



Quectel Products Portfolio

Overview

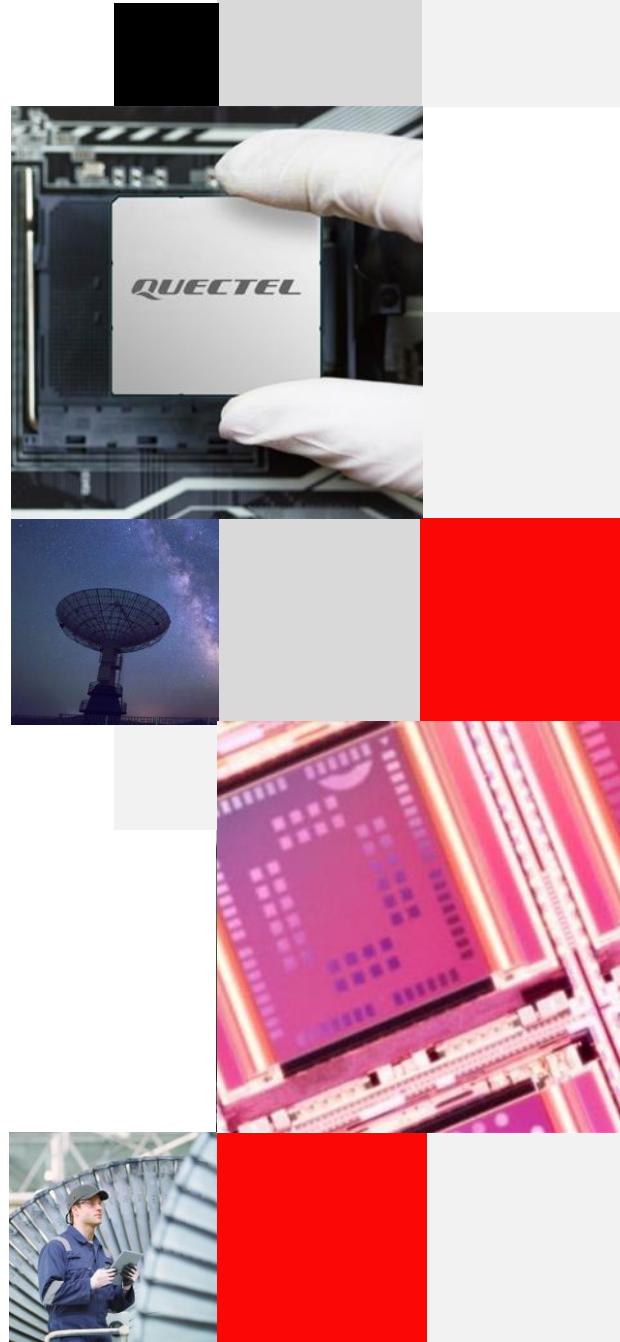
• December, 2020

Build a Smarter World



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Quectel is Leading IoT Innovations from NB-IoT to 5G





Cellular Modules

2G
3G
LTE/ LTE-A
5G
LPWA
Automotive Modules
Smart Modules



Wi-Fi & Bluetooth Modules

Wi-Fi 4
Wi-Fi 5
Wi-Fi 6
Wi-Fi 6E
Wi-Fi Automotive



GNSS Modules

IoT
Automotive
Dead Reckoning
High Precision
Timing



Antenna

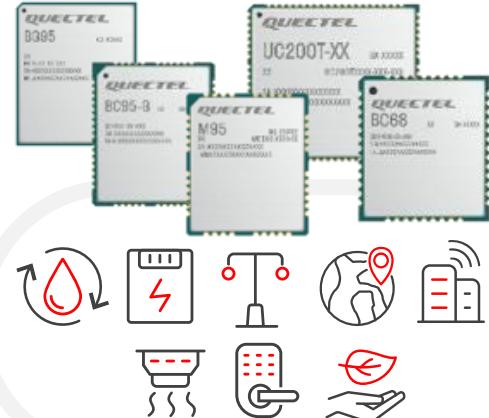
Various types of antennas
matched to the module
5G/4G/3G/2G
LPWA
Wi-Fi & Bluetooth
GNSS

Our broad product portfolio covers the full range of solutions

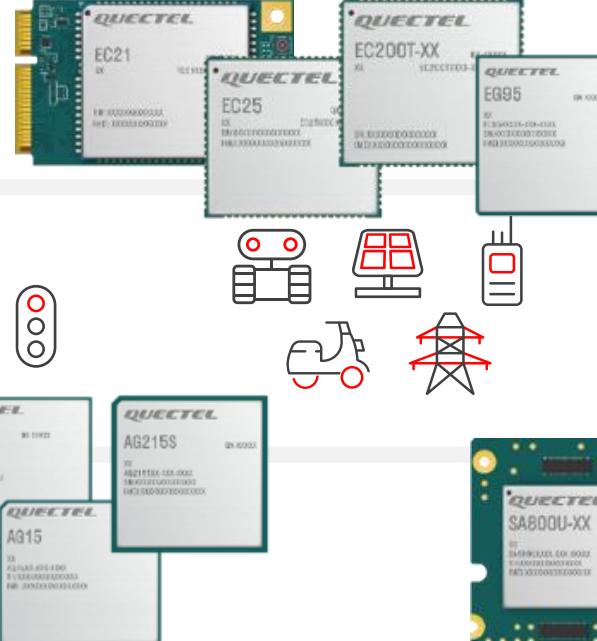
Constant Innovation in Cellular Modules



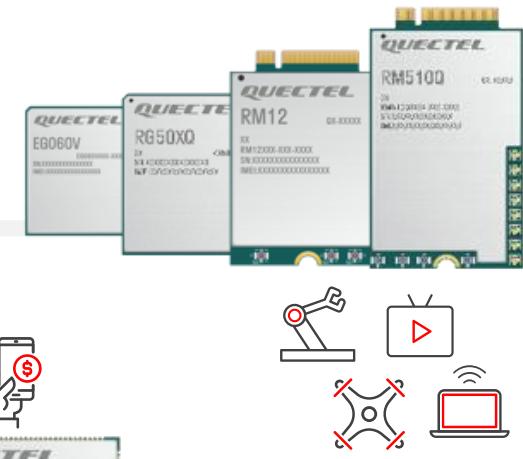
Narrow Band & Low Speed
NB-IoT, Cat M, 3G, 2G



Middle Speed
LTE (Cat 1 & Cat 4)



Wide Band & High Speed
5G & LTE-A



Automotive Modules
5G, LTE-A, LTE, C-V2X

Smart Modules
LTE Cat 6, Cat 4



LTE Standard Modules

LTE-A & 5G Modules

Automotive Modules

Smart Modules

LPWA Modules

UMTS/HSPA(+) Modules

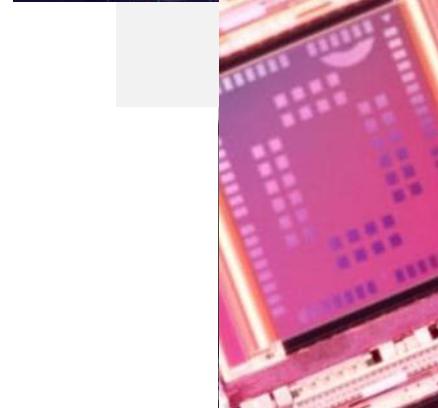
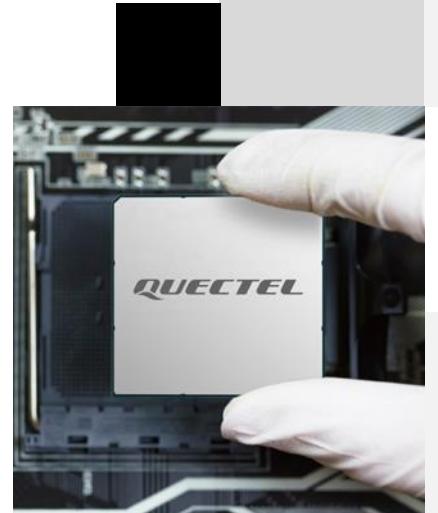
GSM/GPRS Modules

GNSS Modules

Wi-Fi&Bluetooth Modules

Antenna Products

Build a Smarter World



LTE Standard Modules Roadmap

Product Lifetime > 2025



Cat 4

Qualcomm

ASR

Cat 1

Qualcomm

ASR

Unisoc

EC2x/ EC200x Series



EC20/EC25 series
 -A/ -V/ -AF/
 -AFX/ -AFXD/
 -MX/ -AU/ -AUX/
 -EU/ -EUX/ -E/ -J/
 EC20-CE



EG25-G



EC200A series
 -CN*/ -EU*/ -AU*



EC25 series/ EC20-CE/
 EG25-G Mini PCIe

EG9x/ EG91xx Series



EG95 series
 -NA/ -NAX/
 -NAXD/
 -AUX/ -E/ -EX



EM05-CE/ -E/ -G

-A/ -AF/ -AFX/ -AFXD/ -NA/ -NAX/
 -NAXD/ -VX (North America)
 -AU/ -AUX (Latin America/ Australia/
 New Zealand)
 -LA (Latin America)
 -AUT (Australia)
 -CE/ -CN (China/ India)
 -E (EMEA/ Korea/ Thailand/ India)
 -EN (EMEA/ APAC)
 -EU/ -EUX (EMEA/ APAC/ Thailand)
 -EX (EMEA)
 -G (Global)
 -J (Japan)
 -KL (Korea)
 -MX (Mexico)
 -V (Verizon)



EC21 series
 -A/ -V/ -AUT/
 -AU/ -AUX/ -E/
 -EU/ -EUX/
 -KL/ -J



EG21-G



EC21 series/
 EG21-G Mini PCIe



EG91 series
 -NA/ -NAX/
 -NAXD/ -VX/ -AUX/
 -E/ -EX



EC200S series
 -EU/ -EN



EC200U series
 -CN/ -EU



EG915U series
 -EU/ -LA/ -CN*

"*" means under development/ongoing.

Data-only modules of EC25-AF are optional.

EC25-AFXD, EG91-NAXD, EG95-NAXD are data-only modules.

EC25-A/-V/-AF/-AFX/-AFXD/-MX/-AU/-AUX Specifications



■ Multi-mode LTE Cat 4 Module

29.0 mm × 32.0 mm × 2.4 mm
150 Mbps DL / 50 Mbps UL

Variant	EC25-A	EC25-V	EC25-AF	EC25-AFX	EC25-AFXD (Data-only)	EC25-MX	EC25-AU	EC25-AUX
LTE	LTE-FDD	B2/ B4/ B12	B4/ B13	B2/ B4/ B5/ B12/ B13/ B14/ B66/ B71	B2/ B4/ B5/ B12/ B13/ B14/ B66/ B71	B2/ B4/ B5/ B12/ B13/ B14/ B66/ B71	B1/ B2 ^① / B3/ B4/ B5/ B7/ B8/ B28	B1/ B2 ^① / B3/ B4/ B5/ B7/ B8/ B28
	LTE-TDD	-	-	-	-	-	B40	B40
UMTS	WCDMA	B2/ B4/ B5	-	B2/ B4/ B5	B2/ B4/ B5	B2/ B4/ B5	B1/ B2/ B5/ B8	B1/ B2/ B5/ B8/ B4
	TD-SCDMA	-	-	-	-	-	-	-
EVDO/CDMA	-	-	-	-	-	-	-	-
GSM/EDGE	-	-	-	-	-	-	Quad-band	Quad-band
Embedded GNSS	Optional	Optional	Optional	Optional	Optional	-	Optional	Optional
Wi-Fi/BT Interface	Y	Y	Y	-	-	-	Y	-
Ethernet Interface	Y	Y	Y	Y	Y	Y	Y	Y
Region	North America	Verizon	North America	North America	North America	Mexico	Latin America/ Australia/ New Zealand	Latin America/ Australia/ New Zealand
Certification	Carrier: AT&T/ T-Mobile/ Rogers/ Telus Regulatory: PTCRB/ FCC/ IC Others: WHQL	Carrier: Verizon Regulatory: GCF/ FCC Others: WHQL	Carrier: Verizon/ AT&T (FirstNet)/ T-Mobile/ U.S. Cellular/ Rogers/ Telus Regulatory: GCF/ PTCRB/ FCC/ IC Others: WHQL	Carrier: Verizon/ AT&T (FirstNet)/ U.S. Cellular Regulatory: GCF/ PTCRB/ FCC/ IC Others: WHQL	Carrier: Verizon/ AT&T (FirstNet)/ T-Mobile Regulatory: GCF/ PTCRB/ FCC/ IC Others: WHQL	Regulatory: PTCRB/ FCC/ IFETEL Others: WHQL	Carrier: Telstra Regulatory: GCF/ FCC/ Anatel/ NCC/ RCM Others: WHQL	Regulatory: CE/ FCC/ Anatel/ NCC/ RCM/ ICASA Others: WHQL

"Y" means supported.

"-" means unsupported.

^① means Rx-diversity is not supported.

EC25-A/-V/-AF/-AFX/-AFXD/-MX/-AU/-AUX Mini PCIe Specifications



30.0 mm x 51.0 mm x 4.9 mm

150 Mbps DL / 50 Mbps UL

■ Multi-mode LTE Cat 4 Module

Variant		EC25-A Mini PCIe	EC25-V Mini PCIe	EC25-AF Mini PCIe	EC25-AFX Mini PCIe	EC25-AFXD Mini PCIe (Data-only)	EC25-MX Mini PCIe	EC25-AU Mini PCIe	EC25-AUX Mini PCIe
LTE	LTE-FDD	B2/ B4/ B12	B4/ B13	B2/ B4/ B5/ B12/ B13/ B14/ B66/ B71	B2/ B4/ B5/ B12/ B13/ B14/ B66/ B71	B2/ B4/ B5/ B12/ B13/ B14/ B66/ B71	B2/ B4/ B5/ B7/ B28/ B66	B1/ B2 ^① / B3/ B4/ B5/ B7/ B8/ B28	B1/ B2 ^② / B3/ B4/ B5/ B7/ B8/ B28
	LTE-TDD	-	-	-	-	-	-	B40	B40
UMTS	WCDMA	B2/ B4/ B5	-	B2/ B4/ B5	B2/ B4/ B5	B2/ B4/ B5	B2/ B4/ B5	B1/ B2/ B5/ B8	B1/ B2/ B5/ B8/ B4
	TD-SCDMA	-	-	-	-	-	-	-	-
EVDO/CDMA		-	-	-	-	-	-	-	-
GSM/EDGE		-	-	-	-	-	-	Quad-band	Quad-band
Embedded GNSS		Optional	Optional	Optional	Optional	Optional	-	Optional	Optional
Region		North America	Verizon	North America	North America	North America	Mexico	Latin America/ Australia/ New Zealand	Latin America/ Australia/ New Zealand
Certification		Carrier: AT&T/ T-Mobile/ Rogers/ Telus Regulatory: PTCRB/ FCC/ IC Others: WHQL	Carrier: Verizon Regulatory: GCF/ FCC Others: WHQL	Carrier: Verizon/ AT&T (FirstNet)/ T-Mobile/ U.S. Cellular/ Rogers/ Telus Regulatory: GCF/ PTCRB/ FCC/ IC Others: WHQL	Carrier: Verizon/ AT&T (FirstNet)/ U.S. Cellular Regulatory: GCF/ PTCRB/ FCC/ IC Others: WHQL	Carrier: Verizon/ AT&T (FirstNet) ^② / U.S. Cellular Regulatory: GCF/ PTCRB/ FCC Others: WHQL	Regulatory: FCC/ PTCRB/ IFETEL Others: WHQL	Carrier: Telstra Regulatory: GCF/ FCC/ Anatel/ NCC/ RCM Others: WHQL	Regulatory: CE/ FCC/ Anatel/ NCC/ RCM/ ICASA Others: WHQL

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② means the certification of the Mini PCIe terminal device can use the corresponding certification of the LCC module.

EC25-EU/-EUX/-E/-J/EC20-CE/EG25-G Specifications



29.0 mm × 32.0 mm × 2.4 mm

150 Mbps DL / 50 Mbps UL

■ Multi-mode LTE Cat 4 Module

Variant	EC25-EU	EC25-EUX	EC25-E	EC25-J	EC20-CE	EG25-G
LTE	LTE-FDD	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B5/ B7/ B8/ B20	B1/ B3/ B8/ B18/ B19/ B26	B1/ B3/ B5/ B8
	LTE-TDD	B38/ B40/ B41	B38/ B40/ B41	B38/ B40/ B41	B41	B34/ B38/ B39/ B40/ B41
UMTS	WCDMA	B1/ B8	B1/ B8	B1/ B5/ B8	B1/ B6/ B8/ B19	B1/ B8
	TD-SCDMA	-	-	-	-	B34/ B39
EVDO/CDMA	-	-	-	-	BC0	-
GSM/EDGE	B3/ B8	B3/ B8	B3/ B8	-	B3/ B8	Quad-band
Embedded GNSS	Optional	Optional	Optional	Optional	Optional	Optional
Wi-Fi/BT Interface	Y	-	Y	Y	Y	Y
Ethernet Interface	Y	Y	Y	Y	Y	Y
Region	EMEA/ Thailand	EMEA/ Thailand	EMEA/ Korea/ Thailand/ India	Japan	China/ India	Global
Certification	Carrier: Deutsche Telekom/ British Telecom Regulatory: GCF/ CE/ NCC/ RCM Others: WHQL	Carrier: Vodafone/ Deutsche Telekom/ British Telecom/ KT/ SKT/ Telefónica/ LGU+ Regulatory: GCF/ CE/ NCC/ RCM/ FAC/ NBTC/ ICASA Others: WHQL	Carrier: Vodafone/ Deutsche Telekom/ British Telecom/ KT/ SKT/ Telefónica/ LGU+ Regulatory: GCF/ CE/ KC/ NCC/ RCM/ FAC/ NBTC/ ICASA Others: WHQL	Carrier: NTT DOCOMO/ SoftBank/ KDDI Regulatory: JATE/ TELEC Others: WHQL	Regulatory: SRRC/ NAL/ CCC Others: WHQL	Carrier: Deutsche Telekom/ Verizon/ AT&T/ T-Mobile/ Sprint/ U.S. Cellular/ Telus/ Rogers* Regulatory: GCF/ CE/ PTCRB/ FCC/ IC// Anatel/ IFETEL/ SRRC/ NAL/ CCC/ KC/ NCC/ JATE/ TELEC/ RCM/ NBTC/ IMDA/ ICASA/ FAC* Others: WHQL

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EC25-EU/-EUX/-E/-J/EC20-CE/EG25-G Mini PCIe Specifications



■ Multi-mode LTE Cat 4 Module

51.0 mm × 30.0 mm × 4.9 mm
150 Mbps DL/ 50 Mbps UL

Variant		EC25-EU Mini PCIe	EC25-EUX Mini PCIe	EC25-E Mini PCIe	EC25-J Mini PCIe	EC20-CE Mini PCIe	EG25-G Mini PCIe ^①
LTE	LTE-FDD	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B5/ B7/ B8/ B20	B1/ B3/ B8/ B18/ B19/ B26	B1/ B3/ B5/ B8	B1/ B2/ B3/ B4/ B5/ B7/ B8/ B12/ B13/ B18/ B19/ B20/ B25/ B26/ B28
	LTE-TDD	B38/ B40/ B41	B38/ B40/ B41	B38/ B40/ B41	B41	B34/ B38/ B39/ B40/ B41	B38/ B39/ B40/ B41
UMTS	WCDMA	B1/ B8	B1/ B8	B1/ B5/ B8	B1/ B6/ B8/ B19	B1/ B8	B1/ B2/ B4/ B5/ B6/ B8/ B19
	TD-SCDMA	-	-	-	-	B34/ B39	-
EVDO/CDMA		-	-	-	-	BC0	-
GSM/EDGE		B3/ B8	B3/ B8	B3/ B8	-	B3/ B8	Quad-band
Embedded GNSS		Optional	Optional	Optional	Optional	Optional	Optional
Region		EMEA/ Thailand	EMEA/ Thailand	EMEA/ Korea/ Thailand/ India	Japan	China/ India	Global
Certification		Carrier: Deutsche Telekom Regulatory: GCF/ CE/ NCC/ RCM Others: WHQL	Carrier: Vodafone/ Deutsche Telekom/ Deutsche Telekom Regulatory: GCF/ CE/ NCC/ RCM Others: WHQL	Carrier: Vodafone/ Deutsche Telekom/ British Telecom/ SKT/ Telefónica/ LGU+ Regulatory: GCF/ CE/ KC/ NCC/ RCM/ FAC/ NBTC/ ICASA Others: WHQL	Carrier: NTT DOCOMO/ SoftBank/ KDDI Regulatory: JATE/ TELEC Others: WHQL	Regulatory: SRRC/ NAL/ CCC Others: WHQL	Carrier: Deutsche Telekom/ Verizon/ AT&T/ U.S. Cellular/ Telus/ T-Mobile*/ Rogers* Regulatory: GCF/ CE/ PTCRB/ FCC/ IC/ Anatel/ IFETEL/ SRRC/ NAL/ CCC/ KC/ NCC/ JATE/ TELEC/ RCM/ IMDA/ ICASA/ FAC*/ NBTC* Others: WHQL

^① means there are two types of EG25-G Mini PCIe, with or without (U)SIM card connector.

^② means Rx-diversity is not supported.

^{**} means under development/ongoing.

⁻ means unsupported.

EC21 Series/EG21-G Specifications



■ Multi-mode LTE Cat 1 Module

29.0 mm × 32.0 mm × 2.4 mm
10 Mbps DL / 5 Mbps UL

Variant		EC21-A	EC21-V	EC21-AUT	EC21-AU	EC21-AUX	EC21-E	EC21-EU	EC21-EUX	EC21-KL	EC21-J	EG21-G
LTE	LTE-FDD	B2/ B4/ B12	B4/ B13	B1/ B3/ B5/ B7/ B28	B1/ B2 ^① / B3/ B4/ B5/ B7/ B8/ B28	B1/ B2 ^① / B3/ B4/ B5/ B7/ B8/ B28	B1/ B3/ B5/ B7/ B8/ B20	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B5/ B7/ B8	B1/ B3/ B8/ B18/ B19/ B26	B1/ B2/ B3/ B4/ B5/ B7/ B8/ B12/ B13/ B18/ B19/ B20/ B25/ B26/ B28
	LTE-TDD	-	-	-	B40	B40	-	-	-	-	-	B38/ B39/ B40/ B41
UMTS	WCDMA	B2/ B4/ B5	-	B1/ B5	B1/ B2/ B5/ B8	B1/ B2/ B5/ B8/ B4	B1/ B5/ B8	B1/B8	B1/B8	-	-	B1/ B2/ B4/ B5/ B6/ B8/ B19
	-	-	-	-	-	-	-	-	-	-	-	-
EVDO/CDMA		-	-	-	-	-	-	-	-	-	-	-
GSM/EDGE		-	-	-	Quad-band	Quad-band	B3/ B8	B3/B8	B3/B8	-	-	Quad-band
Embedded GNSS		Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	-	-	Optional
Wi-Fi/BT Interface		Y	Y	Y	Y	-	Y	Y	-	Y	Y	-
Ethernet Interface		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region		North America	Verizon	Australia	Latin America/ Australia/ New Zealand	Latin America/ Australia/ New Zealand	EMEA/ Thailand/ India	EMEA/ Thailand	EMEA/ Thailand	Korea	Japan	Global
Certification		Carrier: AT&T/ T-Mobile/ U.S. Cellular/ Rogers/ Telus Regulatory: PTCRB/ FCC/ IC Others: WHQL	Carrier: Verizon Regulatory: GCF/ RCM Others: WHQL	Carrier: Telstra Regulatory: FCC/ IC/ Anatel/ NCC/ JATE/ TELEC/ RCM Others: WHQL	Carrier: Vodafone/ Deutsche Telekom/ Telefónica* Regulatory: CE/ FCC/ Anatel/ NCC/ RCM/ ICASA Others: WHQL	Carrier: Deutsche Telekom Regulatory: GCF/ CE/ NCC/ RCM Others: WHQL	Carrier: Deutsche Telekom Regulatory: GCF/ CE/ RCM Others: WHQL	Carrier: KT/ SKT/ LGU+ Regulatory: GCF/ CE/ FCC/ RCM Others: WHQL	Carrier: NTT DOCOMO/ KDDI Regulatory: KC Others: WHQL	Carrier: SKT/ LGU+ Regulatory: GCF/ CE/ FCC/ RCM Others: WHQL	Carrier: JATE/ TELEC Regulatory: GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ IFETEL/ CCC/ KC/ NCC/ JATE/ TELEC/ RCM/ ICASA Others: WHQL	Carrier: Deutsche Telekom/ Verizon/ AT&T/ Sprint/ U.S. Cellular/ T-Mobile/ Telus Regulatory: GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ IFETEL/ CCC/ KC/ NCC/ JATE/ TELEC/ RCM/ ICASA Others: WHQL

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EC21 Series/EG21-G Mini PCIe Specifications



**30.0 mm × 51.0 mm × 4.9 mm
10 Mbps DL / 5 Mbps UL**

■ Multi-mode LTE Cat 1 Module

Variant		EC21-A Mini PCIe	EC21-V Mini PCIe	EC21-AUT Mini PCIe	EC21-AU Mini PCIe	EC21-AUX Mini PCIe	EC21-E Mini PCIe	EC21-EU Mini PCIe	EC21-EUX Mini PCIe	EC21-KL Mini PCIe	EC21-J Mini PCIe	EG21-G Mini PCIe
LTE	LTE-FDD	B2/ B4/ B12	B4/ B13	B1/ B3/ B5/ B7/ B28	B1/ B2 ^① / B3/ B4/ B5/ B7/ B8/ B28	B1/ B2 ^① / B3/ B4/ B5/ B7/ B8/ B28	B1/ B3/ B5/ B7/ B8/ B20	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B5/ B7/ B8	B1/ B3/ B8/ B18/ B19/ B26	B1/ B2/ B3/ B4/ B5/ B7/ B8/ B12/ B13/ B18/ B19/ B20/ B25/ B26/ B28
	LTE-TDD	-	-	-	B40	B40	-	-	-	-	-	B38/ B39/ B40/ B41
UMTS	WCDMA	B2/ B4/ B5	/	B1/ B5	B1/ B2/ B5/ B8	B1/ B2/ B5/ B8/ B4	B1/ B5/ B8	B1/ B8	B1/ B8	-	-	B1/ B2/ B4/ B5/ B6/ B8/ B19
	TD-SCDMA	-	-	-	-	-	-	-	-	-	-	-
EVDO/CDMA		-	-	-	-	-	-	-	-	-	-	-
GSM/EDGE		-	-	-	Quad-band	Quad-band	B3/ B8	B3/B8	B3/B8	-	-	Quad-band
Embedded GNSS		Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	-	-	Optional
Region		North America	Verizon	Australia	Latin America/ Australia/ New Zealand	Latin America/ Australia/ New Zealand	EMEA/ Korea/ Thailand/ India	EMEA/ Thailand	EMEA/ Thailand	Korea	Japan	Global
Certification		Carrier: AT&T/ T-Mobile/ Rogers/ Telus Regulatory: GCF/ FCC Others: WHQL	Carrier: Verizon	Carrier: Telstra	Carrier: Telstra	Regulatory: FCC/ IC/ Anatel/ NCC/ JATE/ RCM/ ICASA	Regulatory: CE/ FCC/ Anatel/ NCC/ JATE/ RCM/ ICASA	Carrier: Vodafone/ Deutsche Telekom/ Telefónica*	Carrier: Deutsche Telekom	Carrier: KT/ SKT/ LGU+	Carrier: NTT DOCOMO/ KDDI	Carrier: Deutsche Telekom/ Verizon/ AT&T/ T-Mobile*
		Regulatory: GCF/ RCM Others: WHQL	Regulatory: GCF/ RCM Others: WHQL	Regulatory: CE/ RCM Others: WHQL	Regulatory: GCF/ CE/ NCC/ RCM Others: WHQL	Regulatory: GCF/ CE/ NCC/ RCM Others: WHQL	Regulatory: GCF/ CE/ NCC/ RCM Others: WHQL	Regulatory: GCF/ CE/ NCC/ RCM Others: WHQL	Regulatory: GCF/ CE/ NCC/ RCM Others: WHQL	Regulatory: GCF/ CE/ NCC/ RCM Others: WHQL	Regulatory: GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ IFETEL/ NCC/ JATE/ TELEC/ RCM/ ICASA Others: WHQL	

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EG95 Series Specifications



■ Multi-mode LTE Cat 4 Module

29.0 mm × 25.0 mm × 2.3 mm
150 Mbps DL / 50 Mbps UL

Variant		EG95-NA	EG95-NAX	EG95-NAXD (Data-only)	EG95-AUX	EG95-E	EG95-EX
LTE	LTE-FDD	B2/ B4/ B5/ B12/ B13	B2/ B4/ B5/ B12/ B13/ B25/ B26	B2/ B4/ B5/ B12/ B13/ B25/ B26	B1/ B2/ B3/ B4/ B5/ B7/ B8/ B28/ B66	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28
	LTE-TDD	-	-	-	-	-	-
UMTS	WCDMA	B2/ B4/ B5	B2/ B4/ B5	B2/ B4/ B5	B1/ B2/ B5/ B8	B1/ B8	B1/ B8
	TD-SCDMA	-	-	-	-	-	-
EVDO/CDMA		-	-	-	-	-	-
GSM/EDGE		-	-	-	Quad-band	B3/ B8	B3/B8
Embedded GNSS		Optional	Optional	Optional	Optional	-	Optional
Wi-Fi/BT Interface		-	-	-	-	-	-
Ethernet Interface		-	-	-	-	-	-
Region		North America	North America	North America	Latin America/ Australia/ New Zealand	EMEA	EMEA
Certification		Carrier: Verizon/ AT&T/ T-Mobile/ U.S. Cellular/ Rogers/ Telus Regulatory: GCF/ PTCRB/ FCC/ IC Others: WHQL	Carrier: AT&T/ Sprint/ Verizon Regulatory: GCF/ PTCRB/ FCC/ IC Others: WHQL	Carrier: Verizon/ AT&T/ T-Mobile/ Sprint Regulatory: GCF/ PTCRB/ FCC/ IC Others: WHQL	Regulatory: GCF/ CE/ RCM/ Anatel Others: WHQL	Regulatory: GCF/ CE/ RCM/ FAC Others: WHQL	Regulatory: GCF/ CE/ RCM Others: WHQL

"-" means unsupported.

EG91 Series Specifications



29.0 mm × 25.0 mm × 2.3 mm
10 Mbps DL / 5 Mbps UL

■ Multi-mode LTE Cat 1 Module

Variant		EG91-NA	EG91-NAX	EG91-NAXD (Data-only)	EG91-VX	EG91-AUX	EG91-E	EG91-EX
LTE	LTE-FDD	B2/ B4/ B5/ B12/ B13	B2/ B4/ B5/ B12/ B13/ B25/ B26	B2/ B4/ B5/ B12/ B13/ B25/ B26	B4/ B13	B1/ B2/ B3/ B4/ B5/ B7/ B8/ B28/ B66	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28
	LTE-TDD	-	-	-	-	-	-	-
UMTS	WCDMA	B2/ B4/ B5	B2/ B4/ B5	B2/ B4/ B5	-	B1/ B2/ B5/ B8	B1/ B8	B1/ B8
	TD-SCDMA	-	-	-	-	-	-	-
EVDO/CDMA		-	-	-	-	-	-	-
GSM/EDGE		-	-	-	-	Quad-band	B3/ B8	B3/B8
Embedded GNSS	Optional	Optional	Optional	Optional	Optional	Optional	-	Optional
Wi-Fi/BT Interface	-	-	-	-	-	-	-	-
Ethernet Interface	-	-	-	-	-	-	-	-
Region	North America	North America	North America	North America	Latin America/ Australia/ New Zealand	EMEA	EMEA	EMEA
Certification	Carrier: Verizon/ AT&T/ T-Mobile/ U.S. Cellular/ Rogers/ Telus Regulatory: GCF/ PTCRB/ FCC/ IC Others: WHQL	Carrier: Verizon/ AT&T/ Sprint Regulatory: GCF/ PTCRB/ FCC/ IC Others: WHQL	Carrier: Verizon/ AT&T/ T-Mobile/ Sprint Regulatory: GCF/ PTCRB/ FCC/ IC Others: WHQL	Carrier: Verizon Regulatory: GCF/ FCC Others: WHQL	Regulatory: CE/ FCC/ Anatel/ RCM Others: WHQL	Carrier: Deutsche Telekom Regulatory: GCF/ CE/ RCM/ Anatel/ FAC Others: WHQL	Regulatory: GCF/ CE/ NCC/ RCM Others: WHQL	Regulatory: GCF/ CE/ NCC/ RCM Others: WHQL

"-" means unsupported.

EM05 Series Specifications



■ Multi-mode LTE Cat 4 Module

42 mm × 30 mm × 2.3 mm
150 Mbps DL / 50 Mbps UL

Variant	EM05-CE	EM05-E	EM05-G
LTE	LTE-FDD B1/ B3/ B5/ B8	B1/ B3/ B7/ B8/ B20/ B28	B1/ B2/ B3/ B4/ B5/ B7/ B8/ B12/ B13/ B14/ B18/ B19/ B20/ B25/ B26/ B28/ B66/ B71
	LTE-TDD B38/ B39/ B40/ B41	B38/ B41	B38/ B39/ B40/ B41
UMTS	WCDMA B1/ B8	B1/ B8	B1/ B2/ B4/ B5/ B6/ B8/ B19
	TD-SCDMA -	-	-
EVDO/CDMA	BC0	-	-
Embedded GNSS	Optional	Optional	Optional
Wi-Fi/Bluetooth Interface	-	-	-
Ethernet Interface	-	-	-
Region	China/ Thailand/ India	Europe/ Australia/ New Zealand	Global
Certification	Regulatory: SRRC/ NAL/ CCC	Regulatory: CE/ RCM/ NCC/ ICASA	Carrier: AT&T/ T-Mobile/ Vodafone/ EE/ Swisscom/ NTT DOCOMO/ KDDI/ China Telecom/ China Mobile/ China Unicom/ Verizon*/ SoftBank*/ Telstra* Regulatory: SRRC/ NAL/ CCC/ GCF/ CE/ PTCRB/ FCC/ IC/ Anatel/ KC/ NCC/ JATE/ TELEC/ RCM

EC200A Series Specifications



■ Multi-mode LTE Cat 4 Module

29.0 mm × 32.0 mm × 2.4 mm

150 Mbps DL / 50 Mbps UL

Variant		EC200A-CN*	EC200A-EU*	EC200A-AU*
LTE	LTE-FDD	B1/ B3/ B5/ B8	B1/B3/B5/B7/B8/B20/B28	B1/ B2/ B3/ B4/ B5/ B7/ B8/ B28/ B66
	LTE-TDD	B34/ B38/ B39/ B40/ B41	B38/ B40/ B41	B40
UMTS	WCDMA	B1/ B5/ B8	B1/ B5/ B8	B1/ B2/ B4/ B5/ B8
	TD-SCDMA	-	-	-
EVDO/CDMA		-	-	-
GSM/EDGE		B3/ B8	B3/ B8	B2/ B3/ B5/ B8
QuecLocator®		Y	Y	Y
VoLTE		Y*	Y*	Y*
WLAN Interface		Y (QuecOpen® only)	-	-
DFOTA		Y	Y*	Y*
Power Supply		3.4~4.5 V, typ. 3.8 V	3.4~4.5 V, typ. 3.8 V	3.4~4.5 V, typ. 3.8 V
Region		China/ India	EMEA	Latin America/ Australia/ New Zealand
Certification		Regulatory: SRRC*/ NAL*/ CCC*	Regulatory: CE*/ RCM*/ UKCA*	Regulatory: FCC*/ Anatel*

EC200S Series Specifications



■ Multi-Mode LTE Cat 1 Module

29.0 mm × 32.0 mm × 2.4 mm
10 Mbps DL / 5 Mbps UL

Variant		EC200S-EU	EC200S-EN
LTE	LTE-FDD	B1/ B3/ B5/ B7/ B8/ B20/ B28	B1/ B3/ B5/ B7/ B8/ B20/ B28/ B31/ B72
	LTE-TDD	B38/ B40/ B41	-
UMTS	WCDMA	-	-
	TD-SCDMA	-	-
EVDO/CDMA		-	-
GSM/EDGE		B2/ B3/ B5/ B8	B3/ B8
GNSS		-	-
QuecLocator®		Y	Y
Analog Audio		Y	Y
Wi-Fi Scan		Y	-
VoLTE		Y*	Y
DFOTA		Y	Y
Power Supply		3.4–4.5 V, typ. 3.8 V	3.4–4.5 V, typ. 3.8 V
Region		EMEA/ APAC	EMEA/ APAC
Certification		Regulatory: CE/ RCM	Regulatory: CE/ RCM

"Y" means supported.

"-" means unsupported.

"*" means under development.

EC200S Series Mini PCIe Specifications



■ Multi-Mode LTE Cat 1 Module

30.0 mm × 51.0 mm × 4.9 mm

10M DL / 5M UL

Variant	EC200S-EU Mini PCIe	EC200S-EN Mini PCIe
LTE	LTE-FDD	B1/ B3/ B5/ B7/ B8/ B20/ B28
	LTE-TDD	B38/ B40/ B41
GSM/EDGE	B2/ B3/ B5/ B8	B3/ B8
GNSS	-	-
QuecLocator®	Y	Y
Audio	PCM × 1	PCM × 1
Wi-Fi Scan	Optional	-
VoLTE*	Y	Y
Power Supply	3.0–3.6 V, typ. 3.3 V	3.0–3.6 V, typ. 3.3 V
Region	EMEA/ APAC	EMEA/ APAC
Certification	Regulatory: CE/ RCM	Regulatory: CE/ RCM

"Y" means supported.

"-" means unsupported.

"*" means under development.

EC200U Series Specifications



■ Multi-Mode LTE Cat 1 Module

28.0 mm × 31.0 mm × 2.4 mm
10 Mbps DL / 5 Mbps UL

Variant		EC200U-CN	EC200U-EU
LTE	LTE-FDD	B1/ B3/ B5/ B8	B1/ B3/ B5/ B7/ B8/ B20/ B28
	LTE-TDD	B34/ B38/ B39/ B40/ B41	B38/ B40/ B41
UMTS	WCDMA	-	-
	TD-SCDMA	-	-
EVDO/CDMA		-	
GSM/EDGE		B3/ B8	B2/ B3/ B5/ B8
GNSS		Optional	Optional
QuecLocator®		Y	Y
Analog Audio		Y	Y
Wi-Fi Scan		Optional	Optional
Bluetooth		Optional	Optional
VoLTE		Y	Y*
FOTA		Y	Y
Power Supply		3.3–4.3 V, typ. 3.8 V	3.3–4.3 V, typ. 3.8 V
Region		China/India	EMEA
Certification		Regulatory: SRRC/ NAL/ CCC	Regulatory: CE/ RCM

"Y" means supported.

"—" means unsupported.

"**" means under development.

EG915U Series Specifications



■ Multi-Mode LTE Cat 1 Module

23.6 mm × 19.9 mm × 2.4 mm
10 Mbps DL/ 5 Mbps UL

Variant	EG915U-EU	EG915U-LA	EG915U-CN*
LTE	LTE-FDD	B1/B3/B5/B7/B8/B20/B28	B2/B3/B4/B5/B7/B8/B28/B66
	LTE-TDD	-	-
UMTS	WCDMA	-	-
	TD-SCDMA	-	-
EVDO/CDMA	-	-	-
GSM/EDGE	B2/B3/B5/B8	B2/B3/B5/B8	B3/B8
GNSS	-	-	-
QuecLocator®	Y	Y	Y
Analog Audio	Y	Y	Y
Wi-Fi Scan	Optional	Optional	Optional
Bluetooth	Optional	Optional	Optional
VoLTE	Y*	Y*	Y
DFOTA	Y	Y	Y
Power Supply	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
Region	EMEA/ Brazil/ Australia/ New Zealand	Latin America	China/ India
Certification	Regulatory: GCF*/ CE*/ RCM*/ Anatel*	Regulatory: FCC*/ Anatel*	-

"Y" means supported.

"-" means unsupported.

"**" means under development/ongoing.

Support Package - Technical Materials & EVB Kit

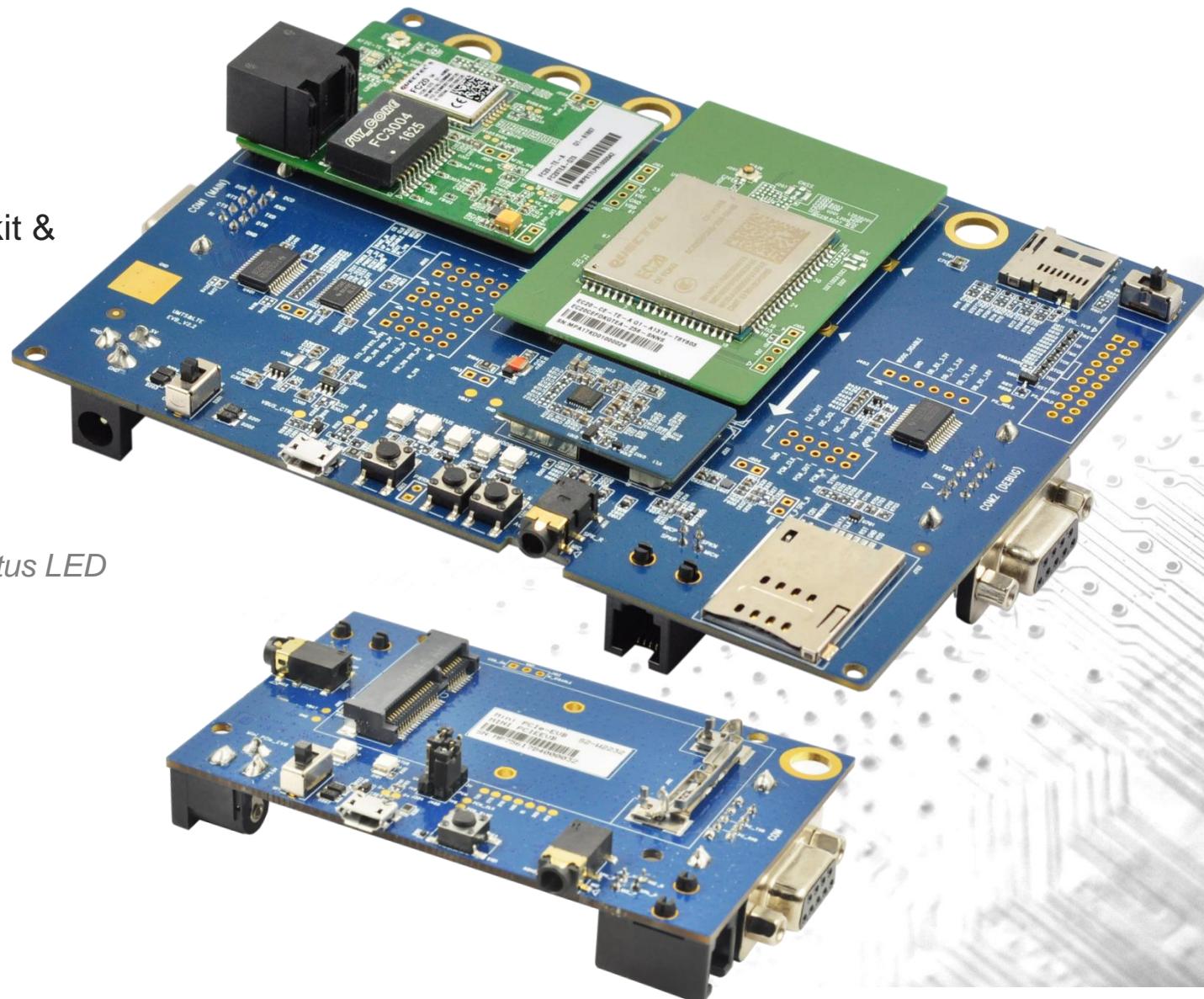


Technical Materials Package

- Hardware & software documents
- Debug tools, download tools, test tools, EVB kit & USB drivers
- Approvals & test reports
- QNavigator

Development Tool (UMTS<E EVB Kit)

- Connectors
 - a) Power supply connectors
 - b) USB connector
 - c) UART connectors
 - d) (U)SIM card connector
 - e) SD card connector
 - f) Digital and audio connectors
- Auxiliaries
 - a) Network status LED
 - b) Power key
 - c) Reset key
 - d) Test points





LTE Standard Modules

LTE-A & 5G Modules

Automotive Modules

Smart Modules

LPWA Modules

UMTS/HSPA(+) Modules

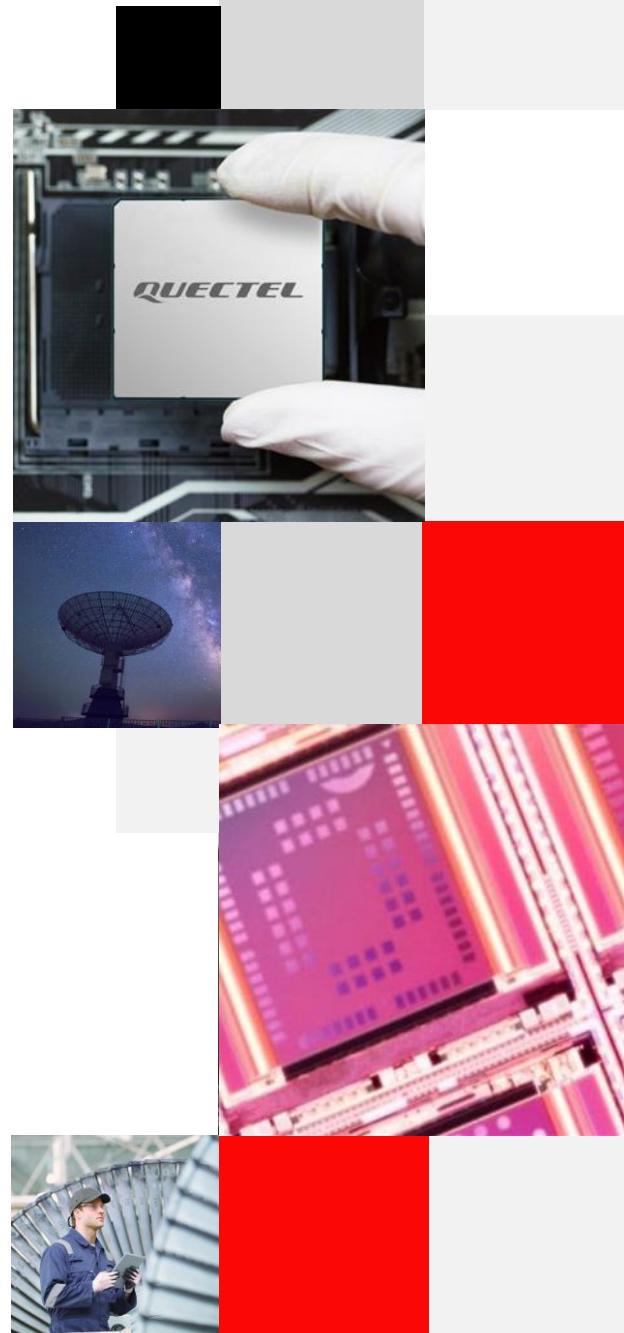
GSM/GPRS Modules

GNSS Modules

Wi-Fi&Bluetooth Modules

Antenna Products

Build a Smarter World



5G/ LTE-A Module Roadmap



mmWave

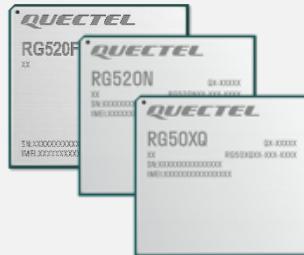
Sub-6 G

Cat 12/
16/ 18

Cat 6



RG500L Series



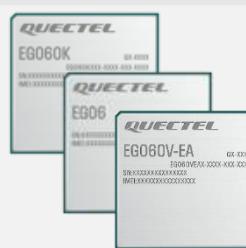
RG520F Series
RG520N Series
RG50xQ Series



EG18 Series
EG12 Series
EG120K-EA



EG512R-EA



EG060K-EA
EG06 Series
EG060V-EA

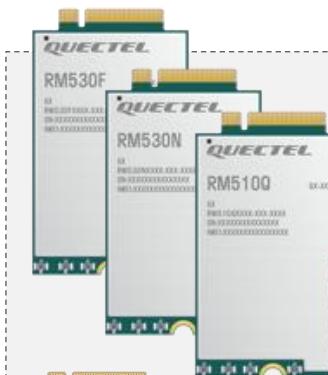


EP06 Series

• Qx/YY Estimated Engineering Sample Time

RG530F Series

• Q4/21



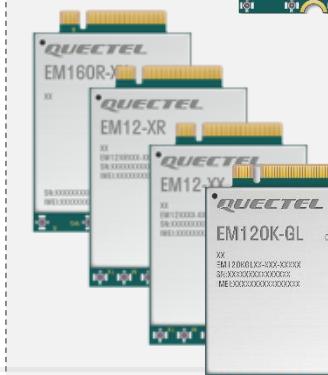
RM530F-GL
RM530N-GL
RM510Q-GL

• Q4/21



RM520F-GL
RM520N-GL
RM50xQ Series
RM500S Series

• Q4/21



EM160R-GL
EM12xR-GL
EM12-G
EM120K-GL

• Q4/21



EM060K-GL
EM06 Series

• Q4/21

Compatible Design

RG50xQ Series Specifications



■ UMTS/LTE/5G Multi-Mode Module

44.0 mm × 41.0 mm × 2.75 mm
5G Sub-6 GHz LGA Module

Variant	RG500Q-EA	RG502Q-EA	RG501Q-EU	RG502Q-EU	RG502Q-GT
5G NR	5G NR	3GPP Release 15 NSA/SA operation, Sub-6 GHz		3GPP Release 15 NSA/SA operation, Sub-6 GHz	3GPP Release 15 SA operation, Sub-6 GHz
	NSA Bands	n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n77/n78/n79		n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n77/n78	-
	SA Bands	n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n77/n78/n79		n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n77/n78	n78
	Sub-6 CA	-	TDD + TDD DL CA*	-	TDD + TDD DL CA*
	DL 4 × 4 MIMO	n1/n3/n7/n38/n40/n41/n77/n78/n79		n1/n3/n7/n38/n40/n41/n77/n78	n78
	UL 2 × 2 MIMO	n41/n77/n78/n79		n41/n77/n78	n78
LTE	LTE Category	Cat 16	Cat 20	Cat 20	Cat 20
	LTE Bands	B1/B3/B5/B7/B8/B18/B19/B20/B26/B28/ B32/B34/B38/B39/B40/B41/B42/B43		B1/B3/B5/B7/B8/B20/B28/B32/B38/B40/B41/B42/B43	B42/B43
	DL 4 × 4 MIMO	B1/B3/B7/B32/B34/B38/B39/B40/B41/B42/B43		B1/B3/B7/B32/B38/B40/B41/B42	B42/B43
UMTS	WCDMA Bands	B1/B3/B5/B6/B8/B19		B1/B5/B8	-
Embedded GNSS		Supported		Supported	-
PCIe 3.0 Interface		Supported		Supported	Supported
USB 3.1 Interface		Supported		Supported	Supported
RGMII Interface		Supported		Supported	Supported
eSIM		Supported		Supported / Built-in eSIM (optional)	Supported / Built-in eSIM (optional)
Region		EMEA/ APAC		EMEA/ Oceania/ Brazil	Global TDD 3.5 GHz Network
Certification	Carrier: Telstra ^{TBD} / China Telecom/ China Mobile/ China Unicom/ KT*/ SKT/ LGU+ Regulatory: CE/ SRRC/ NAL/ CCC/ KC/ JATE/ TELEC/ RCM	Carrier: TBD Regulatory: CE/ RCM	Carrier: TBD Regulatory: GCF/ CE/ RCM	Carrier: TBD Regulatory: CE/ RCM	Carrier: TBD Regulatory: CE*/ RCM*

Notes: 1. ^{*}: Under development/ In progress.
2. ^{TBD}: To Be Determined.

