QUECTEL®
Build a Smarter World

Quectel Products Portfolio

Overview

July, 2019

Quectel M2M Cellular Portfolio

5G

LTE (LPWA/LTE-A)/C-V2X

3G

2G

5G Module

RG500Q — Q3' 19
- SDX55
- 5G NR Sub 6
- LTE/ 5G Dual Mode
- LGA Form Factor

RM500Q — Q3' 19
- SDX55
- 5G NR Sub 6
- LTE/ 5G Dual Mode
- M.2 Form Factor

RG510Q — Q4' 19
- SDX55
- 5G NR mmWave
- LTE/ 5G Dual Mode
- LGA Form Factor

RM510Q — Q4' 19
- SDX55
- 5G NR mmWave
- LTE/ 5G Dual Mode
- M.2 Form Factor

AG550Q — Q4'19
- SA515M
- Sub-6G
- 5G + C-V2X
- Multi-Frequency GNSS

2G-3G-4G-LPWA Migration

LPWA Module

BC950N-N1 — Jul. 2019
- MT2625
- Cat NB1
- Compatible with BC95-G
- **450MHz Supported**

BG95 Series — Jun. 2019
- MDM9205
- Cat M1/NB2/EGPRS/GNSS
- **Compatible with BG96**
- Global Version

BG77 — Jul. 2019
- MDM9205
- Cat M1/ NB2/ GNSS
- Super Compact Size
- Global Version

BG96
- MDM9206
- Cat M1/NB1/EGPRS/GNSS
- 375K DL/ 375K UL
- Global Version

BC600L-M3 — Aug. 2019
- Cat M1/ NB2/ EGPRS
- LCC Package
- Compatible With MC60
- Global Version

BC92 — Jul. 2019
- Cat NB1/ GPRS
- 25.5K (DL)/62.5K (UL)
- GPRS: 85.6K DL/ 85.6K UL
- Global Version

BC69 — Sep. 2019
- Cat M1/ NB2
- LCC Package
- Compatible with M66
- MDM9205

BC95-G
- Boudica 150 (Hi2115)
- Cat NB2 (NB-IoT)
- Extended TBS/2 HARQ*: 125K DL/ 150K UL
- Global Version

BC66/BC66-NA
- BC66: Cat NB1
- BC66-NA: Cat NB2
- Global Versions

EG95/EG91
- MDM9X07
- Compatible with BG96/UG96
- Multi-mode LTE
- Cat 4 (EG95)/ Cat 1 (EG91)

BC68
- Boudica 150 (Hi2115)
- Cat NB2 (NB-IoT)
- Extended TBS/2 HARQ*: 125K DL/ 150K UL
- Global Version

LTE-A Module

EG18
- SDX20
- 5CA
- 1.2G DL
- Cat 18

EG12
- SDX20
- 3CA
- 600Mbps DL
- Cat 12

EG06
- MDM9X40
- LTE with CA
- Up to 4×2 MIMO DL
- Cat 6, 300M DL/ 50M UL

EP06
- MDM9X40
- LTE with CA
- Up to 4×2 MIMO DL
- Cat 6, 300M DL/ 50M UL

EM20 — Q3' 19
- SDX24
- 7CA
- 2Gbps DL
- Cat 20

EM12
- SDX20
- 3CA
- 600Mbps DL
- Cat 12

EM06
- MDM9X40
- LTE with CA
- Up to 4×2 MIMO DL
- Cat 6, 300M DL/ 50M UL

3G - 4G Migration

EG25-G
- MDM9X07
- Multi-mode LTE
- Cat 4, 150M DL/ 50M UL
- Global Version

EC25/ EC21/ EC20 R2.1
- MDM9X07
- Multi-mode LTE

3G - 4G Migration

EG25-G Mini PCIe
- MDM9X07
- Cat 4, 150M DL/ 50M UL
- Global Version

EC25/ EC21/ EC20 R2.1 Mini PCIe
- MDM9X07
- Cat 4, 150M DL/ 50M UL
- Cat 1, 10M DL/ 5M UL

EM05
- MDM9X07
- LTE Cat 4
- 150M DL/ 50M UL
- -CE/ -E/ -CML

Smart Module

SC66
- SDM660
- Octa-core Kryo 260
- Cat 6, 300M DL/ 50M UL
- 3GB LPDDR4X+32GB eMMC

SC600Y
- SDM450
- Octa-core A53 1.8GHz
- Cat 6, 300M DL/ 50M UL
- 2GB RAM+16GB ROM

SC600T
- MSM8953
- Octa-core A53 2.0GHz
- Cat 6, 300M DL/ 50M UL
- 2GB RAM+16GB ROM

SC20
- MSM8909
- Quad-core A7 1.1GHz
- Cat 4, 150M DL/ 50M UL

Automotive

AG520R — Q3' 19
- SA415M
- LTE-A up to Cat 19
- Optional C-V2X
- Multi-Frequency GNSS

AG15
- MDM9150
- C-V2X PC5
- LGA Form Factor

AG35
- MDM9628
- Multi-mode LTE
- Cat 4, 150M DL/ 50M UL
- -CE/ -E/ -NA/ -LA/ -J

UG95/UG96
- XMM6255 (UG95)/ XMM6250 (UG96)
- 7.2M DL/ 5.76M UL
- Global Version (UG96)
- -E/ -A (UG95)

2G - LPWA Migration

UC20
- MDM6200
- (29.0×32.0×2.5)mm
- 14.4M DL/ 5.76M UL
- Global Version

UC20 Mini PCIe
- (30.0×50.95×4.9)mm
- 14.4M DL/ 5.76M UL
- Global Version

UC15
- LCC Form Factor
- (29.0×29.0×2.5)mm
- 3.6M DL/ 384K UL
- -E/ -A/ -T

UC200T
- LCC Form Factor
- (29.0×32.0×2.4)mm
- 21M DL/ 5.76M UL
- -EM*/ -GL*

M95
- MT6261M
- LCC Form Factor
- (23.6×19.9×2.65)mm
- Quad-band

M66
- MT6261D/MT6261M
- LCC Form Factor
- (17.7×15.8×2.3)mm
- Bluetooth

MC60
- MT2503D
- LCC Form Factor
- (18.7×16.0×2.1)mm
- GSM/ GPRS/ GNSS

MC90
- MT2503D
- LCC Form Factor
- (25.6×15.0×2.3)mm
- GSM/ GPRS/ GNSS/ Wi-Fi

M89
- MT6261D
- Quad-band
- LGA Form Factor

M65 — May 2019
- Compatible with M66
- Quad-band
- LCC Form Factor

MM/YYYY

Estimated Engineering Sample Dates

LTE Standard Modules

LTE-A & 5G Modules

Automotive Modules

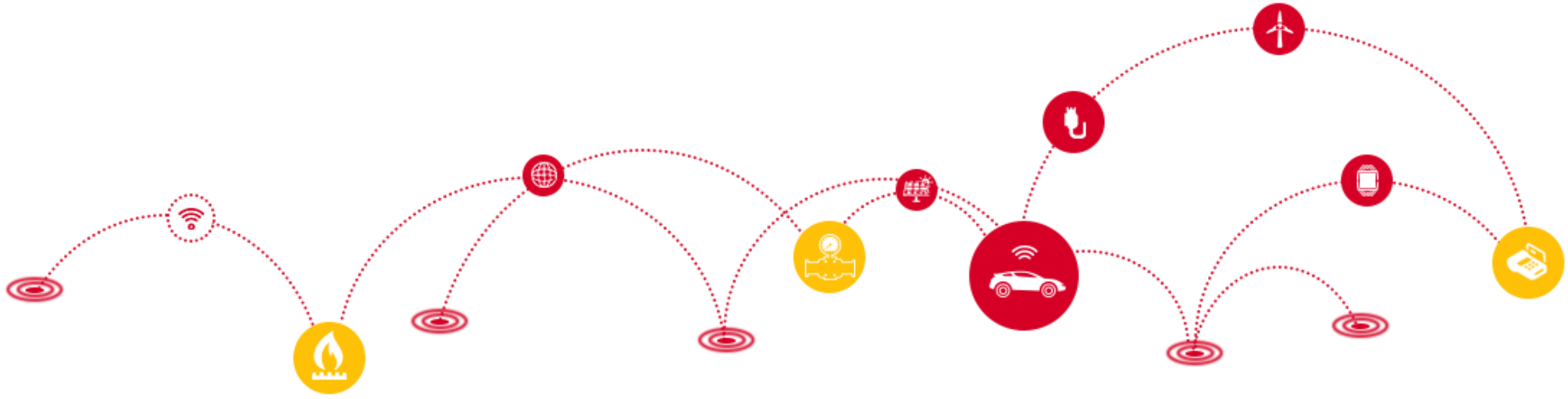
Smart Modules

LPWA Modules

UMTS/HSPA(+) Modules

GSM/GPRS Modules

GNSS Modules



LTE Standard Modules Roadmap

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Cat 4

EC25
- Compatible with EC2x/ EG25-G/ UC20/ UC200T
- Multi-mode LTE
- -E/ -A/ -V/ -J/ -AU/ -AUT/ -AUTL

EC20 R2.1
- Compatible with EC2x/ EG25-G/ UC20 / UC200T
- Multi-mode LTE
- China/ India

EM05
- M.2 Form Factor
- Multi-mode LTE
- -CE/ -E/ -CML

EG95-E
- Compatible with BG96/UG96
- Multi-mode LTE
- EMEA

EC25-EU/ -EC/ -AF
- Compatible with EC2x/ EG25-G/ UC20 / UC200T
- Multi-mode LTE
- EMEA (-EU/ -EC)
- North America (-AF)

EG25-G
- Compatible with EC2x/ UC20 / UC200T
- LGA Form Factor
- Multi-mode LTE
- Global Version

EG95-NA
- Compatible with BG96/ BC95-G/ UG9x/ M95
- Multi-mode LTE
- North America

Cat 1

EC21
- Compatible with EC2x/ EG25-G/ UC20/ UC200T
- Multi-mode LTE
- -E/ -A/ -V/ -J/ -AU/ -AUT/ -AUV/ -KL

EG91-E
- Compatible with BG96/ BC95-G/ UG9x/ M95
- Multi-mode LTE
- EMEA

EC21-EU/ -EC
- Compatible with EC2x/ EG25-G/ UC20 / UC200T
- Multi-mode LTE
- EMEA

EG91-NS/ -NA
- Compatible with BG96/ BC95-G/ UG9x/ M95
- Multi-mode LTE
- North America

ThreadX Series

EC25-MX — May 2019
- Compatible with EC2x/ EG25-G/ UC20 / UC200T
- Multi-mode LTE
- Mexico

EC25-EUX — May 2019
- Compatible with EC2x/ EG25-G/ UC20 / UC200T
- Multi-mode LTE
- EMEA

EC25-AFX — Jul. 2019
- Compatible with EC2x/ EG25-G/ UC20 / UC200T
- Multi-mode LTE
- North America

EC25-AUX — Jul. 2019
- Compatible with EC2x/ EG25-G/ UC20 / UC200T
- Multi-mode LTE
- Latin America/ Australia/ New Zealand/ Taiwan

EG95-EX — Mar. 2019
- Compatible with BG96/ BC95-G/ UG9x/ M95
- Multi-mode LTE
- EMEA

EG95-NAX — Jul. 2019
- Compatible with BG96/ BC95-G/ UG9x/ M95
- Multi-mode LTE
- North America

EG91-VX — Jan. 2019
- Compatible with BG96/ BC95-G/ UG9x/ M95
- Multi-mode LTE
- North America

EC21-AUX — Jul. 2019
- Compatible with EC2x/ EG25-G/ UC20 / UC200T
- Multi-mode LTE
- Latin America/ Australia/ New Zealand/ Taiwan

EG91-EX — Mar. 2019
- Compatible with BG96/ BC95-G/ UG9x/ M95
- Multi-mode LTE
- EMEA

EG91-NAX — Jul. 2019
- Compatible with BG96/ BC95-G/ UG9x/ M95
- Multi-mode LTE
- North America

MM/YYYY *Estimated Engineering Sample Dates*

2016	2017	2018	2019

EC25/EC20 R2.1 Specifications

Multi-Mode LTE Cat 4 Module

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

Variant		EC25-E	EC25-A	EC25-V	EC25-J	EC25-AUT	EC25-AUTL	EC25-AU	EC20-CE R2.1
LTE	LTE-FDD	B1/ B3/ B5/ B7/ B8/ B20	B2/ B4/ B12	B4/ B13	B1/ B3/ B8/ B18/ B19/ B26	B1/ B3/ B5/ B7/ B28	B3/ B7/ B28	B1/ B2①/ B3/ B4/ B5/ B7/ B8/ B28	B1/ B3/ B5/ B8
	LTE-TDD	B38/ B40/ B41	\	\	B41	\	\	B40	B34/ B38/ B39/ B40/ B41
UMTS	WCDMA	B1/ B5/ B8	B2/ B4/ B5	\	B1/ B6/ B8/ B19	B1/ B5	\	B1/ B2/ B5/ B8	B1/ B8
	TD-SCDMA	\	\	\	\	\	\	\	B34/ B39
EVDO/CDMA		\	\	\	\	\	\	\	BC0
GSM/EDGE		B3/ B8	\	\	\	\	\	Quad-band	B3/ B8
Embedded GNSS		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
Region		EMEA/ Korea/ Thailand/ India	North America	Verizon	Japan	Australia Telstra	Australia Telstra	Latin America/ Australia/ New Zealand/ Taiwan	China/ India
Certification		**Carrier:** Vodafone/ Deutsche Telekom/ SKT/ Telefónica/ T-Mobile*/ KT*/ LGU+* **Regulatory:** GCF/ CE/ KC/ NCC/ RCM/ FAC/ NBTC/ ICASA **Others:** WHQL	**Carrier:** AT&T/ T-Mobile/ Rogers/ Telus **Regulatory:** FCC/ IC/ PTCRB **Others:** WHQL	**Carrier:** Verizon **Regulatory:** GCF/ FCC **Others:** WHQL	**Carrier:** NTT DOCOMO/ SoftBank/ KDDI **Regulatory:** JATE/ TELEC **Others:** WHQL	**Regulatory:** RCM **Others:** WHQL	**Regulatory:** RCM **Others:** WHQL	**Carrier:** Telstra* **Regulatory:** FCC/ Anatel/ NCC/ RCM/ GCF* **Others:** WHQL	**Regulatory:** SRRC/ NAL/ CCC **Others:** WHQL

"Y" means supported.
"" means under development.*
① means Rx-diversity is not supported.

EC25 Mini PCIe/ EC20 R2.1 Mini PCIe Specifications

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

Multi-Mode LTE Cat 4 Module

Variant		EC25-E Mini PCIe	EC25-A Mini PCIe	EC25-V Mini PCIe	EC25-J Mini PCIe	EC25-AU Mini PCIe	EC20-CE R2.1 Mini PCIe
LTE	LTE-FDD	B1/ B3/ B5/ B7/ B8/ B20	B2/ B4/ B12	B4/ B13	B1/ B3/ B8/ B18/ B19/ B26	B1/ B2①/ B3/ B4/ B5/ B7/ B8/ B28	B1/ B3/ B5/ B8
	LTE-TDD	B38/ B40/ B41	\	\	B41	B40	B34/ B38/ B39/ B40/ B41
UMTS	WCDMA	B1/ B5/ B8	B2/ B4/ B5	\	B1/ B6/ B8/ B19	B1/ B2/ B5/ B8	B1/ B8
	TD-SCDMA	\	\	\	\	\	B34/ B39
EVDO/CDMA		\	\	\	\	\	BC0
GSM/EDGE		B3/ B8	\	\	\	Quad-band	B3/ B8
Embedded GNSS		Optional	Optional	Optional	Optional	Optional	Optional
Region		EMEA/ Korea/ Thailand/ India	North America	Verizon	Japan	Latin America/ Australia/ New Zealand/ Taiwan	China/ India
Certification		**Carrier:** Vodafone/ Deutsche Telekom/ SKT/ Telefónica/ T-Mobile*/ KT*/ LGU+* **Regulatory:** GCF/ CE/ KC/ NCC/ RCM/ FAC/ NBTC/ ICASA **Others:** WHQL	**Carrier:** AT&T/ T-Mobile/ Rogers **Regulatory:** FCC/ IC/ PTCRB **Others:** WHQL	**Carrier:** Verizon **Regulatory:** GCF/ FCC **Others:** WHQL	**Carrier:** NTT DOCOMO/ SoftBank/ KDDI **Regulatory:** JATE/ TELEC **Others:** WHQL	**Carrier:** Telstra* **Regulatory:** FCC/ Anatel/ NCC/ RCM/ GCF* **Others:** WHQL	**Regulatory:** SRRC/ NAL/ CCC **Others:** WHQL

"" means under development.*
① means Rx-diversity is not supported.

EC25-AF/-AFX/-EU/-EC/-EUX/-MX/-AUX EG25-G Specifications

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

Multi-Mode LTE Cat 4 Module

Variant		EC25-AF	EC25-AFX	EC25-EU	EC25-EC	EC25-EUX	EC25-MX	EC25-AUX	EG25-G
LTE	LTE-FDD	B2/ B4/ B5/ B12/ B13/ B14/ B66/ B71	B2/ B4/ B5/ B12/ B13/ B14/ B66/ B71	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28A	B2/ B4/ B5/ B7/ B28/ B66	B1/ B2①/ B3/ B4/ B5/ B7/ B8/ B28	B1/ B2/ B3/ B4/ B5/ B7/ B8/ B12/ B13/ B18/ B19/ B20/ B25/ B26/ B28
	LTE-TDD	\	\	B38/ B40/ B41	\	B38/ B40/ B41	\	B40	B38/ B39/ B40/ B41
UMTS	WCDMA	B2/ B4/ B5	B2/ B4/ B5	B1/ B8	B1/ B8	B1/ B8	B2/ B4/ B5	B1/ B2/ B5/ B8/ B4	B1/ B2/ B4/ B5/ B6/ B8/ B19
	TD-SCDMA	\	\	\	\	\	\	\	\
EVDO/CDMA		\	\	\	\	\	\	\	\
GSM/EDGE		\	\	B3/ B8	B3/ B8	B3/ B8	\	Quad-band	Quad-band
Embedded GNSS		Optional	Optional	Optional	\	Optional	\	Optional	Optional
Wi-Fi/BT Interface		Y	\	Y	\	\	\	Y	Y
Ethernet Interface		Y	\	Y	Support USB Ethernet	Support USB Ethernet	Support USB Ethernet	Y	Y
Region		North America FirstNet	North America FirstNet	EMEA/ Korea/ Thailand/ India	EMEA	EMEA	Mexico	Latin America/ Australia/ New Zealand/ Taiwan	Global
Certification		**Carrier:** Verizon/ AT&T/ T-Mobile/ U.S. Cellular/ Rogers/ Bell*/ Telus* **Regulatory:** GCF/ FCC/ PTCRB/ IC **Others:** WHQL	**Carrier:** Verizon*/ AT&T*/ T-Mobile*/ U.S. Cellular*/ Rogers*/ Bell*/ Telus* **Regulatory:** GCF*/ FCC*/ PTCRB*/ IC* **Others:** WHQL	**Carrier:** British Telecom **Regulatory:** GCF/ CE/ NCC/ RCM **Others:** WHQL	**Carrier:** British Telecom **Regulatory:** GCF/ CE/ RCM **Others:** WHQL	**Regulatory:** GCF*/ CE*/ RCM*/ NCC* **Others:** WHQL	**Regulatory:** FCC*/ IFETEL* **Others:** WHQL	**Regulatory:** Anatel*/ NCC*/ RCM* **Others:** WHQL*	**Carrier:** AT&T/ Deutsche Telekom*/ Verizon*/ T-Mobile*/ Sprint*/ U.S. Cellular*/ Rogers*/ Telus* **Regulatory:** GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ IFETEL/ SRRC/ NAL/ CCC/ KC/ NCC/ JATE/ TELEC/ RCM/ FAC*/ NBTC*/ ICASA* **Others:** WHQL

"Y" means supported.
"" means under development.*
① means Rx-diversity is not supported.

EC25-AF/-AFX/-EU/-EC/-EUX/-MX/-AUX Mini PCIe/ EG25-G Mini PCIe Specifications

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Multi-Mode LTE Cat 4 Module

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

Variant		EC25-AF Mini PCIe	EC25-AFX Mini PCIe	EC25-EU Mini PCIe	EC25-EC Mini PCIe	EC25-EUX Mini PCIe	EC25-MX Mini PCIe	EC25-AUX Mini PCIe	EG25-G Mini PCIe ①
LTE	LTE-FDD	B2/ B4/ B5/ B12/ B13/ B14/ B66/ B71	B2/ B4/ B5/ B12/ B13/ B14/ B66/ B71	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28A	B2/ B4/ B5/ B7/ B28/ B66	B1/ B2②/ B3/ B4/ B5/ B7/ B8/ B28	B1/ B2/ B3/ B4/ B5/ B7/ B8/ B12/ B13/ B18/ B19/ B20/ B25/ B26/ B28
	LTE-TDD	\	\	B38/ B40/ B41	\	B38/ B40/ B41	\	B40	B38/ B39/ B40/ B41
UMTS	WCDMA	B2/ B4/ B5	B2/ B4/ B5	B1/ B8	B1/ B8	B1/ B8	B2/ B4/ B5	B1/ B2/ B5/ B8/ B4	B1/ B2/ B4/ B5/ B6/ B8/ B19
	TD-SCDMA	\	\	\	\	\	\	\	\
EVDO/CDMA		\	\	\	\	\	\	\	\
GSM/EDGE		\	\	B3/ B8	B3/ B8	B3/ B8	\	Quad-band	Quad-band
Embedded GNSS		Optional	Optional	Optional	\	Optional	\	Optional	Optional
Region		North America FirstNet	North America FirstNet	EMEA/ Korea/ Thailand/ India	EMEA	EMEA	Mexico	Latin America/ Australia/ New Zealand/ Taiwan	Global
Certification		**Carrier:** Verizon/ AT&T/ T-Mobile/ Rogers/ Bell*/ Telus* **Regulatory:** GCF/ FCC/ PTCRB/ IC **Others:** WHQL	**Carrier:** Verizon*/ AT&T*/ T-Mobile*/ U.S. Cellular*/ Rogers*/ Bell*/ Telus* **Regulatory:** GCF*/ FCC*/ PTCRB*/ IC* **Others:** WHQL	**Regulatory:** GCF/ CE/ NCC/ RCM **Others:** WHQL	**Regulatory:** GCF/ CE/ RCM **Others:** WHQL	**Regulatory:** GCF*/ CE*/ RCM*/ NCC* **Others:** WHQL	**Regulatory:** FCC*/ IFETEL* **Others:** WHQL	**Regulatory:** Anatel*/ NCC*/ RCM* **Others:** WHQL*	**Carrier:** AT&T/ Verizon*/ T-Mobile*/ Sprint*/ U.S. Cellular*/ Rogers*/ Telus* **Regulatory:** GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ IFETEL/ SRRC/ NAL/ CCC/ KC/ NCC/ JATE/ TELEC/ RCM/ FAC*/ NBTC*/ ICASA* **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.*

EC21 Specifications

Multi-Mode LTE Cat 1 Module

29.0mm × 32.0mm × 2.4mm
10M DL/ 5M UL

Variant		EC21-E	EC21-EU	EC21-EC	EC21-A	EC21-V	EC21-AUT	EC21-AUV	EC21-AU	EC21-KL	EC21-J	EC21-AUX
LTE	LTE-FDD	B1/ B3/ B5/ B7/ B8/ B20	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28A	B2/ B4/ B12	B4/ B13	B1/ B3/ B5/ B7/ B28	B1/ B3/ B5/ B8/ B28	B1/ B2①/ B3/ B4/ B5/ B7/ B8/ B28	B1/ B3/ B5/ B7/ B8	B1/ B3/ B8/ B18/ B19/ B26	B1/ B2①/ B3/ B4/ B5/ B7/ B8/ B28
	LTE-TDD	\	\	\	\	\	\	\	B40	\	\	B40
WCDMA		B1/ B5/ B8	B1/B8	B1/B8	B2/ B4/ B5	\	B1/ B5	B1/ B5/ B8	B1/ B2/ B5/ B8	\	\	B1/ B2/ B5/ B8/ B4
GSM/EDGE		B3/ B8	B3/B8	B3/B8	\	\	\	\	Quad-band	\	\	Quad-band
Embedded GNSS		Optional	Optional	\	Optional	Optional	Optional	\	Optional	\	\	Optional
Wi-Fi/BT Interface		Y	Y	\	Y	Y	Y	Y	Y	Y	Y	Y
Ethernet Interface		Y	Y	Support USB Ethernet	Y	Y	Y	Y	Y	Y	Y	Y
Region		EMEA/ Korea/ Thailand/ India	EMEA/ Korea/ Thailand/ India	EMEA	North America	Verizon	Australia Telstra	Australia Vodafone/ New Zealand	Latin America/ Australia/ New Zealand/ Taiwan	Korea	Japan	Latin America/ Australia/ New Zealand/ Taiwan
Certification		**Carrier:** Vodafone/ Deutsche Telekom/ Telefónica* **Regulatory:** GCF/ CE/ FAC **Others:** WHQL	**Regulatory:** GCF/ CE/ NCC/ RCM **Others:** WHQL	**Carrier:** Deutsche Telekom **Regulatory:** GCF/ CE/ RCM **Others:** WHQL	**Carrier:** AT&T/ T-Mobile/ U.S. Cellular/ Rogers **Regulatory:** FCC/ PTCRB/ IC **Others:** WHQL	**Carrier:** Verizon **Regulatory:** GCF/ FCC **Others:** WHQL	**Carrier:** Telstra **Regulatory:** GCF/RCM **Others:** WHQL	**Regulatory:** GCF/ RCM **Others:** WHQL	**Carrier:** Telstra **Regulatory:** FCC/ Anatel/ NCC/ JATE/ TELEC/ RCM **Others:** WHQL	**Carrier:** KT/ SKT **Regulatory:** KC **Others:** WHQL	**Carrier:** NTT DOCOMO/ KDDI **Regulatory:** JATE/ TELEC **Others:** WHQL	**Regulatory:** Anatel*/ NCC*/ RCM* **Others:** WHQL*

"Y" means supported.
"" means under development.*
① means Rx-diversity is not supported.

EC21 Mini PCIe Specifications

30.0mm × 51.0mm × 4.9mm
10M DL/ 5M UL

Multi-Mode LTE Cat 1 Module

Variant		EC21-E Mini PCIe	EC21-EU Mini PCIe	EC21-EC Mini PCIe	EC21-A Mini PCIe	EC21-V Mini PCIe	EC21-AUT Mini PCIe	EC21-AU Mini PCIe	EC21-KL Mini PCIe	EC21-J Mini PCIe	EC21-AUX Mini PCIe
LTE	LTE-FDD	B1/ B3/ B5/ B7/ B8/ B20	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28A	B2/ B4/ B12	B4/ B13	B1/ B3/ B5/ B7/ B28	B1/ B2①/ B3/ B4/ B5/ B7/ B8/ B28	B1/ B3/ B5/ B7/ B8	B1/ B3/ B8/ B18/ B19/ B26	B1/ B2①/ B3/ B4/ B5/ B7/ B8/ B28
	LTE-TDD	\	\	\	\	\	\	B40	\	\	B40
WCDMA		B1/ B5/ B8	B1/ B8	B1/ B8	B2/ B4/ B5	\	B1/ B5	B1/ B2/ B5/ B8	\	\	B1/ B2/ B5/ B8/ B4
GSM/EDGE		B3/ B8	B3/B8	B3/B8	\	\	\	Quad-band	\	\	Quad-band
Embedded GNSS		Optional	Optional	\	Optional	Optional	Optional	Optional	\	\	Optional
Region		EMEA/ Korea/ Thailand/ India	EMEA/ Korea/ Thailand/ India	EMEA	North America	Verizon	Australia Telstra	Latin America/ Australia/ New Zealand/ Taiwan	Korea	Japan	Latin America/ Australia/ New Zealand/ Taiwan
Certification		**Carrier:** Vodafone/ Deutsche Telekom/ Telefónica* **Regulatory:** GCF/ CE/ FAC **Others:** WHQL	**Regulatory:** GCF/ CE/ NCC/ RCM **Others:** WHQL	**Regulatory:** GCF/ CE/ RCM **Others:** WHQL	**Carrier:** AT&T/ T-Mobile/ Rogers **Regulatory:** FCC/ PTCRB/ IC **Others:** WHQL	**Carrier:** Verizon **Regulatory:** GCF/ FCC **Others:** WHQL	**Carrier:** Telstra **Regulatory:** GCF/RCM **Others:** WHQL	**Carrier:** Telstra **Regulatory:** FCC/ Anatel/ NCC/ JATE/ TELEC/ RCM **Others:** WHQL	**Carrier:** KT/ SKT **Regulatory:** KC **Others:** WHQL	**Carrier:** NTT DOCOMO/ KDDI **Regulatory:** JATE/ TELEC **Others:** WHQL	**Regulatory:** Anatel*/ NCC*/ RCM* **Others:** WHQL*

"" means under development.*
① means Rx-diversity is not supported.

