013AA	YC0013AAEVB	YPGS001AA	YPGS001AAEVB	YCGS004AA	YCGS005AA	YCGS006AA
							
Frequency Bands (MHz)	1559-1606	1559-1606	1559-1609	1559-1609	1560-1606	1575.42-1602	1575.42-1602
Technology	GNSS (passive)	GNSS (passive)	GNSS (passive)	GNSS (passive)	GNSS L1 & G1(passive)	GNSS L1 & G1(passive)	GNSS L1 & G1(passive)
Cable Length (mm)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Connector Type	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Mounting Type	SMD	n/a	SMD	n/a	SMD	SMD	SMD
Dimensions (mm)	3.2 × 1.6 × 0.6	90 × 50	7.0 x 5.8 x 0.8	80 × 35	9 × 9 × 4	18 × 18 × 4	25 × 25 × 4
Matched Quectel Modules	GNSS L1 module series						

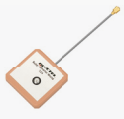
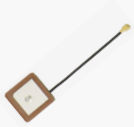
Product	YCGA001AA	YCGA002AA	YCGA003AA	YG0038AA	YG0043AA	YG0046AA
						
Frequency Bands (MHz)	1575.45 ±1.5	1560-1602	1559-1605	1561, 1575	1559-1606	1559-1606
Technology	GNSS L1(passive)	GNSS L1(passive)	GNSS L1(passive)	GNSS L1(passive)	GNSS L1(passive)	GNSS L1(passive)
Cable Length (mm)	n/a	n/a	n/a	n/a	n/a	n/a
Connector Type	n/a	n/a	n/a	n/a	n/a	n/a
Mounting Type	Pin Mounting	Pin Mounting	Pin Mounting	Pin mounting	Pin Mounting	Pin Mounting
Dimensions (mm)	10 × 10 × 4	12 × 12 × 4	35 × 35 × 4	13 × 13 × 4	15 × 15 × 4	18 × 18 × 2
Matched Quectel Modules	GNSS L1 module series					

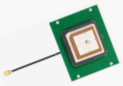
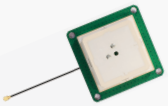
Product	YG0005AA	YG0062AA	YCGA012AA	YCGA013AA	YG0048AA	YCGS010AA	YPA00A0AA
							
Frequency Bands (MHz)	1565-1606	1559-1606	L5: 1166-1186 L1: 1559-1606	L5: 1166-1186 L1: 1559-1606	1176, 1575	1176.45-1278.75, 1575.42	Iridium (1616-1626.5)
Technology	GNSS L1(passive)	GNSS L1 (passive)	GNSS L1 & L5 (passive)	GNSS L1 & L5 (passive)	GNSS L1 & L5 (passive)	GNSS (passive)	GNSS (passive)
Cable Length (mm)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Connector Type	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Mounting Type	Pin Mounting	Pin Mounting	Pin Mounting	Pin Mounting	Pin Mounting	SMD	Pin mounting
Dimensions (mm)	18.4 × 18.4 × 4	25 × 25 × 4	38 × 38 × 10 + 25 × 25 × 6	45 × 45 × 6 & 40 × 40 × 4	18 × 18 × 4 & 25 × 25 × 4	5 × 3 × 0.5	25 × 25 × 4
Matched Quectel Modules	GNSS L1 module series		GNSS L1/L5 module series				/

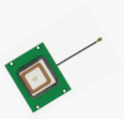
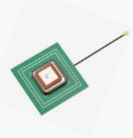
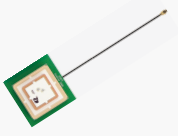
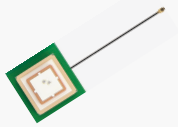
Product	YCGO004AA	YCGO005AA	YCGO006AA	YCGO007AA	YG0034AA	YG0021AA
						
Frequency Bands (MHz)	1559-1606	1575-1602	1559-1577	1575-1602	1560-1605	1560-1605
Technology	GNSS L1 (passive)	GNSS L1 (passive)	GNSS L1 (passive)	GNSS L1 (passive)	GNSS L1 (active)	GNSS L1 & B1 & G1 (active)
Cable Length (mm)	50	50	50	50	35	42
Connector Type	IPEX I	IPEX I	IPEX I	IPEX I	IPEX I	IPEX I
Mounting Type	Cable Mounting	Cable Mounting	Cable Mounting	Cable Mounting	Cable Mounting	Cable Mounting
Dimensions (mm)	10 × 10 × 6.3	15 × 15 × 6.2	18 × 18 × 6.3	25 × 25 × 6.3	13 ×13 × 6.8	18.4 × 18.4 × 8.86
Matched Quectel Modules	GNSS L1 module series					

The parameters shall be subject to the Specification.

