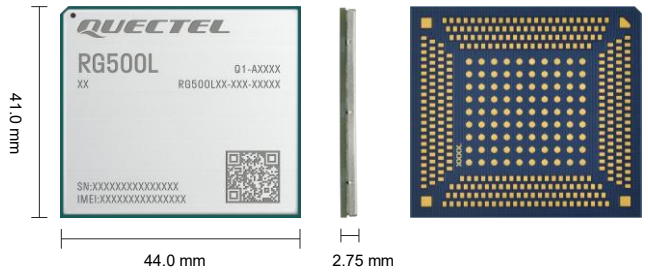


# Quectel RG500L Series

## IoT/ eMBB-Optimized 5G Sub-6 GHz LGA Module



Quectel RG500L is a series of 5G Sub-6 GHz LGA modules optimized specially for IoT and eMBB applications. By adopting the 3GPP Rel-15 technology, the module supports both 5G NSA and SA modes. It supports Option 3x, 3a, 3 and Option 2 network architectures and is backwards compatible with 4G/ 3G network.

RG500L Series is an industrial-grade module for industrial and commercial applications only.

It includes 5 variants: RG500L-EU, RG500L-NA, RG500L-LA, RG500L-AR and RG500L-ARS. The module integrates a multi-constellation GNSS receiver that supports GPS, BDS, GLONASS and Galileo. It helps to simplify the product design and can achieve high-precision, fast, and dependable positioning.

RG500L Series has a quad-core CPU @ 2.0 GHz, and is integrated with network hardware accelerator and VPN hardware accelerator, which extend the applicability of the modules to a wide range of IoT and eMBB applications such as 5G wireless router, CPE, MiFi, industrial router, home gateway, etc.



### Key Features

- ✓ 5G Sub-6 GHz LGA module with 4G (LTE Cat 19)/ 3G fallback, optimized for IoT and eMBB applications
- ✓ Worldwide 5G, LTE-A and WCDMA coverage
- ✓ Supports 5G NSA and SA modes
- ✓ Supports 5G 2CC Carrier Aggregation
- ✓ Spectrum multiplexing and significantly increased network capacity enabled with TM9
- ✓ Multi-constellation GNSS receiver available for applications requiring fast and accurate positioning in any environment



5G Sub-6 GHz



Max. 1.6 Gbps (DL)  
Max. 211 Mbps (UL)



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



Embedded Abundant  
Protocols



LGA  
Form Factor



USB 3.0/ PCIe 3.0  
Superspeed Interface



VoLTE/ VoNR  
(Optional)



Quectel  
Enhanced API



Multi-constellation  
GNSS (Optional)

