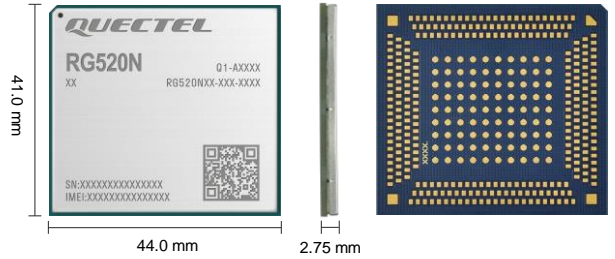


# Quectel RG520N Series

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



Quectel RG520N is a series of 5G Sub-6 GHz LGA modules optimized specially for IoT and eMBB applications. Adopting the 3GPP Rel-16 technology, it supports both 5G NSA and SA modes with Option 3x/ 3a/ 3 and Option 2 network architectures, and it is backwards compatible with 4G/ 3G network. It is pin-to-pin compatible with Quectel 5G module RG50xQ series and LTE-A Cat 12 module EG512R-EA. The module can meet customers' different application demands for high speed, large capacity, low latency, high reliability, etc.

RG520N series module is an industrial-grade module for industrial and commercial applications only.

RG520N series contains five variants: RG520N-EU, RG520N-NA, RG520N-EB, RG520N-GT and RG520N-LA. It supports Qualcomm® IZat™ location technology Gen 9VT (GPS, GLONASS, BDS, 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, PCM, UART, etc.) and abundant functionalities (USB drivers for Windows 7/ 8/ 8.1/ 10/ 11, Linux and Android) extend the applicability of the module to a wide range of IoT and eMBB applications such as business routers, home gateway, STB, industrial laptops, consumer laptops, industrial PDAs, rugged tablet PCs, and video surveillance.



## Key Features

- ✓ 5G / 4G/ 3G multi-mode module with LGA form factor, optimized for IoT and eMBB applications
- ✓ Worldwide 5G and LTE-A coverage
- ✓ 5G NSA and SA modes
- ✓ Multi-constellation GNSS (Optional) receiver available for applications requiring fast and accurate fixes in any environment
- ✓ Feature refinements: DFOTA and VoNR/ VoLTE (Optional)



5G NR Sub-6 GHz Bands



LTE Cat 19 (DL)  
LTE Cat 18 (UL)



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



Embedded Abundant Protocols



LGA Form Factor



Multi-constellation GNSS (Optional)



USB 3.1 High Speed Interface



PCIe 3.0 Interface



VoNR/ VoLTE (Optional)



