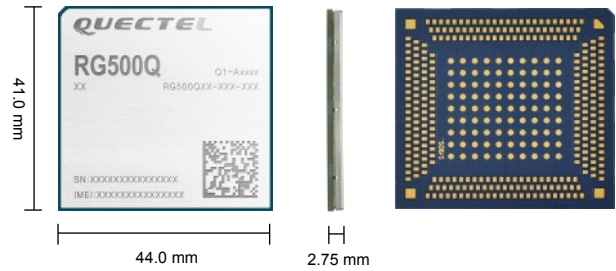




# Quectel RG500Q Series

IoT/M2M-optimized

5G Sub-6 GHz LGA Module



Quectel RG500Q 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 M2M-optimized peak data rates of 2.5 Gbps downlink and 900 Mbps uplink. It supports both 5G NSA and SA modes, Option 3x, 3a and Option 2 network architecture, which makes it backwards compatible with 4G/3G network. It can meet customers' different application demands for high speed, eMBB, low latency, etc.

RG500Q series contains 2 variants: RG500Q-EA and RG500Q-NA\*. It supports Qualcomm® IZat™ location technology Gen9C Lite (GPS, GLONASS, BeiDou/Compass, 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 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 Benefits

- ✓ 5G/4G/3G multi-mode module with LGA form factor, optimized for IoT and M2M applications
- ✓ Worldwide 5G and LTE-A coverage
- ✓ Both NSA and SA modes are 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 GHz Bands Supported



LTE Cat 16  
Max 1.0 Gbps (DL)  
Max 200 Mbps (UL)



Max 42 Mbps (DL)  
Max 5.76 Mbps (UL)



Embedded Abundant Protocols



LGA Form Factor



Multi-constellation GNSS



USB 3.1/PCIe 3.0 High Speed Interface



Voice over LTE (Optional)