GNSS Antennas

Product	YG0032AA	YG0015AA	YCGO008AA	YCGO009AA	YCGO010AA	YCGO011AA
						
Frequency Bands (MHz)	Beidou: 1561 ±5 ; GPS: 1575 ±5	1575.42–1602	1559–1606	1575–1602	1559–1577	1575–1602
Technology	GNSS L1 & B1 & G1 (active)	GNSS L1 (active)	GNSS L1 (active)	GNSS L1 (active)	GNSS L1 (active)	GNSS L1 (active)
Cable Length (mm)	55	48	50	95	50	50
Connector Type	IPEX I	IPEX I	IPEX I	IPEX I	IPEX I	IPEX I
Mounting Type	Cable Mounting	Cable Mounting	Cable Mounting	Cable Mounting	Cable Mounting	Cable Mounting
Dimensions (mm)	18 × 18 × 6.6	25 × 25 × 7.6	10 × 10 × 6.3	15 × 15 × 6.2	18 × 18 × 6.3	25 × 25 × 6.3
Matched Quectel Modules	GNSS L1 module series					

Product	YCGA014AA	YAT001BA	YBS00A1AA
			
Frequency Bands (MHz)	GPS L5: 1176.45, GPS L1: 1575.42, GLONASS L1: 1602	1176, 1575	1166–1186, 1559–1606
Technology	GNSS L1 & L5 (active)	GNSS L1 & L5 (active)	GNSS L1 & L5 (active)
Cable Length (mm)	100	40	60
Connector Type	IPEX MHF I	RF I	IPEX I
Mounting Type	Cable Mounting	Cable Mounting	Cable Mounting
Dimensions (mm)	25 × 25 × 11.9	25 × 25 × 2 & 18 × 18 × 2	40 × 40 × 4 & 45 × 45 × 6
Matched Quectel Modules	GNSS L1/L5 module series		

Product	YAT001CA	YG0030AA	YCGO014AA	YCGO022AA
				
Frequency Bands (MHz)	1176, 1575	1176, 1575	L5: 1166–1186, L1: 1559–1606	L1: 1559–1586, L5: 1164–1189
Technology	GNSS L1 & L5 (active)	GNSS L1 & L5 (passive)	GNSS L1 & L5 (passive)	GNSS L1 & L5 (active)
Cable Length (mm)	40	60	142	100
Connector Type	RF I	IPEX I	IPEX I	IPEX MHF1
Mounting Type	Cable Mounting	Cable Mounting	Cable Mounting	Cable Mounting
Dimensions (mm)	25 × 25 × 2 & 18 × 18 × 4	50 × 50 × 9.3	38 × 38 × 10 & 25 × 25 × 6	50 ×50 ×13.4
Matched Quectel Modules	GNSS L1/L5 module series			

Product	YFGA006AA	YFGA005AA	YFGA003AA	YFGA007AA
				
Frequency Bands (MHz)	1160–1270, 1560–1605	1560–1605	1559–1609	1176.45; 1575.42
Technology	GNSS L1 & L2 & L5 & L6 (passive)	GNSS L1 (passive)	GNSS L1 (passive)	GNSS L1 & L2 & L5 & L6 (passive)
Cable Length (mm)	143	100	100	115
Connector Type	IPEX I	IPEX I	RF I	IPEX 1
Mounting Type	Adhesive	Adhesive	Adhesive	Adhesive
Dimensions (mm)	74.56 × 24.5 × 0.25	61.15 × 11.24	39.45 × 13.25 × 0.13	43 × 24 × 0.12
Matched Quectel Modules	GNSS L1/L5 module series	GNSS L1 module series		GNSS L1/L5 modules

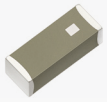
The parameters shall be subject to the Specification.

