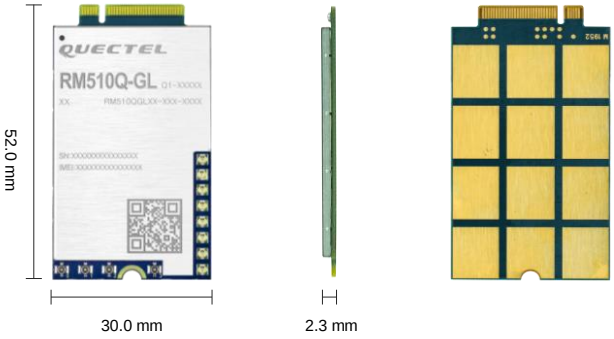
Quectel RM510Q-GL

5G Sub-6 GHz & mmWave M.2 Module



Quectel RM510Q-GL is a 5G module that is specially optimized for IoT/eMBB applications. Adopting 3GPP Release 15, it supports both 5G NSA and SA modes. Designed in M.2 form factor, RM510Q-GL can be easily embedded in customers' applications.

RM510Q-GL is an industrial-grade module for industrial and commercial applications only.

The global version RM510Q-GL nearly covers all of the main operators worldwide. The module supports Qualcomm® IZat™ location technology Gen9C Lite (GPS, GLONASS, BDS and Galileo). The integrated GNSS receiver greatly simplifies the product design, and also provides quicker, more accurate and more dependable positioning capability.

A rich set of Internet protocols, industry-standard interfaces and abundant functionality (USB and PCIe drivers for operating systems Windows 7/8/8.1/10, Linux and Android) extend the applicability of the module to a wide range of eMBB and IoT applications such as industrial router, home gateway, CPE, industrial laptop, consumer laptop, industrial PDA, rugged tablet PC, video transmission and digital signage.

Key Features

- 5G/4G/3G multi-mode module with M.2 form factor, optimized for IoT and eMBB applications
- Worldwide 5G and LTE-A coverage
- Both NSA and SA modes supported
- Multi-constellation GNSS receiver (optional) available for applications requiring fast and accurate fixes in any environment
- Feature refinements: DFOTA* and VoLTE (optional)

5G NR Sub-6 & mmWave Bands

DL: LTE Cat 20
UL: LTE Cat 18

WCDMA
DL: max. 42 Mbps
UL: max. 5.76 Mbps

Embedded Abundant Protocols

M.2 Form Factor

Multi-constellation GNSS (Optional)

USB 3.1/PCIe 3.0 High Speed Interface

Voice over LTE (Optional)