RG520N Series Specifications (Preliminary)



44.0 mm × 41.0 mm × 2.75 mm
5G Sub-6 GHz LGA Module

■ UMTS/LTE/5G Multi-Mode Module

Variant	RG520N-EU (Draft)	RG520N-NA (Draft)
5G NR	5G NR	3GPP Release 16 NSA/SA operation, Sub-6 GHz
	NSA Bands	n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n75/n76/n77/n78
	SA Bands	n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n75/n76/n77/n78
	Sub-6 CA	FDD + FDD, TDD + TDD, FDD + TDD 2CA
	DL 4 × 4 MIMO	n1/n3/n7/n38/n40/n41/n77/n78/n75/n76
LTE	LTE Category	Cat 19
	LTE Bands	B1/B3/B5/B7/B8/B20/B28/B32/B38/B40/B41/B42/B43
	DL 4 × 4 MIMO	B1/B3/B7/B32/B38/B40/B41/B42/B43
UMTS	WCDMA Bands	B1/B5/B8
Embedded GNSS	Supported	Supported
PCIe 4.0 Interface	Supported	Supported
USB 3.1 Interface	Supported	Supported
RGMII Interface	Not Supported	Not Supported
Region	EMEA/ Oceania/ Brazil	North America
Certification	Carrier: TBD Regulatory: CE*/ RCM*	Carrier: TBD Regulatory: FCC*/ IC*

RG520F Series Specifications (Preliminary)



■ UMTS/LTE/5G Multi-Mode Module

45.0 mm × 48.0 mm × 2.85 mm (approx.)
5G Sub-6 GHz LGA Module

Variant	RG520F-EU (Draft)	RG520F-NA (Draft)
5G NR	5G NR	3GPP Release 16 NSA/SA operation, Sub-6 GHz
	NSA Bands	n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n75/n76/n77/n78
	SA Bands	n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n75/n76/n77/n78
	Sub-6 CA	FDD + FDD, TDD + TDD, FDD + TDD DL 3CA / UL 2CA
	DL 4 × 4 MIMO	n1/n3/n7/n38/n40/n41/n75/n76/n77/n78
LTE	LTE Category	Cat 20
	LTE Bands	B1/B3/B5/B7/B8/B20/B28/B32/B38/B40/B41/B42/B43
	DL 4 × 4 MIMO	B1/B3/B7/B32/B38/B40/B41/B42/B43
UMTS	WCDMA Bands	B1/B5/B8
Embedded GNSS	Supported	Supported
PCIe 4.0 Interface	Supported	Supported
USB 3.1 Interface	Supported	Supported
RGMII Interface	Not Supported	Not Supported
Region	EMEA/ Oceania/ Brazil	North America
Certification	Carrier: TBD Regulatory: GCF ^{TBD} /CE*/RCM*	Carrier: TBD Regulatory: GCF ^{TBD} /PTCRB ^{TBD} /FCC*/IC*

Notes: 1. “*”: Under development/ In progress.
2. TBD: To Be Determined.

RG530F Series Specifications (Preliminary)



■ UMTS/LTE/5G Multi-Mode Module

45.0 mm × 48.0 mm × 2.85 mm (approx.)
5G Sub-6 GHz LGA Module

Variant	RG530F-EU (Draft)	RG530F-NA (Draft)
5G NR	5G NR	3GPP Release 16 NSA/SA operation, Sub-6 GHz, mmWave
	Sub-6 NSA Bands	n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n75/n76/n77/n78
	Sub-6 SA Bands	n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n75/n76/n77/n78
	Sub-6 CA	FDD + FDD, TDD + TDD, FDD + TDD DL 3CA / UL 2CA
	mmWave Bands	n257/n258/n260/n261
	DL 4 × 4 MIMO	n1/n3/n7/n38/n40/n41/n75/n76/n77/n78
LTE	LTE Category	Cat 20
	LTE Bands	B1/B3/B5/B7/B8/B20/B28/B32/B38/B40/B41/B42/B43
	DL 4 × 4 MIMO	B1/B3/B7/B32/B38/B40/B41/B42/B43
UMTS	WCDMA Bands	B1/B5/B8
Embedded GNSS	Supported	Supported
PCIe 4.0 Interface	Supported	Supported
USB 3.1 Interface	Supported	Supported
RGMII Interface	Not Supported	Not Supported
Region	EMEA/ Oceania/ Brazil	North America
Certification	Carrier: TBD Regulatory: TBD	Carrier: TBD Regulatory: TBD

RG500L Series Specifications



44.0 mm × 41.0 mm × 2.75 mm
5G Sub-6 GHz LGA Module

■ UMTS/LTE/5G Multi-Mode Module

Variant	RG500L-EU	RG500L-NA (Preliminary)
5G NR	5G NR	3GPP Release 15 NSA/SA operation, Sub-6 GHz
	NSA Bands	n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n77/n78
	SA Bands	n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n77/n78
	DL 4 × 4 MIMO	n1/n3/n7/n38/n40/n41/n77/n78
	UL 2 × 2 MIMO	n40*/n41/n77/n78
LTE	LTE Category	Cat 19
	LTE Bands	B1/B3/B5/B7/B8/B20/B28/B32/B38/B40/B41/B42/B43
	DL 4 × 4 MIMO	B1/B3/B7/B38/B40/B41/B42
UMTS	WCDMA Bands	B1/B5/B8
Embedded GNSS	Supported	Supported
PCIe 3.0 Interface	Supported	Supported
USB 3.1 Interface	Supported	Supported
SGMII Interface	Supported	Supported
Region	EMEA/ Oceania/ Brazil	North America
Certification	Carrier: TBD Regulatory: GCF ^{TBD} / CE/ RCM	Carrier: TBD Regulatory: GCF ^{TBD} / FCC ^{TBD} / IC ^{TBD} / PTCRB ^{TBD}

RM50xQ Series Specifications



■ UMTS/LTE/5G Multi-Mode Module

52.0 mm × 30.0 mm × 2.3 mm
5G Sub-6 GHz M.2 Module

Variant	RM500Q-AE	RM502Q-AE	RM505Q-AE	RM500Q-GL	RM502Q-GL
5G NR	5G NR	3GPP Release 15 NSA/SA operation, Sub-6 GHz		3GPP Release 15 NSA/SA operation, Sub-6 GHz	
	NSA Bands	n1/n2/n3/n5/n7/n8/n12/n20/n25/n28/n38/n40/n41/n48*/ n66/n71/n77/n78/n79		n41/n77/n78/n79	n38/n41/n77/n78
	SA Bands	n1/n2/n3/n5/n7/n8/n12/n20/n25/n28/n38/n40/n41/n48*/ n66/n71/n77/n78/n79		n1/n2/n3/n5/n7/n8/n12/n20/n25/n28/n38/n40/n41/n48*/n66/n71/n77/n78/ n79	n1/n2/n3/n5/n7/n8/n12/n20/n25/n28/n38/n40/n41/n48/n66/n71/n77/n78
	Sub-6 CA	-	TDD +TDD DL CA*	-	TDD +TDD DL CA*
	DL 4 × 4 MIMO	n1/n2/n3/n7/n25/n38/n40/n41/n48/n66/n77/n78/n79		n1/n2/n3/n7/n25/n38/n40/n41/n48/n66/n77/n78/n79	n1/n2/n3/n7/n25/n38/n40/n41/n48/n66/n77/n78
	UL 2 × 2 MIMO	n41		n41/n77/n78/n79	n41/n77/n78
LTE	LTE Category	DL Cat 16/ UL Cat 18	DL Cat 20/ UL Cat 18	DL Cat 16/ UL Cat 18	DL Cat 20/ UL Cat 18
	LTE Bands	B1/B2/B3/B4/B5/B7/B8/B12(B17)/B13/B14/B18/B19/B20/B25/B26/B28/B29/B30/B32/B34/B38/B39/B40/B41/B42/B43/B46(LAA)/B48/B66/B71		B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/B32/B34/B38/B39/B40/B41/B42/B43/B46(LAA)/B48/B66/B71	
	DL 4 × 4 MIMO	B1/B2/B3/B4/B7/B25/B30/B32/B34/B38/39/B40/B41/B42/B43/B48/B66		B1/B2/B3/B4/B7/B25/B30/B32/B34/B38/B39/B40/B41/B42/B43/B48/B66	
UMTS	WCDMA Bands	B1/B2/B3/B4/B5/B6/B8/B19			B1/B2/B3/B4/B5/B6/B8/B19
Embedded GNSS	Supported	Supported	Supported (Independent GNSS Antenna Port, Active)		Supported
PCIe 3.0 Interface		Supported			Supported
USB 3.1 Interface		Supported			Supported
eSIM		Supported / Built-in eSIM (optional)			Supported / Built-in eSIM (optional)
Region		Global (except for China)		Global (except for US)	Global (except for US/ China/ Japan)
Certification	Carrier: Deutsche Telekom/ AT&T/ T-Mobile*/ Verizon*/ Telstra* Regulatory: GCF/ CE/ PTCRB/ FCC/ IC/ NCC*/ JATE/ TELEC/ RCM	Carrier: Deutsche Telekom*/ AT&T/ T-Mobile/ Verizon*/ Telstra Regulatory: GCF/ CE/ PTCRB/ FCC/ IC/ JATE/ TELEC/ RCM	Carrier: Deutsche Telekom/ AT&T/ T-Mobile*/ Verizon*/ Telstra* Regulatory: GCF/ CE/ PTCRB/ FCC/ IC/ JATE/ TELEC/ RCM	Carrier: Deutsche Telekom*/ China Telecom/ China Mobile/ China Unicom/ KT/ SKT/ LGU+ Regulatory: GCF/ CE/ SRRC/ NAL/ CCC/ KC/ RCM	Carrier: TBD Regulatory: GCF / PTCRB / CE / RCM/ IC/ FCC

Notes: 1. **: Under development/ In progress.
2. TBD: To Be Determined.

RM520N-GL Specifications (Preliminary)



■ UMTS/LTE/5G Multi-Mode Module

52.0 mm × 30.0 mm × 2.3 mm
5G Sub-6 GHz M.2 Module

Variant	RM520N-GL (Draft)	
5G NR	5G NR	3GPP Release 16 NSA/SA operation, Sub-6 GHz
	NSA Bands	n1/n2/n3/n5/n7/n8/n12/n13/n14/n20/n25/n26/n28/n29/n30/n38/n40/n41/n48/n66/n71/n75/n76/n77/n78/n79
	SA Bands	n1/n2/n3/n5/n7/n8/n12/n13/n14/n20/n25/n26/n28/n29/n30/n38/n40/n41/n48/n66/n71/n75/n76/n77/n78/n79
	Sub-6 CA	FDD + FDD, TDD + TDD, FDD + TDD 2CA
	DL 4 × 4 MIMO	n1/n2/n3/n7/n25/n38/n41/n48/n66/n77/n78/n79
	UL 2 × 2 MIMO	n41
LTE	LTE Category	DL Cat 19/ UL Cat 18
	LTE Bands	B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/B32/B34/B38/B39/B40/B41/B42/B43/B46(LAA)/B48/B66/B71
	DL 4 × 4 MIMO	B1/B2/B3/B4/B7/B25/B38/B41/B42/B43/B48/B66
UMTS	WCDMA Bands	B1/B2/B3/B4/B5/B6/B8/B19
Embedded GNSS		Supported
PCIe 4.0 Interface		Supported
USB 3.1 Interface		Supported
eSIM		Supported / Built-in eSIM (optional)
Region		Global
Certification		Carrier: TBD Regulatory: GCF*/PTCRB*/CE*/RCM*/IC*/FCC*/JATE*/TELEC*

Notes: 1. “*”: Under development/ In progress.
2. TBD: To Be Determined.

RM510Q-GL Specifications



■ UMTS/LTE/5G Multi-Mode Module

52.0 mm × 30.0 mm × 2.3 mm

Variant	RM510Q-GL	
5G NR	5G NR	3GPP Release 15 NSA/SA operation, Sub-6 GHz, mmWave
	Sub-6 NSA Bands	n1/n2/n3/n5/n7/n8/n12/n20/n25/n28/n38/n40/n41/n48/n66/n71/n77/n78/n79
	Sub-6 SA Bands	n1/n2/n3/n5/n7/n8/n12/n20/n25/n28/n38/n40/n41/n48/n66/n71/n77/n78/n79
	mmWave Bands	n257/n258/n260/n261
	DL 4 × 4 MIMO	n1/n2/n3/n7/n25/n38/n40/n41/n48/n66/n77/n78/n79
	UL 2 × 2 MIMO	n41/n257/n258/n260/n261
LTE	LTE Category	DL Cat 20 / UL Cat 18
	LTE Bands	B1/B2/B3/B4/B5/B7/B8/B12(B17)/B13/B14/B18/B19/B20/B25/B26/B28/B29/B30/B32/B34/B38/B39/B40/B41/B42/B43/B46(LAA)/B48/B66/B71
	DL 4 × 4 MIMO	B1/B2/B3/B4/B7/B25/B30/B32/B34/B38/B39/B40/B41/B42/B43/B48/B66
UMTS	WCDMA Bands	B1/B2/B3/B4/B5/B6/B8/B19
Embedded GNSS		Supported
PCIe 3.0 Interface		Supported
USB 3.1 Interface		Supported
eSIM		Supported / Built-in eSIM (optional)
Region		Global
Certification		Carrier ^{TBD} : Verizon/ AT&T/ T-Mobile/ Telstra Regulatory : GCF/ CE/ PTCRB/ FCC/ IC/ RCM

RM530N-GL Specifications (Preliminary)



■ UMTS/LTE/5G Multi-Mode Module

52.0 mm × 30.0 mm × 2.3 mm
5G Sub-6 GHz + mmWave M.2 Module

Variant	RM530N-GL (Draft)	
5G NR	5G NR	3GPP Release 16 NSA/SA operation, Sub-6 GHz, mmWave
	Sub-6 NSA Bands	n1/n2/n3/n5/n7/n8/n12/n13/n14/n20/n25/n26/n28/n29/n30/n38/n40/n41/n48/n66/n71/n75/n76/n77/n78/n79/
	Sub-6 SA Bands	n1/n2/n3/n5/n7/n8/n12/n13/n14/n20/n25/n26/n28/n29/n30/n38/n40/n41/n48/n66/n71/n75/n76/n77/n78/n79
	Sub-6 CA	FDD + FDD, TDD + TDD, FDD + TDD 2CA
	mmWave Bands	n257/n258/n260/n261
	DL 4 × 4 MIMO	n1/n2/n3/n7/n25/n38/n41/n48/n66/n77/n78/n79
	UL 2 × 2 MIMO	n41/n257/n258/n259/n260/n261
LTE	LTE Category	DL Cat 19 / UL Cat 18
	LTE Bands	B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/B32/B34/B38/B39/B40/B41/B42/B43/B46(LAA)/B48/B66/B71
	DL 4 × 4 MIMO	B1/B2/B3/B4/B7/B25/B38/B41/B42/B43/B48/B66
UMTS	WCDMA Bands	B1/B2/B3/B4/B5/B6/B8/B19
Embedded GNSS		Supported
PCIe 4.0 Interface		Supported
USB 3.1 Interface		Supported
eSIM		Supported / Built-in eSIM (optional)
Region		Global
Certification		Carrier: TBD Regulatory: GCF*/PTCRB*/CE*/RCM*/IC*/FCC*/JATE*/TELEC*

EG06 Series Specifications



39.5 mm × 37.0 mm × 2.8 mm
LTE Cat 6, 300M DL/ 50M UL

■ Multi-Mode LTE-A Module

Variant		EG06-E	EG06-EA	EG06-A	EG06-AUTL
Category		6	6	6	6
LTE	LTE-FDD	B1/B3/B5/B7/B8/B20/B28/B32 ^①	B1/B3/B5/B7/B8/B20/B28/B32 ^①	B2/B4/B5/B7/B12/B13/B25/B26/B29 ^① /B30/B66	B3/B7/B28
	LTE-TDD	B38/B40/B41	B38/B40/B41	-	-
	2CA	B1+B1/B5/B8/B20/B28; B3+B3/B5/B7/B8/B20/B28; B7+B5/B7/B8/B20/B28; B20+B32 ^① ; B38+B38; B40+B40; B41+B41	B1+B1/B3/B5/B7/B8/B20/B28; B3+B3/B5/B7/B8/B20/B28; B7+B5/B7/B8/B20/B28; B20+B32 ^① ; B38+B38; B40+B40; B41+B41	B2+B2/B5/B12/B13/B29 ^① ; B4+B4/B5/B12/B13/B29 ^① ; B7+B5/B7/B12/B26; B25+B5/B12/B25/B26; B30+B5/B12/B29 ^① ; B66+B5/B12/B13/B29 ^① /B66	B3+B3/B7/B28; B7+B7/B28
UMTS	WCDMA	B1/B3/B5/B8	B1/B3/B5/B8	B2/B4/B5	-
Embedded GNSS		Supported	Supported	Supported	Supported
VoLTE (Voice over LTE)		Supported	Supported	Supported	Supported
USB 2.0 Interface		Supported	Supported	Supported	Supported
Region		EMEA/ APAC ^② / Brazil	EMEA/ APAC ^② / Brazil	North America	Australia
Certification		Carrier: Deutsche Telekom/ British Telecom/ Telstra Regulatory: GCF/ CE/ KC/ RCM	Carrier: TBD Regulatory: CE/ RCM	Carrier: Verizon/ AT&T/ U.S. Cellular Regulatory: GCF/ FCC/ PTCRB/ IC	Carrier: Telstra Regulatory: GCF/ RCM

Notes: 1. TBD: To Be Determined.

2. ①LTE-FDD B29 and B32 support receiving only, and are only for secondary component carrier in 2CA.

3. ②Excluding Japan and China Mobile.

EG06xK Series Specifications (Preliminary)



EG060K-EA: 39.5 mm × 37.0 mm × 2.80 mm

EG065K-NA: 28.0 mm × 31.0 mm × 2.40 mm

LTE Cat 6, 300M DL / 50M UL

■ LTE-A Module

Variant		EG060K-EA	EG065K-NA
Category		6	6
LTE	LTE-FDD	B1/B3/B5/B7/B8/B20/B28/B32	B2/B4/B5/B7/B12/B13/B14/B25/B26/B30/B66
	LTE-TDD	B38/B40/B41/B42(Optional)/B43(Optional)	-
	2CA	B1+B1/B3/B5/B7/B8/B20/B28/B38/B40/B41 B3+B3/B5/B7/B8/B20/B28/B38/B40/B41 B7+B5/B7/B8/B20/B28 B20+B32 B20+B38/B40 B38+B38 B40+B40 B41+B41	B2+B4/5/12/13/14/66 B4+B5/12/13 B5+B5/30/66 B12+B66 B7+B5/B12 B25+B5/12/25/26 B30+B5/12/14 B66+B5/12/13 66A-66A, 66B, 66C
UMTS	WCDMA	B1/B3/B5/B8	B2*/B4*/B5*
Embedded GNSS		Supported	-
VoLTE (Voice over LTE)		Supported	-
USB 2.0/3.0 Interface		Supported	Supported ^①
Region		EMEA/ APAC/ Brazil	North America
Certification		Carrier: TBD Regulatory: CE*/ RCM*	Carrier: AT&T*/ Verizon*/ Telus* Regulatory: GCF*/ FCC*/ IC*/ PTCRB*/ IFETEL*

EG060V-EA Specifications



LTE-A Module

39.5 mm × 37.0 mm × 3.05 mm
LTE Cat 6, 300M DL/ 50M UL

Variant	EG060V-EA	
Category	6	
LTE	LTE-FDD	B1/B3/B5/B7/B8/B20/B28
	LTE-TDD	B38/B40/B41
	2CA ^②	B1+B1/B3/B5/B8/B20/B28; B3+B3/B5/B7/B8 ^① /B20/B28; B7+B5/B7/B8/B20/B28; B38+B38; B40+B40; B41+B41
UMTS	WCDMA	B1/B5/B8
Embedded GNSS	-	
VoLTE (Voice over LTE)	Supported	
USB 2.0 Interface	Supported	
Region	EMEA/ APAC ^③ / Brazil	
Certification	Carrier: TBD Regulatory: CE*/ NCC*	

Notes: 1. **: Under development/ In progress. TBD: To Be Determined.

2. ① For CA-3A-8A, “B3 (PCC) + B8 (SCC)” is supported, while “B8 (PCC) + B3 (SCC)” is not.

3. ② 2CA supports continuous intra-band CA, but not non-continuous intra-band CA.

4. ③ Excluding Japan and China Mobile.

EP06 Series Specifications



50.95 mm × 30.0 mm × 3.95 mm
LTE Cat 6, 300M DL/ 50M UL

■ Multi-Mode LTE-A Module

Variant		EP06-E	EP06-A
Category		6	6
LTE	LTE-FDD	B1/B3/B5/B7/B8/B20/B28/B32 ^①	B2/B4/B5/B7/B12/B13/B25/B26/B29 ^① /B30/B66
	LTE-TDD	B38/B40/B41	-
	2CA	B1+B1/B5/B8/B20/B28; B3+B3/B5/B7/B8/B20/B28; B7+B5/B7/B8/B20/B28; B20+B32 ^① ; B38+B38; B40+B40; B41+B41	B2+B2/B5/B12/B13/B29 ^① ; B4+B4/B5/B12/B13/B29 ^① ; B7+B5/B7/B12/B26; B25+B5/B12/B25/B26; B30+B5/B12/B29 ^① ; B66+B5/B12/B13/B29 ^① /B66
UMTS	WCDMA	B1/B3/B5/B8	B2/B4/B5
Embedded GNSS		Supported	Supported
USB 2.0 Interface		Supported	Supported
Region		EMEA/ APAC ^② / Brazil	North America
Certification		Carrier: Telstra/ Deutsche Telekom Regulatory: GCF/ CE/ NCC/ RCM/ ICASA	Carrier: Verizon/ AT&T/ Sprint/ Rogers/ Bell ^{TBD} / Telus Regulatory: GCF/ FCC/ PTCRB/ IC

Notes: 1. *TBD: To Be Determined.*

2. ①LTE-FDD B29 and B32 support receiving only, and are only for secondary component carrier in 2CA.

3. ②Excluding Japan and China Mobile.

EM06 Series Specifications



42.0 mm × 30.0 mm × 2.3 mm
LTE Cat 6, 300M DL/ 50M UL

■ Multi-Mode LTE-A Module

Variant	EM06-E	EM06-A	EM06-J	
Category	6	6	6	
LTE	LTE-FDD	B1/B3/B5/B7/B8/B20/B28/B32 ^①	B2/B4/B5/B7/B12/B13/B25/B26/B29 ^① / B30/ B66	B1/B3/B8/B18/B19/B26/B28
	LTE-TDD	B38/B40/B41	B41	B41
	2CA	B1+B1/B5/B8/B20/B28; B3+B3/B5/B7/B8/B20/B28; B7+B5/B7/B8/B20/B28; B20+B32 ^① ; B38+B38; B40+B40; B41+B41	B2+B2/B5/B12/B13/B29 ^① ; B4+B4/B5/B12/B13/B29 ^① ; B5+B5/B7/B25/B30/B66; B7+B7/B12/B26; B12+B12/B25/B30/B66; B13+B66; B25+B25/B26; B30+B29 ^① ; B66+B29 ^① /B66; B41+B41	B1+B1/B8/B18/B19/B26/B28; B3+B3/B8/B18/B19/B26/B28; B41+B41
UMTS	WCDMA	B1/B3/B5/B8	B2/B4/B5	B1/B3/B6/B8/B19
Embedded GNSS		Supported	Supported	Supported
eSIM		Supported	Supported	Supported
USB 2.0 Interface		Supported	Supported	Supported
Region		EMEA/ APAC ^② / Brazil	North America	Japan
Certification		Carrier: Deutsche Telekom/ KT/ SKT/ Telstra Regulatory: GCF/ CE/ NCC/ RCM/ ICASA/ KC Others: WHQL	Carrier: Verizon/ AT&T/ T-Mobile/ Sprint Regulatory: GCF/ FCC/ PTCRB/ IC Others: WHQL	Carrier: KDDI Regulatory: JATE/ TELEC Others: WHQL

Notes: 1. ^①LTE-FDD B29 and B32 support receiving only, and are only for secondary component carrier in 2CA.

2. ^②Excluding Japan and China Mobile.

EM060K-GL Specifications (Preliminary)



42.0 mm × 30.0 mm × 2.3 mm
LTE Cat 6, 300M DL / 50M UL

■ Multi-Mode LTE-A Module

Variant	EM060K-GL (Preliminary)	
Category	6	
LTE	LTE-FDD	B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29 ^① /B30/B32 ^① /B66/B71
	LTE-TDD	B34/B38/B39/B40/B41/B42/B43/B46(LAA)/B48(CBRS)
	DL 2CA	Intra-band and Inter-band
UMTS	WCDMA	B1/B2/B3/B4/B5/B6/B8/B19
Embedded GNSS	Supported	
USB 2.0 Interface	Supported	
PCIe Interface	Optional (RC Mode)	
USB 3.0 Interface	Supported	
eSIM	Supported / Built-in eSIM (optional)	
Region	Global	
Certification	Carrier: TBD Regulatory: GCF*/PTCRB*/CE*/RCM*/FCC*/IC*/CCC* Others: WHQL	

EM12-G Specifications



42.0 mm × 30.0 mm × 2.3 mm
LTE Cat 12, 600M DL/ 150M UL

■ Multi-Mode LTE-A Module

Variant		EM12-G
Category		DL/UL: 12/13
LTE	LTE-FDD	B1/B2/B3/B4/B5/B7/B8/B9/B12/B13/B14/B17/B18/B19/B20/B21/B25/B26/B28/B29 ^① /B30/B32 ^① /B66
	LTE-TDD	B38/39/B40/B41
	DL 2CA	B1+B3/B5/B18/B19/B20/B21/B26; B2+B2/B4/B5/B12/B13/B17/B29 ^① /B30/B66; B3+B3/B5/B7/B8/B19/B20/B28; B4+B4/B5/B12/B13/B17/B29 ^① /B30; B5+B7/B25/B30/B66; B7+B7/B20/B28; B12+B25/B30; B13+B66; B20+B32 ^① ; B25+B25/B26/B41; B29+B30; B38+B38; B40+B40; B41+B41; B66+B66
	DL 3CA	DL inter-band 3CA: B1+B3+B7; B1+B3+B19; B1+B3+B20; B1+B19+B21; B2+B4+B5; B2+B4+B13; B2+B5+B30; B2+B12+B30; B2+B29+B30; B3+B7+B20; B3+B7+B28; B4+B5+B30; B4+B12+B30; B4+B29+B30; B5+B66+B2; B13+B66+B2 DL 2 contiguous plus inter-band 3CA: B2+B2+B5; B2+B2+B13; B3+B3+B7; B3+B7+B7; B3+B3+B20; B4+B4+B5; B4+B4+B13; B5+B66+B66; B13+B66+B66; B66+B66+B2; B66+B66+B66
	DL 256QAM	Supported
	UL 2CA	B3+B3; B41+B41
	UL 64QAM	Supported
UMTS	WCDMA	B1/B2/B3/B4/B5/B8/B19
Embedded GNSS		Supported
PCIe Interface		Optional (RC Mode)
USB 3.0 Interface		Supported
Region		Global
Certification		Carrier: Vodafone/ TIM/ Deutsche Telekom/ British Telecom/ Telefónica/ Verizon/ AT&T/ T-Mobile/ Sprint/ Rogers/ Telus/ NTT DOCOMO/ SoftBank/ KDDI/ Telstra Regulatory: GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ CCC/ KC/ NCC/ JATE/ TELEC/ RCM/ ICASA Others: WHQL

Note: ① LTE-FDD B29 and B32 support receiving only, and are only for secondary component carrier in 2CA.

EG12 Series Specifications



■ Multi-Mode LTE-A Module

39.5 mm × 37.0 mm × 2.8 mm
LTE Cat 12, 600M DL/ 150M UL

Variant	EG12-GT	EG12-EA
Category	12	12
LTE	LTE-FDD	-
	LTE-TDD	B42/B43/B48
	DL 2CA	B42+B42; B48+B48
	DL 3CA	B42+B42+B42; B48+B48+B48
	DL 256QAM	Supported
	DL 4 × 4 MIMO	B42/B48
	UL 2CA	B42+B42
UMTS	WCDMA	-
Embedded GNSS	Supported	Supported
PCIe Interface	Optional (RC Mode)	Optional (RC Mode)
USB 3.0 Interface	Supported	Supported
Region	Global TDD 3.5 GHz Network	EMEA/ APAC ^① / Brazil
Certification	Regulatory: FCC	Regulatory: GCF/ CE/ RCM

Note: ① Excluding Japan and China Mobile.

EG120K-EA Specifications (Preliminary)



LTE-A Module

39.5 mm × 37.0 mm × 2.80 mm
LTE Cat 12, 600M DL/ 150M UL

Variant	EG120K-EA (Preliminary)
Category	12
LTE	LTE-FDD B1/B3/B5/B7/B8/B20/B28/B32
	LTE-TDD B38/B40/B41/B42(Optional)/B43(Optional)
	CA DL 3CA; UL 2CA
	DL 4 × 4 MIMO LTE-FDD: B1/B3/B7 LTE-TDD: B38/B40/B41/B42
UMTS	WCDMA B1/B3/B5/B8
Embedded GNSS	Supported
VoLTE (Voice over LTE)	Supported
USB 2.0/3.0 Interface	Supported
Region	EMEA/ APAC/ Brazil
Certification	TBD

EG18 Series Specifications



■ Multi-Mode LTE-A Pro Module

39.5 mm × 37.0 mm × 2.8 mm
LTE Cat 18, 1.2G DL/ 150M UL

Variant	EG18-EA	EG18-NA
Category	DL/UL: 18/13	DL/UL: 18/13
LTE	LTE-FDD	B1/B3/B5/B7/B8/B20/B28
	LTE-TDD	B38/B40/B41
	DL 2CA	Intra-band and Inter-band
	DL 3CA	Intra-band and Inter-band
	DL 4CA	Intra-band and Inter-band
	DL 5CA	Intra-band and Inter-band within 4 bands
	DL 4 × 4 MIMO	B1/B3/B7
	DL 256QAM	Supported
	UL 2CA	Intra-band contiguous
	UL 64QAM	Supported
UMTS	WCDMA	B1/B3/B5/B8
Embedded GNSS	Supported	Supported
PCIe Interface	Optional (RC Mode)	Optional (RC Mode)
USB 3.0 Interface	Supported	Supported
Region	EMEA/ APAC ^① / Brazil	North America
Certification	Carrier: Telstra Regulatory: GCF/ CE/ RCM	Carrier: Verizon/ AT&T/ T-Mobile/ U.S. Cellular Regulatory: GCF/ FCC/ PTCRB/ IC

EG512R-EA Specifications



■ Multi-Mode LTE-A Pro Module

42.0 mm × 38.0 mm × 2.65 mm
LTE Cat 12, 600M DL/ 90M UL

Variant		EG512R-EA
Category		DL/UL: 12 /13
LTE	LTE-FDD	B1/B3/B5/B7/B8/B20/B28/B32
	LTE-TDD	B38/B41/B42/B43
	DL 2CA	Intra-band and Inter-band
	DL 3CA	Intra-band and Inter-band
	DL 4 × 4 MIMO	B1/B3/B7/B32/B38/B41/B42/B43
	DL 256QAM	Supported
	UL 2CA	Intra-band contiguous
	UL 64QAM	Supported
UMTS	WCDMA	B1/B3/B5/B8
Embedded GNSS		Supported
PCIe Interface		Supported
RGMII Interface		Supported
USB 3.0 Interface		Supported
eSIM		Supported / Built-in eSIM (optional)
Region		EMEA/ Australia/ Brazil
Certification		Regulatory: GCF/ CE/ RCM Carrier: TBD

EM12xR-GL Specifications



■ Multi-Mode LTE-A Pro Module

42.0 mm × 30.0 mm × 2.3 mm
LTE Cat 12, 600 Mbps DL/150 Mbps UL

Variant	EM120R-GL	EM121R-GL (Preliminary)
Category	DL/UL: 12 /13	DL/UL: 12 /13
LTE	LTE-FDD	B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/ B30/B32/B66
	LTE-TDD	B38/B39/B40/B41/B42/B43/B46(LAA)/B48(CBRS)
	DL 2CA	Intra-band and Inter-band
	DL 3CA	Intra-band and Inter-band
	DL 256QAM	Supported
	UL 2CA	Intra-band
	UL 64QAM	Supported
UMTS	WCDMA	B1/B2/B3/B4/B5/B6/B8/B19
Embedded GNSS	Supported/ L1 (Passive Antenna)	Supported/ L1 + L5 (Active Antenna)
PCIe Interface	Supported	Supported
USB 3.0 Interface	Supported	Supported
eSIM	Supported / Built-in eSIM (optional)	Supported / Built-in eSIM (optional)
Region	Global	Global
Certification	Carrier: Vodafone/ British Telecom/ Verizon/ AT&T/ T-Mobile/ Sprint/ China Mobile/ China Unicom/ NTT DOCOMO/ SoftBank ^① / KDDI/ Rukuten/ Telstra ^{TBD} / Swisscom Regulatory: GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ IFETEL/ SRRC/ NAL/ CCC/ KC/ NCC/ JATE/ TELEC/ RCM/ ICASA	Carrier: AT&T*/ Verizon Regulatory: GCF/ CE/ FCC/ PTCRB/ IC/ RCM

Notes: 1. “*”: Under development/ In progress.

2. *TBD*: To Be Determined

3. ①: Currently, SoftBank certification is only supported for PC applications.

EM120K-GL Specifications (Preliminary)



42.0 mm × 30.0 mm × 2.3 mm
LTE Cat 12, 600M DL / 50M UL

■ Multi-Mode LTE-A Module

Variant	EM120K-GL (Preliminary)	
Category	12	
LTE	LTE-FDD	B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29 ^① /B30/B32 ^① /B66/B71
	LTE-TDD	B34/B38/B39/B40/B41/B42/B43/B46(LAA)/B48(CBRS)
	DL 2CA	Intra-band and Inter-band
UMTS	WCDMA	B1/B2/B3/B4/B5/B6/B8/B19
Embedded GNSS		Supported
USB 2.0 Interface		Supported
PCIe Interface		Optional (RC Mode)
USB 3.0 Interface		Supported
eSIM		Supported / Built-in eSIM (optional)
Region		Global
Certification		Carrier: TBD Regulatory: GCF*/PTCRB*/CE*/RCM*/FCC*/IC*/CCC* Others: WHQL

EM160R-GL Specifications



■ Multi-Mode LTE-A Pro Module

42.0 mm × 30.0 mm × 2.3 mm
LTE Cat 16, 1.0 Gbps DL/150 Mbps UL

Variant	EM160R-GL	
Category	DL/UL: 16 /13	
LTE	LTE-FDD	B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/B32/B66
	LTE-TDD	B38/B39/B40/B41/B42/B43/B46(LAA)/B48(CBRS)
	DL 2CA	Intra-band and Inter-band
	DL 3CA	Intra-band and Inter-band
	DL 4CA	Intra-band and Inter-band
	DL 5CA	Intra-band and Inter-band within 4 bands
	DL 4 × 4 MIMO	B1/B2/B3/B4/B7/B25/B30/B32/B66/B38/B39/B40/B41
	DL 256QAM	Supported
	UL 2CA	Intra-band
	UL 64QAM	Supported
UMTS	WCDMA	B1/B2/B3/B4/B5/B6/B8/B19
Embedded GNSS	Supported	
PCIe Interface	Supported	
USB 3.0 Interface	Supported	
eSIM	Supported / Built-in eSIM (optional)	
Region	Global	
Certification	<p>Carrier: Vodafone/ British Telecom/ Verizon/ AT&T/ T-Mobile/ Sprint/ China Mobile/ China Unicom/ NTT DOCOMO/ SoftBank^①/ KDDI/ Rukuten/ Telstra ^{TBD}/ Swisscom</p> <p>Regulatory: GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ IFETEL/ SRRC/ NAL/ CCC/ KC/ NCC/ JATE/ TELEC/ RCM/ ICASA</p>	

Notes: 1. ^{TBD}: To Be Determined

2. ^①: Currently, SoftBank certification is only supported for PC applications.



LTE Standard Modules

LTE-A & 5G Modules

Automotive Modules

Smart Modules

LPWA Modules

UMTS/HSPA(+) Modules

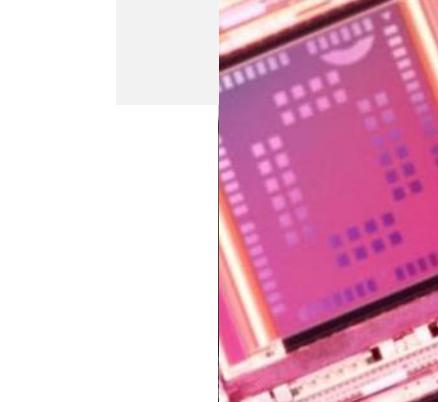
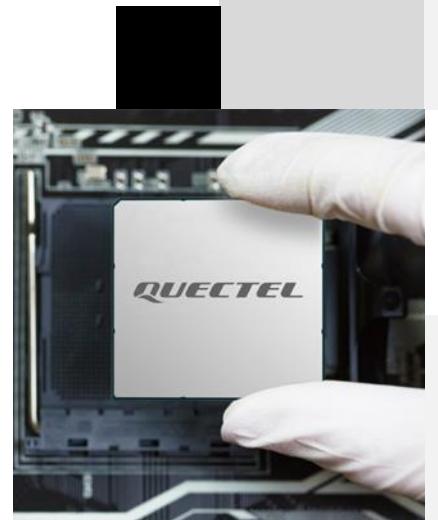
GSM/GPRS Modules

GNSS Modules

Wi-Fi&Bluetooth Modules

Antenna Products

Build a Smarter World



Automotive Modules Roadmap



5G

SA515M



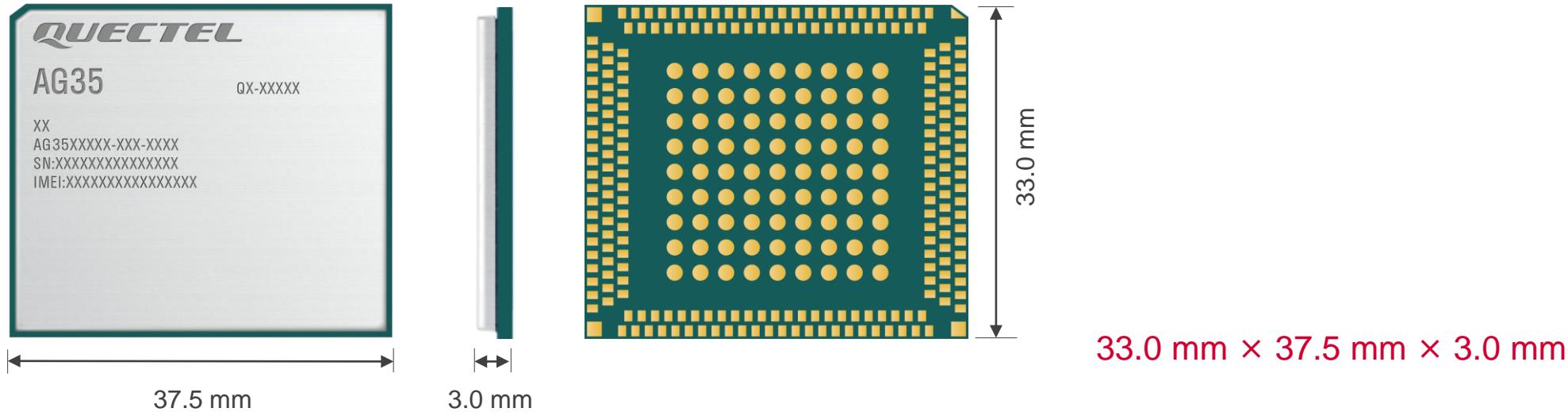
* means under development
① means under planning

• Qx/YY Estimated Engineering Sample Time

Automotive Module AG35 Series Highlights



Multi-Mode LTE Cat 4 Module (MDM9628)



- Qualcomm MDM9628 chipset solution dedicated for automotive applications
- Ideal for automotive applications with IATF 16949 requirement
- Wide operation temperature range (-40 °C to +85 °C) and support eCall under +95 °C^{NOTE}
- Automotive quality processes (PPAP, 8D report, DFMEA, PFMEA...)
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact LGA form factor ideal for integration in slim and size-constrained automotive solutions
- Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment

NOTE: +95 °C eCall application is supported through proper customers' system designs, and it may lead to shortened module lifetime.

AG35 Series Specifications



■ Multi-Mode LTE Cat 4 Module

33.0 mm × 37.5 mm × 3.0 mm
150 Mbps DL/ 50 Mbps UL

Variant		AG35-CE	AG35-E	AG35-NA	AG35-LA	AG35-J
LTE	LTE-FDD	B1/B3/B5/B8	B1/B3/B5/B7/B8/B20/B28	B2/B4/B5/B7/B12(B17)/B13	B1/B2/B3/B4/B5/B7/B8/B28	B1/B3/B5/B8/B9/B19/B21/B28
	LTE-TDD	B34/B38/B39/B40/B41	B38/B40	-	-	B41
UMTS	WCDMA	B1/B8	B1/B5/B8	B2/B4/B5	B1/B2/B3/B4/B5/B8	B1/B3/B5/B6/B8/B19
	TD-SCDMA	B34/B39	-	-	-	-
EVDO/CDMA		BC0 ^①	-	-	-	-
GSM		900/1800 MHz	900/1800 MHz	850/1900 MHz	850/900/1800/1900 MHz	-
Embedded GNSS		Y	Y	Y	Y	Y
Dead Reckoning		Optional	Optional	Optional	Optional	Optional
PPE (RTK)		Optional	-	-	-	-
Wi-Fi/BT Interface		Y	Y	Y	Y	Y
Region		China	EMEA, Korea, Australia, India, Southeast Asia	North America	Latin America	Japan
Certification		Regulatory: SRRC/ NAL/ CCC	Carrier: KT/ SKT*	Carrier: Verizon/ AT&T/ T-Mobile/ Rogers	Regulatory: CE/ FCC/ Anatel/ RCM	Carrier: NTT DOCOMO Regulatory: JATE/ TELEC

"Y" means supported.

* means under development.

① means the band is optional.

AG35 Series Key Features



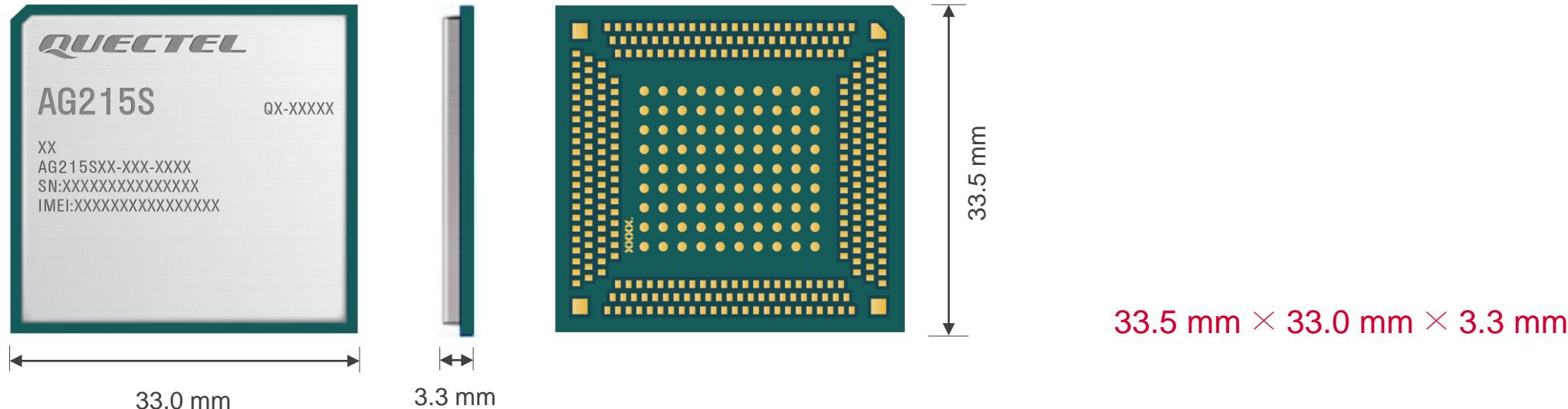
Item	Description
Chipset	<p>Enhanced processes compliant with the key testing items required by AEC-Q100</p> <p>Application processor</p> <ul style="list-style-type: none"> - ARM Cortex A7 up to 1.2 GHz with 256 kB L2 cache - ARM Cortex A7 - primary boot processor <p>Modem processor</p> <ul style="list-style-type: none"> - QDSP6 processor at up to 691 MHz (Turbo) <p>RPM processor</p> <ul style="list-style-type: none"> - ARM Cortex M3 up to 100 MHz
Memory	<p>Embedded Nand+DDRAM</p> <ul style="list-style-type: none"> - NAND: 512 MB - DDRAM: 256 MB <p>Available for customers</p> <ul style="list-style-type: none"> - NAND: > 120 MB - DDRAM: > 100 MB
Interfaces	USB 2.0, HSIC, UART, I2C, PCM, SGMII, SDIO, (U)SIM, ADC, SPI, GPIOs
Enhanced Features	<p>Wi-Fi + BT*</p> <p>eCall, QuecOpen® (Open Linux), Multi-APN</p> <p>ERA-GLONASS*</p> <p>Secure Boot, TrustZone/TPM*, Code/user data backup for higher security</p> <p>Temperature management</p> <p>Embedded codec (<i>Optional</i>)</p> <p>ESD/ EMI protection through internal specific circuits and components</p>
Data Speed	LTE: LTE-FDD: Max. 150 Mbps (DL), Max. 50 Mbps (UL) LTE-TDD: Max. 130 Mbps (DL), Max. 30 Mbps (UL)
	UMTS: DC-HSDPA: Max. 42 Mbps HSUPA: Max. 5.76 Mbps WCDMA: Max. 384 kbps (DL/UL)
	TD-SCDMA: Max. 4.2 Mbps (DL), Max. 2.2 Mbps (UL)
	CDMA2000: EVDO: Max. 3.1 Mbps (DL), Max. 1.8 Mbps (UL) 1X Advanced: Max. 307.2 kbps (DL/UL)
	GSM: EDGE: Max. 296 kbps (DL), Max. 236.8 kbps (UL) GPRS: Max. 107 kbps (DL), Max. 85.6 kbps (UL)

* means under development

Automotive EAP Module AG215S Highlights



AP Module for C-V2X and Telematics (SA2150P)



- Qualcomm SA2150P chipset for the C-V2X and Telematics Application Processor
- Automotive quality processes (PPAP, 8D report, DFMEA, PFMEA...)
- IATF 16949 compliant Application Processor to host ITS stack, C-V2X and Telematics applications
- Optimized communication performance with Quectel AG520R/AG550Q/AG553Q
- Embedded hardware engine fulfills powerful ECDSA verification capability
- Support global and China national security algorithms
- Additional HSM/SE integrated, and optional ITS stack integrated
- Wide operation temperature range (-40 °C to +85 °C)
- Extremely high reliability thanks to automotive grade testing standard

EAP: External Application Processor

Version: 4.4 | Status: Released

AG215S Specifications



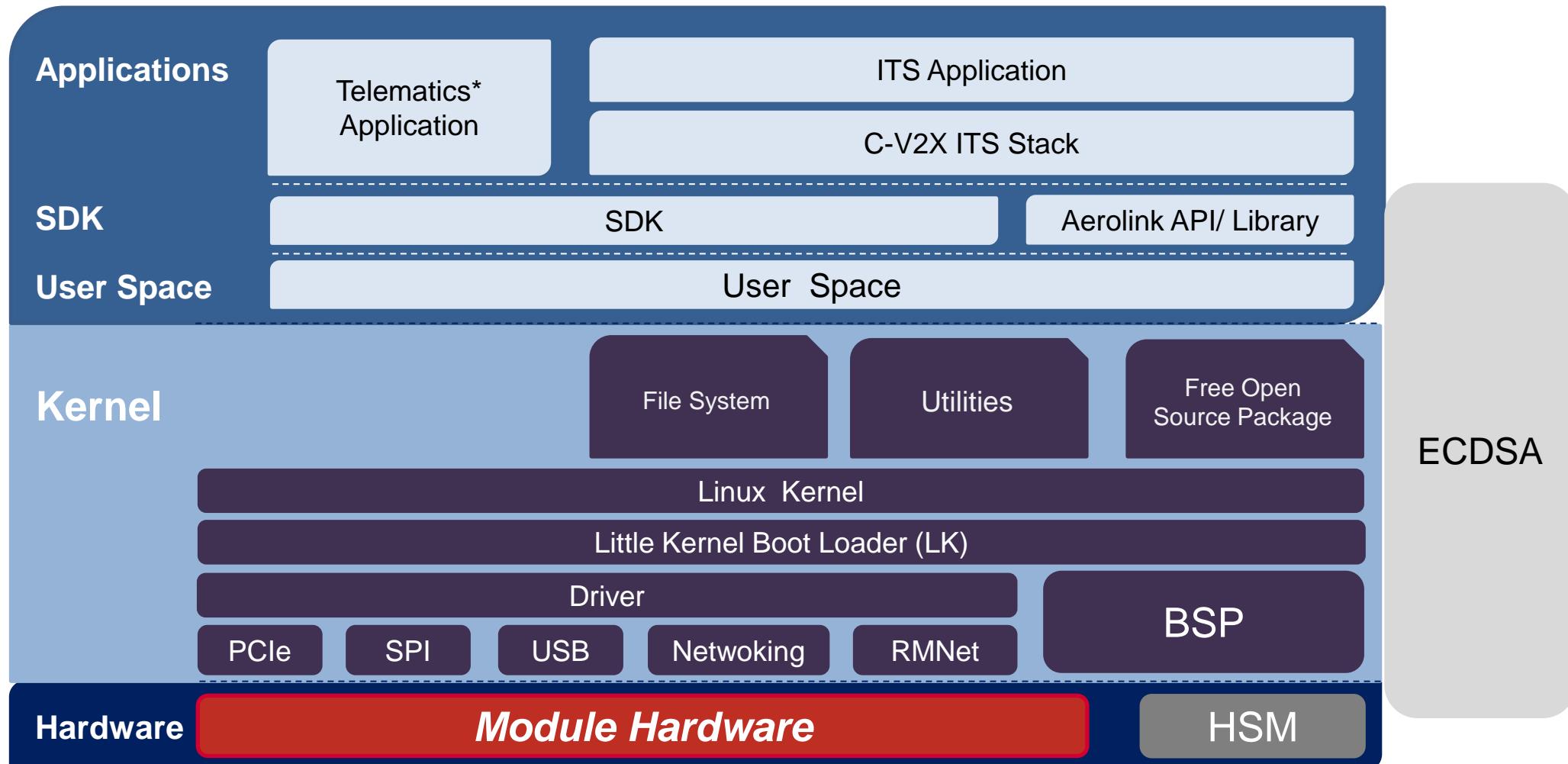
Automotive Grade C-V2X and Telematics Application Processor Module

33.5 mm × 33.0 mm × 3.3 mm

Features	AG215S
Processors	<ul style="list-style-type: none">• 64-bit ARM Cortex-A53 Microprocessor Cores• 1.4 GHz Quad-Core Processor
Interfaces	SDIO, PCIe Gen 2*, USB 3.0/2.0, RGMII 1 Gbps, UART, SPI, I2C, 1PPS (Input), ADC
Embedded ECDSA Hardware Engine	Support 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	<ul style="list-style-type: none">• Secret key generation and storage, and digital signature and verification• Additional 2000TPS ECDSA capability (based on NIST p-256 and SM2)
Region	Global
Certification	TBD

* means under development

AG215S Software Architecture

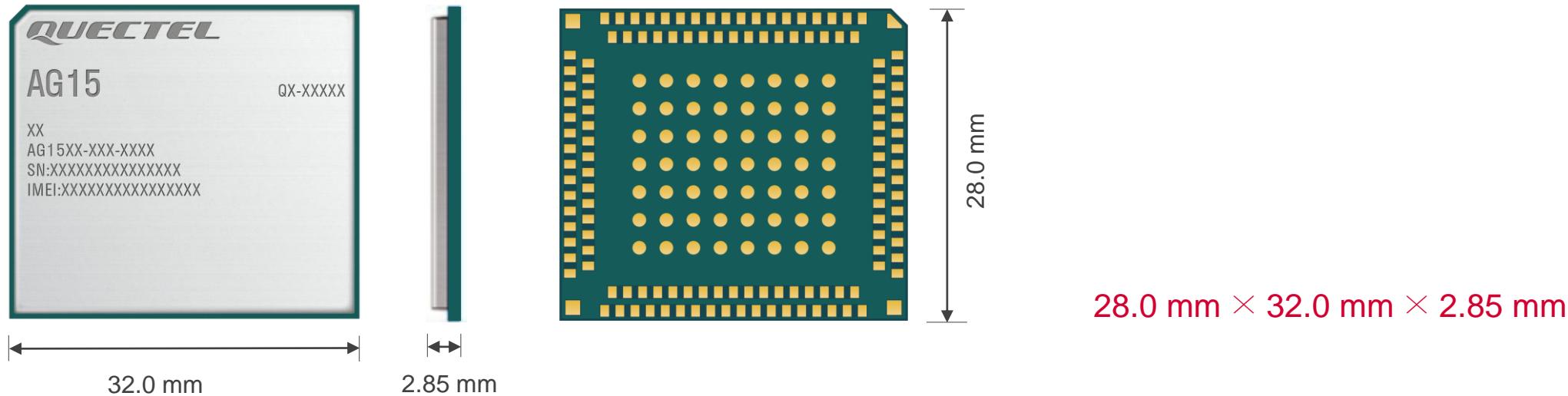


* Telematics under planning. Telematics Application is not needed if using QuecOpen® SDK.