GNSS Antennas

Product	YG0035AA	YEGM007AA	YEGM007BA	YEGS001AA	YEGM008AA	YB0017AA
						
Frequency Bands (MHz)	1561, 1575	1560–1580	1570–1610	1557–1606	1575 ±5, 1602 ±5	GPS L1/L5, BD B1/B2, GLONASS L1
Technology	GNSS L1 & B1 & G1 (active)	GNSS L1 & B1 (active)	GNSS L1 & G1 (active)	GNSS L1 (active)	GNSS (active)	GNSS L1 & L5 (active)
Cable Length (mm)	3000	3000	3000	600	3000	3000
Connector Type	SMA Male (center pin)	SMA	SMA	N-Type Male	FAKRA C (Female)	SMA Male (center pin)
Mounting Type	Magnetic	Adhesive	Adhesive	Screw	Adhesive	Magnetic
Dimensions (mm)	50.3 × 38.4 × 17.1	38.6 × 50.9 × 17	38.6 × 50.9 × 17	Φ 85 × 25	50.4 × 38.3 × 18.2	61.5 × 56.5 × 23
Matched Quectel Modules	GNSS L1 module series					GNSS L1/L5 module series

Product	YG0063AA	YEGM011AA	YEGM011BA	YEGT001BA	YEGT002BA
					
Frequency Bands (MHz)	GPS L1/L2/L5; BDS B1/B2/B3; GLONASS L1/L2; Galileo E1/E5a/E5b/E6; L-band	1166–1227, 1559–1606	1166–1227, 1559–1606	1561 ±5, 1575 ±5, 1602 ±5	1561 ±5, 1575 ±5, 1602 ±5
Technology	All GNSS bands + L-band Corrections (active)	GPS L1/L2/L5, BDS B1/B2, GLONASS G1 (active)	GPS L1/L2/L5, BDS B1/B2, GLONASS G1 (active)	GNSS L1 (passive)	GNSS L1 (passive)
Cable Length (mm)	n/a	4000	4000	n/a	n/a
Connector Type	TNC Female	Antenna: TNC Female, Cable: SMA to TNC Male	Antenna: TNC Female, Cable: SMA to TNC Male	SMA Male (center pin)	SMA Male (center pin)
Mounting Type	Screw	Thread and Magnet	Thread and Magnet	Terminal	Terminal
Dimensions (mm)	Φ 165 × 68	Φ 146.4 × 65	Φ 146.4 × 65	50 × 16.4	52 × Ø10.5
Matched Quectel Modules	/	GNSS L1/L2/L5 module series		All GNSS L1 modules	

Wi-Fi & Bluetooth Antennas

Product	YC0009AA	YC0010AA	YXU00A0AA	YEWM001AA
				
Frequency Bands (MHz)	2400–2500	2400–2500	2400–2500, 5150–7150	2400–2500
Technology	Wi-Fi (Bluetooth)	Wi-Fi (Bluetooth)	Wi-Fi (Bluetooth)	Wi-Fi (Bluetooth)
Cable Length (mm)	n/a	n/a	n/a	1500
Connector Type	n/a	n/a	n/a	SMA Male (center pin)
Mounting Type	SMD	SMD	SMD	Magnetic
Dimensions (mm)	3.2 × 1.6 × 0.5	5.2 × 2.0 × 1.2	8.0 × 6.6 × 1.6	Φ 30 ×77.4
Matched Quectel Modules	FC30R		All Wi-Fi/BT modules	FC30R

Product	YF0011KA	YF0026AA	YF0027AA	YF0029AA	YF0029CA	YF0023AA	YF0023CA
							
Frequency Bands (MHz)	2400–2500, 5150–5850	2400–2500, 5150–5850, 5925–7125	2400–2500, 5150–5850, 5925–7125	2400–2500, 5150–5850, 5925–7125	2400–2500; 5150–5850; 5925–7125	2400–2500, 4900–5850, 5925–7125	2400–2500, 4900–5850, 5925–7125
Technology	Wi-Fi (Bluetooth)	Wi-Fi (Bluetooth)	Wi-Fi (Bluetooth)	Wi-Fi (Bluetooth)	Wi-Fi (Bluetooth)	Wi-Fi (Bluetooth)	Wi-Fi (Bluetooth)
Cable Length (mm)	50.5	100	100	100	100	100	100
Connector Type	IPEX 1	IPEX MHF I	IPEX MHF I	IPEX MHF I	IPEX IV	RF I	RF I
Mounting Type	Adhesive	Adhesive	Adhesive	Adhesive	Adhesive	Adhesive	Adhesive
Dimensions (mm)	38.9 × 9 × 0.12	28.9 × 11 × 0.12	38 × 7 × 0.12	29.98 × 30.85 × 0.12	29.98 × 30.85	22.9 × 11.7	37.8 × 7.5
Matched Quectel Modules	All Wi-Fi/BT modules (Except Wi-Fi 6E)	All Wi-Fi/BT modules		All Wi-Fi/BT modules (Except Wi-Fi 6E)	All Wi-Fi/BT modules	All Wi-Fi/BT modules	

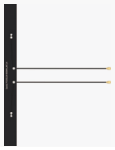
The parameters shall be subject to the Specification.

