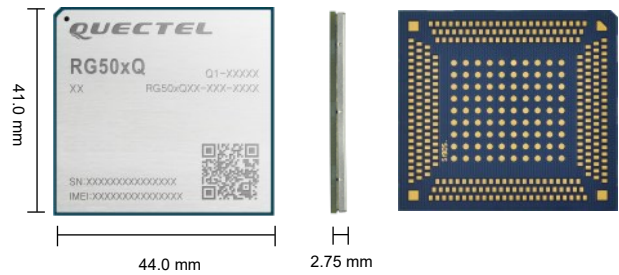




Quectel RG50xQ Series

IoT/M2M-optimized

5G Sub-6 GHz LGA Module



Quectel RG50xQ is a series of 5G Sub-6 GHz LGA modules optimized specially for IoT and M2M applications. Adopting the 3GPP Rel-15 technology, it delivers maximum data rates up to 5 Gbps downlink and 900 Mbps uplink. It supports both 5G NSA and SA modes, Option 3x, 3a and Option 2 network architectures, which makes it backwards compatible with 4G/3G network. It is pin-to-pin compatible with Quectel LTE-A Cat 12 EG512R-EA module. It can meet customers' different application demands for high speed, large capacity, low latency, and high reliability etc.

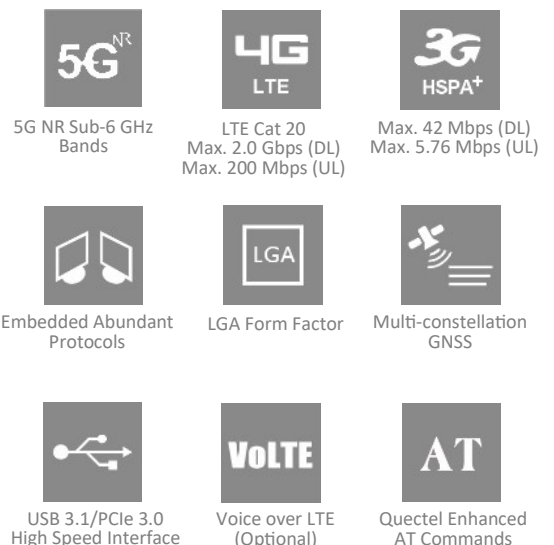
RG50xQ is a series of industrial-grade modules for industrial and commercial applications only. It includes: RG500Q series (RG500Q-EA and RG500Q-NA*), RG501Q-EU* and RG502Q-EA. It supports Qualcomm® IZat™ location technology Gen9C Lite (GPS, GLONASS, BeiDou, Galileo and QZSS). The integrated GNSS receiver greatly simplifies product design and provides quicker, more accurate and more dependable positioning capability.

A rich set of Internet protocols, industry-standard interfaces (USB 2.0/3.0/3.1, PCIe 3.0, RGMII, PCM, UART, etc.) and abundant functionalities (USB drivers for Windows 7/8/8.1/10, Linux and Android) extend the applicability of the module to a wide range of IoT and M2M applications such as business router, home gateway, STB, industrial laptop, consumer laptop, industrial PDA, rugged tablet PC and video surveillance.



Key Features

- ✓ Optimized for IoT and M2M applications with LGA form factor supported
- ✓ Worldwide 5G/4G/3G coverage
- ✓ Supported 5G NSA and SA modes
- ✓ Multi-constellation GNSS receiver available for applications requiring fast and accurate positioning in any environment
- ✓ Feature refinements: DFOTA* and VoLTE (Optional)