Automotive C-V2X Module AG15 Highlights



Support C-V2X PC5 Direct Communications (MDM9150)



- Qualcomm MDM9150 chipset solution dedicated for C-V2X (V2V, V2I, V2P) applications
- Designed to meet IATF 16949 requirements
- Wide operation temperature range (-40 °C to +85 °C)
- Automotive quality processes (PPAP, 8D report, DFMEA, PFMEA...)
- Extremely high reliability thanks to automotive grade testing standard
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact LGA form factor ideal for integration in slim and size-constrained automotive solutions
- Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment

C-V2X Module AG15 Specifications



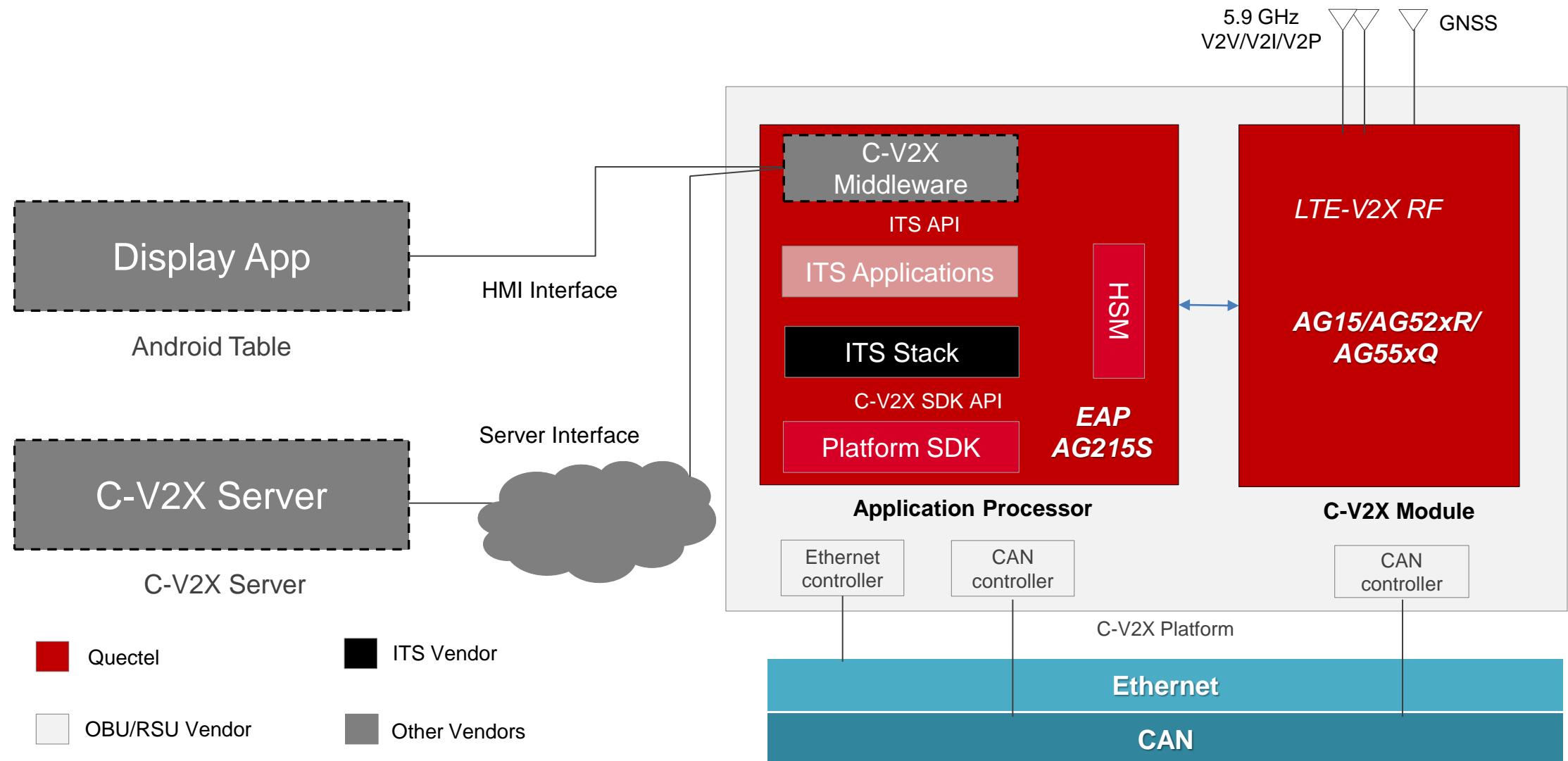
Qualcomm MDM9150 C-V2X Chipset solution
based on 3GPP Rel-14 for PC5-based
direct communications

28.0 mm × 32.0 mm × 2.85 mm

Features	AG15
Frequency	5.8 GHz & 5.9 GHz
Embedded GNSS*	GPS/ GLONASS/ BeiDou/ Galileo/ QZSS
Interfaces	PCIe, USB 3.0/2.0, SPI, I2C, UART, GPIO, ADC, DR_SYNC
Dead Reckoning*	QDR3 (Share the same IMU with MDM9628)
Enhanced Features	PACE (Position Assisted Clock Estimator), TUNC (Time Uncertainty Constraint)
Region	Global
Certification	TBD

* means under development

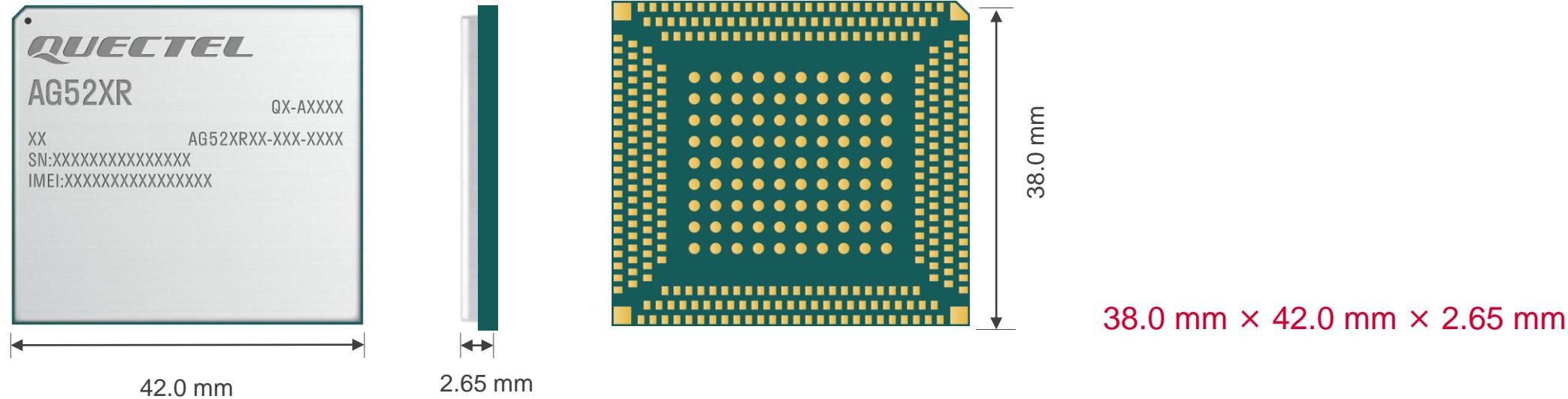
C-V2X System Architecture



Automotive Module AG52xR Series Highlights



Multi-Mode Automotive Module up to LTE Cat 12 + Optional C-V2X (SA415M)



- AEC-Q100 qualified Qualcomm SA415M chipset solution dedicated for automotive and optional C-V2X applications
- Ideal for automotive applications with IATF 16949 requirement
- Wide operation temperature range (-40 °C to +85 °C) and support eCall under +95 °C
- Automotive quality processes (PPAP, 8D report, DFMEA, PFMEA...)
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact LGA form factor ideal for integration in slim and size-constrained automotive solutions
- Multi-frequency GNSS receiver available for applications requiring fast and accurate fixes in any environment

AG52xR Series Specifications



■ Multi-Mode LTE up to Cat 12 + Optional C-V2X

Variant		AG52xR-CN	AG52xR-EU	AG52xR-NA	AG52xR-JP	AG52xR-LA (Planning)
LTE	LTE-FDD	B1/B3/B5/B7/B8	B1/B3/B5/B7/B8/B20/ B28/B32 ^①	B2/B4/B5/B7/B12/B13/B14/ B25/B26/B29 ^① /B30 ^{*①} /B66/B71	B1/B3/B5/B8/B9/B11/ B18/B19/B21/B28	B1/B2/B3/B4/B5/ B7/B8/B20/B28
	LTE-TDD	B34/B38/B39/ B40/B41	B38/B40/B41	-	B41	B38/B40/B41
UMTS	WCDMA	B1/B8	B1/B3/B5/B8	-	B1/B3/B5/B8/B9/B19	B1/B2/B3/B5/B8
GSM		900/1800 MHz	900/1800 MHz	-	-	850/900/1800/1900 MHz
C-V2X		AG520R	AG520R	AG520R	TBD	AG520R
MF-GNSS	Optional	L1 + L5	L1 + L5	L1 + L5	L1 + L5	L1 + L5
Dead Reckoning	Optional	QDR 3.0	QDR 3.0	QDR 3.0	QDR 3.0	QDR 3.0
PPE (RTK)		Optional	Planning	Planning	TBD	-
Ethernet	Optional	RGMII	RGMII	RGMII	RGMII	RGMII
Wi-Fi/BT Interface		Y	Y	Y	Y	Y
Region	China	EMEA/ Korea/ Brazil/ India/ Australia	North America	Japan	Latin America (excl. Brazil)	
Certification	Regulatory: SRRC/ NAL/ CCC	AG521R-EU: Carrier: TBD Regulatory: CE AG520R-EU: TBD	AG521R-NA: Carrier: AT&T/ T-Mobile/ Verizon* Regulatory: GCF/ PTCRB/ FCC/ IC AG520R-NA: TBD	TBD	TBD	

"Y" means supported.

* means under development/ongoing.

① LTE-FDD B29, B30 and B32 support Rx only

AG52xR Series Key Features

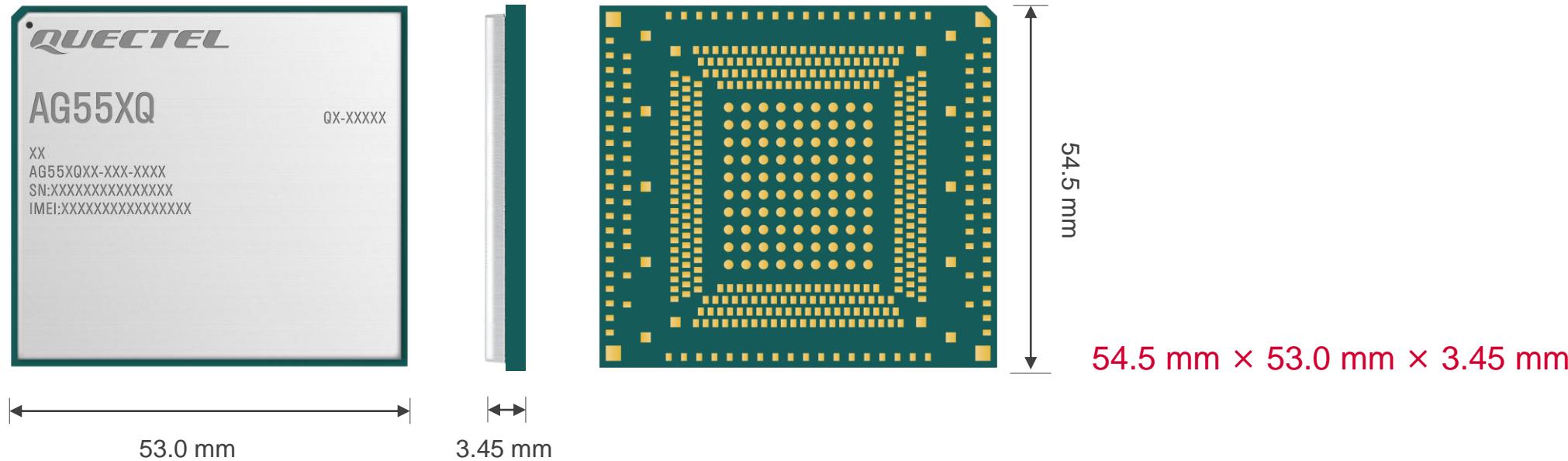


Item	Description
4G Category	Default Configuration: Cat 12, 2×2 MIMO <i>Optional Configuration: Cat 16, 4 × 4 MIMO (Based on customized firmware and certifications)</i>
Apps Processor	ARM Cortex A7 at 1.5 GHz; 256 KB L2
C-V2X (AG520R)	PC5 Mode 4 (direct communication), Uu mode
Embedded GNSS <small>Optional</small>	<ul style="list-style-type: none"> GPS/ GLONASS/ BeiDou/ Galileo Enhanced Automotive MF-GNSS (L1 + L5)
QDR <small>Optional</small>	QDR3 (external IMU is required)
Interface	PCIe, USB 2.0/3.0, RGMII, SDIO, SPI, I2C, I2S, PCM, UARTs, GPIOs, 1PPS, Wi-Fi interface, BT interface
Antenna Interfaces	<ul style="list-style-type: none"> 2 × cellular antenna interfaces for 2×2 MIMO (<i>4 cellular antenna interfaces for 4×4 MIMO available as an option</i>) 2 × C-V2X antenna interfaces 1 × GNSS antenna interface
Peak Data Rate	AG521R Series LTE: LTE Cat 16: LTE-FDD: Max. 1.0 Gbps (DL)/ 150 Mbps (UL) LTE Cat 12: LTE-FDD: Max. 600 Mbps (DL)/ 150 Mbps (UL) LTE Cat 6: LTE-FDD: Max. 300 Mbps (DL)/ 50 Mbps (UL)
	LTE-TDD: Max. 716 Mbps (DL)/ 90 Mbps (UL) LTE-TDD: Max. 410 Mbps (DL)/ 90 Mbps (UL) LTE-TDD: Max. 226 Mbps (DL)/ 28 Mbps (UL)
	AG520R Series LTE: LTE Cat 16: LTE-FDD: Max. 1 Gbps (DL)/ 75 Mbps (UL) LTE Cat 12: LTE-FDD: Max. 600 Mbps (DL)/ 75 Mbps (UL) LTE Cat 6: LTE-FDD: Max. 300 Mbps (DL)/ 50 Mbps (UL)
	LTE-TDD: Max. 716 Mbps (DL)/ 45 Mbps (UL) LTE-TDD: Max. 410 Mbps (DL)/ 45 Mbps (UL) LTE-TDD: Max. 226 Mbps (DL)/ 28 Mbps (UL)
	UMTS: DC-HSDPA: Max. 42 Mbps HSUPA: Max. 5.76 Mbps GSM: EDGE: Max. 296 kbps (DL), Max. 236.8 kbps (UL) C-V2X: Max. 30 Mbps (Tx/Rx)
	WCDMA: Max. 384 kbps (DL/UL) GPRS: Max. 107 kbps (DL), Max. 85.6 kbps (UL)

Automotive Module AG55xQ Series Highlights



Automotive Grade 5G Module + Optional C-V2X/ DSDA (SA515M)



- AEC-Q100 qualified Qualcomm SA515M chipset solution dedicated for automotive 5G NR and optional C-V2X/DSDA applications
- Ideal for automotive applications with IATF 16949 requirement
- Wide operation temperature range (-40 °C to +85 °C) and support eCall under +95 °C
- Automotive quality processes (PPAP, 8D report, DFMEA, PFMEA...)
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact LGA form factor ideal for integration in slim and size-constrained automotive solutions
- Multi-frequency GNSS receiver available for applications requiring fast and accurate fixes in any environment

AG55xQ Series Specifications



■ Automotive Grade 5G Module + Optional C-V2X/DSDA

54.5 mm × 53.0 mm × 3.45 mm

Variant	AG55xQ-CN	AG55xQ-EU	AG55xQ-NA	AG55xQ-JP (Planning)
5G NR	5G FDD	n1 ^① /n3 ^① /n28 ^①	n1/n3/n8/n20/n28	n2/n5/n25/n66/n71
	5G TDD	n41/n78/n79	n41/n78	n77/n78/n79
LTE	LTE-FDD	B1/B3/B5/B7/B8	B1/B2/B3/B4/B5/B7/B8/B20/B28/ B32 ^②	B2/B4/B5/B7/B12/B13/B14/B17/B25/ B26/B28/B29 ^② /B30 ^② /B66/B71
	LTE-TDD	B34/B38/B39/B40/B41	B38/B40/B41/B42	B41/B48
UMTS	WCDMA	B1/B8	B1/B3/B5/B6/B8	B2/B4/B5
	TD-SCDMA	-	-	-
GSM	900/1800 MHz	900/1800/850/1900 MHz	1900 MHz	-
C-V2X B47	AG550Q/AG553Q	AG550Q/AG553Q	AG550Q/AG553Q	AG550Q/AG553Q
DSDA (SIM2 for 2G/4G only)	AG552Q/AG553Q	AG552Q/AG553Q	AG552Q/AG553Q	AG552Q/AG553Q
MF-GNSS <small>Optional</small>	L1 + L5	L1 + L5	L1 + L5	L1 + L5
Dead Reckoning <small>Optional</small>	QDR 3.0	QDR 3.0	QDR 3.0	QDR 3.0
PPE (RTK)	Optional	Planning	Planning	Planning
Ethernet <small>Optional</small>	RGMII	RGMII	RGMII	RGMII
Wi-Fi/BT Interface	Y	Y	Y	Y
Region	China	EMEA/ Korea/ Australia/ India/ Southeast Asia/ Latin America	North America/ Mexico	Japan
Certification	Regulatory: SRRC/ NAL/ CCC	AG551Q-EU: Regulatory: CE/ RCM	TBD	TBD

① n1/n3/n28 for AG55xQ-CN supports SA only

② LTE-FDD B29, B30 and B32 support Rx only

"Y" means supported.

* means ongoing.

AG55xQ Series Key Features



Features	Description
5G NR	3GPP Release 15 NSA/SA operation, Sub-6 GHz
4G Category	LTE Cat 19, 3G/2G fallback
Apps Processor	Cortex A7 at 1.5 GHz; 256 KB L2
C-V2X (AG550Q / AG553Q)	PC5 Mode 4 (direct communication), Uu mode
DSDA (AG552Q / AG553Q)	Dual SIM Dual Activation
Embedded GNSS <small>Optional</small>	GPS/ GLONASS/ BeiDou/ Galileo Enhanced Automotive MF-GNSS (L1 + L5)
QDR <small>Optional</small>	QDR3 (external IMU required)
Interface	PCIe 3.0, USB 2.0/3.1, RGMII, SDIO, SPI, I2C, I2S, UART, PCM, ADC, (U)SIM, 1PPS, GPIOs
Antenna Interfaces	<ul style="list-style-type: none">• 4 × 5G/4G antenna interfaces (4×4 MIMO)• 2 × antenna interfaces for DSDA (2×2 MIMO)• 2 × C-V2X antenna interfaces (2×2 MIMO)• 1 × GNSS antenna interface
Peak Data Rate	5G SA: Max. 2.0 Gbps (DL)/ 450 Mbps (UL)
	5G NSA: Max. 2.4 Gbps (DL)/ 550 Mbps (UL)
	LTE: LTE-FDD: Max. 1.6 Gbps (DL)/ 200 Mbps (UL)
	UMTS: DC-HSDPA: Max. 42 Mbps HSUPA: Max. 5.76 Mbps
	GSM: EDGE: Max. 296 kbps (DL)/ 236.8 kbps (UL)
	C-V2X: Max. 48 Mbps (Tx/Rx)
LTE-TDD: Max. 1.4 Gbps (DL)/ 120 Mbps (UL)	
WCDMA: Max. 384 kbps (DL/UL)	
GPRS: Max. 107 kbps (DL)/ 85.6 kbps (UL)	

AG55xQ Series Memory Information

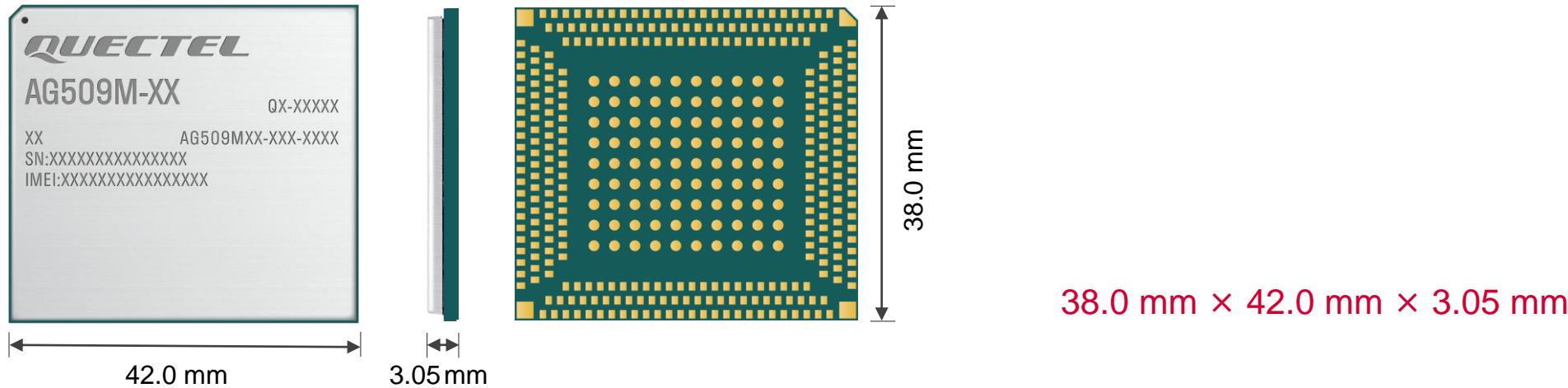


Item	Total Memory	Available Memory	Remark
AG551Q Series	4+4 MCP (512 MB + 512 MB)	RAM 127 MB	<ul style="list-style-type: none"> Not including the memory necessary for QDR/PPE/Wi-Fi QDR + PPE: 30 MB; Wi-Fi 6: 60 MB Recommended minimum remaining RAM: 35 MB
		Flash 67 MB	<ul style="list-style-type: none"> Recommended space redundancy: 20%
	8+8 MCP (1 GB + 1 GB)	RAM 623 MB	<ul style="list-style-type: none"> Not including the memory necessary for QDR/PPE/Wi-Fi QDR + PPE: 30 MB; Wi-Fi 6: 60 MB Recommended minimum remaining RAM: 35 MB
		Flash 529 MB	<ul style="list-style-type: none"> Recommended space redundancy: 20%
AG550Q Series	4+4 MCP (512 MB + 512 MB)	RAM 117 MB	<ul style="list-style-type: none"> Not including the memory necessary for QDR/PPE/Wi-Fi QDR + PPE: 30 MB; Wi-Fi 6: 60 MB Recommended minimum remaining RAM: 35 MB
		Flash 67 MB	<ul style="list-style-type: none"> Recommended space redundancy: 20%
	8+8 MCP (1 GB + 1 GB)	RAM 608 MB	<ul style="list-style-type: none"> Not including the memory necessary for QDR/PPE/Wi-Fi QDR + PPE: 30 MB; Wi-Fi 6: 60 MB Recommended minimum remaining RAM: 35 MB
		Flash 529 MB	<ul style="list-style-type: none"> Recommended space redundancy: 20%

Automotive Module AG509M Series Highlights



Multi-Mode LTE Cat 6 Module (MT2731R)



- AEC-Q100 qualified MTK MT2731R chipset solution dedicated for automotive applications
- Ideal for automotive applications with IATF 16949: 2016 requirement
- Wide operation temperature range (-40 °C to +85 °C) and support eCall under +95 °C^{NOTE}
- Automotive quality processes (PPAP, 8D report, DFMEA, PFMEA...)
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact LGA form factor ideal for integration in slim and size-constrained automotive solutions
- GNSS receiver available for applications requiring fast and accurate fixes in any environment

NOTE: +95 °C eCall application is supported through proper customers' system designs, and it may lead to shortened module lifetime.

AG509M Series Specifications



38.0 mm × 42.0 mm × 3.05 mm

■ Multi-Mode LTE Cat 6

Variant		AG509M-EU*	AG509M-NA (Planning)	AG509M-JP (Planning)	AG509M-CN (Planning)
LTE	LTE-FDD	B1/B3/B5/B7/B8/B20/B28/B32 ^①	B2/B4/B5/B7/B12/B13/B17/B28/ B29 ^① /B30 ^① /B66/B71	B1/B3/B5/B7/B8/B9/B11/B19/B21/ B28	B1/B3/B5/B7/B8
	LTE-TDD	B38/B40/B41	-	B41	B34/B38/B39/B40/B41
UMTS	WCDMA	B1/B3/B5/B8	B2/B4/B5	B1/B3/B5/B8/B9/B19	B1/B8
GSM		B2/B3/B5/B8	B2/B5	-	B3/B8
CA Combination		B1+3, B1+5, B1+7, B1+8, B1+20, B1+28, B3+3, B3+5, B3+7, B3+8, B3+20, B3+28, B5+7, B7+7, B7+8, B7+20, B7+28, B20+32,B20+38, B1C, 3C, 7C, 38C	B2+2, B2+4, B2+13, B2+29, B25+66, B25+5, B25+12, B25+25, B25+71, B5+66, B12+66, B13+66, B29+66, B66+71, B2C, 5B, 66C, B2+28, B2+30, B4+28, B66+30, B5+7, B5+30, B7+12, B7+28, B12+30	B1+3, B1+8, B1+18, B1+19, B1+5, B1+28B, B1+41, B3+8, B3+19, B41+41, B41C, B11+28, B1+1, 1C, B21+28, B28+41, B3+28, B3+3, B3+41, B3+5, B3+8, 3C, B8+41	B1+3, B1+5, B1+8, B3C, B3+5, B3+8, B39+41, B39C, B40C, B41C
GNSS		L1	L1	L1	L1
Ethernet	Optional	RGMII/eAVB	RGMII/eAVB	RGMII/eAVB	RGMII/eAVB
Dead Reckoning	Optional	ADR	ADR	ADR	ADR
Wi-Fi/Bluetooth Interface		Y	Y	Y	Y
Region		EMEA/Korea/Australia/ Southeast Asia/ Brazil	North America/Mexico/ Latin America	Japan	China/India
Certification		Regulatory: CE*	TBD	TBD	Regulatory (Planning): SRRC/ NAL/ CCC

^① LTE-FDD B29, B30 and B32 support Rx only

"Y" means supported.

* means under development/planning.

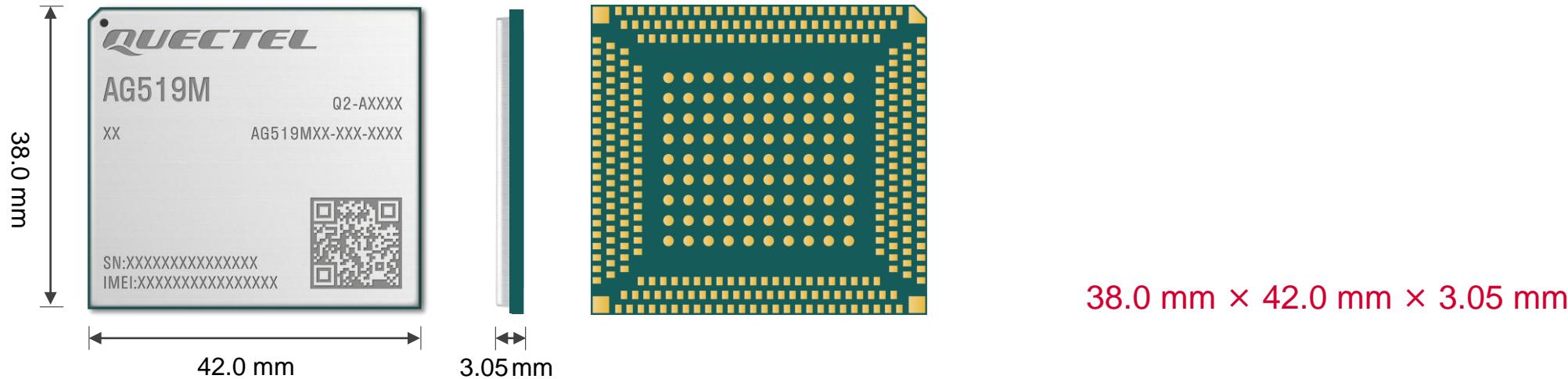
AG509M Series Key Features



Automotive Module AG519M Series Highlights



Multi-Mode LTE Cat 6 Module (MT2731R, Intra Band CA only)



- AEC-Q100 qualified MTK MT2731R chipset solution dedicated for automotive applications
- Ideal for automotive applications with IATF 16949: 2016 requirement
- Wide operation temperature range (-40 °C to +85 °C) and support eCall under +95 °C^{NOTE}
- Automotive quality processes (PPAP, 8D report, DFMEA, PFMEA...)
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact LGA form factor ideal for integration in slim and size-constrained automotive solutions
- GNSS receiver available for applications requiring fast and accurate fixes in any environment

NOTE: +95 °C eCall application is supported through proper customers' system designs, and it may lead to shortened module lifetime.

AG519M Series Specifications



38.0 mm × 42.0 mm × 3.05 mm

■ Multi-Mode LTE Cat 6

Variant		AG519M-EU*	AG519M-NA (Planning)	AG519M-JP (Planning)	AG519M-CN (Planning)
LTE	LTE-FDD	B1/B3/B5/B7/B8/B20/B28	B2/B4/B5/B7/B12/B13/B17/B28/ B29 ^① /B30 ^① /B66/B71	B1/B3/B5/B7/B8/B9/B11/B19/B21/ B28	B1/B3/B5/B7/B8
	LTE-TDD	B38	-	B41	B34/B38/B39/B40/B41
UMTS	WCDMA	B1/B5/B8	B2/B4/B5	B1/B3/B5/B8/B9/B19	B1/B8
GSM		B3/B8	B2/B5	-	B3/B8
DL CA (Intra Band CA Only)		CA_1A-1A, CA_1C, CA_3A-3A, CA_3C, CA_5A-5A, CA_5B, CA_7A-7A, CA_7C	CA_2A-2A, CA_2C, CA_4A-4A, CA_5A-5A, CA_5B, CA_7A-7A CA_7C, CA_66A-66A, CA_66B CA_66C	CA_1A-1A, CA_1C, CA_3A-3A CA_3C, CA_5A-5A, CA_5B, CA_7A-7A, CA_7C, CA_38C CA_39C, CA_40C, CA_40A-40A CA_41A-41A, CA_41C	CA_1A-1A, CA_1C, CA_3A-3A CA_3C, CA_5A-5A, CA_5B CA_7A-7A, CA_7C, CA_38C CA_39C, CA_40C, CA_40A-40A CA_41A-41A, CA_41C
UL CA (Intra Band CA Only)		7C	7C	7C ,41A	7C,39C,40C,41C
GNSS <small>Optional</small>		L1 (AGPS)	L1 (AGPS)	L1 (AGPS)	L1 (AGPS)
Ethernet <small>Optional</small>		RGMII/eAVB	RGMII/eAVB	RGMII/eAVB	RGMII/eAVB
Dead Reckoning <small>Optional</small>		ADR	ADR	ADR	ADR
Wi-Fi/Bluetooth Interface		Y	Y	Y	Y
Region		EMEA/Korea/Australia/ Southeast Asia/ Brazil	North America/Mexico/ Latin America	Japan	China/India
Certification		Regulatory: CE*	TBD	TBD	Regulatory (Planning): SRRC/ NAL/ CCC

^① LTE-FDD B29 and B30 support Rx only.

"Y" means supported.

* means under development/planning.

AG519M Series Key Features

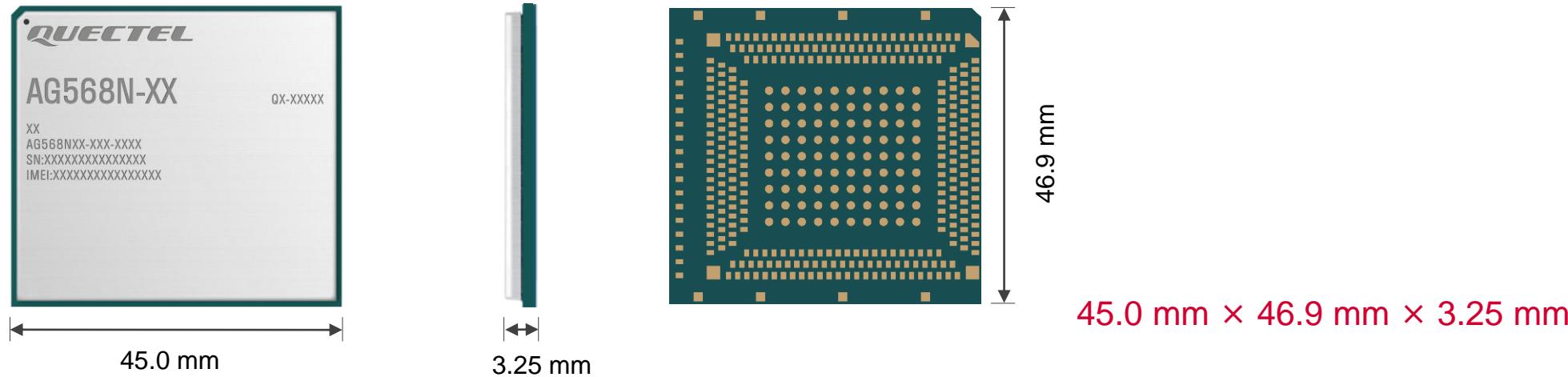


Features	Description
4G Category	Cat 6 with Intra Band CA Only
Apps Processor	Cortex A53 Dual Core
Embedded GNSS	GPS/ GLONASS/ BeiDou/ Galileo
ADR	Optional
Interface	PCIe/USB 3.0, USB 2.0, RGMII, SDIO, SPI, I2C, I2S, PCM, UART, GPIO
Antenna Interfaces	<ul style="list-style-type: none">• 2 × cellular antenna interfaces• 1 × GNSS antenna interface
Peak Data Rate	LTE: LTE-FDD: Max. 300 Mbps (DL)/ 50 Mbps (UL) LTE-TDD : Max. 240 Mbps (DL)/ 30 Mbps (UL)
	UMTS: DC-HSDPA: Max. 42 Mbps HSUPA: Max. 5.76 Mbps WCDMA: Max. 384 kbps (DL/UL)
	GSM: EDGE: Max. 236.8 kbps (DL)/ 236.8 kbps (UL) GPRS: Max. 85.6 kbps (DL)/ 85.6 kbps (UL)

Automotive Module AG568N Series Highlights



Automotive Grade 5G Module + DSDS (MT2735M)



- AEC-Q100 compliant MediaTek MT2735M chipset solution dedicated for automotive 5G NR and DSDS applications
- Dual-core Cortex-A55 operating up to 1.5 GHz
- Ideal for automotive applications with IATF 16949 requirement
- Wide operation temperature range (-40 °C to +85 °C) and support eCall under +95 °C^{NOTE}
- Automotive quality processes (PPAP, 8D report, DFMEA, PFMEA...)
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact LGA form factor ideal for integration in slim and size-constrained automotive solutions
- Multi-frequency GNSS receiver available for applications requiring fast and accurate fixes in any environment
- Optimized thermal management and low power consumption designs as well as the underfill process ensure higher reliability
- Integrated 2.5 Gbps ETH supports AVB/TSN

AG568N Series Specifications (Preliminary)



■ Automotive Grade 5G NR 4x4 MIMO

45.0 mm × 46.9 mm × 3.25 mm

Variant		AG568N-CN*	AG568N-EU*	AG568N-NA (Planning)	AG568N-ROW (Planning)
5G NR	5G FDD	n1/n3/n28A ^①	n1/n3/n8/n20/n28A ^①	n2/n5/n12/n14/n25/n66/n71	n1/n3/n28
	5G TDD	n41/n78	n41/n78	n41/n78	n41/n77/n78/n79 ^③
LTE	LTE-FDD	B1/B3/B5/B7/B8	B1/B3/B5/B7/B8/B20/B28A/B32 ^②	B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B29 ^② /B30 ^② /B66/B71	B1/B2/B3/B4/B5/B7/B8/B9/B11 ^③ /B18/B19/B21/B26/B28
	LTE-TDD	B34/B38/B39/B40/B41	B38/B40/B41	B38/B41/B48	B38/B40/B41
UMTS	WCDMA	B1/B8	B1/B3/B5/B8	B2/B4/B5	B1/B3/B5/B6/B7/B8/B9/B19
GSM		900/1800 MHz	900/1800/850 MHz	-	900/1800/850/1900 MHz
C-V2X B47		-	-	-	-
MF-GNSS	Optional	L1 + L5	L1 + L5	L1 + L5	L1 + L5
Ethernet	Optional	SGMII/RGMII	SGMII/RGMII	SGMII/RGMII	SGMII/RGMII
Wi-Fi/BT Interface		Y (PCIe)	Y (PCIe)	Y (PCIe)	Y (PCIe)
Region		China	EMEA/ Korea/ Australia/ India/ Southeast Asia	North America	Japan/ Latin America/ Brazil/ Mexico/ ...
Certification		Regulatory: SRRC*/ NAL*/ CCC*	TBD	TBD	TBD

① n28A supports Tx at 703–733 MHz and Rx at 758–788 MHz

② LTE-FDD B29, B30 and B32 support Rx only

③ Optional bands. Not supported by default.

"Y" means supported.

* means under development/ongoing.

AG568N Series Key Features



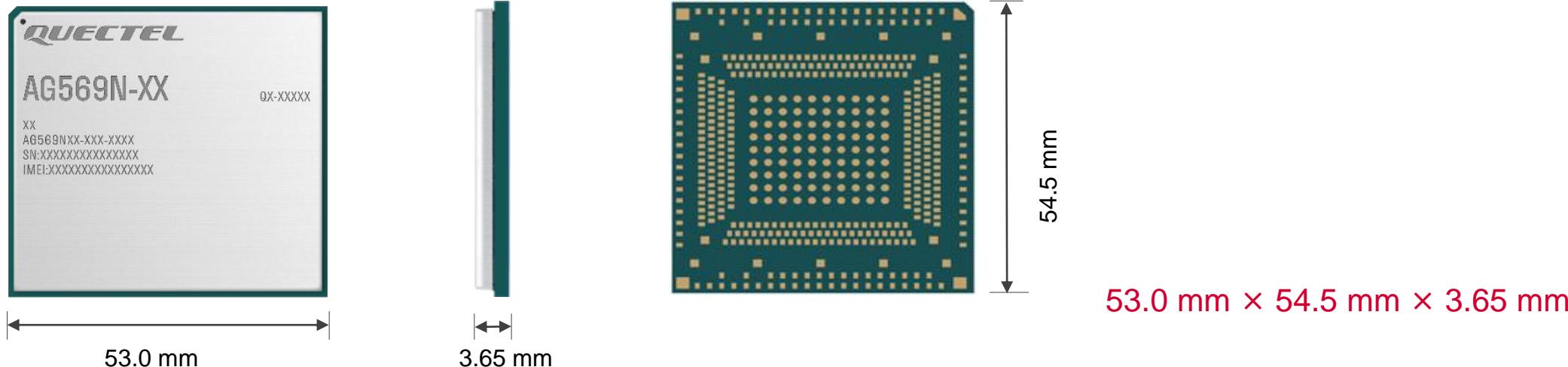
Features	Description
5G NR	3GPP Release 15 NSA/SA operation, Sub-6 GHz
4G Category	LTE Cat 15 (<i>LTE Cat 6 for AG568N-CN</i>), 3G/2G fallback
Apps Processor	Cortex A55 1.5 GHz Dual Core
C-V2X	Not supported
DSDS	Dual SIM Dual Standby supported
Embedded GNSS	GPS/ GLONASS/ BeiDou/ Galileo
	Enhanced Automotive MF-GNSS (L1 + L5)
Interface	USB 3.0/ PCIe (Gen3)/ RGMII/ SGMII/ UARTs/ SPI / I2C/ I2S (PCM) / SDIO/ ADCs / GPIOs
Antenna Interfaces	<ul style="list-style-type: none">• 4 × 5G/4G antenna interfaces (4×4 MIMO)• 1 × GNSS antenna interface
Peak Data Rate	5G NR ^① : Max. 4.67 Gbps (DL)/ 2.5 Gbps (UL)
	LTE Cat 15 : LTE-FDD: Max. 800 Mbps (DL)/ 200 Mbps (UL)
	LTE Cat 6 : LTE-FDD: Max. 300 Mbps (DL)/ 50 Mbps (UL)
	UMTS : DC-HSDPA: Max. 42 Mbps HSUPA: Max. 5.76 Mbps WCDMA: Max. 384 kbps (DL/UL)
	GSM : EDGE: Max. 296 kbps (DL)/ 236.8 kbps (UL)
GPRS: Max. 107 kbps (DL)/ 85.6 kbps (UL)	

^① Preliminary data. To be tested.

Automotive Module AG569N Series Highlights



Automotive Grade 5G Module + DSDS + C-V2X (MT2735P)



- AEC-Q100 compliant MediaTek MT2735P chipset solution dedicated for automotive 5G NR, DSDS and C-V2X applications
- Quad-core Cortex-A55 1.5 GHz supporting 15K DMIPS computing
- Ideal for automotive applications with IATF 16949 requirement
- Wide operation temperature range (-40 °C to +85 °C) and support eCall under +95 °C^{NOTE}
- Automotive quality processes (PPAP, 8D report, DFMEA, PFMEA...)
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact LGA form factor ideal for integration in slim and size-constrained automotive solutions
- Multi-frequency GNSS receiver available for applications requiring fast and accurate fixes in any environment
- Optimized thermal management and low power consumption designs, as well as the underfill process ensure higher reliability
- Integrated audio codec and 2.5 Gbps ETH support AVB/TSN

AG569N Series Specifications (Preliminary)



■ Automotive Grade 5G NR 4x4 MIMO + DSDS + C-V2X

53.0 mm × 54.5 mm × 3.65 mm

Variant		AG569N-CN*	AG569N-EU (Planning)	AG569N-NA (Planning)	AG569N-JP (Planning)
5G NR	5G FDD	n1/n3/n28A ^①	n1/n3/n8/n20/n28	n2/n5/n12/n14/n25/n66/n71	n1/n3
	5G TDD	n41/n78	n41/n78	n41/n78	n41/n78
LTE	LTE-FDD	B1/B3/B5/B7/B8	B1/B3/B5/B7/B8/B20/B28/B32 ^②	B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B29 ^② /B30 ^② /B66/B71	B1/B3/B8/B11/B18/B19/B21/B26/B28
	LTE-TDD	B34/B38/B39/B40/B41	B38/B40/B41	B38/B41/B48	B38/B41
UMTS	WCDMA	B1/B8	B1/B3/B5/B8	B2/B4/B5	B1/B8
GSM		900/1800 MHz	900/1800/850/1900 MHz	-	-
C-V2X B47		Y	Y	Y	Y
MF-GNSS <small>Optional</small>		L1 + L5	L1 + L5	L1 + L5	L1 + L5
Ethernet <small>Optional</small>		SGMII/RGMII	SGMII/RGMII	SGMII/RGMII	SGMII/RGMII
Wi-Fi/BT Interface		Y (PCIe)	Y (PCIe)	Y (PCIe)	Y (PCIe)
Region		China	EMEA/ Korea/ Australia/ India/ Southeast Asia/ Latin America/ Brazil/ Mexico	North America	Japan
Certification		Regulatory: SRRC*/ NAL*/ CCC*	TBD	TBD	TBD

① n28A supports Tx at 703–733 MHz and Rx at 758–788 MHz

② LTE-FDD B29, B30 and B32 support Rx only

"Y" means supported.

* means under development/ongoing.