EG95/EG91 Specifications

29.0mm × 25.0mm × 2.3mm
150M DL/ 50M UL (EG95)
10M DL/ 5M UL (EG91)

■ Multi-Mode LTE Cat 4/Cat 1 Modules

Variant		EG95-E	EG91-E	EG95-NA	EG95-NAX 2019, New	EG91-NA	EG91-NAX 2019, New	EG95-EX 2019, New	EG91-EX 2019, New	EG91-NS 2019, New	EG91-VX 2019, New
Category		Cat 4	Cat 1	Cat 4	Cat 4	Cat 1	Cat 1	Cat 4	Cat 1	Cat 1	Cat 1
LTE	LTE-FDD	B1/ B3/ B7/ B8/ B20/ B28A	B1/ B3/ B7/ B8/ B20/ B28A	B2/ B4/ B5/ B12/ B13	B2/ B4/ B5/ B12/ B13/ B25/ B26	B2/ B4/ B5/ B12/ B13	B2/ B4/ B5/ B12/ B13/ B25/ B26	B1/ B3/ B7/ B8/ B20/ B28	B1/ B3/ B7/ B8/ B20/ B28	B2/ B4/ B5/ B12/ B13/ B25/ B26	B4/ B13
	LTE-TDD	\	\	\	\	\	\	\	\	\	\
UMTS	WCDMA	B1/ B8	B1/ B8	B2/ B4/ B5	B2/ B4/ B5	B2/ B4/ B5	B2/ B4/ B5	B1/ B8	B1/ B8	B2/ B4/ B5	\
	TD-SCDMA	\	\	\	\	\	\	\	\	\	\
EVDO/CDMA		\	\	\	\	\	\	\	\	\	\
GSM/EDGE		B3/ B8	B3/ B8	\	\	\	\	B3/B8	B3/B8	\	\
GNSS		\	\	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Wi-Fi/BT Interface		\	\	\	\	\	\	\	\	\	\
Ethernet Interface		\	\	\	\	\	\	\	\	\	\
Region		EMEA	EMEA	North America	North America	North America	North America	EMEA	EMEA	North America	North America
Certification		**Regulatory:** GCF/ CE/ RCM/ FAC **Others:** WHQL	**Carrier:** Deutsche Telekom **Regulatory:** GCF/ CE/ RCM/ FAC/ Anatel* **Others:** WHQL	**Carrier:** Verizon/ AT&T/ T-Mobile/ U.S. Cellular/ Rogers/ Telus **Regulatory:** GCF/ FCC/ PTCRB/ IC **Others:** WHQL	**Carrier:** Verizon*/ AT&T*/ T-Mobile*/ U.S. Cellular*/ Rogers*/ Telus* **Regulatory:** GCF*/ FCC*/ PTCRB*/ IC* **Others:** WHQL	**Carrier:** Verizon/ AT&T/ T-Mobile/ U.S. Cellular/ Rogers/ Telus **Regulatory:** GCF/ FCC/ PTCRB/ IC **Others:** WHQL	**Carrier:** Verizon*/ AT&T*/ T-Mobile*/ U.S. Cellular*/ Rogers*/ Telus* **Regulatory:** GCF*/ FCC*/ PTCRB*/ IC* **Others:** WHQL	**Regulatory:** GCF*/ CE*/ RCM* **Others:** WHQL	**Regulatory:** GCF*/ CE*/ RCM* **Others:** WHQL	**Carrier:** Verizon*/ AT&T*/ T-Mobile*/ Sprint* **Regulatory:** GCF/ FCC/ PTCRB/ IC **Others:** WHQL	**Carrier:** Verizon* **Regulatory:** FCC/ GCF* **Others:** WHQL

"" means under development.*

EM05 Specifications

42mm × 30mm × 2.3mm
150M DL/ 50M UL

Multi-Mode LTE Cat 4 Module

Variant		EM05-CE	EM05-E	EM05-CML
LTE	LTE-FDD	B1/ B3/ B5/ B8	B1/ B3/ B7/ B8/ B20/ B28	\
	LTE-TDD	B38/ B39/ B40/ B41	B38/ B41	B38/ B39/ B40/ B41
UMTS	WCDMA	B1/ B8	B1/ B8	\
	TD-SCDMA	\	\	\
EVDO/CDMA		BC0	\	\
GNSS		Optional	Optional	Optional
Wi-Fi/BT Interface		\	\	\
Ethernet Interface		\	\	\
Region		China/ Thailand/ India	Europe/ Australia/ New Zealand	CMCC
Certification		**Regulatory:** SRRC/ NAL/ CCC	**Regulatory:** CE*	**Regulatory:** SRRC/ NAL/ CCC

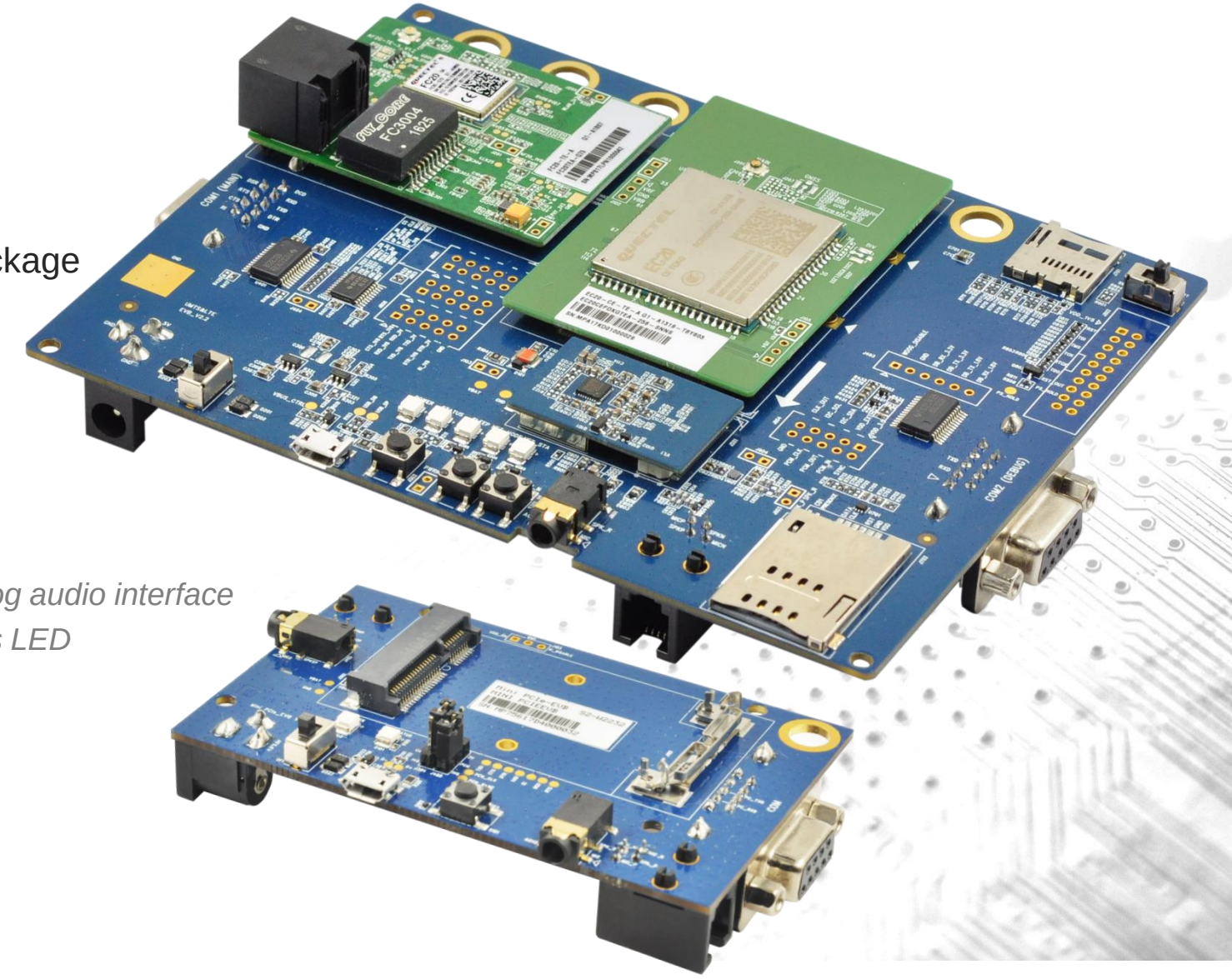
Support Package - Technical Materials & EVB Kit

Technical Materials Package

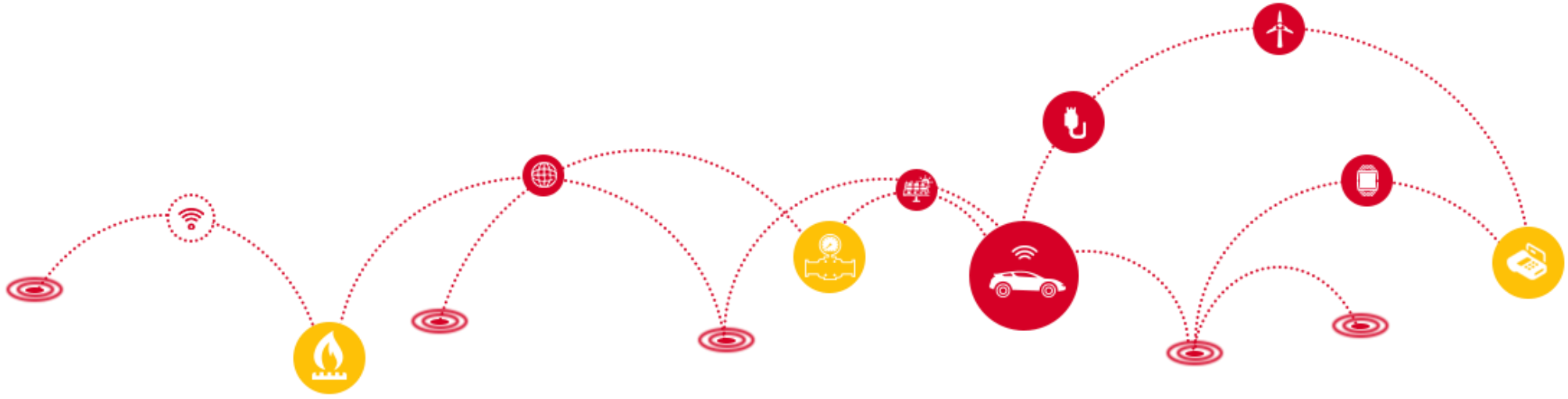
- Hardware & software specifications
- Application note package
- Debug tool, download tool, test tool, EVB package & USB drivers
- Approvals & test report package
- QNavigator

Development Tool (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



LTE-A/ LTE-A Pro/ 5G Roadmap

QUECTEL Build a Smarter World

5G mmWave

RG510Q Q4'19
- LGA Form Factor
- 5G NR mmWave
- LTE/ 5G Dual-Mode

RM510Q Q4'19
- M.2 Form Factor
- 5G NR mmWave
- LTE/ 5G Dual-Mode

5G Sub-6

RG500Q Q3'19
- LGA Form Factor
- 5G NR Sub-6GHz
- LTE/ 5G Dual-Mode

RM500Q Q3'19
- M.2 Form Factor
- 5G NR Sub-6GHz
- LTE/ 5G Dual-Mode

Cat 18/ Cat 20

EG18
- LGA Form Factor
- 5CA, 4×4 MIMO
- Cat 18

EM20 Q3'19
- M.2 Form Factor
- 7CA
- Cat 20

Cat 12

EG12
- LGA Form Factor
- 3CA
- Cat 12

EM12
- M.2 Form Factor
- 3CA
- Cat 12

Cat 6

EG06
- LGA Form Factor
- LTE with CA
- Cat 6

EP06
- Mini PCIe Form Factor
- LTE with CA
- Cat 6

EM06
- M.2 Form Factor
- LTE with CA
- Cat 6

Qx/YY

Estimated Engineering Sample Dates

EG06 Specifications

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

Multi-Mode LTE-A Module

Variant		EG06-E	EG06-A	EG06-AUTL
Category		6	6	6
LTE	LTE-FDD	B1/B3/B5/B7/B8/B20/B28/B32①	B2/B4/B5/B7/B12/B13/B25/B26/ B29①/B30/B66	B3/B7/B28
	LTE-TDD	B38/B40/B41	\	\
	2×CA	B1+B1/B5/B8/B20/B28; B3+B3/B5/B7/B8/B20/B28; B7+B5/B7/B8/B20/B28; B20+B32①; B38+B38; B40+B40; B41+B41	B2+B2/B5/B12/B13/B29①; B4+B4/B5/B12/B13/B29①; B7+B5/B7/B12/B26; B25+B5/B12/B25/B26; B30+B5/B12/B29①; B66+B5/B12/B13/B29①/B66	B3+B3/B7/B28; B7+B7/B28
UMTS	WCDMA	B1/B3/B5/B8	B2/B4/B5	\
Embedded GNSS		Y	Y	Y
PCIe Interface		Y	Y	Y
USB 2.0 Interface		Y	Y	Y
Region		EMEA/ APAC②/ Brazil	North America/ Mexico	Australia
Certification		**Carrier:** Deutsche Telekom/ Telstra **Regulatory:** GCF/ CE/ KC/ RCM	**Carrier:** AT&T/ Verizon*/ U.S. Cellular* **Regulatory:** GCF/ FCC/ PTCRB/ IC	**Carrier:** Telstra **Regulatory:** GCF/ RCM

"Y" means supported.
"" means under development.*
①means LTE-FDD B29 and B32 support Rx only, and in 2×CA they are only for secondary component carrier.
②means excluding Japan and CMCC.

EP06 Specifications

Multi-Mode LTE-A Module

30.0mm x 51.0mm x 4.3mm
LTE Cat 6, 300M DL/ 50M UL

Variant		EP06-E	EP06-A
Category		6	6
LTE	LTE-FDD	B1/B3/B5/B7/B8/B20/B28/B32①	B2/B4/B5/B7/B12/B13/B25/B26/B29①/B30/B66
	LTE-TDD	B38/B40/B41	\
	2×CA	B1+B1/B5/B8/B20/B28; B3+B3/B5/B7/B8/B20/B28; B7+B5/B7/B8/B20/B28; B20+B32①; B38+B38; B40+B40; B41+B41	B2+B2/B5/B12/B13/B29①; B4+B4/B5/B12/B13/B29①; B7+B5/B7/B12/B26; B25+B5/B12/B25/B26; B30+B5/B12/B29①; B66+B5/B12/B13/B29①/B66
UMTS	WCDMA	B1/B3/B5/B8	B2/B4/B5
Embedded GNSS		Y	Y
USB 2.0 Interface		Y	Y
Region		EMEA/ APAC②/ Brazil	North America/ Mexico
Certification		**Carrier:** Telstra/ Deutsche Telekom* **Regulatory:** GCF/ CE/ RCM/ NCC*	**Carrier:** AT&T/ Telus/ Verizon*/ Sprint*/ Rogers*/ Bell③ **Regulatory:** GCF/ FCC/ PTCRB/ IC

"Y" means supported.
"" means under development.*
①means LTE-FDD B29 and B32 support Rx only, and in 2×CA they are only for secondary component carrier.
②means excluding Japan and CMCC.
③means TBD.

EM06 Specifications

42.0mm x 30.0mm x 2.3mm
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/B32①	B2/B4/B5/B7/B12/B13/B25/B26/B29①/ B30/ B66	B1/B3/B8/B18/B19/B26/B28
	LTE-TDD	B38/B40/B41	B41	B41
	2×CA	B1+B1/B5/B8/B20/B28; B3+B3/B5/B7/B8/B20/B28; B7+B5/B7/B8/B20/B28; B20+B32①; B38+B38; B40+B40; B41+B41	B2+B2/B5/B12/B13/B29; B4+B4/B5/B12/B13/B29①; B7+B5/B7/B12/B26; B25+B5/B12/B25/B26; B30+B5/B12/B29①; B66+B5/B12/B13/B29①/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		Y	Y	Y
eSIM		Y	Y	Y
USB 2.0 Interface		Y	Y	Y
Region		EMEA/ APAC②/ Brazil	North America/ Mexico	Japan
Certification		**Carrier:** Telstra/ Deutsche Telekom* **Regulatory:** GCF/ CE/ NCC/ RCM/ ICASA* **Others:** WHQL	**Carrier:** Verizon*/ AT&T*/ Sprint* **Regulatory:** GCF/ FCC/ PTCRB/ IC **Others:** WHQL	**Carrier:** KDDI **Regulatory:** JATE/ TELEC **Others:** WHQL

"Y" means supported.
"" means under development.*
① means LTE-FDD B29 and B32 support Rx only, and in 2×CA they are only for secondary component carrier.
② means excluding Japan and CMCC.

EM12 Specifications

30.0mm x 42.0mm x 2.3mm
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/B29①/B30/B32①/B66
	LTE-TDD	B38/39/B40/B41
	DL 2×CA	B1+B3/B5/B18/B19/B20/B21/B26; B2+B2/B4/B5/B12/B13/B17/B29①/B30/B66; B3+B3/B5/B7/B8/B19/B20/B28; B4+B4/B5/B12/B13/B17/B29①/B30; B5+B7/B25/B30/B66; B7+B7/B20/B28; B12+B25/B30; B13+B66; B20+B32①; B25+B25/B26/B41; B29+B30; B38+B38; B40+B40; B41+B41; B66+B66
	DL 3×CA	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	Y
	UL 2×CA	B3+B3; B41+B41
	UL 64QAM	Y
UMTS	WCDMA	B1/B2/B3/B4/B5/B8/B19
Embedded GNSS		Y
PCIe Interface		Optional
USB 3.0 Interface		Y
Region		Global
Certification		**Carrier:** Verizon*/ AT&T*/ Telefónica*/ Telstra* **Regulatory:** GCF/ CE/ FCC/ PTCRB/ IC/ NCC/ RCM/ JATE*/ TELEC*/ ICASA* **Others:** WHQL

"Y" means supported.
"" means under development.*
① means LTE-FDD B29 and B32 support Rx only, and in 2×CA they are only for secondary component carrier.

EG12 Specifications (Preliminary)

37.0mm x 39.5mm x 2.8mm
LTE Cat 12, 600M DL/ 100M UL

Multi-Mode LTE-A Module

Variant		EG12-GT	EG12-EA	EG12-NA
Category		12	12	12
LTE	LTE-FDD	\	B1/B3/B5/B7/B8/B20/B28	B2/B4/B5/B7/B12/B13/B14/B25/B26/B29/B30/B66/B71
	LTE-TDD	B42/B43/B48	B38/B40/B41	\
	DL 2×CA	B42+B42; B48+B48	Intra-band and Inter-band	Intra-band and Inter-band
	DL 3×CA	B42+B42+B42; B48+B48+B48	Intra-band and Inter-band	Intra-band and Inter-band
	DL 256QAM	Y	Y	Y
	DL 4×4 MIMO	B42/B48	B1/B3/B7	B2/B4/B7/B25/B66
	UL 2×CA	B42+B42	Intra-band contiguous	Intra-band contiguous
UMTS	WCDMA	\	B1/B3/B5/B8	B2/B4/B5
Embedded GNSS		Y	Y	Y
PCIe Interface		Y	Y	Y
USB 3.0 Interface		Y	Y	Y
Region		Global TDD 3.5G Operators	EMEA/ APAC①/ Brazil	North America
Certification		**Regulatory:** FCC*	**Carrier:** TBD **Regulatory:** CE/ RCM/ GCF②	**Carrier:** Verizon②/ AT&T② **Regulatory:** FCC*/ IC*/ GCF②/ PTCRB②

"Y" means supported.
① means excluding Japan and CMCC.
② means TBD.

EG18 Specifications (Preliminary)

QUECTEL Build a Smarter World

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

Multi-Mode LTE-A Pro Module

Variant		EG18-EA	EG18-NA
Category		DL/UL: 18/13	DL/UL: 18/13
LTE	LTE-FDD	B1/B3/B5/B7/B8/B20/B28	B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B29/B30/B66/B71
	LTE-TDD	B38/B40/B41	B41
	DL 2×CA	Intra-band and Inter-band	Intra-band and Inter-band
	DL 3×CA	Intra-band and Inter-band	Intra-band and Inter-band
	DL 4×CA	Intra-band and Inter-band	Intra-band and Inter-band
	DL 5×CA	Intra-band and Inter-band within 4 bands	Intra-band and Inter-band within 4 bands
	DL 4×4MIMO	B1/B3/B7	B2/B4/B7/B25/B66
	DL 256QAM	Y	Y
	UL 2×CA	Intra-band contiguous	Intra-band contiguous
	UL 64QAM	Y	Y
UMTS	WCDMA	B1/B3/B5/B8	B2/B4/B5
Embedded GNSS		Y	Y
PCIe Interface		Y	Y
USB 3.0 Interface		Y	Y
Region		EMEA/ APAC①/ Brazil	North America
Certification		**Carrier:** TBD **Regulatory:** CE/ RCM/ GCF②	**Carrier:** Verizon②/ AT&T② **Regulatory:** FCC*/ IC*/ GCF②/ PTCRB②

"Y" means supported.
"" means under development.*
① means excluding Japan and CMCC.
② means TBD.

EM20 Specifications (Preliminary)

Multi-Mode LTE-A Pro Module

30.0mm x 42.0mm x 2.3mm
LTE Cat 20, 2.0Gbps DL/150Mbps UL

Variant		EM20-G
Category		DL/UL: 20 /13
LTE	LTE-FDD	B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/B66
	LTE-TDD	B38/39/B40/B41/B42/B43/B46(LAA)/B48(CBRS)
	DL CA	7xCA @ 2 x 2 MIMO with 5 inter-band 5xCA @ 4 x 4 MIMO with 3 inter-band
	DL 256QAM	Y
	UL 2×CA	2 intra-band
	UL 64QAM	Y
UMTS	WCDMA	B1/B2/B3/B4/B5/B8
Embedded GNSS		Y
PCIe Interface		Y
USB 3.0 Interface		Y
Dual (U)SIM Card		Y
Region		Global
Certification		**Carrier:** Vodafone*/ Verizon*/ AT&T*/ NTT DOCOMO*/ SoftBank*/ KDDI*/ Telstra*/ Orange① **Regulatory:** GCF*/ CE*/ FCC*/ PTCRB*/ IC*/ JATE*/ TELEC*/ RCM* **Others:** WHQL

"" means under development.*
① means TBD.

RG500Q Specifications (Preliminary)

QUECTEL Build a Smarter World

42.0mm x 46.0mm x 2.8mm (Approx.)
5G Sub-6GHz LGA Module

LTE/5G Dual-Mode Module

Variant		RG500Q-EA
5G NR	5G NR	3GPP Release 15 NSA/SA operation, Sub-6G
	Sub-6GHz Bands	n41/n77/n78/n79
	DL 4×4 MIMO	n41/n77/n78/n79
LTE	LTE Category	Cat 12 and above
	LTE Bands	B1/B3/B5/B7/B8/B18/B19/B20/B26/B28/B32/B34/B38/B39/B40/B41/B42/B43
	DL 4×4 MIMO	B1/B3/B7/B38/B40/B41/B42/B43
Embedded GNSS		Y
PCIe 3.0 Interface		Y
USB 3.1 Interface		Y
RGMII Interface		Y
Region		China/ APAC/ EMEA
Certification		**Carrier:** TBD **Regulatory:** GCF/ CE/ CCC/ RCM (TBD)

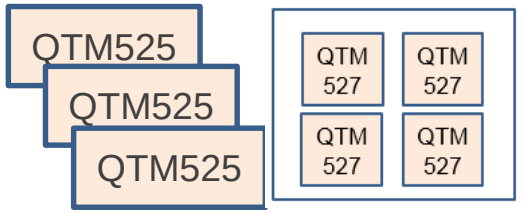
RM500Q Specifications (Preliminary)

52.0mm x 30.0mm x 2.3mm (Approx.)
5G Sub-6GHz M.2 Module

LTE/5G Dual-Mode Module

Variant		RM500Q-GL
5G NR	5G NR	3GPP Release 15 NSA/SA operation, Sub-6G
	Sub-6GHz Bands	n1/n2/n3/n5/n7/n8/n20/n28/n41/n66/n71/n77/n78/n79
	DL 4×4 MIMO	n1/n2/n3/n7/n41/n66/n77/n78/n79
LTE	LTE Category	Cat 20 and above
	LTE Bands	B1/B2/B3/B4(B66)/B5(B18/B19/B26)/B7/B8/ B12(B17)/B13/ B14/B20/B25/B26/B28/B29/B30/B32/B38/B39/B40/B41/B42/B43/B46/B48/B71
	DL 4×4 MIMO	B1/B2/B3/B4/B7/B25/B30/B38/B39/B40/B41/B42/B43/B48/B66
Embedded GNSS		Y
PCIe 3.0 Interface		Y
USB 3.1 Interface		Y
eSIM		Embedded
Region		Global
Certification		**Carrier:** TBD **Regulatory:** GCF/ CE/ CCC/ RCM (TBD)

RM510Q Specifications (Preliminary)

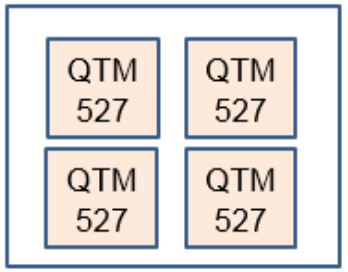


52.0mm x 30.0mm x 2.3mm (Approx.)

5G Sub-6GHz +mmWave Module

Variant		RM510Q-GL
5G NR	5G NR	3GPP Release 15 NSA/SA operation, Sub-6G
	Sub-6GHz Bands	n1/n2/n3/n5/n7/n8/n20/n28/n41/n66/n71/n77/n78/n79
	mmWave Bands	n257/n258/n260/n261
	DL 4×4 MIMO	n1/n2/n3/n7/n66/n77/n78/n79/
LTE	LTE Category	Cat 20 and above
	LTE Bands	B1/B2/B3/B4(B66)/B5(B18/B19/B26)/B7/B8/B12(B17)/B13/B14/B20/B25/B26/B28/B29/B30/B32/B38/B39/B40/B41/B42/B43/B46/B48/B71
	DL 4×4 MIMO	B1/B2/B3/B4/B7/B25/B30/B38/B39/B40/B41/B42/B43/B48/B66
Embedded GNSS		Y
PCIe 3.0 Interface		Y
USB 3.1 Interface		Y
eSIM		Embedded
Region		Global
Certification		**Carrier:** TBD **Regulatory:** GCF/ CE/ FCC/ PTCRB/ CCC (TBD)

RG510Q Specifications (Preliminary)

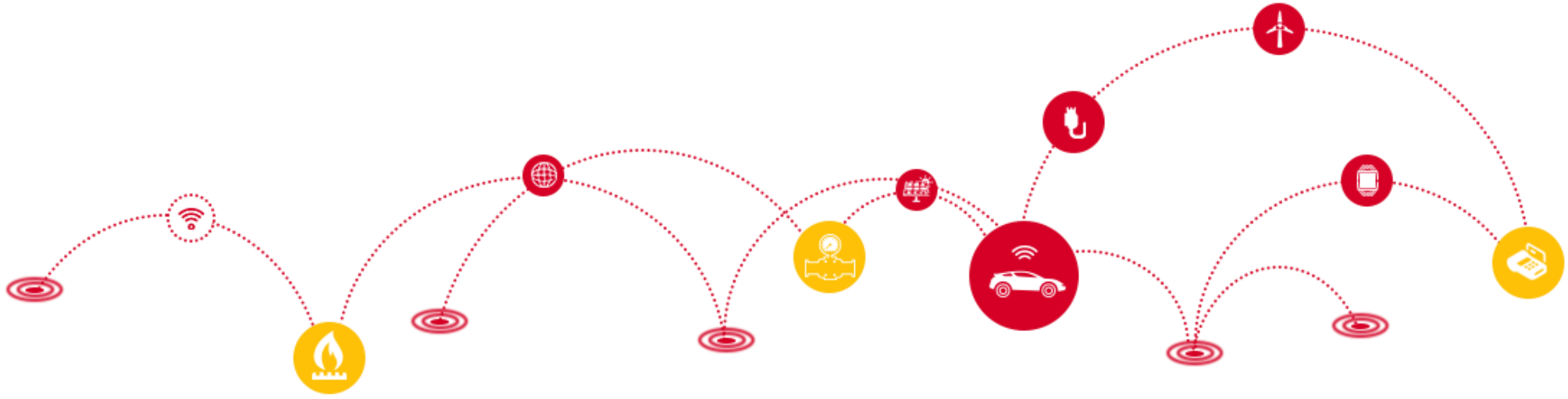


5G Sub-6GHz+mmWave Module

Variant		RG510Q-NA
5G NR	5G NR	3GPP Release 15 NSA/SA operation, Sub-6G
	mmWave Bands	n260/n261
	Sub-6GHz Bands	n41/n71
	DL 4×4 MIMO	n41
LTE	LTE Category	Cat 20
	LTE Bands	B2/B4/B5/B7/B12/B13/B14/B25/B26/B29/B30/B41/B66/B71
	DL 4×4 MIMO	B2/B4/B25/B30/B41/B66
Embedded GNSS		Y
PCIe 3.0 Interface		Y
USB 3.1 Interface		Y
RGMII		Y
Region		North America
Certification		**Carrier:** TBD **Regulatory:** GCF/ FCC/IC/ PTCRB (TBD)

NOTE: The dimensions of RG510Q is TBD.