Version: 1.2 | Status: Released

Quectel RG50xQ Series

	RG500Q-EA&RG502Q-EA	RG500Q-NA*	RG501Q-EU*
Region/Operator	EMEA/APAC	North America	EMEA/Oceania/Brazil
Dimensions (mm)	41.0 × 44.0 × 2.75	41.0 × 44.0 × 2.75	41.0 × 44.0 × 2.75
Weight (g)	11.0	11.0	11.0
Temperature Range			
Operating Temperature	-30 °C to +75 °C	-30 °C to +75 °C	-30 °C to +75 °C
Extended Temperature	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
Frequency Bands ①			
5G NR NSA	n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n77/n78/n79	n2/n5/n7/n12/n25/n41/n48/n66/n71/n77/n78	n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n77/n78
5G NR SA	n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n77/n78/n79	n2/n5/n7/n12/n25/n41/n48/n66/n71/n77/n78	n1/n3/n5/n7/n8/n20/n28/n38/n40/n41/n77/n78
LTE-FDD	B1/B3/B5/B7/B8/B18/B19/B20/B26/B28/B32	B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B29/B30/B66/B71	B1/B3/B5/B7/B8/B20/B28/B32
LTE-TDD	B34/B38/B39/B40/B41/B42/B43	B41/B42/B43/B48	B38/B40/B41/B42/B43
LAA	-	B46	-
WCDMA	B1/B3/B5/B6/B8/B19	-	B1/B5/B8
MIMO	DL: 4 × 4 UL ②: 2 × 2	DL: 4 × 4 UL ②: 2 × 2	DL: 4 × 4 UL ②: 2 × 2
GNSS	GPS/GLONASS/BeiDou/Galileo/QZSS (Optional)	GPS/GLONASS/BeiDou/Galileo/QZSS (Optional)	GPS/GLONASS/BeiDou/Galileo/QZSS (Optional)
Certifications			
Carrier	RG500Q-EA: South Korea: LGU+ Australia: Telstra* China: China Telecom/China Mobile/China Unicom	America: Verizon*/AT&T*/T-Mobile*	CE*/RCM*
Regulatory	RG502Q-EA: TBD RG500Q-EA: Europe: CE China: SRRC/NAL/CCC South Korea: KC Australia/New Zealand: RCM	Global: GCF* North America: PTCRB* America: FCC* Canada: IC*	TBD
Others	RoHS	RoHS	RoHS
Max. Data Transmission Rates ③			
5G SA Sub-6 GHz	RG500Q-EA: 2.1 Gbps (DL)/ 900 Mbps (UL) RG502Q-EA: 4.2 Gbps (DL)/ 900 Mbps (UL)	2.1 Gbps (DL)/ 900 Mbps (UL)	2.1 Gbps (DL)/ 900 Mbps (UL)
5G NSA Sub-6 GHz	RG500Q-EA: 2.5 Gbps (DL)/ 650 Mbps (UL) RG502Q-EA: 5.0 Gbps (DL)/ 650 Mbps (UL)	2.5 Gbps (DL)/ 600 Mbps (UL)	3.3 Gbps (DL)/ 600 Mbps (UL)
LTE	RG500Q-EA: 1.0 Gbps (DL)/ 200 Mbps (UL) RG502Q-EA: 2.0 Gbps (DL)/ 200 Mbps (UL)	1.0 Gbps (DL)/ 150 Mbps (UL)	2.0 Gbps (DL)/ 150 Mbps (UL)
UMTS	42 Mbps (DL)/ 5.76 Mbps (UL)	-	42 Mbps (DL)/ 5.76 Mbps (UL)
Interfaces			
(U)SIM	× 2, 1.8/2.95 V	× 2, 1.8/2.95 V	× 2, 1.8/2.95 V
e-SIM	-	MFF2 (Optional)	MFF2 (Optional)
UART	× 3	× 3	× 3
SD Card	× 1	× 1	× 1
USB 2.0/3.0/3.1	× 1	× 1	× 1
PCIe 3.0	Gen3, Lane × 2	Gen3, Lane × 2	Gen3, Lane × 2
RGMII	× 1	× 1	× 1
PCM*	× 1	× 1	× 1
I2S*	× 1	× 1	× 1
I2C	× 1	× 1	× 1
SPI	× 1	× 1	× 1
ADC	●	●	●
RESET_N	●	●	●
GPIOs (QuecOpen®)	●	●	●
Wi-Fi	●	●	●
Antennas	Cellular: 6 + 2 (n79) GNSS: × 1	Cellular: × 4 GNSS: × 1	Cellular: × 6 GNSS: × 1
Voice			
Voice	Digital Audio and VoLTE (Voice over LTE) (Optional)	Digital Audio and VoLTE (Voice over LTE) (Optional)	Digital Audio and VoLTE (Voice over LTE) (Optional)
Enhanced Features			
DTMF*	●	●	●
DFOTA*	●	●	●
(U)SIM Card Detection	●	●	●