AG569N Series Key Features



Features	Description	
5G NR	3GPP Release 15 NSA/SA operation, Sub-6 GHz	
4G Category	LTE Cat 15 (<i>LTE Cat 6 for AG569N-CN</i>), 3G/2G fallback	
Apps Processor	Cortex A55 1.5 GHz Quad Core	
C-V2X	B47 C-V2X	
DSDS	Dual SIM Dual Standby supported	
Embedded GNSS	GPS/ GLONASS/ BeiDou/ Galileo	
	Enhanced Automotive MF-GNSS (L1 + L5)	
Interface	USB 3.0/ PCIe (Gen3)/ RGMII/ SGMII/ UARTs/ SPI / I2C / I2S (PCM) / SDIO/ ADCs/ GPIOs	
Antenna Interfaces	<ul style="list-style-type: none">• 4 × 5G/4G antenna interfaces (4×4 MIMO)• 2 × C-V2X antenna interfaces (2×2 MIMO)• 1 × GNSS antenna interface	
Peak Data Rate	5G NR^①: Max. 4.67 Gbps (DL)/ Max. 2.5 Gbps (UL)	
	LTE Cat 15: LTE-FDD: Max. 800 Mbps (DL)/ 200 Mbps (UL) LTE Cat 6: LTE-FDD: Max. 300 Mbps (DL)/ 50 Mbps (UL)	LTE-TDD: Max. 600 Mbps (DL)/ 120 Mbps (UL) LTE-TDD: Max. 300 Mbps (DL)/ 50 Mbps (UL)
	UMTS: DC-HSDPA: Max. 42 Mbps HSUPA: Max. 5.76 Mbps	WCDMA: Max. 384 kbps (DL/UL)
	GSM: EDGE: Max. 296 kbps (DL)/ 236.8 kbps (UL)	GPRS: Max. 107 kbps (DL)/ 85.6 kbps (UL)

AG55xQ/AG52xR/AG5x9M/AG56xN + AG215S Support Package

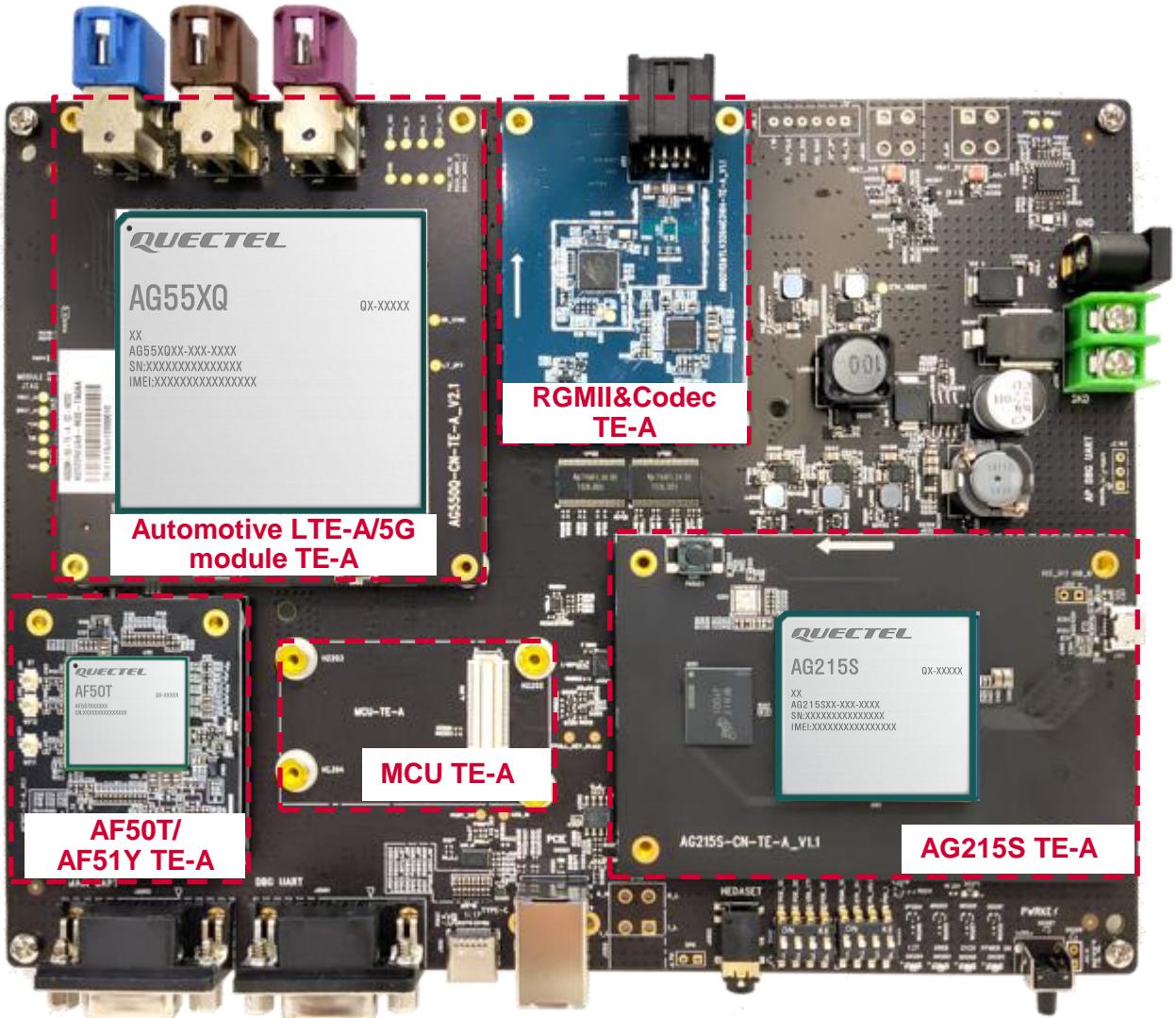


Technical Materials Package

- Hardware and software development guides
- Debug tools, download tools, test tools, EVB kit & USB drivers

Development Tool (V2X&5G EVB Kit)

- Interfaces
 - a) Power supply interface
 - b) Ethernet interface
 - c) Antenna interfaces
 - d) UART interfaces
 - e) USB interfaces
 - f) (U)SIM interfaces
 - g) PCIe interface
 - h) Audio interfaces
 - i) CAN interface
- Accessories
 - a) Antenna box
 - b) RGMII&Codec TE-A
 - c) Power adapter
 - d) Power converters
 - e) Earphone
 - f) USB Type-C cable
 - g) USB to UART converter cable





LTE Standard Modules

LTE-A & 5G Modules

Automotive Modules

Smart Modules

LPWA Modules

UMTS/HSPA(+) Modules

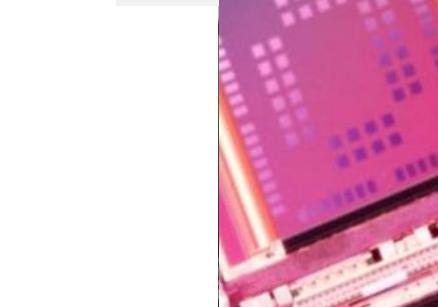
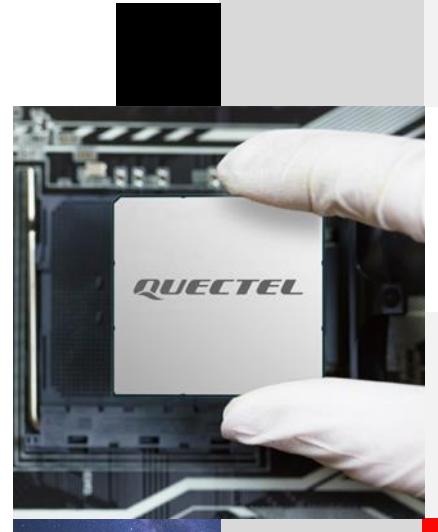
GSM/GPRS Modules

GNSS Modules

Wi-Fi&Bluetooth Modules

Antenna Products

Build a Smarter World

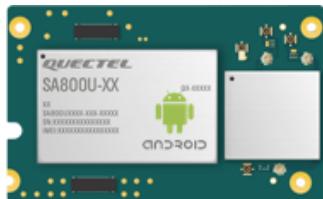


Smart Modules Roadmap Planning



Premium

Octa-Core



SA800U-WF

SDA845

Qualcomm



SG865W-WF

QCS8250

Qualcomm

- A/ -AL/ -NA (North America)
- AU/ -AUL (ANZ/ Latin America)
- CE (China)
- E/ -EL (EMEA/ APAC)
- EM (EMEA/ APAC/ ANZ/ Latin America)
- J/ -JP (Japan)
- W/ -WL/ -MW/ -WF (Global)

High

Octa-Core



SC600T Series

-EM/ -NA/ -JP/ -WF

Cat 6

MSM8953

Qualcomm



SC606T Series

-EM/ -NA/ -WF

Cat 6

MSM8953

Qualcomm



SC66 Series

-CE/ -E/ -A/ -J/ -MW

Cat 6

SDM660

Qualcomm

Medium

Octa-Core



SC600Y Series

-EM/ -NA/ -JP/ -WF

Cat 6

SDM450

Qualcomm

Entry

Quad-Core



SC20 Series

-CE/ -E/ -A/ -AU/ -J/ -W/
-EL/ -AL/ -AUL/ -WL

Cat 4

MSM8909

Qualcomm



SC200R Series

-CE/ -EM/ -NA/ -WF

Cat 4

QCM2150

Qualcomm



SC200E Series

-CE/ EM/ -NA/ -WF

Cat 4

QCM2290

Qualcomm



SC200L Series

-CE/ -EU/ -AU

Cat 4

SL8541E

紫光展锐™

SC20 Series Specifications



Variant		SC20-E/-EL ^③	SC20-A/-AL ^③	SC20-J/-JL ^③	SC20-AU/-AUL ^③	SC20-CE	SC20-W/-WL ^③
LTE	LTE-FDD	B1/B3/B5/B7/B8/B20	B2/B4/B5/B7/B12/B13/B25/B26	B1/B3/B8/B18/B19/B26	B1/B3/B5/B7/B8/B28	B1/B3/B5/B8	-
	LTE-TDD	B38/B40/B41	-	B41	B40	B38/B39/B40/B41	-
UMTS	WCDMA	B1/B5/B8	B1/B2/B4/B5/B8	B1/B6/B8/B19	B1/B2/B5/B8	B1/B8	-
	TD-SCDMA	-	-	-	-	B34/B39	-
EVDO/CDMA		-	-	-	-	BC0	-
GSM/EDGE		Quad-band	850/1900 MHz	-	Quad-band	900/1800 MHz	-
Embedded GNSS		Y	Y	Y	Y	Y	-
Wi-Fi/Bluetooth		Y	Y	Y	Y	Y	Y
Region		EMEA/Korea/Thailand/India/Vietnam	North America	Japan	Australia/Brazil/Taiwan	China (CMCC, CUCC)	Global
Certification		Regulatory: GCF/CE/UKCA/KC/NBTC	Carrier: Verizon/AT&T/T-Mobile ^① /Rogers/Telus ^① Regulatory: GCF/PTCRB/FCC/IC	Carrier: NTT DOCOMO/SoftBank/KDDI Regulatory: JATE/TELEC	Carrier: Telstra Regulatory: GCF/CE/Anatel/NCC/RCM	Regulatory: SRRC/NAL/CCC	Regulatory: CE/FCC/UKCA/IC/Anatel/JATE/TELEC/RCM

"Y" means supported.

^① T-Mobile/Telus for Data Only version has been done and that for Voice version is TBD.

^③ SC20-EL/-AL/-JL/-AUL/-WL are modules with Yocto Linux OS inside.

And the certification status listed above are for Android-version SC20 series and can not be shared by the Linux-Version SC20 series.

SC20 Series Features



Item	Description
CPU	MSM8909, Quad-core A7, up to 1.1 GHz
Memory	<ul style="list-style-type: none">• 1 GB LPDDR3 + 8 GB eMMC• 2 GB LPDDR3 + 16 GB eMMC
OS	<ul style="list-style-type: none">• Android 7.1/8.1 supported by SC20-E/-A/-J/-AU/-CE/-W• Yocto Linux (Kernel 3.18) supported only by SC20-EL/-AL/-JL/-AUL/-WL
WLAN	<ul style="list-style-type: none">• 2.4&5 GHz, 802.11a/b/g/n• 150 Mbps, STA/AP/P2P
Bluetooth	<ul style="list-style-type: none">• Bluetooth 2.1 EDR/3.0 HS/4.2 LE• Support a maximum of 10 ACL/BEL/SCO links
GNSS	GPS/BeiDou/GLONASS or GPS/BeiDou/Galileo (not supported on SC20-W/-WL)
Modem	3GPP Release 10 compliant

SC20 Series Interfaces



Item	Description
LCM	<ul style="list-style-type: none">• 4-lane MIPI_DSI, 1.5 Gbps/lane, HD (720P) @ 60 fps• Support MIPI to RGB, MIPI to LVDS and MIPI to HDMI
Camera	2-lane + 1-lane MIPI_CSI, 1.5 Gbps/lane, 1×ISP, Bayer/YUV format
Touch Panel	Capacitive-screen, I2C controls
Audio	Analog channels: <ul style="list-style-type: none">• Two inputs: MIC1, MIC2• Three outputs: speaker, earpiece, headphone
Video	<ul style="list-style-type: none">• 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
USB 2.0	<ul style="list-style-type: none">• High Speed, 480 Mbps• Support USB 2.0 OTG, USB OTG + charge and USB to Ethernet functions
(U)SIM	× 2, support 1.8/3 V (U)SIM cards, with (U)SIM card detection function; DSDS supported
UART	× 2, support up to 4 Mbps with hardware flow control
SD Card	SD 3.0, 4-bit SDIO
I2C/SPI/ADC/GPIO	Supported
PWRKEY	Supported
Antenna	× 4, main antenna, Rx-diversity antenna, GNSS antenna and Wi-Fi/Bluetooth antenna respectively



Evaluation Board

Interfaces

- Serial port
- Antenna interface
- Micro-USB interface

Accessories

- Micro-USB cable
- USB to RS-232 converter cable
- RF cables
- Power adapter
- Earphone
- Antennas
- USB flash drive

SC200R Series Specifications



Variant		SC200R-EM	SC200R-NA	SC200R-JP ^①	SC200R-CE	SC200R-WF
LTE	LTE-FDD	B1/B2/B3/B4/B5/B7/B8/ B20/B28	B2/B4/B5/B7/B12/B13/B14/ B17/B25/B26/B66/B71	B1/B3/B5/B8/B11/B18/B19/ B21/B26/B28	B1/B3/B5/B8	-
	LTE-TDD	B38/B40/B41	B41	B41	B34/B38/B39/B40/B41	-
UMTS	WCDMA	B1/B2/B4/B5/B8	B2/B4/B5	B1/B6/B8/B19	B1/B8	-
EVDO/CDMA		-	-	-	BC0	-
GSM/EDGE		850/900/1800/1900 MHz	-	-	900/1800 MHz	-
Embedded GNSS		Y	Y	Y	Y	-
Wi-Fi/Bluetooth		Y	Y	Y	Y	Y
Region		EMEA/India/Korea/ South Asia/Latin America/ Australia/New Zealand/ South Africa	North America	Japan	China	Global
Certification		Carrier: Telstra* Regulatory: GCF/CE/RCM	Carrier: Verizon/AT&T/T-Mobile* Regulatory: GCF/PTCRB/FCC/IC	Carrier: NTT DOMOCO ^① Regulatory: JATE ^① /TELEC ^①	Regulatory: CCC/SRRC*/NAL*	Regulatory: CE/FCC/IC/RCM

"Y" means supported.

"*" means planning.

① means TBD.

SC200R Series Features



Item	Description
CPU	QCM2150 , Quad-core ARM Cortex-A53 64-bit CPU @ 1.3 GHz
GPU	Qualcomm® Adreno™ 308 Graphics Processing Unit (GPU) with 64-bit addressing
Memory	<ul style="list-style-type: none">• 1 GB LPDDR3 + 8 GB eMMC• 2 GB LPDDR3 + 16 GB eMMC
OS	Android 10
Battery Charge	Supported
WLAN	2.4&5 GHz, 802.11a/b/g/n, 150 Mbps, STA/AP/P2P
Bluetooth	<ul style="list-style-type: none">• Bluetooth 2.1 EDR/3.0 HS/4.2 LE• Support a maximum of 10 ACL/BEL/SCO links
GNSS	GPS/BeiDou/GLONASS or GPS/BeiDou/Galileo (not supported on SC200R-WF)
Modem	3GPP Release 10

SC200R Series Interfaces



Item	Description
LCM	<ul style="list-style-type: none">• 4-lane MIPI_DSI, HD+ (1440 × 720) @ 60 fps• Wi-Fi display: 1080P @ 30 fps (UBWC)
Camera	<ul style="list-style-type: none">• 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 touch panel, I2C controls
Audio	Analog channels: <ul style="list-style-type: none">• 3 inputs: MIC1, MIC2, MIC3 (including one noise-canceling MIC)• 3 outputs: speaker, earpiece, headphone
Video	<ul style="list-style-type: none">• Encoder: 1080P (H.264) @ 30 fps; WVGA (MPEG-4/VP8) @ 30 fps• Decoder: 1080P (H.264/MPEG-4/VP8/H.265/DivX4/5/6) @ 30 fps; WVGA (H.263) @ 30 fps
USB 2.0	× 1, compliant with USB 2.0, support USB OTG, USB OTG + charge, etc.
(U)SIM	× 2, support 1.8/2.95 V (U)SIM cards, with (U)SIM card detection function, DSDS supported
UART	× 3, up to 4 Mbps, one of them supports hardware flow control
SD Card	× 1, SD 3.0, 4-bit SDIO
I2C/I2S/PWM/SPI/ADC/GPIO/PWRKEY	Supported
Antenna	× 4, Main/Rx-diversity/GNSS/Wi-Fi & Bluetooth antenna respectively



Evaluation Board

Interfaces

- Serial port
- Antenna interface
- USB Type-C interface

Accessories

- USB Type-C cable
- USB to RS-232 converter cable
- RF cables
- Power adapter
- Earphone
- Antennas
- USB flash drive

SC200L Series Specifications



Variant		SC200L-EU	SC200L-AU	SC200L-CE
LTE	LTE-FDD	B1/B3/B5/B7/B8/B20/B28	B1/B2/B3/B4/B5/B7/B8/B28	B1/B3/B5/B8
	LTE-TDD	B38/B40/B41	B38	B34/B38/B39/B40/B41
UMTS	WCDMA	B1/B5/B8	B1/B2/B4/B5/B8	B1/B8
EVDO/CDMA		-	-	-
GSM/EDGE		900/1800MHz	850/900/1800/1900 MHz	900/1800 MHz
Embedded GNSS		Y	Y	Y
Wi-Fi/Bluetooth		Y	Y	Y
Region		EMEA/APAC	Latin America	China
Certification		Regulatory: GCF*/CE*	Regulatory: Anatel*	Regulatory: CCC/SRRC*/NAL*

“*” means ongoing/planning.

SC200L series are not promoted or sold in US, Canada, Australia, New Zealand, Japan, South Korea or Taiwan region.

SC200L Series Features



Item	Description
CPU	SL8541E , Quad-core ARM Cortex-A53 64-bit CPU @ 1.4 GHz
Memory	<ul style="list-style-type: none">• 1 GB LPDDR3 + 8 GB eMMC• 2 GB LPDDR3 + 16 GB eMMC
OS	Android 10
Battery Charge	Supported
WLAN	2.4&5 GHz, 802.11a/b/g/n/ac
Bluetooth	<ul style="list-style-type: none">• Bluetooth 2.1 EDR/3.0 HS/4.2 LE/5.0 LE• Support a maximum of 10 ACL/BEL/SCO links
GNSS	GPS/GLONASS or GPS/BeiDou
Modem	3GPP Release 10

SC200L Series Interfaces



Item	Description
LCM	4-lane MIPI_DSI, HD+ (1440 × 720) @ 60 fps
Camera	<ul style="list-style-type: none">• 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)
Touch Panel	Capacitive touch panel, I2C controls
Audio	Analog channels: <ul style="list-style-type: none">• 3 inputs: MIC1, MIC2, MIC3 (MIC1 & MIC3 can support dual-microphone noise-canceling)• 3 outputs: speaker, earpiece, headphone
Video	<ul style="list-style-type: none">• Encoder: 1080P (H.264) @ 30 fps; WVGA (MPEG-4/VP8) @ 30 fps• Decoder: 1080P (H.264/MPEG-4/VP8/H.265/DivX4/5/6) @ 30 fps; WVGA (H.263) @ 30 fps
USB 2.0	× 2 <ul style="list-style-type: none">• 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
(U)SIM	× 2, support 1.8/2.95 V (U)SIM cards, with (U)SIM card detection function, DSDS supported
UART	× 2, up to 3.25 Mbps, UART0 supports hardware flow control
SD Card	× 1, SD 3.0, 4-bit SDIO
I2C/PWM/SPI/ADC/GPIO/ PWRKEY	Supported
Antenna	× 4, Main/Rx-diversity/GNSS/Wi-Fi & Bluetooth antenna respectively



Evaluation Board

Interfaces

- Serial port
- Antenna interface
- USB Type-C interface

Accessories

- USB Type-C cable
- USB to RS-232 converter cable
- RF cables
- Power adapter
- Earphone
- Antennas
- USB flash drive

SC200E Series Specifications



Variant		SC200E-EM*	SC200E-NA*	SC200E-JP ^①	SC200E-CE*	SC200E-WF*
LTE	LTE-FDD	B1/B2/B3/B4/B5/B7/B8/B20/B28	B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B66/B71	B1/B3/B5/B8/B11/B18/B19/B21/B26/B28	B1/B3/B5/B8	-
	LTE-TDD	B38/B40/B41	B41	B41	B34/B38/B39/B40/B41	-
UMTS	WCDMA	B1/B2/B4/B5/B8	-	B1/B6/B8/B19	B1/B8	-
EVDO/CDMA		-	-	-	BC0	-
GSM/EDGE		850/900/1800/1900 MHz	-	-	900/1800 MHz	-
GNSS		Y	Y	Y	Y	-
Wi-Fi/Bluetooth		Y	Y	Y	Y	Y
Region		EMEA/Korea/South Asia/Latin America/India/Australia/New Zealand/South Africa	North America	Japan	China	Global
Certification		Carrier: Telstra*	Carrier: Verizon*/AT&T*/T-Mobile*	TBD	Regulatory: SRRC*/NAL*/CCC*	Regulatory: CCC*/CE*/UKCA*/KC*/NCC*/JATE*/TELEC*/RCM*/NBTC*

“*” means under development/planning.

^① means TBD.

SC200E Series Features



Item	Description
CPU	QCM2290 , Quad-core ARM Cortex-A53 64-bit CPU @ 2.0 GHz
GPU	Qualcomm® Adreno™ 702 Graphics Processing Unit (GPU) with 64-bit addressing
Memory	<ul style="list-style-type: none">• 2 GB LPDDR4X + 32 GB eMMC• 3 GB LPDDR4X + 32 GB eMMC
OS	Android 11/12/13
Battery Charge	Supported
WLAN	2.4&5 GHz, 802.11a/b/g/n/ac, 433 Mbps, STA/AP/P2P
Bluetooth	Bluetooth 2.1 EDR/3.0 HS/4.2 LE/5.0 LE
GNSS	GPS/BeiDou/GLONASS/Galileo/QZSS/SBAS (not supported on SC200E-WF)
Modem	3GPP Release 10

SC200E Series Interfaces



Item	Description
LCM	4-lane MIPI_DSI, HD+ (1680 × 720) @ 60 fps
Camera	<ul style="list-style-type: none">• 2 groups of 4-lane MIPI_CSI, up to 2.5 Gbps/lane• Support 2 or 3 cameras, up to 25 MP or 13 MP + 13 MP with dual ISP
Touch Panel	Capacitive touch panel, I2C controls
Audio	Analog channels: <ul style="list-style-type: none">• 3 inputs: MIC1, MIC2, MIC3 (including one noise-canceling MIC)• 3 outputs: earpiece, headphone, lineout
Video	<ul style="list-style-type: none">• Encoder: 1080P 8-bit H.264/H.265(HEVC) @ 30 fps• Decoder: 1080P 8-bit H.264/H.265(HEVC)/VP9 @ 30 fps
USB 3.1	× 1, Type-C, compliant with USB 3.1/2.0
(U)SIM	× 2, support 1.8/2.95 V (U)SIM cards, with (U)SIM card detection function, DSDS supported
UART	× 3, up to 4 Mbps, one of them supports hardware flow control
SD Card	× 1, SD 3.0, 4-bit SDIO
I2C/I2S/PWM/SPI/ADC/GPIO/PWRKEY	Supported
Antenna	× 4, Main/Rx-diversity/GNSS/Wi-Fi & Bluetooth antenna respectively



Evaluation Board

Interfaces

- Serial port
- Antenna interface
- Micro-USB interface

Accessories

- USB type-C cable
- USB to RS-232 converter cable
- RF cables
- Earphone
- Antennas
- Power adapter
- USB flash drive

SC600Y/SC600T/SC606T Series Specifications



Variant		SC600Y-EM/SC600T-EM/ SC606T-EM	SC600Y-NA/SC600T-NA/ SC606T-NA	SC600Y-JP/SC600T-JP/ SC606T-JP ^①	SC600Y-WF/SC600T-WF/ SC606T-WF
LTE	LTE-FDD	B1/B2/B3/B4/B5/B7/B8/B20/B28	B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B66/B71	B1/B3/B5/B8/B11/B18/B19/B21/B26/B28	-
	LTE-TDD	B38/B39 ^② /B40/B41	B41	B41	-
UMTS	WCDMA	B1/B2/B4/B5/B8	B2/B4/B5	B1/B6/B8/B19	-
	TD-SCDMA	-	-	-	-
CDMA		-	-	-	-
GSM/EDGE		850/900/1800/1900 MHz	-	-	-
Embedded GNSS		Y	Y	Y	-
Wi-Fi/Bluetooth		Y	Y	Y	Y
Region		EMEA/India/Korea/South Asia/ Latin America/Australia/ New Zealand/South Africa	North America	Japan	Global
Certification ^③		Carrier: Telstra Regulatory: GCF/CE/UKCA/Anatel/KC/ NCC/RCM	Carrier: Verizon/AT&T/T-Mobile/Sprint Regulatory: GCF/PTCRB/FCC/IC/IFETEL	Carrier: NTT DOCOMO/KDDI Regulatory: JATE/TELEC	Regulatory: CE/FCC/IC/KC/JATE/TELEC/ RCM

"Y" means supported.

^① means TBD.

^② means SC606T-EM does not support B39.

^③ means the certification status listed above are for SC600Y/SC600T series and cannot be shared by SC606T series.

SC600Y/SC600T/SC606T Series Features



Item	Description
CPU	<ul style="list-style-type: none">• SC600Y: SDM450, Octa-core ARM Cortex-A53 64-bit CPU @ 1.8 GHz• SC600T/SC606T: MSM8953, Octa-core ARM Cortex-A53 64-bit CPU @ 2.0 GHz
GPU	Qualcomm® Adreno™ 506 graphics processing unit (GPU) with 64-bit addressing
Memory	2 GB LPDDR3 + 16 GB eMMC
OS	<ul style="list-style-type: none">• Android 9/10 @ SC600Y/SC600T• Yocto Linux (kernel 4.9) @ SC606T
WLAN	2.4&5 GHz, 802.11a/b/g/n/ac, 433 Mbps, STA/AP/P2P
Bluetooth	<ul style="list-style-type: none">• Bluetooth 2.1 EDR/3.0 HS/4.2 LE• Support a maximum of 10 ACL/BEL/SCO links
GNSS	GPS/BeiDou/GLONASS or GPS/BeiDou/Galileo (not supported on SC600Y-WF/SC600T-WF/SC606T-WF)
Modem	Partially 3GPP Release 10 compliant

SC600Y/SC600T/SC606T Series Interfaces



Item	Description
LCM	<ul style="list-style-type: none">Support dual LCDs for independent display: dual 4-lane MIPI_DSI; WUXGA (1920 × 1200) @ 60 fpsWi-Fi display: 1080P @ 30 fps (UBWC)
Camera	<ul style="list-style-type: none">3 groups of 4-lane MIPI_CSI, up to 2.1 Gbps per lane. 2×ISPSupport 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 @ SC600YUp to 24 MP with dual ISP @ SC600T/SC606T
Touch Panel	× 2, Capacitive-screen, I2C controls
Audio	Analog channels: <ul style="list-style-type: none">Two inputs: MIC1, MIC2Three outputs: speaker, earpiece, headphone
Video	<ul style="list-style-type: none">Video encoding and decoding: up to 1080P @ 60 fps @ SC600YVideo encoding and decoding: up to 4K @ 30 fps @ SC600T/SC606TEncoder HFR: 720P @ 120 fps; 60 Mbps; Maximum 972000 macro block/s; 1080P @ 60 fps decode + 1080P @ 30 fps encode
USB	USB 3.0 and 2.0 Compliant, Type-C, USB OTG + Charge
(U)SIM	× 2, support 1.8/3 V (U)SIM cards, with (U)SIM card detection function; DSDS supported
UART	× 3, support 4 Mbps with hardware flow control
SD Card	SD 3.0, 4-bit SDIO
I2C/SPI/PWM/ADC/GPIO/ PWRKEY	Supported
Antenna	4 pads (for Main Antenna, Rx-diversity Antenna, GNSS Antenna and Wi-Fi/Bluetooth Antenna respectively)



Evaluation Board

Interfaces

- Serial port
- Antenna interface
- USB Type-C Interface

Accessories

- USB Type-C cable
- USB to RS-232 converter cable
- Antennas
- Power adapter

SC66 Series Specifications



Variant		SC66-E	SC66-A	SC66-J	SC66-CE	SC66-MW
LTE	LTE-FDD	B1/B2/B3/B4/B5/B7/B8/B20/B28(A+B)	B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B66/B71	B1/B3/B5/B8/B11/B18/B19/B21/B26/B28(A+B)	B1/B3/B5/B8	-
	LTE-TDD	B38/B39/B40/B41 ^①	B41 ^①	B41 ^②	B34/B38/B39/B40/B41 ^②	-
UMTS	WCDMA	B1/B2/B4/B5/B8	B2/B4/B5	B1/B6/B8/B19	B1/B8	-
	TD-SCDMA	-	-	-	B34/B39	-
EVDO/CDMA		-	-	-	BC0	-
GSM/EDGE		850/900/1800/1900 MHz	-	-	900/1800 MHz	-
Embedded GNSS		Y	Y	Y	Y	-
Wi-Fi/Bluetooth		Y (MIMO supported)	Y (MIMO supported)	Y (MIMO supported)	Y (MIMO is not supported)	Y (MIMO supported)
Region		Europe/India/Korea/ South Asia/Latin America/ Australia/South Africa	North America	Japan	China	Global
Certification		Carrier: Telstra ^③ Regulatory: GCF/CE/UKCA/KC/NCC/ RCM/Anatel ^③	Carrier: Verizon/AT&T Regulatory: GCF/PTCRB/FCC/IC	Carrier: NTT DOCOMO ^③ Regulatory: JATE/TELEC	Regulatory: SRRC/NAL/CCC	Regulatory: CE/FCC/IC/KC/RCM

"Y" means supported.

^① B41 of SC66-E/SC66-A only support 200 MHz bandwidth.

^② B41 of SC66-J/SC66-CE only support 120 MHz bandwidth.

^③ means TBD.

SC66 Series Features



Item	Description
CPU	SDM660, Customized 64-bit ARM v8.0-compliant AP (Kryo 260 CPU): <ul style="list-style-type: none">• Kryo Gold Quad high-performance cores targeting 2.2 GHz, L2 – 1 MB• Kryo Silver Quad low-power cores targeting 1.843 GHz, L2 – 1 MB
GPU	Qualcomm® Adreno 512 @ 650 MHz, OpenGL ES3.1 + AEP, DX12_FL12, Vulkan, OpenCL2.0 FP, RenderScript
Memory	<ul style="list-style-type: none">• 3 GB LPDDR4X + 32 GB eMMC• 4 GB LPDDR4X + 64 GB eMMC
WLAN/Bluetooth	<ul style="list-style-type: none">• 2.4&5 GHz, 802.11a/b/g/n/ac• Bluetooth 2.1 EDR/3.0 HS/4.2 LE/5.0 LE• 2 × 2 MIMO Wi-Fi (except SC66-CE)
Video	<ul style="list-style-type: none">• Decoder: 4K @ 30 fps; H.264, VP8, VP9 and HEVC• Encoder: 4K @ 30 fps; HEVC, H264, VP8 and MPEG-4
GNSS	GPS/GLONASS/BeiDou/Galileo/QZSS/SBAS (not supported on SC66-MW)
Modem	3GPP Release 12 compliant (Part of Release 13 features are supported)
OS	Android 9/10
AI Engine	Vector DSP, CPU and GPU work together, providing neural network SDK, supporting Caffe/Caffe2/Tensorflow
USB	Support two groups of USB interfaces: <ul style="list-style-type: none">• One supports USB 3.1 Type-C interface, which is compatible with USB 2.0.• The other supports USB 2.0, which can only work in host mode.
Camera	<ul style="list-style-type: none">• 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
LCM	<ul style="list-style-type: none">• 2560 × 1600 @ 60 fps primary display• 4K @ 30 fps over DP• Dual MIPI DSI• Wi-Fi display: 1080P @ 30 fps

SC66 Series Evaluation Kit



Evaluation Board

Interfaces

- Serial port
- Antenna interface
- USB Type-C interface

Accessories

- USB Type-C cable
- USB to RS-232 converter cable
- RF cables
- Power adapter
- Earphone
- Antennas
- USB flash drive

SA800U-WF Features



Item	Description
CPU	SDA845, 64-bit application processors (Kryo 385) with 2 MB L3 cache: <ul style="list-style-type: none">Quad high-performance Kryo cores at 2.649 GHz – Kryo Gold cluster with 256 KB L2Quad low-power Kryo cores at 1.766 GHz – Kryo Silver cluster with 128 KB L2
GPU	Adreno 630 – 4K 60 fps UI or 2 × 2K 90 fps UI
Memory	<ul style="list-style-type: none">4 GB LPDDR4X + 64 GB UFS 2.18 GB LPDDR4X + 256 GB UFS 2.1
WLAN/Bluetooth	<ul style="list-style-type: none">2.4&5 GHz, 802.11a/b/g/n/acBluetooth 2.1 EDR/3.0 HS/4.2 LE/5.0 LE2 × 2 MIMO Wi-Fi
Video	<ul style="list-style-type: none">Decoder: 4K @ 60 fps; H.264 High Profile, H.265 Main 10 Profile and VP9 Profile 2Encoder: 4K @ 60 fps; H.264 High Profile, H.265 Main 10 ProfileEncoder: 4K @ 30 fps; VP8Supports HDR 10-bit video playback (HLG, HDR10)Supports HDR 10-bit capture (HLG)
Modem & GNSS	Supported by using Quectel 4G/5G/GNSS modules
OS	Android 10
AI Engine	Vector DSP, CPU and GPU work together, providing neural network SDK, supporting Caffe/Caffe2/Tensorflow
USB	Supports two groups of USB interfaces: <ul style="list-style-type: none">1 × 3.1 with DP1 × 3.1 host only
Camera	<ul style="list-style-type: none">3 × 4-lane CSI with C-PHY/D-PHY + 1 × 2-lane CSI with D-PHY2 × 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
LCM	<ul style="list-style-type: none">3840 × 2400 @ 60 fps primary display4K @ 60 fps over DPWi-Fi display: 4K @ 30 fps
PCIe	Supports two groups of PCIe interfaces: <ul style="list-style-type: none">1 × 1-lane PCIe Gen 21 × 1-lane PCIe Gen 3

Evaluation Board



Interfaces

- Serial port
- Antenna interface
- USB Type-C interface
- HDMI IN 4K connector
- HDMI OUT 4K connector
- One Gigabit Ethernet RJ45 interface
- M.2 interface for external 4G/5G module
- USB 3.0 interface
- CAN bus interface

Accessories

- USB Type-C cable
- USB to RS-232 converter cable
- RF cables
- Power adapter
- Earphone
- Antennas
- USB flash drive
- HDMI to HDMI cable
- USB Type-C to DP cable
- One Gigabit Ethernet cable

SG865W-WF Features



Item	Description
CPU	QCS8250, 64-bit application processors (Kryo 585) with 4 MB L3 cache: <ul style="list-style-type: none">• 1 × Kryo 585 Gold prime core Fmax at 2.842 GHz – with 512 KB L2 cache• 3 × Kryo 585 Gold cores Fmax at 2.419 GHz – with 256 KB L2 cache per core• 4 × Kryo 585 Silver cores Fmax at 1.805 GHz – with 128 KB L2 cache per core
GPU	Adreno 650 at 587 MHz – 4K 60 fps UI or 2 × 2K 60 fps UI
NPU	Qualcomm NPU230
Memory	8 GB LPDDR5 + 64 GB UFS 2.1
Total TOPS	15 TOPS including CPU, GPU, NPU,...
WLAN/Bluetooth	<ul style="list-style-type: none">• 2.4&5 GHz, 802.11a/b/g/n/ac/ax• Bluetooth 5.1• 2 × 2 MIMO Wi-Fi
Video	<ul style="list-style-type: none">• Encoder: 4K @ 120 fps; 8K @ 30 fps• Decoder: 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)
Camera	<ul style="list-style-type: none">• 6 × 4-lane CSI• 64 MP @ 30 fps ZSL with dual ISP
Modem & GNSS	Supported by using Quectel 4G/5G/GNSS modules
OS	Android 10
AI Engine	Vector DSP, CPU and GPU work together, providing neural network SDK, supporting Caffe/Caffe2/Tensorflow
USB	2 × USB 3.1, one supports DP
LCM	<ul style="list-style-type: none">• 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
PCIe	2 × 2-lane PCIe Gen 3

Evaluation Board



Interfaces

- Serial port
- Antenna interface
- USB Type-C interface
- HDMI IN 4K connector
- HDMI OUT 4K connector
- One Gigabit Ethernet RJ45 interface
- M.2 interface for external 4G/5G module
- USB 3.0 interface
- CAN bus interface

Accessories

- USB Type-C cable
- USB to RS-232 converter cable
- RF cables
- Power adapter
- Earphone
- Antennas
- USB flash drive
- HDMI to HDMI cable
- USB Type-C to DP cable
- One Gigabit Ethernet cable



LTE Standard Modules

LTE-A & 5G Modules

Automotive Modules

Smart Modules

LPWA Modules

UMTS/HSPA(+) Modules

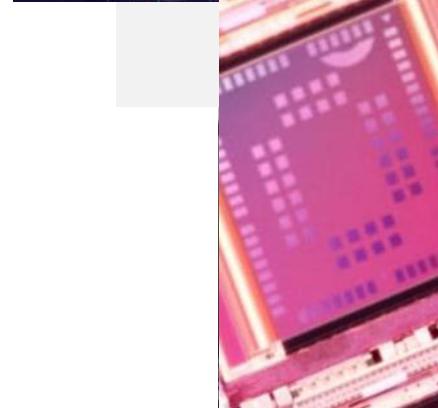
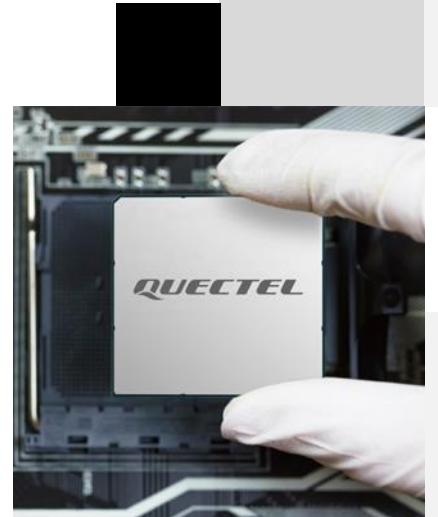
GSM/GPRS Modules

GNSS Modules

Wi-Fi&Bluetooth Modules

Antenna Products

Build a Smarter World



Narrow Band & Low Speed Modules Roadmap



LPWA

Qualcomm

Cat M, Cat NB, 2G
GNSS (Optional)

Sony

BG96



BG/BC9x Series

BG95 Series
-M1/ -M2/ -M3/ -M4/
-M5/ -M6/ -MF

BG95xA-GL



Qualcomm

NB-IoT

Unisoc

BC92



HiSilicon

BC95-G(EOL)



HiSilicon 5G NB-IoT Solutions

BC95-GV



MediaTek

BG/BC6xx Series

BG600L-M3



BC660K-GL



BC65



BC68(EOL)



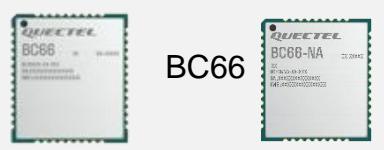
BC68-GV



BC66



BC66-NA



BG77x Series

BG77



BG770A-GL



BG96 Highlights



Highlight	Description
Multi Modes	Cat M1/ Cat NB1/ EGPRS
Package	LGA / Mini PCIe
Global Bands	<ul style="list-style-type: none">Cat M1/NB1: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25⁽¹⁾/B26*/B28/B39 (B39 for Cat M1 only)EGPRS: 850/900/1800/1900 MHz
Low Power Consumption	Approx. 10 µA in PSM mode
Mobility	Movable application (TX3.0)
Extended Power Supply Range	3.3–4.3 V, 3.8 V typ.
GNSS (Optional)	GPS, GLONASS, BeiDou/Compass, Galileo, QZSS
VoLTE	PCM digital audio interface
QuecOpen®	ARM A7 Processor, with 3 MB Flash and 3 MB RAM available for users
QuecLocator®*	Location based on base station cell information
Compatibility	Soldering footprint completely compatible with Quectel UG95/UG96/BC95

** means under development.

⁽¹⁾ LTE B25 supported on BG96 with R1.2 hardware version.

Cat M1/Cat NB1/EGPRS



26.5 mm × 22.5 mm × 2.3 mm

Package: 102-pin LGA

Supply Voltage: 3.3–4.3 V, 3.8 V Typ.

Data Rate:

- LTE Cat M1: Max. 375 kbps (DL), Max. 375 kbps (UL) (Half Duplex)
- LTE Cat NB1: Max. 32 kbps (DL), Max. 70 kbps (UL)
- EGPRS: Max. 296 kbps (DL), Max. 236.8 kbps(UL)
- GPRS: Max. 107 kbps (DL), Max. 85.6 kbps (UL)

Protocols: PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/MQTT

Functions: Data/VoLTE/GNSS/DFOTA/NITZ/PING

Interfaces: (U)SIM/UART/USB/I2C/PCM/ADC/GPIO/Antenna

Power Consumption (Typical): 10 µA @PSM

BG96 Specifications 2



■ LPWA Cat M1/Cat NB1/EGPRS Module

26.5 mm × 22.5 mm × 2.3 mm
Cat M1: 375 kbps DL/375 kbps UL
Cat NB1: 32 kbps DL/70 kbps UL

Items	Description
Cat M1	LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25 ^① /B26*/B28 LTE TDD: B39
Cat NB1	LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25 ^① /B26*/B28
EGPRS	850/900/1800/1900 MHz
GNSS	Optional
Region	Global
Certification	Carrier: Vodafone/ Deutsche Telekom/ Telefónica/ Verizon/ AT&T/ T-Mobile/ Sprint/ U.S. Cellular/ Rogers/ Telus/ KT/ SKT/ LGU+/ NTT DOCOMO/ SoftBank/ KDDI/ Telstra Regulatory: GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ IFETEL/ CCC/ KC/ NCC/ JATE/ TELEC/ RCM/ NBTC/ IMDA

“*” means under development.

① LTE B25 supported on BG96 with R1.2 hardware version.

BG96 Power Consumption



Description	Conditions	Typ.	Unit
Power Saving Mode	PSM @ Real Network	10	µA
Sleep State^①	DRX = 1.28 s @ Paging Duration = 35 mA/25 ms	1.5	mA
	e-I-DRX = 40.96 s @ PTW = 2.3 mA/10 s	1.2	mA
Idle State^②	DRX = 1.28 s @ Paging Duration = 45 mA/16 ms	15	mA
	e-I-DRX = 40.96 s @ PTW = 16 mA/10 s	15	mA
Active State	23 dBm @ Instrument	205	mA
	10 dBm @ Instrument	140	mA
	0 dBm @ Instrument	128	mA
	Data Transfer @ Real Network	95	mA
	Voice @ Real Network	108	mA

^① Sleep state with UART connected and USB disconnected. The module can enter into sleep state through executing **AT+QSCLK=1** command via UART interface and then controlling the module's DTR pin. For details, please refer to [Quectel_BG96_Hardware_Design](#).

^② Idle state with UART connected and USB disconnected.

BG96 Main Interfaces



Interface	Description
(U)SIM	1.8 /3.0 V
UART	3 (UART1, UART2, UART3)
USB	1
I2C	1
ADC	2
GPIO	2 (I2C and UART3 can be re-configured as extra 4 GPIOs if they are not used)
PCM	1
Antenna Interface	2 (for Main Antenna and GNSS Antenna, respectively)
GNSS (Optional)	GPS, GLONASS, BeiDou/Compass, Galileo, QZSS

BG96 Main Functions



Function	Description
Protocols	PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ MQTT
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
GNSS Driver	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/10.x
NDIS Driver	Windows 7/8/8.1/10
GobiNet Driver	Linux 2.6–5.4
QMI_WWAN Driver	Linux 3.4–5.4
SMS	Point-to-point MO and MT; SMS Cell Broadcast; Text and PDU Mode
Voice	VoLTE (for Cat M1 only. Support Realtek ALC 5616 codec by default firmware)
DFOTA	Delta Firmware Upgrade Over-The-Air
LwM2M	Enabled

“*” means under development

BG95 Series Overview



Model	Mode	Bands	Certifications	Status
BG95-M1	Cat M1 Only	LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66/B85	All major global carriers	MP
BG95-M2	Cat M1/ Cat NB2	LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26 ^① /B27 ^① /B28/B66/B71 ^② /B85	All major global carriers	MP
BG95-M3	Cat M1/ Cat NB2/ EGPRS	LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26 ^① /B27 ^① /B28/B66/B71 ^② /B85 EGPRS: 850/900/1800/1900 MHz	All major global carriers	MP
BG95-M4	Cat M1/ Cat NB2 (450 MHz Supported)	LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26 ^① /B27 ^① /B28/ B31^③ /B66/ B72^③ / B73^③ /B85	Major certifications in Europe and Latin America	MP
BG95-M5	Cat M1/ Cat NB2/ EGPRS (Power Class 3)	LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26 ^① /B27 ^① /B28/B66/B71 ^② /B85 EGPRS: 850/900/1800/1900 MHz	All major global carriers	MP
BG95-M6	Cat M1/ Cat NB2 (Power Class 3)	LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26 ^① /B27 ^① /B28/B66/B71 ^② /B85	All major global carriers	MP
BG95-MF	Cat M1/ Cat NB2 (Wi-Fi Positioning)	LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26 ^① /B27 ^① /B28/B66/B71 ^② /B85 Wi-Fi (Positioning Only): 2.4 GHz	Based on market demand	CS

^① Cat M1 bands only ^② Cat NB2 Bands Only

^③LTE-FDD B31/B72/B73 for BG95-M4 supports Power Class 2 (26 dBm) and Power Class 3 (23 dBm).

* means under development

BG95 Series Highlights



Highlight	Description
Multi Modes	Cat M1/ Cat NB2/ EGPRS
Rich Product Variants	Support Power Class 3/ Power Class 5 (21 dBm)/ 450 MHz/ Wi-Fi Positioning/ Mini PCIe
Global Bands	<ul style="list-style-type: none"> LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26^①/B27^①/B28/B31/B66/B71^②/B72/B73/B85 EGPRS: 850/900/1800/1900 MHz
Low Power Consumption	BG95-M3: Approx. 3.9 µA in PSM mode (USB and UART disconnected)
Mobility	Movable application with handover support (Cat M1 only)
PSM Wake-up	Support T3412 expiration and real-time hardware pin wake-up
Extended Power Supply Range ^③	<p>2.6–4.8 V, typ. 3.3 V (BG95-M1/-M2) 3.3–4.3 V, typ. 3.8 V (BG95-M3/-M5/-M6/-MF) 3.2–4.2 V, typ. 3.8 V (BG95-M4)</p>
GNSS	GPS, GLONASS, BeiDou, Galileo, QZSS
Voice	<ul style="list-style-type: none"> VoLTE for Cat M1 CS voice for GSM
QuecOpen®	Integrated ARM Cortex A7 processor supporting ThreadX
Security	Comprehensive set of hardware-based security features
Compatibility	Soldering footprint compatible with Quectel BG96/M95
Special Features	<ul style="list-style-type: none"> SIM service: eSIM/ SoftSIM/ nuSIM* Cloud service: AWS/ Azure QuecLocator® Jamming Detection Fast Shutdown

^① Cat M1 bands only

^② Cat NB2 Bands Only

^③ refer to the hardware design manual for more specific requirements on power supply voltage
 LTE-FDD B31/B72/B73 for BG95-M4 supports Power Class 2 (26 dBm) and Power Class 3 (23 dBm).

* means under development

Cat M1/Cat NB2/EGPRS



23.6 mm × 19.9 mm × 2.2 mm

Package: 102-pin LGA

Supply Voltage ⁽¹⁾: 2.6–4.8 V, typ. 3.3 V (BG95-M1/-M2)

3.3–4.3 V, typ. 3.8 V (BG95-M3/-M5/-M6/-MF)

3.2–4.2 V, typ. 3.8 V (BG95-M4)

Data Rate:

- LTE Cat M1: Max. 588 kbps (DL), Max. 1119 kbps (UL) (Half Duplex)
- LTE Cat NB2: Max. 127 kbps (DL), Max. 158.5 kbps (UL)
- EGPRS: Max. 296 kbps (DL), Max. 236.8 kbps(UL)
- GPRS: Max. 107 kbps (DL), Max. 85.6 kbps (UL)

Protocols: PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ MQTT/ LwM2M/ CoAP/ IPv6

Functions: Data/ VoLTE/ GNSS/ DFOTA/ NITZ/ PING/ Jamming Detection/ Triangle Location

Interfaces: (U)SIM/ eSIM ⁽²⁾/ UART/ USB/ I2C/ PCM/ ADC/ GPIO/ GRFC/ Antenna

Power Consumption (Typical): 3.9 µA @ PSM (USB and UART disconnected), BG95-M3

* means under development

⁽¹⁾ please refer to the hardware design manual for more specific requirements on power supply voltage.

⁽²⁾ eSIM is reserved and not included by default.

BG95 Series Specifications 2



■ LTE Cat M1/Cat NB2/EGPRS Module

23.6 mm x 19.9 mm x 2.2 mm

Cat M1: 588 kbps DL/1119 kbps UL

Cat NB2: 127 kbps DL/158.5 kbps UL

Items		BG95-M1	BG95-M2	BG95-M3	BG95-M4	BG95-M5	BG95-M6	BG95-MF
Cat M1	LTE-FDD	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66/B85	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66/B85	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66/B85	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B27/B28/B31 ⁽¹⁾ /B66/B72 ⁽¹⁾ /B73 ⁽¹⁾ /B85	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66/B85	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66/B85	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66/B85
Cat NB2	LTE-FDD	-	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B28/B66/B71/B85	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B28/B66/B71/B85	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B28/B31 ⁽¹⁾ /B66/B72 ⁽¹⁾ /B73 ⁽¹⁾ /B85	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B28/B66/B71/B85	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B28/B66/B71/B85	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B28/B66/B71/B85
EGPRS	-	-	850/900/1800/1900 MHz	-	-	850/900/1800/1900 MHz	-	-
Wi-Fi (For Positioning Only)	-	-	-	-	-	-	-	2.4 GHz
GNSS	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported
Certification	All major global carriers/ depend on customers' requirements	All major global carriers/ depend on customers' requirements	All major global carriers/ depend on customers' requirements	Major certifications in Europe and Latin America	All major global carriers/ depend on customers' requirements	All major global carriers/ depend on customers' requirements	Based on market demands	

* means under development

⁽¹⁾ LTE-FDD B31/B72/B73 for BG95-M4 supports Power Class 2 (26 dBm) and Power Class 3 (23 dBm).

BG95-M3 Power Consumption



Description	Conditions	Typ.	Unit
Leakage	Power off mode	14.5 ^{NOTE}	µA
Power Saving Mode	PSM @ Real Network (USB and UART disconnected)	3.9	µA
Sleep State (Under Cat M1 network)	DRX = 1.28 s	1.89	mA
	e-I-DRX = 81.92 s @ PTW = 2.56 s, DRX = 1.28 s	0.63	mA
Sleep State (Under Cat NB1 network)	DRX = 1.28 s	1.49	mA
	e-I-DRX = 81.92 s @ PTW = 2.56 s, DRX = 1.28 s	0.67	mA
Active State (GNSS OFF) (Under Cat M1 network)	21 dBm @ Instrument	193	mA
	Data Transfer @ Real Network (TCP 200B)	48	mA
Active State (GNSS OFF) (Under Cat NB1 network)	21 dBm @ Instrument	154	mA
	Data Transfer @ Real Network (TCP 200B)	40	mA
Active State (GNSS ON, LTE OFF)	Searching (Cold start)	71	mA
	Tracking (Instrument, GPS only)	55	mA

NOTE: More internal power supplies are powered off and also the internal clock frequency is reduced in PSM, therefore the power consumption in PSM is much lower than that in power-off mode.

BG95 Series Main Interfaces



Interface	Description
(U)SIM	1 (Support 1.8 V only)
UART	3 (Main UART, Debug UART, GNSS UART)
USB 2.0	1
PCM	1 (For VoLTE only)
I2C	1 (For VoLTE only)
ADC	1
PWRKEY	1
GPIO	9
GRFC	2
Antenna Interface	2 (for Main Antenna and GNSS Antenna, respectively)

“” means under development*

BG95 Series Main Functions



Function	Description
Protocols	PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ MQTT/ LwM2M/ CoAP/ IPv6
USB Serial Driver	Windows 7/8/8.1/10, Linux 2.6–5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x
GNSS/RIL Driver	Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x
SMS	Point-to-point MO and MT; SMS Cell Broadcast; Text and PDU Mode
Voice	<ul style="list-style-type: none">• VoLTE for Cat M1• CS voice for GSM
DFOTA	Delta Firmware Upgrade Over-The-Air
LwM2M	Supported
GNSS	GPS, GLONASS, BeiDou, Galileo, QZSS
nuSIM*	Supported

“*” means under development

BG77 Highlights



Highlight	Description
Super Compact Size	14.9 mm × 12.9 mm × 1.7 mm
Dual-Mode	LTE Cat M1/ Cat NB2
Power Class	Support Power Class 5 (21 dBm)
Global Bands	Cat M1: LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66/B85* Cat NB2: LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B28/B66/B71/B85*
Low Power Consumption	Approx. 3.2 µA in PSM mode (USB and UART disconnected)
Mobility	Movable application with handover support (Cat M1 only)
PSM Wake-up	Support T3412 expiration and real-time hardware pin wake-up
Extended Power Supply Range ^①	2.6–4.8 V, typ. 3.3 V
GNSS	GPS, GLONASS, BeiDou, Galileo, QZSS
Voice	VoLTE (For Cat M1 Only)
QuecOpen®	Integrated ARM Cortex A7 processor supporting ThreadX
Security	Comprehensive set of hardware-based security features
Special Features	<ul style="list-style-type: none">• SoftSIM• QuecLocator®• Jamming Detection• Fast Shutdown

* means under development

^①please refer to the hardware design manual for more specific requirements on power supply voltage

Cat M1/Cat NB2



14.9 mm × 12.9 mm × 1.7 mm

Super Compact Size: 14.9 mm × 12.9 mm × 1.7 mm

Package: 94-pin LGA

Supply Voltage ^①: 2.6–4.8 V, 3.3 V Typ.