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



Automotive Modules Roadmap

LTE Cat 4
AG35
MDM9628

- Automotive Grade
- Multi-mode LTE
- 150M DL/ 50M UL
- GNSS
- -CE/ -E/ -NA/ -LA/ -J
- LGA Form Factor

LTE C-V2X
AG15
MDM9150

- Automotive Grade
- C-V2X PC5
- GNSS
- LGA Form Factor

LTE Cat 9/ 16
C-V2X (Optional)
AG520R
SA415M

- Automotive Grade
- Multi-mode LTE
- Cat 9/ 16
- Integrate C-V2X Optional
- Multi-Frequency GNSS
- -CN*/ -NA*/ -EU*
- LGA Form Factor

5G
C-V2X (Optional)
AG550Q
SA515M

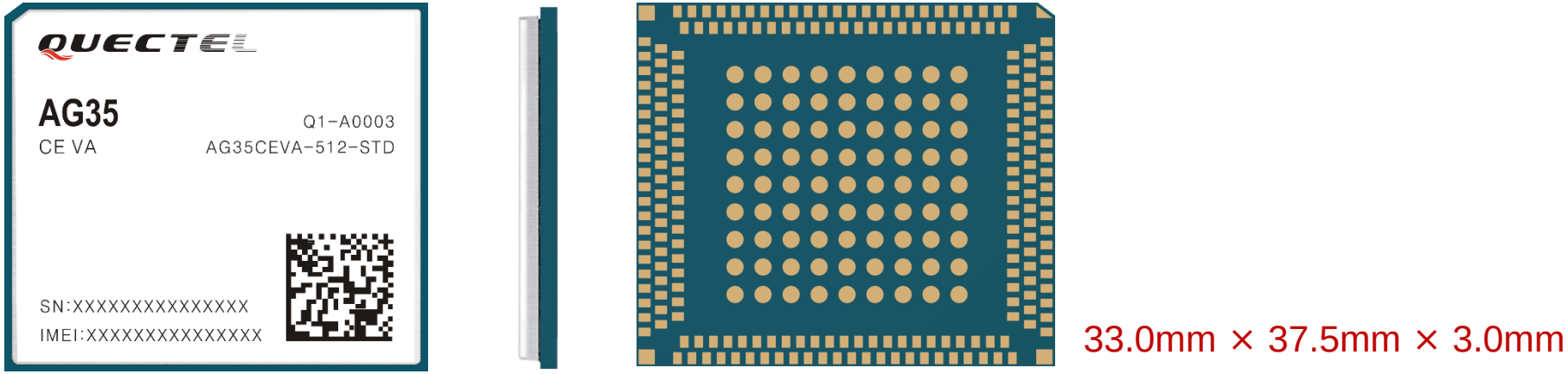
- Automotive Grade
- 5G NR Sub-6G
- 4G/3G/2G fallback
- DSDA
- Integrate C-V2X Optional
- Multi-Frequency GNSS
- -CN*/ -NA*/ -EU*
- LGA Form Factor

Qx' YY *Estimated Engineering Sample Dates*

2017 | 2018 | 2019 | 2020

Automotive Module AG35 Highlights

Multi-Mode LTE Cat 4 Module (MDM9628)



33.0mm × 37.5mm × 3.0mm

- Qualcomm MDM9628 chipset solution dedicated for automotive applications
- Ideal for automotive applications with IATF 16949 requirement
- Wide operation temperature range (-40℃ to +85℃)
- Automotive quality processes (PPAP, 8D, DFMEA, PFMEA…)
- 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
- Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment

AG35 Specifications

QUECTEL
Build a Smarter World

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

Multi-Mode LTE Cat 4 Module

Variant		AG35-CE	AG35-E	AG35-NA	AG35-LA	AG35-J
LTE	FDD-LTE	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
	TDD-LTE	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		BC0①	\	\	\	\
GSM		900/1800MHz	900/1800MHz	850/1900MHz	850/900/1800/1900MHz	\
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, S.E.A, Taiwan	North America	Latin America	Japan
Certification		**Regulatory:** SRRC/ NAL/ CCC	**Carrier:** KT*/ STK*/ LGU+* **Regulatory:** GCF/ CE/ RCM/ FCC*/ KC*	**Carrier:** Verizon*/ AT&T*/ T-Mobile*/ Rogers* **Regulatory:** GCF/ FCC/ PTCRB/ IC	**Regulatory:** CE/ FCC/ RCM*/ Anatel*	**Carrier:** NTT DOCOMO* **Regulatory:** JATE/ TELEC

"Y" means supported. ** means under development.* *① means the band is optional.*

AG35 Features 1

Item	Description		
Dimension	33.0mm × 37.5mm × 3.0mm		
Operating Temperature	-40℃ ~ +85℃		
Chipset	Qualcomm MDM9628		
	Enhanced process compliant with the key testing items required by AEC-Q100		
	Application processor - ARM Cortex A7 up to 1.2 GHz with 256kB L2 cache - ARM Cortex A7 - primary boot processor Modem processor - QDSP6 processor at up to 691MHz (Turbo) RPM processor - ARM Cortex M3 up to 100 MHz		
Memory	Embedded Nand+DDRAM - NAND: 512MB - DDRAM: 256MB Available for customers - NAND: > 120MB - DDRAM: > 100MB		
Software Environment	AT Command; QuecOpen®		
Network	LTE-FDD/ LTE-TDD/ GSM/ EDGE/ WCDMA/ TD-SCDMA/ CDMA2000/ EVDO		
Variants	China/ EMEA/ North America/ Latin America/ Japan		
Data Speed	**LTE:**	LTE-FDD: Max 150Mbps (DL), Max 50Mbps (UL)	LTE-TDD: Max 130Mbps (DL), Max 30Mbps (UL)
	UMTS:	DC-HSDPA: Max 42Mbps HSUPA: Max 5.76Mbps	WCDMA: Max 384Kbps (DL/UL)
	TD-SCDMA:	Max 4.2Mbps (DL), Max 2.2Mbps (UL)	
	CDMA2000:	EVDO: Max 3.1Mbps (DL), Max 1.8Mbps (UL)	1X Advanced: Max 307.2Kbps (DL/UL)
	GSM:	EDGE: Max 296Kbps (DL), Max 236.8Kbps (UL)	GPRS: Max 107Kbps (DL), Max 85.6Kbps (UL)

AG35 Features 2

Item	Description	Remark
GNSS	GPS/ GLONASS/ BeiDou/ Galileo/ QZSS	
Wi-Fi	SDIO interface for Wi-Fi function	
BT*	UART2 interface for BT function	
Interfaces	USB 2.0	×1 (with high speed up to 480Mbps)
	HSIC*	×1
	UART	×3 (Main UART/ BT UART/ Debug UART)
	I²C	×2 (×1 for PCM)
	PCM	×1
	SGMII	×1 (*Optional*)
	SDIO	×2 (for Wi-Fi and eMMC/SD)
	(U)SIM	×1 (support 1.8V/3.0V USIM/SIM cards)
	ADC	×3 (15 bits)
	Antenna	×3 (Main/Rx-diversity/GNSS antenna interfaces)
	SPI	> 1 (for QuecOpen® version only)
	GPIO	> 15 (for QuecOpen® version only)
Audio	Echo cancellation Noise reduction	
Embedded Protocols	TCP/ UDP/ PPP/ PING/ FTP(S)/ HTTP(S)/ SMTP/ SSL/ TLS/ MMS/ NTP/ FILE/ QMI	
Drivers	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	

** means under development*

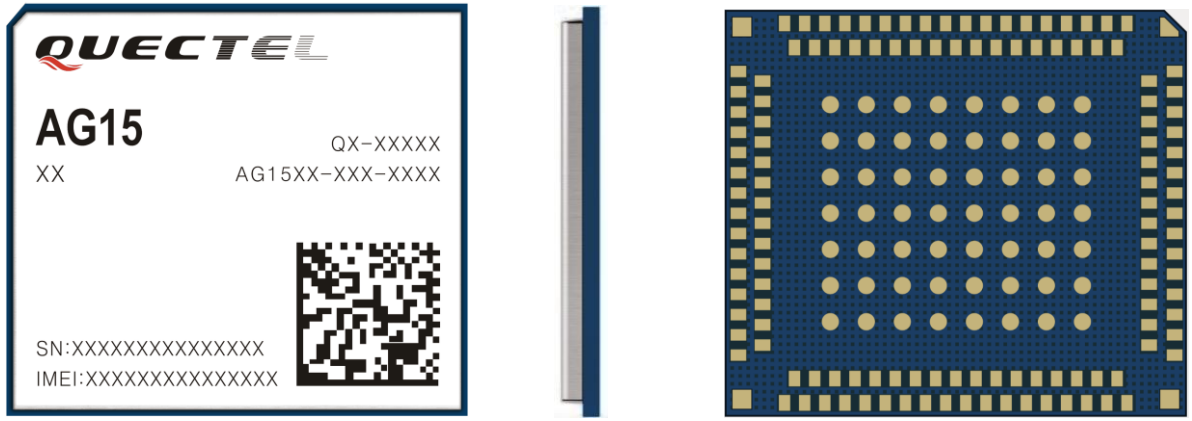
AG35 Features 3

Item	Description	Remark
Advanced Features	eCall	
	ERA-GLONASS*	
	QuecOpen® (Open Linux)	
	Multi-APN	
	DFOTA	
	Secure Boot	
	TrustZone/TPM*	
	Temperature management	
	Embedded codec	*Optional*
	Code/user data backup for higher security	
ESD/ EMI Protection	Through internal specific circuits and components	

** means under development*

Automotive C-V2X Module AG15 Highlights

Support C-V2X Direct Communications (MDM9150)



28.0mm × 32.0mm × 2.85mm

- Qualcomm MDM9150 chipset solution dedicated for C-V2X (V2V, V2I, V2P) applications
- Designed to meet IATF 16949 requirements
- Wide operation temperature range (-40℃ to +85℃)
- Automotive quality processes (PPAP, 8D, DFMEA, PFMEA…)
- Extremely high reliability thanks to automotive grade testing standard
- 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
- Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment

C-V2X Module AG15 Specifications

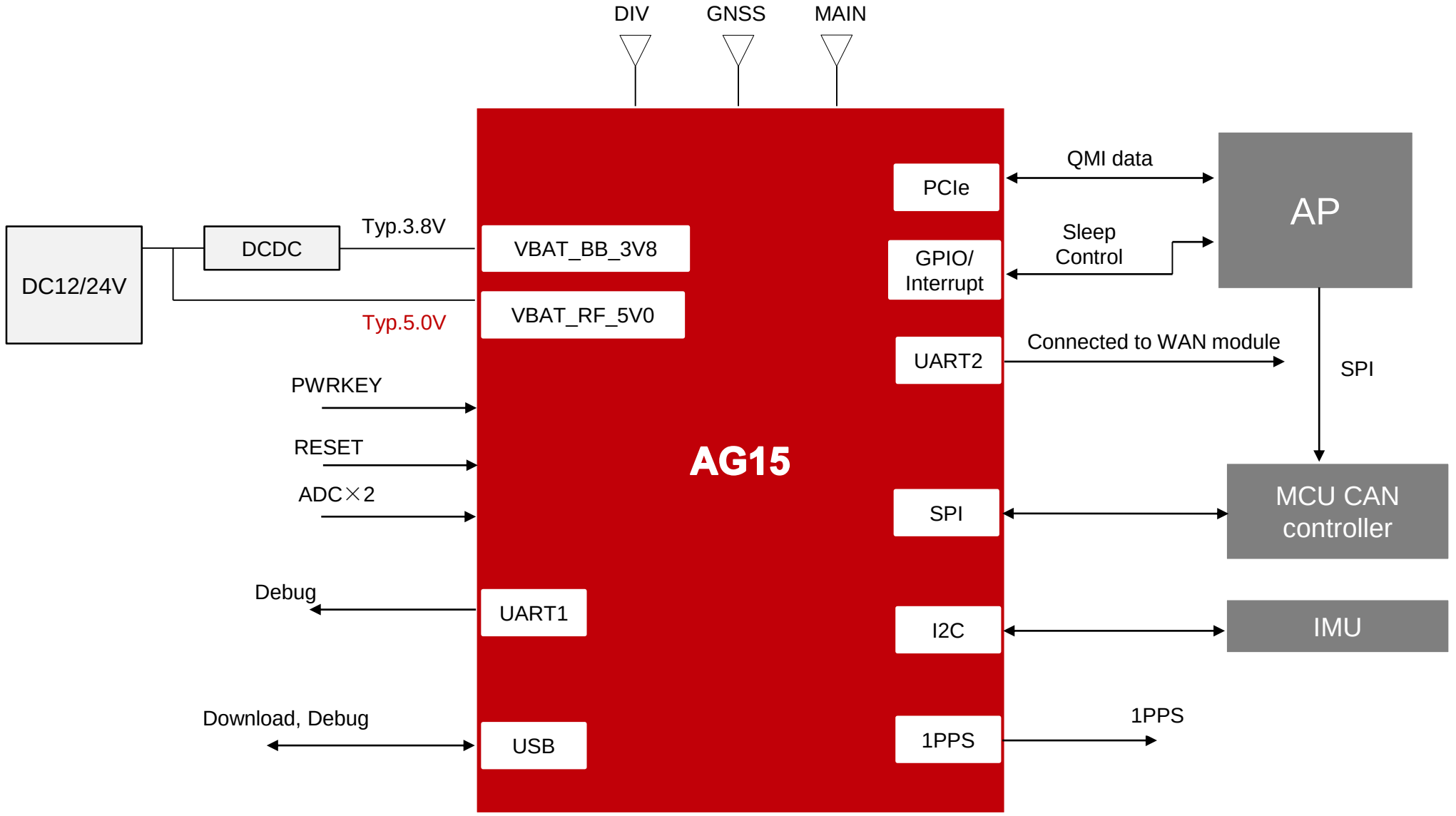
Qualcomm MDM9150 C-V2X Chipset solution based on 3GPP Rel.14 for PC5-based direct communications

28.0mm × 32.0mm × 2.85mm

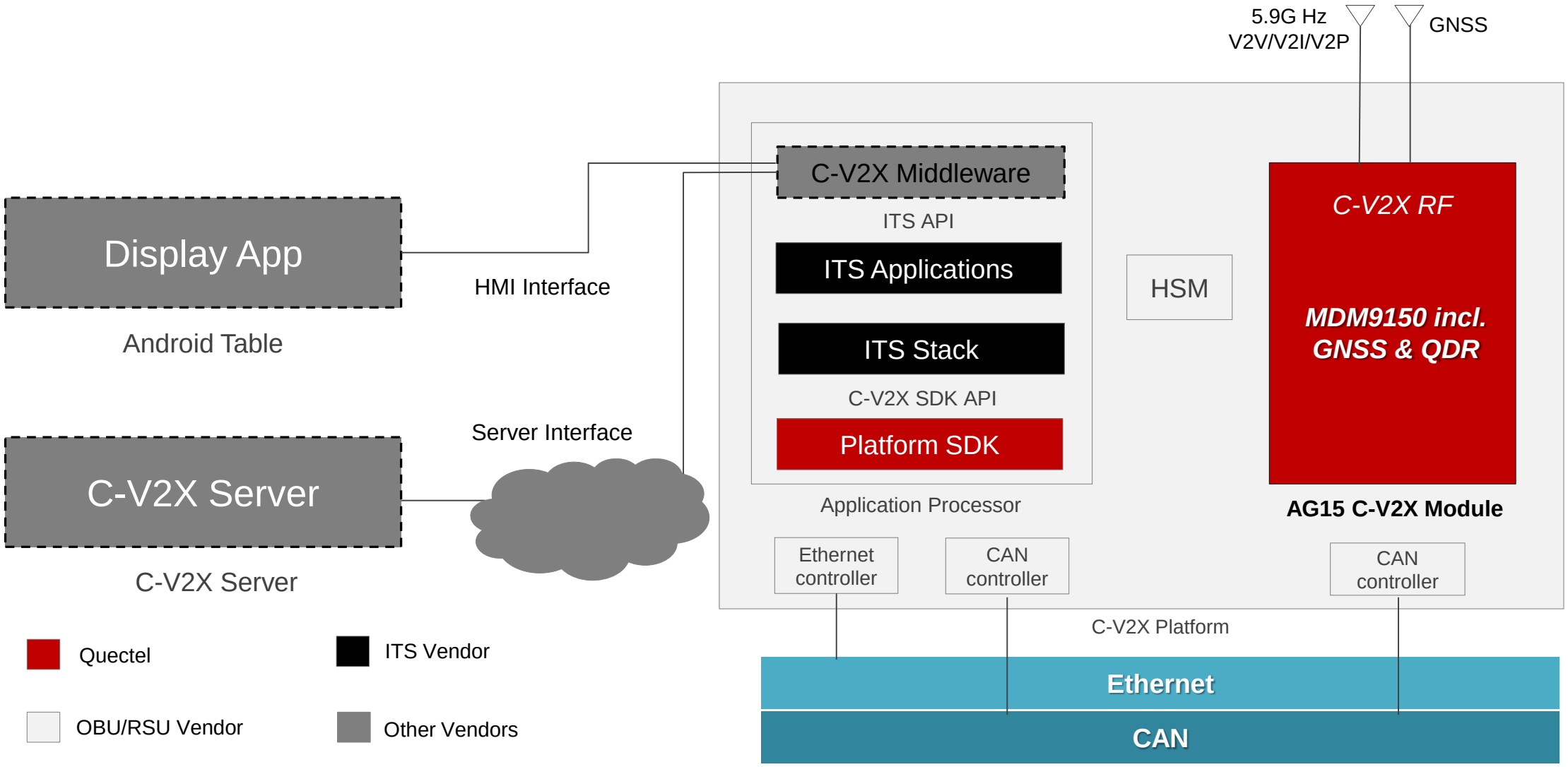
Features	AG15
Frequency	5.8GHz① & 5.9GHz
Embedded GNSS	GPS, GLONASS, BeiDou, Galileo, QZSS
Interfaces	PCIe, USB 3.0/2.0, SPI, I2C, UART, GPIO, ADC
Dead Reckoning	QDR3 (Share the same IMU with MDM9628)
Region	Global
Certification	TBD

① 5.8GHz for AG15 is under development.

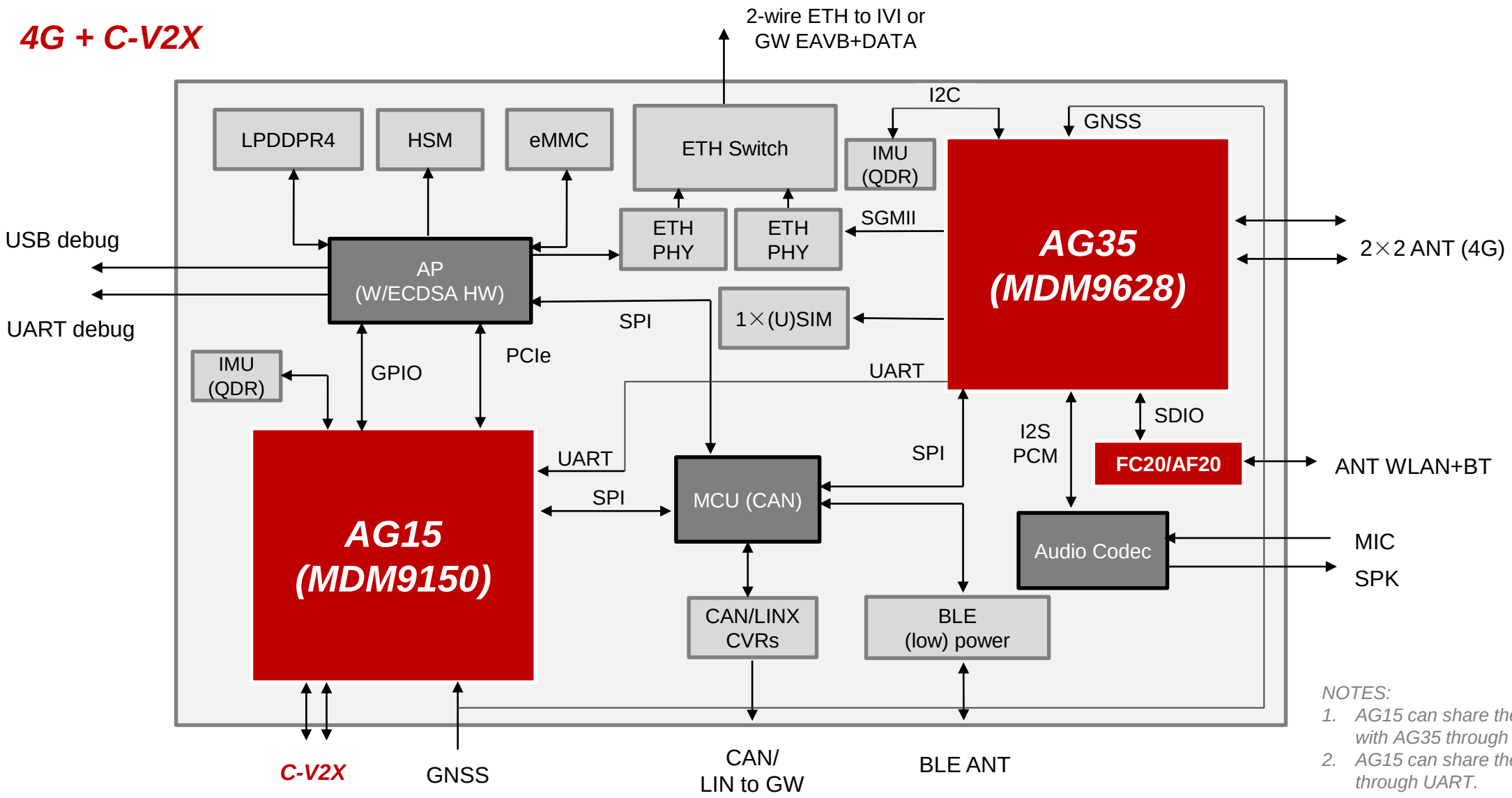
AG15 Interface Design



C-V2X System


5.9G Hz
V2V/V2I/V2P
GNSS
Display App
HMI Interface
Android Table
C-V2X Middleware
ITS API
ITS Applications
ITS Stack
C-V2X SDK API
Platform SDK
Application Processor
HSM
C-V2X RF
MDM9150 incl.
GNSS & QDR
AG15 C-V2X Module
Server Interface
C-V2X Server
C-V2X Server
Ethernet controller
CAN controller
CAN controller
C-V2X Platform
Ethernet
CAN
Quectel
ITS Vendor
OBU/RSU Vendor
Other Vendors

AG15+AG35 TCU Hardware Architecture

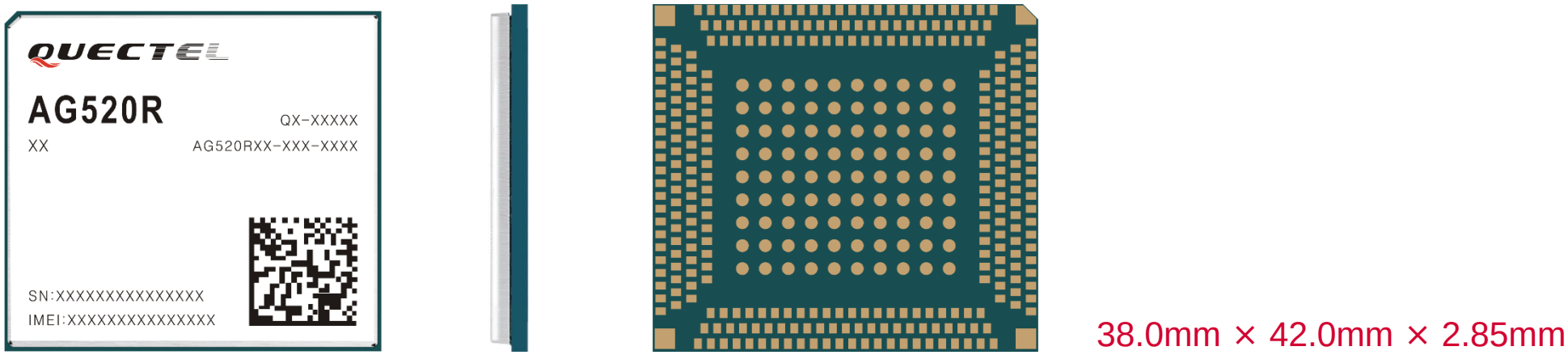


NOTES:

1. *AG15 can share the GNSS antenna with AG35 through a power splitter.*
2. *AG15 can share the IMU with AG35 through UART.*

Automotive Module AG520R Highlights

Multi-Mode Automotive Module up to LTE-A Cat 19 (SA415M)



38.0mm × 42.0mm × 2.85mm

- 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℃ to +85℃)
- Automotive quality processes (PPAP, 8D, DFMEA, PFMEA…)
- 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
- Multi-frequency GNSS receiver available for applications requiring fast and accurate fixes in any environment

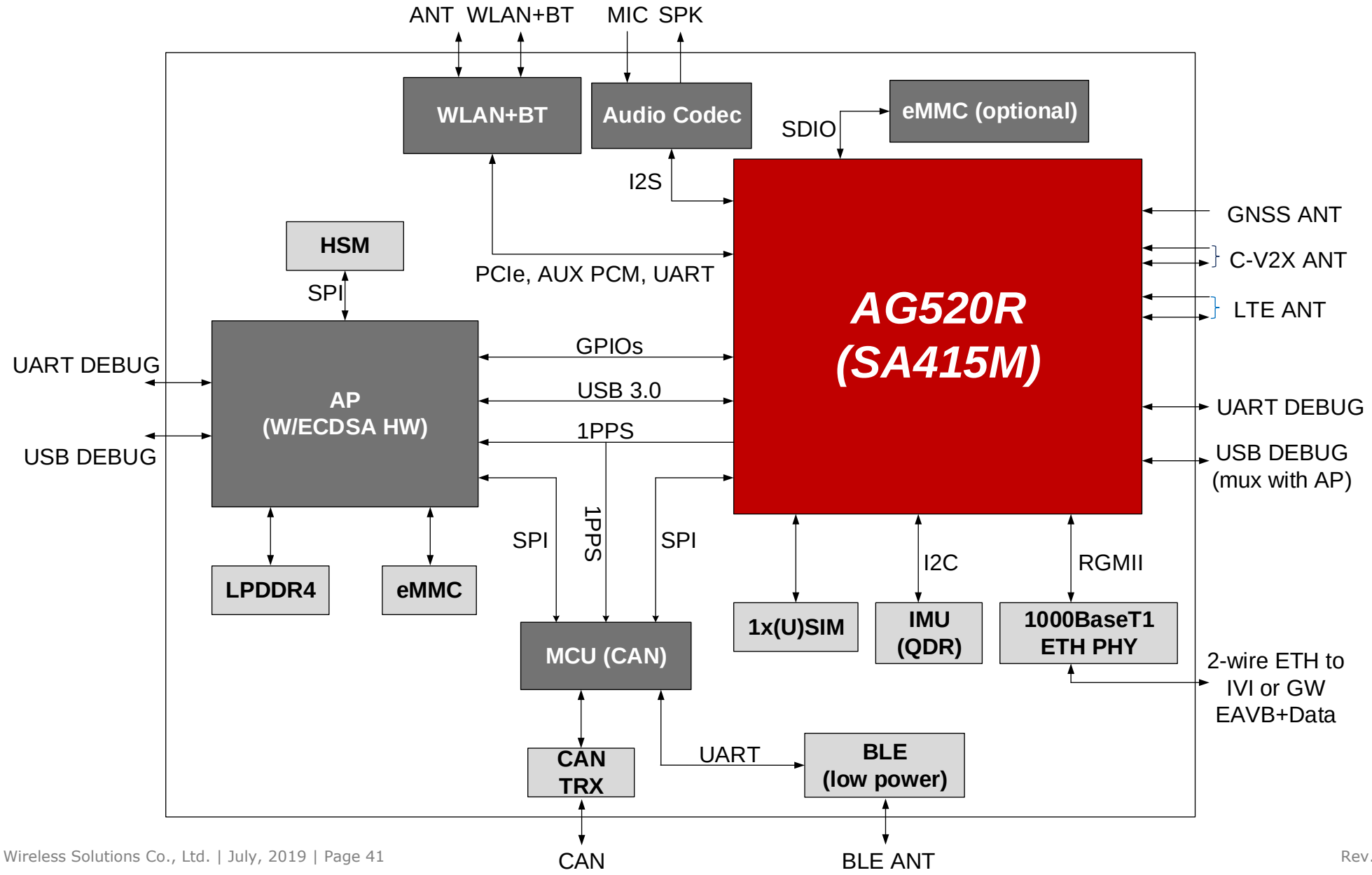
AG520R Features

38.0mm × 42.0mm × 2.85mm

Multi-Mode LTE-A Up to Cat 19 + Optional C-V2X

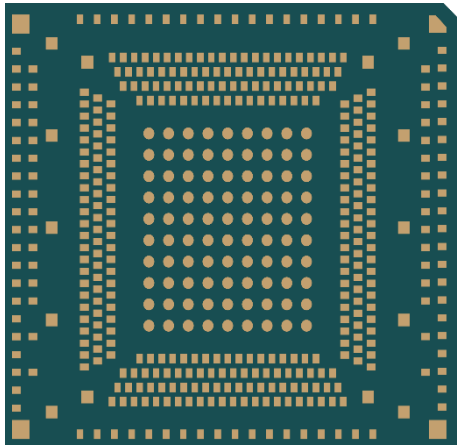
Features	AG520R
4G Category	Max up to Cat 19
Apps Processor	Cortex A7 at 1.5GHz; 256 KB L2
C-V2X Optional	PC5 Mode 4 (direct communication), uu mode
Embedded GNSS	GPS/ GLONASS/ BeiDou/ Galileo Enhanced Automotive MF-GNSS (L1/L2/L5) Optional
QDR Optional	QDR3 (external IMU is required)
Interface	PCIe, USB 2.0/3.0, RGMII, SDIO, SPI, I2C, I2S, PCM, UARTs, GPIOs, 1PPS, Wi-Fi interface, BT interface
Antenna interface	• 2 × Antennas for LTE-A Cat 9 (2×2 MIMO) **or** 4 × Antennas for LTE-A Cat 19 (4×4MIMO) • 2 × C-V2X antenna • 1 × GNSS antenna
Region	• -CN (China) • -EU (EMEA) • -NA (North America) • -J (Japan) • -LA (Latin America)
Certification	TBD

Proposed AG520R System Architecture (4G+C-V2X)



Automotive Module AG550Q Highlights

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



53.0mm × 54.5mm × 2.75mm

- Qualcomm SA515M chipset solution dedicated for automotive 5G NR and optional C-V2X applications
- Ideal for automotive applications with IATF 16949 requirement
- Wide operation temperature range (-40℃ to +85℃)
- Automotive quality processes (PPAP, 8D, DFMEA, PFMEA…)
- 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
- Multi-frequency GNSS receiver available for applications requiring fast and accurate fixes in any environment