Notes:

- * means under development.
- ① For CA bands, see *Quectel_RG50xQ_Series_CA&EN-DC_Features* for details.
- ② means only supported in 5G SA mode.
- ③ means theoretical data rates and the actual data rates depend on the network condition.
- ④ HPUE only supports single carrier.

Quectel RG50xQ Series

	RG500Q-EA&RG502Q-EA	RG500Q-NA*	RG501Q-EU*
Drivers			
USB Serial Driver	Windows 7/8/8.1/10, Linux 2.6-5.8, Android 4.x-10.0	Windows 7/8/8.1/10, Linux 2.6-5.8, Android 4.x-10.0	Windows 7/8/8.1/10, Linux 2.6-5.8, Android 4.x-10.0
PCIe MHI Driver	Windows 10 Linux 3.10-5.8	Windows 10 Linux 3.10-5.8	Windows 10 Linux 3.10-5.8
GNSS Driver	Android 4.x-10.0	Android 4.x-10.0	Android 4.x-10.0
RIL Driver	Android 4.x-11.x	Android 4.x-11.x	Android 4.x-11.x
NDIS Driver	Windows 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10
MBIM Driver	Windows 8/8.1/10, Linux 3.18-5.8	Windows 8/8.1/10, Linux 3.18-5.8	Windows 8/8.1/10, Linux 3.18-5.8
GobiNet Driver	Linux 2.6-5.8	Linux 2.6-5.8	Linux 2.6-5.8
QMI_WWAN Driver	Linux 3.4-5.8	Linux 3.4-5.8	Linux 3.4-5.8
Electrical Features			
Supply Voltage Range	3.3-4.3 V, typ. 3.8 V	3.3-4.3 V, typ. 3.8 V	3.3-4.3 V, typ. 3.8 V
Output Power	Class 3 (24 dBm +1/-3 dB) for WCDMA bands Class 3 (23 dBm ±2 dB) for LTE bands Class 3 (23 dBm ±2 dB) for 5G NR bands Class 2 (26 dBm ±2 dB) for LTE B38/B40/B41/B42 bands HPUE ^① Class 2 (26 dBm +2/-3 dB) for 5G NR n41/n77/n78/n79 bands HPUE ^②	Class 3 (23 dBm ±2 dB) for LTE bands Class 3 (23 dBm ±2 dB) for 5G NR bands Class 2 (26 dBm ±2 dB) for B41/B48 bands Class 2 (26 dBm +2/-3 dB) for 5G NR n41/n77/n78 bands HPUE ^③	Class 3 (23 dBm ±2 dB) for LTE bands Class 3 (23 dBm ±2 dB) for 5G NR bands Class 2 (26 dBm ±2 dB) for B41/B42 bands HPUE ^④ Class 2 (26 dBm +2/-3 dB) for 5G NR n41/n77*/n78 bands HPUE ^④
Power Consumption	0.033 mA @ Power off 1.45 mA @ Sleep, typ. 20.1 mA @ Idle	TBD @ Power off TBD @ Sleep, typ. TBD @ Idle	TBD @ Power off TBD @ Sleep, typ. TBD @ Idle

Notes:

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- ① For CA bands, see *Quectel_RG50xQ_Series_CA&EN-DC_Features* for details.
- ② means only supported in 5G SA mode.
- ③ means theoretical data rates and the actual data rates depend on the network condition.
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