Data Rate:

- LTE Cat M1: Max. 588 kbps (DL), Max. 1119 kbps (UL) (Half Duplex)
- LTE Cat NB2: Max. 127 kbps (DL), Max. 158.5 kbps (UL)

Protocols: PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ MQTT/ LwM2M/ CoAP/ IPv6

Functions: Data/ VoLTE/ GNSS/ DFOTA/ NITZ/ PING/ Jamming Detection/ Triangle Location

Interfaces: (U)SIM/ UART/ USB/ I2C/ PCM/ ADC/ GPIO/ GRFC/ Antenna

Power Consumption (Typical): 3.2 µA @ PSM (USB and UART disconnected)

* means under development

① please refer to the hardware design manual for more specific requirements on power supply voltage.

BG77 Specifications 2



■ LTE Cat M1/Cat NB2 Module

14.9 mm × 12.9 mm × 1.7 mm
Cat M1: 588 kbps DL/1119 kbps UL
Cat NB2: 127 kbps DL/158.5 kbps UL

Items	BG77
Cat M1	LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66/B85*
Cat NB2	LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B28/B66/B71/B85*
GNSS	Supported
Certification	All major global carriers

“*” means under development

BG77 Power Consumption



Description	Conditions	Typ.	Unit
Leakage	Power off mode	13 ^{NOTE}	µA
Power Saving Mode	PSM @ Real Network (USB and UART disconnected)	3.2	µA
Sleep State (Under Cat M1 network)	DRX = 1.28 s	1.61	mA
	e-I-DRX = 81.92 s @ PTW = 2.56 s, DRX = 1.28 s	0.61	mA
Sleep State (Under Cat NB1 network)	DRX = 1.28 s	1.54	mA
	e-I-DRX = 81.92 s @ PTW = 2.56 s, DRX = 1.28 s	0.66	mA
Active State (GNSS OFF) (Under Cat M1 network)	21 dBm @ Instrument	228	mA
	Data Transfer @ Real Network (TCP 200B)	55	mA
Active State (GNSS OFF) (Under Cat NB1 network)	21 dBm @ Instrument	165	mA
	Data Transfer @ Real Network (TCP 200B)	45	mA
Active State (GNSS ON, LTE OFF)	Searching (Cold start)	77	mA
	Tracking (Instrument, GPS only)	62	mA

NOTE: More internal power supplies are powered off and also the internal clock frequency is reduced in PSM, therefore the power consumption in PSM is much lower than that in power-off mode.

BG77 Main Interfaces



Interface	Description
(U)SIM	1 (Support 1.8 V only)
UART	3 (Main UART, Debug UART, GNSS UART)
USB	1
PCM	1 (For VoLTE only)
I2C	1 (For VoLTE only)
RESET_N	1
ADC	2
GPIO	7
GRFC	2
Antenna Interface	2 (for Main Antenna and GNSS Antenna, respectively)

“*” means under development

BG77 Main Functions



Function	Description
Protocols	PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ MQTT/ LwM2M/ CoAP/ IPv6
USB Serial Driver	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.x/11.x
GNSS/RIL Driver	Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x
SMS	Point-to-point MO and MT; SMS Cell Broadcast; Text and PDU Mode
Voice	VoLTE (For Cat M1 Only)
DFOTA	Delta Firmware Upgrade Over-The-Air
LwM2M	Supported
GNSS	GPS, GLONASS, BeiDou, Galileo, QZSS

“*” means under development

BG600L-M3 Highlights



Highlight	Description
Multi Modes	Cat M1/ Cat NB2/ EGPRS
Global Bands	<ul style="list-style-type: none">LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26^①/B27^①/B28/B66/B71^②/B85EGPRS: 850/900/1800/1900 MHz
Power Class	Support Power Class 5 (21 dBm)
Low Power Consumption	4.0 µA @ PSM (USB and UART disconnected)
Mobility	Movable application with handover support (Cat M1 only)
PSM Wake-up	Support T3412 expiration and real-time hardware pin wake-up
Extended Power Supply Range	3.3–4.3 V, typ. 3.8 V
GNSS	GPS, GLONASS, BeiDou, Galileo, QZSS
Voice	VoLTE (For Cat M1 Only), CS voice for GSM
QuecOpen®	Integrated ARM Cortex A7 processor supporting ThreadX
Security	Comprehensive set of hardware-based security features
Compatibility	Compatible with Quectel MC60
Special Features	<ul style="list-style-type: none">QuecLocator®Jamming DetectionFast Shutdown

Cat M1/Cat NB2/EGPRS



Small Size: 18.7 mm × 16.0 mm × 2.1 mm

Package: 68-pin LGA

Supply Voltage: 3.3–4.3 V, 3.8 V Typ.

Data Rate:

- LTE Cat M1: Max. 588 kbps (DL), Max. 1119 kbps (UL) (Half Duplex)
- LTE Cat NB2: Max. 127 kbps (DL), Max. 158.5 kbps (UL)

Protocols: PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ MQTT/ LwM2M/ CoAP/ IPv6/

Functions: Data/ VoLTE/ GNSS/ DFOTA/ NITZ/ PING/ Jamming Detection/ Triangle Location

Interfaces: (U)SIM/ UART/ USB/ I2C/ PCM/ ADC/ GPIO/ GRFC/ Antenna

Power Consumption (Typical): 4.0 µA @ PSM (USB and UART disconnected)

* means under development

BG600L-M3 Specifications 2



■ LTE Cat M1/Cat NB2/EGPRS Module

18.7 mm × 16.0 mm × 2.1 mm

Cat M1: 588 kbps DL/1119 kbps UL

Cat NB2: 127 kbps DL/158.5 kbps UL

Items	BG600L-M3
Cat M1	LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66/B85
Cat NB2	LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B28/B66/B71/B85
EGPRS	850/900/1800/1900 MHz
GNSS	Support
Certification	All major global carriers/ depend on customers' requirements

* means under development

BG600L-M3 Power Consumption



Description	Conditions	Typ.	Unit
Power Saving Mode	PSM @ Real Network (USB and UART disconnected)	4.0	µA
Sleep State (Under Cat M1 network)	DRX = 1.28 s	1.66	mA
	e-I-DRX = 81.92 s @ PTW = 2.56 s, DRX = 1.28 s	0.66	mA
Sleep State (Under Cat NB1 network)	DRX = 1.28 s	1.47	mA
	e-I-DRX = 81.92 s @ PTW = 2.56 s, DRX = 1.28 s	0.69	mA
Active State (GNSS OFF) (under Cat M1 network)	21 dBm @ Instrument	186	mA
	Data Transfer @ Real Network	59	mA
Active State (GNSS OFF) (under Cat NB1 network)	21 dBm @ Instrument	148	mA
	Data Transfer @ Real Network	47	mA
Active State (GNSS ON, LTE OFF)	Searching (Cold start)	66.31	mA
	Tracking (Instrument, GPS only)	20.8	mA

BG600L-M3 Main Interfaces



Interface	Description
USB	1
(U)SIM	1 (Support 1.8 V only)
UART	3 (Main UART, Debug UART, GNSS UART)
ADC	1
PWRKEY	1
NET_STATUS	1
Antenna Interface	2
GRFC	2
I2C	1 (For VoLTE only)
PCM	1 (For VoLTE only)
GPIO	6

* means under development

BG600L-M3 Main Functions



Function	Description
Protocols	PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ MQTT/ LwM2M/ CoAP/ IPv6
USB Serial Driver	Windows 7/8/8.1/10, Linux 2.6–5.12, Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x
GNSS/RIL Driver	Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x
SMS	Point-to-point MO and MT; SMS Cell Broadcast; Text and PDU mode
Voice	<ul style="list-style-type: none">• VoLTE for Cat M1• CS Voice for GSM
DFOTA	Delta Firmware Upgrade Over-The-Air
LwM2M	Supported
GNSS	GPS/ GLONASS/ BeiDou/ Galileo/ QZSS

* means under development

BC660K-GL Highlights



LTE Cat NB2

DL: Max. 127 kbps / UL: Max. 158.5 kbps

Highlights	Description
Global Bands	LTE Cat NB2: B1/B2/B3/B4/B5/B8/B12/B13/B17/B18/B19/B20/B25/B28/B66/B70/B85
Rich Hardware Interfaces	UART/RI/USIM/ADC/NETLIGHT*/PSM_EINT/BOOT/RESET_N/Antenna/GPIO/I2C* ^① /PWM* ^① /SPI* ^①
Abundant Protocols	UDP/TCP/PING/SNTP/LwM2M*/MQTT*/MQTTS*/SSL*/TLS*
eSIM ^②	eSIM reserved for customization
Power Supply	Supply voltage range: 2.2–4.3 V, typical 3.3 V Low voltage supply allows the battery to be powered by Lithium manganese/Lithium zinc cells.
Wakeup	<ul style="list-style-type: none">After the T3412 timer expires, the module will exit from Deep Sleep automatically.Send an AT command to the module (this AT command will be lost), pull down the MAIN_RXD, and, on a falling edge, the module will exit from Deep Sleep.Dedicated PSM_EINT interface(s) to wake up the module from Deep Sleep.
Power Consumption ^③	800 nA @ PSM 0.11 mA @ Idle (DRX = 2.56 s) 0.038 mA @ Idle (eDRX = 40.96 s, PTW = 10.24 s)
Advanced Features	<ul style="list-style-type: none">Battery voltage detection*QuecOpen®*DFOTA
Compatibility	Compatible with Quectel GSM/GPRS M66, NB-IoT BC66/BC66-NA, BC65 and BC68 modules, easy for migration and future upgrades.

* means under development.

① means supported only on QuecOpen® version.

② eSIM is reserved and not included by default.

③ sourced from the chipset spec.

BC660K-GL Main Interfaces



Interface	Description
USIM	1
UART	2 (for QuecOpen® version, × 3)
RI	1
PSM_EINT	1 (for QuecOpen® version, × 2)
ADC	1 (for QuecOpen® version, × 2)
RESET_N	1
BOOT	1
NETLIGHT*	1
GRFC*	2
Antenna	1
GPIO	4 (for QuecOpen® version, × 13)
I2C*	1 (for QuecOpen® version only)
PWM*	1 (for QuecOpen® version only)
SPI*	1 (for QuecOpen® version only)

BC660K-GL Main Functions



Function	Description
Protocols	UDP/TCP/PING/SNTP/LwM2M*/MQTT*/MQTTS*/SSL*/TLS*
SMS*	Text mode and PDU mode
DFOTA	Delta firmware upgrade over-the-air
eSIM	Supported ^①
QuecOpen® *	4 MB Nor flash (integrated) + 272 KB SRAM (integrated)

* means under development.

① eSIM is reserved and not included by default. If it is needed, a different OC will be provided.

BC660K-GL Power Consumption

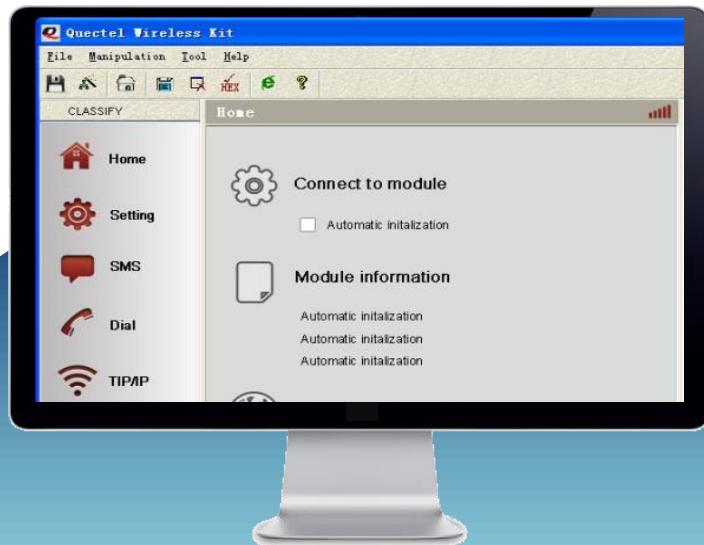


Description	Conditions	Typ.	Unit
Deep Sleep	PSM	800	nA
Light Sleep	@ DRX = 1.28 s	220	µA
	@ DRX = 2.56 s	110	µA
	eDRX = 40.96 s, PTW = 10.24 s, ECL = 0	38	µA
Active State	@ Connected Tx 0 dBm	67	mA
	@ Connected Tx 23 dBm	330	mA

BG96/BG95/BG77/BG770A-GL/BG95xA-GL BG600L-M3 Support Package



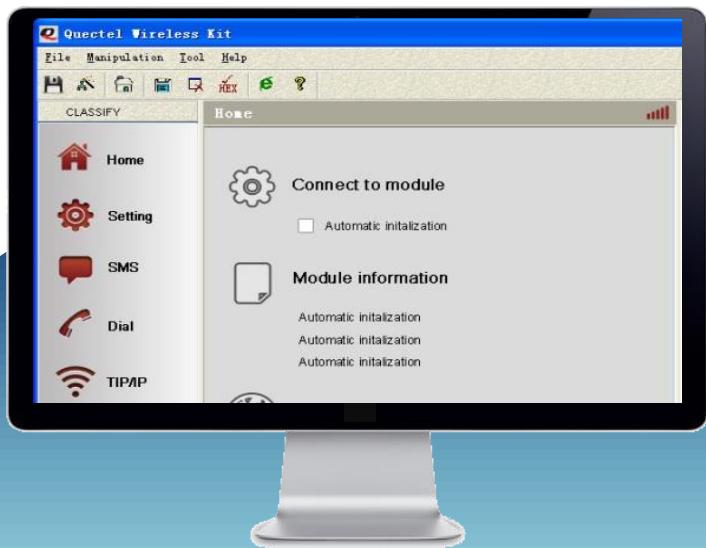
eMTC & UMTS & LTE EVB Kit



Quectel offers a GUI tool named **QNavigator**. It can help customers quickly test Quectel module's functionality.



BC660K-GL Support Package



Quectel offers a GUI tool named **QNavigator**. It can help you quickly test Quectel module's functionality.

TE-B Kit



BG770A-GL Highlights



Highlights	Description
Super Compact Size	14.9 mm × 12.9 mm × 1.9 mm
Global Bands	Cat M1: LTE-FDD B1/B2/B3/B4/B5/B8/B9*/B10*/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66 Cat NB1/ NB2*: LTE-FDD B1/B2/B3/B4/B5/B8/B12/B13/B17/B18/B19/B20/B25/B27*/B28/B66
Rich Hardware Interfaces	UART/ (U)SIM/ USB*/ PCM*/ I2C*/ ADC/ GPIO/ GRFC*/ NET_STATUS/ STATUS/ Antenna
Abundant Protocols	TCP/ PPP/ UDP/ SSL/ MQTT/ FTP(S)/ HTTP(S)/ LwM2M/ IPv4/ IPv6/ TLS/ DTLS/ PING/ CoAP/ NITZ
Power Supply	Supply voltage range: VBAT_BB: 2.2–4.35 V; VBAT_RF: 3.1–4.35 V; Typ. 3.3 V Low voltage supply allows the battery to be powered by Lithium manganese or Lithium zinc cells.
Wakeup	Hardware wakeup: Power Key
Ultra Low Power Consumption	<ul style="list-style-type: none">Power Saving Mode: 1.4 µASleep Mode (Modem Disabled): 45 µASleep Mode (ECL0): 1.1 mA @ DRX = 1.28 s (Cat M); 2.2 mA @ DRX = 1.28 s (NB-IoT) 0.06 mA @ eDRX Cycle = 40.96 s; PTW = 1.28 s; DRX = 1.28 s (Cat M) 0.16 mA @ eDRX Cycle = 40.96 s; PTW = 1.28 s; DRX = 1.28 s (NB-IoT)
Security*	ISE - hardware-based security features
Voice*	VoLTE (For Cat M1 Only)
GNSS	GPS, GLONASS
Advanced Features	<ul style="list-style-type: none">QuecLocatorDFOTA
Compatibility	Compatible with Quectel BG77

Cat M1/Cat NB1/Cat NB2*



14.9 mm × 12.9 mm × 1.9 mm

Super Compact Size: 14.9 mm × 12.9 mm × 1.9 mm

Package: 94-pin LGA

Supply Voltage: VBAT_BB: 2.2–4.35 V; VBAT_RF: 3.1–4.35 V; Typ. 3.3 V

Data Rate:

- LTE Cat M1: Max. 588 kbps (DL)/ 1119 kbps (UL)
- LTE Cat NB2: Max. 127 kbps (DL)/ 158 kbps (UL)

Protocols: TCP/ PPP/ UDP/ SSL/ MQTT/ FTP(S)/ HTTP(S)/ LwM2M/ IPv4/ IPv6/ TLS/ DTLS/ PING/ CoAP/ NITZ

Functions: Data Transfer/ GNSS/ DFOTA/ NITZ/ PING/ Jamming Detection/ Triangle Location

Interfaces: UART/ USB (FS Only)*/ (U)SIM/ I2C*/ PCM*/ ADC/ GPIO/ GRFC*/ NET_STATUS/ STATUS/ Antenna

Power Consumption (Typical): 1.4 µA @ PSM (USB and UART disconnected)

* Under development

BG770A-GL Specifications 2



■ LTE Cat M1/Cat NB1/Cat NB2* Module

14.9 mm × 12.9 mm × 1.9 mm
Cat M1: Max. 588 kbps (DL)/ 1119 kbps (UL)
Cat NB2: Max. 127 kbps (DL)/ 158 kbps (UL)

Items	BG770A-GL
Cat M1	LTE-FDD: B1/B2/B3/B4/B5/B8/B9*/B10*/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66
Cat NB1/ NB2*	LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B17/B18/B19/B20/B25/B27*/B28/B66
GNSS	GPS, GLONASS
Certification*	All major global carriers

* Under development/Ongoing

BG770A-GL Power Consumption



Modes	Current Consumption	Notes
PSM	1.4 µA	
RF Disabled	45 µA	AT+CFUN=0 AT+QSCLK=2
Sleep Mode (Cat M; DRX = 1.28 s; ECL0)	1.1 mA	
Sleep Mode (NB-IoT; DRX = 1.28 s; ECL0)	2.2 mA	
Sleep Mode (Cat M; eDRX Cycle = 40.96 s; PTW = 1.28 s; DRX = 1.28 s)	0.06 mA	
Sleep Mode (NB-IoT; eDRX Cycle = 40.96 s; PTW = 1.28 s; DRX = 1.28 s)	0.16 mA	

BG770A-GL Main Interfaces



Interface	Description
(U)SIM	1 (Supports 1.8 V only)
UART	3
USB*	1 (FS only)
PCM*	1 (For VoLTE only)
I2C*	1 (For VoLTE only)
ADC	2
GPIO	7
GRFC*	2
NET_STATUS	1
STATUS	1
Antenna Interface	2 (For the main antenna and GNSS antenna, respectively)

* Under development

BG770A-GL Main Functions



Function	Description
Protocols	PPP/ TCP/ UDP/ SSL/ MQTT/ FTP(S)/ HTTP(S)/ LwM2M/ IPv4/ IPv6/ TLS/ DTLS/ PING/ CoAP/ NITZ
SMS	Point-to-point MO and MT; Text and PDU Mode
Voice*	VoLTE (For Cat M1 Only)
DFOTA	Delta Firmware Upgrade Over-The-Air
LwM2M	Supported
GNSS	GPS, GLONASS

* Under development

BG95xA-GL Series Highlights



Highlights	Description
Compatible Size	23.6 mm × 19.9 mm × 2.2 mm
Global Bands	Cat M1: LTE-FDD B1/B2/B3/B4/B5/B8/B9*/B10*/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66 Cat NB1/ NB2*: LTE-FDD B1/B2/B3/B4/B5/B8/B9*/B10*/B12/B13/B17/B18/B19/B20/B25/B27*/B28/B66
Rich Hardware Interfaces	UART/ (U)SIM/ USB*/ PCM*/ I2C*/ ADC/ GPIO/ GRFC*/ NET_STATUS/ STATUS/ Antenna
Abundant Protocols	TCP/ PPP/ UDP/ SSL/ MQTT/ FTP(S)/ HTTP(S) /LwM2M/ IPv4/ IPv6/ TLS/ DTLS/ PING/ CoAP/ NITZ
Power Supply	Supply voltage range: 2.2–4.35 V, typical 3.3 V Low voltage supply allows the battery to be powered by Lithium manganese or Lithium zinc cells.
Wakeup	Hardware wakeup: Power Key
Ultra Low Power Consumption ^①	<ul style="list-style-type: none"> Power Saving Mode: 1.4 µA Sleep Mode (Modem Disabled): 45 µA Sleep Mode (ECL0): 1.1 mA @ DRX = 1.28 s (Cat M); 2.2 mA @ DRX = 1.28 s (NB-IoT) 0.06 mA @ eDRX Cycle = 40.96 s; PTW = 1.28 s; DRX = 1.28 s (Cat M) 0.16 mA @ eDRX Cycle = 40.96 s; PTW = 1.28 s; DRX = 1.28 s (NB-IoT)
Security*	ISE - hardware-based security features
Voice*	VoLTE (For Cat M1 Only)
GNSS	GPS, GLONASS, Galileo, Beidou, QZSS (<i>Only BG951A-GL supports Galileo, Beidou and QZSS as well as LTE&GNSS concurrency*</i>)
Advanced Features*	<ul style="list-style-type: none"> QuecLocator DFOTA
Compatibility	Compatible with Quectel BG95 series

^① Preliminary data

* under development

Cat M1/Cat NB1/Cat NB2*



23.6 mm × 19.9 mm × 2.2 mm

Package: 102-pin LGA

Supply Voltage: 2.2–4.35 V, typ. 3.3 V

Data Rate:

- LTE Cat M1: Max. 588 kbps (DL)/ 1119 kbps (UL)
- LTE Cat NB1: Max. 27.2 kbps (DL)/62.5 kbps (UL)
- LTE Cat NB2: Max. 127 kbps (DL)/ 158 kbps (UL)

Protocols*: TCP/ PPP/ UDP/ SSL/ MQTT/ FTP(S)/ HTTP(S)/ LwM2M/ IPv4/ IPv6/ TLS/ DTLS/ PING/ CoAP/ NITZ

Functions: Data Transfer/ GNSS/ DFOTA/ NITZ/ PING/ Jamming Detection/ Triangle Location

Interfaces: UART/ USB* (FS Only)/ (U)SIM/ I2C*/ PCM*/ ADC/ GPIO/ GRFC*/ NET_STATUS/ STATUS/ Antenna

Power Consumption (Typical)^①: 1.4 µA @ PSM (USB and UART disconnected)

BG95xA-GL Specifications 2



23.6 mm x 19.9 mm x 2.2 mm

Cat M1: Max. 588 kbps (DL)/ 1119 kbps (UL)

Cat NB1: Max. 27.2 kbps (DL)/62.5 kbps (UL)

Cat NB2*: Max. 127 kbps (DL)/ 158 kbps (UL)

■ LTE Cat M1/Cat NB2 Module

Items	BG95xA-GL
Cat M1	LTE-FDD: B1/B2/B3/B4/B5/B8/B9*/B10*/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66
Cat NB1/NB2*	LTE-FDD: B1/B2/B3/B4/B5/B8/B9*/B10*/B12/B13/B17/B18/B19/B20/B25/B27*/B28/B66
GNSS	GPS, GLONASS, Galileo, Beidou, QZSS (<i>only BG951A-GL supports Galileo, Beidou and QZSS as well as LTE&GNSS concurrency*</i>)
Certification (Planning)	All major global carriers

* Under development

BG95xA-GL Main Interfaces



Interface	Description
(U)SIM	1 (Supports 1.8 V only)
UART	3
USB*	1 (FS only)
PCM*	1 (For VoLTE only)
I2C*	1 (For VoLTE only)
ADC	2
GPIO	9
GRFC*	2
NET_STATUS	1
STATUS	1
Antenna Interface	2 (For the main antenna and GNSS antenna, respectively)

* Under development

BG95xA-GL Main Functions



Function	Description
Protocols	PPP/ TCP/ UDP/ SSL/ MQTT/ FTP(S)/ HTTP(S)/ LwM2M/ IPv4/ IPv6/ TLS/ DTLS/ PING/ CoAP/ NITZ
SMS	Point-to-point MO and MT; Text and PDU mode
Voice*	VoLTE (for Cat M1 only)
DFOTA	Delta Firmware Upgrade Over-The-Air
LwM2M	Supported
GNSS	GPS, GLONASS, BeiDou, Galileo, QZSS (<i>only BG951A-GL supports BeiDou, Galileo and QZSS as well as LTE&GNSS concurrency[*]</i>)

* 表示正在开发中

BC66 Highlights



LTE Cat NB1

25.5 kbps DL/ 62.5 kbps UL

Highlight	Description
Global Bands	B1/B2/B3/B4/B5/B8/B12/B13/B17/B18/B19/B20/B25/B26*/B28/B66
Rich Hardware Interfaces	USB/ UART/ SPI ^① / I2S ^① / I2C ^① / USIM/ ADC/ NETLIGHT/ Antenna/ PSM_EINT/ PWRKEY/ RESET
Abundant Protocols	UDP/ TCP/ LwM2M/ MQTT/ SNTP/ TLS/ DTLS/ PPP*/ HTTP*/ HTTPS*/ CoAP*
Special Features	QuecOpen®, DFOTA, eSIM ^②
Low Power Consumption	3.5 µA (PSM), 0.24 mA (eDRX), 0.35 mA (DRX), 110 mA (Active, 23 dBm) <small>Average Value</small>
QuecLocator®*	Location based on base station cell information
Power Supply Feature	Low power supply voltage (2.1–3.63 V, typ. 3.3 V)
Wake-up Feature	Specialized PSM_EINT for module wake-up via external interrupt
Compatibility	Compatible with Quectel GSM module M66 and Quectel NB-IoT module BC68/ BC66-NA/ BC65

* means under development.

① means supported only on QuecOpen® version.

② eSIM is reserved and not included by default.

BC66 Main Interfaces



Interface	Description
USB	1
USIM	1
UART	3 (Main/Debug/Auxiliary UART)
PSM_EINT	1 (wake up device via external interrupt)
ADC	1 (10 bits)
RESET	1
PWRKEY	1
NETLIGHT	1
Antenna	1
SPI	1 (for QuecOpen® version only)
I2C	1 (for QuecOpen® version only)
I2S	1 (for QuecOpen® version only)
GPIO	Configurable (for QuecOpen® version only)

BC66 Main Functions



Function	Description
Protocols	UDP/ TCP/ LwM2M/ MQTT/ SNTP/ TLS/ DTLS/ PPP*/ HTTP*/ HTTPS*/ CoAP*
DFOTA	Delta firmware upgrade over-the-air
eSIM	Supported ^①
QuecOpen®	<ul style="list-style-type: none">ROM: 200 KB for APP image binRAM: 400 KB (100 KB static memory and 300 KB dynamic memory)

* means under development.

① eSIM is reserved and not included by default. If needed, a different OC will be provided.

BC66-NA Highlights



LTE Cat NB2

103 kbps DL/151 kbps UL

Highlight	Description
Global Bands	B1/B2/B3/B4/B5/B8/B12/B13/B17/B18/B19/B20/B25/B26*/B28/B66/B71/B85
Rich Hardware Interfaces	USB/ UART/ SPI ^① / I2S ^① / I2C ^① / USIM/ ADC/ NETLIGHT/ Antenna/ PSM_EINT/ PWRKEY/ RESET
Abundant Protocols	UDP/ TCP/ LwM2M/ MQTT/ SNTP/ TLS/ DTLS/ PPP*/ HTTP*/ HTTPS*/ CoAP*
Special Features	QuecOpen®, DFOTA, ECID*, OTDOA*, eSIM ^②
Low Power Consumption	3.5 µA (PSM), 0.13 mA (eDRX), 0.25 mA (DRX), 95 mA (Active, 23 dBm) ^{Average Value}
QuecLocator®*	Location based on base station cell information
Power Supply Feature	Low power supply voltage (2.1–3.63 V, typ. 3.3 V)
Wake-up Feature	Specialized PSM_EINT for module wake-up via external interrupt
Compatibility	Compatible with Quectel GSM module M66 and Quectel NB-IoT module BC68/ BC66/ BC65

* means under development.

① means supported only on QuecOpen® version.

② eSIM is reserved and not included by default.

BC66-NA Main Interfaces



Interface	Description
USB	1
USIM	1
UART	3 (Main/Debug/Auxiliary UART)
PSM_EINT	1 (wake up device via external interrupt)
ADC	1 (10 bits)
RESET	1
PWRKEY	1
NETLIGHT	1
Antenna	1
SPI	1 (for QuecOpen® version only)
I2C	1 (for QuecOpen® version only)
I2S	1 (for QuecOpen® version only)
GPIO	Configurable (for QuecOpen® version only)

BC66-NA Main Functions

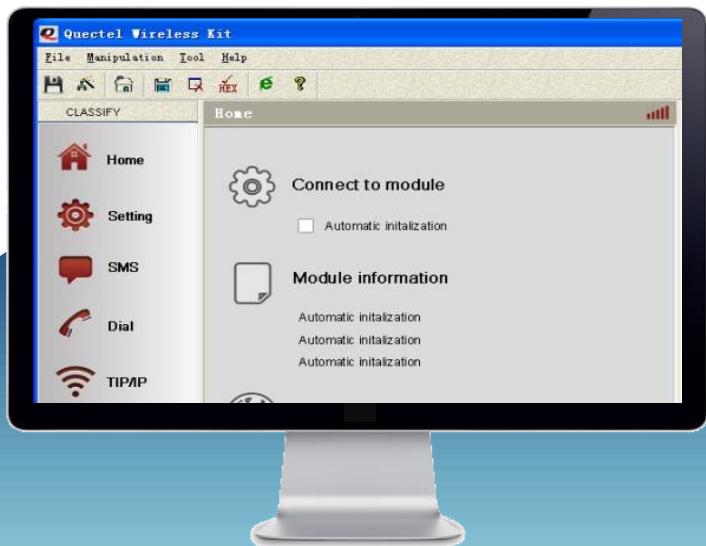


Function	Description
Protocols	UDP/ TCP/ LwM2M/ MQTT/ SNTP/ DTLS/ TLS/ PPP*/ CoAP*/ HTTP*/ HTTPS*
ECID*	Enhanced Cell ID
OTDOA*	Observed Time Difference of Arrival
DFOTA	Delta firmware upgrade over-the-air
eSIM	Supported ⁽¹⁾
QuecOpen®	<ul style="list-style-type: none">ROM: 200 KB for APP image binRAM: 400 KB (100 KB static memory and 300 KB dynamic memory)

* means under development.

⁽¹⁾ eSIM is reserved and not included by default. If needed, a different OC will be provided.

BC66/BC66-NA Support Package



Quectel offers a GUI tool named **QNavigator**. It can help customers quickly test Quectel module's functionality.

TE-B Kit



BC65 Highlights

LTE Cat NB1 (Max.):
25.5 kbps (DL) / 62.5 kbps (UL)
LTE Cat NB2 (Max.):
127 kbps (DL) / 158.5 kbps (UL)



Highlight	Description
Global Bands	B1*/B3/B5/B8/B20/B28
Data Rate	<ul style="list-style-type: none">LTE Cat NB1 (Max.): 25.5 kbps (DL) / 62.5 kbps (UL)LTE Cat NB2 (Max.): 127 kbps (DL) / 158.5 kbps (UL)
Rich Hardware Interfaces	UART/(U)SIM/PSM_EINT/ADC/RESET/PWRKEY/RI/NETLIGHT/Antenna
Abundant Protocols	UDP/TCP/SNTP/MQTT/CoAP*/PPP/TLS/DTLS
eSIM Supported	eSIM ^② reserved to support customization
Power Supply Feature	Supply Voltage: 3.2–4.2 V, Typ. 3.8 V.
Wake-up Feature	Specialized PSM_EINT for module wake-up via external interrupt
Special Features	<ul style="list-style-type: none">Low power designDFOTA
Compatibility	Compatible with Quectel GSM module M66 and Quectel NB-IoT module BC66/BC68

* means under development.

① eSIM is reserved but not included by default.

BC65 Main Interfaces



Interface	Description
(U)SIM	1
UART	3 (Main/Debug/Auxiliary UART)
PSM_EINT	1 (wake up device via external interrupt)
ADC	1 (10 bits)
RESET	1
PWRKEY	1
RI	1
NETLIGHT	1
Antenna	1

BC65 Main Functions



Function	Description
Protocols	UDP/TCP/SNTP/MQTT/CoAP*/PPP/TLS/DTLS
SMS*	Text and PDU mode
DFOTA	Delta Firmware Upgrade Over-The-Air
eSIM	Supported ⁽¹⁾
Power Supply	Range: 3.4–4.2 V Typical: 3.8 V

* means under development.

⁽¹⁾ eSIM is reserved but not included by default. If needed, a different OC will be provided.

BC92 Highlights

LTE Cat NB2/GSM

LTE Cat NB1 (Max.): 25.5 kbps (DL) / 62.5 kbps (UL)

LTE Cat NB2 (Max.): 127 kbps (DL) / 158.5 kbps (UL)

GSM (Max.): 85.6 kbps (DL) / 85.6 kbps (UL)



Highlight	Description
Global Bands / Dual Mode	<ul style="list-style-type: none">LTE Cat NB2: B3/ B5/ B8/ B20/ B28GSM: 850/ 900/ 1800/ 1900 MHz
Data Rate	<ul style="list-style-type: none">LTE Cat NB1 (Max.): 25.5 kbps (DL) / 62.5 kbps (UL)LTE Cat NB2 (Max.): 127 kbps (DL) / 158.5 kbps (UL)GSM (Max.): 85.6 kbps (DL) / 85.6 kbps (UL)
Rich Hardware Interfaces	UART/(U)SIM/ADC/NETLIGHT/PSM_EINT/PWRKEY/RI/RESET/Antenna
Abundant Protocols	UDP/TCP/SNTP/PPP/MQTT/CoAP*/HTTP*/HTTPS*/FTP
Power Supply Feature	Supply Voltage: 3.4–4.2 V, typ. 3.8 V
Wake-up Feature	Specialized PSM_EINT for module wake-up via external interrupt
QuecLocator®	Location based on base station cell information
Special Features	<ul style="list-style-type: none">Built-in ADC temperature detection*Low power designDFOTA
Compatibility	Compatible with Quectel GSM module M95 and Quectel NB-IoT module BC95-G and Quectel LPWA BG95 module

* means under development.

BC92 Main Interfaces



Interface	Description
(U)SIM	2 [(U)SIM 1 supports NB-IoT/GSM, (U)SIM 2* only supports GSM]
UART	2 (Main, Debug)
PSM_EINT	1 (External Wake-up pin)
ADC	1 (10 bits)
RESET	1
PWRKEY	1
RI	1
NETLIGHT	1
Antenna	1

* means under development.

BC92 Main Functions



Function	Description
Protocols	UDP/TCP/SNTP/PPP/MQTT/CoAP*/HTTP*/HTTPS*/FTP
SMS*	Text and PDU mode
DFOTA	Delta Firmware Upgrade Over-The-Air
Power Supply	Range: 3.4–4.2 V Typical: 3.8 V

* means under development.

BC68&BC68-GV Specifications



Module	BC68 (EOL)	BC68-GV ①
Chipset	Boudica V150 (Hi2115)	HiSilicon 5G NB-IoT Solution (CB0201)
Category	3GPP Rel-14, Cat NB2	3GPP Rel-14, 3GPP Rel-15*, Cat NB2
Band	B1/B3/B5/B8/B20/B28 @ LTE-FDD	B1/B3/B5/B8/B20/B28/B18*/B26* @ LTE-FDD
Dimension	17.7 mm × 15.8 mm × 2.0 mm	17.7 mm × 15.8 mm × 2.0 mm
Data Rate	Single Tone	DL: 25.2 kbps; UL: 15.625 kbps
	Multi Tone	DL: 25.2 kbps; UL: 54 kbps
	Extended TBS/2 HARQ	DL: 125 kbps; UL: 150 kbps
Protocol	IPv4/ IPv6/ UDP/ CoAP/ LwM2M/ Non-IP/ DTLS/ TCP/ MQTT	IPv4*/ IPv6*/ UDP*/ TCP*/ Non-IP*/ CoAP*/ LwM2M*/ DTLS*/ MQTT*/ HTTP*/ DNS*/ TLS*/ MQTTS*
Supply Voltage	3.1–4.2 V, typ. 3.6 V	2.1–4.2 V, typ. 3.0/3.6 V
Power Consumption (Typical)	<ul style="list-style-type: none"> • 3 µA @ PSM • 0.5 mA @ Idle Mode, DRX = 2.56 s, ECL0 • 250 mA @ Tx, 23 dBm (B1/B3) • 220 mA @ Tx, 23 dBm (B5/B8/B20) • 280 mA @ Tx, 23 dBm (B28) • 130 mA @ Tx, 12 dBm (B1/B3/B5/B8/B20/B28) • 70 mA @ Tx, 0 dBm (B1/B3/B5/B8/B20/B28) • 60 mA @ Rx 	<ul style="list-style-type: none"> • 2 µA @ PSM • 0.23 mA @ Idle Mode, DRX = 2.56 s, ECL0 • 310 mA @ Tx, 23 dBm (B1/B3) • 210 mA @ Tx, 23 dBm (B5/B8/B20) • 210 mA @ Tx, 23 dBm (B28) • 75 mA @ Tx, 12 dBm (B1/B3/B5/B8/B20/B28) • 45 mA @ Tx, 0 dBm (B1/B3/B5/B8/B20/B28) • 23 mA @ Rx
Other Features	-	Integrated BLE 5.0* (AoA and mesh not supported)
Region	Global	Global
Certification	Carrier: Vodafone/ Deutsche Telekom/ TIM/ Telefónica/ Altice-MEO/ SoftBank/ Telstra Regulatory: GCF/ CE/ NCC/ JATE/ TELEC/ RCM/ FAC/ IMDA Others: ATEX	Carrier: Vodafone*/ Deutsche Telekom*/ TIM*/ Telefónica*/ Altice-MEO*/ SoftBank*/ Telstra* Regulatory: GCF*/ CE*/ NCC*/ JATE*/ TELEC*/ RCM*/ FAC*/ IMDA* Others: ATEX*

“*” means under development/planning/ongoing.

① Preliminary, specific hardware/software specifications to be determined.

BC95-G&BC95-GV Specifications



Module		BC95-G (EOL)	BC95-GV ^①
Chipset		Boudica V150 (Hi2115)	HiSilicon 5G NB-IoT Solution (CB0201)
Category		3GPP Rel-14, Cat NB2	3GPP Rel-14, 3GPP Rel-15*, Cat NB2
Band		B1/B3/B5/B8/B20/B28 @ LTE-FDD	B1/B3/B5/B8/B20/B28/B18*/B26* @ LTE-FDD
Dimension		23.6 mm × 19.9 mm × 2.2 mm	23.6 mm × 19.9 mm × 2.2 mm
Data Rate	Single Tone	DL: 25.2 kbps; UL: 15.625 kbps	DL: 25.2 kbps; UL: 15.625 kbps
	Multi Tone	DL: 25.2 kbps; UL: 54 kbps	DL: 25.2 kbps; UL: 54 kbps
	Extended TBS/2 HARQ	DL: 125 kbps; UL: 150 kbps	DL: 125 kbps; UL: 150 kbps
Protocol		IPv4/ IPv6/ UDP/ CoAP/ LwM2M/ Non-IP/ DTLS/ TCP/ MQTT	IPv4*/ IPv6*/ UDP*/ TCP*/ Non-IP*/ CoAP*/ LwM2M*/ DTLS*/ MQTT*/ HTTP*/ DNS*/ TLS*/ MQTTS*
Supply Voltage		3.1–4.2 V, typ. 3.6 V	2.1–4.2 V, typ. 3.0/3.6 V
Power Consumption (Typical)		<ul style="list-style-type: none"> • 3 µA @ PSM • 0.5 mA @ Idle Mode, DRX = 2.56 s, ECL0 • 250 mA @ Tx, 23 dBm (B1/B3) • 220 mA @ Tx, 23 dBm (B5/B8/B20) • 280 mA @ Tx, 23 dBm (B28) • 130 mA @ Tx, 12 dBm (B1/B3/B5/B8/B20/B28) • 70 mA @ Tx, 0 dBm (B1/B3/B5/B8/B20/B28) • 60 mA @ Rx 	<ul style="list-style-type: none"> • 2 µA @ PSM • 0.23 mA @ Idle Mode, DRX = 2.56 s, ECL0 • 310 mA @ Tx, 23 dBm (B1/B3) • 210 mA @ Tx, 23 dBm (B5/B8/B20) • 210 mA @ Tx, 23 dBm (B28) • 75 mA @ Tx, 12 dBm (B1/B3/B5/B8/B20/B28) • 45 mA @ Tx, 0 dBm (B1/B3/B5/B8/B20/B28) • 23 mA @ Rx
Other Features		-	Integrated BLE 5.0* (AoA and mesh not supported)
Region		Global	Global
Certification		Carrier: Vodafone/ Deutsche Telekom/ Telefónica/ KT/ LGU+/ SoftBank/ Telstra/ Spark Regulatory: GCF/ CE/ Anatel/ KC/ NCC/ JATE/ TELEC/ RCM/ FAC/ NBTC/ IMDA Others: ATEX	Carrier: Vodafone*/ Deutsche Telekom*/ Telefónica*/ KT*/ LGU+*/ SoftBank*/ Telstra*/ Spark* Regulatory: GCF*/ CE*/ Anatel*/ KC*/ NCC*/ JATE*/ TELEC*/ RCM*/ FAC*/ NBTC*/ IMDA* Others: ATEX*

^{**} means under development/planning/ongoing.

^① Preliminary, specific hardware/software specifications to be determined.

BC68-GV&BC95-GV Enhanced Features



Feature	Description
Network	Cat NB2 + BLE 5.0*
Global Bands	B1/ B3/ B5/ B8/ B20/ B28/ B18*/ B26*
Low Power Consumption	PSM and eDRX features realize ultra-low power consumption and extended battery life; 2 µA @ PSM; 0.23 mA @ Idle Mode, DRX = 2.56 s, ECL0; Max. 210 mA @ Tx, 23 dBm; 23 mA @ Rx
Abundant Protocols*	IPv4/ IPv6/ UDP/ TCP/ Non-IP/ CoAP/ LwM2M/ DTLS/ MQTT/ HTTP/ DNS/ TLS/ MQTTS
Special Features	DFOTA; DFOTA Over BLE*; QuecOpen®*; eSIM ^①
Security	TEE Security; Digital Signature*
Compatibility	Compatible with various Quectel modules in packaging
Extensive Experience	Over 50 million shipments, five-hundred-customer foundation; Customers can deploy commercial products more quickly and stably. Millions of terminals have been functioning well with Quectel NB-IoT modules, and such applications include smart meters, trackers and smart NB-IoT white goods, etc.

** means under development.

① eSIM is reserved but not included by default.



LTE Standard Modules

LTE-A & 5G Modules

Automotive Modules

Smart Modules

LPWA Modules

UMTS/HSPA(+) Modules

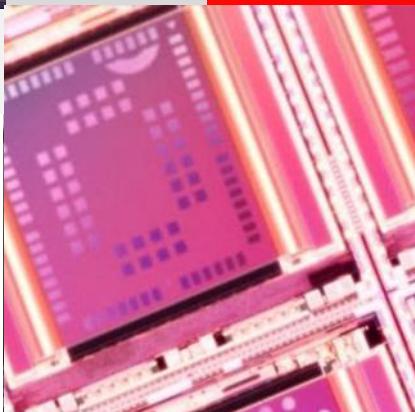
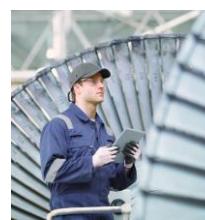
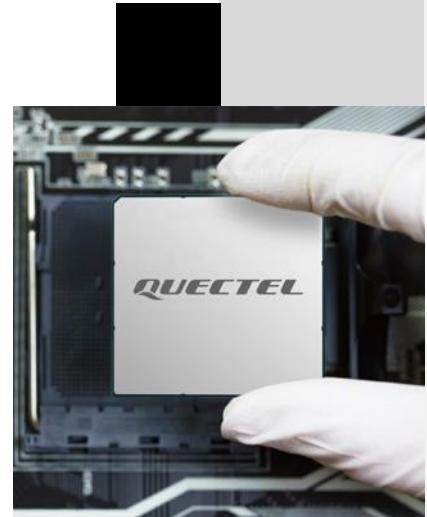
GSM/GPRS Modules

GNSS Modules

Wi-Fi&Bluetooth Modules

Antenna Products

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UMTS/HSPA(+) Modules Roadmap

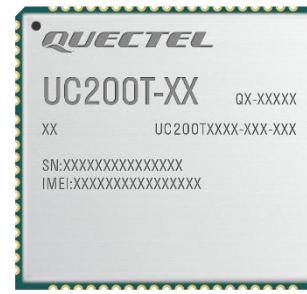


UG96



- XMM6250
- LGA Form Factor
- (26.5 × 22.5 × 2.2) mm
- 7.2 Mbps DL/ 5.76 Mbps UL
- Global Version

UC200T Series



- ASR1501
- LCC Form Factor
- (29.0 × 32.0 × 2.4) mm
- 21 Mbps DL/ 5.76 Mbps UL
- -EM/ -GL

UC200T Series Mini PCIe



- ASR1501
- Mini PCIe Form Factor
- (30.0 × 51.0 × 4.9) mm
- 21 Mbps DL/ 5.76 Mbps UL
- -EM/ -GL

UG89



- ASR1501
- LGA Form Factor
- (25.4 × 27.6 × 2.35) mm
- 21 Mbps DL/ 5.76 Mbps UL
- Global Version

2015

2019

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UG89 Specifications



■ UMTS/HSPA+ Module

25.4 mm × 27.6 mm × 2.35 mm
21 Mbps (DL)/ 5.76 Mbps (UL)

Variant	UG89
Platform	ASR1501
Band	B1/B2/B5/B8 @ UMTS 850/900/1800/1900 MHz @ GSM
Area	Global
Supply Voltage	3.3–4.5 V, typ. 3.8 V
Interfaces	(U)SIM/ UART/ USB/ Audio Digital (PCM)/ I2C/ ADC/ GPIO/ Antenna
Protocols	TCP/ UDP/ PPP/ FTP/ HTTP/ NTP/ PING/ NITZ/ CMUX/ HTTPS/ FTPS/ SSL/ FILE/ MQTT/ SMTP/ MMS/ SMTPS/ CSD*
Features	QuecFOTA®/ QuecLocator®/ QuecFile®/ RIL Driver/ USB RNDIS Driver/ USB Serial Driver/ (U)SIM Card Detection/ USB ECM Driver
Certification	Regulatory: GCF/ CE/ PTCRB/ FCC/ IC/ Anatel/ IFETEL/ RCM

“*” means under development/planning.

UC200T Series Specifications



■ UMTS/HSPA+ Module

29.0 mm × 32.0 mm × 2.4 mm
21 Mbps (DL)/ 5.76 Mbps (UL)

Variant	UC200T-EM	UC200T-GL
Platform	ASR1501	ASR1501
Band	B1/B8 @ UMTS 900/1800 MHz @ GSM	B1/B2/B5/B8 @ UMTS 850/900/1800/1900 MHz @ GSM
Area	Europe/ Asia Pacific Region	Global
Supply Voltage	3.4–4.5 V, typ. 3.8 V	
Interfaces	(U)SIM/ UART/ USB/ Audio Digital (PCM)/ I2C/ ADC/ Antenna	
Protocols	TCP/ UDP/ PPP/ FTP/ HTTP/ NTP/ PING/ NITZ/ CMUX/ HTTPS/ FTPS/ SSL/ FILE/ MQTT/ SMTP/ MMS/ SMTSP/ CSD*	
Features	QuecFOTA®/ QuecLocator®/ QuecFile®/ RIL Driver/ USB RNDIS Driver/ USB Serial Driver/ (U)SIM Card Detection/ USB ECM Driver	
Certification	Regulatory: CE/ RCM	Regulatory: CE/ FCC/ Anatel/ RCM

“*” means under development.

UC200T Series Mini PCIe Specifications



■ UMTS/HSPA+ Module

30.0 mm × 51.0 mm × 4.9 mm
21 Mbps (DL)/ 5.76 Mbps (UL)

Variant	UC200T-EM Mini PCIe	UC200T-GL Mini PCIe
Platform	ASR1501	ASR1501
Band	B1/B8 @ UMTS 900/1800 MHz @ GSM	B1/B2/B5/B8 @ UMTS 850/900/1800/1900 MHz @ GSM
Area	Europe/ Asia Pacific Region	Global
Supply Voltage	3.0–3.6 V, typ. 3.3 V	
Interfaces	(U)SIM/ UART/ USB/ Audio Digital (PCM)/ I2C/ Antenna/ (U)SIM Card Holder (optional)	
Protocols	TCP/ UDP/ PPP/ FTP/ HTTP/ NTP/ PING/ NITZ/ CMUX/ HTTPS/ FTPS/ SSL/ FILE/ MQTT/ SMTP/ MMS/ SMTSP/ CSD*	
Features	QuecFOTA®/ QuecLocator®/ QuecFile®/ RIL Driver/ USB RNDIS Driver/ USB Serial Driver/ (U)SIM Card Detection/ USB ECM Driver	

“*” means under development.