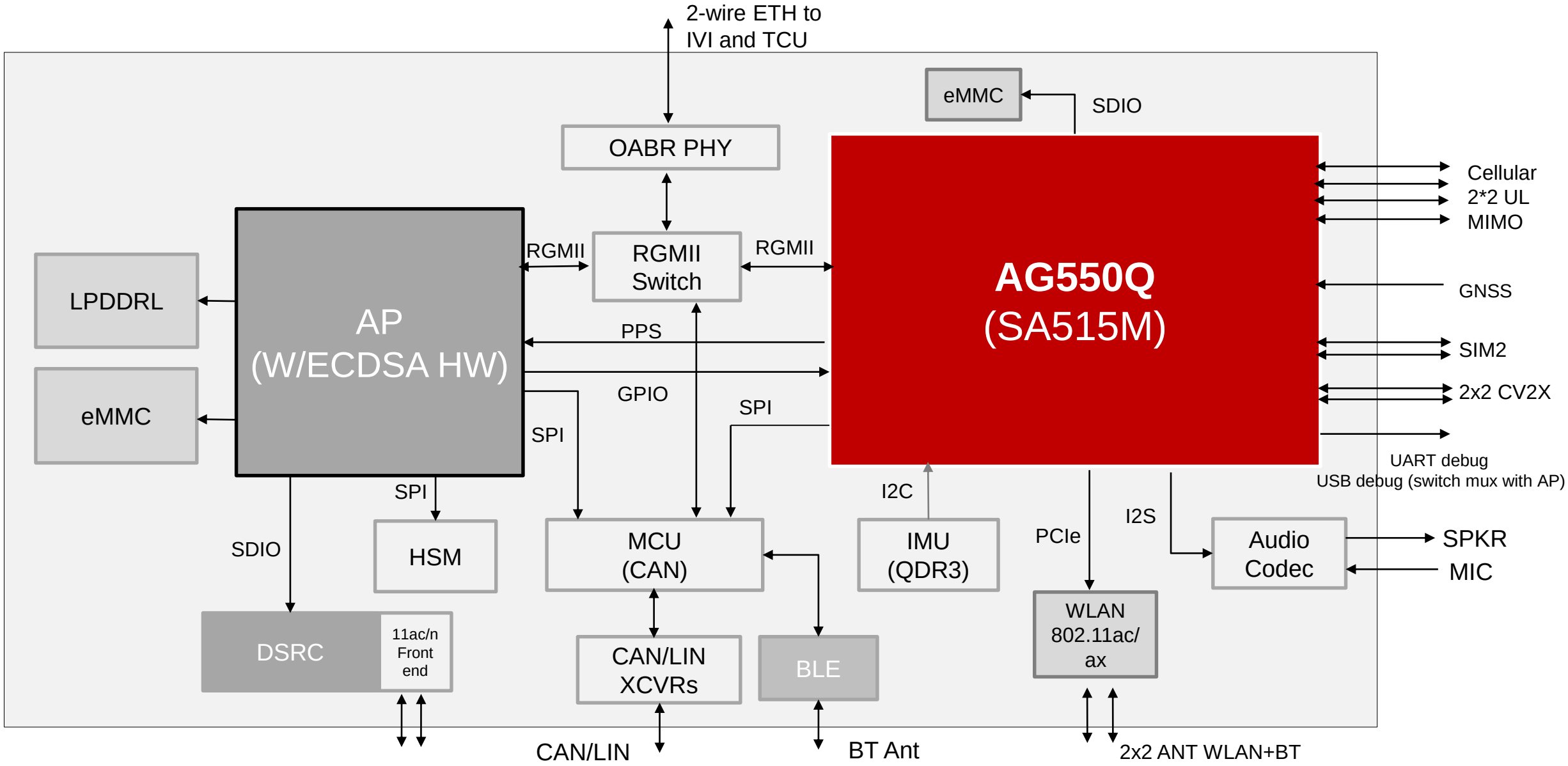
AG550Q Features

53.0mm × 54.5mm × 2.75mm

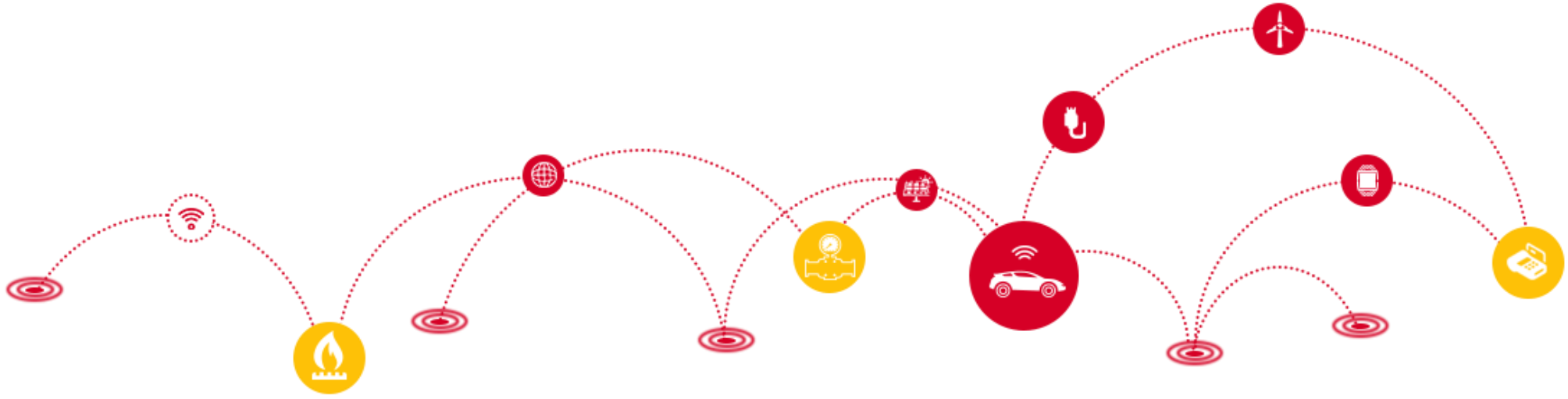
Automotive Grade 5G Module + Optional C-V2X

Features	AG550Q
5G NR	3GPP Release 15 NSA/SA operation, Sub-6G
4G Category	LTE Cat 19, 3G/2G fallback
Apps Processor	Cortex A7 at 1.5GHz; 256 KB L2
C-V2X Optional	PC5 Mode 4 (direct communication), uu mode
DSDA Optional	Dual SIM Dual Activation
Embedded GNSS	GPS/ GLONASS/ BeiDou/ Galileo Enhanced Automotive MF-GNSS (L1/L2/L5) Optional
QDR Optional	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 interface	• 4×4 Antenna sharing with 5G and 4G • 2×2 ANT DSDA • 2 × C-V2X antenna • 1 × GNSS antenna
Region	• -CN (China) • -EU (EMEA) • -NA (North America) • -ROW (Rest of World)
Certification	TBD

Proposed AG550Q System Architecture (5G+C-V2X)



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



Smart Modules Roadmap

LTE Cat 4
SC20
MSM8909

- Multi-mode LTE
- Quad-core A7 1.1GHz
- HD Display
- Camera 8MP
- Cat 4, 150M DL/ 50M UL
- LCC+LGA Form Factor

LTE Cat 6
SC600Y
SDM450

- Multi-mode LTE
- Octa-core A53 (**1.8GHz**)
- 2GB LPDDR3+16GB eMMC
- WUXGA Display
- Camera **21MP**
- Cat 6, 300M DL/ 50M UL
- LCC+LGA Form Factor

LTE Cat 6
SC600T
MSM8953

- Multi-mode LTE
- Octa-core A53 (**2.0GHz**)
- 2GB LPDDR3+16GB eMMC
- WUXGA Display
- Camera **24MP**
- Video 4K@30fps
- Cat 6, 300M DL/ 50M UL
- LCC+LGA Form Factor

LTE Cat 6
SC66
SDM660

- Multi-mode LTE
- Octa-core Kryo 260
- 3GB LPDDR4X+32GB eMMC
- Display 2560x1600 @60fps Primary + 4K@30fps over DP
- Camera 24 MP at 30 fps ZSL
- Cat 6, 300M DL/ 50M UL
- **Neural processing engine**
- LCC+LGA Form Factor

AI

Smart Module Life Cycle

……2025

SC20 Specifications

Variant		SC20-E	SC20-EU	SC20-A	SC20-J	SC20-AU	SC20-CE	SC20-W
LTE	LTE-FDD	B1/ B3/ B5/ B7/ B8/ B20	B1/ B2①/ B3/ B5①/ B7/ B8/ B20/ B28A	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	B38/B41②	\	B41	B40	B38/ B39/ B40/ B41	\
UMTS	WCDMA	B1/ B5/ B8	B1/B2/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	Quad-band	850/ 1900MHz	\	Quad-band	900/ 1800MHz	\
Embedded GNSS		Y	Y	Y	Y	Y	Y	\
Wi-Fi/BT		Y	Y	Y	Y	Y	Y	Y
Region		EMEA/ Korea/ Thailand/ India	EMEA/ Korea/ Thailand	America	Japan	Australia/ Taiwan/ Brazil	China (CMCC, CUCC)	Global
Certification		**Regulatory:** GCF/ CE/ NBTC/ KC	**Regulatory:** GCF/ CE/ RCM	**Carrier:** Verizon/ AT&T/ T-Mobile③/ Sprint④/ Rogers/ Telus③ **Regulatory:** GCF/ FCC/ PTCRB/ IC	**Carrier:** NTT DOCOMO* **Regulatory:** JATE/ TELEC	**Carrier:** Telstra **Regulatory:** GCF/ CE/ Anatel/ RCM	**Regulatory:** SRRC/ NAL/ CCC	**Regulatory:** CE/ FCC/ IC/ Anatel/ JATE/ TELEC/ RCM

"Y" means supported.
"" means under development.*
① Rx-diversity is not supported on LTE B2/B5 for SC20-EU.
② LTE B41 for SC20-EU is optional and not certified by GCF.
③ T-Mobile/ Telus for Data Only version has been done and that for Voice version is TBD.
④ TBD .

SC20 Features

Item	Description
CPU	• MSM8909, Quad-core A7, up to 1.1GHz
Memory	• 1GB LPDDR3 + 8GB eMMC/2GB LPDDR3 + 16GB eMMC
OS	• Android 7.1 *(Android 8.1 Optional)*
WLAN	• 2.4G/5G, 802.11 a/b/g/n • 150Mbps, STA/AP/P2P
BT	• BT 2.1 + EDR/3.0/4.1 LE (BT4.2 available on Android 7) • Support a maximum of 10 ACL/BEL/SCO links
GNSS	• GPS/BeiDou/GLONASS, or GPS/BeiDou/Galileo
Modem	• 3GPP Release 10 compliant

SC20 Interfaces

Item	Description
LCM	• 4-lane MIPI_DSI, 1.5Gbps/lane, HD (720P) @60fps • Support MIPI to RGB, MIPI to LVDS and MIPI to HDMI
Camera	• 4-lane MIPI_CSI, 1.5Gbps/lane, 1 ISP, Bayer/YUV format
Touch panel	• Capacitive-screen, I2C controls
Audio	**Analog channels:** • Two inputs: MIC1, MIC2 • Three outputs: speaker, earpiece, headphone
Video	• Encode: 720P (H.264) @30fps; WVGA (MPEG-4/VP8) @30fps • Decode: 1080P (H.264/MPEG-4/VP8/H.265/DivX4/5/6) @30fps; WVGA (H.263) @30fps
USB 2.0 Device	• High Speed, 480Mbps • Support USB 2.0 OTG, USB OTG+Charge and USB to Ethernet functions
(U)SIM	• 2, support 1.8/3V (U)SIM cards, with (U)SIM card detection function; DSDS supported
UART	• 2, support up to 4Mbps with Hardware Flow Control
SDIO	• SD 3.0, 4 bit SDIO
I2C/SPI/ADC/GPIO	• Supported
PWRKEY	• Supported
Antenna	• 4 pads (for main antenna, diversity antenna, GNSS antenna and BT/Wi-Fi antenna, respectively)

SC20 Support Package

Evaluation Board

Interfaces

- Serial port
- Antenna interface
- Micro-USB interface

Accessories

- Micro-USB cable
- USB to RS232 converter cable
- RF cables
- Power adapter
- Earphone
- Antennas
- USB flash drive

SC600Y/SC600T Specifications

Variant		SC600Y-EM/SC600T-EM	SC600Y-NA/SC600T-NA	SC600Y-JP/SC600T-JP	SC600Y-WF/SC600T-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/ B40/ B41	B41	B41	\
UMTS	WCDMA	B1/ B2/ B4/ B5/ B8	B2/ B4/ B5	B1/ B6/ B8/ B19	\
	TD-SCDMA	\	\	\	\
CDMA		\	\	\	\
GSM/EDGE		850/900/1800/1900MHz	\	\	\
Embedded GNSS		Y	Y	Y	\
Wi-Fi/BT		Y	Y	Y	Y
Region		EMEA/ India/ Korea/ Taiwan/ South Asia/ Latin America/ Australia/ New Zealand/ South Africa	North America	Japan	Global
Certification		**Carrier:** Telstra① **Regulatory:** GCF*/ CE*/ RCM*	**Carrier:** Verizon*/ AT&T*/ T-Mobile* **Regulatory:** GCF*/ FCC*/ PTCRB*/ IC*	**Carrier:** NTT DOCOMO*/ KDDI* **Regulatory:** JATE/ TELEC	TBD

"Y" means supported.
"" means under development.*
① TBD

SC600Y/SC600T Features

Item	Description
CPU	• **SC600Y**: SDM450, Octa-core ARM Cortex-A53 64-bit CPU @1.8GHz • **SC600T**: MSM8953, Octa-core ARM Cortex-A53 64-bit CPU @2.0GHz
GPU	• Qualcomm® Adreno™ 506 graphics processing unit (GPU) with 64-bit addressing
Memory	• 2GB LPDDR3 + 16GB eMMC
OS	• Android 9
WLAN	• 2.4G/5GHz, 802.11 a/b/g/n/ac, 433Mbps, STA/AP/P2P
BT	• BT2.1+EDR/ 3.0/ 4.1LE/ 4.2LE • Support a maximum of 10 ACL/BEL/SCO links
GNSS	• GPS/BeiDou/GLONASS, or GPS/BeiDou/Galileo
Modem	• Partial 3GPP Release 10 compliant

SC600Y/SC600T Interfaces

Item	Description
LCM	• Support dual LCDs for independent display: dual 4-lane MIPI_DSI; WUXGA (1920*1200) @60fps • Wi-Fi display: 1080P 30fps (UBWC)
Camera	• 3 groups of 4-lane MIPI_CSI, up to 2.1Gbps per lane • Support three cameras (4-lane + 4-lane + 4-lane) or four cameras (4-lane + 4-lane + 2-lane + 1-lane) • Up to 21MP with dual ISP @**SC600Y** • Up to 24MP with dual ISP @**SC600T**
Touch panel	• 2, Capacitive-screen, I2C controls
Audio	**Analog channels:** • Two inputs: MIC1, MIC2 • Three outputs: speaker, earpiece, headphone
Video	• Video encoding and decoding: up to 1080P @60fps @**SC600Y** • Video encoding and decoding: up to 4K at 30fps @**SC600T** Encoder HFR: 720P@120ps; 60Mbps; Maximum 972000 macro block/s; 1080P@60fps decode+1080P@30fps encode
USB	• USB 3.0 and 2.0 Compliant, Type-C, USB OTG + Charge
(U)SIM	• 2, support 1.8/3V (U)SIM cards, with (U)SIM card detection function; DSDS supported
UART	• 3, support 4Mbps with hardware flow control
SDIO	• SD 3.0, 4 bit SDIO
I2C/SPI/PWM/ADC/GPIO/PWRKEY	• Supported
Antenna	• 4 pads (for main antenna, diversity antenna, GNSS antenna and BT/Wi-Fi antenna, respectively)

SC66 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/ B41①	B41①	B41②	B34/ B38/ B39/ B40/ B41①	\
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		B2/ B3/ B5/ B8	\	\	B3/ B8	\
Embedded GNSS		Y	Y	Y	\	\
Wi-Fi/BT		Y(MIMO supported)	Y(MIMO supported)	Y(MIMO supported)	Y(MIMO is not supported)	Y(MIMO supported)
Region		Europe/ India/ Korea/ Taiwan/ South Asia/ Latin America/ Australia/ South Africa	North America	Japan	China	Global
Certification		**Carrier:** Telstra **Regulatory:** GCF*/ CE*/ RCM*/ Anatel/ KC	**Carrier:** Verizon*/ AT&T* **Regulatory:** GCF*/ FCC*/ IC*/ PTCRB*	**Carrier:** NTT DOCOMO③ **Regulatory:** JATE*/ TELEC*	**Regulatory:** CCC/ SRRC/ NAL	**Regulatory:** FCC/ IC/ CE/RCM

"Y" means supported.
"" means under development.*
① Only 200MHz bandwidth is supported.
② Only 120MHz bandwidth is supported.
③ means TBD

SC66 Features

Item	Description
CPU	• SDM660, Customized 64-bit ARM v8.0-compliant AP (Kryo260 CPU) • KryoGold Quad high-performance cores targeting 2.2GHz, L2 - 1MB • KryoSilver Quad low-power cores targeting 1.843GHz, L2 - 1MB
GPU	• Qualcomm® Adreno 512 at 650MHz, OpenGL ES3.1 + AEP, DX12_FL12, Vulkan, OpenCL2.0 FP, RenderScript
Memory	• 3GB LPDDR4X + 32GB eMMC (larger memory is optional)
WLAN/BT	• 2.4G/5GHz, 802.11 a/b/g/n/ac; • Bluetooth 5.0; • 2×2 MIMO Wi-Fi (except SC66-CE)
Video	• Decoder: 4K@30fps; H.264, VP8,VP9 and HEVC • Encoder: 4K@30fps; HEVC, H264, VP8 and MPEG-4
GNSS	• GPS, GLONASS, BeiDou, Galileo
Modem	• 3GPP Release 12 compliant (parts of Release 13 features are supported)
OS	• Android 9
AI Engine	• Vector DSP, CPU and GPU work together, providing neural network SDK, supporting Caffe/Caffe2/Tensorflow
USB	• Dual USB, 3.1x1, 2.0x1
LCM	• 2560×1600 @60fps primary display • 4k@30fps over DP • Dual MIPI DSI • Wi-Fi display: 1080P @30fps

LTE Standard Modules

LTE-A & 5G Modules

Automotive Modules

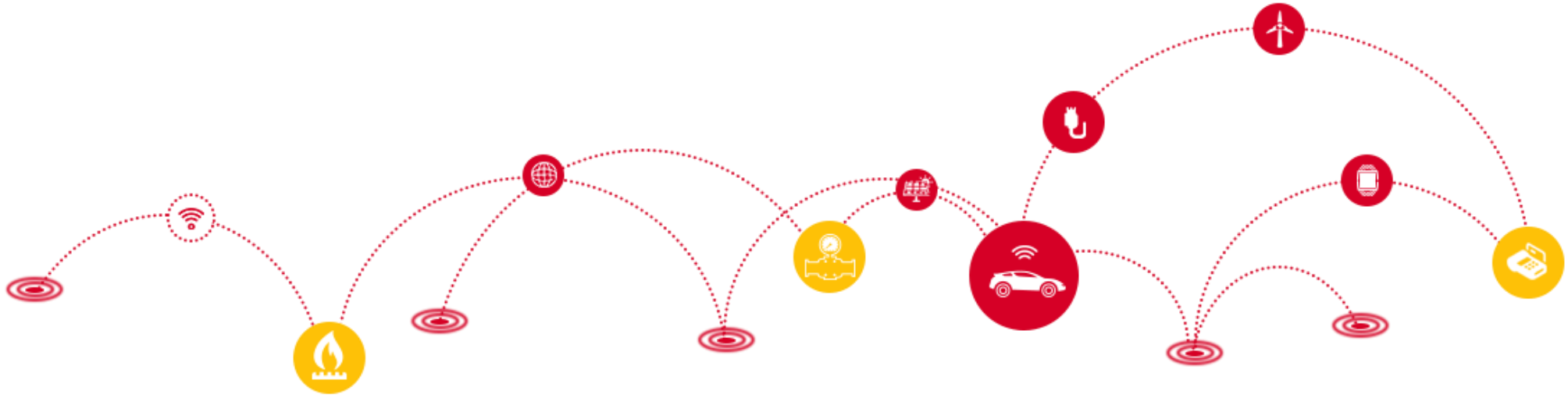
Smart Modules

LPWA Modules

UMTS/HSPA(+) Modules

GSM/GPRS Modules

GNSS Modules



LPWA Modules Roadmap

QUALCOMM

BG96
- BG96: Cat M1/ NB1/ EGPRS/ GNSS
- 375K DL/ 375K UL
- Global Version

BG95 Series — Jun. 2019
- Cat M1/ NB2/ EGPRS/ GNSS
- **Compatible with BG96**
- -M1/-M2/-M3/-M4/-M5/-N1/-MF
- Global Version

BC600L-M3 — Aug. 2019
- Cat M1/ NB2/ EGPRS/ GNSS
- LCC Package
- Compatible With MC60
- Global Version

BG77 — Jul. 2019
- Cat M1/ NB2/ GNSS
- **Super Compact Size**
- Global Version

BC69 — Sep. 2019
- Cat M1/ NB2/ GNSS
- **Compatible with M66**
- Global Version

MEDIATEK

BC66
- Cat NB1
- 25.5 DL/62.5 UL
- Global Version

BC66-NA — May 2019
- Cat NB2
- 103K DL/150K UL
- **B71/B85 Supported**
- Global Version

BC950N-N1 — Jul. 2019
- Cat NB1
- 25.5K DL/62.5K UL
- BLE 5.0
- **450MHz Supported**

HISILICON

BC95-G
- Cat NB2 (NB-IoT)
- 125K DL/ 150K UL
- Global Version

BC68
- Cat NB2 (NB-IoT)
- 125K DL/ 150K UL
- Global Version

UNISOC

BC92 — Jul. 2019
- Cat NB1/ GPRS
- 25.5K DL/62.5K UL
- GPRS: 85.6K DL/UL
- Global Version

MM/YYYY *Estimated Engineering Sample Dates*

2017 | 2018 | 2019

Quectel LPWA Modules Summary (MP)

Module	BG96	BC95-G	BC68	BC66
Timeline	MP in Jan. 2018	MP in Jan. 2017	MP in Feb. 2018	MP in Jul. 2018
Chipset	Qualcomm MDM9206	Hisilicon Hi2115	Hisilicon Hi2115	MTK MT2625
Mode	Cat M1/ Cat NB1/ EGPRS/ GNSS	Cat NB2	Cat NB2	Cat NB1
LTE Band	1/2/3/4/5/8/12(17)/13/18/19/20/25①26*/28/39 *(B39 for Cat M1 only)*	1/3/5/8/20/28	1/3/5/8/20/28	1/2/3/4/5/8/12/13/17/18/19/20/25/28/66/26*
Compatibility	EG91/ UG95/ UG96/ BG95	M95	M66/ BC66	M66/ BC68
Highlight	• Robust quality • 30+ global certifications	• Good robustness • Proprietary DFOTA	• Good robustness • Proprietary DFOTA	• Cost efficiency • Small size • 2.1V-3.63V power supply • eSIM
Certification	**Carrier:** Vodafone/ Deutsche Telekom/ Telefónica/ Verizon/ AT&T/ T-Mobile/ Telus/ SKT/ SoftBank/ KDDI/ Telstra/ LGU+/ NTT DOCOMO/ Sprint/ Rogers*/ Bell* **Regulatory:** GCF/ CE/ FCC/ PTCRB/ IC/ IFETEL/ CCC/ KC/ NCC/ JATE/ TELEC/ RCM/ NBTC/ IMDA	**Carrier:** Vodafone/ Deutsche Telekom/ Telefónica*/ KT*/ LGU+*/ SoftBank*/ Telstra **Regulatory:** GCF/ CE/ KC/ NCC/ JATE/ TELEC/ RCM/ NBTC/ IMDA **Others:** ATEX*	**Carrier:** Vodafone/ Deutsche Telekom/ Telefónica*/ SoftBank*/ Telstra **Regulatory:** GCF/ CE/ KC*/ NCC/ JATE/ TELEC/ RCM/ IMDA **Others:** ATEX	**Carrier:** Vodafone/ T-Mobile/ AT&T/ Telefonica*/ Verizon*/ Telstra*/ LGU+*/ NTT DOCOMO*/ SoftBank* **Regulatory:** GCF/ CE/ FCC/ PTCRB/ IC/ KC/ NCC/ JATE/ TELEC/ RCM/ NBTC/ IMDA **Others:** ATEX*
Promotion Recommendations	• Quality sensitive customers • Asset tracking	• Smart metering • Customers with high requirements on product maturity	• Smart metering/ smoke detector • Customers with high requirements on product maturity	• Smart metering/ smoke detector/ tracker • Cost sensitive customers

"" means under development.*
① LTE B25 will be supported on BG96 with R1.2 hardware version.

Quectel LPWA Modules Summary (Under Development 1)

Module	BG95 Series	BG77	BC600L-M3	BC69
Timeline	• ES: Jun.2019 • CS: Aug. 2019	• ES: Aug. 2019 • CS: Sep. 2019	• ES: Aug. 2019 • CS: Oct. 2019	• ES: Sep. 2019 • CS: Oct. 2019
Chipset	Qualcomm MDM9205	Qualcomm MDM9205	Qualcomm MDM9205	Qualcomm MDM9205
Mode	Cat M1/ Cat NB2/ EGPRS/ GNSS/ Wi-Fi	Cat M1/ Cat NB2/ GNSS	Cat M1/ Cat NB2/ EGPRS/ GNSS	Cat M1/ Cat NB2/ GNSS
LTE Band	1/2/3/4/5/8/12/13/14①/18/19/20/ 25/26*/27①/28/31*/66/71②/72*/73*/85	1/2/3/4/5/8/12/13/14①/18/19/20/ 25/26*/27①/28/66/71②/85	1/2/3/4/5/8/12/13/14①/17/18/B19/20/ 25/26*/27①/28/66/71②/85	1/2/3/4/5/8/12/13/14①/17/18/19/20/ 25/26*/27①/28/66/71②/85
Compatibility	BG96/ EG91/ UG95/ UG96/ M95	----	MC60	M66/ BC66/ BC68
Highlight	• Low power consumption • 1.12Mbps UL (Cat M1) • 2.5V-4.8V or 3.3V~4.3V power supply • VoLTE for Cat M1/ CS voice for GSM • eSIM • Wi-Fi positioning	• Super compact size • (14.9×12.9×1.7)mm • 2.5V-4.8V power supply	• Compact size • VoLTE for Cat M1/ CS voice for GSM • 1.12Mbps UL (Cat M1) • 3.3V-4.3V power supply	• Small size • 2.5V-4.8V power supply
Certification Plan *(depend on customer demands)*	*All major global carriers*	*All major global carriers*	*Major carriers in Europe*	*Major carriers in Europe*
Promotion Recommendations	• Quality sensitive customers • Asset tracking	• Smart wearables • Size-sensitive applications	• Quality sensitive customers • Asset tracking	• Quality sensitive customers • Smart metering/ smoke detector/ tracker

"" means under development* *① Cat M1 bands only* *② Cat NB2 Bands Only*

Quectel LPWA Modules Summary (Under Development 2)

Module	BC66-NA	BC950N-N1	BC92
Timeline	• ES: May 2019 • CS: Aug. 2019	• ES: Jul. 2019 • CS: Sep. 2019	• ES: Jul. 2019 • CS: Oct. 2019
Chipset	MTK MT2625	MTK MT2625	UNISOC RDA8909B
Mode	Cat NB2	Cat NB1 (450MHz supported) / BLE 5.0 (optional)	Cat NB1 / GSM
LTE Band	1/2/3/4/5/8/12/13/17/18/19/20/25/28/66/26*/71/85	1/2/3/4/5/8/12/13/17/18/19/20/25/26/28/66/31	3/5/8/20/28
Compatibility	M66/ BC68/ BC66	BC95-G	BC95 R2.0/ M95
Highlight	• Cost efficiency • Small size • 2.1V-3.63V power supply • eSIM	• Support 450MHz (Band 31) • BLE 5.0 (optional) • Low power consumption • Cost efficiency	• GSM voice call* • Built-in ADC temperature detection* • Low power consumption • DFOTA
Certification Plan *(depend on customer demands)*	**Carrier*:** Vodafone/ Verizon/ AT&T/ T-Mobile/ Telstra **Regulatory*:** GCF/ CE/ FCC/ PTCRB/ IC/ KC/ NCC/ JATE/ TELEC/ RCM **Others*:** ATEX	**Regulatory*:** GCF/ CE	**Carrier*:** Vodafone **Regulatory*:** GCF/ CE/ RCM
Promotion Recommendations	• Smart metering/ smoke detector/ tracker • Cost sensitive customers	• Electric/ water/ gas meter • Smart home/ agriculture/city • Detector/ tracker • Cost sensitive customers	• Smart wristband/ smart watch/ student card/ bike sharing/ tracker/ parking/ truck

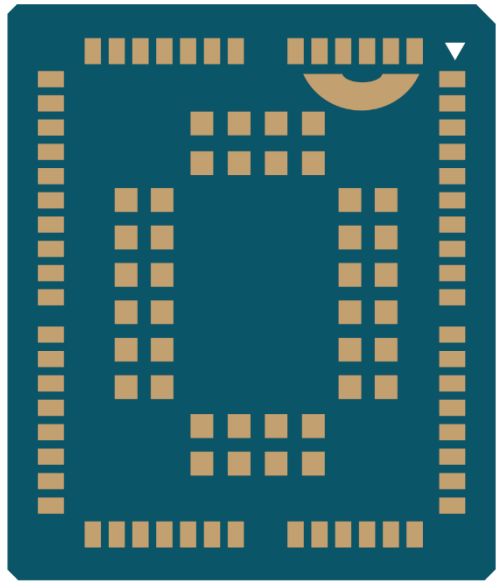
"" means under development*

BG96/BG95/BG77/BC600L-M3/BC69 Summary

Model	Variants	Bands	Package	Dimensions (mm)	eSIM	Compatibility	Target Carrier Certifications
BG96	BG96 (Cat M1/NB1/EGPRS)	Global	LGA	26.5 × 22.5 × 2.3	/	M95/ UG9x/ EG9x	All major global carriers
BG95	BG95-M1 (Cat M1 Only) BG95-M2 (Cat M1/Cat NB2) BG95-M3 (Cat M1/Cat NB2/EGPRS) BG95-N1 (Cat NB2 Only)	Global	LGA	23.6 × 19.9 × 2.2	Optional	BG96/ M95	All major global carriers/ depend on customers' requirements
	BG95-M4 (Cat M1/Cat NB2, 450MHz Supported) BG95-M5 (Cat M1/Cat NB2, Power Class 3) BG95-MF (Cat M1/Cat NB2, Wi-Fi Positioning)				/		
BG77	BG77 (Cat M1/Cat NB2)	Global	LGA	14.9 × 12.9 × 1.7	/	/	All major global carriers/ depend on customers' requirements
BC600L-M3	BC600L-M3 (Cat M1/Cat NB2/EGPRS)	Global	LCC	18.7 × 16.0 × 2.1	/	MC60	Major carriers in Europe
BC69	BC69 (Cat M1/Cat NB2)	Global	LCC	17.7 × 15.8 × 2.0	/	BC66/ BC68/ M66	Major carriers in Europe

BG96 Mechanical Dimensions

Multi-Mode LPWA Module (MDM9206)



Length: 26.5mm (± 0.15mm)
Width: 22.5mm (± 0.15mm)
Height: 2.3mm (± 0.2mm)
Weight: Approx. 3.1g

BG96 Highlights

Highlight	Description
Multi Modes	Cat M1/ Cat NB2/ EGPRS
Global Bands	• **Cat M1/NB1:** B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25①/B26*/B28/B39 (*B39 for Cat M1 only*) • **EGPRS:** 850/900/1800/1900MHz
Low Power Consumption	Approx. 10uA in PSM mode
Mobility	Movable application (TX3.0)
Extended Power Supply Range	3.3V~4.3V, 3.8V typ.
GNSS	GPS, GLONASS, BeiDou/Compass, Galileo, QZSS
VoLTE	PCM digital audio interface
Quecopen®	ARM A7 Processor, with 3MB Flash and 3MB 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 will be supported on BG96 with R1.2 hardware version.

