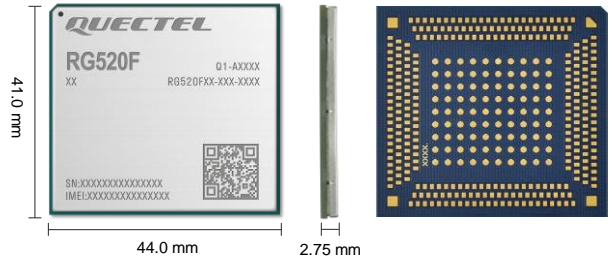


# Quectel RG520F Series

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



Quectel RG520F is a series of 5G Sub-6 GHz LGA modules optimized specially for IoT and eMBB applications. Adopting the 3GPP Rel-16 technology, it delivers maximum data rates up to 4.0 Gbps downlink and 900 Mbps uplink. It supports both 5G NSA and SA modes with Option 3x/ 3a/ 3 and Option 2 network architectures and is backward 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.

RG520F series module is an industrial-grade module for industrial and commercial applications only.

RG520F series contains three variants: RG520F-EU, RG520F-EB and RG520F-NA. 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, LTE-A and 3G coverage
- ✓ 5G NSA and SA modes
- ✓ Multi-constellation GNSS 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 20 (DL)  
LTE Cat 18 (UL)



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



Embedded Abundant Protocols



LGA Form Factor



Multi-constellation GNSS (L1 + L5)



USB 3.1 High Speed Interface



PCIe 3.0 Interface



VoNR/ VoLTE (Optional)



Quectel Enhanced AT Commands

# Quectel RG520F Series

	RG520F-EU	RG520F-NA	RG520F-EB
Region/Operator	EMEA/ APAC <sup>①</sup> / Brazil	North America	EMEA/ APAC <sup>①</sup> / Brazil
Dimensions (mm)	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
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			
	5G NR	3GPP Rel-16 NSA/SA operation, Sub-6 GHz	3GPP Rel-16 NSA/SA operation, Sub-6 GHz
5G	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
	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
	DL 4 × 4 MIMO	n1/ 3/ 5/ 7/ 8/ 20/ 28/ 38/ 40/ 41/ 75/ 76/ 77/ 78	n2/ 5/ 7/ 12/ 13 <sup>②</sup> / 14/ 25/ 26 <sup>②</sup> / 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
	LTE Category	DL Cat 20/ UL Cat 18	DL Cat 20/ UL Cat 18
LTE	LTE-FDD	B1/ 3/ 5/ 7/ 8/ 20/ 28/ 32	B2/ 4/ 5/ 7/ 12/ 13/ 14/ 17/ 25/ 26/ 29/ 30/ 66/ 71
	LTE-TDD	B38/ 40/ 41/ 42/ 43	B38/ 41/ 42/ 43/ 48
	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
WCDMA	B1/ 5/ 8	-	B1/ 5/ 8
GNSS	GPS/ GLONASS/ BDS/ Galileo/ QZSS	GPS/ GLONASS/ BDS/ Galileo/ QZSS	GPS/ GLONASS/ BDS/ Galileo/ QZSS
Certifications			
Regulatory	Europe: CE The UK: UKCA Australia/New Zealand: RCM	TBD	Europe: CE Australia/New Zealand: RCM
Carrier	TBD	TBD	TBD
Others	RoHS	RoHS	RoHS
Data Rates (Max.) <sup>③</sup>			
5G SA Sub-6	4.0 Gbps (DL)/ 900 Mbps (UL)	4.0 Gbps (DL)/ 900 Mbps (UL)	4.0 Gbps (DL)/ 900 Mbps (UL)
5G NSA Sub-6	4.0 Gbps (DL)/ 550 Mbps (UL)	4.0 Gbps (DL)/ 550 Mbps (UL)	4.0 Gbps (DL)/ 550 Mbps (UL)
LTE	2.0 Gbps (DL)/ 200 Mbps (UL)	2.0 Gbps (DL)/ 200 Mbps (UL)	2.0 Gbps (DL)/ 200 Mbps (UL)
WCDMA	42 Mbps (DL)/ 5.76 Mbps (UL)	-	42 Mbps (DL)/ 5.76 Mbps (UL)
Interfaces			
(U)SIM	× 2	× 2	× 2
UART	× 3	× 3	× 3
SDIO	× 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
PCM	× 1	× 1	× 1
I2S*	× 1	× 1	× 1
I2C	× 1	× 1	× 1
SPI	× 1	× 1	× 1
ADC	●	●	●
RESET_N	●	●	●
GPIOs (QuecOpen®)	●	●	●
Antennas	Cellular: × 4 <sup>④</sup> ; GNSS: × 1	Cellular: × 4; GNSS: × 1	Cellular: × 4; GNSS: × 1
Audio			
Voice	Digital Audio and VoLTE (Optional)	Digital Audio and VoLTE (Optional)	Digital Audio and VoNR/ VoLTE (Optional)
Enhanced Features			
eSIM	○	○	○
DTMF*	●	●	●
DFOTA	●	●	●
(U)SIM Card Detection	●	●	●
Drivers			
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
RIL Driver	Android 4.x–12.x	Android 4.x–12.x	Android 4.x–12.x
PCIe MHI Drive	Linux 3.10–5.18	Linux 3.10–5.18	Linux 3.10–5.18
USB NDIS Drive	Windows 7/8/8.1/10/11	Windows 7/8/8.1/10/11	Windows 7/8/8.1/10/11
USB MBIM Drive	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
USB QMI_WWAN Driver	Linux 3.4–5.18	Linux 3.4–5.18	Linux 3.4–5.18
Electrical Features			
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
Power Consumption	150 μA @ Power down 3.0 mA @ Sleep 40 mA @ Idle (USB 2.0 active) 60 mA @ Idle (USB 3.0 active)	150 μA @ Power down 3.0 mA @ Sleep 40 mA @ Idle (USB 2.0 active) 60 mA @ Idle (USB 3.0 active)	150 μA @ Power down 3.0 mA @ Sleep 40 mA @ Idle (USB 2.0 active) 60 mA @ Idle (USB 3.0 active)

## NOTE:

- ①: Excluding China/Japan.
- ②: Only supporting DL 2 × 2 MIMO currently.
- ③: Theoretical only; actual values depend on network conditions.
- ④: Default: 4-Antenna; Optional: 6-Antenna.
- : Supported.
- : Optional.
- TBD: To Be Determined.