UG96 Specifications



■ UMTS/HSPA Module

26.5 mm × 22.5 mm × 2.2 mm
7.2 Mbps DL / 5.76 Mbps UL

Variant	UG96
Platform	XMM6250
Band	B1/B2/B5/B6/B8 @ UMTS 850/900/1800/1900 @ GSM
Area	Global
Supply Voltage	3.3–4.3 V, typ. 3.8 V
Consumption	1.1 mA @ GSM sleep, DRX = 9 1.7 mA @ UMTS sleep, DRX = 9
Interfaces	(U)SIM/ UART/ USB/ Audio Digital (PCM)/ I2C/ RTC Backup/ Antenna
Protocols	TCP/ UDP/ PPP/ MMS/ HTTP/ HTTPS/ SMTP/ SMTPL/ FTP/ NTP/ NITZ/ PING/ SSL
Features	DTMF/ DFOTA/ RIL Driver/ MUX/ USB Serial Driver/ (U)SIM Card Detection
Certification	Carrier: Deutsche Telekom/ Telefonica Regulatory: GCF/ CE/ PTCRB/ FCC/ IC/ Anatel/ IFETEL/ CCC/ JATE/ TELEC/ RCM/ FAC/ ICASA

Support Package (UG96/UC200T/UG89 Series)

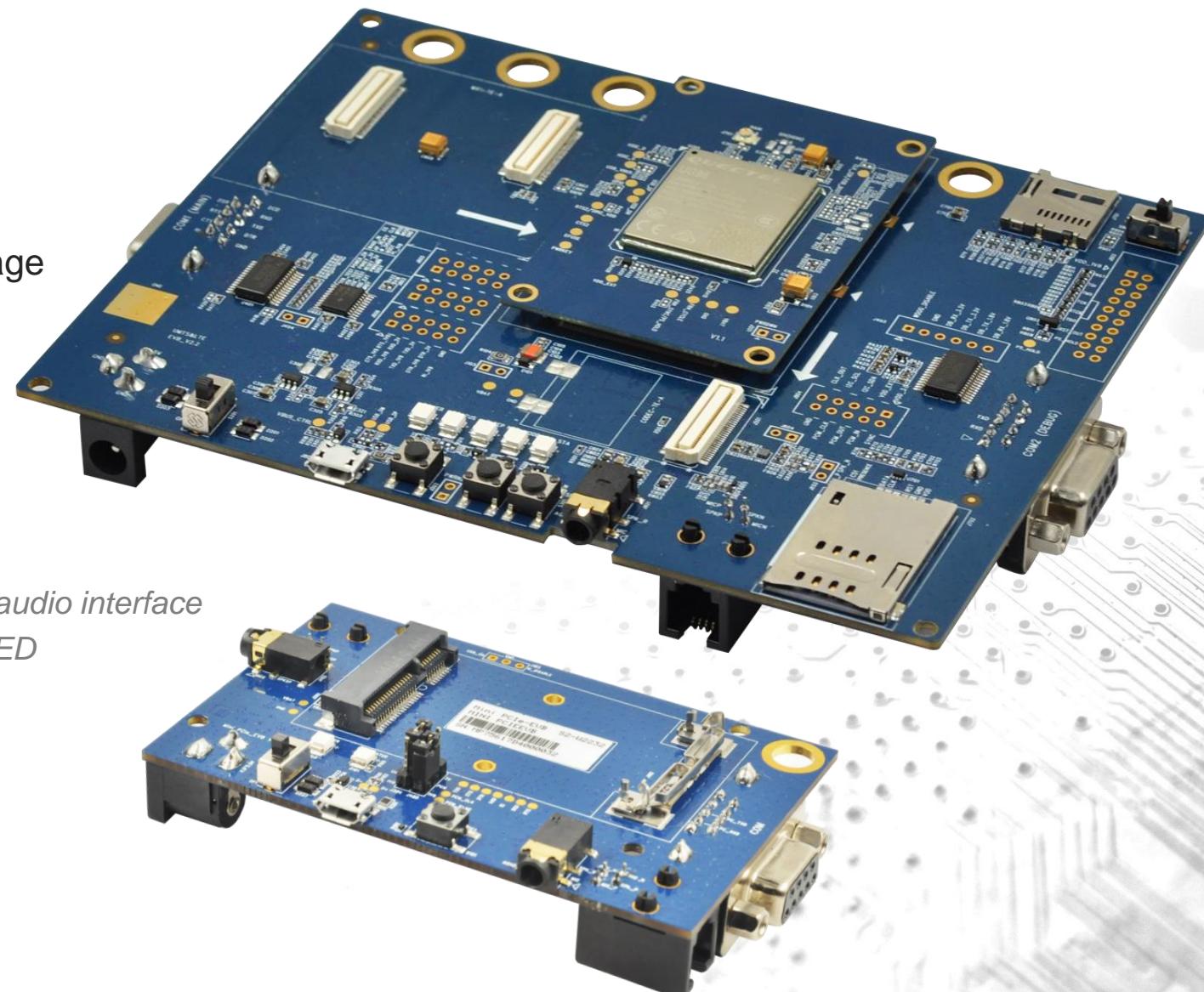


Technical Materials Package

- Hardware & software specifications
- Application note package
- Debug tool, download tool, test tool, EVB package & USB drivers
- Approvals & test report package
- QNavigator

Development Tool (UMTS<E EVB Kit)

- Interfaces
 - a) RS-232 interfaces
 - b) USB interface
 - c) Power supply
 - d) Antenna interface
 - e) Handset interface
 - f) Earphone interface
 - g) Test points
- Features
 - a) Digital or analog audio interface
 - b) Network status LED
 - c) Power key
 - d) Reset key



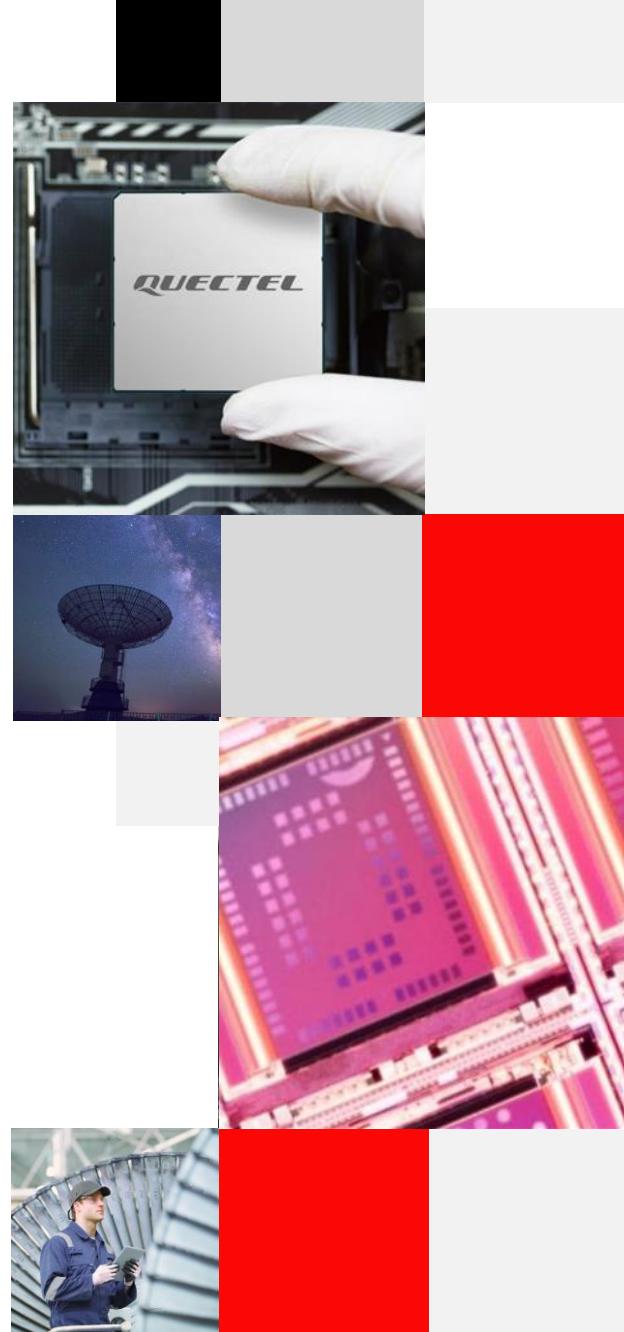


LTE Standard Modules
LTE-A & 5G Modules
Automotive Modules
Smart Modules
LPWA Modules
UMTS/HSPA(+) Modules

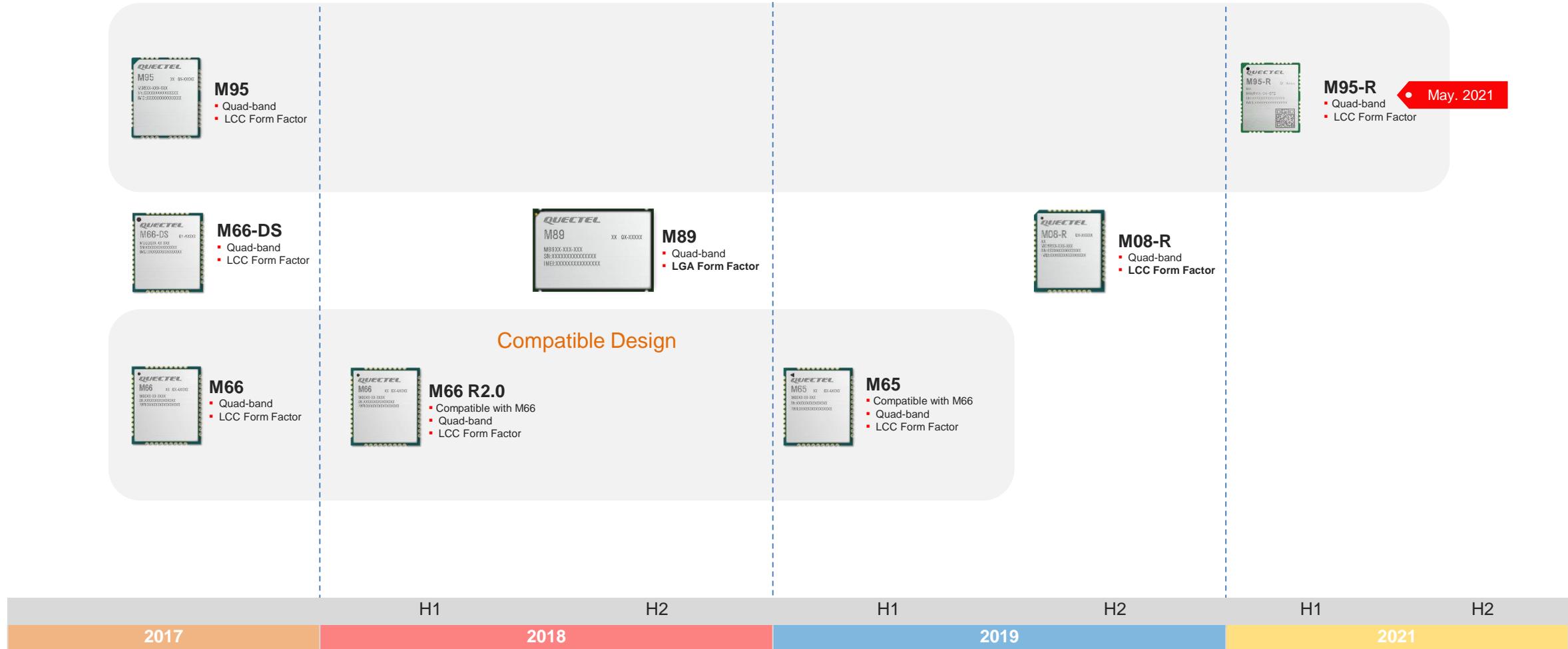
GSM/GPRS Modules

GNSS Modules
Wi-Fi&Bluetooth Modules
Antenna Products

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GSM Modules Roadmap



M89 Specifications

18.8 mm × 26.7 mm × 2.3 mm
GPRS Multi-slot Class 12
85.6 kbps DL/85.6 kbps UL



Model	M89
Quad-Band	850/900/1800/1900 MHz
Supply Voltage	3.3–4.6 V, typ. 4.0 V
Consumption	3.0 mA @ DRX = 5 3.0 mA @ DRX = 9
SMS/Voice	•
Interfaces	(U)SIM/UART/Audio/RTC/GPIO/Antenna
Protocols	TCP/UDP/PPP/FTP/HTTP(S)/POP3/SNTP(S)/USSD/QNTP/QPING/SSL
Features	eCall DTMF Audio Play/Audio Recording QuecFOTA® QuecFile® CMUX SSL
Certification	Regulatory: CE/Anatel

• : Supported.

M08-R Specifications

17.6 mm × 15.7 mm × 2.4 mm
GPRS Multi-slot Class 12
85.6 kbps DL/85.6 kbps UL

Model	M08-R
Quad-Band	850/900/1800/1900 MHz
Supply Voltage	3.45–4.25 V, typ. 4.0 V
Consumption	1.3 mA ^① @ DRX = 5 1.2 mA ^① @ DRX = 9
SMS/Voice	●
Interfaces	(U)SIM/UART/RTC/Audio/GSM Antenna
Protocols	TCP/UDP/PPP/HTTP/NTP/PING/TTS/FTP/SSL/HTTPS/MQTT/IPv6*
Features	Audio Play/Audio Recording QuecCell® QuecFOTA® DFOTA QuecFile® CMUX QuecOpen® QuecLocator®
Certification	Regulatory: CE

● : Supported.

“*” means under development.

① means average value, for reference only.

M66/M66-DS/M66 R2.0/M65 Specifications

17.7 mm × 15.8 mm × 2.3 mm

GPRS Multi-slot Class 12

85.6 kbps DL/85.6 kbps UL



Model	M66	M66-DS	M66 R2.0	M65
Platform	MT6261D	MT6261D	MT6261M	RDA8955L
PA	RF7198 (M66) HS8298H (M66 R1.1)	RF7198	HS8298H	HS8225H
Quad-band	850/900/1800/1900 MHz	850/900/1800/1900 MHz	850/900/1800/1900 MHz	850/900/1800/1900 MHz
Supply Voltage	3.3–4.6 V, typ. 4.0 V	3.3–4.6 V, typ. 4.0 V	3.3–4.6 V, typ. 4.0 V	3.45–4.25 V, typ. 4.0 V
Consumption	1.3 mA @ DRX = 5 1.2 mA @ DRX = 9	1.3 mA @ DRX = 5 1.2 mA @ DRX = 9	1.3 mA @ DRX = 5 1.2 mA @ DRX = 9	1.2 mA @ DRX = 5 1.1 mA @ DRX = 9
SMS/Voice	SMS & Voice	SMS & Voice	SMS & Voice	SMS & Voice
Interfaces	(U)SIM/UART/PCM/RTC/ Audio/GSM & BT Antenna/SD	(U)SIM/UART/PCM/RTC/Audio/GSM & BT Antenna/SD/ADC	(U)SIM/UART/PCM/RTC/Audio/ GSM Antenna	(U)SIM/UART/RTC/Audio/ADC/ GSM Antenna
Protocols	TCP/UDP/PPP/FTP/HTTP/ SMTP/CMUX/SSL	TCP/UDP/PPP/FTP/HTTP/ SMTP/CMUX/SSL	TCP/UDP/PPP/FTP/HTTP(S)/ SMTP/CMUX/SSL/MQTT	TCP/UDP/PPP/HTTP/NTP/PING/ FTP/SSL/MQTT/HTTPS/IPv6
Features	eCall DTMF Audio Play/Audio Recording QuecFOTA® QuecCell® QuecFile® QuecOpen® BT 3.0 (SPP/HFP)	eCall DTMF Audio Play/Audio Recording QuecFOTA® QuecCell® QuecFile® QuecOpen® BT 3.0 (SPP/HFP) DSDS	eCall DTMF Audio Play/Audio Recording QuecFOTA® QuecCell® QuecFile® BT 3.0 (SPP/HFP)	DTMF* QuecOpen® Audio Play/Audio Recording QuecCell® QuecFOTA® QuecLocator® QuecFile® CMUX
Certification	Carrier: Vodafone/Deutsche Telekom Regulatory: GCF/CE/UCRF/FCC/Anatel/ FAC/ICASA Others: Bluetooth	Carrier: Deutsche Telekom Regulatory: CE	Regulatory: CE	Regulatory: CE/Anatel

M95/M95-R Specifications

23.6 mm × 19.9 mm × 2.65 mm



GPRS Multi-slot Class 12

85.6 kbps DL/85.6 kbps UL

Model	M95	M95-R
Platform	MT6261M	RDA8955L
PA	RF7198 (M95) HS8298H (M95 R2.1)	HS8225H
Quad-band	850/900/1800/1900 MHz	850/900/1800/1900 MHz
Supply Voltage	3.3–4.6 V, typ. 4.0 V	3.45–4.25 V, typ. 4.0 V
Consumption	1.3 mA @ DRX = 5 1.2 mA @ DRX = 9	1.4 mA @ DRX = 5 1.3 mA @ DRX = 9
SMS/Voice	SMS & Voice	SMS & Voice
Interfaces	(U)SIM/UART/RTC/Antenna/Audio/PCM	(U)SIM/UART/RTC/Antenna/Audio/PCM
Protocols	PPP/TCP/UDP/FTP/HTTP/SMTP/CMUX/SSL/MQTT	PPP/TCP/UDP/FTP/HTTP/CMUX/SSL/MQTT
Features	eCall QuecFOTA® DTMF Dual SIM Audio Play/Audio Recording QuecCell®	QuecFOTA® DFOTA Audio Play/Audio Recording QuecCell®
Certification	Carrier: Vodafone/Telenor/Rogers Regulatory: GCF/CE/UCRF/FCC/PTCRB/IC/Anatel/NCC/RCM/ICASA Others: ATEX	Regulatory: CE*

MC60 Specifications



Multi-constellation GNSS	GPS+GLONASS+Galileo^①	
Channel Number	33 tracking channels 99 acquisition channels 210 PRN channels	
SBAS	WAAS, EGNOS, MSAS, GAGAN	
Horizontal Position Accuracy	Autonomous	<2.5 m CEP
Velocity Accuracy	Without Aid	<0.1 m/s
Acceleration Accuracy	Without Aid	0.1 m/s ²
Timing Accuracy	1PPS	10 ns
TTFF @-130dBm with QuecFastFix Online	Cold Start	<4.5 s
TTFF @-130dBm with EASY™	Cold Start	<15 s
	Warm Start	<5 s
	Hot Start	<1 s
TTFF @-130dBm without EASY™	Cold Start	<35 s
	Warm Start	<30 s
	Hot Start	<1 s
Sensitivity	Acquisition	-149 dBm
	Tracking	-167 dBm
	Re-acquisition	-161 dBm
		Quad-band
		850/ 900/ 1800/ 1900MHz
GPRS Multi-slot Class		Class 12
GPRS Mobile Station		Class B
Compliant to GSM Phase 2/2+		Class 4 (2W @ 850/900 MHz) Class 1 (1W @ 1800/1900 MHz)
Supply Voltage Range		3.3–4.6 V, 4.0 V Typ.
Low Power Consumption		1.2 mA @ DRX=5
Bluetooth 4.0 Current Consumption (Modem Off)		1.26 mA @ Advertising 1.35 mA @ Connection
Operation Temperature		-40 °C to +85 °C
Dimensions		18.7 mm × 16.0 mm × 2.1 mm
Weight		Approx. 1.3 g
Control via AT Commands		GSM 07.07, 07.05 and other enhanced AT commands
Speech Codec Modes		Half Rate (HR) Enhanced Full Rate (EFR) Full Rate (FR) Adaptive Multi-Rate (AMR)
Echo Arithmetic		Echo Cancellation Echo Suppression Noise Reduction
Bluetooth		Bluetooth 3.0 Bluetooth 4.0 Optional GATT/ PXP*/ FMP*/ SPP/ HFP-AG
(U)SIM		3.0 V/1.8 V
UART		×4

^① Galileo is disabled by default. It can be enabled by PMTK command.

“*” means under development.

MC90 Specifications

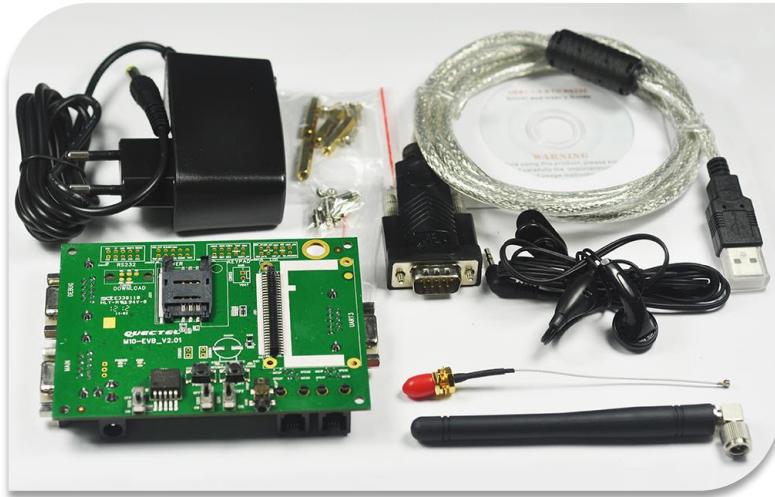


Multi-constellation GNSS	GPS+GLONASS+Galileo^①	
Channel Number	33 tracking channels 99 acquisition channels 210 PRN channels	
SBAS	WAAS, EGNOS, MSAS, GAGAN	
Horizontal Position Accuracy	Autonomous	<2.5 m CEP
Velocity Accuracy	Without Aid	<0.1 m/s
Acceleration Accuracy	Without Aid	0.1 m/s ²
Timing Accuracy	1PPS	10 ns
TTFF @-130dBm with QuecFastFix Online	Cold Start	<4.5 s
TTFF @-130dBm with EASY™	Cold Start	<15 s
	Warm Start	<5 s
	Hot Start	<1 s
TTFF @-130dBm without EASY™	Cold Start	<35 s
	Warm Start	<30 s
	Hot Start	<1 s
Sensitivity	Acquisition	-149 dBm
	Tracking	-167 dBm
	Re-acquisition	-161 dBm

Quad-band	850/ 900/ 1800/ 1900MHz
GPRS Multi-slot Class	Class 12
GPRS Mobile Station	Class B
Compliant to GSM Phase 2/2+	Class 4 (2W @ 850/900 MHz) Class 1 (1W @ 1800/1900 MHz)
Supply Voltage Range	3.3–4.3 V, 4.0 V Typ.
Low Power Consumption	1.2 mA @ DRX=5
Wi-Fi Current Consumption (Wi-Fi part only)	0.4 mA
Operation Temperature	-40 °C to +85 °C
Dimensions	25.6 mm × 15.0 mm × 2.3 mm
Weight	Approx. 1.4 g
Control via AT Commands	GSM 07.07, 07.05 and other enhanced AT commands
Speech Codec Modes	Half Rate (HR) Enhanced Full Rate (EFR) Full Rate (FR) Adaptive Multi-Rate (AMR)
Echo Arithmetic	Echo Cancellation Echo Suppression Noise Reduction
WLAN Protocol	2.4 GHz, IEEE 802.11 b/g/n
(U)SIM	3.0 V/1.8 V
UART	×4

^① Galileo is disabled by default. It can be enabled by PMTK command.

GSM Support Package



Technical Materials Package GSM-EVB Kit

- Specification
- Hardware Design
- AT Commands Manual
- Footprint&Part in PADS and Protel Formats
- GSM EVB/ TE-A User Guide
- GNSS AGPS Application Note
- GNSS Protocol Specification
- Reference Design
- BLE AT Commands
- BT AT Commands
- Wi-Fi Application Note



MCx0-TE-A Kit

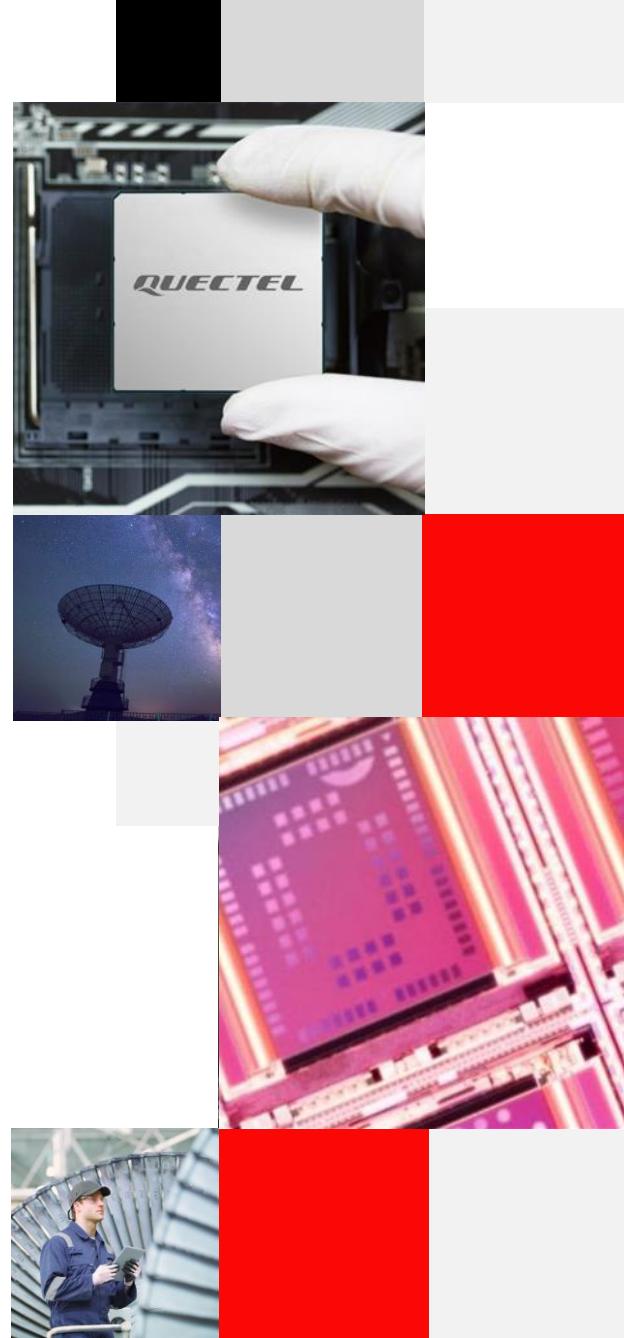
- MC60-TE-A/ MC90-TE-A
- GNSS Antenna
- RF Cable for GNSS Antenna Connection
- USB Flash Drive

- Accessories
 - GSM EVB
 - 5V DC Power Supply
 - GSM Antenna
 - USB Data Cable
 - USB-UART Converter Cable
 - RF Cable for Antenna Connection
 - Disk
- Interfaces
 - RS-232 Interfaces
 - Power Supply
 - Antenna Interface
 - Debug UART Interface
 - Handset Interface
 - Earphone Interface
- Feature
 - Network Status LED
 - Power Key
 - Emergency Off Key



LTE Standard Modules
LTE-A & 5G Modules
Automotive Modules
Smart Modules
LPWA Modules
UMTS/HSPA(+) Modules
GSM/GPRS Modules
GNSS Modules
Wi-Fi&Bluetooth Modules
Antenna Products

Build a Smarter World



GNSS Modules Roadmap



GPS Only



L70 Series

- L70 (MT3339)
- L70-R (MT3337)
- L70-RL (MT3337)

Single-band
GNSS



L76 Series

- L76 (MT3333)
- L76-L (MT3333)
- L76-LB (AG3331)
- LC76F (GK9501)



L26 Series

- L26 (MT3333)
- L26-LB (AG3331)



L26-DR

- TESEO III
- ADR
- UDR
- Automotive grade (optional)



L26-P

- TESEO III
- GNSS/ IMU raw data output



L26-T

- TESEO III
- Timing Applications



LG77L

- LG77L (A/B) (AG3331)
- LG77L (C) (MT3333)



LC98S

- TESEO III
- Timing Applications
- Maximized reliability

Multi-
band
GNSS



LC79D

- BCM47755
- GPS/GAL: L1/L5
- GLO/BDS: L1
- IRNSS: L5
- DR (optional)



LC79H

- AG3335
- GPS/GAL/BDS/
QZSS: L1/L5
- GLO: L1



LC29D

- BCM47755
- GPS/GAL: L1/L5
- GLO/BDS: L1
- IRNSS: L5
- BDS: L5 (optional)
- DR (optional)
- RTK (optional)



LC29H

- LC29H: AG3335
- GPS/GAL/BDS: L1/L5
- GLO: L1



LG69T

- TESEO V
- Automotive
- GPS/Galileo/BeiDou: L1/L5
- GLONASS (optional)
- DR (optional)/RTK (optional)
- Raw data output (optional)
- ASIL B (optional)

Integrated
Antenna



L80 Series

- L80 (MT3339)
- L80-R (MT3337)
- GPS only



L86

- MT3333
- GPS/ GLO/ GAL



LC86L

- LC86L (A) (AG3331)
- LC86L (C) (MT3333)



L89 R2.0

- AG3335
- IRNSS GNSS module
- AIS140 Compliant



L96

- MT3333
- Embedded Chip Antenna

LG69T GNSS Module Overview

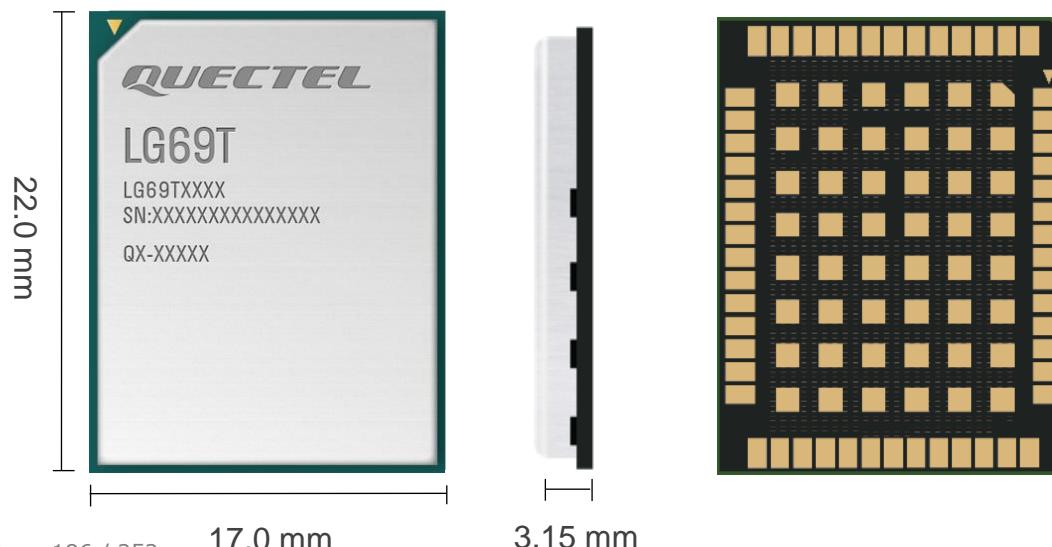


Dual-Band Automotive Grade GNSS Module (TESEO V)

LG69T is a series automotive grade, dual-band, high precision GNSS modules based on the fifth generation platform of ST.

The module includes variants listed below:

- LG69T (AA)¹⁾ features raw data output and integrates DR.
- LG69T (AD) features L1+L5 dual bands PVT.
- LG69T (AQ) integrates RTK and DR, and therefore outputs high precision results (industrial sensor).
- LG69T (AB) is ASIL B compliant and supports raw data output.
- LG69T (AS) features L1+L5 dual bands base station.
- LG69T (AM) integrates RTK function.



¹⁾ LG69T (AA) can also support DR function based on a separate firmware version.
LG69T series are distinguished from each other with different OCs (ordering codes).

LG69T GNSS Module

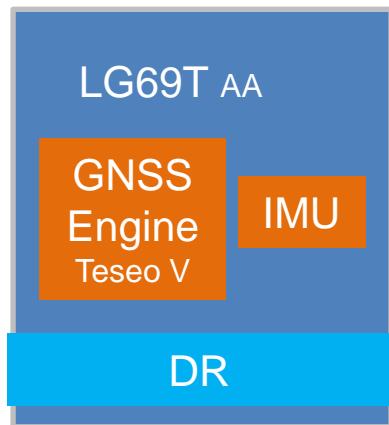


Dual-Band Automotive Grade GNSS Module

Automotive Grade

LG69T (AA)

Raw Data+DR

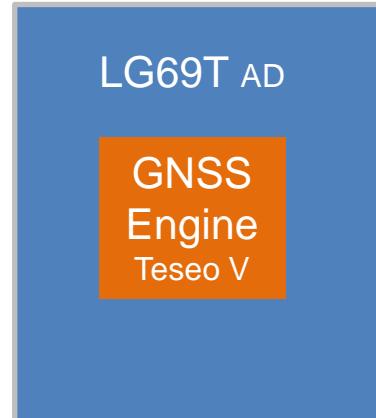


- ST Teseo V
- L1+L5 Dual-Band GNSS
- GNSS Raw Data Output
- Sensor Raw Data Output
- DR Integrated (Optional)

Automotive Grade

LG69T (AD)

L1+L5 Dual-band

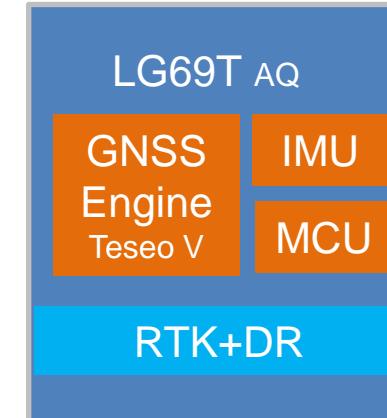


- ST Teseo V
- L1+L5 Dual-Band GNSS
- GNSS Raw Data Output

Automotive Grade

LG69T (AQ)

RTK+DR Integrated



- ST Teseo V
- L1+L5 Dual-Band GNSS
- High Performance MCU Embedded
- RTK+DR Integrated for High Precision Positioning (cm level)
- Sensor Raw Data Output (Optional)

LG69T series are distinguished from each other with different OCs (ordering codes).

LG69T GNSS Module



Dual-Band Automotive Grade GNSS Module

Automotive Grade

LG69T (AM)

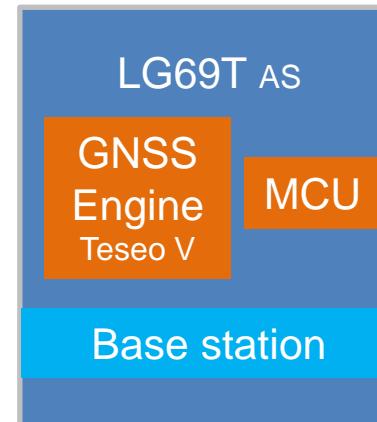
RTK+DR Integrated



Automotive Grade

LG69T (AS)

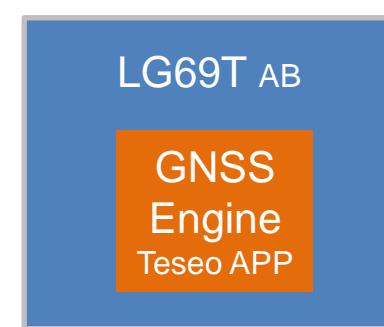
Base station



Automotive Grade

LG69T (AB)

ASIL B Compliant



- ST Teseo V
- L1+L5 Dual-Band GNSS
- High Performance MCU Embedded
- RTK Integrated for High Precision Positioning (cm level)

- ST Teseo V
- L1+L5 Dual-Band
- MCU Embedded
- Base station

- ST Teseo App
- L1+L2 Dual-Band GNSS
- GNSS Raw Output
- ASIL B Compliant
- L1+L5 Dual-Band (Optional)

LG69T series are distinguished from each other with different OCs (ordering codes).

LG69T Key Features



Product	LG69T (AQ)	LG69T(AS)*	LG69T (AA)*
Constellation	GPS/Galileo/BeiDou	GPS/Galileo/BeiDou	GPS/GLONASS/Galileo/BeiDou/QZSS/IRNSS
Dimensions (mm)	22.0 × 17.0 × 3.15	22.0 × 17.0 × 3.15	22.0 × 17.0 × 3.15
Channels	4 Fast Acquisition 80 Tracking	4 Fast Acquisition 80 Tracking	4 Fast Acquisition 80 Tracking
Accuracy	Autonomous: < 1.0 m CEP RTK ¹⁾ : Horizontal Accuracy: < 0.2 m + ppm CEP	-	Autonomous: < 1.0 m CEP ²⁾
TTFF (With AGNSS)	Cold Start	TBD	-
TTFF (Without AGNSS)	Cold Start	< 35 s	-
	Warm Start	< 30 s	-
	Hot Start	< 3 s	-
Sensitivity	Acquisition	-145 dBm	-
	Reacquisition	-153 dBm	-
	Tracking	-160 dBm	-
Interfaces	UART	× 2	× 2
	CAN	× 1	-
Update Rate	1 Hz (Default), Max. 10 Hz	1 Hz (Default)	1 Hz (Default), Max. 10 Hz
Temperature Range	Operating	-40 °C to +85 °C	-40 °C to +85 °C
	Storage	-40 °C to +90 °C	-40 °C to +90 °C
Power Supply	3.0–3.6 V, typ. 3.3 V	3.0–3.6 V, typ. 3.3 V	3.0–3.6 V, typ. 3.3 V
Power Consumption (@ 3.3 V)	Acquisition	360 mA ²⁾	TBD
	Tracking	366 mA ²⁾	TBD
Power Saving Mode Consumption	TBD	TBD	TBD
Key Features	DR	●	-
	RTK	●	-
	AGNSS	-	-
	SBAS	-	-
	PPS	●	●
	Anti-Jamming	-	-
	Jammer Detection	-	-
	Antenna Short Circuit Protection	-	-
	Antenna Open Circuit Detection	-	-
	Geo-fence	-	-
	Odometer	-	-
	GNSS Raw Data	-	●
	Sensor Raw Data	●	●

LG69T Key Features



Product	LG69T (AD)*	LG69T (AB)*	LG69T(AM)*	
Constellation	GPS/BeiDou/Galileo/QZSS/IRNSS	GPS/GLONASS/Galileo/BeiDou/QZSS	GPS/Galileo/BeiDou	
Dimensions (mm)	22.0 × 17.0 × 3.15	22.0 × 17.0 × 3.15	22.0 × 17.0 × 3.15	
Channels	4 Fast Acquisition 80 Tracking	4 Fast Acquisition 80 Tracking	4 Fast Acquisition 80 Tracking	
Accuracy	Autonomous: < 1.0 m CEP	Autonomous: < 1.0 m CEP ²⁾	RTK ¹⁾ : Horizontal Accuracy: < 0.05 m + ppm CEP	
TTFF (With AGNSS)	Cold Start Cold Start Warm Start Hot Start	TBD < 35 s ²⁾ < 30 s ²⁾ < 3 s ²⁾	TBD < 35 s ²⁾ < 30 s ²⁾ < 3 s ²⁾	TBD < 35 s ²⁾ < 30 s ²⁾ < 3 s ²⁾
Sensitivity	Acquisition Reacquisition Tracking	-145 dBm ²⁾ -153 dBm ²⁾ -160 dBm ²⁾	-146 dBm ²⁾ -152 dBm ²⁾ -152 dBm ²⁾	-146 dBm ²⁾ -152 dBm ²⁾ -152 dBm ²⁾
Interfaces	UART CAN	× 1 -	× 2 -	× 2 -
Update Rate		1 Hz (Default), Max. 10 Hz	1 Hz (Default), Max. 10 Hz	1 Hz (Default)
Temperature Range	Operating Storage	-40 °C to +85 °C -40 °C to +90 °C	-40 °C to +105 °C -40 °C to +105 °C	-40 °C to +105 °C -40 °C to +105 °C
Power Supply		3.0–3.6 V, typ. 3.3 V	3.0–3.6 V, typ. 3.3 V	3.0–3.6 V, typ. 3.3 V
Power Consumption (@ 3.3 V)	Acquisition Tracking	221 mA ²⁾ 218 mA ²⁾	TBD TBD	TBD TBD
Power Saving Mode Consumption		48 µA ²⁾	TBD	TBD
Key Features	DR	-	-	-
	RTK	-	-	-
	AGNSS	●	-	-
	SBAS	●	-	-
	PPS	●	●	●
	Anti-Jamming	-	-	-
	Jammer Detection	-	-	-
	Antenna Short Circuit Protection	-	-	-
	Antenna Open Circuit Detection	-	-	-
	Geo-fence	-	-	-
	Odometer	-	-	-
	GNSS Raw Data	●	●	-
	Sensor Raw Data	-	●	-

¹⁾ Measured by using active high-precision antennas in an open-sky environment and within 1 km from the base station

²⁾ Preliminary data

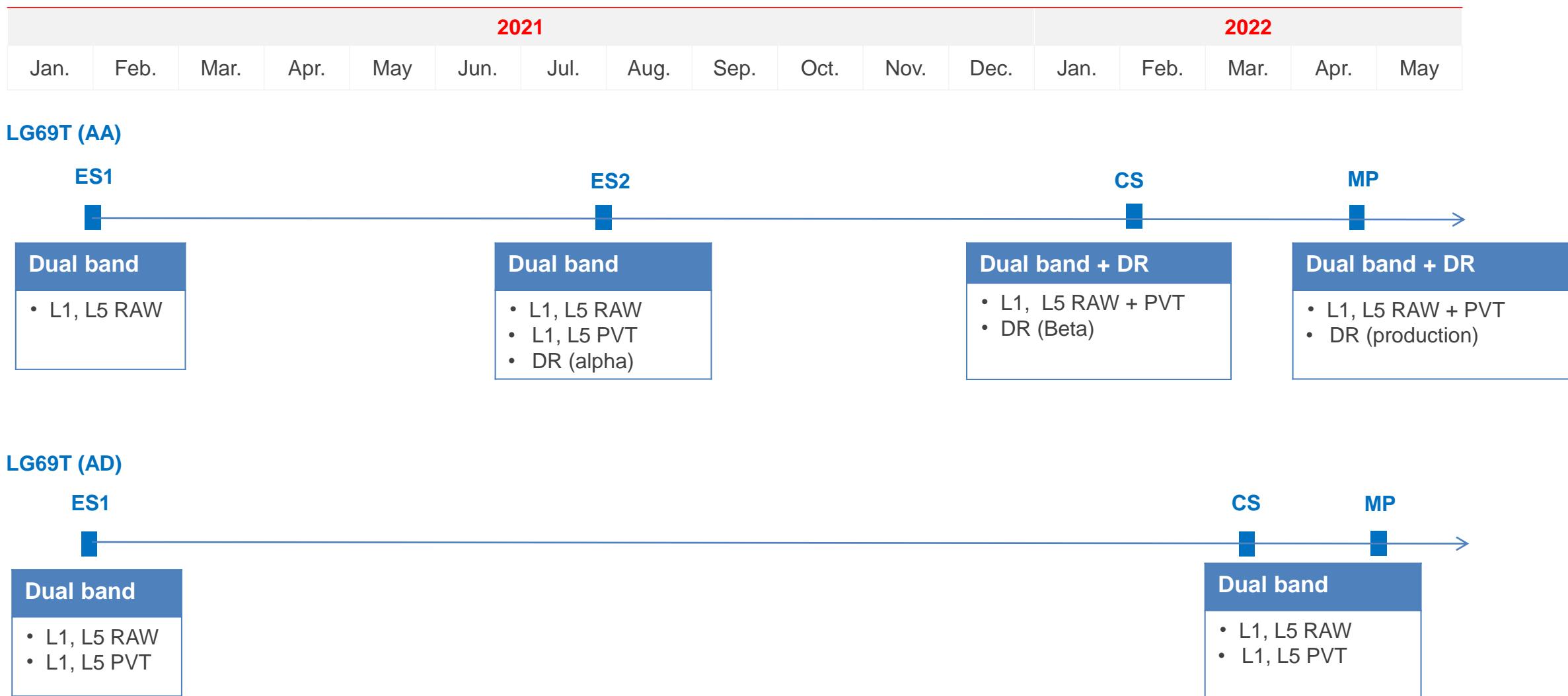
* Under development/planning

- Unsupported

● Supported

TBD: To Be Determined

LG69T Timeline

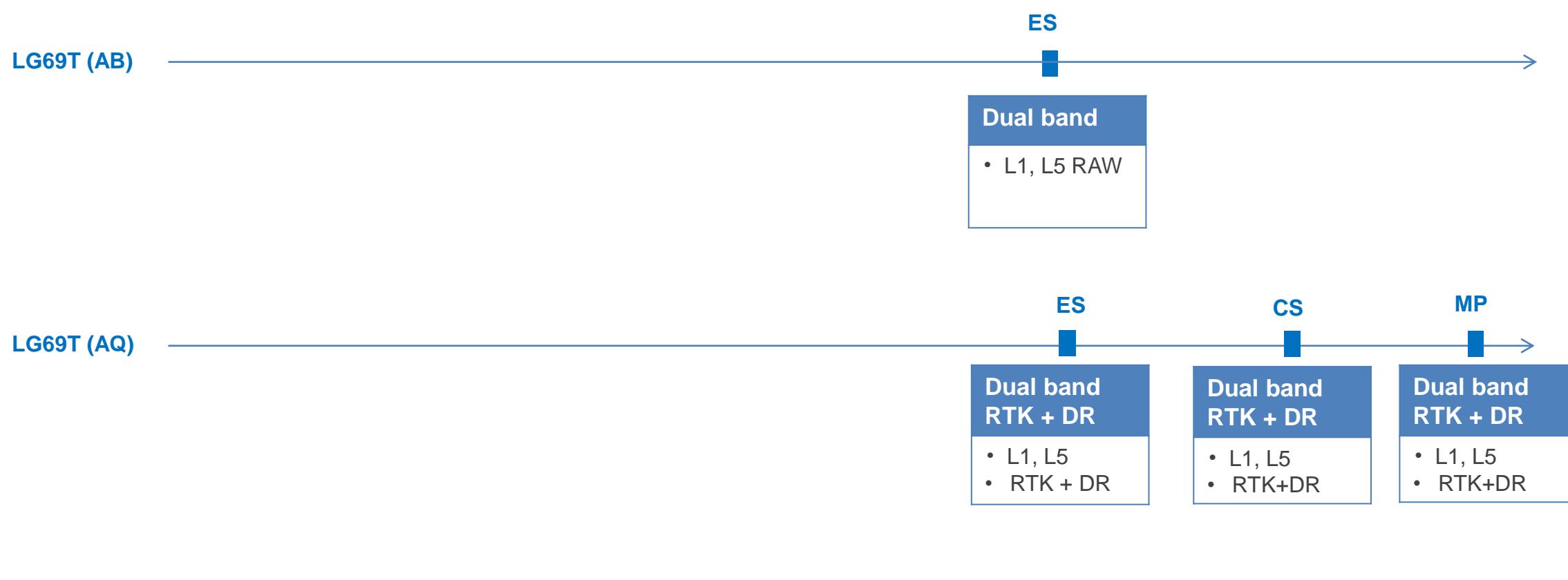


The timeline may be adjusted according to the actual development status.

LG69T Timeline



2021												2022				
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May

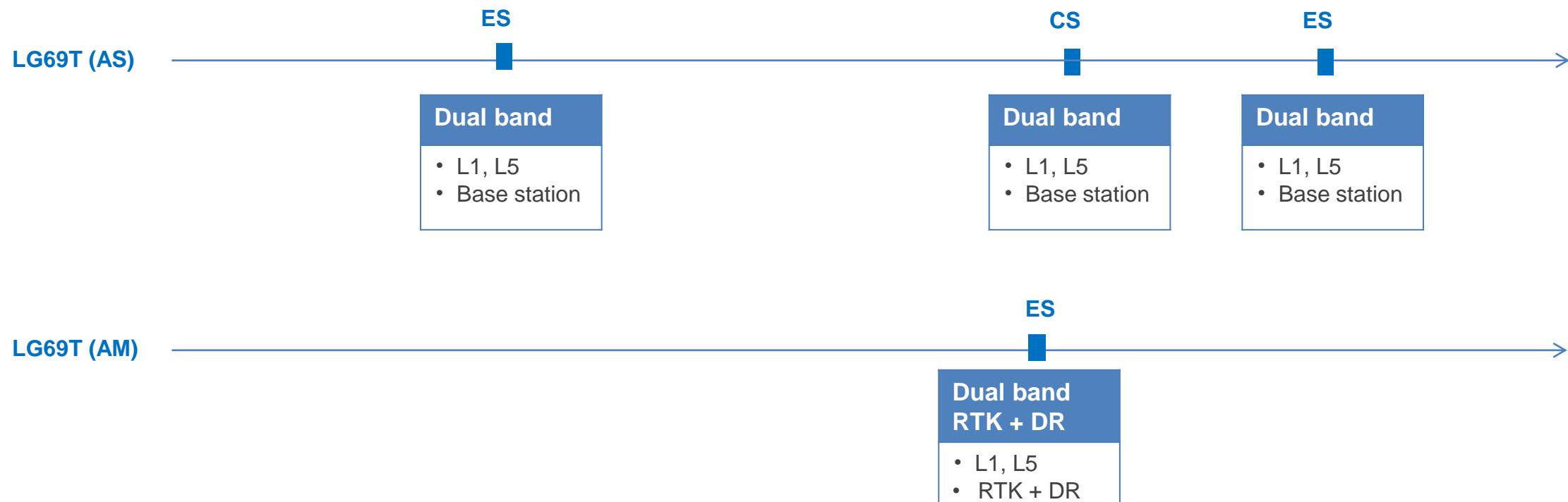


The timeline may be adjusted according to the actual development status.

LG69T Timeline



2021												2022					
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	



The timeline may be adjusted according to the actual development status.

LC79D GNSS Module Overview

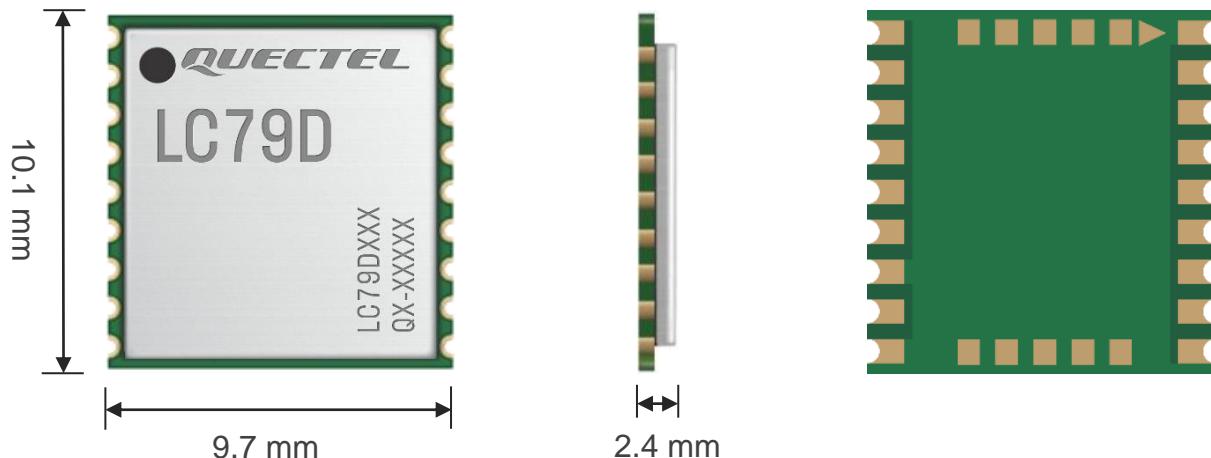


Dual-Band High Precision GNSS Module (BCM47755)

LC79D is a series of dual-band, high precision GNSS modules integrating DR function.

The module includes variant listed below:

- LC79D (C) works in 2-wheel ADR and 4-wheel ADR/UDR modes, and supports sensor raw data output, which is Betta architecture not for new customers' design.



LC79D series are distinguished from each other with different OCs (ordering codes).

LC79D Key Features



Product	LC79D (C)	
Constellation	GPS/GLONASS/Galileo/BeiDou/IRNSS/QZSS	
Dimensions (mm)	10.1 x 9.7 x 2.4	
Channels	32 Channels	
Accuracy	Autonomous: < 1.2 m CEP	
TTFF (With AGNSS)	Cold Start	< 5 s
TTFF (Without AGNSS)	Cold Start	< 34 s
	Warm Start	< 30 s
	Hot Start	< 2 s
Sensitivity	Acquisition	-147 dBm
	Reacquisition	-158 dBm
	Tracking	-163 dBm
Interfaces	UART	x 1
	I2C	x 1 (Master)
Update Rate	1 Hz (Default)	
Temperature Range	Operating	-40 °C to +85 °C
	Storage	-40 °C to +90 °C
Power Supply	1.7–1.9 V, typ. 1.8 V	
Power Consumption (@ 1.8 V)	Acquisition	47 mA
	Tracking	43 mA
Power Saving Mode Consumption	200 µA @ Sleep Mode 88 µA @ Standby Mode	
Key Features	DR	●
	RTK	-
	AGNSS	●
	SBAS	●
	PPS	●
	Anti-Jamming	-
	Jamming Detection	-
	Antenna Short Circuit Protection	-
	Antenna Open Circuit Detection	-
	Geo-fence	●
	Odometer	●
	GNSS Raw Data	-
	Sensor Raw Data	●

- Unsupported

● Supported

LC79D Timeline



2021											
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.



The timeline may be adjusted according to the actual development status.