BG96 Specifications 1

26.5mm × 22.5mm × 2.3mm

Cat M1/Cat NB1/EGPRS

Package: 102-pin LGA

Supply Voltage: 3.3V~4.3V, 3.8V Typ.

Data Rate:

- LTE Cat M1: Max. 375kbps (DL), Max. 375kbps (UL) (Half Duplexer)
- LTE Cat NB1: Max. 32kbps (DL), Max. 70kbps (UL)
- EGPRS: Max. 296kbps (DL), Max. 236.8kbps(UL)
- GPRS: Max. 107kbps (DL), Max. 85.6kbps (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): 10μA @PSM

BG96 Specifications 2

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

■ LPWA Cat M1/Cat NB1/EGPRS Module

Items	Description
Cat M1	LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25①/B26*/B28 LTE TDD: B39
Cat NB1	LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25①/B26*/B28
EGPRS	850/900/1800/1900MHz
GNSS	Optional
Region	Global
Certification	**Carrier:** Vodafone/ Deutsche Telekom/ Telefónica/ Verizon/ AT&T/ T-Mobile/ Sprint/ Telus/ SKT/ LGU+/ NTT DOCOMO/ SoftBank/ KDDI/ Telstra/ Rogers*/ Bell* **Regulatory:** GCF/ CE/ FCC/ PTCRB/ IC/ IFETEL/ CCC/ KC/ NCC/ JATE/ TELEC/ RCM/ NBTC/ IMDA

"" means under development.*
① LTE B25 will be supported on BG96 with R1.2 hardware version.

BG96 Power Consumption

Description	Conditions	Typ.	Max.	Unit
Power Saving Mode	PSM @Real Network	10	-	μA
Sleep State①	DRX=1.28s @PagingDuration=35mA/25ms	1.5	78	mA
	e-I-DRX=40.96s @PTW=2.3mA/10s	1.2	81	mA
Idle State②	DRX=1.28s @PagingDuration=45mA/16ms	15	77	mA
	e-I-DRX=40.96s @PTW=16mA/10s	15	83	mA
Active State	23dBm @Instrument	205	496	mA
	10dBm @Instrument	140	278	mA
	0dBm @Instrument	128	225	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

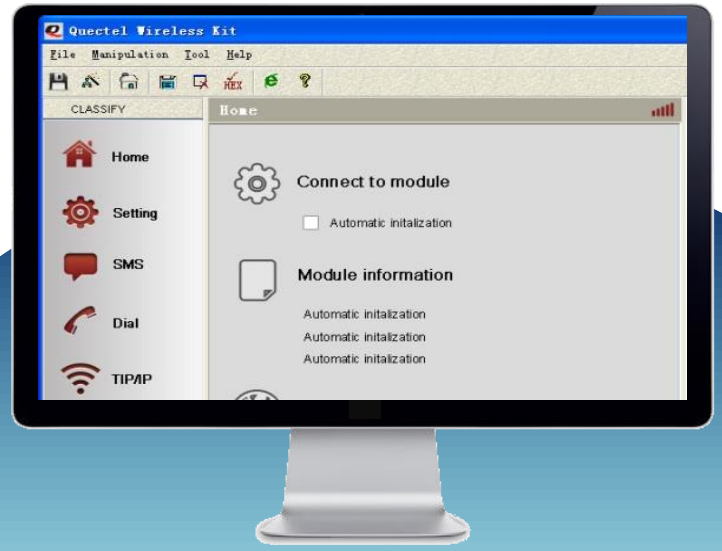
Interface	Description
(U)SIM	1.8V/3.0V
UART	3 (UART1, UART2, UART3)
USB	1
I2C	1
ADC	2
GPIO	2 (I2C and UART3 can be re-configured as extra 4 GPIOs if they are not used)
PCM	1
Antenna pad	2 (for Main Antenna and GNSS Antenna, respectively)
GNSS (Optional)	GPS, GLONASS, BeiDou/Compass, Galileo, QZSS

BG96 Main Functions

Function	Description
Protocols	PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ MQTT
RIL Driver	Android 4.x/5.x/6.x/7.x/8.x/9.x
USB Serial Driver	Windows 7/8/8.1/10, Linux 2.6/3.x/4.1~4.15, Android 4.x/5.x/6.x/7.x/8.x/9.x
NDIS Driver	Windows 7/8/8.1/10
Gobinet Driver	Linux 2.6/3.x/4.1~4.15
QMI_WWAN Driver	Linux 3.x (3.4 or later)/4.1~4.15
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

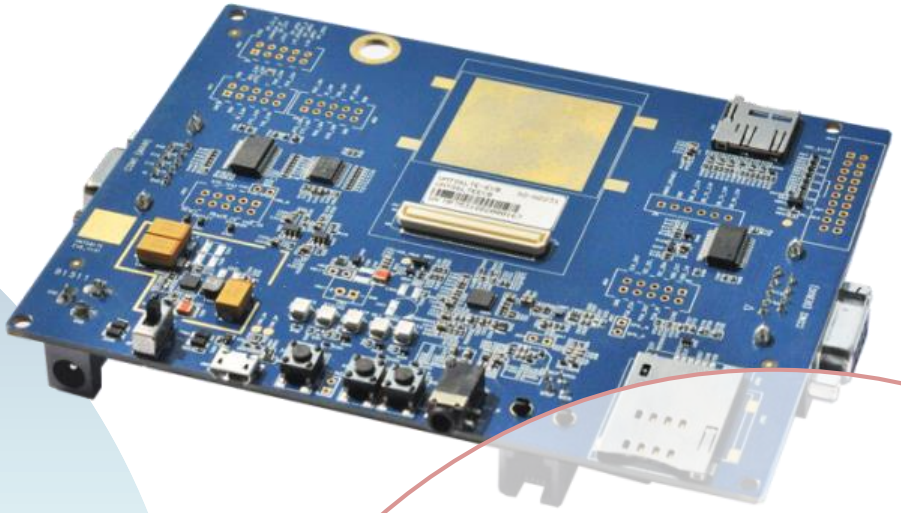
"" means under development*

BG96 Support Package



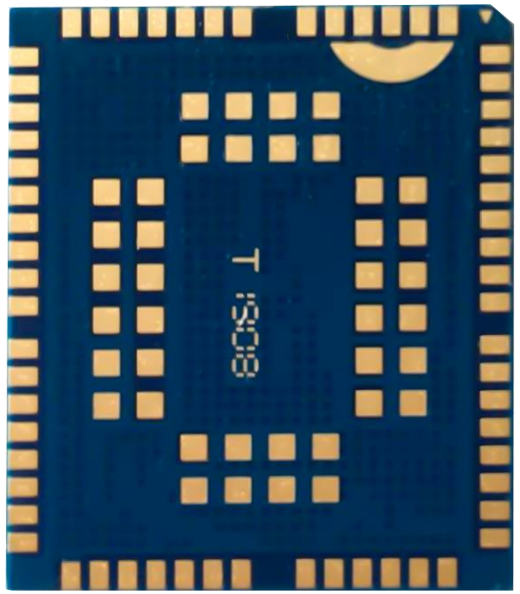
Quectel offers a GUI tool named **QNavigator**. It can help customers quickly test Quectel module's functionality.

eMTC & UMTS & LTE
EVB Kit



BG95 Mechanical Dimensions

Multi-Mode LPWA Module (MDM9205)



Length: 23.6mm (± 0.15mm)
Width: 19.9mm (± 0.15mm)
Height: 2.2mm (± 0.2mm)
Weight: Approx. 2.15g

BG95 Series

Model	Mode	Bands	Target Carrier Certifications	Status	ES Available
BG95-M1	Cat M1 Only	**LTE FDD:** B1/B2/B3/B4/B5/B8/B12/B13/B14/B18/ B19/B20/B25/B26*/B27/B28/B66/B85	Verizon, AT&T	On-going	Jun. 2019
BG95-M2	Cat M1/ Cat NB2	**LTE FDD:** B1/B2/B3/B4/B5/B8/B12/B13/B14①/B18/ B19/B20/B25/B26*/B27①/B28/B66/B71②/B85	All major global carriers	On-going	Jul. 2019
BG95-M3	Cat M1/ Cat NB2/ EGPRS	**LTE FDD:** B1/B2/B3/B4/B5/B8/B12/B13/B14①/B18/ B19/B20/B25/B26*/B27①/B28/B66/B71②/B85 **EGPRS:** 850/900/1800/1900MHz	All major global carriers	On-going	Aug. 2019
BG95-N1	Cat NB2 Only	**LTE FDD:** B1/B2/B3/B4/B5/B8/B12/B13/B18/ B19/B20/B25/B26*/B28/B66/B71/B85	Based on market demand	*Planning*	Sep. 2019
BG95-M4	Cat M1/ Cat NB2 **(450MHz Supported)**	**LTE FDD:** B1/B2/B3/B4/B5/B8/B12/B13/B14①/B18/ B19/B20/B25/B26*/B27①/B28/**B31**/B66/**B72**/**B73***/B85	Based on market demand	*Planning*	Oct. 2019
BG95-M5	Cat M1/ Cat NB2 **(Power Class 3)**	**LTE FDD:** B1/B2/B3/B4/B5/B8/B12/B13/B14①/B18/ B19/B20/B25/B26*/B27①/B28/B66/B71*/B85	Based on market demand	*Planning*	Oct. 2019
BG95-MF	Cat M1/ Cat NB2 **(Wi-Fi Positioning)**	**LTE FDD:** B1/B2/B3/B4/B5/B8/B12/B13/B14①/B18/ B19/B20/B25/B26*/B27①/B28/B66/B71②/B85 **Wi-Fi (Positioning Only):** 2.4GHz/5GHz	Based on market demand	*Planning*	Nov. 2019

** means under development*

① Cat M1 bands only ② Cat NB2 bands only

BG95 Highlights

Highlight	Description
Multi Modes	Cat M1/ Cat NB2/ EGPRS
Rich Product Variants	Support Power Class 3/ 450MHz/ Wi-Fi Positioning in addition to Cat M1/ Cat NB2/ EGPRS
Global Bands	• **LTE FDD:** B1/B2/B3/B4/B5/B8/B12/B13/B14①/B18/B19/B20/B25/B26*/B27①/B28/B31*/B66/B71②/B72*/B73*/B85 • **EGPRS:** 850/900/1800/1900MHz
Low Power Consumption	Approx. 3uA in PSM mode
Mobility	Movable application with handover support (Cat M1 only)
Extended Power Supply Range	2.5V~4.8V, 3.3V Typ. (BG95-M1/-M2/-N1/-M4/-M5/-MF) 3.3V~4.3V, 3.8V Typ. (BG95-M3)
GNSS*	GPS, GLONASS, BeiDou, Galileo, QZSS
Voice*	• 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 completely compatible with Quectel BG96/M95

** means under development*
LTE-FDD B31/B72/B73 supported by BG95-M4 only
① Cat M1 bands only ② Cat NB2 Bands Only

BG95 Specifications 1

23.6mm × 19.9mm × 2.2mm

Cat M1/Cat NB2/EGPRS

Package: 102-pin LGA

Supply Voltage: 2.5V~4.8V, 3.3V Typ. (BG95-M1/-M2/-N1/-M4/-M5/-MF)

3.3V~4.3V, 3.8V Typ. (BG95-M3)

Data Rate:

- LTE Cat M1: Max. 589kbps (DL), Max. 1.12Mbps (UL) (Half Duplexer)
- LTE Cat NB2: Max. 136kbps (DL), Max. 150kbps (UL)
- EGPRS: Max. 296kbps (DL), Max. 236.8kbps(UL)
- GPRS: Max. 107kbps (DL), Max. 85.6kbps (UL)

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

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

Interfaces: (U)SIM/ eSIM ① / UART/ USB/ I2C/ PCM/ ADC/ GPIO/ Antenna

Power Consumption (Typical): 3μA @PSM

** means under development*
① eSIM is reserved and not included by default

BG95 Specifications 2

23.6mm × 19.9mm × 2.2mm
Cat M1: 589kbps DL/1.12Mbps UL
Cat NB2: 136kbps DL/150kbps UL

LTE Cat M1/Cat NB2/EGPRS Module

Items		BG95-M1*	BG95-M2*	BG95-M3*	BG95-N1(Planning)	BG95-M4 (Planning)	BG95-M5 (Planning)	BG95-MF (Planning)
Cat M1	LTE FDD	B1/B2/B3/B4/B5/B8/ B12/B13/B14/B18/ B19/B20/B25/B26*/ B27/B28/B66/B85	B1/B2/B3/B4/B5/B8/ B12/B13/B14/B18/ B19/B20/B25/B26*/ B27/B28/B66/B85	B1/B2/B3/B4/B5/B8/ B12/B13/B14/B18/ B19/B20/B25/B26*/ B27/B28/B66/B85	/	B1/B2/B3/B4/B5/B8/ B12/B13/B14/B18/ B19/B20/B25/B26*/ B27/B28/B31/B66/B72/ B73/B85	B1/B2/B3/B4/B5/B8/ B12/B13/B14/B18/ B19/B20/B25/B26*/ B27/B28/B66/B85	B1/B2/B3/B4/B5/B8/ B12/B13/B14/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/B26*/B28/ B66/B71/B85	B1/B2/B3/B4/B5/B8/ B12/B13/B18/B19/ B20/B25/B26*/B28/ B66/B71/B85	B1/B2/B3/B4/B5/B8/ B12/B13/B18/B19/ B20/B25/B26*/B28/ B66/B71/B85	B1/B2/B3/B4/B5/B8/ B12/B13/B18/B19/ B20/B25/B26*/B28/ B31/B66/B72/B73*/B85	B1/B2/B3/B4/B5/B8/ B12/B13/B18/B19/ B20/B25/B26*/B28/ B66/B71*/B85	B1/B2/B3/B4/B5/B8/ B12/B13/B18/B19/ B20/B25/B26*/B28/ B66/B71/B85
EGPRS		/	/	850/900/1800/1900MHz	/	/	/	/
Wi-Fi (For Positioning Only)		/	/	/	/	/	/	2.4GHz/ 5GHz
GNSS*		Supported	Supported	Supported	Supported	Supported	Supported	Supported
Certification		**Carrier:** Verizon*/ AT&T* **Regulatory:** GCF*/ FCC*/ PTCRB*/ IC*	All major global carriers/ depend on customers' requirements	All major global carriers/ depend on customers' requirements	TBD	TBD	TBD	TBD

"" means under development*

BG95 Power Consumption

Description	Conditions	Typ.	Max.	Unit
Power Saving Mode	PSM @Real Network	3①	-	μA
Sleep State	DRX=1.28s	TBD	TBD	mA
	e-I-DRX=40.96s @PTW=10s	TBD	TBD	mA
Idle State	DRX=2.56s	0.8①	TBD	mA
	e-I-DRX=81.92s @PTW=2.56s	0.25①	TBD	mA
	e-I-DRX=327.68s @PTW=5.12s	0.1①	TBD	mA
Active State	20dBm @Instrument	TBD	TBD	mA
	10dBm @Instrument	TBD	TBD	mA
	0dBm @Instrument	TBD	TBD	mA
	Data Transfer @Real Network	TBD	TBD	mA
	Voice @Real Network	TBD	TBD	mA

① Sourced from Qualcomm MDM9205 Spec

BG95 Main Interfaces

Interface	Description
(U)SIM	1.8V Only
UART	3 (Main UART, Debug UART, GNSS UART)
USB 2.0	1
PCM*	1
I2C*	1
ADC	1
RESET_N	1
GPIO	9
Antenna pad	2 (for Main Antenna and GNSS Antenna, respectively)
GNSS*	GPS, GLONASS, BeiDou, Galileo, QZSS

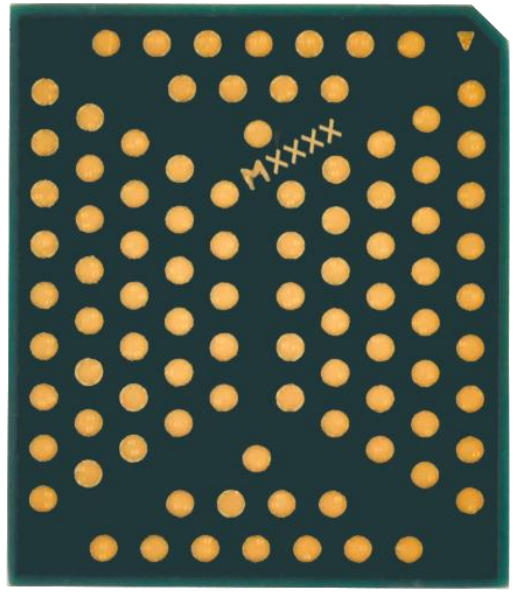
BG95 Main Functions

Function	Description
Protocols*	PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ MQTT/ CoAP
RIL Driver*	Android 4.x/5.x/6.x/7.x/8.x/9.x
USB Serial Driver*	Windows 7/8/8.1/10, Linux 2.6/3.x/4.1~4.15, Android 4.x/5.x/6.x/7.x/8.x/9.x
NDIS Driver*	Windows 7/8/8.1/10
Gobinet Driver*	Linux 2.6/3.x/4.1~4.15
QMI_WWAN Driver*	Linux 3.x (3.4 or later)/4.1~4.15
SMS*	Point-to-point MO and MT; SMS Cell Broadcast; Text and PDU Mode
Voice*	• VoLTE for Cat M1 • CS voice for GSM
DFOTA*	Delta Firmware Upgrade Over-The-Air
LwM2M*	Support

"" means under development*

BG77 Mechanical Dimensions

Ultra Compact Cat M1/ Cat NB2 Module (MDM9205)



Length: 14.9mm (± 0.15mm)
Width: 12.9mm (± 0.15mm)
Height: 1.7mm (± 0.2mm)
Weight: Approx. 1.7g

BG77 Highlights

Highlight	Description
Super Compact Size	14.9mm × 12.9mm × 1.7mm
Dual-Mode	LTE Cat M1/ Cat NB2
Global Bands	LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B14①/B18/B19/B20/B25/B26*/B27①/B28/B66/B71②/B85
Low Power Consumption	Approx. 3uA in PSM mode
Mobility	Movable application with handover support (Cat M1 only)
Extended Power Supply Range	2.5V~4.8V, 3.3V typ.
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

** means under development*
① Cat M1 bands only
② Cat NB2 bands only

BG77 Specifications 1

14.9mm × 12.9mm × 1.7mm

Cat M1/Cat NB2

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

Package: LGA

Supply Voltage: 2.5V~4.8V, 3.3V Typ.

Data Rate:

- LTE Cat M1: Max. 589kbps (DL), Max. 1.12Mbps (UL) (Half Duplexer)
- LTE Cat NB2: Max. 136kbps (DL), Max. 150kbps (UL)

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

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

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

Power Consumption (Typical): 3μA @PSM

** means under development*

BG77 Specifications 2

14.9mm × 12.9mm × 1.7mm
Cat M1: 589kbps DL/1.12Mbps UL
Cat NB2: 136kbps DL/150kbps UL

LTE Cat M1/Cat NB2 Module

Items	BG77
Cat M1	LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B14/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/B26*/B28/B66/B71/B85
EGPRS	/
GNSS*	Supported
Certification	All major global carriers

"" means under development*

BG77 Power Consumption

Description	Conditions	Typ.	Max.	Unit
Power Saving Mode	PSM @Real Network	3①	-	μA
Sleep State	DRX=1.28s	TBD	TBD	mA
	e-I-DRX=40.96s @PTW=10s	TBD	TBD	mA
Idle State	DRX=2.56s	0.8①	TBD	mA
	e-I-DRX=81.92s @PTW=2.56s	0.25①	TBD	mA
	e-I-DRX=327.68s @PTW=5.12s	0.1①	TBD	mA
Active State	20dBm @Instrument	TBD	TBD	mA
	10dBm @Instrument	TBD	TBD	mA
	0dBm @Instrument	TBD	TBD	mA
	Data Transfer @Real Network	TBD	TBD	mA
	Voice @Real Network	TBD	TBD	mA

① Sourced from Qualcomm MDM9205 Spec

BG77 Main Interfaces

Interface	Description
(U)SIM	1.8V Only
UART	3 (Main UART, Debug UART, GNSS UART)
USB	1
PCM	1
I2C	1
SPI	1
RESET	1
ADC	2
GPIO	3
Antenna Interface	2 (for Main Antenna and GNSS Antenna, respectively)
GNSS*	GPS, GLONASS, BeiDou, Galileo, QZSS

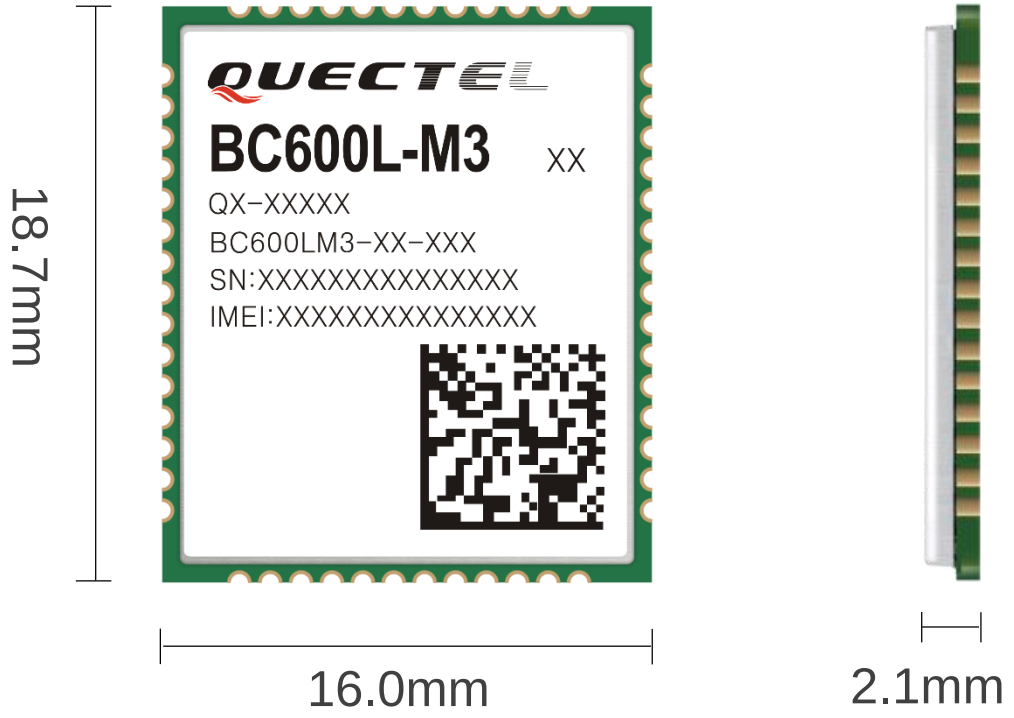
BG77 Main Functions

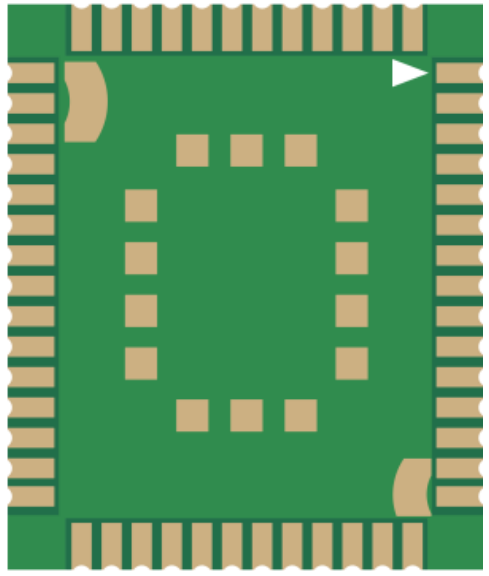
Function	Description
Protocols*	PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ MQTT/ CoAP
RIL Driver*	Android 4.x/5.x/6.x/7.x/8.x/9.x
USB Serial Driver*	Windows 7/8/8.1/10, Linux 2.6/3.x/4.1~4.15, Android 4.x/5.x/6.x/7.x/8.x/9.x
NDIS Driver*	Windows 7/8/8.1/10
Gobinet Driver*	Linux 2.6/3.x/4.1~4.15
QMI_WWAN Driver*	Linux 3.x (3.4 or later)/4.1~4.15
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*	Support

"" means under development*

BC600L-M3 Mechanical Dimensions

Multi-Band Cat M1/ Cat NB2 / EGPRS Module (MDM9205)





Length: 18.7mm (± 0.15mm)
Width: 16.0mm (± 0.15mm)
Height: 2.1mm (± 0.2mm)

BC600L-M3 Highlights

Highlight	Description
Multi Modes	Cat M1/ Cat NB2/ EGPRS
Global Bands	• **LTE FDD:** B1/B2/B3/B4/B5/B8/B12/B13/B14①/B18/B19/B20/B25/B26*/B27①/B28/B66/B71②/B85 • **EGPRS:** 850/900/1800/1900MHz
Low Power Consumption	Approx. 3uA in PSM mode
Mobility	Movable application with handover support (Cat M1 only)
Extended Power Supply Range	3.3V~4.3V, 3.8V typ.
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	Soldering footprint completely compatible with Quectel MC60

** means under development*
① Cat M1 bands only
② Cat NB2 bands only

BC600L-M3 Specifications 1

18.7mm × 16.0mm ×2.1mm

Cat M1/Cat NB2/EGPRS

Small Size: 18.7mm × 16.0mm × 2.1mm

Package: LCC

Supply Voltage: 3.3V~4.3V, 3.8V Typ.