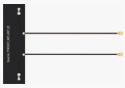
Wi-Fi & Bluetooth Antennas

Product	YE0031BA	YE0032BA	YEWT004AA	YEWN001AA
				
Frequency Bands (MHz)	2400–2500, 5000–5800	2400–2500, 5000–5800	2400–2500, 5150–7150	2400–2500, 5150–5850
Technology	Wi-Fi (Bluetooth)	Wi-Fi (Bluetooth)	Wi-Fi 6E (Bluetooth)	Wi-Fi (Bluetooth)
Cable Length (mm)	n/a	n/a	n/a	n/a
Connector Type	SMA Male (center pin)	SMA Male (center pin)	SMA Male (center pin)	RP-SMA Male (inside hole of internal thread)
Mounting Type	Terminal	Terminal	Terminal	Terminal
Dimensions (mm)	52 × Φ 10.5	50 × 17 × 10.5	109 × Φ 10	Φ 13 × 200
Matched Quectel Modules	All Wi-Fi/BT modules (Except Wi-Fi 6E)		All Wi-Fi/BT modules	All Wi-Fi/BT modules (Except Wi-Fi 6E)

Combo Antennas

Product	YB0007AA	YB0008AA	YB0014AA	YWL00A0AA	YB0032AA	YB0027AA
						
Frequency Bands (MHz)	700–960, 1710–2690, 3300–5000	4G MAIN: 698–1000, 1700–2700; GNSS: 1575.42 ±5, 1561.098 ±5; 4G DIV: 698–1000, 1700–2700	4G: 698–1000, 1700–2700; 4G DIV: 698–1000, 1700–2700 GNSS: 1561.098 ±3, 1575.42 ±3	698–960, 1710–2690	700–2700	5G (LMH×4): 617–6000 5G (MH×4):1450–6000 GNSS: 1164–1189; 1559–1606
Technology	5G & GNSS	Main LTE & DIV LTE & GNSS	Main LTE & DIV LTE & GNSS	LTE MIMO	Main LTE & DIV LTE	5G Main & DIV & GNSS
Cable Length (mm)	500	300	3000	1500	2000	300
Connector Type	SMA Male (center pin)	SMA Male (center pin)	SMA Male (center pin)	SMA Male (center pin)	SMA Male (Center Pin)	SMA Male (center pin)
Mounting Type	Screw	Adhesive	Screw	Screw	Screw	Screw
Dimensions (mm)	Φ 120 × 43	Φ 84 × 17.5	81 × 14.5	Φ 81 × 27.5	Φ 120 × 43	Φ 162 x56
Matched Quectel Modules	All 5G modules (RM50xQ Series, RG50xQ Series) & All 4G/3G/2G modules & GNSS L1 modules	All 4G/3G/2G modules & GNSS L1 modules		All 4G/3G/2G modules		All 5G/4G/3G/2G modules & GNSS L1& L5 modules

Product	YB0033AA	YB0031AA	YEMA003AA	YFCO002AA	YCGS024AA	YCGS025AA
						
Frequency Bands (MHz)	LTE Main & Div: 700–960, 1700–2700; GNSS: 1559–1610 (active)	LTE: 698–960; 1710–2690; GNSS: 1575.42 ±5, 1561.098 ±5	GPS L1/L5, BD B1/B2, GLONASS L1	600-6000	1575.42, 2400–2500	1575.42, 2400–2500, 5150–5850
Technology	Main LTE & DIV LTE & GNSS	LTE & GNSS	LTE & GNSS	4G & 5G	GNSS & WiFi	GNSS & WiFi
Cable Length (mm)	2000	300	3000	150	n/a	n/a
Connector Type	SMA Male (Center Pin)	SMA Male (center pin)	4G: FAKRA D; GNSS: FAKRA C	IPEX I	n/a	n/a
Mounting Type	Screw	Adhesive	Adhesive	Adhesive	SMD	SMD
Dimensions (mm)	Φ 120 × 43	Φ 84 ×17.5	Φ 84 × 17.5	237 × 22	3.2 × 1.6 × 0.5	3.2 × 1.6 × 0.5
Matched Quectel Modules	4G/3G/2G modules & GNSS L1 modules			5G/4G/3G/2G/LPWA	Wi-Fi module & GNSS L1	