LC79H GNSS Module Overview

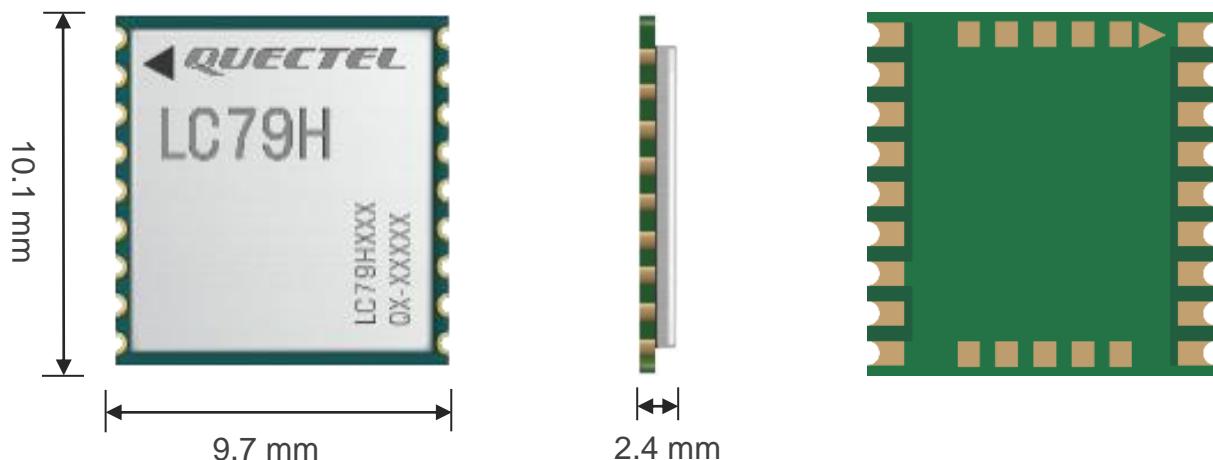


Dual-Band High Precision GNSS Module (AG3335)

LC79H is a series of dual-band, high precision GNSS modules.

The module includes the variants listed below:

- LC79H (A) works in standard dual-band mode.
- LC79H (B) works in standard single-band mode.



LC79H Key Features



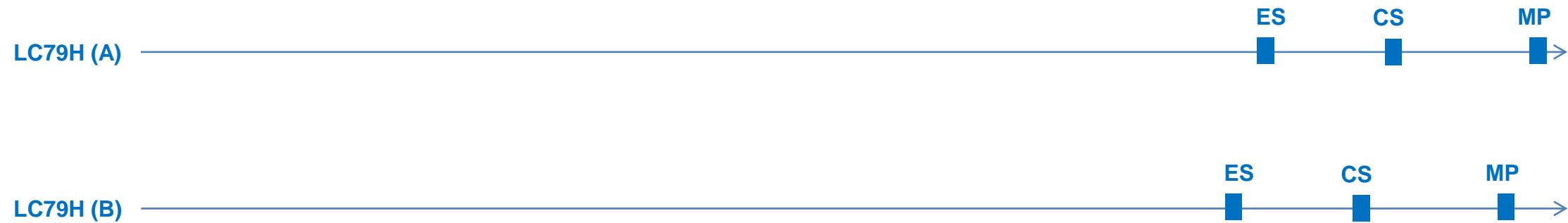
Product	LC79H (A)*		LC79H (B)*
Constellation	GPS/GLONASS/Galileo/BeiDou/QZSS		GPS/GLONASS/Galileo/BeiDou/QZSS
Dimensions (mm)	10.1 × 9.7 × 2.4		10.1 × 9.7 × 2.4
Channels	135 Channels		135 Channels
Accuracy	Autonomous: 1.0 m CEP		Autonomous: 2.0 m CEP
TTFF (With AGNSS)	Cold Start	< 15 s	< 15 s
	Cold Start	< 28 s	< 28 s
TTFF (Without AGNSS)	Warm Start	< 20 s	< 20 s
	Hot Start	< 1 s	< 1 s
Sensitivity	Acquisition	-145 dBm	-145 dBm
	Reacquisition	-157 dBm	-157 dBm
	Tracking	-165 dBm	-165 dBm
Interfaces	UART	× 1	× 1
	I2C*	× 1	× 1
Update Rate	1 Hz (Default)		1 Hz (Default)
Temperature Range	Operating	-40 °C to +85 °C	-40 °C to +85 °C
	Storage	-40 °C to +90 °C	-40 °C to +90 °C
Power Supply	1.7–1.9 V, typ. 1.8 V		1.7–1.9 V, typ. 1.8 V
Power Consumption (@ 1.8 V)	Acquisition	TBD	TBD
	Tracking	TBD	TBD
Power Saving Mode Consumption	TBD		TBD
Key Features	DR	-	-
	RTK	-	-
	AGNSS	●	●
	SBAS	●	●
	PPS	●	●
	Anti-Jamming	●	●
	Jamming Detection	●	●
	Antenna Short Circuit Protection	●	●
	Antenna Open Circuit Detection	●	●
	Geo-fence	-	-
	Odometer	-	-
	GNSS Raw Data	-	-
	Sensor Raw Data	-	-

LC79H Timeline



2021

Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
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The timeline may be adjusted according to the actual development status.

LC29D GNSS Module Overview

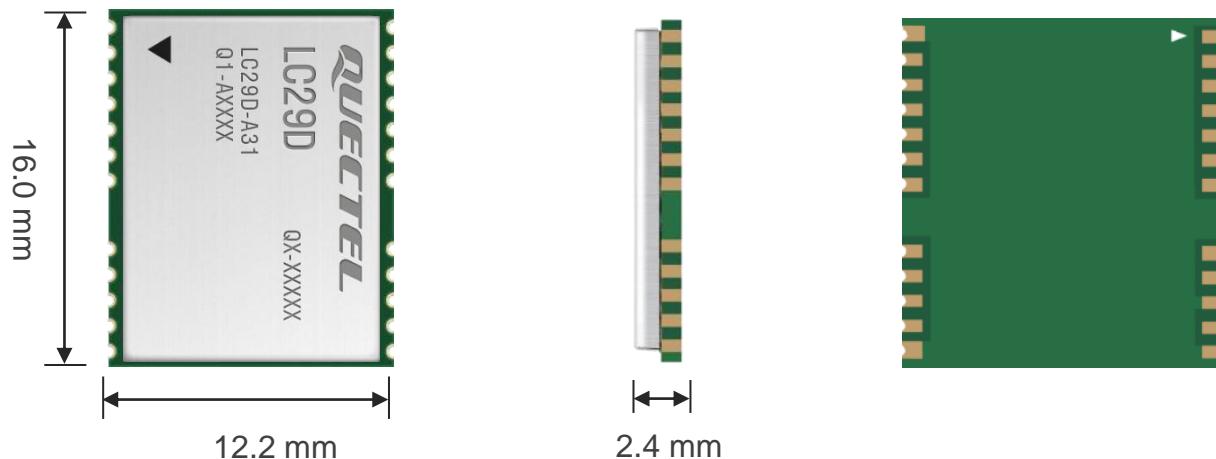


Dual-Band GNSS Module with DR/RTK Functions (BCM47755)

LC29D is a series dual-band, high precision GNSS modules integrating DR and RTK functions.

The module includes variants listed below:

- LC29D (B) features dual-band, RTK and DR functions, and supports sensor raw data output. Additionally it supports B2a band.
- LC29D (C) features dual-band and DR function, and supports sensor raw data output.
- LC29D (D) features dual-band and RTK functions, and supports sensor raw data output. Additionally it supports B2a band.



LC29D series are distinguished from each other with different OCs (ordering codes).

LC29D Key Features



Product	LC29D (B)*	LC29D (C)	LC29D (D)*	
Constellation	GPS/GLONASS/Galileo/BeiDou/IRNSS/QZSS	GPS/GLONASS/Galileo/BeiDou/IRNSS/QZSS	GPS/GLONASS/Galileo/BeiDou/IRNSS/QZSS	
Dimensions (mm)	12.2 × 16.0 × 2.4	12.2 × 16.0 × 2.4	12.2 × 16.0 × 2.4	
Channels	48 Channels	32 Channels	48 Channels	
Accuracy	Autonomous: < 1.0 m CEP ¹⁾ RTK: < 0.5 m ¹⁾	Autonomous: < 1.2 m CEP	Autonomous: < 1.0 m CEP ¹⁾ RTK: < 0.5 m ¹⁾	
TTFF (With AGNSS)	Cold Start Cold Start Warm Start Hot Start	< 5 s ¹⁾ < 34 s ¹⁾ < 30 s ¹⁾ < 2 s ¹⁾	< 5 s < 34 s < 30 s < 2 s	< 5 s ¹⁾ < 34 s ¹⁾ < 30 s ¹⁾ < 2 s ¹⁾
Sensitivity	Acquisition Reacquisition Tracking	-148 dBm ¹⁾ -157 dBm ¹⁾ -162 dBm ¹⁾	-148 dBm -157 dBm -163 dBm	-148 dBm ¹⁾ -157 dBm ¹⁾ -162 dBm ¹⁾
Interfaces	UART SPI	× 1 × 1	× 1 × 1	× 1 × 1
Update Rate		1 Hz (Default), Max. 10 Hz	1 Hz (Default), Max. 10 Hz	1 Hz (Default), Max. 10 Hz
Temperature Range	Operating Storage	-40 °C to +85 °C -40 °C to +90 °C	-40 °C to +85 °C -40 °C to +90 °C	-40 °C to +85 °C -40 °C to +90 °C
Power Supply		2.7–3.6 V, typ. 3.3 V	2.7–3.6 V, typ. 3.3 V	2.7–3.6 V, typ. 3.3 V
Power Consumption (@ 3.3 V)	Acquisition Tracking	50 mA ¹⁾ 37 mA ¹⁾	53 mA 39 mA	50 mA ¹⁾ 37 mA ¹⁾
Power Saving Mode Consumption		1.3 mA ¹⁾ @ Sleep Mode	1.2 mA @ Sleep Mode	1.3 mA ¹⁾ @ Sleep Mode
Key Features	DR	●	●	-
	RTK	●	-	●
	AGNSS	●	●	●
	SBAS	●	●	●
	PPS	●	●	●
	Anti-Jamming	-	-	-
	Jamming Detection	-	-	-
	Antenna Short Circuit Protection	-	-	-
	Antenna Open Circuit Detection	-	-	-
	Geo-fence	-	-	-
	Odometer	-	-	-
	GNSS Raw Data	-	-	-
	Sensor Raw Data	●	●	●

¹⁾ Preliminary data

* Under development/planning

- Unsupported

● Supported

LC29D Timeline



2021												2022			
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	

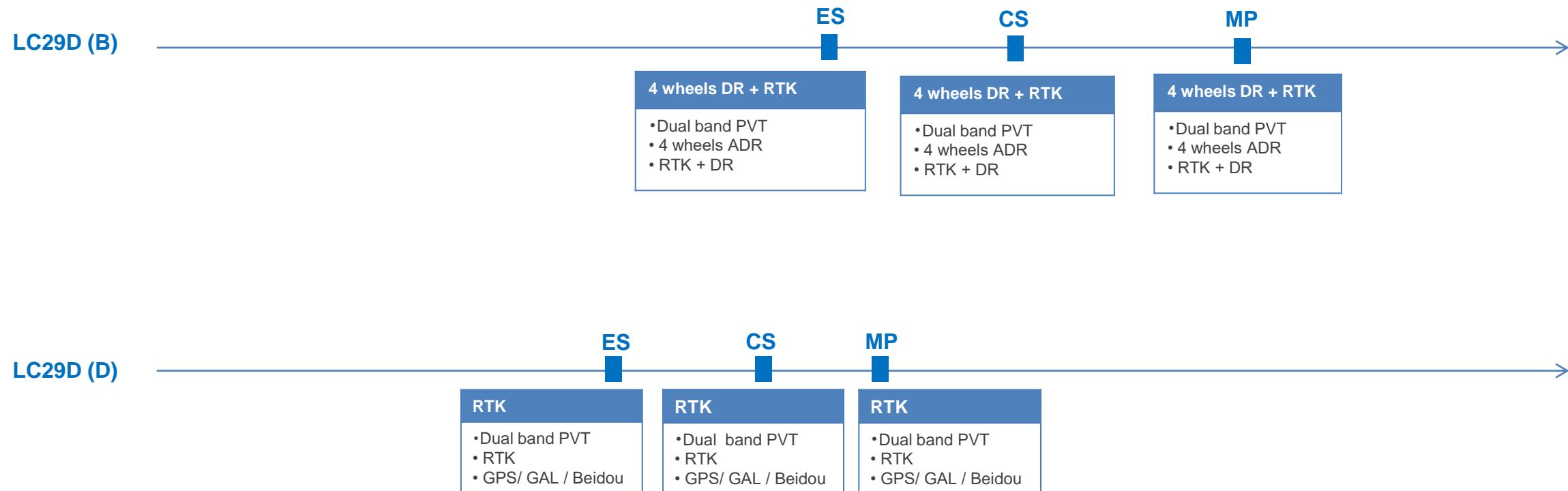


The timeline may be adjusted according to the actual development status.

LC29D Timeline



2021												2022					
Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.			



The timeline may be adjusted according to the actual development status.

LC29H GNSS Module Overview

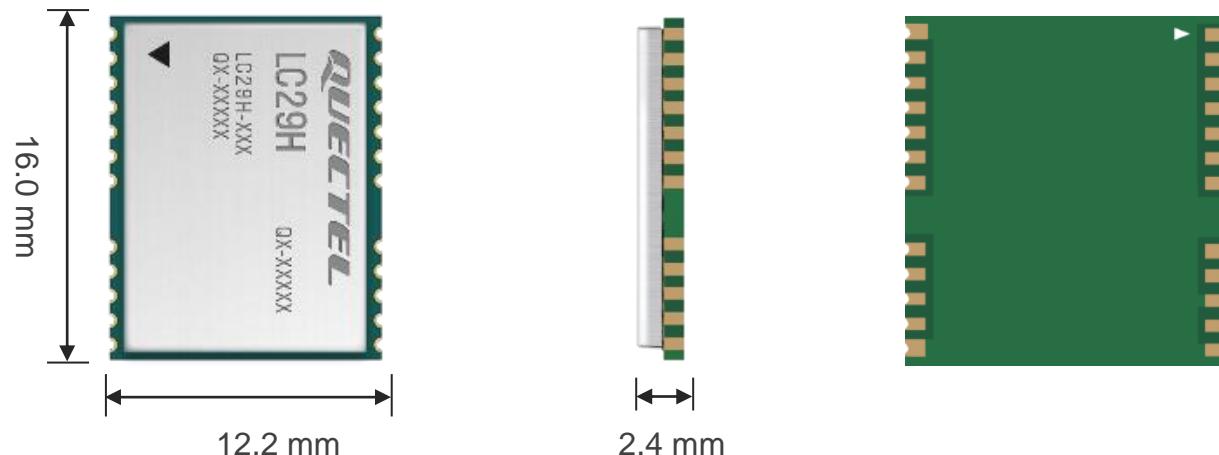


Dual-Band High Precision GNSS Module (AG3335)

LC29H is a series of dual-band, high precision GNSS modules.

The module includes the variant listed below:

- LC29H (A) works in standard dual-band mode.



LC29H Key Features



Product	LC29H (A)	
Constellation	GPS/GLONASS/Galileo/BeiDou/QZSS	
Dimensions (mm)	12.2 × 16.0 × 2.4	
Channels	135 Channels	
Accuracy	Autonomous: < 1.0 m CEP	
TTFF (With AGNSS)	Cold Start	< 15 s
TTFF (Without AGNSS)	Cold Start	< 28 s
	Warm Start	< 20 s
	Hot Start	< 1 s
Sensitivity	Acquisition	-147 dBm
	Reacquisition	-162 dBm
	Tracking	-165 dBm
Interfaces	UART	× 1
	I2C*	× 1
Update Rate	1 Hz (Default)	
Temperature Range	Operating	-40 °C to +85 °C
	Storage	-40 °C to +90 °C
Power Supply	3.1–3.6 V, typ. 3.3 V	
Power Consumption (@ 3.3 V)	Acquisition	TBD
	Tracking	TBD
Power Saving Mode Consumption	TBD	
Key Features	DR	-
	RTK	-
	AGNSS	●
	SBAS	●
	PPS	●
	Anti-Jamming	●
	Jamming Detection	●
	Antenna Short Circuit Protection	●
	Antenna Open Circuit Detection	●
	Geo-fence	-
	Odometer	-
	GNSS Raw Data	-
	Sensor Raw Data	-

* Under development/planning

- Unsupported

● Supported

TBD: To Be Determined

LC29H Timeline



2021

Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
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The timeline may be adjusted according to the actual development status.

LC76F Key Features



Product (Chipset)	LC76F (AA) (GK9501)	
Constellation	GPS/GLONASS/BeiDou/QZSS	
Dimensions (mm)	10.1 × 9.7 × 2.5	
Channels	26 Channels	
Accuracy	Autonomous: < 2 m CEP	
TTFF (With AGNSS)	Cold Start	< 6 s
TTFF (Without AGNSS)	Cold Start	< 30 s
	Warm Start	< 2 s
	Hot Start	< 2 s
Sensitivity	Acquisition	-148 dBm
	Reacquisition	-162 dBm
	Tracking	-165 dBm
Interfaces	UART	× 1
	I2C	× 1
Update Rate	1 Hz (Default), up to 10 Hz	
Temperature Range	Operating	-40 °C to +85 °C
	Storage	-40 °C to +90 °C
Power Supply	2.8–4.3 V, Typ. 3.3 V	
Power Consumption (@ 3.3 V)	Acquisition	29 mA (GPS + GLONASS)
	Tracking	29 mA (GPS + GLONASS)
Power Saving Mode Consumption	30 µA @ Backup Mode	
Key Features	DR	-
	RTK	-
	AGNSS	●
	SBAS	●
	PPS	●
	Anti-Jamming	-
	Jammer Detection	-
	Antenna Short Circuit Protection	-
	Antenna Open Circuit Detection	-
	Geo-fence	-
	Odometer	-
	GNSS Raw Data	-
	Sensor Raw Data	-

- Unsupported ● Supported

LC76F Timeline



2021

Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
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The timeline may be adjusted according to the actual development status.

L70 Series Key Features



Product (Chipset)	L70-R (MT3337)	L70-RL (MT3337)	L70 (MT3339)	
Constellation	GPS/QZSS	GPS/QZSS	GPS/QZSS	
Dimensions (mm)	10.1 × 9.7 × 2.5	10.1 × 9.7 × 2.5	10.1 × 9.7 × 2.5	
Channels	66 Acquisition 22 Tracking	66 Acquisition 22 Tracking	66 Acquisition 22 Tracking	
Accuracy	Autonomous: < 2.5 m CEP	Autonomous: < 2.5 m CEP	Autonomous: < 2.5 m CEP	
TTFF (With AGNSS)	Cold Start Cold Start Warm Start Hot Start	< 15 s (with EASY™) < 35 s < 30 s < 1 s	< 15 s (with EASY™) < 35 s < 30 s < 1 s	< 15 s (with EASY™) < 35 s < 30 s < 1 s
Sensitivity	Acquisition Reacquisition Tracking	-148 dBm -160 dBm -165 dBm	-149 dBm -161 dBm -167 dBm	-148 dBm -160 dBm -165 dBm
Interface	UART	× 1	× 1	× 1
Update Rate		1 Hz (Default), Max. 5 Hz	1 Hz (Default), Max. 5 Hz	1 Hz (Default), Max. 5 Hz
Temperature Range	Operating Storage	-40 °C to +85 °C -40 °C to +90 °C	-40 °C to +85 °C -40 °C to +90 °C	-40 °C to +85 °C -40 °C to +90 °C
Power Supply		2.8–4.3V, typ. 3.3 V	2.8–4.3V, typ. 3.3 V	2.8–4.3 V, typ. 3.3 V
Power Consumption (@ 3.3 V)	Acquisition Tracking	16 mA 13 mA	21 mA 18 mA	18 mA 12 mA
Power Saving Mode Consumption		8 µA @ Backup Mode	8 µA @ Backup Mode	7 µA @ Backup Mode
Key Features	DR	-	-	-
	RTK	-	-	-
	AGNSS	●	●	●
	SBAS	●	●	●
	PPS	●	●	●
	Anti-Jamming	●	●	●
	Jammer Detection	-	-	●
	Antenna Short Circuit Protection	-	-	-
	Antenna Open Circuit Detection	-	-	-
	Geo-fence	-	-	●
	Odometer	-	-	●
	GNSS Raw Data	-	-	-
	Sensor Raw Data	-	-	-

- Unsupported

● Supported

L76 Series Key Features



Product (Chipset)	L76 (MT3333)	L76-L (MT3333)	L76-LB (AG3331)	
Constellation	GPS/GLONASS/Galileo/QZSS	GPS/GLONASS/Galileo/QZSS	GPS/GLONASS/ GalileoBeiDou/QZSS	
Dimensions (mm)	10.1 x 9.7 x 2.5	10.1 x 9.7 x 2.5	10.1 x 9.7 x 2.5	
Channels	99 Acquisition 33 Tracking	99 Acquisition 33 Tracking	99 Acquisition 33 Tracking 210 PRN	
Accuracy	Autonomous: < 2.5 m CEP	Autonomous: < 2.5 m CEP	Autonomous: < 2.5 m CEP	
TTFF (With AGNSS)	Cold Start Cold Start Warm Start Hot Start	< 15 s (with EASY™) < 15 s < 5 s < 1 s	< 15 s (with EASY™) < 35 s < 30 s < 1 s	< 15 s (with EASY™) < 35 s < 30 s < 1 s
Sensitivity	Acquisition Reacquisition Tracking	-148 dBm -160 dBm -165 dBm	-149 dBm -161 dBm -167 dBm	-148 dBm -163 dBm -165 dBm
Interfaces	UART I2C	x 1 -	x 1 x 1	x 1 x 1
Update Rate		1 Hz (Default), Max. 10 Hz	1Hz (Default), Max. 10Hz	1 Hz (Default), Max. 10 Hz
Temperature Range	Operating Storage	-40 °C to +85 °C -40 °C to +90 °C	-40 °C to +85 °C -40 °C to +90 °C	-40 °C to +85 °C -40 °C to +90 °C
Power Supply		2.8–4.3 V, typ. 3.3 V	2.8–4.3 V, typ. 3.3 V	2.8–4.3 V, typ. 3.3 V
Power Consumption (@ 3.3 V)	Acquisition Tracking	25 mA (GPS + GLONASS) 18 mA (GPS + GLONASS)	29 mA (GPS + GLONASS) 22 mA (GPS + GLONASS)	31.6 mA (GPS + BDS) 30.3 mA (GPS + BDS)
Power Saving Mode Consumption		7 µA @ Backup Mode	7 µA @ Backup Mode	7 µA @ Backup Mode
Key Features	DR	-	-	-
	RTK	-	-	-
	AGNSS	●	●	●
	SBAS	●	●	●
	PPS	●	●	●
	Anti-Jamming	●	●	●
	Jamming Detection	-	●	●
	Antenna Short Circuit Protection	-	-	●
	Antenna Open Circuit Detection	-	-	●
	Geo-fence	●	●	●
	Odometer	●	●	●
	GNSS Raw Data	-	-	-
	Sensor Raw Data	-	-	-

- Unsupported

● Supported

LG77L Key Features



Product (Chipset)	LG77L (A) (AG3331)	LG77L (B) (AG3331)	LG77L (C) (MT3331)	
Constellation	GPS/GLONASS/BeiDou/QZSS	GPS/GLONASS/BeiDou/QZSS	GPS/GLONASS/ Galileo/BeiDou/QZSS	
Dimensions (mm)	7.0 × 7.0 × 2.0	7.0 × 7.0 × 2.0	7.0 × 7.0 × 2.0	
Channels	99 Acquisition 33 Tracking	99 Acquisition 33 Tracking	99 Acquisition 33 Tracking	
Accuracy	Autonomous: < 2.5 m CEP	Autonomous: < 2.5 m CEP	Autonomous: < 2.5 m CEP	
TTFF (With AGNSS)	Cold Start Cold Start Warm Start Hot Start	< 14 s (with EASY™) < 26 s < 24 s < 2 s	< 14 s (with EASY™) < 26 s < 24 s < 2 s	< 17 s (with EASY™) < 25 s < 23 s < 2 s
Sensitivity	Acquisition Reacquisition Tracking	-147 dBm -156 dBm -158 dBm	-147 dBm -156 dBm -158 dBm	-146 dBm -156 dBm -163 dBm
Interfaces	UART I2C	× 1 × 1	× 1 × 1	× 1 × 1
Update Rate	1 Hz (Default), Max. 10 Hz	1Hz (Default), Max. 10Hz	1 Hz (Default), Max. 10 Hz	
Temperature Range	Operating Storage	-40 °C to +85 °C -40 °C to +90 °C	-40 °C to +85 °C -40 °C to +90 °C	-40 °C to +85 °C -40 °C to +90 °C
Power Supply	2.8–4.3 V, typ. 3.3 V	2.8–4.3 V, typ. 3.3 V	2.8–4.3 V, typ. 3.3 V	
Power Consumption (@ 3.3 V)	Acquisition Tracking	25 mA (GPS + GLONASS) 24 mA (GPS + GLONASS)	26 mA (GPS + GLONASS) 25 mA (GPS + GLONASS)	24 mA (GPS + GLONASS) 23 mA (GPS + GLONASS)
Power Saving Mode Consumption	6 µA @ Backup Mode	6 µA @ Backup Mode	6 µA @ Backup Mode	
Key Features	DR	-	-	
	RTK	-	-	
	AGNSS	●	●	
	SBAS	●	●	
	PPS	●	●	
	Anti-Jamming	●	●	
	Jamming Detection	●	●	
	Antenna Short Circuit Protection	●	●	
	Antenna Open Circuit Detection	●	●	
	Geo-fence	●	●	
	Odometer	●	●	
	GNSS Raw Data	-	-	
	Sensor Raw Data	-	-	

- Unsupported

● Supported

L26 Series Key Features



Product (Chipset)		L26 (MT3333)	L26-LB (AG3331)	L26-T (TESEO III)	L26-P (TESEO III)
Constellation		GPS/GLONASS/Galileo/QZSS	GPS/GLONASS/Galileo/BeiDou/QZSS	GPS/GLONASS/ BeiDou/Galileo/QZSS	GPS/GLONASS/BeiDou/Galileo/QZSS
Dimensions (mm)		12.2 × 16.0 × 2.4	12.2 × 16.0 × 2.3	12.2 × 16.0 × 2.3	12.2 × 16.0 × 2.3
Channels		99 Acquisition 33 Tracking 210 PRN	99 Acquisition 33 Tracking 210 PRN	2 Fast Acquisition 48 Tracking	2 Fast Acquisition 48 Tracking
Accuracy		Autonomous: < 2.5 m CEP	Autonomous: < 2.5 m CEP	Autonomous: < 1.5 m CEP	Autonomous: < 1.5 m CEP
TTFF (With AGNSS)	Cold Start	< 15 s (with EASY™)	< 15 s (with EASY™)	< 13 s	< 13 s
TTFF (Without AGNSS)	Cold Start	< 35 s	< 35 s	< 32 s	< 32 s
	Warm Start	< 30 s	< 30 s	< 25 s	< 25 s
	Hot Start	< 1 s	< 1 s	< 2 s	< 2 s
Sensitivity	Acquisition	-148 dBm	-148 dBm	-147 dBm	-147 dBm
	Reacquisition	-160 dBm	-160 dBm	-154 dBm	-154 dBm
	Tracking	-167 dBm	-165 dBm	-162 dBm	-162 dBm
Interfaces	UART	× 1	× 1	× 1	× 1
	I2C	-	× 1	-	-
Update Rate		1 Hz (Default), Max. 10 Hz	1 Hz (Default), Max. 10 Hz	1 Hz (Default)	1 Hz (Default)
Temperature Range	Operating	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
	Storage	-45 °C to +125 °C	-40 °C to +90 °C	-40 °C to +90 °C	-40 °C to +90 °C
Power Supply		2.8–4.3 V, typ. 3.3 V	2.8–4.3 V, typ. 3.3 V	3.0–3.6 V, typ. 3.3 V	3.0–3.6 V, typ. 3.3 V
Power Consumption (@ 3.3 V)	Acquisition	29 mA (GPS + GLONASS) 26 mA (GPS)	30.3 mA (GPS + GLONASS)	71 mA	73 mA
	Tracking	21 mA (GPS + GLONASS) 18 mA (GPS)	28.0 mA (GPS + GLONASS)	67 mA	62 mA
Power Saving Mode Consumption		7 µA @ Backup Mode	7 µA @ Backup Mode	9 µA @ Backup Mode	17 µA @ Backup Mode
Key Features	DR	-	-	-	-
	RTK	-	-	-	-
	AGNSS	●	●	●	●
	SBAS	●	●	●	●
	PPS	●	●	●	●
	Anti-Jamming	●	●	-	-
	Jammer Detection	●	●	-	-
	Antenna Short Circuit Protection	●	●	●	●
	Antenna Open Circuit Detection	●	●	●	●
	Geo-fence	●	●	●	●
	Odometer	●	●	●	●
	GNSS Raw Data	-	-	●	●
	Sensor Raw Data	-	-	-	●

- Unsupported

● Supported

Version: 4.4 | Status: Released

L26-x Series Key Features



Product (Chipset)		L26-ADR (TESEO III)	L26-UDR (TESEO III)	L26-ADRC (TESEO III)
Constellation		GPS/GLONASSBeiDou/Galileo/QZSS	GPS/GLONASSBeiDou/Galileo/QZSS	GPS/GLONASSBeiDou/Galileo/QZSS
Dimensions (mm)		12.2 × 16.0 × 2.3	12.2 × 16.0 × 2.3	12.2 × 16.0 × 2.3
Channels		2 Fast Acquisition 48 Tracking	2 Fast Acquisition 48 Tracking	2 Fast Acquisition 48 Tracking
Accuracy		Autonomous: < 1.5 m CEP	Autonomous: < 1.5 m CEP	Autonomous: < 1.5 m CEP
TTFF (With AGNSS)	Cold Start	< 13 s	< 13 s	< 13 s
TTFF (Without AGNSS)	Cold Start	< 32 s	< 32 s	< 32 s
	Warm Start	< 25 s	< 25 s	< 25 s
	Hot Start	< 2 s	< 2 s	< 2 s
Sensitivity	Acquisition	-145 dBm	-145 dBm	-145 dBm
	Reacquisition	-152 dBm	-152 dBm	-152 dBm
	Tracking	-162 dBm	-162 dBm	-162 dBm
Interfaces	UART	× 1	× 1	× 1
	I2C	× 1	× 1	× 1
Update Rate		1 Hz (Default)	1 Hz (Default)	1 Hz (Default)
Temperature Range	Operating	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
	Storage	-40 °C to +90 °C	-40 °C to +90 °C	-40 °C to +90 °C
Power Supply		3.0–3.6 V, typ. 3.3 V	3.0–3.6 V, typ. 3.3 V	3.0–3.6 V, typ. 3.3 V
Power Consumption (@ 3.3 V)	Acquisition	79 mA	84 mA	79 mA
	Tracking	74 mA	81mA	74 mA
Power Saving Mode Consumption		17 µA @ Standby Mode	13 µA @ Standby Mode	13 µA @ Standby Mode
Key Features	DR	●	●	●
	RTK	-	-	-
	AGNSS	●	●	●
	SBAS	●	●	●
	PPS	●	●	●
	Anti-Jamming	-	-	-
	Jamming Detection	-	-	-
	Antenna Short Circuit Protection	●	●	●
	Antenna Open Circuit Detection	●	●	●
	Geo-fence	●	●	●
	Odometer	●	●	●
	GNSS Raw Data	-	-	-
	Sensor Raw Data	●	●	●

- Unsupported

● Supported

LC86L Key Features



Product (Chipset)	LC86L (A) (AG3331)		LC86L (C) (MT3333)
Constellation	GPS/GLONASS/BeiDou/QZSS		GPS/GLONASS/BeiDou/QZSS
Dimensions (mm)	16.0 × 16.0 × 6.95		16.0 × 16.0 × 6.95
Channels	99 Acquisition 33 Tracking		99 Acquisition 33 Tracking
Accuracy	Autonomous: < 2.5 m CEP		Autonomous: < 2.5 m CEP
TTFF (With AGNSS)	Cold Start Cold Start Warm Start Hot Start	< 15 s (with EASY™) < 35 s < 30 s < 2 s	< 15 s (with EASY™) < 35 s < 30 s < 2 s
TTFF (Without AGNSS)	Acquisition Reacquisition Tracking	-148 dBm -161 dBm -166 dBm	-148 dBm -162 dBm -166 dBm
Sensitivity	UART I2C	× 1 -	× 1 -
Interfaces	Update Rate	1 Hz (Default), Max. 10 Hz	1Hz (Default), Max. 10Hz
Temperature Range	Operating Storage	-40 °C to +85 °C -40 °C to +90 °C	-40 °C to +85 °C -40 °C to +90 °C
Power Supply	typ. 2.8 V	2.8–4.3 V, typ. 3.3 V	
Power Consumption (@ 3.3 V)	Acquisition Tracking	32 mA (GPS + GLONASS) 31 mA (GPS + GLONASS)	32 mA (GPS + GLONASS) 30 mA (GPS + GLONASS)
Power Saving Mode Consumption	6 µA @ Backup Mode	7 µA @ Backup Mode	
Key Features	DR	-	-
	RTK	-	-
	AGNSS	●	●
	SBAS	●	●
	PPS	●	●
	Anti-Jamming	●	●
	Jamming Detection	●	●
	Antenna Short Circuit Protection	●	●
	Antenna Open Circuit Detection	●	●
	Geo-fence	●	●
	Odometer	●	●
	GNSS Raw Data	-	-
	Sensor Raw Data	-	-

- Unsupported

● Supported

L8x Series/L96 Key Features



Product (Chipset)		L80-R (MT3337)	L80 (MT3339)	L86 (MT3333)	L89 R2.0 (AG3335)	L96 (MT3333)
Constellation		GPS/QZSS	GPS/QZSS	GPS/GLONASS/Galileo/QZSS	GPS/Galileo/IRNSS/ QZSS	GPS/GLONASS/Galileo/QZSS
Dimensions (mm)		16.0 × 16.0 × 6.45	16.0 × 16.0 × 6.45	18.4 × 18.4 × 6.45	26.4 × 18.4 × 6.8	14.0 × 9.6 × 2.0
Channels		66 Acquisition 22 Tracking	66 Acquisition 22 Tracking	99 Acquisition 33 Tracking	135 Channels	99 Acquisition 33 Tracking 210 PRN
Accuracy		Autonomous: < 2.5 m CEP	Autonomous: < 2.5 m CEP	Autonomous: < 2.5 m CEP	Autonomous: < 1.8 m CEP	Autonomous: <2.5m CEP
TTFF (With AGNSS)	Cold Start	< 15 s (with EASY™)	< 15 s (with EASY™)	< 15 s (with EASY™)	< 15 s (with AGPS)	< 15 s (with EASY™)
	Cold Start	< 35 s	< 35 s	< 35 s	< 30 s	<35s
TTFF (Without AGNSS)	Warm Start	< 30 s	< 30 s	< 30 s	< 25 s	<30s
	Hot Start	< 1 s	< 1 s	< 1 s	< 1 s	<1s
Sensitivity	Acquisition	-148 dBm	-148 dBm	-149 dBm	-144 dBm	-148dBm
	Reacquisition	-160 dBm	-160 dBm	-161 dBm	-152 dBm	-160dBm
	Tracking	-165 dBm	-165 dBm	-167 dBm	-161 dBm	-165dBm
Interfaces	UART	× 1	× 1	× 1	× 1	× 1
	I2C	-	-	-	× 1	× 1
Update Rate		1 Hz (Default), Max. 5Hz	1 Hz (Default), Max. 10 Hz	1 Hz (Default), Max. 10 Hz	1 Hz (Default)	1 Hz (Default), Max. 10Hz
Temperature Range	Operating	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
	Storage	-40 °C to +90 °C	-40 °C to +90 °C	-40 °C to +90 °C	-40 °C to +90 °C	-40 °C to +90 °C
Power Supply		3.0–4.3 V, typ. 3.3 V	3.0–4.3 V, typ. 3.3 V	3.0–4.3 V, typ. 3.3 V	3.1–4.3 V, typ. 3.3 V	3.0–4.3 V, typ. 3.3 V
Power Consumption (@ 3.3 V)	Acquisition	25 mA	25 mA	30 mA	25 mA	25 mA
	Tracking	20 mA	20 mA	26 mA	25 mA	20 mA
Power Saving Mode Consumption		7 µA @ Backup Mode	7 µA @ Backup Mode	7 µA @ Backup Mode	82 µA @ Backup Mode	7µA @ Backup Mode
Key Features	DR	-	-	-	-	-
	RTK	-	-	-	-	-
	AGNSS	●	●	●	●	●
	SBAS	●	●	●	●	●
	PPS	●	●	●	●	●
	Anti-Jamming	●	●	●	●	●
	Jammer Detection	-	●	●	●	●
	Antenna Short Circuit Protection	-	●	●	●	-
	Antenna Open Circuit Detection	-	●	●	●	-
	Geo-fence	-	●	●	-	●
	Odometer	-	●	●	-	●
	GNSS Raw Data	-	-	-	-	-
	Sensor Raw Data	-	-	-	-	-

- Unsupported

● Supported

LC98S Key Features



Product (Chipset)	LC98S (TESEO III)	
Constellation	GPS/GLONASS/BeiDou/QZSS	
Dimensions (mm)	22.4 × 17.0 × 2.6	
Channels	48 Acquisition 2 Tracking	
Accuracy	Autonomous: < 1.5 m CEP 1PPS < 6.8 ns @ 1 σ	
Timing Accuracy (@Room temperature, all satellites at -130 dBm)		
TTFF (With AGNSS)	Warm Start	< 2 s (with EASY™)
TTFF (Without AGNSS)	Cold Start	< 29 s
	Warm Start	< 28 s
	Hot Start	< 2 s
Sensitivity(@Demonstrated with a good external LNA.)	Acquisition	-146 dBm
	Reacquisition	-155 dBm
	Tracking	-161 dBm
Interfaces	UART	× 1
	I2C	-
Update Rate	1 Hz (Default), Max. 10 Hz	
Temperature Range	Operating	-40 °C to +85 °C
	Storage	-40 °C to +90 °C
Power Supply	typ. 3.3 V	
Power Consumption (@ 3.3 V)	Acquisition	75 mA (GPS + BeiDou)
	Tracking	75 mA (GPS + BeiDou)
Key Features	DR	-
	RTK	-
	AGNSS	●
	SBAS	●
	PPS	●
	Anti-Jamming	-
	Jammer Detection	-
	Antenna Short Circuit Protection	-
	Antenna Open Circuit Detection	-
	Geo-fence	-
	Odometer	-
	GNSS Raw Data	-
	Sensor Raw Data	-

- Unsupported

● Supported

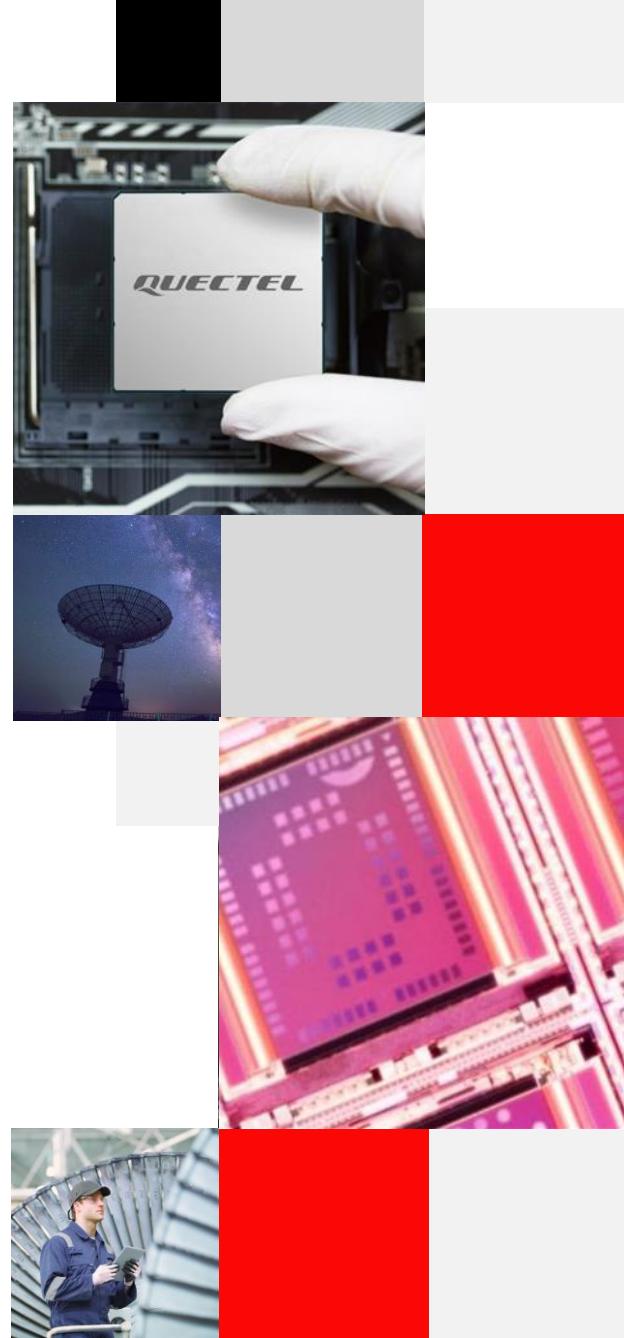


LTE Standard Modules
LTE-A & 5G Modules
Automotive Modules
Smart Modules
LPWA Modules
UMTS/HSPA(+) Modules
GSM/GPRS Modules
GNSS Modules

Wi-Fi&Bluetooth Modules

Antenna Products

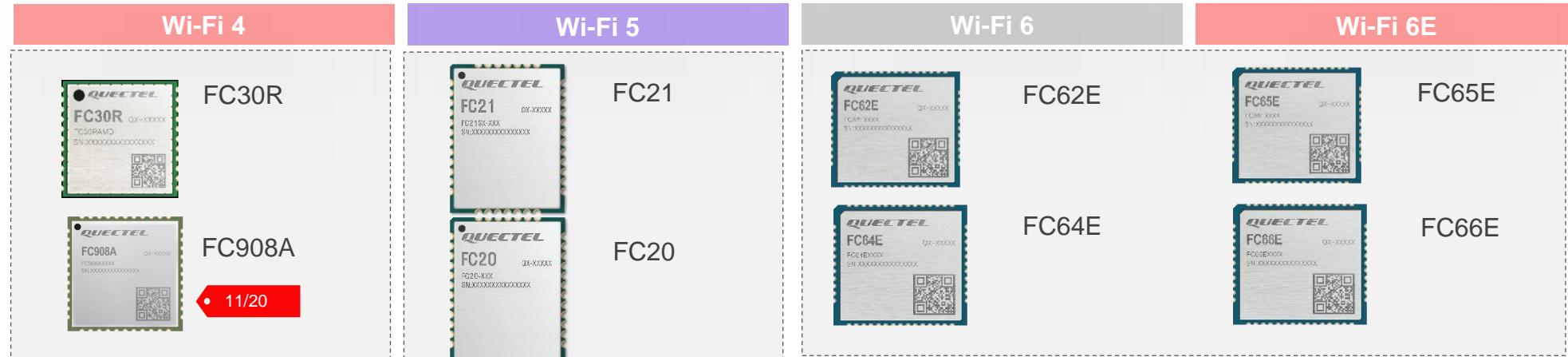
Build a Smarter World



Non-Automotive Wi-Fi&Bluetooth Modules Roadmap



Hosted Wi-Fi



Stand-alone



• MM/DD Estimated Engineering Sample Time

Version: 4.4 | Status: Released

Automotive Wi-Fi&Bluetooth Modules Roadmap



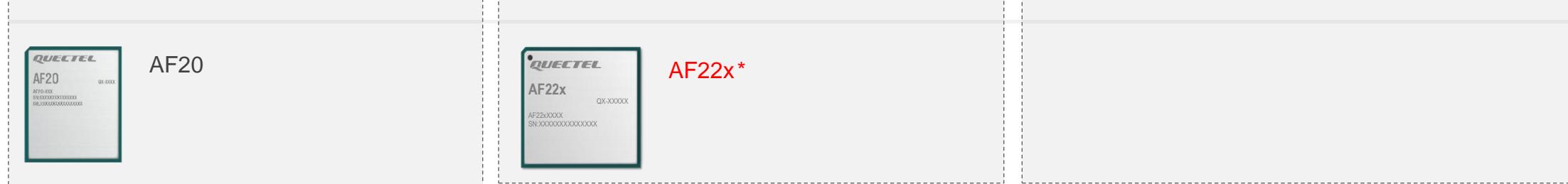
High



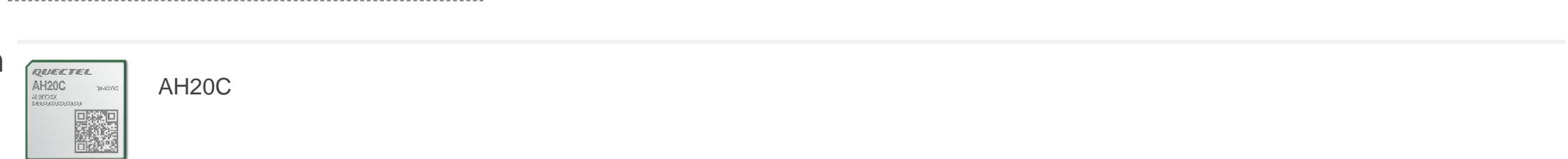
Medium



Entry



Bluetooth

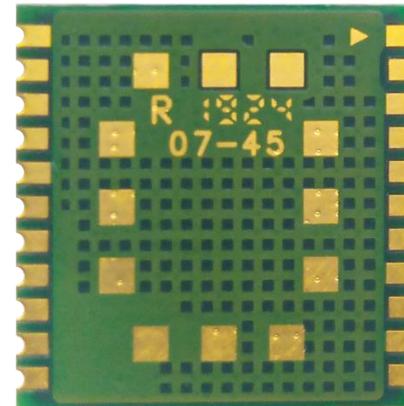


* means under planning.

FC30R Highlights (Wi-Fi 4)



Industrial Grade Wi-Fi Module (RTL8189EM)



Length: 12.0 mm (± 0.15 mm)
Width: 12.0 mm (± 0.15 mm)
Height: 2.1 mm (± 0.20 mm)
Weight: Approx. 0.57 g

- Work with Quectel LTE Standard modules
- Support 802.11 b/g/n, 2.4 GHz band and 1 × 1 antenna
- Cost-effective Wi-Fi only solution
- Operate in soft-AP or station mode
- Operating temperature range: -30 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained solutions

FC30R Specifications (Wi-Fi 4)



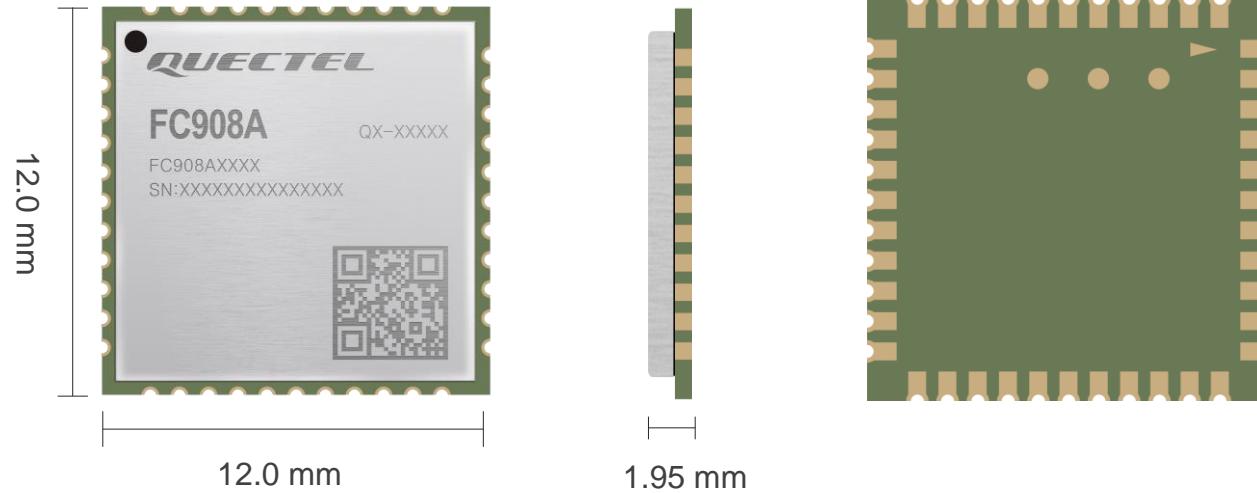
Module	FC30R
WLAN Protocol	802.11 b/g/n
Wi-Fi Bands (GHz)	2.4
Wi-Fi Modulation	DBPSK, DQPSK, BPSK, QPSK, CCK, 16QAM, 64QAM
Dimension (mm)	12.0 × 12.0 × 2.1
Working Mode	AP/ STA
Power Supply Voltage Range (V)	3.0–3.6, Typ. 3.3
Interfaces	SDIO 3.0 × 1, Wi-Fi × 1
I/O Power Supply Voltage Range (V)	<ul style="list-style-type: none">● 1.75–1.89, Typ. 1.8● 3.0–3.6, Typ. 3.3
Security	TKIP/ AES/ WPA-PSK/ WPA2-PSK
Operating Temperature Range (°C)	-30 to +85
Region	Global
Certification	Regulatory: SRRC/ CE*/ FCC*/ IC*/ Anatel*/ JATE*/ TELEC*/ RCM*

“*” means under planning.

FC908A Highlights (Wi-Fi 4)



Industrial Grade Wi-Fi&Bluetooth Module (CYW43438)



Length: 12.0 mm (± 0.15 mm)
Width: 12.0 mm (± 0.15 mm)
Height: 1.95 mm (± 0.20 mm)
Weight: TBD

- Support 802.11 b/g/n, 2.4 GHz band and 1 × 1 antenna
- Operate in soft-AP or station mode, support Bluetooth 5.1
- Operating temperature range: -30 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained solutions

FC908A Specifications (Wi-Fi 4)



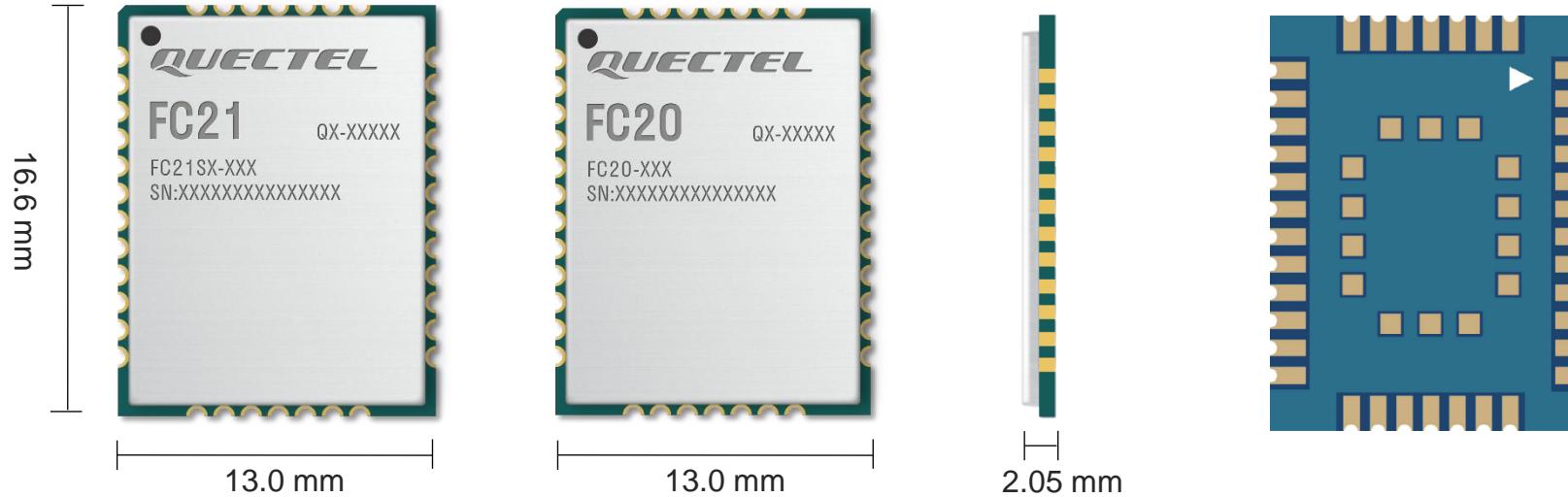
Module	FC908A
WLAN Protocol	802.11 b/g/n
Wi-Fi Bands (GHz)	2.4
Wi-Fi Modulation	DSSS, OFDM, DBPSK, DQPSK, CCK, BPSK, QPSK, 16QAM, 64QAM
Bluetooth Protocol	Bluetooth 5.1
Dimension (mm)	12.0 × 12.0 × 1.95
Working Mode	AP/ STA
Power Supply Voltage Range (V)	3.0–4.8, Typ. 3.6
Interfaces	SDIO 2.0 × 1, Wi-Fi × 1
I/O Power Supply Voltage Range (V)	1.71–3.63, Typ. 1.8/3.3
Security	WPA3
Operating Temperature Range (°C)	-30 to +85
Region	Global
Certification	Regulatory: CE*/ FCC*/ SRRC*

“*” means under planning.