Quectel Enhanced AT Commands

# Quectel RG520N Series

5G Sub-6	RG520N-EU	RG520N-NA	RG520N-EB	RG520N-GT	RG520N-LA
Region/Operator	EMEA/APAC <sup>①</sup> /Brazil	North America	EMEA/APAC <sup>①</sup> /Brazil	Global TDD 3.5 GHz	Latin America <sup>②</sup>
Dimensions (mm)	41.0 × 44.0 × 2.75	41.0 × 44.0 × 2.75	41.0 × 44.0 × 2.75	41.0 × 44.0 × 2.75	41.0 × 44.0 × 2.75
Weight (g)	Approx. 11 g	Approx. 11 g	Approx. 11 g	Approx. 11 g	Approx. 11 g
<b>Temperature Range</b>					
Operating Temperature	-30 °C to +75 °C	-30 °C to +75 °C	-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	-40 °C to +85 °C	-40 °C to +85 °C
<b>Frequency Bands</b>					
5G NR	3GPP Rel-16 NSA/SA operation, Sub-6 GHz	3GPP Rel-16 NSA/SA operation, Sub-6 GHz	3GPP Rel-16 NSA/SA operation, Sub-6 GHz	3GPP Rel-16 SA operation, Sub-6 GHz	3GPP Rel-16 NSA/SA operation, Sub-6 GHz
5G NR NSA	n1/3/5/7/8/20/28/38/40/41/75/76/77/78	n2/5/7/12/13/14/25/26/29/30/38/41/48/66/70/71/77/78	n1/3/5/7/8/20/28/38/40/41/71/75/76/77/78	-	n2/5/7/8/28/38 <sup>③</sup> /40/66/71 <sup>④</sup> /78
5G NR SA	n1/3/5/7/8/20/28/38/40/41/75/76/77/78	n2/5/7/12/13/14/25/26/29/30/38/41/48/66/70/71/77/78	n1/3/5/7/8/20/28/38/40/41/71/75/76/77/78	n48/77/78	n2/5/7/8/28/38 <sup>③</sup> /40/66/71 <sup>④</sup> /78
DL 4 × 4 MIMO	n1/3/5/7/8/20/28/38/40/41/75/76/77/78	n2/5/7/12/13 <sup>⑤</sup> /14/25/26 <sup>⑥</sup> /29/30/38/41/48/66/70/71/77/78	n1/3/7/38/40/41/71/77/78	n48/77/78	n2/5/7/8/28/38 <sup>③</sup> /40/66/71 <sup>④</sup> /78
LTE Category	DL Cat 19/ UL Cat 18	DL Cat 19/ UL Cat 18	DL Cat 19/ UL Cat 18	DL Cat 19/ UL Cat 18	DL Cat 19/ UL Cat 18
LTE-FDD	B1/3/5/7/8/20/28/32	B2/4/5/7/12/13/14/17/25/26/29/30/66/71	B1/3/5/7/8/20/28/32/71	-	B2/4/5/7/8/26/28/66
LTE-TDD	B38/40/41/42/43	B38/41/42/43/48	B38/40/41/42/43	B42/43/48	B38 <sup>③</sup> /40/42/43 <sup>④</sup>
LAA	-	B46	-	-	-
DL 4 × 4 MIMO	B1/3/5/7/8/20/28/32/38/40/41/42/43	B2/4/5/7/12/13/14/17/25/26/29/30/38/41/42/43/48/66/71	B1/3/7/38/40/41/42/43/71	B42/43/48	B2/4/5/7/8/26/28/38 <sup>③</sup> /40/42/43 <sup>④</sup> /66
WCDMA	B1/5/8	-	B1/5/8	-	B2/4/5
GNSS	GPS/ GLONASS/ BDS/ Galileo/ QZSS	GPS/ GLONASS/ BDS/ Galileo/ QZSS	GPS/ GLONASS/ BDS/ Galileo/ QZSS (Optional)	GPS/ GLONASS/ BDS/ Galileo/ QZSS	GPS/ GLONASS/ BDS/ Galileo/ QZSS
<b>Certifications</b>					
Regulatory	Global: GCF Europe: CE Brazil: Anatel Australia/New Zealand: RCM	Global: GCF North America: PTCRB America: FCC Canada: IC America:	Europe: CE Australia/New Zealand: RCM	Europe: CE	America: FCC*
Carrier	Australia: Telstra	Verizon*/ T-Mobile/ AT&T	TBD	TBD	TBD
Others	RoHS	RoHS	RoHS	RoHS*	RoHS*
<b>Data Rates (Max.)<sup>⑦</sup></b>					
5G SA Sub-6	2.4 Gbps (DL)/ 900 Mbps (UL)	2.4 Gbps (DL)/ 900 Mbps (UL)	2.4 Gbps (DL)/ 900 Mbps (UL)	2.4 Gbps (DL)/ 900 Mbps (UL)	2.4 Gbps (DL)/ 900 Mbps (UL)
5G NSA Sub-6	3.4 Gbps (DL)/ 550 Mbps (UL)	3.4 Gbps (DL)/ 550 Mbps (UL)	3.4 Gbps (DL)/ 550 Mbps (UL)	-	3.4 Gbps (DL)/ 550 Mbps (UL)