Product	YB0015AA	YB0026AA	YEMA004AA	YEWN004AA	YFWO001AA
					
Frequency Bands (MHz)	LTE: 698–960, 1700–2700; Wi-Fi, Bluetooth: 2400–2500; GNSS: 1561 ±5, 1575 ±5	LTE: 700–2700; Wi-Fi: 2400–5850; GNSS: 1561/1575.42/1602	4G: 698–960 , 1710–2690; Wi-Fi & Bluetooth: 2400–2500	2400–2500, 5150–5850	2400-2500, 5150-7150
Technology	LTE/GPS & BD/Wi-Fi	LTE & GNSS & Wi-Fi1 & Wi-Fi2	LTE & Wi-Fi	Wi-Fi MIMO	Wi-Fi/Bluetooth
Cable Length (mm)	300	1000	900	300	100
Connector Type	SMA Male (center pin)	GNSS: FAKRA_C, LTE: FAKRA_D, Wi-Fi 1: FAKRA_I, Wi-Fi 2: FAKRA_I	SMA Male (center pin)	SMA Male (center pin)	IPEX I
Mounting Type	Screw	Screw	Screw	Screw	Adhesive
Dimensions (mm)	54 × 91	Φ 120 ×43	Φ 81 ×14.5	Φ 46 ×15	78.6 × 21.4
Matched Quectel Modules	4G/3G/2G modules & GNSS L1 modules & Wi-Fi, Bluetooth modules		All 4G/3G/2G modules & Wi-Fi modules	Wi-Fi modules	All Wi-Fi/BT modules

The parameters shall be subject to the Specification.

ISM Antennas

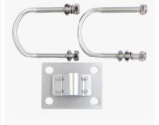
Product	YE0019AA	YE0039CA	YEIM001AA	YFOA004AA	YCIS001AA	YCIS002AA	YCIS003AA
							
Frequency Bands (MHz)	450-470	430-470, 790-960	465-475	410-470	863-870	863-870	902-928
Technology	ISM	ISM	ISM	ISM	ISM	ISM	ISM
Cable Length (mm)	n/a	75	2000	n/a	n/a	n/a	n/a
Connector Type	SMA Male (center pin)	SMA Male (center pin)	SMA Male (center pin)	IPEX MHF 1	n/a	n/a	n/a
Mounting Type	Terminal	Adhesive	Magnetic	Adhesive	SMD	SMD	SMD
Dimensions (mm)	109 × 10	117 × 21.81 × 5.47	Φ 30 × 131	100 × 20	5.0 × 3.0 × 0.5	10 × 3.2 × 0.5	10 × 3.2 × 0.5

Tuner

Product	YSOS001AA
	
Frequency Bands (MHz)	≥ 0.1 GHz
Technology	tuner
Cable Length (mm)	n/a
Connector Type	n/a
Mounting Type	SMD
Dimensions (mm)	1.1 x 1.5
Matched Quectel Modules	Consult with Quectel for module information

Cable Assemblies

Product	YM0003AA	YM0015AA	YM0003CA	YM0003AB	YM0013AA	YSAN025AA	YSAN026AA	YSAN027AA	YSAN028AA
									
Frequency Bands (MHz)	0-6000	0-6000	0-6000	0-6000	0-6000	0-6000	0-6000	0-6000	0-6000
Technology	Cable	Cable	Cable	Cable	Cable	Cable	Cable	Cable	Cable
Cable Length (mm)	100	150	200	200	300	100	100	100	100
Connector Type	SMA female to IPEX I	SMA female to IPEX I	SMA female to IPEX I	RP SMA female to IPEX I	SMA female to IPEX I	SMA Female to IPEX I(waterproof)	RP SMA Female to IPEX I(waterproof)	SMA Female to IPEX IV(waterproof)	RP SMA Female to IPEX IV(waterproof)
Mounting Type	Screw	Screw	Screw	Screw	Screw	screw	screw	screw	screw
Dimensions (mm)	100	150	200	200	300	100	100	100	100

Product	YSAN027FA	YSAN028FA	YM0004AA	YBY00A0HA	YBY00A0JA	YSAO001AA	YSAO002AA	YBY00A0IA
								
Frequency Bands (MHz)	0-6000	0-6000	0-6000	0-6000	0-6000	DC-6000	DC-6000	n/a
Technology	Cable	Cable	Cable	Cable	Cable	Cable	Cable	Bracket
Cable Length (mm)	150	100	100	200	250	100	100	n/a
Connector Type	SMA Female to IPEX IV	RP SMA Female to IPEX IV	SMA female to IPEX IV	N-K-female to RF1	N-female to RF IV	FAKRA-D(Purple) to U.FL 1	FAKRA-C(Blue) to U.FL 1	n/a
Mounting Type	Screw	Screw	Screw	Screw	Screw	Fakra D to U.FL I	Fakra C to U.FL I	n/a
Dimensions (mm)	150	100	100	200	250	Φ1.13	Φ1.13	80 ×60 ×80

The parameters shall be subject to the Specification.