Quectel Enhanced AT Commands

Rev.: V1.0 | Status: Preliminary

# Quectel RG500Q Series

	RG500Q-EA	RG500Q-NA*(Under Development)
<b>Region/Operator</b>	EMEA/APAC	North America
<b>Dimensions (mm)</b>	41.0 × 44.0 × 2.75	41.0 × 44.0 × 2.75
<b>Weight (g)</b>	11.0	TBD
<b>Temperature Range</b>		
<b>Operating Temperature</b>	-30 to +75 °C	-30 to +75 °C
<b>Extended Temperature</b>	-40 to +85 °C	-40 to +85 °C
<b>Frequency Bands</b>		
<b>5G NR NSA</b>	n41/n77/n78/n79/n1*/n3*/n5*/n7*/n8*/n20*/n28*/n38*/n40*	n2/n5/n7/n12/n25/n41/n48/n66/n71/n77/n78
<b>5G NR SA</b>	n41*/n77*/n78*/n79*/n1*/n3*/n5*/n7*/n8*/n20*/n28*/n38*/n40*	n41/n77/n78/n2/n5/n7/n12/n25/n41/n48/n66/n71/n77/n78
<b>LTE-FDD</b>	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
<b>LTE-TDD</b>	B34/B38/39/B40/B41/B42/B43*	B41/B48
<b>LAA</b>	/	B46
<b>WCDMA</b>	B1/B3/B5/B6/B8/B19	B2/B4/B5
<b>MIMO</b>	DL: 4 × 4; UL: 2 × 2	DL: 4 × 4; UL: Not Supported
<b>GNSS</b>	GPS/GLONASS/BeiDou (Compass)/Galileo/QZSS (Optional)	GPS/GLONASS/BeiDou (Compass)/Galileo/QZSS (Optional)
<b>Certifications</b>		
<b>Carrier</b>	TBD	TBD
<b>Regulatory</b>	<b>Europe:</b> CE* <b>China:</b> SRRC*/NAL*/CCC* <b>South Korea:</b> KC* <b>Australia/New Zealand:</b> RCM*	<b>America:</b> FCC <b>Canada:</b> IC
<b>Others</b>	RoHS	RoHS
<b>Data Transmission<sup>①</sup></b>		
<b>5G SA Sub-6 GHz Data Rate</b>	2.1 Gbps (DL)/ 900 Mbps (UL)	2.1 Gbps (DL)/ 450 Mbps (UL)
<b>5G NSA Sub-6 GHz Data Rate</b>	2.5 Gbps (DL)/ 650 Mbps (UL)	2.5 Gbps (DL)/ 650 Mbps (UL)
<b>LTE Data Rate</b>	1.0 Gbps (DL)/ 200 Mbps (UL)	1.0 Gbps (DL)/ 200 Mbps (UL)
<b>WCDMA Data Rate</b>	42 Mbps (DL)/ 5.76 Mbps (UL)	42 Mbps (DL)/ 5.76 Mbps (UL)
<b>Interfaces</b>		
<b>(U)SIM</b>	× 2, 1.8/2.95 V	× 2, 1.8/2.95 V
<b>UART</b>	× 3	× 3
<b>SD Card</b>	× 1	× 1
<b>USB 2.0/3.0/3.1</b>	× 1	× 1
<b>PCIe 3.0</b>	Gen3, Lane × 2	Gen3, Lane × 2
<b>RGMII</b>	× 1	× 1
<b>PCM</b>	× 1	× 1
<b>I2S</b>	× 1	× 1
<b>I2C</b>	× 1	× 1
<b>SPI</b>	× 1	× 1
<b>ADC</b>	●	●
<b>RESET_N</b>	●	●
<b>GPIOs</b>	●	●
<b>Wi-Fi</b>	●	●
<b>Antennas</b>	Cellular × 8, GNSS × 1	Cellular × 8, GNSS × 1
<b>Voice</b>		
<b>Voice</b>	Digital Audio and VoLTE (Voice over LTE) (Optional)	Digital Audio and VoLTE (Voice over LTE) (Optional)
<b>Enhanced Features</b>		
<b>DTMF*</b>	●	●
<b>DFOTA*</b>	●	●
<b>(U)SIM Card Detection</b>	●	●
<b>Drivers</b>		
<b>USB Serial Driver</b>	Windows 7/8/8.1/10, Linux 2.6–5.4, Android 4.x–9.x	Windows 7/8/8.1/10, Linux 2.6–5.4, Android 4.x–9.x
<b>GNSS Driver</b>	Android 4.x–9.x	Android 4.x–9.x
<b>RIL Driver</b>	Android 4.x–10.x	Android 4.x–10.x
<b>NDIS Driver</b>	Windows 7/8/8.1/10	Windows 7/8/8.1/10
<b>MBIM Driver</b>	Windows 8/8.1/10, Linux 3.18–5.4	Windows 8/8.1/10, Linux 3.18–5.4
<b>GobiNet Driver</b>	Linux 2.6–5.4	Linux 2.6–5.4
<b>QMI_WWAN Driver</b>	Linux 3.4–5.4	Linux 3.4–5.4
<b>Electrical Features</b>		
<b>Supply Voltage Range</b>	3.3–4.3 V, Typ. 3.8 V	3.3–4.3 V, Typ. 3.8 V
<b>Output power</b>	Class 3 (24 dBm +1/-3 dB) for WCDMA bands Class 3 (23 dBm ±2 dB) for LTE-FDD bands Class 3 (23 dBm ±2 dB) for LTE-TDD 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* Class 2 (26 dBm ±2 dB) for 5G NR n41/n77/n78/n79 bands HPUE*	Class 3 (24 dBm +1/-3 dB) for WCDMA bands Class 3 (23 dBm ±2 dB) for LTE-FDD bands Class 3 (23 dBm ±2 dB) for LTE-TDD bands Class 3 (23 dBm ±2 dB) for 5G NR bands Class 2 (26 dBm ±2 dB) for B41 bands HPUE Class 2 (26 dBm ±2 dB) for 5G NR n41/n77/n78 bands HPUE
<b>Power Consumption</b>	0.033 mA @ Power off 1.92 mA @ Sleep, typ. 16 mA @ Idle	TBD @ Power off TBD @ Sleep, typ. TBD @ Idle

#### Notes:

- \* means under development.
- ① means supported in 2020 H2 according to chipset schedule.
- ② means the data rates are theoretical and depend on the network condition.