# Quectel RG500L Series

5G Sub-6	RG500L-EU	RG500L-NA	RG500L-LA	RG500L-AR	RG500L-ARS
<b>Region/ Operator</b>	EMEA/ APAC <sup>①</sup> / Brazil	North America	Latin America <sup>③</sup>	India	India
<b>Dimensions (mm)</b>	44.0 × 41.0 × 2.75	44.0 × 41.0 × 2.75	44.0 × 41.0 × 2.75	44.0 × 41.0 × 2.75	44.0 × 41.0 × 2.75
<b>Temperature Range</b>					
<b>Operating Temperature</b>	-30 °C to +70 °C	-30 °C to +70 °C	-30 °C to +70 °C	-30 °C to +70 °C	-30 °C to +70 °C
<b>Extended Temperature</b>	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
<b>Frequency Bands</b>					
<b>5G NR NSA</b>	n1/ 3/ 5 <sup>②</sup> (71 <sup>②</sup> )/ 7/ 8/ 20/ 28/ 38/ 40/ 41/ 77/ 78	n2/ 5/ 7/ 12/ 25/ 38/ 41/ 48/ 66/ 71/ 77/ 78	n2/ 5/ 7/ 28/ 66/ 78	n1/ 3/ 5/ 8/ 40/ 78	n1/ 3/ 40/ 78
<b>5G NR SA</b>	n1/ 3/ 5 <sup>②</sup> (71 <sup>②</sup> )/ 7/ 8/ 20/ 28/ 38/ 40/ 41/ 77/ 78	n2/ 5/ 7/ 12/ 25/ 38/ 41/ 48/ 66/ 71/ 77/ 78	n2/ 5/ 7/ 28/ 66/ 78	n1/ 3/ 5/ 8/ 40/ 78	n1/ 3/ 40/ 78
<b>5G DL CA</b>	Supports 2CC CA	Supports 2CC CA	Supports 2CC CA	Supports 2CC CA	Supports 2CC CA
<b>5G DL 4 × 4 MIMO</b>	n1/ 3/ 7/ 38/ 40/ 41/ 77/ 78	n2/ 7/ 25/ 38/ 41/ 48/ 66/ 77/ 78	n2/ 7/ 66/ 78	n1/ 3/ 5/ 8/ 40/ 78	n1/ 3/ 40/ 78
<b>5G UL 2 × 2 MIMO</b>	n40/ 41/ 77/ 78	n41/ 48/ 77/ 78	n78	n40/ 78	n40/ 78
<b>LTE-FDD</b>	B1/ 3/ 5 <sup>②</sup> (71 <sup>②</sup> )/ 7/ 8/ 20/ 28/ 32	B2/ 4/ 5/ 7/ 12/ 13/ 14/ 17/ 25/ 26/ 29/ 30/ 66/ 71	B2/ 4/ 5/ 7/ 8/ 28/ 66	B1/ 3/ 5/ 8	B1/ 3
<b>LTE-TDD</b>	B38/ 40/ 41/ 42/ 43	B38/ 41/ 42/ 43/ 48	B42/ 43	B40	B40
<b>LTE-LAA</b>	-	B46	-	-	-
<b>LTE DL 4 × 4 MIMO</b>	B1/ 3/ 7/ 32 <sup>②</sup> / 38/ 40/ 41/ 42/ 43	B2/ 4/ 7/ 25/ 30/ 38/ 41/ 42/ 43/ 48/ 66	B2/ 4/ 7/ 42/ 43/ 66	B1/ 3/ 5/ 8/ 40	B1/ 3/ 40
<b>WCDMA</b>	B1/ 5 <sup>②</sup> / 8	-	B2/ 4/ 5	-	-
<b>GNSS</b>	GPS/ BDS/ GLONASS/ Galileo, (L1 + L5) <sup>②</sup>	GPS/ BDS/ GLONASS/ Galileo, L1 only	-	-	-
<b>Certifications</b>					
<b>Carrier</b>	TBD	TBD	TBD	-	-
<b>Regulatory/ Conformance</b>	Global: GCF Europe: CE Australia/ New Zealand: RCM	America: FCC Canada: IC	America: FCC	Europe: CE Australia/ New Zealand: RCM	Europe: CE
<b>Others</b>	RoHS	RoHS	RoHS	RoHS	RoHS
<b>Data Rate<sup>④</sup></b>					
<b>5G SA Sub-6 GHz</b>	4.67 Gbps (DL)/ 1.25 Gbps (UL)	4.67 Gbps (DL)/ 1.25 Gbps (UL)	4.67 Gbps (DL)/ 1.25 Gbps (UL)	4.67 Gbps (DL)/ 1.25 Gbps (UL)	4.67 Gbps (DL)/ 1.25 Gbps (UL)
<b>5G NSA Sub-6 GHz</b>	4.67 Gbps (DL)/ 836 Mbps (UL)	4.67 Gbps (DL)/ 836 Mbps (UL)	4.67 Gbps (DL)/ 836 Mbps (UL)	4.67 Gbps (DL)/ 836 Mbps (UL)	4.67 Gbps (DL)/ 836 Mbps (UL)
<b>LTE</b>	1.6 Gbps (DL)/ 211 Mbps (UL)	1.6 Gbps (DL)/ 211 Mbps (UL)	1.6 Gbps (DL)/ 211 Mbps (UL)	1.6 Gbps (DL)/ 211 Mbps (UL)	1.6 Gbps (DL)/ 211 Mbps (UL)
<b>DC-HSPA+</b>	42 Mbps (DL)/ 5.76 Mbps (UL)	-	42 Mbps (DL)/ 5.76 Mbps (UL)	-	-

Note:

1. ①: Excl. China/Japan.

2. ②: Optional.

3. ③: Excl. Brazil.

4. ④: NR T-put listed here are calculated by formula defined in 38.306. We assume the slot format is all downlink slot for DL T-put and all uplink slot for UL T-put. Different UDC should be recalculated proportionally.