LTE	1.6 Gbps (DL)/ 200 Mbps (UL)	1.6 Gbps (DL)/ 200 Mbps (UL)	1.6 Gbps (DL)/ 200 Mbps (UL)	1.6 Gbps (DL)/ 200 Mbps (UL)	1.6 Gbps (DL)/ 200 Mbps (UL)
WCDMA	42 Mbps (DL)/ 5.76 Mbps (UL)	-	42 Mbps (DL)/ 5.76 Mbps (UL)	-	42 Mbps (DL)/ 5.76 Mbps (UL)
<b>Interfaces</b>					
(U)SIM	× 2	× 2	× 2	× 2	× 2
UART	× 3	× 3	× 3	× 3	× 3
SD Card	× 1	× 1	× 1	× 1	× 1
USB 2.0/3.0/3.1	× 1	× 1	× 1	× 1	× 1
PCIe 3.0	Gen 3, Lane × 2	Gen 3, Lane × 2	Gen 3, Lane × 2	Gen 3, Lane × 2	Gen 3, Lane × 2
PCM	× 1	× 1	× 1	× 1	× 1
I2S*	× 1	× 1	× 1	× 1	× 1
I2C	× 1	× 1	× 1	× 1	× 1
SPI	× 1	× 1	× 1	× 1	× 1
ADC	●	●	●	●	●
RESET_N	●	●	●	●	●
GPIOs (QuecOpen*)	●	●	●	●	●
Antennas	Cellular: × 4 <sup>⑧</sup> ; GNSS: × 1	Cellular: × 4; GNSS: × 1	Cellular: × 4 <sup>⑨</sup> ; GNSS: × 1	Cellular: × 4; GNSS: × 1	Cellular: × 4; GNSS: × 1
<b>Audio</b>					
Voice	Digital Audio and VoLTE (Optional)	Digital Audio and VoLTE (Optional)	Digital Audio and VoNR/ VoLTE (Optional)	Digital Audio and VoLTE (Optional)	Digital Audio and VoLTE (Optional)
<b>Enhanced Features</b>					
eSIM	○	○	○	○	○
DTMF*	●	●	●	●	●
DFOTA	●	●	●	●	●
(U)SIM Card Detection	●	●	●	●	●
<b>Drivers</b>					
USB Serial Driver	Windows 7/8/8.1/10/11; Linux 2.6–5.18; Android 4.x–12.x	Windows 7/8/8.1/10/11; Linux 2.6–5.18; Android 4.x–12.x	Windows 7/8/8.1/10/11; Linux 2.6–5.18; Android 4.x–12.x	Windows 7/8/8.1/10/11; Linux 2.6–5.18; Android 4.x–12.x	Windows 7/8/8.1/10/11; Linux 2.6–5.18; Android 4.x–12.x
RIL Driver	Android 4.x–12.x	Android 4.x–12.x	Android 4.x–12.x	Android 4.x–12.x	Android 4.x–12.x
PCIe MHI Driver	Linux 3.10–5.18	Linux 3.10–5.18	Linux 3.10–5.18	Linux 3.10–5.18	Linux 3.10–5.18
USB NDIS Driver	Windows 7/8/8.1/10/11	Windows 7/8/8.1/10/11	Windows 7/8/8.1/10/11	Windows 7/8/8.1/10/11	Windows 7/8/8.1/10/11
USB MBIM Driver	Windows 10/11; Linux 3.18–5.18	Windows 10/11; Linux 3.18–5.18	Windows 10/11; Linux 3.18–5.18	Windows 10/11; Linux 3.18–5.18	Windows 10/11; Linux 3.18–5.18
USB GobiNet Driver	Linux 2.6–5.18	Linux 2.6–5.18	Linux 2.6–5.18	Linux 2.6–5.18	Linux 2.6–5.18
USB QMI_ WWAN Driver	Linux 3.4–5.18	Linux 3.4–5.18	Linux 3.4–5.18	Linux 3.4–5.18	Linux 3.4–5.18
<b>Electrical Features</b>					
Supply Voltage Range	3.3–4.4 V, typ. 3.8 V	3.3–4.4 V, typ. 3.8 V	3.3–4.4 V, typ. 3.8 V	3.3–4.4 V, typ. 3.8 V	3.3–4.4 V, typ. 3.8 V
Power Consumption	0.142 mA @ power off 2.6 mA @ sleep (typ.)	0.142 mA @ power off 2.6 mA @ sleep (typ.)	0.142 mA @ power off 2.6 mA @ sleep (typ.)	TBD	TBD

**NOTE:**

- ①: Excluding China/Japan.
- ②: Excluding Brazil.
- ③: Only supporting DL 2 × 2 MIMO currently.
- ④: Optional band.
- ⑤: Theoretical only; actual values depend on network conditions.
- ⑥: Default: 4-Antenna; Optional: 6-Antenna.
- ⑦: Default: 4-Antenna; Optional: 10-Antenna.
- \*: Under development/In progress.
- : Supported.
- : Optional.