Quectel Enhanced AT Commands

Quectel RM510Q-GL

5G Sub-6 & mmWave		RM510Q-GL
Region/Operator		Global
Dimensions		30.0 mm × 52.0 mm × 2.3 mm
Weight		9.1 g
Temperature Range		
Operating Temperature		-30 °C to +70 °C
Extended Temperature		-40 °C to +85 °C
Frequency Bands		
5G	**5G NR**	**3GPP Release 15 NSA/SA operation, Sub-6 GHz, mmWave**
	5G NR NSA	n1/ 2/ 3/ 5/ 7/ 8/ 12/ 20/ 25/ 28/ 38/ 40/ 41/ 48*/ 66/ 71/ 77/ 78/ 79/ 257①/ 258①/ 260①/ 261①
	5G NR SA	n1/ 2/ 3/ 5/ 7/ 8/ 12/ 20/ 25/ 28/ 38/ 40/ 41/ 48*/ 66/ 71/ 77/ 78/ 79
	MIMO	DL: 4 × 4 on n1/ 2/ 3/ 7/ 25/ 38/ 40/ 41/ 48*/ 66/ 77/ 78/ 79 UL: 2 × 2 on n41/ 257/ 258/ 260/ 261
LTE	**LTE Category**	**DL Cat 20 / UL Cat 18**
	LTE-FDD	B1/ 2/ 3/ 4/ 5/ 7/ 8/ 12(17)/ 13/ 14/ 18/ 19/ 20/ 25/ 26/ 28/ 29/ 30/ 32/ 66/ 71
	LTE-TDD	B34/ 38/ 39/ 40/ 41/ 42/ 43/ 48
	LAA	B46 (only supported for DL 2 × 2 MIMO)
	DL 4 × 4 MIMO	B1/ 2/ 3/ 4/ 7/ 25/ 30/ 32/ 34/ 38/ 39/ 40/ 41/ 42/ 43/ 48/ 66
UMTS	**WCDMA**	B1/ 2/ 3/ 4/ 5/ 6/ 8/ 19
GNSS (Optional)		GPS/GLONASS/BDS/Galileo
Certifications		
Carrier		**America:** Verizon*/AT&T*/T-Mobile* **Australia:** Telstra*
Regulatory		**Global:** GCF **Europe:** CE **North America:** PTCRB **America:** FCC **Canada:** IC **Australia/New Zealand:** RCM
Others		RoHS/WHQL
Data Rate (Max.) ②		
5G SA Sub-6		DL 4.2 Gbps; UL 450 Mbps
5G NSA Sub-6		DL 5.0 Gbps; UL 600/650 Mbps ③
5G NSA mmWave		DL 7.5 Gbps; UL 2.9 Gbps
LTE		DL 2.0 Gbps; UL 200 Mbps
WCDMA		DL 42 Mbps; UL 5.76 Mbps
Interfaces		
(U)SIM		× 1
USB 2.0		× 1
USB 3.0/3.1		× 1
PCIE 3.0		× 1
PCM*		× 1
Antenna		Sub-6 GHz × 4; mmWave × 8

NOTE:
1. ①: Work with mmWave antennas.
2. ②: The presented data rates are theoretical only, and the actual value depends on network conditions.
3. ③: 600 Mbps is the typical value; while 650 Mbps is the theoretical data rate when the UL 256QAM of both LTE and 5G NR are enabled (LTE UL 256QAM in EN-DC is disabled by default and has not been deployed by operators, and it is not fully tested).
4. *: Under development/planned/in progress.

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Quectel RM510Q-GL

5G Sub-6 & mmWave	RM510Q-GL
Voice	
VoLTE	Digital Audio and VoLTE (Voice over LTE) (Optional)
Enhanced Features	
eSIM	Optional
DFOTA*	Supported
(U)SIM Card Detection	Supported
Drivers	
USB Serial Driver	Windows 7/8/8.1/10 Linux 2.6–5.4 Android 4.x/5.x/6.x/7.x/8.x/9.x/10
GNSS Driver	Android 4.x/5.x/6.x/7.x/8.x/9.x/10
RIL Driver	Android 4.x/5.x/6.x/7.x/8.x/9.x/10
NDIS Driver	Windows 7/8/8.1/10
MBIM Driver	Windows 10 Linux 3.18–5.4
GobiNet Driver	Linux 2.6–5.4
QMI_WWAN Driver	Linux 3.4–5.4
Electrical Features	
Supply Voltage Range	3.135–4.4 V, typical 3.7 V
Output Power	**5G NR:** - Class 2 (26 dBm) for n41/ 77/ 78/ 79; Class 3 (23dBm) for other Sub-6 bands; - Follow QTM525 (Class 3)/QTM527(Class 1) for n257/ 258/ 260/ 261 **LTE:** Class 2 (26 dBm) for B38/ 40/ 41/ 42/ 43; Class 3 (23 dBm) for other LTE bands **WCDMA:** Class 3 (23 dBm)
Power Consumption (Typical)	80 µA @ Power down 4.2 mA @ Sleep ① 39 mA @ USB 2.0, Idle 54.5 mA @ USB 3.0, Idle

NOTE:
1. ①: Being improved.
2. *: Under development/planned/in progress.

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