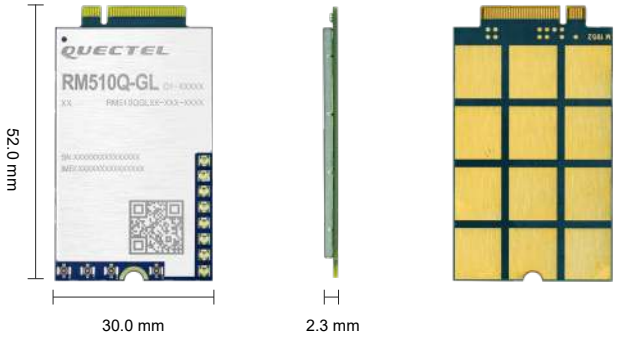
Quectel RM510Q-GL

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, BeiDou/Compass 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 surveillance and digital signage, etc.

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 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

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/n2/n3/n5/n7/n8/n12/n20/n25/n28/n38/n40/n41/n48*/n66/n71/n77/n78/n79/n257①/n258①/ n260①/n261①
	5G NR SA	n1/n2/n3/n5/n7/n8/n12/n20/n25/n28/n38/n40/n41/n48*/n66/n71/n77/n78/n79
	MIMO	DL: 4 × 4 on n1/n2/n3/n7/n25/n38/n40/n41/n48*/n66/n77/n78/n79 UL: 2 × 2 on n41/n257/n258/n260/n261
LTE	**LTE Category**	**DL Cat 20 / UL Cat 18**
	LTE-FDD	B1/B2/B3/B4/B5/B7/B8/B12(B17)/B13/B14/B18/B19/B20/B25/B26/B28/B29/B30/B32/B66/B71
	LTE-TDD	B34/B38/B39/B40/B41/B42/B43/B48
	LAA	B46 (only supported for DL 2 × 2 MIMO)
	DL 4 × 4 MIMO	B1/B2/B3/B4/B7/B25/B30/B32/B34/B38/B39/B40/B41/B42/B43/B48/B66
UMTS	**WCDMA**	B1/B2/B3/B4/B5/B6/B8/B19
GNSS		GPS/GLONASS/BeiDou(Compass)/Galileo
Certifications		
Regulatory		**Global:** GCF **Europe:** CE **North America:** PTCRB **America:** FCC **Canada:** IC **Australia/New Zealand:** RCM
Carrier		**America:** Verizon*/AT&T*/T-Mobile* **Australia:** Telstra*
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

Notes:
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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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/n77/n78/n79; Class 3 (23dBm) for other Sub-6 bands; - Follow QTM525 (Class 3)/QTM527(Class 1) for n257/n258/n260/n261 **LTE:** Class 2 (26 dBm) for B38/B40/B41/B42/B43; 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

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

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