Data Rate:

- LTE Cat M1: Max. 589kbps (DL), Max. 1.12Mbps (UL) (Half Duplexer)
- LTE Cat NB2: Max. 136kbps (DL), Max. 150kbps (UL)

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

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

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

Power Consumption (Typical): 3μA @PSM

BC600L-M3 Specifications 2

18.7mm × 16.0mm × 2.1mm
Cat M1: 589kbps DL/1.12Mbps UL
Cat NB2: 136kbps DL/150kbps UL

LTE Cat M1/Cat NB2/EGPRS Module

Items	BC600L-M3
Cat M1	LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B14/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/B26*/B28/B66/B71/B85
EGPRS	850/900/1800/1900MHz
GNSS*	Supported
Certification	All major global carriers

** means under development*

BC600L-M3 Power Consumption

Description	Conditions	Typ.	Max.	Unit
Power Saving Mode	PSM @Real Network	3①	-	μA
Sleep State	DRX=1.28s	TBD	TBD	mA
	e-I-DRX=40.96s @PTW=10s	TBD	TBD	mA
Idle State	DRX=2.56s	0.8①	TBD	mA
	e-I-DRX=81.92s @PTW=2.56s	0.25①	TBD	mA
	e-I-DRX=327.68s @PTW=5.12s	0.1①	TBD	mA
Active State	20dBm @Instrument	TBD	TBD	mA
	10dBm @Instrument	TBD	TBD	mA
	0dBm @Instrument	TBD	TBD	mA
	Data Transfer @Real Network	TBD	TBD	mA
	Voice @Real Network	TBD	TBD	mA

① Sourced from Qualcomm MDM9205 Spec

BC600L-M3 Main Interfaces

Interface	Description
USB	1
USIM	1
UART	3 (Main UART, Debug UART, GNSS UART)
ADC	1
PWRKEY	1
NETLIGHT	1
Antenna Pad	1
RESET	1
SPI*	1
I2C*	1
I2S*	1
GPIO	Configurable

** means under development*

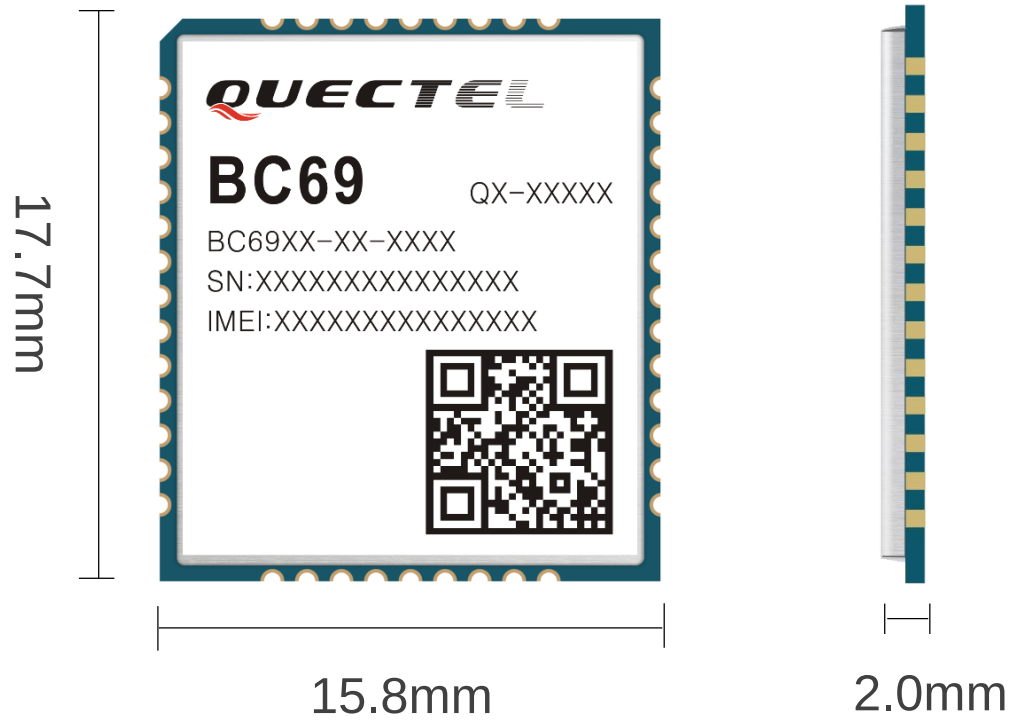
BC600L-M3 Main Functions

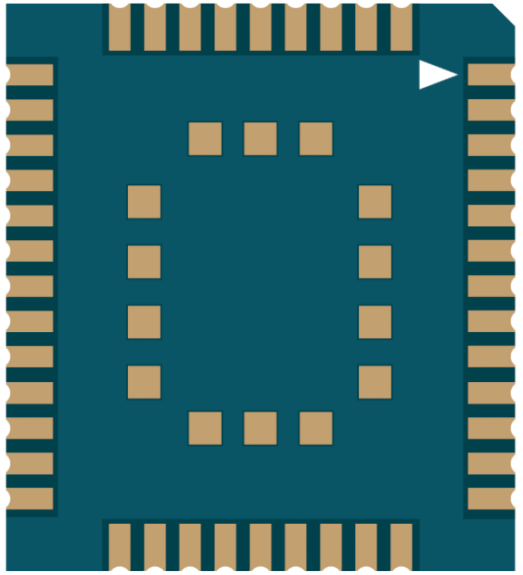
Function	Description
Protocols*	PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ MQTT/ CoAP
RIL Driver*	Android 4.x/5.x/6.x/7.x/8.x/9.x
USB Serial Driver*	Windows 7/8/8.1/10, Linux 2.6/3.x/4.1~4.15, Android 4.x/5.x/6.x/7.x/8.x/9.x
NDIS Driver*	Windows 7/8/8.1/10
Gobinet Driver*	Linux 2.6/3.x/4.1~4.15
QMI_WWAN Driver*	Linux 3.x (3.4 or later)/4.1~4.15
SMS*	Point-to-point MO and MT; SMS Cell Broadcast; Text and PDU Mode
Voice*	• VoLTE for Cat M1 • CS voice for GSM
DFOTA*	Delta Firmware Upgrade Over-The-Air
LwM2M*	Support

"" means under development*

BC69 Mechanical Dimensions

Multi-Band Cat M1/ Cat NB2 Module (MDM9205)





Length: 17.7mm (± 0.15mm)
Width: 15.8mm (± 0.15mm)
Height: 2.0mm (± 0.2mm)

BC69 Highlights

Highlight	Description
Multi Modes	Cat M1/ Cat NB2
Global Bands	• **LTE FDD:** B1/B2/B3/B4/B5/B8/B12/B13/B14①/B18/B19/B20/B25/B26*/B27①/B28/B66/B71②/B85
Low Power Consumption	Approx. 3uA in PSM mode
Mobility	Movable application with handover support (Cat M1 only)
Extended Power Supply Range	2.5V~4.8V, 3.3V typ.
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
Compatibility	Soldering footprint completely compatible with Quectel BC66/M66

** means under development*
① Cat M1 bands only
② Cat NB2 bands only

BC69 Specifications 1

17.7mm × 15.8mm ×2.0mm

Cat M1/Cat NB2

Small Size: 17.7mm × 15.8mm × 2.0mm

Package: LCC

Supply Voltage: 2.5V~4.8V, 3.3V Typ.

Data Rate:

- LTE Cat M1: Max. 589kbps (DL), Max. 1.12Mbps (UL) (Half Duplexer)
- LTE Cat NB2: Max. 136kbps (DL), Max. 150kbps (UL)

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

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

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

Power Consumption (Typical): 3μA @PSM

BC69 Specifications 2

17.7mm × 15.8mm × 2.0mm
Cat M1: 589kbps DL/1.12Mbps UL
Cat NB2: 136kbps DL/150kbps UL

LTE Cat M1/Cat NB2 Module

Items	BC69
Cat M1	LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B14/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/B26*/B28/B66/B71/B85
EGPRS	/
GNSS*	Supported
Certification	All major global carriers

** means under development*

BC69 Power Consumption

Description	Conditions	Typ.	Max.	Unit
Power Saving Mode	PSM @Real Network	3①	-	μA
Sleep State	DRX=1.28s	TBD	TBD	mA
	e-I-DRX=40.96s @PTW=10s	TBD	TBD	mA
Idle State	DRX=2.56s	0.8①	TBD	mA
	e-I-DRX=81.92s @PTW=2.56s	0.25①	TBD	mA
	e-I-DRX=327.68s @PTW=5.12s	0.1①	TBD	mA
Active State	20dBm @Instrument	TBD	TBD	mA
	10dBm @Instrument	TBD	TBD	mA
	0dBm @Instrument	TBD	TBD	mA
	Data Transfer @Real Network	TBD	TBD	mA
	Voice @Real Network	TBD	TBD	mA

① Sourced from Qualcomm MDM9205 Spec

BC69 Main Interfaces

Interface	Description
USB	1
USIM	1
UART	3 (Main UART, Debug UART, GNSS UART)
ADC	1
PWRKEY	1
NETLIGHT	1
Antenna Pad	1
SPI*	1
I2C*	1
I2S*	1
GPIO	Configurable

** means under development*

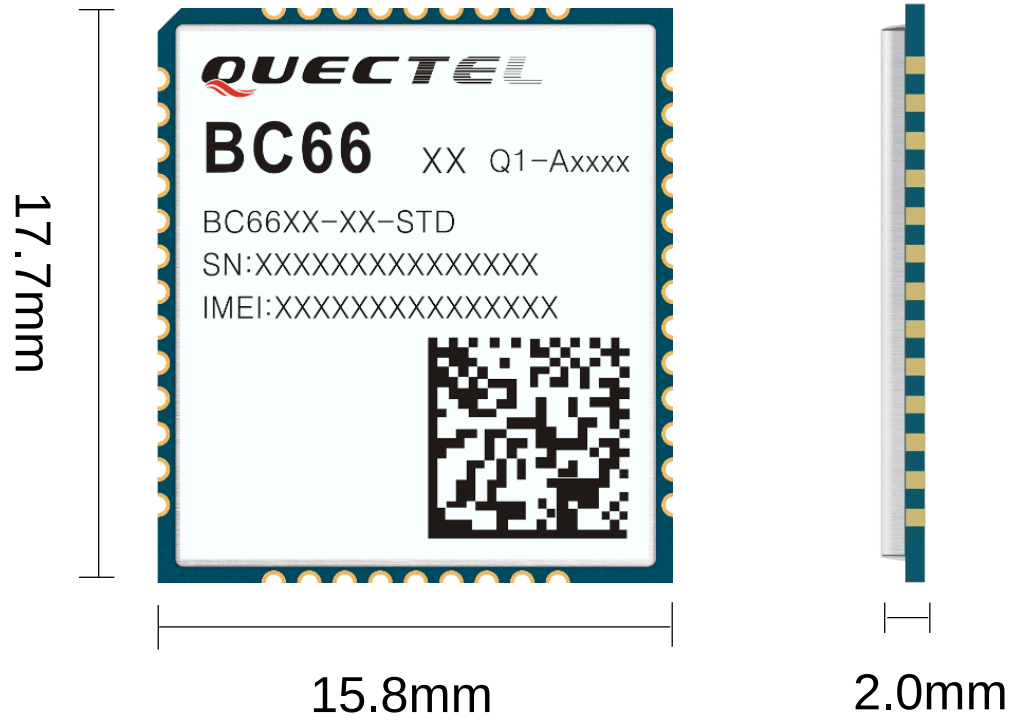
BC69 Main Functions

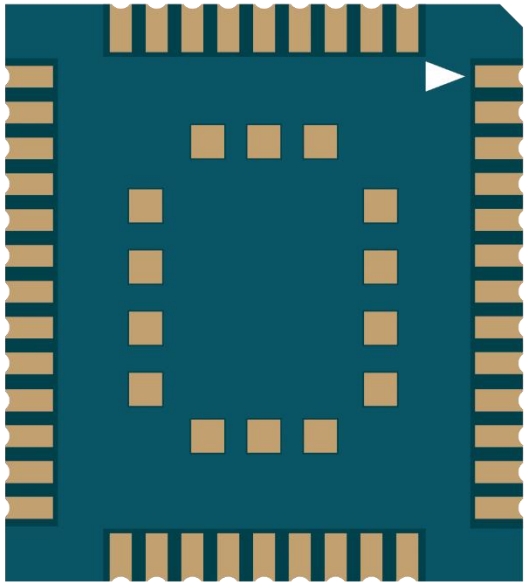
Function	Description
Protocols*	PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ MQTT/ CoAP
RIL Driver*	Android 4.x/5.x/6.x/7.x/8.x/9.x
USB Serial Driver*	Windows 7/8/8.1/10, Linux 2.6/3.x/4.1~4.15, Android 4.x/5.x/6.x/7.x/8.x/9.x
NDIS Driver*	Windows 7/8/8.1/10
Gobinet Driver*	Linux 2.6/3.x/4.1~4.15
QMI_WWAN Driver*	Linux 3.x (3.4 or later)/4.1~4.15
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*	Support

"" means under development*

BC66 Mechanical Dimensions

Multi-Band Cat NB1 Module (MTK MT2625)





Length: 17.7mm (± 0.15mm)
Width: 15.8mm (± 0.15mm)
Height: 2.0mm (± 0.2mm)
Weight: Approx. 1.2g

BC66 Highlights

LTE Cat NB1
25.5kbps DL/ 62.5kbps 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/ SPI①/ I2S①/ I2C①/ USIM/ ADC/ NETLIGHT/ PSM_EINT/ PWRKEY/ RESET
Abundant Protocols	UDP/ TCP/ LwM2M/ MQTT/ SNTP/ DTLS/ PPP*/ CoAP*/ TLS*/ HTTP*/ HTTPS*
Special Features	OpenCPU, DFOTA, eSIM②
Low Power Consumption	3.5uA (PSM), 0.24mA (eDRX), 0.35mA (DRX), 110mA (Active, 23dBm) *Average Value*
QuecLocator™ *	Location based on base station cell information
Power Supply Feature	Low power supply voltage (2.1V~3.63V, 3.3V typ.)
Wake-up Feature	Specialized PSM_ENIT for module wake-up via external interrupt
Compatibility	Compatible with Quectel GSM module M66 and Quectel NB-IoT module BC68

** means under development.*
① means supported only on OpenCPU 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 Pad	1
SPI	1 (for OpenCPU version only)
I2C	1 (for OpenCPU version only)
I2S	1 (for OpenCPU version only)
GPIO	Configurable (for OpenCPU version only)

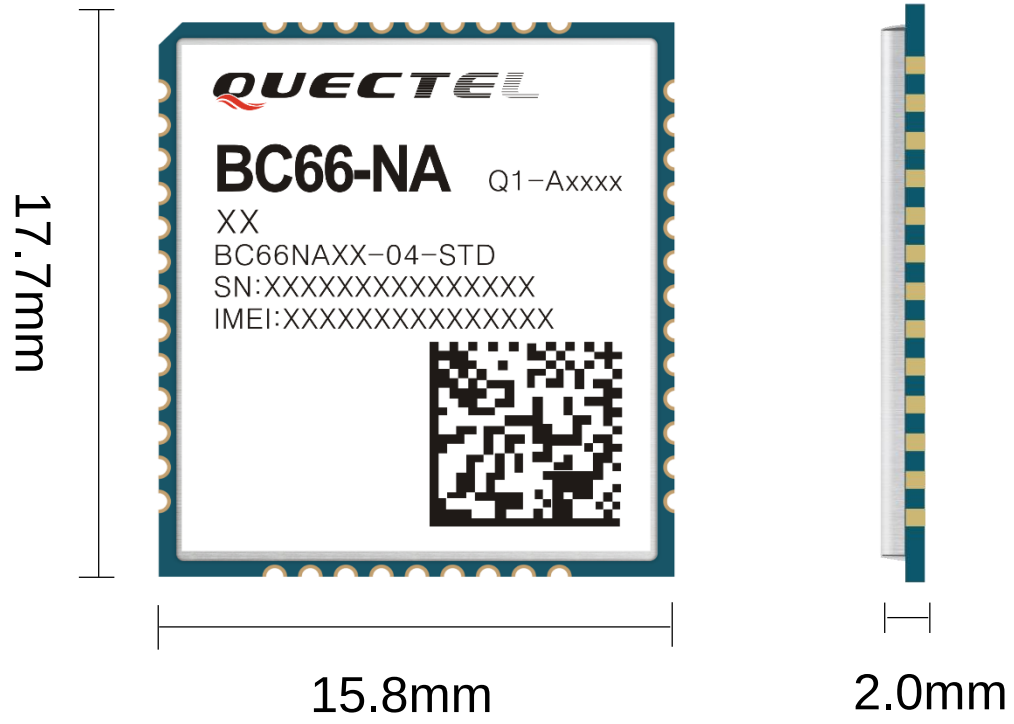
BC66 Main Functions

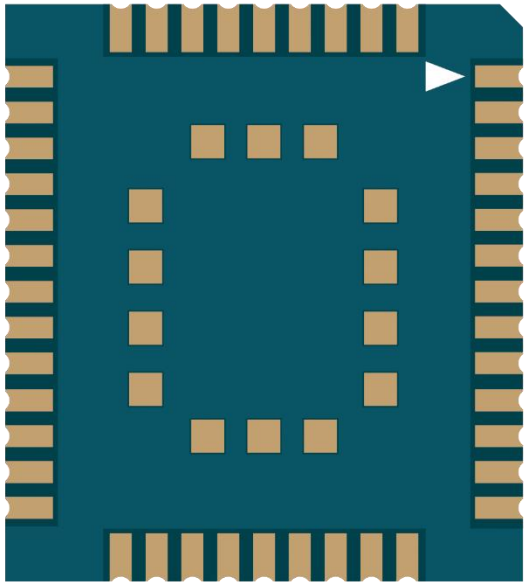
Function	Description
Protocols	UDP/ TCP/ LwM2M/ MQTT/ SNTP/ DTLS/ PPP*/ CoAP*/ TLS*/ HTTP*/ HTTPS*
SMS*	Text and PDU mode
DFOTA	Delta firmware upgrade over-the-air
eSIM	Supported ①
OpenCPU	• ROM: 200KB for APP image bin • RAM: 400KB (100KB static memory and 300KB dynamic memory)

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

BC66-NA Mechanical Dimensions

Multi-Band Cat NB2 Module (MTK MT2625)





Length: 17.7mm (± 0.15mm)
Width: 15.8mm (± 0.15mm)
Height: 2.0mm (± 0.2mm)
Weight: Approx. 1.2g

BC66-NA Highlights

LTE Cat NB2
103kbps DL/150kbps 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/ SPI①/ I2S①/ I2C①/ USIM/ ADC/ NETLIGHT/ PSM_EINT/ PWRKEY/ RESET
Abundant Protocols	UDP/ TCP/ LwM2M/ MQTT/ SNTP/ PPP*/ CoAP*/ TLS*/ DTLS/ HTTP*/ HTTPS*
Special Features	OpenCPU, DFOTA, OTDOA, eSIM②
Low Power Consumption	3.5uA (PSM), 0.13mA (eDRX), 0.25mA (DRX), 120mA (Active, 23dBm)
QuecLocator™ *	Location based on base station cell information
Power Supply Feature	Low power supply voltage (2.1V~3.63V, 3.3V typ.)
Wake-up Feature	Specialized PSM_ENIT for module wake-up via external interrupt
Compatibility	Compatible with Quectel GSM module M66 and Quectel LPWA module BC68/ BC66

** means under development.*
① means supported only on OpenCPU version.
② eSIM is reserved and not included by default.

BC66-NA Main Interfaces

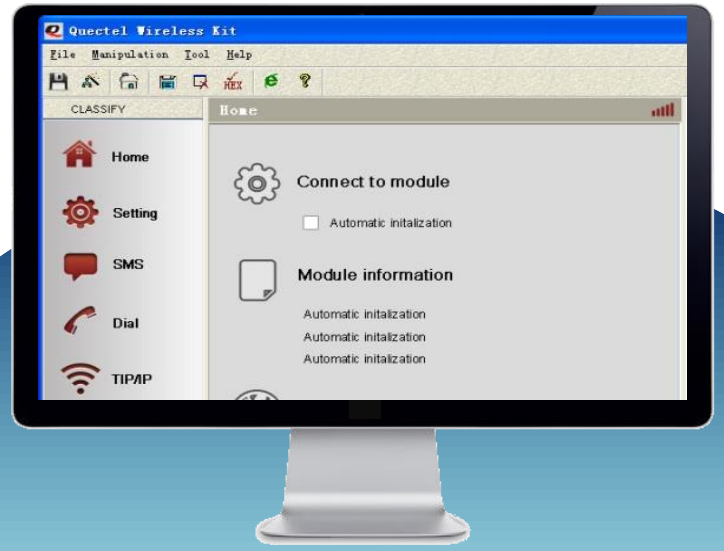
Interface	Description
USB	1
USIM	1
UART	3 (Main/Debug/Auxiliary UART)
PSM_EINT	1 (wake up device via external interrupt)
ADC	1 (10 bits)
RESET	1
PWRKEY	1
NETLIGHT	1
Antenna Pad	1
SPI	1 (for OpenCPU version only)
I2C	1 (for OpenCPU version only)
I2S	1 (for OpenCPU version only)
GPIO	Configurable (for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

BC66-NA Main Functions

Function	Description
Protocols	UDP/ TCP/ LwM2M/ MQTT/ SNTP/ DTLS/ PPP*/ CoAP*/ TLS*/ HTTP*/ HTTPS*
SMS*	Text and PDU mode
OTDOA*	Observed Time Difference of Arrival
DFOTA	Delta firmware upgrade over-the-air
eSIM	Supported ①
OpenCPU	• ROM: 200KB for APP image bin • RAM: 400KB (100KB static memory and 300KB 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

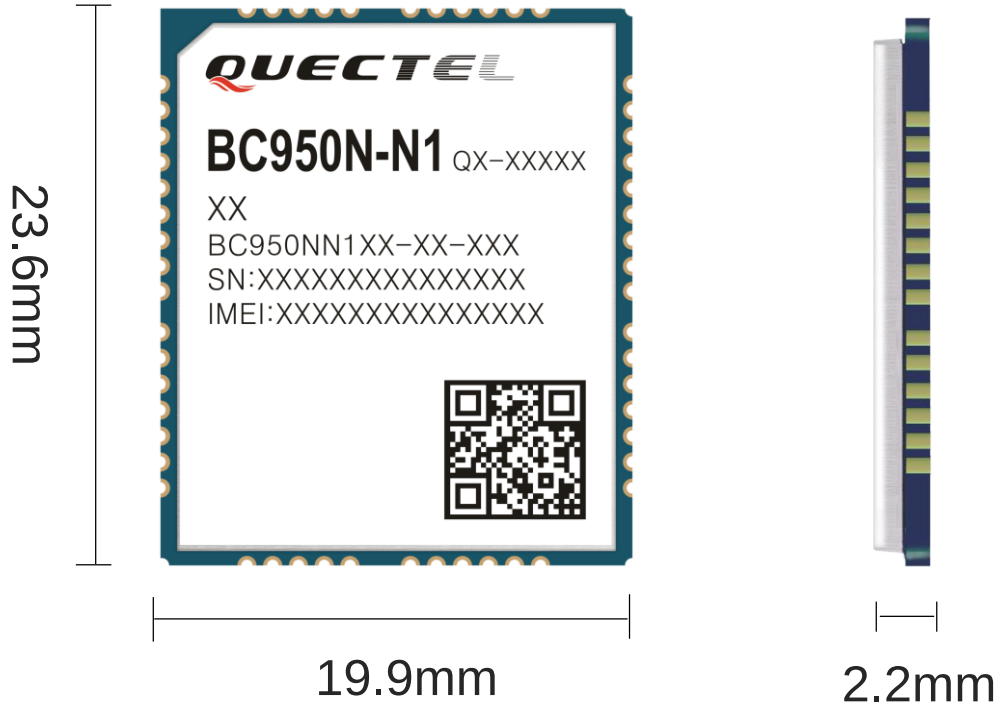


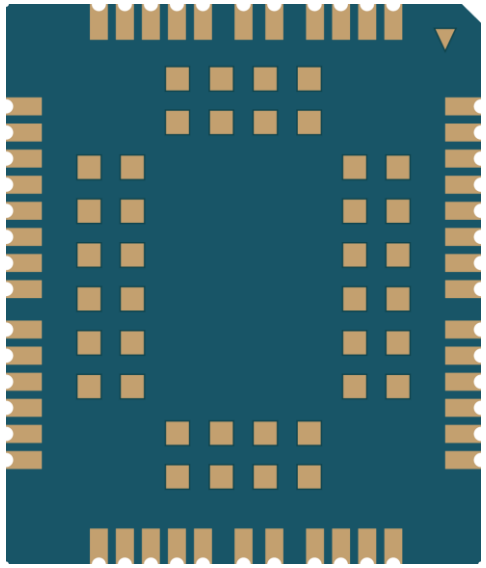
Quectel offers a GUI tool named **QNavigator**. It can help customers quickly test Quectel module's functionality.

TE-B Kit

BC950N-N1 Mechanical Dimensions

Multi-band LTE Cat NB1 Module (MTK MT2625)





Length: 23.6mm (±0.15mm)
Width: 19.9mm (±0.15mm)
Height: 2.2mm (±0.2mm)

BC950N-N1 Highlights

LTE Cat NB1 with Band 31
25.5kbps DL/ 62.5kbps UL

Highlight	Description
LTE Cat NB1 with Band 31	B1/ B2/ B3/ B4/ B5/ B8/ B12/ B13/ B17/ B18/ B19/ B20/ B25/ B26/ B28/ B66/ B31 (B31 supports 450MHz)
Hardware Platform	• 78MHz ARM® Cortex®-M4 • Embedded 32Mbits Flash + Embedded 32Mbits PSRAM
BT Function*	BT 5.0 LE (Optional)
Rich Hardware Interfaces	UART/ USIM/ PSM_EINT/ PWRKEY/ RESET/ SPI*/ I2C*/ ADC*/ NETLIGHT*
Abundant Internet Protocols	UDP/ TCP/ SNTP/ PPP/ LwM2M*/ MQTT*/ CoAP*/ TLS*/ DTLS*/ HTTP*/ HTTPS*
Enhanced Features	OpenCPU*, DFOTA*
Compatibility	Compatible with Quectel LPWA module BC95-G

"" means under development.*

BC950N-N1 Main Interfaces

Interface	Description
USIM	1
UART	4
USB	1
PSM_EINT	1 (wake up device via external interrupt)
ADC*	1 (10 bits)
RESET	1
PWRKEY	1
NETLIGHT*	1
Antenna Pad	2 (main antenna and BT* antenna)
I2C*	1 (for OpenCPU* version only)
SPI*	1 (for OpenCPU* version only)
GPIO	Configurable (for OpenCPU* version only)

"" means under development.*

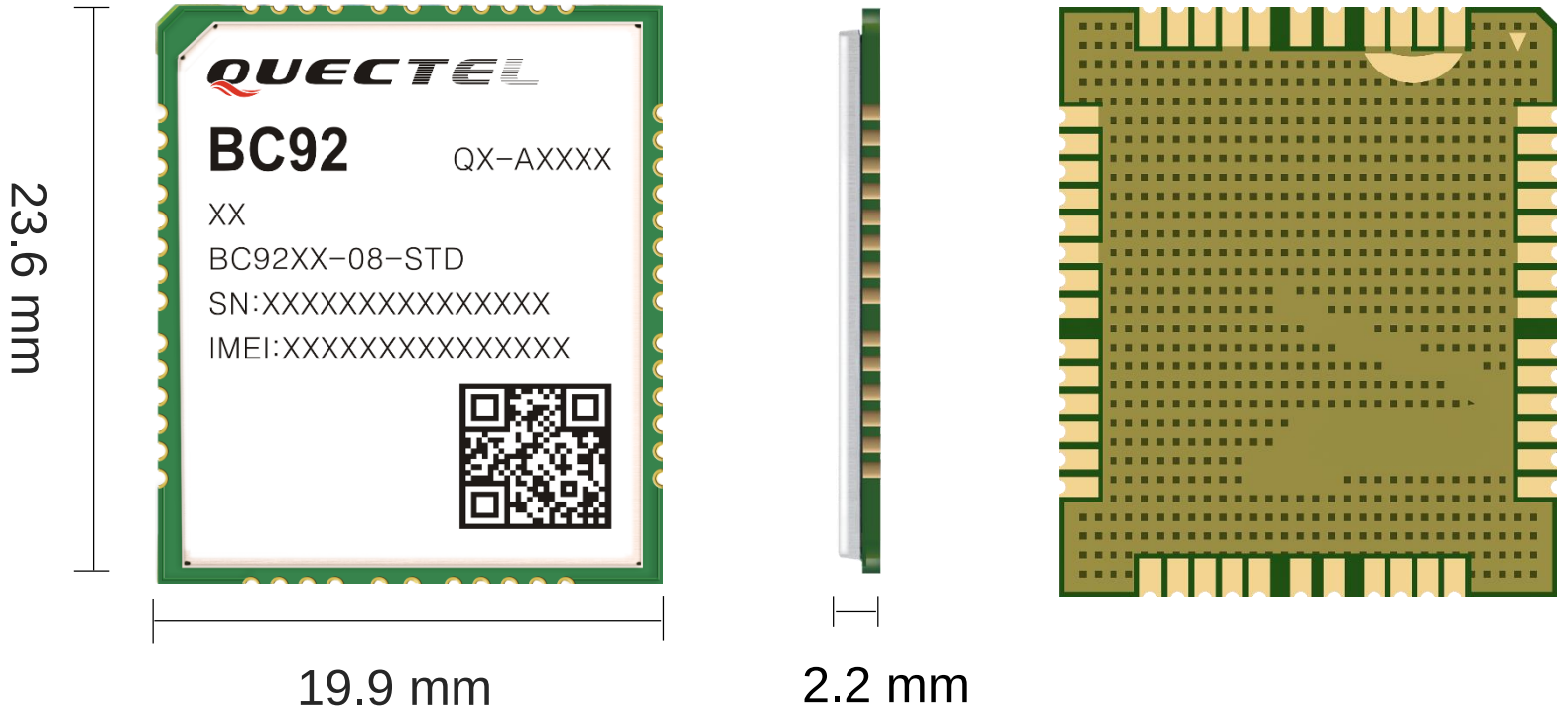
BC950N-N1 Main Functions

Function	Description
Protocols	UDP/ TCP/ SNTP/ PPP/ LwM2M*/ MQTT*/ CoAP*/ TLS*/ DTLS*/ HTTP*/ HTTPS*
SMS*	Text and PDU modes
DFOTA*	Delta Firmware Upgrade Over-The-Air

"" means under development.*

BC92 Mechanical Dimensions

Multi-Band LTE Cat NB1 / GSM Module (RDA8909B)



Length: 23.6mm (± 0.15mm)

Width: 19.9mm (± 0.15mm)

Height: 2.2mm (± 0.2mm)

BC92 Highlights

LTE Cat NB1/GSM
LTE Cat NB1: Max. 25.5kbps DL/ 62.5kbps UL
GSM: Max. 85.6kbps DL/ 85.6kbps UL

Highlight	Description
Global Bands / Dual Mode	• **LTE Cat NB1**: B3/B5/B8/B20/B28 • **GSM**: 850/900/1800/1900MHz
Rich Hardware Interfaces	UART/ USIM/ ADC*/ NETLIGHT/ PSM_EINT/ PWRKEY/ RESET/ Audio*/ BT*①
Abundant Protocols	UDP/TCP/LwM2M*/SNTP/PPP/MQTT*/CoAP*/HTTP*/HTTPS*/FTP*
eSIM Supported	eSIM② reserved to support customization
Power Supply Feature	Supply Voltage: 3.4V~4.2V, 3.8V Typ.
Wake-up Feature	Specialized PSM_ENIT for module wake-up via external interrupt
QuecLocator™ *	Location based on base station cell information
BT Function*	BLE 4.2*(Partial Protocol)
Special Features	• GSM voice call* • Built-in ADC temperature detection* • Low power design • DFOTA
Compatibility	Compatible with Quectel GSM module M95 and Quectel NB-IoT module BC95 R2.0

** means under development.*
① means reserved and not included by default.
② eSIM is reserved and not included by default. If needed, a different OC will be provided.