# Quectel RG500L Series

5G Sub-6	RG500L-EU	RG500L-NA	RG500L-LA	RG500L-AR	RG500L-ARS
<b>Interfaces</b>					
<b>Antenna</b>	Cellular: × 8 GNSS <sup>①</sup> : × 1	Cellular: × 8 GNSS: × 1	Cellular: × 8	Cellular: × 8	Cellular: × 4
<b>(U)SIM</b>	× 2 (Dual SIM Single Standby)	× 2 (Dual SIM Single Standby)	× 2 (Dual SIM Single Standby)	× 2 (Dual SIM Single Standby)	× 2 (Dual SIM Single Standby)
<b>UART</b>	× 3 (including 1 Bluetooth UART)	× 3 (including 1 Bluetooth UART)	× 3 (including 1 Bluetooth UART)	× 3 (including 1 Bluetooth UART)	× 3 (including 1 Bluetooth UART)
<b>USB 2.0/ 3.0</b>	× 1	× 1	× 1	× 1	× 1
<b>SGMII</b>	× 2	× 2	× 2	× 2	× 1
<b>PCIe 3.0</b>	× 4	× 4	× 4	× 2	× 1
<b>Digital Audio (PCM)</b>	× 2	× 2	× 2	× 2	× 1
<b>SPI</b>	× 2	× 2	× 2	× 2	× 2
<b>I2C</b>	× 1	× 1	× 1	× 1	-
<b>ADC</b>	× 3	× 3	× 3	× 3	-
<b>DBI-C</b>	× 1	× 1	× 1	× 1	-
<b>Audio</b>					
<b>Voice (optional)</b>	Digital Audio and VoLTE/ VoNR	Digital Audio and VoLTE/ VoNR	Digital Audio and VoLTE/ VoNR	Digital Audio and VoLTE/ VoNR	Digital Audio and VoLTE/ VoNR
<b>Enhanced Features</b>					
<b>DTMF</b>	●	●	●	●	●
<b>FOTA</b>	●	●	●	●	●
<b>(U)SIM Card Detection</b>	●	●	●	●	●
<b>Electrical &amp; RF 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	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
<b>Power Consumption</b>	100 µA @ Power off 6.5 mA @ Sleep 125 mA @ Idle (USB active)	100 µA @ Power off 6.5 mA @ Sleep 125 mA @ Idle (USB active)	100 µA @ Power off 6.5 mA @ Sleep 125 mA @ Idle (USB active)	100 µA @ Power off 6.5 mA @ Sleep 125 mA @ Idle (USB active)	100 µA @ Power off 6.5 mA @ Sleep 125 mA @ Idle (USB active)
<b>Output Power</b>	Class 3 (23 dBm ±2 dB) @ WCDMA bands Class 3 (23 dBm ±2 dB) @ LTE-FDD bands Class 3 (23 dBm ±2 dB) @ LTE-TDD bands Class 3 (23 dBm ±2 dB) @ 5G NR bands Class 2 (26 dBm +2/-3 dB) @ 5G NR n40/ 41/ 77/ 78, (Note: n40 @ UL MIMO)	Class 3 (23 dBm ±2 dB) @ LTE-FDD bands Class 3 (23 dBm ±2 dB) @ LTE-TDD bands Class 3 (23 dBm ±2 dB) @ 5G NR bands Class 2 (26 dBm +2/-3 dB) @ 5G NR n41/ 77/ 78	Class 3 (23 dBm ±2 dB) @ WCDMA bands Class 3 (23 dBm ±2 dB) @ LTE-FDD bands Class 3 (23 dBm ±2 dB) @ LTE-TDD bands Class 3 (23 dBm ±2 dB) @ 5G NR bands Class 2 (26 dBm +2/-3 dB) @ 5G NR n78	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/-3 dB) for 5G NR n40/ n78, (Note: n40 @ UL MIMO) Class 1.5 (29 dBm +2/-3 dB) for 5G NR n78 UL MIMO (TX Diversity)	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/-3 dB) for 5G NR n40/ n78, (Note: n40 @ UL MIMO) Class 1.5 (29 dBm +2/-3 dB) for 5G NR HPUE n78 (n78 @ UL MIMO)

Note:

- : Supported.
- ① : Optional.