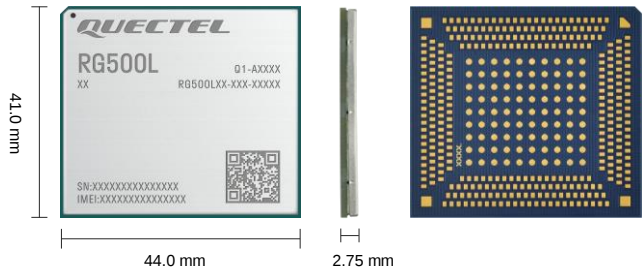


Quectel RG500L Series

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 4 variants: RG500L-EU, RG500L-NA, RG500L-LA and RG500L-AR. 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
Region/ Operator	EMEA/ APAC ^① / Brazil	North America	Latin America ^③	India
Dimensions (mm)	44.0 × 41.0 × 2.75	44.0 × 41.0 × 2.75	44.0 × 41.0 × 2.75	44.0 × 41.0 × 2.75
Temperature Range				
Operating Temperature	-30 °C to +70 °C	-30 °C to +70 °C	-30 °C to +70 °C	-30 °C to +70 °C
Extended Temperature	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
Frequency Bands				
5G NR NSA	n1/ 3/ 5 ^② (71 ^②)/ 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
5G NR SA	n1/ 3/ 5 ^② (71 ^②)/ 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
5G DL CA	Supports 2CC CA	Supports 2CC CA	Supports 2CC CA	Supports 2CC CA
5G DL 4 × 4 MIMO	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
5G UL 2 × 2 MIMO	n40/ 41/ 77/ 78	n41/ 48/ 77/ 78	n78	n40/ 78
LTE-FDD	B1/ 3/ 5 ^② (71 ^②)/ 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
LTE-TDD	B38/ 40/ 41/ 42/ 43	B38/ 41/ 42/ 43/ 48	B42/ 43	B40
LTE-LAA	-	B46	-	-
LTE DL 4 × 4 MIMO	B1/ 3/ 7/ 32 ^② / 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
WCDMA	B1/ 5 ^② / 8	-	B2/ 4/ 5	-
GNSS	GPS/ BDS/ GLONASS/ Galileo, (L1 + L5) ^②	GPS/ BDS/ GLONASS/ Galileo, L1 only	-	-
Certifications				
Carrier	TBD	TBD	TBD	-
Regulatory	Global: GCF Europe: CE Australia/ New Zealand: RCM	America: FCC Canada: IC	America: FCC	Europe: CE Australia/ New Zealand: RCM
Others	RoHS	RoHS	RoHS	RoHS
Data Rate ^④				
5G SA Sub-6 GHz	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)
5G NSA Sub-6 GHz	4.67 Gbps (DL)/ 825 Mbps (UL)	4.67 Gbps (DL)/ 825 Mbps (UL)	4.67 Gbps (DL)/ 825 Mbps (UL)	3.75 Gbps (DL)/ 725 Mbps (UL)
LTE	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)/ 200 Mbps (UL)
DC-HSPA+	42 Mbps (DL)/ 5.76 Mbps (UL)	-	42 Mbps (DL)/ 5.76 Mbps (UL)	-

Note:
1. * : Under development/planning/in progress..
2. ①: Excl. China/Japan.
3. ②: Optional.
4. ③: Excl. Brazil.
5. 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
Interfaces				
Antenna	Cellular: × 8 GNSS ^① : × 1	Cellular: × 8 GNSS: × 1	Cellular: × 8	Cellular: × 8
(U)SIM	× 2 (Dual SIM Single Standby)	× 2 (Dual SIM Single Standby)	× 2 (Dual SIM Single Standby)	× 2 (Dual SIM Single Standby)
UART	× 3 (including 1 Bluetooth UART)	× 3 (including 1 Bluetooth UART)	× 3 (including 1 Bluetooth UART)	× 3 (including 1 Bluetooth UART)
USB 2.0/ 3.0	× 1	× 1	× 1	× 1
SGMII	× 2	× 2	× 2	× 2
PCIe 3.0	× 4	× 4	× 4	× 2
Digital Audio (PCM)	× 2	× 2	× 2	× 2
SPI	× 2	× 2	× 2	× 2
I2C	× 1	× 1	× 1	× 1
ADC	× 3	× 3	× 3	× 3
DBI-C	× 1	× 1	× 1	× 1
Audio				
Voice	Digital Audio and VoLTE/ VoNR ^①	Digital Audio and VoLTE/ VoNR ^①	Digital Audio and VoLTE/ VoNR ^①	Digital Audio and VoLTE/VoNR ^①
Enhanced Features				
DTMF	●	●	●	●
FOTA	●	●	●	●
(U)SIM Card Detection	●	●	●	●
Electrical & RF 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	3.3–4.3 V, typ. 3.8 V
Power Consumption	80 μA @ Power off 6.5 mA @ Sleep 125 mA @ Idle (USB active)	80 μA @ Power off 6.5 mA @ Sleep 125 mA @ Idle (USB active)	80 μA @ Power off 6.5 mA @ Sleep 125 mA @ Idle (USB active)	80 μA @ Power off 6.5 mA @ Sleep 125 mA @ Idle (USB active)
Output Power	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)

Note:
1. ● : Supported.
2. ① : Optional.