FC20/FC21 Highlights (Wi-Fi 5)



Industrial Grade Wi-Fi&Bluetooth Module (QCA1023/QCA9377)



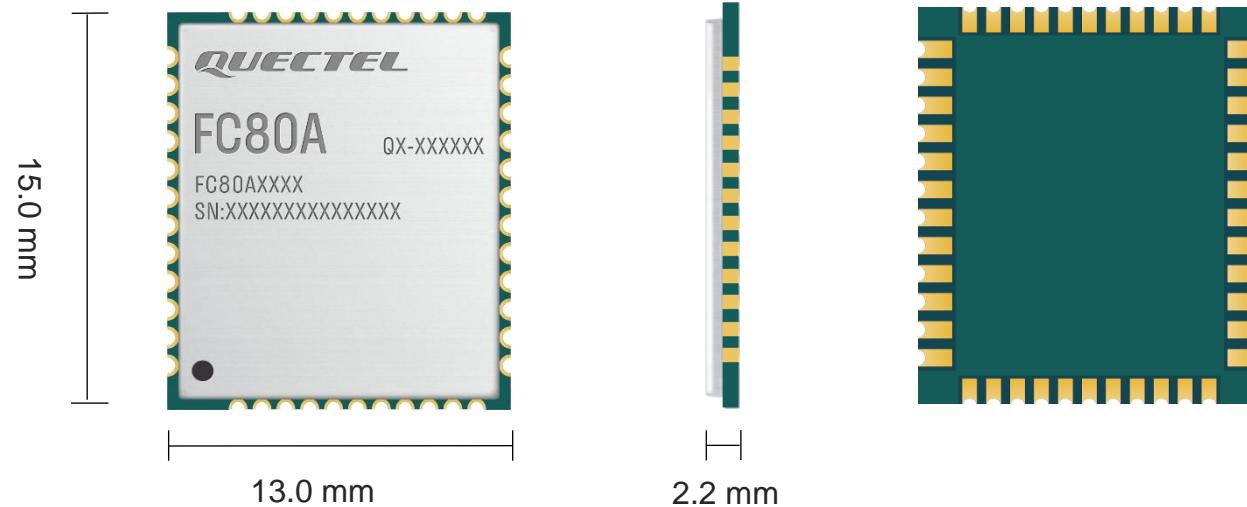
Length: 16.6 mm (± 0.15 mm)
Width: 13.0 mm (± 0.15 mm)
Height: 2.05 mm (± 0.20 mm)
Weight: Approx. 0.81 g (FC20)
Approx. 0.73 g (FC21)

- Based on Qualcomm QCA1023/QCA9377 chipset solution for industrial Wi-Fi and Bluetooth applications
- 1 × 1 device supporting 802.11 a/b/g/n/ac and 2.4/5 GHz dual-band
- 5 GHz power amplifier available to improve Wi-Fi 5 GHz performance for FC20 series, not available for FC21
- Operate in soft-AP or station mode, support Bluetooth 5.0
- Operating temperature range: -40 °C to +85 °C
- Excellent co-existence with Quectel LTE Standard modules
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained solutions

FC80A Highlights (Wi-Fi 5)



Industrial Grade Wi-Fi&Bluetooth Module (CYW54591)



Length: 15.0 mm (± 0.15 mm)
Width: 13.0 mm (± 0.15 mm)
Height: 2.2 mm (± 0.20 mm)
Weight: 0.88 g

- Support 802.11 a/b/g/n/ac and 2.4 GHz/5 GHz dual-band
- Support 2 × 2 MIMO or 1 × 1 + 1 × 1 in RSDB (Real Simultaneous Dual Band) mode
- Operate in soft-AP and station mode, support Bluetooth 5.0
- Operating temperature range: -30 °C to +75 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained solutions

FC80A Specifications (Wi-Fi 5)



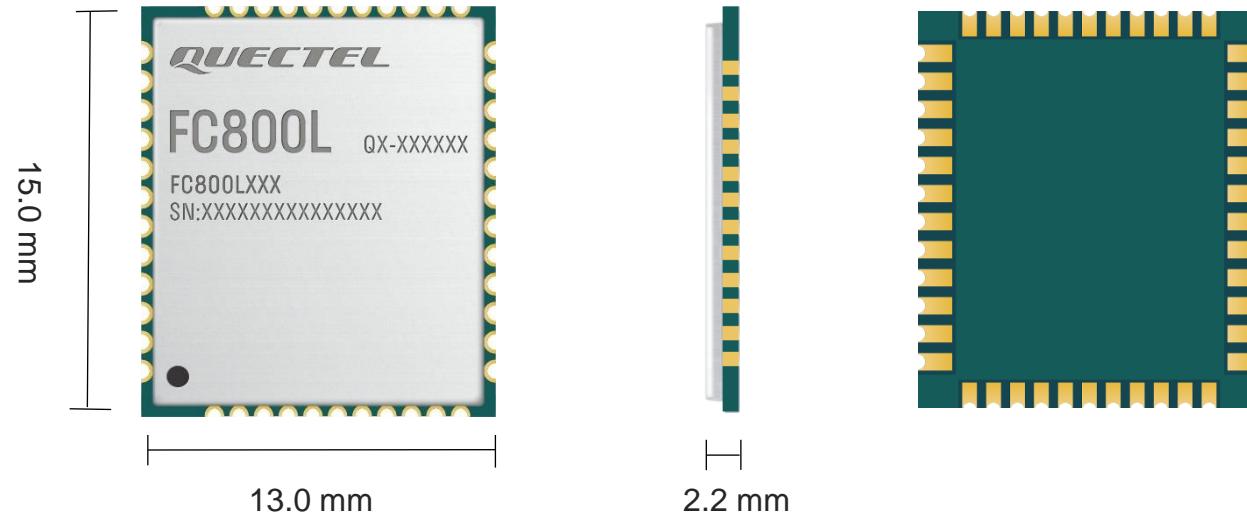
Module	FC80A
WLAN Protocol	802.11 a/b/g/n/ac
Wi-Fi Bands (GHz)	2.4/ 5
Wi-Fi Modulation	BPSK, QPSK, CCK, 16QAM, 64QAM, 256QAM
Bluetooth Protocol	Bluetooth 5.0
Dimension (mm)	15.0 × 13.0 × 2.2
Working Mode	AP/ STA
Interfaces	SDIO 3.0 × 1, UART × 1, PCM × 1, Wi-Fi Antenna × 2, Bluetooth Antenna × 1 (Optional)
Power Supply Voltage Range (V)	VBAT: 3.2–4.5, Typ. 3.3
I/O Power Supply Voltage Range (V)	VDDIO: 1.7–3.6, Typ. 1.8/3.3
Security	WPA3
Max. Physical Data Rate (Mbps)	866.6 Mbps + 300 Mbps, 2 × 2 MIMO, or 1 × 1+ 1 × 1 in RSDB (Real Simultaneous Dual Band) mode
Operating Temperature Range (°C)	-30 to +75
Region	Global
Certification	Regulatory: CE*/ FCC*

“*” means under planning.

FC800L Highlights (Wi-Fi 5)



Industrial Grade Wi-Fi&Bluetooth Module (Amlogic W155S1)



Length: 15.0 mm (± 0.15 mm)
Width: 13.0 mm (± 0.15 mm)
Height: 2.2 mm (± 0.20 mm)
Weight: TBD

- Support 802.11 a/b/g/n/ac and 2.4 GHz/ 5 GHz dual-band
- Operate in soft-AP and station mode, support Bluetooth 5.0
- Operating temperature range: -30 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained solutions

FC800L Specifications (Wi-Fi 5)



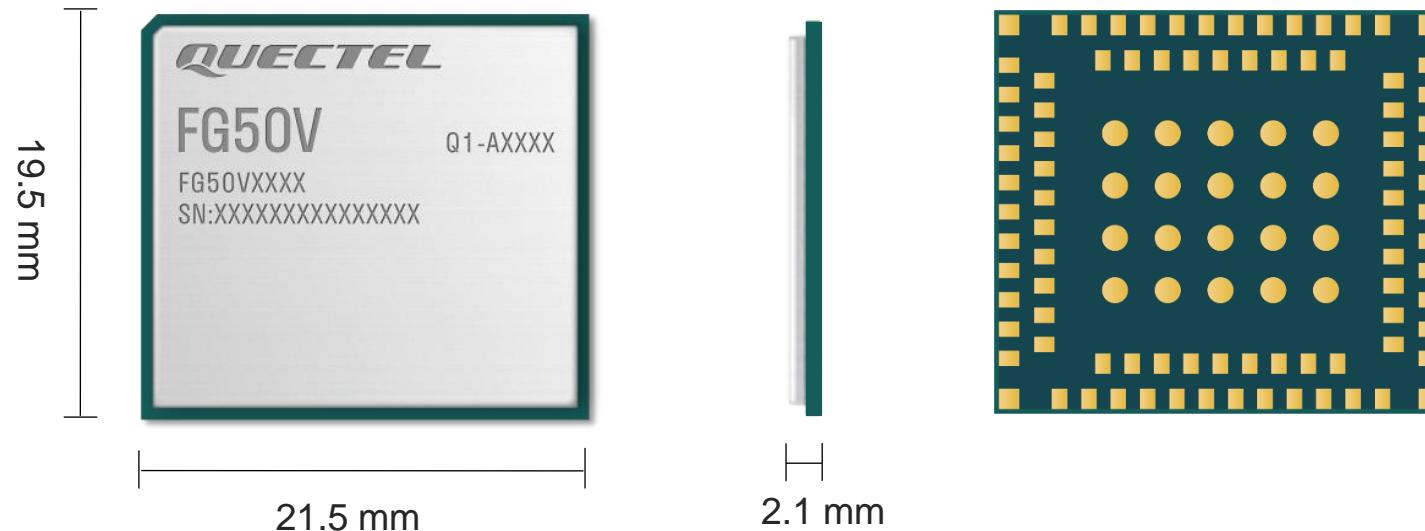
Module	FC800L
WLAN Protocol	802.11 a/b/g/n/ac
Wi-Fi Bands (GHz)	2.4/ 5
Wi-Fi Modulation	DSSS, CCK, BPSK, QPSK, DBPSK, DQPSK, 16QAM, 64QAM, 256QAM
Bluetooth Protocol	Bluetooth 5.0
Dimension (mm)	15.0 × 13.0 × 2.2
Working Mode	AP/ STA
Interfaces	SDIO 3.0 × 1, UART × 1, PCM × 1, Wi-Fi × 1, Bluetooth Antenna × 1
Power Supply Voltage Range (V)	VBAT: 2.97–3.63, Typ. 3.3
I/O Power Supply Voltage Range (V)	VDDIO: 1.62–1.98, Typ. 1.8
Security	WPA3
Max. Physical Data Rate (Mbps)	433.3
Operating Temperature Range (°C)	-30 to +85
Region	Global
Certification	Regulatory: CE*/ FCC*/ SRRC*

“*” means under planning.

FG50V Highlights (Wi-Fi 6)



Industrial Grade Wi-Fi&Bluetooth Module (QCA6391)



Length: 19.5 mm (± 0.20 mm)
Width: 21.5 mm (± 0.20 mm)
Height: 2.1 mm (± 0.20 mm)
Weight: 2.3 g

- Must work with Quectel 5G RG50xQ series modules and enjoy good co-existence mechanism
- 2 × 2 + 2 × 2 device supporting 802.11 a/b/g/n/ac/ax and 2.4/ 5 GHz dual-band, with max. data rate up to 1774.5 Mbps
- Operate in soft-AP and station mode, support Bluetooth 5.2
- Operating temperature range: -30 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained solutions

FG50V Specifications (Wi-Fi 6)



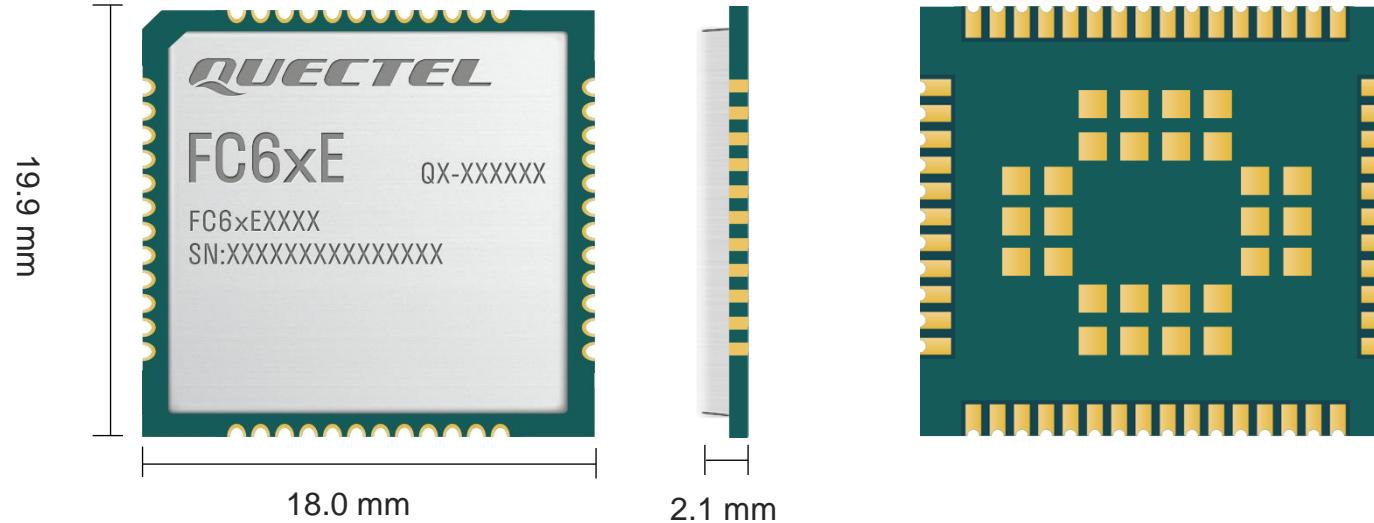
Module	FG50V
WLAN Protocol	802.11 a/b/g/n/ac/ax
Wi-Fi Bands (GHz)	2.4/ 5
Wi-Fi Modulation	BPSK, QPSK, CCK, 16QAM, 64QAM, 256QAM, 1024QAM
Bluetooth Protocol	Bluetooth 5.2
Dimension (mm)	19.5 × 21.5 × 2.1
Working Mode	AP/ STA
VBAT	VDD_RF, VDD_CORE_VL, VDD_CORE_VM, VDD_CORE_VH, VDD_IO
Interfaces	PCIe, WLAN_EN, UART, PCM, BT_EN, GPIOs
Security	WPA3
Max. Physical Data Rate (Mbps)	1774.5, 2 × 2 + 2 × 2 MIMO, DBS (Dual Band Simultaneous)
Operating Temperature Range (°C)	-30 to +85
Region	Global
Certification	Regulatory: CE/ FCC/ KC*

“*” means under ongoing.

FC62E/FC64E Highlights (Wi-Fi 6)



Industrial Grade Wi-Fi&Bluetooth Module (QCA2062/QCA2064)



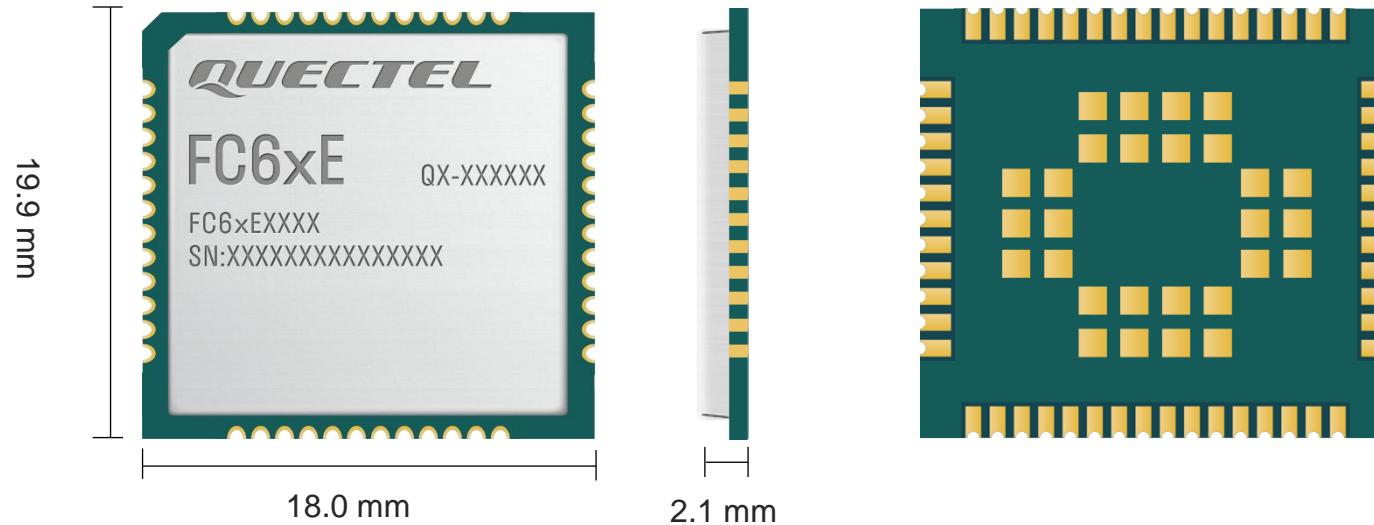
Length: 19.9 mm (± 0.15 mm)
Width: 18.0 mm (± 0.15 mm)
Height: 2.1 mm (± 0.20 mm)
Weigh: 1.6 g

- Support 802.11 a/b/g/n/ac/ax and 2.4/ 5 GHz dual-band, with max. data rate up to 1774.5 Mbps
- Support DBS (Dual Band Simultaneous): FC64E supports DBS, FC62E does not support DBS
- FC64E supports $2 \times 2 + 2 \times 2$ MIMO, FC62E supports 2×2 MIMO
- Operate in soft-AP or station mode and support Bluetooth 5.1
- Operating temperature range: -30 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained solutions

FC65E/FC66E Highlights (Wi-Fi 6E)



Industrial Grade Wi-Fi&Bluetooth Module (QCA2065/QCA2066)



Length: 19.9 mm (± 0.15 mm)
Width: 18.0 mm (± 0.15 mm)
Height: 2.1 mm (± 0.20 mm)
Weigh: 1.63 g

- Support 802.11 a/b/g/n/ac/ax and 2.4/ 5/ 6 GHz triple-band, with max. data rate up to 2400 Mbps
- Support DBS (Dual Band Simultaneous): FC66E supports DBS, FC65E does not support DBS
- FC65E supports 2 × 2 MIMO, FC66E supports 2 × 2 + 2 × 2 MIMO
- Operate in soft-AP or station mode and support Bluetooth 5.1
- Operating temperature range: -30 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained solutions

FC6xE Specifications (Wi-Fi 6 & Wi-Fi 6E)



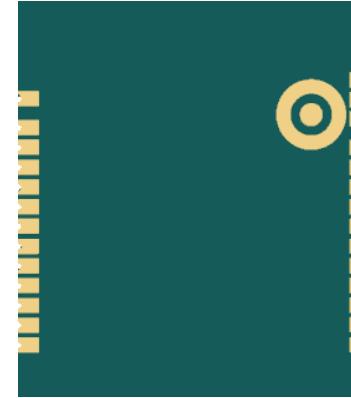
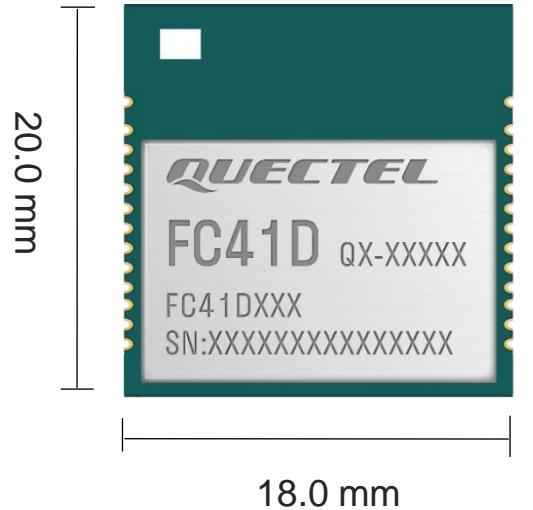
Module	FC62E/ FC64E	FC65E/ FC66E
WLAN Protocol	802.11 a/b/g/n/ac/ax	802.11 a/b/g/n/ac/ax
Wi-Fi Bands (GHz)	2.4/ 5	2.4/ 5/ 6
Wi-Fi Modulation	DBPSK, DQPSK, CCK, BPSK, QPSK, QAM	DBPSK, DQPSK, CCK, BPSK, QPSK, QAM
Bluetooth Protocol	Bluetooth 5.1	Bluetooth 5.1
Dimension (mm)	18.0 × 19.9 × 2.1	18.0 × 19.9 × 2.1
Working Mode	AP/ STA	AP/ STA
Power Supply Voltage (V)	0.95, 1.35, 1.95, 1.8, 2.2, 3.3 (Optional)	0.95, 1.35, 1.95, 1.8, 2.2, 3.3 (Optional)
Interfaces	Wi-Fi: PCIe 3.0 × 1 Bluetooth: UART × 1, PCM × 1 Antenna: Wi-Fi × 2, Bluetooth × 1 (shared with Wi-Fi, independent antenna is optional)	Wi-Fi: PCIe 3.0 × 1 Bluetooth: UART × 1, PCM × 1 Antenna: Wi-Fi × 2, Bluetooth × 1 (shared with Wi-Fi, independent antenna is optional)
DBS (Dual Band Simultaneous)	FC62E does not support DBS, FC64E supports DBS	FC65E does not support DBS, FC66E supports DBS
I/O Power Supply Voltage (V)	1.8	1.8
Security	WPA3	WPA3
Operating Temperature Range (°C)	-30 to +85	-30 to +85
Region	Global	Global
Certification	Regulatory: CE*/ FCC*/ SRRC*/ JATE*/ TELEC*	Regulatory: CE*/ FCC*/ SRRC*/ JATE*/ TELEC*

^{“*”} means under planning.

FC41D Highlights



Stand-alone Wi-Fi&Bluetooth Module (BK7231M)



Length: 20.0 mm (± 0.20 mm)
Width: 18.0 mm (± 0.20 mm)
Height: 2.6 mm (± 0.20 mm)
Weight: 1.05 g

- Support 802.11 b/g/n Wi-Fi
- Operate in soft-AP or station mode and support Bluetooth 5.2
- Support UART serial communication
- Compatible with pin antenna, IPEX antenna and PCB antenna
- Operating temperature range: -40 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained automotive solutions

FC41D Specifications

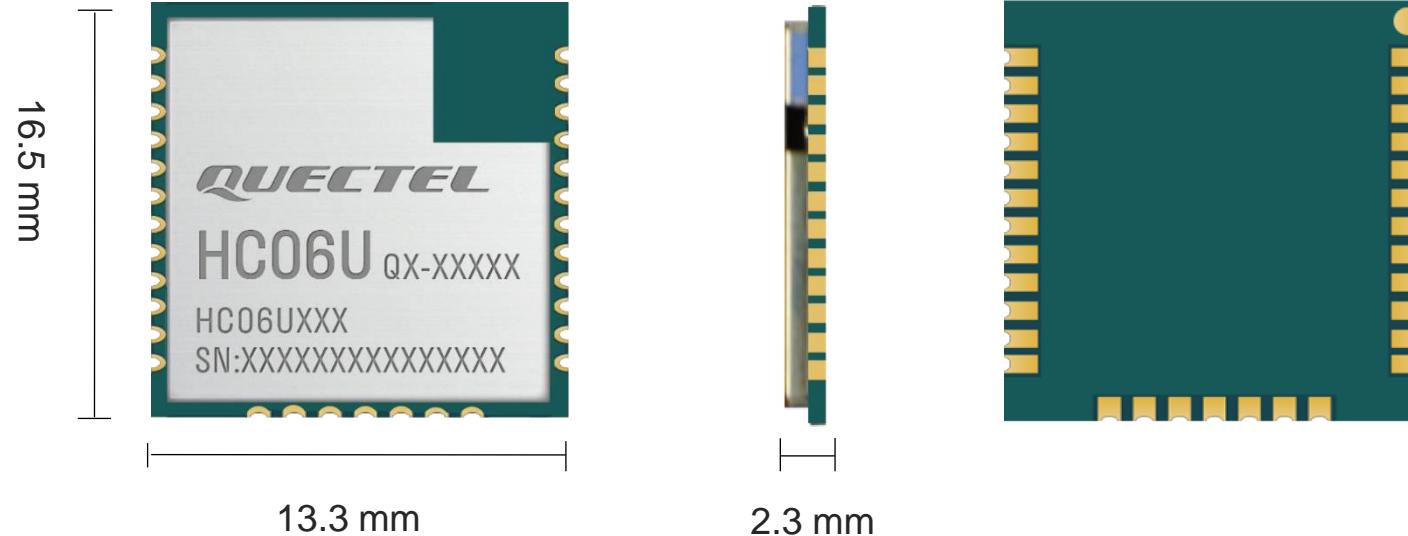
Module	FC41D
WLAN Protocol	802.11 b/g/n, 1 x 1
Wi-Fi Bands (GHz)	2.4
Wi-Fi Modulation	BPSK, QPSK, CCK, 16QAM, 64QAM
Bluetooth Protocol	Bluetooth 5.2
Working Mode	AP/ STA
Power Supply Voltage (V)	3.3
Interfaces	UART, SPI, PWM, ADC, GPIOs
Security	WPA3
Operating Temperature Range (°C)	-40 to +85
Region	Global
Certification	Regulatory: CE*/ FCC*/ SRRC* Others: Bluetooth*

“*” means under ongoing.

HC06U Highlights



BLE Module (BR1001)



Length: 16.5 mm (± 0.20 mm)
Width: 13.3 mm (± 0.20 mm)
Height: 2.3 mm (± 0.20 mm)
Weight: 0.85 g

- Support Bluetooth 5.0
- High cost performance, BLE module, integrated master and slave mode
- Operating temperature range: -40 °C to +85 °C
- Built-in ceramic antenna, Built-out pin antenna
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained automotive solutions

HC06U Specifications

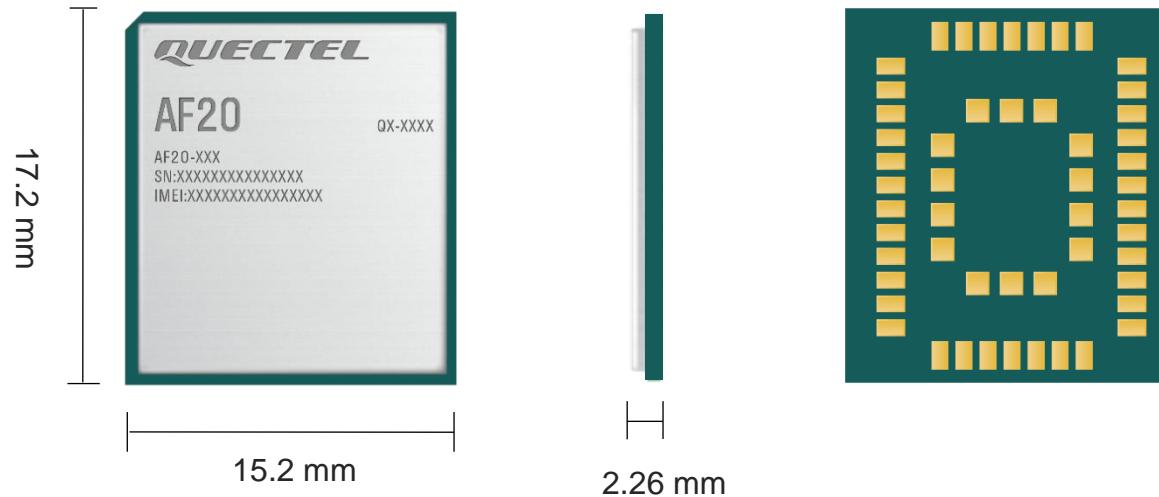
Module	HC06U
Bluetooth Protocol	Bluetooth 5.0
Power Supply Voltage (V)	3.3
Interfaces	UART, SPI, GPIOs
Security	SMP
Operating Temperature Range (°C)	-40 to +85
Region	Global
Certification	Regulatory: FCC/ IC/ CE*

“*” means under planning/ongoing.

AF20 Highlights (Wi-Fi 5 1×1)



Automotive Grade Wi-Fi&Bluetooth Module (QCA6564A)



Length: 17.2 mm (± 0.15 mm)
Width: 15.2 mm (± 0.15 mm)
Height: 2.26 mm (± 0.20 mm)
Weight: 1.26 g

- Qualcomm QCA6564A chipset solution dedicated for automotive applications
- Work with Quectel AG35 series module and enjoy good co-existence mechanism with the automotive grade LTE module
- 1 × 1 device supporting 802.11 a/b/g/n/ac and 2.4/ 5 GHz dual-band
- Operate in soft-AP or station mode and support Bluetooth 5.0
- Ideal for automotive applications with IATF 16949 requirement
- Automotive quality processes (PPAP, 8D, DFMEA, PFMEA...)
- Operating temperature range: -40 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained automotive solutions

AF20 Specifications (Wi-Fi 5 1×1)



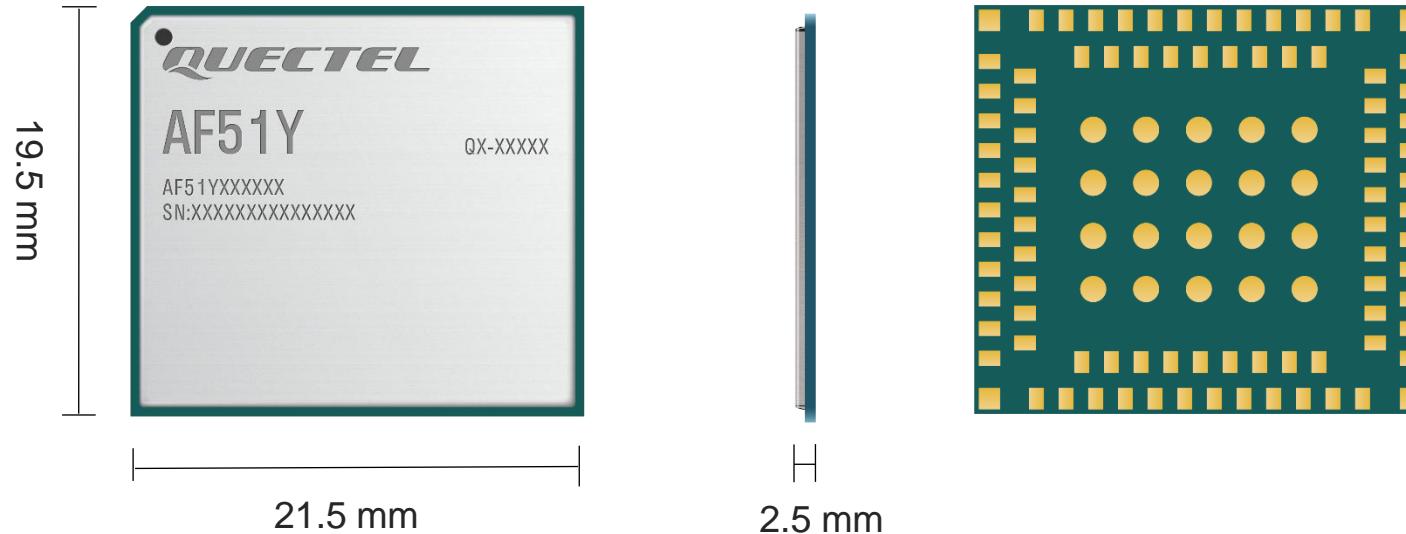
Module	AF20
Chip	QCA6564A
WLAN Protocol	802.11 a/b/g/n/ac, 1 × 1
Wi-Fi Bands (GHz)	2.4/ 5
Wi-Fi Modulation	BPSK, QPSK, CCK, 16QAM, 64QAM, 256QAM
Bluetooth Protocol	Bluetooth 5.0
Working Mode	AP/ STA
Power Supply Voltage Range (V)	3.14–3.46, Typ. 3.3
Interfaces	SDIO 3.0 × 1, BT_UART × 1, Wi-Fi/Bluetooth Antenna × 1
I/O Power Supply Voltage Range (V)	1.71–1.89, Typ.1.8
Security	WEP/ TKIP/ AES/ WPA-PSK/ WPA2-PSK
Operating Temperature Range (°C)	-40 to +85
Region	Global
Certification	Regulatory: CE*/ FCC*/ IC*/ Anatel*/ JATE*/ TELEC*/ RCM*

“*” means under planning.

AF51Y Highlights (Wi-Fi 5 2×2+1×1)



Automotive Grade Wi-Fi&Bluetooth Module (QCA6595)



Length: 19.5 mm (± 0.20 mm)
Width: 21.5 mm (± 0.20 mm)
Height: 2.5 mm (± 0.20 mm)
Weight: 2.32 g

- Qualcomm QCA6595 chipset solution dedicated for automotive applications
- Work with Quectel AG55xQ/AG52xR series modules
- Support 802.11 a/b/g/n/ac Wi-Fi and Dual-Band Simultaneous (DBS) with dual-MAC
- Operate in soft-AP and station mode and support Bluetooth 5.2
- Ideal for automotive applications with IATF 16949 requirement
- Automotive quality processes (PPAP, 8D, DFMEA, PFMEA...)
- Operating temperature range: -40 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained automotive solutions

AF51Y Specifications (Wi-Fi 5 2×2+1×1)

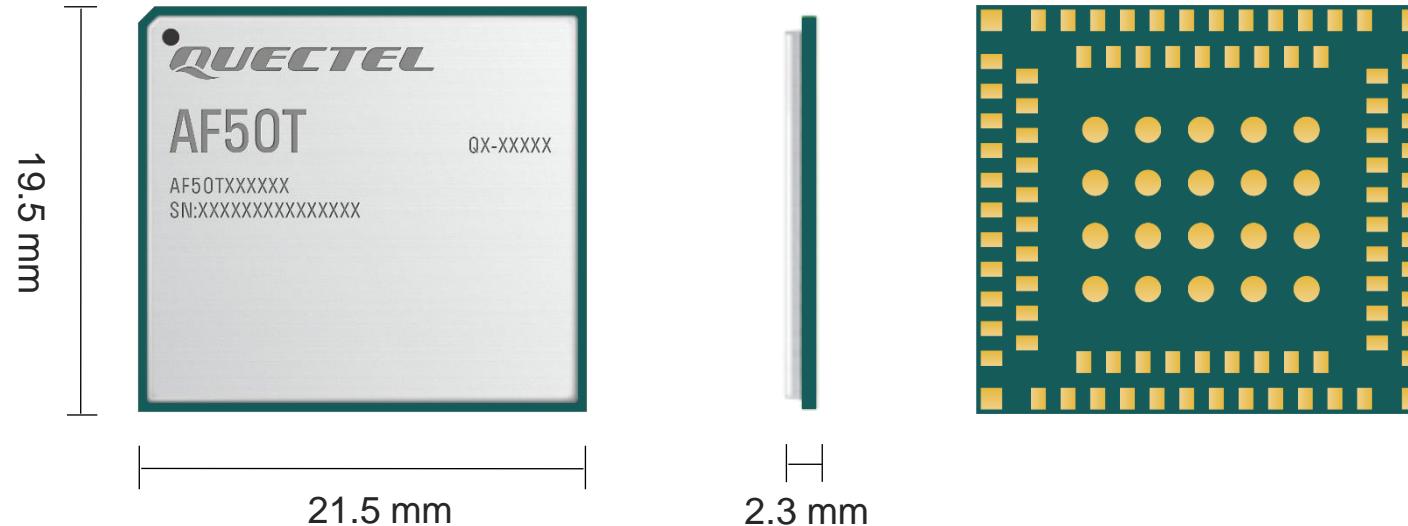
Module	AF51Y
Chip	QCA6595
WLAN Protocol	802.11 a/b/g/n/ac, 2 × 2 + 1 × 1, dual MAC
Wi-Fi Bands (GHz)	2.4/ 5
Wi-Fi Modulation	CCK, BPSK, QPSK, 16QAM, 64QAM, 256QAM
Bluetooth Protocol	Bluetooth 5.2
Working Mode	AP/ STA
Power Supply	VDD_CORE_VL, VDD_CORE_VM, VDD_CORE_VH, VDD_IO
Interfaces	PCIe, WLAN_EN, UART, PCM, BT_EN, GPIOs
Security	WPA3
Operating Temperature Range (°C)	-40 to +85
Region	Global
Certification	Regulatory: CE*/ FCC*/ IC*/ Anatel*/ JATE*/ TELEC*

“*” means under planning.

AF50T Highlights (Wi-Fi 6 2×2+2×2)



Automotive Grade Wi-Fi&Bluetooth Module (QCA6696)



Length: 19.5 mm (± 0.20 mm)
Width: 21.5 mm (± 0.20 mm)
Height: 2.3 mm (± 0.20 mm)
Weight: Approx. 2.1 g

- Qualcomm QCA6696 chipset solution dedicated for automotive applications
- Work with Quectel AG55xQ/AG52xR series modules
- Support 802.11 a/b/g/n/ac/ax Wi-Fi and Dual-Band Simultaneous (DBS) with dual-MAC
- Operate in soft-AP and station mode and support Bluetooth 5.2
- Ideal for automotive applications with IATF 16949 requirement
- Automotive quality processes (PPAP, 8D, DFMEA, PFMEA...)
- Operating temperature range: -40 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained automotive solutions

AF50T Specifications (Wi-Fi 6 2×2+2×2)



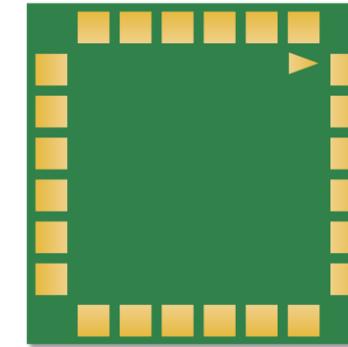
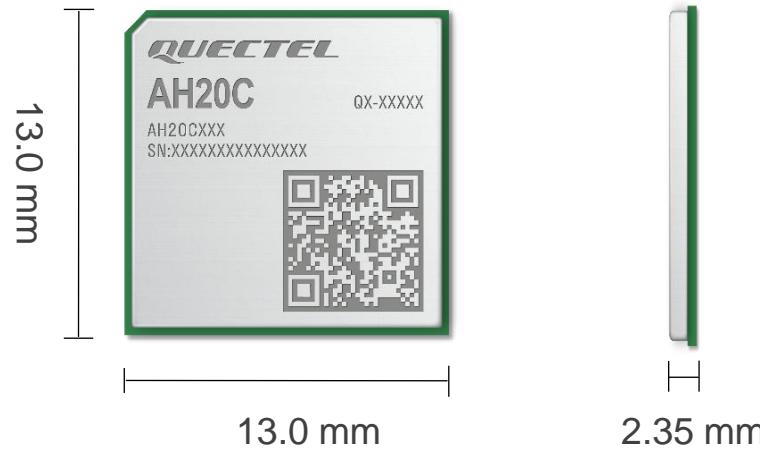
Module	AF50T
Chip	QCA6696
WLAN Protocol	802.11 a/b/g/n/ac/ax, 2 × 2 + 2 × 2, dual MAC
Wi-Fi Bands (GHz)	2.4/ 5
Wi-Fi Modulation	DBPSK, DQPSK, CCK, BPSK, QPSK, QAM, MU-MIMO-OFDMA
Bluetooth Protocol	Bluetooth 5.2
Working Mode	AP/ STA
Power Supply	VDD_RF, VDD_CORE_VL, VDD_CORE_VM, VDD_CORE_VH, VDD_IO
Interfaces	PCIe, WLAN_EN, UART, PCM, BT_EN, GPIOs
Security	WPA3
Operating Temperature Range (°C)	-40 to +85
Region	Global
Certification	Regulatory: CE/ FCC/ RCM/ IC*/ Anatel*/ SRRC*/ JATE*/ TELEC*

“*” means under planning.

AH20C Highlights (Stand-alone Bluetooth)



Automotive Grade Stand-alone Bluetooth Module (CYW89072)



Length: 13.0 mm (± 0.20 mm)
Width: 13.0 mm (± 0.20 mm)
Height: 2.35 mm (± 0.20 mm)
Weight: TBD

- CYW89072 chipset solution dedicated for automotive applications
- Work with Quectel AG55xQ/AG52xR series modules or third-party platform
- Support Bluetooth 5.0, support BLE and classic Bluetooth
- Ideal for automotive applications with IATF 16949 requirement
- Automotive quality processes (PPAP, 8D, DFMEA, PFMEA...)
- Operating temperature range: -40 °C to +85 °C
- Excellent EMC/ESD protection ensures great robustness even in harsh environments
- Compact SMT form factor ideal for integration in slim and size-constrained automotive solutions

AH20C Specifications



Module	AH20C
Chip	CYW89072
Bluetooth Bands (GHz)	2.4
Bluetooth Modulation	GFSK, π/4-DQPSK, 8-DPSK, Gaussian
Bluetooth Protocol	Bluetooth 5.0 (BLE + Classic Bluetooth)
Bluetooth Profile	HFP, HSP, PBAP, A2DP, AVRCP, MAP, HID, GATT, iAP2, SPP, etc.
Power Supply	VDD_BT_3V3, VDD_IO_1V8
Interfaces	UART, PCM, I2C, BT_HOST_WAKE, BT_DEV_WAKE
Operating Temperature Range (°C)	-40 to +85
Region	Global
Certification	Regulatory: CE*/ FCC*/ IC*

“*” means under planning.

The Advantages of Quectel Modules



USB Serial Drivers

Windows 7/8/8.1/10
Linux 2.6–5.10
Android 4.x–10.x



NDIS & RIL Drivers

RIL Driver: Android 4.x–10.x
NDIS Driver: Windows 7/8/8.1/10



Flexible Applications

eCall
(U)SIM card detection
DTMF
DFOTA



Quality Guarantee

Reliable network protocols
Steady flash protection mechanism
Superior audio algorithms
High sensitivity
High reliability



Special Features

QuecOpen®
PSM
RTK & DR
5G & C-V2X
Multi security features

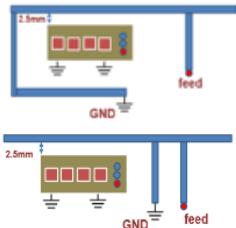


Enhanced AT Commands

Standard V.25ter AT commands
3GPP TS 27.007 (GSM 07.07)
3GPP TS 27.005 (GSM 07.05 SMS)
TCP/IP stack AT commands
STK (SIM Application Toolkit)



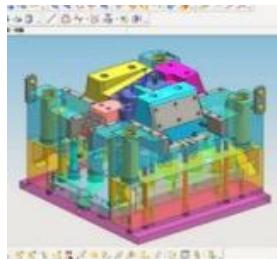
1. Consulting & Evaluation



- Feasibility & Architecture Study
 - Risk Identification
 - Initial Proof of Concept
- Antenna Component Selection

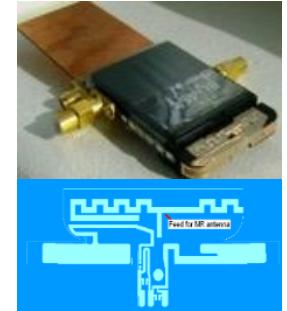
4. Manufacturing

- Antenna Sample
- Tooling & Molding
 - Assembly and Production Test
 - Delivery



2. Design

- Antenna Placement
- Antenna Layout Design
- RF Specification Design
- Antenna System Design & Optimization
- Gerber File Review



3. Testing & Certification

- Antenna OTA Testing
- Interference Mitigation
- Support for CE/ FCC/ PTCRB radio approval
- Pre-certification OTA Testing for 2G/ 3G/ 4G/ 5G

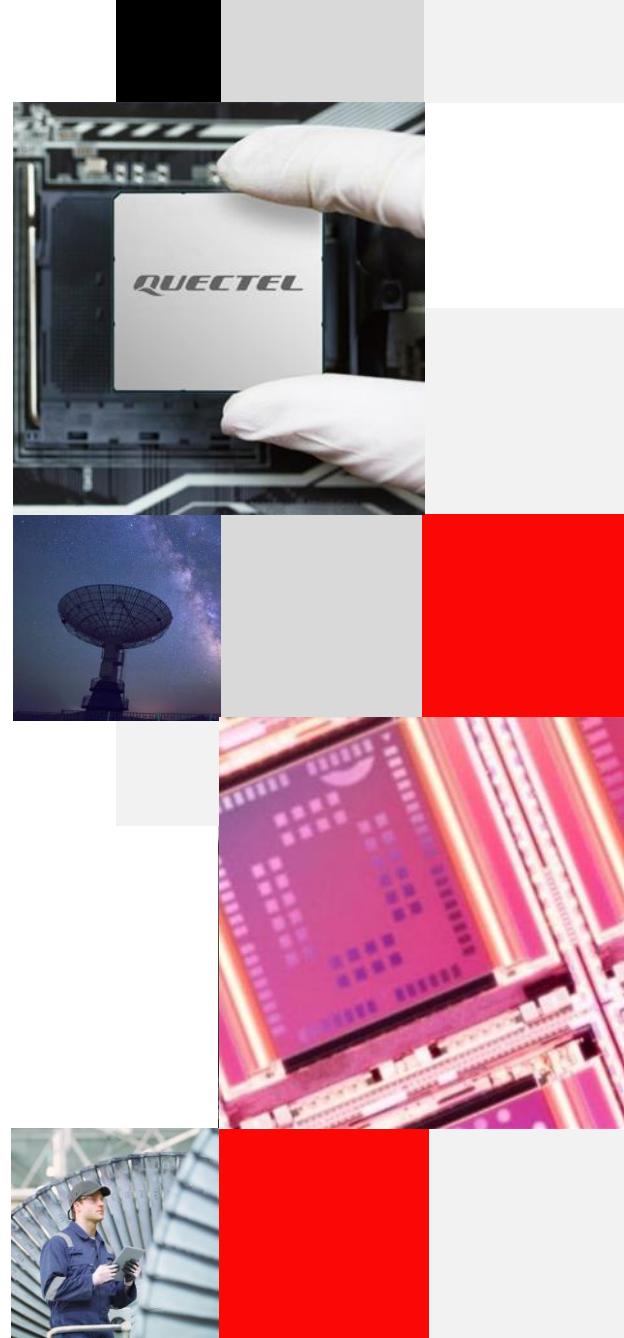




LTE Standard Modules
LTE-A & 5G Modules
Automotive Modules
Smart Modules
LPWA Modules
UMTS/HSPA(+) Modules
GSM/GPRS Modules
GNSS Modules
Wi-Fi&Bluetooth Modules

Antenna Products

Build a Smarter World

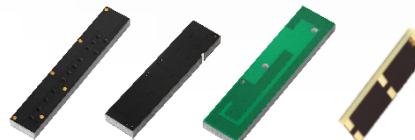


Cellular Antennas

QUECTEL

Internal/
Embedded

LTE (4G)



YC0001AA
YC0002AA
YC0003AA
YC0017BA



YF0022AA
YFCA002AA

External-
Direct
Mount



YCN001AA
YE0002AA
YE0013AA
YGL001AA

External-
Cabled



YB0010AA
YB0016AA
YE0006AA
YE0010AA
YE0021AA
YE0029AA

External-
Cabled
Combo



YB0015AA (LTE + GNSS + Wi-Fi)
YB0031AA (LTE + GNSS)
YB0033AA (LTE x 2 + GNSS)

5G



YP0009CA



YF0020AA



5G SMD
YC0018



YF0002AA
YF0002DA



YP0009AA
YP0009BA



YF0017AA
YF0017BA



YF0002BA
YF0002CA

5G mmWave



YM0011AA



RA510TRWAA-
N00-NNNNA

Wi-Fi/Bluetooth and GNSS Antennas



Internal/
Embedded
Ceramic
SMD

Internal/
Embedded
Cabled

External-
Direct
Mount

Wi-Fi/Bluetooth (Dual)



YC0009AA
YC0010AA
YC0011AA



YF0011AA
YF0029AA



YE0031AA
YE0032AA
YE0038AA

Wi-Fi 6E (Tri-band)



YF0026AA
YF0027AA



YEWT004AA
YEWP001AA

Internal/
Embedded
Passive

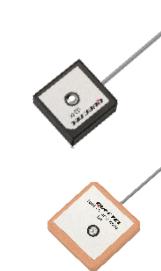
Internal/
Embedded
Active

External-
Cabled
Active

GNSS



YG0005AA
YG0062AA

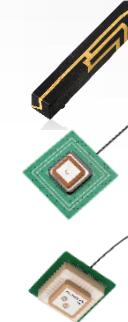


YG0021AA
YG0015AA



YG0035AA
YLY001CA

With L5



YC0008AA
YG0030AA
YCG0012AA



GNSS L1&L2&L5 L6
YFGA001AA



GNSS L1&L2&L5
YG0063AA



YB0017AA
YG0028AA

5G Antenna Solutions



Terminal Antenna



External Antenna



Combined Antenna



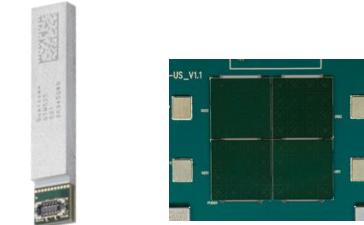
Magnetic Antenna



Embedded PCB
Antenna



Embedded FPC
Antenna



mmWave Antenna



High-integrated Antenna
for 5G Modules



The number one cellular module vendor in the world and a leading GNSS module supplier

- Unbeatable choice from the broadest module portfolio in the world
- The highest quality products for the best possible prices
- Superb support with the largest R&D team in the industry
- Continuous innovation – first to market with 5G, LPWA, CV2X, snapdragon
- A passionate, dedicated team of “Quectelers” ensure our customers always come first

Thank You

Build a Smarter World

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