Build a Smarter World

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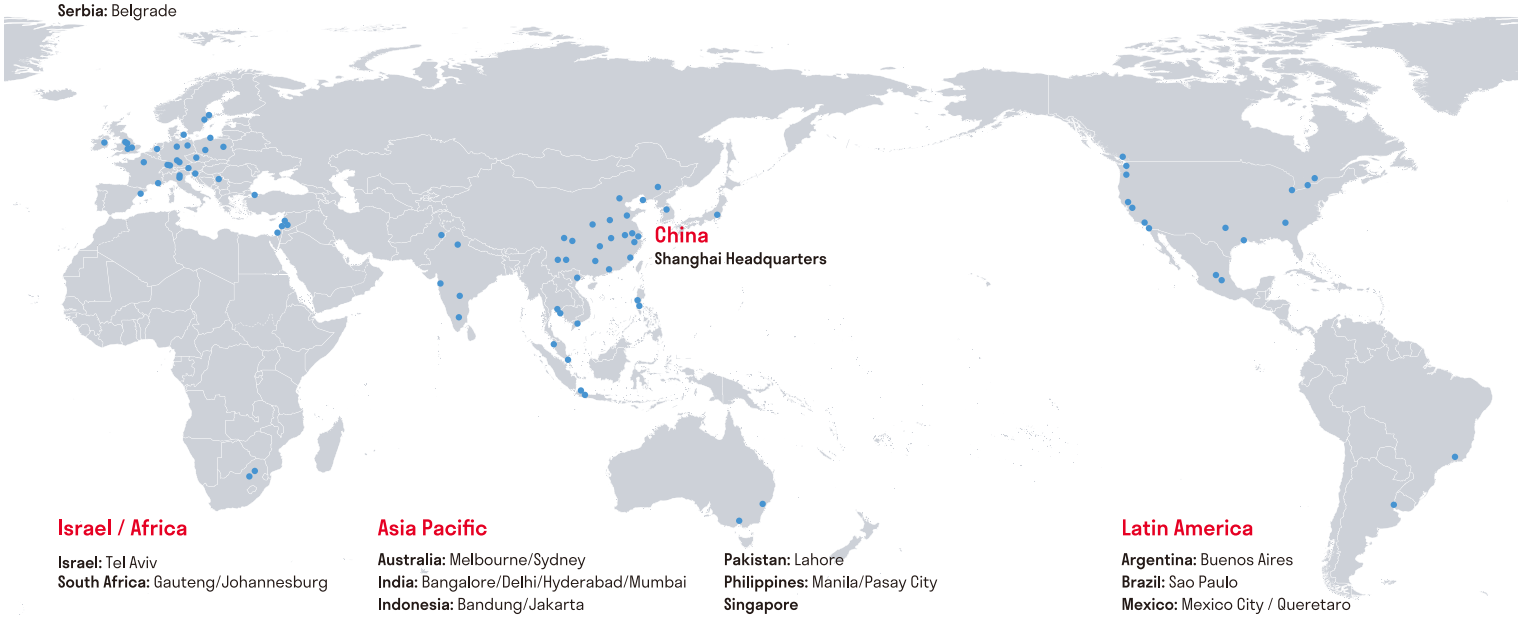
Point Roberts, WA



Israel / Africa

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South Africa: Gauteng/Johannesburg

Asia Pacific

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India: Bangalore/Delhi/Hyderabad/Mumbai
Indonesia: Bandung/Jakarta
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Korea: Seoul
Malaysia: Penang
Pakistan: Lahore
Philippines: Manila/Pasay City
Singapore
Thailand: Bangkok/Samutprakarn
Vietnam: Hanoi/HoChiMinh City

Latin America

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Brazil: Sao Paulo
Mexico: Mexico City / Queretaro

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90+ distributors
Serving 7000+ customers
Modules are sold to 150+ countries and regions

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