BC92 Main Interfaces

Interface	Description
USIM	2 (USIM1 supports NB-IoT/GSM, USIM2* only supports GSM)
UART	2 (Main, Debug)
BT Antenna*	1 (Reserved)
PSM_EINT	1 (External Wake-up pin)
ADC*	1 (10 bits)
RESET	1
PWRKEY	1
NETLIGHT	1
Main Antenna	1
Audio*	3（1 MIC differential input, 1 SPK differential output and 1 LOUDSPK differential output）

** means under development.*

BC92 Main Functions

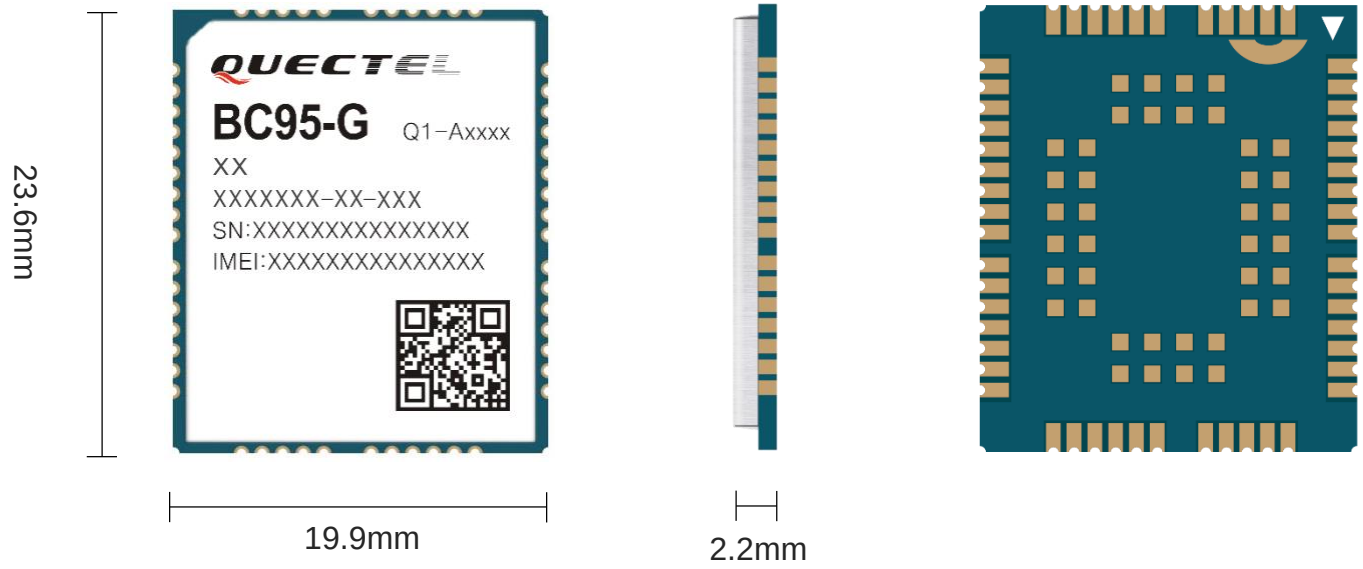
Function	Description
Protocols	UDP/TCP/LwM2M*/SNTP/PPP/MQTT*/CoAP*/HTTP*/HTTPS*/FTP*
SMS*	Text and PDU mode
DFOTA	Delta Firmware Upgrade Over-The-Air
eSIM	Supported ①
Power Supply	Range: 3.4V~4.2V Typical: 3.8V
Voice Call*	GSM voice call Supported

** means under development.*

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

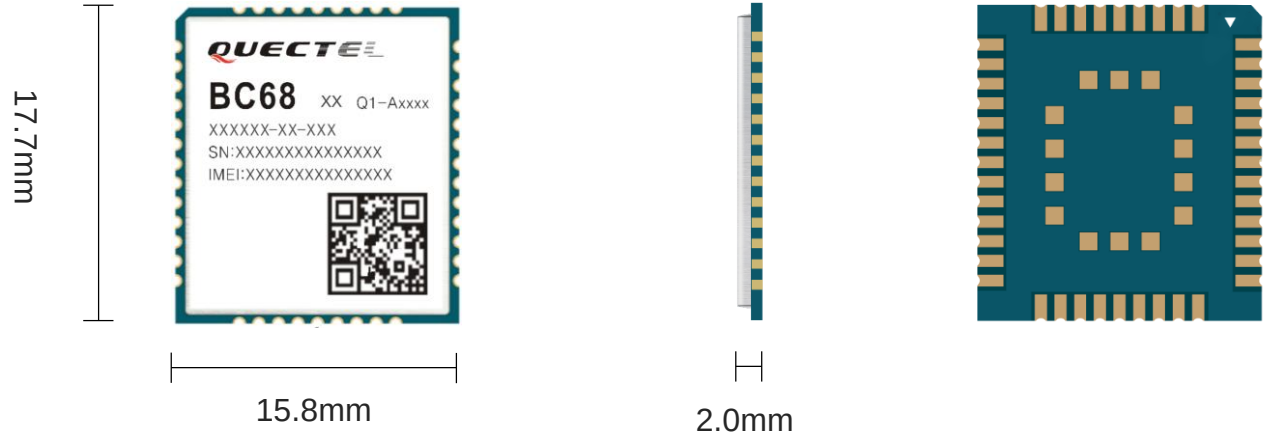
BC95-G/BC68 Mechanical Dimensions

Multi-Band LTE Cat NB2 Module (Hisilicon Boudica V150)



23.6mm × 19.9mm × 2.2mm

Length:	23.6mm (± 0.15mm)
Width:	19.9mm (± 0.15mm)
Height:	2.2mm (± 0.2mm)
Weight:	Approx. 1.8g (± 0.2g)



17.7mm × 15.8mm × 2.0mm

Length:	17.7mm (± 0.15mm)
Width:	15.8mm (± 0.15mm)
Height:	2.0mm (± 0.2mm)
Weight:	Approx. 1.1g (±0.2g)

LTE Cat NB2 (NB-IoT)

BC95-G/BC68 Specifications

23.6mm x 19.9mm x 2.2mm
LTE Cat NB2

17.7mm x 15.8mm x 2.0mm
LTE Cat NB2

Module	BC95-G	BC68
LTE	B1/B3/B8/B5/B20/B28 @LTE-FDD	B1/B3/B8/B5/B20/B28 @LTE-FDD
Supply Voltage	3.1V~4.2V, 3.6V Typ.	3.1V~4.2V, 3.6V Typ.
Dimension	23.6mm x 19.9mm x 2.2mm	17.7mm x 15.8mm x 2.0mm
Region	Global	Global
Certification	**Carrier:** Vodafone/ Deutsche Telekom/ Telefónica*/ KT*/ LGU+*/ SoftBank*/ Telstra **Regulatory:** GCF/ CE/ KC/ NCC/ JATE/ TELEC/ RCM/ NBTC/ IMDA **Others:** ATEX*	**Carrier:** Vodafone/ Deutsche Telekom/ Telefónica*/ SoftBank*/ Telstra **Regulatory:** GCF/ CE/ KC*/ NCC/ JATE/ TELEC/ RCM/ IMDA **Others:** ATEX

"" means under development.*

BC95-G/BC68 Features

Item		BC95-G/ BC68
Chipset		Boudica 150 (Hi2115)
Band		Multi band (698MHz-960MHz, 1695MHz-2180MHz) B1/B3/B8/B5/B20/B28
LCC Package		• BC95-G: 23.6mm x 19.9mm x 2.2mm • BC68: 17.7mm x 15.8mm x 2.0mm
Data Rate	Single Tone	DL: 25.2kbps; UL: 15.625kbps
	Multi Tone	DL: 25.2kbps; UL: 54kbps
	Extended TBS/2 HARQ	DL: 125kbps; UL: 150kbps
Protocols		IPv4/IPv6/UDP/CoAP/LwM2M/Non-IP/DTLS/TCP/MQTT
Power Consumption (Typical)		• 3uA @PSM • 0.5mA @Idle Mode, DRX=2.56s, ECL0 • 250mA @Tx, 23dBm (B1/B3) • 220mA @Tx, 23dBm (B8/B5/B20) • 280mA @Tx, 23dBm (B28) • 130mA @Tx, 12dBm (B1/B3/B8/B5/B20/B28) • 70mA @Tx, 0dBm (B1/B3/B8/B5/B20/B28) • 60mA @Rx

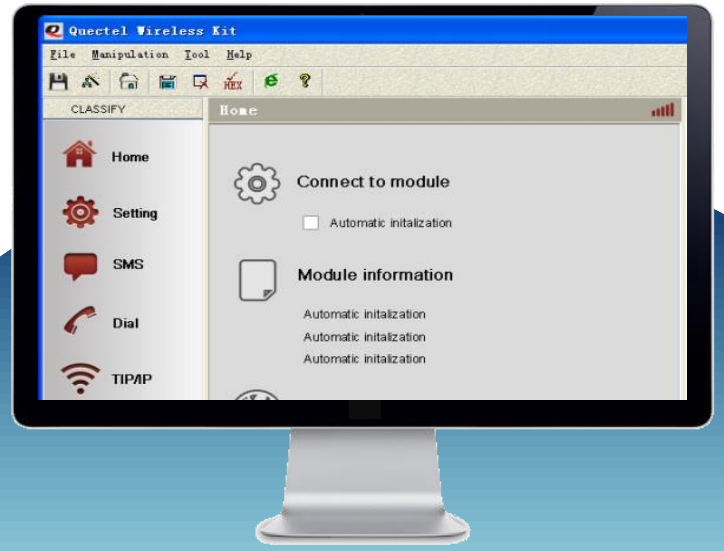
"" means under development.*

BC95-G/BC68 Enhanced Features

Feature	Description
NB-IoT Network	Cat NB1 / Cat NB2
Global Bands	B1 / B3 / B5 / B8 / B20 / B28
Low Power Consumption	PSM and eDRX features realize ultra-low power consumption and extended battery life; 3uA @PSM; 0.5mA @Idle Mode, DRX=2.56s, ECL0; Max 220mA @Tx, 23dBm; 60mA @Rx
Abundant Protocols	IPv4 / IPv6 / UDP / CoAP / LwM2M / Non-IP / DTLS / TCP / MQTT
Special Features	DFOTA (proprietary algorithm), OpenCPU, eSIM
Security	TEE Security, Digital Signature*
Compatibility	Compatible with various other Quectel modules in packaging
Extensive Experience	Over 10 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 includes smart meters, trackers and smart NB-IoT white goods, etc.

"" means under development.*

BC95-G/BC68 Support Package

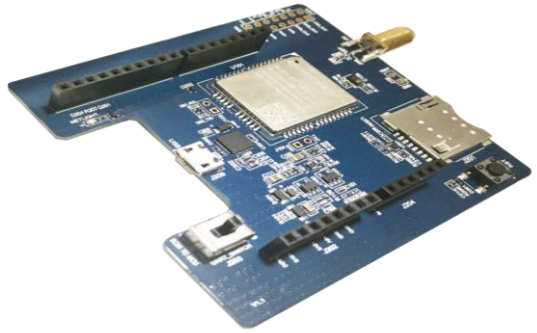


Quectel offers a GUI tool named **Qnavigator** to help customers quickly test Quectel module's functionality.

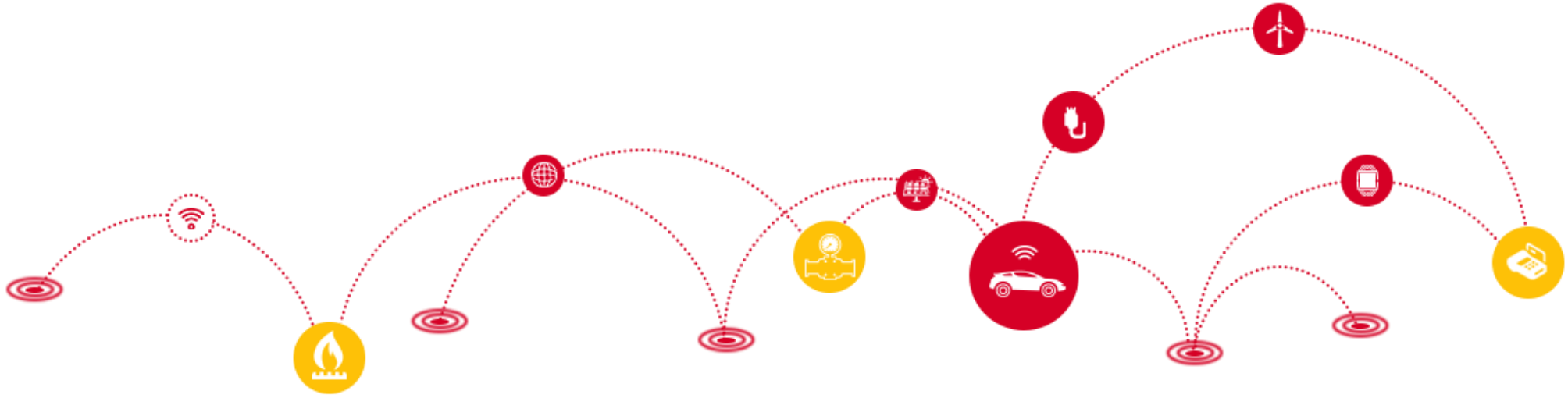
EVB Kit

TE-B

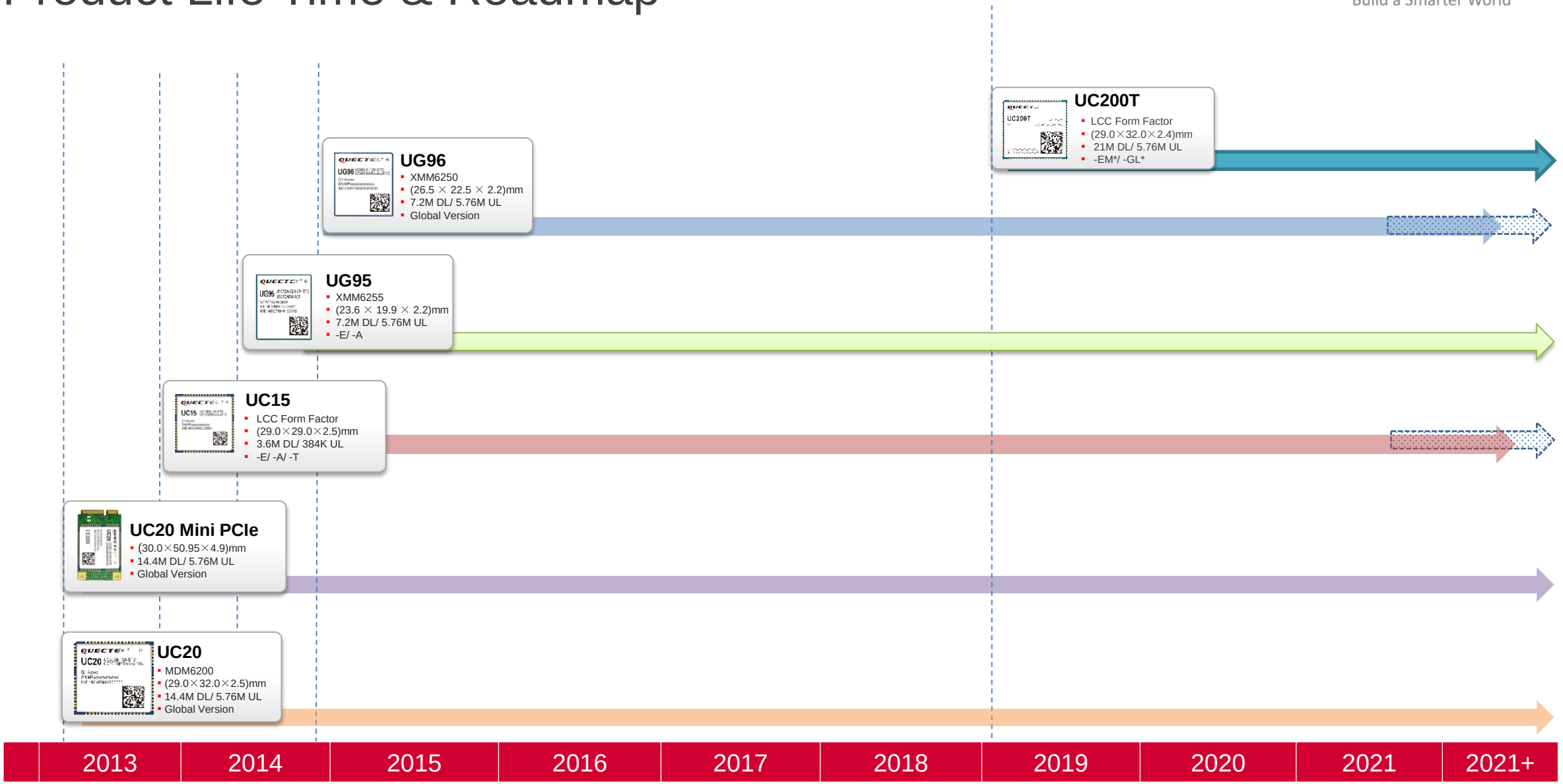
(USB interface for power supply and debugging & Arduino interface)



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



Product Life Time & Roadmap



UC200T Specifications

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

UMTS/HSPA+ Module

Variant	UC200T-EM	UC200T-GL
Platform	ASR1501	ASR1501
Band	900/2100MHz @UMTS 900/1800MHz @GSM	850/900/1900/2100MHz @UMTS 850/900/1800/1900MHz @GSM
Area	Europe/Asia Pacific Region	Global
Supply Voltage	3.3~4.3V, Typ. 3.8V	
Interfaces	(U)SIM/ UAR/ USB/ Audio Digital (PCM)/ RTC Backup/ ADC/ GPIO/ Antenna	
Protocols	TCP/ UDP/ PPP/ NTP/ NITZ/ FTP*/ HTTP*/ PING*/ CMUX*/ HTTPS*/ SMTP*/ MMS*/ FTPS*/ SMTPS*/ SSL*/ FILE*/ MQTT*	
features	QuecFOTA/ QuecFile/ RIL Driver/ RNDIS Driver/ USB Serial Driver/ (U)SIM Detection/ ECM Driver	
Certification	**Regulatory:** CE*	**Regulatory:** Anatel*

** means under planning*

UC20 Specifications

29.0mm × 32.0mm × 2.5mm
14.4Mbps DL/ 5.76Mbps UL

UMTS/HSPA+ Module

Variant	UC20-G
Platform	MDM6200
Band	800/850/900/1900/2100 @UMTS 850/900/1800/1900 @GSM
Area	Global
Embedded GNSS	GPS/GLONASS
Supply Voltage	3.3~4.3V, Typ. 3.8V
Consumption	1.5mA @GSM sleep, DRX=9 1.1mA @UMTS sleep, DRX=9
Interfaces	(U)SIM/ UAR/ USB/ Audio Digital (PCM)/ RTC Backup/ ADC/ GPIO/ Antenna
Protocols	PPP/ TCP/ UDP/ FTP/ HTTP/ FILE/ MMS/ SMTP/ SSL
Features	eCall/ DTMF/ QuecFOTA/ DFOTA/ Audio Playback/ Audio Recording/ QuecFile/ RIL Driver/ NDIS/ MUX/ USB Serial Driver/ (U)SIM Detection
Certification	**Carrier:** Vodafone/ AT&T/ Rogers **Regulatory:** GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ JATE/ TELEC/ RCM/ NBTC

UC20 Mini PCIe Specifications

30.0mm × 51.0mm × 4.9mm
14.4M DL/ 5.76M UL

UMTS/HSPA+ Module

Variant	UC20-G Mini PCIe
Platform	MDM6200
Band	800/850/900/1900/2100 @UMTS 850/900/1800/1900 @GSM
Area	Global
Embedded GNSS	GPS/ GLONASS
Supply Voltage	3.0~3.6V, Typ. 3.3V
Consumption	1.5mA @GSM sleep, DRX=9 1.1mA @UMTS sleep, DRX=9
Interfaces	(U)SIM/ UAR/ USB/ Audio Digital (PCM)/ RTC Backup/ ADC/ GPIO/ Antenna/ (U)SIM Card Socket
Protocols	PPP/ TCP/ UDP/ FTP/ HTTP/ FILE/ MMS/ SMTP/ SSL
Features	eCall/ DTMF/ QuecFOTA/ DFOTA/ Audio Playback/ Audio Recording/ QuecFile/ RIL Driver/ NDIS/ MUX/ USB Serial Driver/ (U)SIM Detection
Certification	**Regulatory**: CE/ FCC/ IC/ RCM

UG96/UG95 Specifications

26.5mm × 22.5mm × 2.2mm (UG96)
23.6mm × 19.9mm × 2.2mm (UG95)
7.2Mbps DL/ 5.76Mbps UL

UMTS/HSPA Modules

Variant	UG96	UG95-E	UG95-A
Platform	XMM6250	XMM6255	
Band	800/850/900/1900/2100 @UMTS 850/900/1800/1900 @GSM	900/2100 @UMTS 900/1800 @GSM	850/1900 @UMTS
Area	Global	EMEA	North America
Supply Voltage	3.3~4.3V, Typ. 3.8V	3.3~4.3V, Typ. 3.8V	
Consumption	1.1mA @GSM sleep, DRX=9 1.7mA @UMTS sleep, DRX=9	0.96mA @GSM sleep, DRX=9 1.15mA @UMTS sleep, DRX=9	
Interfaces	(U)SIM/ UART/ USB/ Audio Digital (PCM)/ RTC Backup/ Antenna	(U)SIM/ UART/ USB/ Audio Digital (PCM)/ RTC Backup/ Antenna	
Protocols	TCP/ UDP/ PPP/ MMS/ HTTP/ HTTPS/ SMTP/ SMTPS/ FTP/ NTP/ NITZ/ PING/ SSL	TCP/ UDP/ PPP/ MMS/ FTP/ FTPS/ SMTP/ SMTPS/ HTTP/ HTTPS/ NTP/ PING/ SSL	
Features	DTMF/ DFOTA/ RIL Driver/ MUX/ USB Serial Driver/ (U)SIM Detection	DTMF/ DFOTA/ RIL Driver/ MUX/ USB Serial Driver	
Certification	**Carrier**: Deutsche Telekom/ Telefonica **Regulatory**: GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ IFETEL/ CCC/ JATE/ TELEC/ RCM/ FAC/ ICASA	**Regulatory**: GCF/ CE/ RCM/ FAC/ ICASA	**Carrier**: AT&T/ Rogers FCC/ PTCRB/ IC

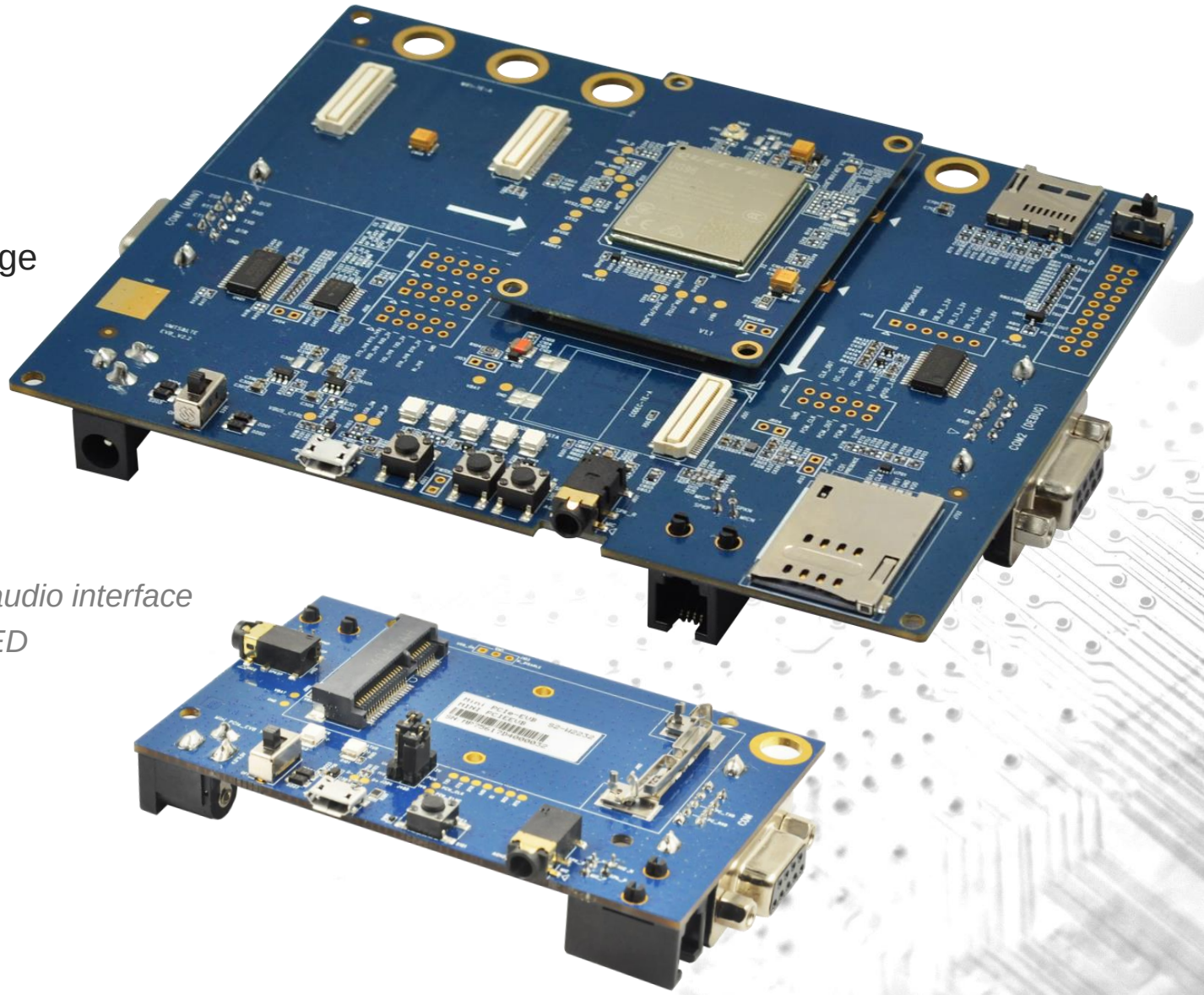
Support Package (UG96/UG95/UC20/UC200T)

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&LTE 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*



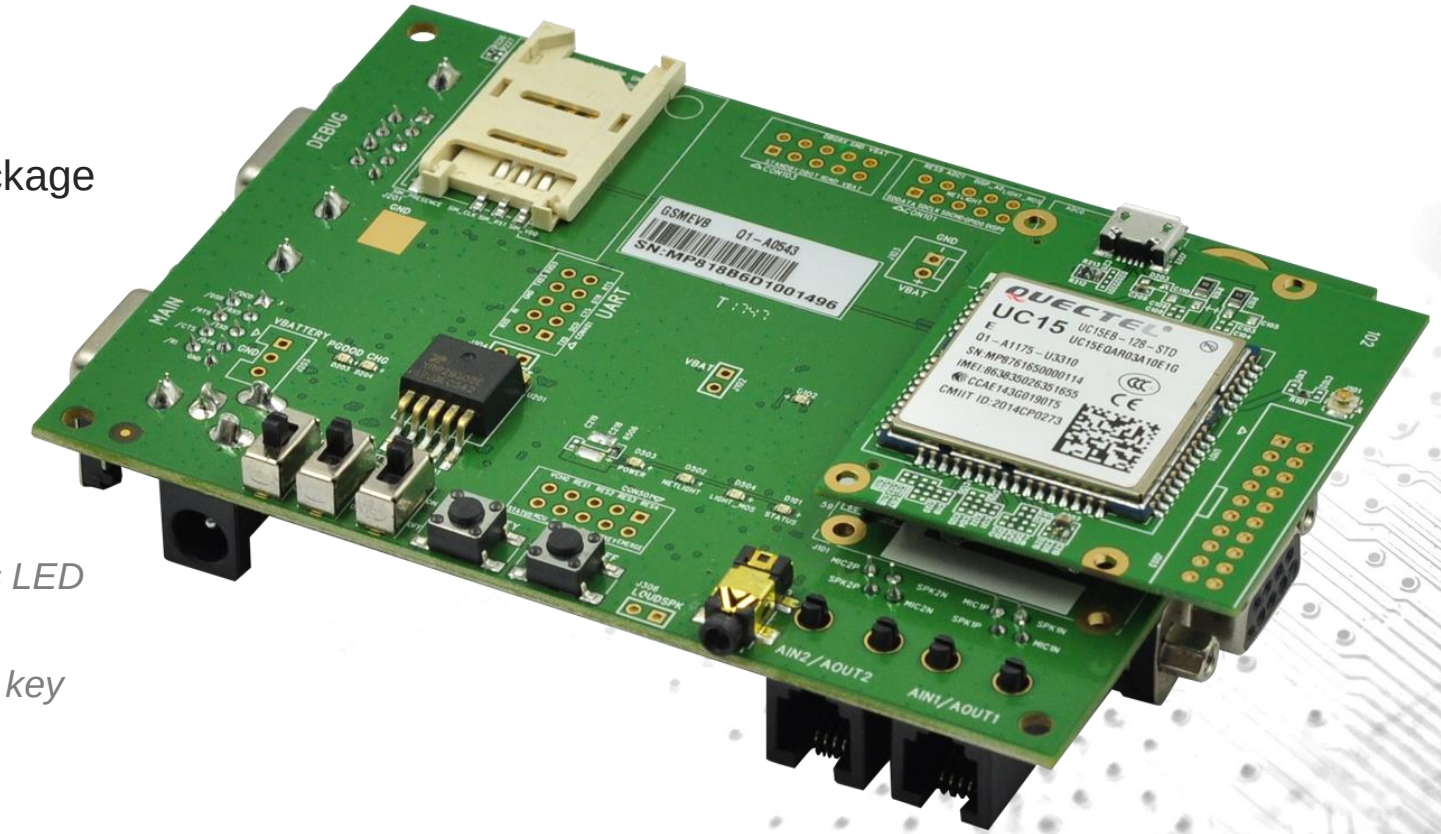
Support Package (UC15)

Technical Materials Package

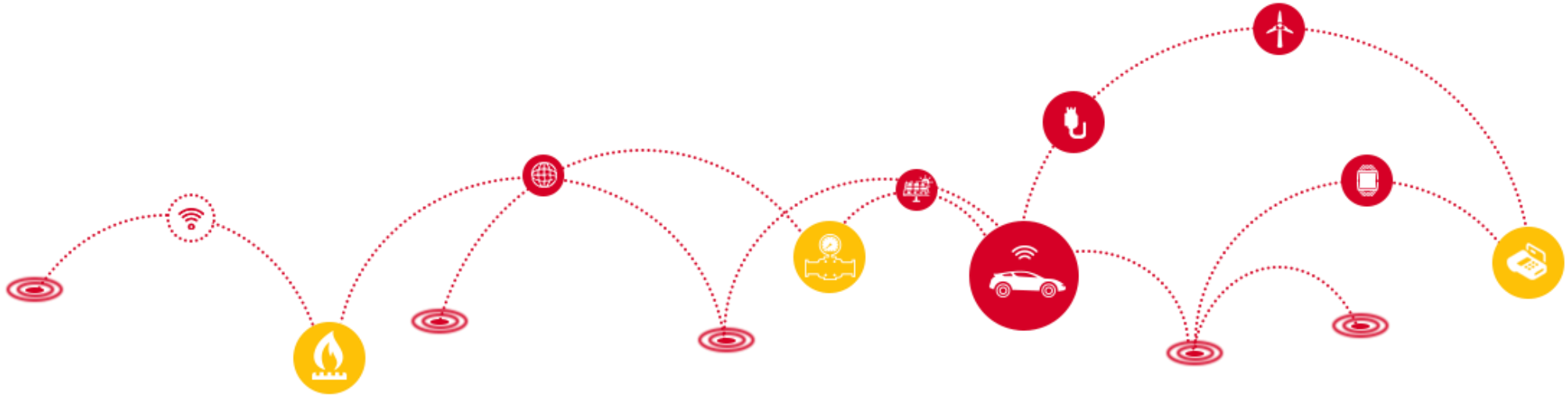
- Hardware & software specifications
- Application note package
- Debug tool, download tool, test tool, EVB package & USB drivers
- Approvals & test report package
- QNavigator

Development Tool (GSM EVB Kit)

- Interfaces
  a) *RS-232 interfaces*
  b) Debug UART interface
  c) *Power supply*
  d) *Antenna interface*
  e) *Handset interface*
  f) *Earphone interface*
  g) *Test points*
- Features
  a) *Network status LED*
  b) *Power key*
  c) *Emergency off key*



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



GSM Modules Roadmap

Not recommended for new designs

M10
- Quad-band
- LCC Form Factor

M95
- Quad-band
- LCC Form Factor

M66-DS
- Quad-band
- LCC Form Factor

M89
- Quad-band
- **LGA Form Factor**

Compatible Design

M66
- Quad-band
- LCC Form Factor

M66 R2.0
- Compatible with M66
- Quad-band
- LCC Form Factor

May 2019

M65
- Compatible with M66
- Quad-band
- LCC Form Factor

MM/YYYY *Estimated Engineering Sample Date*

	H1	H2	H1	H2
2017	2018		2019	

M89 Specifications

Model	M89
Quad-Band	**850/ 900/ 1800/ 1900MHz**
Dimension	18.8mm × 26.7mm × 2.3mm
Data Rate	85.6kbps DL/ 85.6kbps UL
Supply Voltage	3.3V~4.6V, 4.0V Typ.
Consumption	TBD @DRX=5 TBD @DRX=9
SMS/Voice	Supported
Interfaces	(U)SIM/ UART/ Audio/ RTC/ GPIO/ Antenna
Protocols	TCP/ UDP/ PPP/ FTP/ HTTP(S)/ POP3/ SMTP(S)/ USSD/ QNTP/ QPING/ SSL
Features	eCall DTMF Audio Play/ Audio Recording QuecFOTA QuecFile CMUX SSL
Certification	**Regulatory:** CE/ Anatel

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

17.7mm × 15.8mm × 2.3mm
GPRS Multi-slot Class 12
85.6kbps DL/ 85.6kbps UL

Model	M66	M66-DS	M66 R2.0	M65
Platform	MT6261D	MT6261D	MT6261M	RDA8955L
Quad-band	**850/ 900/ 1800/ 1900MHz**	**850/ 900/ 1800/ 1900MHz**	**850/ 900/ 1800/ 1900MHz**	**850/ 900/ 1800/ 1900MHz**
Supply Voltage	3.3V~4.6V, 4.0V Typ.	3.3V~4.6V, 4.0V Typ.	3.3V~4.6V, 4.0V Typ.	3.35V~4.25V, 4.0V Typ.
Consumption	1.3mA @DRX=5 1.2mA @DRX=9	1.3mA @DRX=5 1.2mA @DRX=9	1.3mA @DRX=5 1.2mA @DRX=9	1.2mA @DRX=5 1.1mA @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*/ PCM*/ 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/ TTS/ FTP/ SSL/ MQTT/ HTTPS*/ IPv6*
Features	eCall DTMF Audio Play/ Audio Recording QuecFOTA QuecCell QuecFile OpenCPU BT 3.0 (SPP/ HFP)	eCall DTMF Audio Play/ Audio Recording QuecFOTA QuecCell QuecFile OpenCPU BT 3.0 (SPP/ HFP) DSDS	eCall DTMF Audio Play/ Audio Recording QuecFOTA QuecCell QuecFile	eCall DTMF* Audio Play/ Audio Recording* QuecCell QuecFOTA QuecLocator* QuecFile CMUX
Certification	**Carrier:** Vodafone **Regulatory:** GCF/ CE/ UCRF/ FCC/ Anatel/ FAC/ ICASA **Others:** BT SIG	**Regulatory:** CE	**Regulatory:** CE	**Regulatory:** CE

"" means under development.*

M95/M10 Specifications

QUECTEL
Build a Smarter World

Model	M95	M10 Not recommended for new designs
Platform	MT6261M	MT6261M (OC: M10FA-03-STD) MT6261A (OC: M10FA-16-CPU)
Quad-band	**850/ 900/ 1800/ 1900MHz**	**850/ 900/ 1800/ 1900MHz**
Dimensions	23.6mm × 19.9mm × 2.65mm	29.0mm × 29.0mm × 3.6mm
Data Rate	85.6kbps DL/ 85.6kbps UL	85.6kbps DL/ 85.6kbps UL
Supply Voltage	3.3V~4.6V, 4.0V Typ.	3.3V~4.6V, 4.0V Typ.
Consumption	1.3mA @DRX=5 1.2mA @DRX=9	1.3mA @DRX=5 1.2mA @DRX=9
SMS/Voice	SMS & Voice	SMS & Voice
Interfaces	(U)SIM/ UART/ RTC/ Antenna/ Audio/ PCM	(U)SIM/ UART/ Audio/ RTC/ Antenna/ GPIOs/ SD
Protocols	PPP/ TCP/ UDP/ FTP/ HTTP/ SMTP/ CMUX/ SSL/ MQTT	PPP/ TCP/ UDP/ HTTP/ FTP/ MMS/ SMTP/ CMUX
Features	eCall QuecFOTA DTMF Dual SIM Audio Play/ Audio Recording QuecCell	eCall QuecFOTA DTMF CMUX OpenCPU (For OC M10FA-16-CPU only)
Certification	**Carrier:** Vodafone/ Telenor/ Rogers **Regulatory:** GCF/ CE/ UCRF/ FCC/ PTCRB/ IC/ Anatel/ NCC/ RCM/ ICASA **Others:** ATEX (Europe)	**Regulatory:** CE/ IC/ SRRC/ NAL

MC60 Specifications

Multi-constellation GNSS	**GPS+GLONASS+Galileo①**	
Channel Number	33 tracking channels 99 acquisition channels 210 PRN channels	
SBAS	WAAS, EGNOS, MSAS, GAGAN	
Horizontal Position Accuracy	Autonomous	<2.5m CEP
Velocity Accuracy	Without Aid	<0.1m/s
Acceleration Accuracy	Without Aid	0.1m/s²
Timing Accuracy	1PPS	10ns
TTFF @-130dBm with QuecFastFix Online	Cold Start	<4.5s
TTFF @-130dBm with EASY™	Cold Start	<15s
	Warm Start	<5s
	Hot Start	<1s
TTFF @-130dBm without EASY™	Cold Start	<35s
	Warm Start	<30s
	Hot Start	<1s
Sensitivity	Acquisition	-149dBm
	Tracking	-167dBm
	Re-acquisition	-161dBm

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 @850/900MHz) Class 1 (1W @1800/1900MHz)
Supply Voltage Range	3.3V~4.6V, 4.0V Typ.
Low Power Consumption	1.2mA @DRX=5
BT4.0 Current Consumption (Modem Off)	1.26mA @Advertising 1.35mA @Connection
Operation Temperature	-40°C ~ +85°C
Dimensions	18.7mm × 16.0mm × 2.1mm
Weight	Approx. 1.3g
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	**BT3.0** **BT4.0** Optional GATT/ PXP/ FMP/ SPP/ HFP-AG
(U)SIM	3.0V/1.8V
UART	×4

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

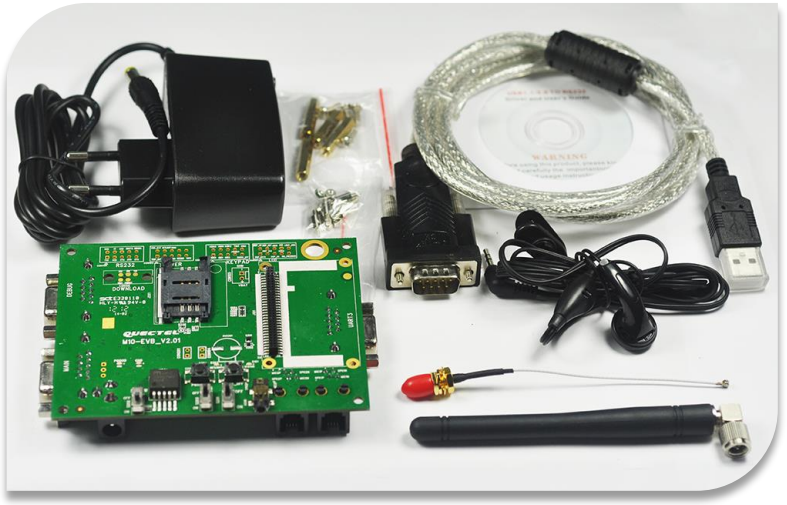
MC90 Specifications

Multi-constellation GNSS	**GPS+GLONASS+Galileo①**	
Channel Number	33 tracking channels 99 acquisition channels 210 PRN channels	
SBAS	WAAS, EGNOS, MSAS, GAGAN	
Horizontal Position Accuracy	Autonomous	<2.5m CEP
Velocity Accuracy	Without Aid	<0.1m/s
Acceleration Accuracy	Without Aid	0.1m/s²
Timing Accuracy	1PPS	10ns
TTFF @-130dBm with QuecFastFix Online	Cold Start	<4.5s
TTFF @-130dBm with EASY™	Cold Start	<15s
	Warm Start	<5s
	Hot Start	<1s
TTFF @-130dBm without EASY™	Cold Start	<35s
	Warm Start	<30s
	Hot Start	<1s
Sensitivity	Acquisition	-149dBm
	Tracking	-167dBm
	Re-acquisition	-161dBm

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 @850/900MHz) Class 1 (1W @1800/1900MHz)
Supply Voltage Range	3.3V~4.3V, 4.0V Typ.
Low Power Consumption	1.2mA @DRX=5
Wi-Fi Current Consumption (Wi-Fi part only)	0.4mA
Operation Temperature	-40°C ~ +85°C
Dimensions	25.6mm × 15.0mm × 2.3mm
Weight	Approx. 1.4g
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	**2.4GHz, IEEE 802.11 b/g/n**
(U)SIM	3.0V/1.8V
UART	×4

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

GSM Support Package



Technical Materials Package

- 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

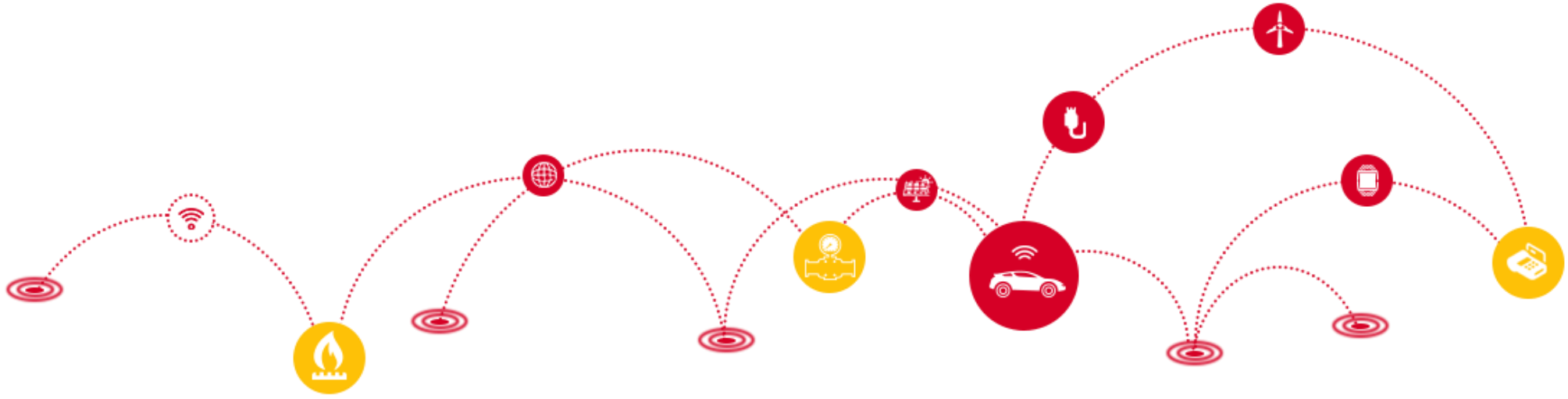
MCx0-TE-A Kit

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

GSM-EVB Kit

- 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



GNSS Modules Roadmap

Multi-band GNSS

L89
- GPS L1, QZSS L1, IRNSS L5
- Embedded Antenna

LC79D
GPS L1/L5, GLONASS L1, Galileo E1/E5a, IRNSS L5, BeiDou B1, QZSS L1/L5

Aug. 2019

LG69T
GPS L1/L5, Galileo E1/E5a, IRNSS L5, BeiDou B1C/B2a, QZSS L1/L5

Single-band GNSS

L86
- GPS/GLONASS/ Galileo/BeiDou/QZSS
- Embedded Antenna

L26-T/L26-P
- GPS/GLONASS/ Galileo/BeiDou/QZSS
- Raw Data or Timing

L76/L76-L
GPS/GLONASS/ Galileo/BeiDou/QZSS

L96
- GPS/GLONASS/ Galileo/BeiDou/QZSS
- Embedded Antenna

L26-DR
Dead Reckoning + GNSS

GPS

L70/L70-R/L70-RL
GPS/QZSS

L80/L80-R
- GPS/QZSS
- Embedded Antenna

** means under development.*

Earlier	Q1	Q2	Q3	Q4
	2019			

Product Key Features

Model	Constellation					Band		Voltage				Interfaces		Features													
	GPS / QZSS	GLONASS	Galileo	BeiDou	IRNSS	L1	L1 & L5	3.0V – 4.3 V	3.1V-3.6V	2.8V-3.6V	1.7V-1.9V	UART	IIC	Programmable (Flash)	Embedded LNA	Internal Oscillator	Wakeup Pin	Time Pulse (1PPS)	Antenna Short Circuit Protection	Antenna Open Circuit Detection	Timing	Raw Data	A-GPS	Dead Rockoning	Anti-Jamming	Jamming Detection	Embedded Antenna	Geo-fence	Odometer	SDK Commands
L70-R	●					●		●				●				T		●					●		●					
L70-RL	●					●		●				●			●	T		●					●		●					
L70	●					●		●				●		●		T		●					●		●	●		●	●	●
L76	●	●	o	o		●		●				●		●		T	●	●					●		●	●		●	●	●
L76-L	●	●	o	o		●		●				●	o	●	●	T	●	●					●		●	●		●	●	●
L80-R	●					●		●				●			●	T		●					●		●		●			
L80	●					●		●				●		●	●	T		●	●	●			●		●	●	●	●	●	●
L86	●	●	o	o		●		●				●		●	●	T	●	●	●	●			●		●	●	●	●	●	●
L89	●	o	●	o	●	●		●				●	o	●	●	T	●	●	●	●			●				●	●	●	
L96	●	●	o	o		●		●				●	o	●	●	T	●	●					●		●	●	●	●	●	●
L26	●	●	o	o		●		●				●		●	●	T	●	●	●	●			●		●	●		●	●	●
L26-DR	●	●	●	o		●			●			●		●	●	T	●	●	●	●			●	●				●	●	
L26-T*	●	●	●	o		●			●			●		●	●	T	●	●	●	●	●	o	●					●	●	
L26-P*	●	●	●	o		●			●			●		●	●	T	●	●	●	●		●	●					●	●	
LC79D*	●	●	●	●	●		●				●	●		●	●	T	●	●					●					●	●	●

● means supported. o means optional. T means TCXO.

"" means under development.*

GPS Module Specifications

L70 GPS Module

10.1mm × 9.7mm × 2.5mm
MT3339

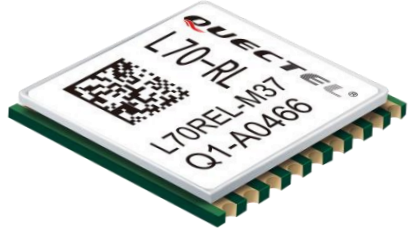
- 18 pins with LCC
- High sensitivity: -165dBm @Tracking
- Default baud rate: 9600bps
- Voltage 2.8V to 4.3V, 3.3V typ.
- Low power consumption:
  12mA @Tracking mode
  18mA @Acquisition mode
  7uA @Backup mode
- AGPS function: EASY™ technology, EPO
- Multiple power saving modes (AlwaysLocate™/ Periodic mode/ Standby mode/ Backup mode)
- FLP mode: only 5mA in static receiving
- LOCUS, built-in logger solution
- Support SDK command

L70-R GPS Module

10.1mm × 9.7mm × 2.5mm
MT3337

- 18 pins with LCC
- High sensitivity: -165dBm @Tracking
- Default baud rate: 9600bps
- Voltage 2.8V to 4.3V, 3.3V typ.
- Low power consumption:
  13mA @Tracking mode
  16mA @Acquisition mode
  8uA @Backup mode
- AGPS function: EASY™ technology, EPO
- Multiple power saving modes (Standby mode/ Backup mode)

L70-RL GPS Module



10.1mm × 9.7mm × 2.5mm
MT3337

- 18 pins with LCC
- High sensitivity: -167dBm @Tracking
- Default baud rate: 9600bps
- Voltage 2.8V to 4.3V, 3.3V typ.
- Low power consumption:
  18mA @Tracking mode
  21mA @Acquisition mode
  8uA @Backup mode
- AGPS function: EASY™ technology, EPO
- Built-in LNA
- Multiple power saving modes (Standby mode/ Backup mode)

GNSS Module Specifications

L76 GNSS Module

- 18 pins with LCC
- GPS, GLONASS, Galileo and QZSS
- High sensitivity: -165dBm @Tracking
- Default baud rate: 9600bps
- Voltage 2.8V to 4.3V, 3.3V typ.
- Low power consumption:
  18mA (GPS+GLONASS) @Tracking mode
  25mA (GPS+GLONASS) @Acquisition mode
  7uA @Backup mode
- AGPS function: EASY™ technology, EPO
- Multiple power saving modes (AlwaysLocate™/ Periodic mode/ Standby mode/ Backup mode)
- LOCUS, built-in logger solution
- Support SDK command

10.1mm × 9.7mm × 2.5mm
MT3333

L76-L GNSS Module

- 18 pins with LCC
- GPS, GLONASS, Galileo and QZSS
- High sensitivity: -167dBm @Tracking
- Default baud rate: 9600bps
- Voltage 2.8V to 4.3V, 3.3V typ.
- Low power consumption:
  22mA (GPS+GLONASS) @Tracking mode
  29mA (GPS+GLONASS) @Acquisition mode
  7uA @Backup mode
- AGPS function: EASY™ technology, EPO
- Built-in LNA
- Multiple power saving modes (AlwaysLocate™/ Periodic mode/ Standby mode/ Backup mode)
- LOCUS, built-in logger solution
- Support SDK command

10.1mm × 9.7mm × 2.5mm
MT3333

GNSS Module Specifications

L26 GNSS Module

12.2mm × 16.0mm × 2.4mm
MT3333

- 24 pins with LCC
- GPS, GLONASS, Galileo and QZSS
- High Sensitivity: -167dBm @Tracking
- Default baud rate: 9600bps
- Voltage 2.8V to 4.3 V, 3.3V typ.
- Low power consumption:
  21mA (GPS+GLONASS) @Tracking mode
  29mA (GPS+GLONASS) @Acquisition mode
  7uA @Backup mode
- AGPS function: EASY™ technology, EPO
- Built-in LNA
- Multiple power saving modes (AlwaysLocate™/ Periodic mode/ Standby mode/ Backup mode)
- LOCUS, built-in logger solution
- Short-circuit protection and detection for active antenna
- Support SDK command

L26-DR GNSS Module

12.2mm × 16.0mm × 2.3mm
Teseo III

- 24 pins with LCC
- GPS, BeiDou, GLONASS, Galileo and QZSS
- High Sensitivity: -163dBm @Tracking
- Default baud rate: 115200bps
- Voltage 3.0 V to 3.6 V, 3.3V typ.
- Low power consumption
  56mA (GPS) @Tracking mode
  70mA (GPS) @Acquisition mode
- Built-in LNA
- Support DR (Dead Reckoning)
- Support AGPS
- Sensor integrated
- Sensor raw data output
- Host wake up function
- Short-circuit protection and detection for active antenna

L26-T* GNSS Module

12.2mm × 16.0mm × 2.3mm
Teseo III

- 24 pins with LCC
- GPS, BeiDou, GLONASS, Galileo and QZSS
- High Sensitivity: -163dBm@Tracking
- Default baud rate: 9600bps
- Voltage 3.0 V to 3.6 V, 3.3V typ.
- Low power consumption
  52mA (GPS) @Tracking mode
  64mA (GPS) @Acquisition mode
- Built-in LNA
- Support Timing
- Support raw data output (separate firmware)
- Support AGPS
- Short-circuit protection and detection for active antenna

L26-P* GNSS Module

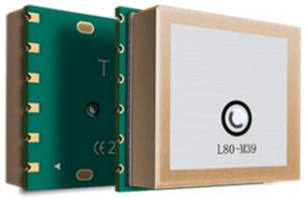
12.2mm × 16.0mm × 2.3mm
Teseo III

- 24 pins with LCC
- GPS, BeiDou, GLONASS, Galileo and QZSS
- Default baud rate: 115200bps
- Voltage 3.0 V to 3.6 V, 3.3V typ.
- Low power consumption
  52mA① (GPS) @Tracking mode
  65mA① (GPS) @Acquisition mode
- Built-in LNA
- Support GNSS raw data and sensor raw data output
- Support AGPS
- Short-circuit protection and detection for active antenna

"" means under development.*
① means preliminary data for reference only.

GNSS Module (with Antenna Embedded) Specifications

L80 GPS Module



16.0mm × 16.0mm × 6.45mm
MT3339

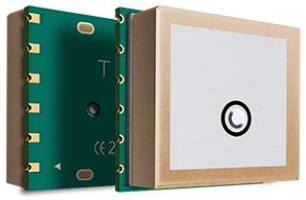
- 12 pins with LCC
- Patch antenna (15.0mm × 15.0mm × 4.0mm) on the top of module
- High sensitivity: -165dBm @Tracking
- Default baud rate: 9600bps
- Voltage 3.0V to 4.3V, 3.3V typ.
- Low power consumption
  20mA @Tracking mode
  25mA @Acquisition mode
  7uA @Backup mode
- Short-circuit protection and detection for active antenna
- Active antenna switching function
- Built-in LNA
- Large size of pins (Length=1.5mm; Width=1.0mm)
- AGPS function: EASY™ technology, EPO
- Multiple power saving modes (AlwaysLocate™/ Periodic mode/ Standby mode/ Backup mode)
- FLP mode: only 50% power consumption of normal mode
- LOCUS, built-in logger solution
- Support SDK command

L86 GNSS Module

18.4mm × 18.4mm × 6.45mm
MT3333

- 12 pins with LCC
- GPS, GLONASS, Galileo and QZSS
- Patch antenna (18.4mm × 18.4mm × 4.0mm) on the top of module
- High sensitivity: -167dBm @Tracking
- Default baud rate: 9600bps
- Voltage 3.0V to 4.3V, 3.3V typ.
- Low power consumption
  26mA (GLONASS+GPS) @Tracking mode
  30mA (GLONASS+GPS) @Acquisition mode
  7uA @Backup mode
- Short-circuit protection and detection for active antenna
- Active antenna switching function
- Built-in LNA
- Large size of pins (Length=1.5mm; Width=1.0mm)
- AGPS function: EASY™ technology, EPO
- Multiple power saving modes (AlwaysLocate™/ Periodic mode/ Standby mode/ Backup mode)
- LOCUS, built-in logger solution
- Support SDK command

L80-R GPS Module



16.0mm × 16.0mm × 6.45mm
MT3337

- 12 pins with LCC
- Patch antenna (15.0mm × 15.0mm × 4.0mm) on the top of module
- High sensitivity: -165dBm @Tracking
- Default baud rate: 9600bps
- Voltage 3.0V to 4.3V, 3.3V typ.
- Low power consumption
  20mA @Tracking mode
  25mA @Acquisition mode
  7uA @Backup mode
- Built-in LNA
- Large size of pins (Length=1.5mm; Width=1.0mm)
- AGPS function: EASY™ technology, EPO
- Multiple power saving modes (Standby mode/ Backup mode)

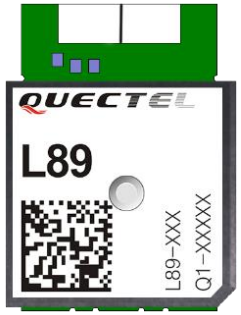
L96 GNSS Module

14.0mm × 9.6mm × 2.0mm
MT3333

- 31 pins with LCC
- GPS, GLONASS, BeiDou, Galileo (RLM supported) and QZSS
- Chip antenna embedded on the top of module
- High sensitivity: -165dBm @Tracking
- Default baud rate: 9600bps
- Voltage 2.8V to 4.3V, 3.3V typ.
- Low power consumption
  20mA (GLONASS+GPS) @Tracking mode
  25mA (GLONASS+GPS) @Acquisition mode
  7uA @Backup mode
- Built-in LNA
- AGPS function: EASY™ technology, EPO
- Multiple power saving modes (AlwaysLocate™/ Periodic mode/ Standby mode/ Backup mode)
- LOCUS, built-in logger solution
- Support SDK command
- Dual SAW filters integrated for noise cancellation

GNSS Module (Supporting IRNSS) Specifications

L89 GNSS Module



26.4mm × 18.4mm × 6.8mm
Teseo III

- 16 pins with LCC
- IRNSS module, AIS140 compliance
- Dual antenna embedded: patch antenna (18.4mm × 18.4 mm × 4.0mm) for L1 band, chip antenna for L5 band
- High sensitivity: -161dBm @Tracking
- Default baud rate: 9600bps
- Voltage 3.1V to 4.3V, 3.3V typ.
- Low power consumption
  95mA (GPS+Galileo+IRNSS) @Tracking mode
  99mA (GPS+Galileo+IRNSS) @Acquisition mode
- Short-circuit protection and detection for active antenna
- Active antenna switching function
- Built-in LNA
- Large size of pins (Length=1.5mm; Width=1.0mm)
- Support AGPS
- Power saving mode: Backup mode
- Support SDK command*
- Pin-to-pin compatible with L80 and L86

LC79D* GNSS Module

10.1mm × 9.7mm ×2.5mm
BCM47755

- 28 pins with LCC
- Dual band GNSS module (L1, L5)
- GPS L1 C/A, GPS L5, GLONASS L1, Galileo E1/E5a, IRNSS L5, BeiDou B1 and QZSS L1/L5 work simultaneously
- High sensitivity: -163dBm@Tracking
- Default baud rate: 115200bps
- Voltage 1.7V~1.9V, typical 1.8V
- Low power consumption
  40mA① @Tracking mode
  43mA① @Acquisition mode
- Built-in LNA
- Power saving mode: Backup mode
- Support SDK command*

LG69T* GNSS Module

22.0mm × 17.0mm ×2.4mm
Teseo V

- 54 pins with LCC
- Dual band GNSS module (L1, L5)
- GPS L1 C/A, GPS L5, GLONASS L1, Galileo E1/E5a, IRNSS L5, BeiDou B1 and QZSS L1/L5 work simultaneously
- High sensitivity: -162① dBm@Tracking
- Default baud rate: 115200bps
- Voltage 3.0V~3.6V, typical 3.3V
- Low power consumption
  TBD @Tracking mode
  TBD @Acquisition mode
- Built-in LNA
- Power saving mode: Backup mode
- Support SDK command*

"" means under development.*
① means preliminary data for reference only.

Global IoT Deployment

Thank you!

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