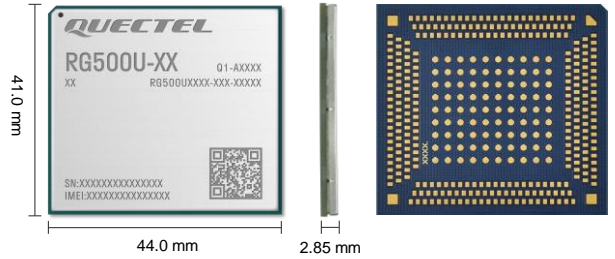


# Quectel RG500U Series

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



Quectel RG500U series is a series of 5G Sub-6 GHz LGA modules optimized specially for IoT/ eMBB applications with features of high performance and cost-effective. Adopting the 3GPP Release 15 technology, it supports both 5G NSA and SA modes. It supports both TDD and FDD modes and it is backward compatible with the 4G/ 3G network.

RG500U series is an industrial-grade module for industrial and commercial applications only.

RG500U series includes five variants: RG500U-CN, RG500U-EA, RG500U-EB, RG500U-JO and RG500U-LA. RG500U series provides rich built-in network protocols and supports a variety of drivers and software functions, VoLTE, VoNR, DFOTA and audio via communication interfaces such as PCIe, USB, SDIO, UART, SPI, I2C, I2S and GPIOs, integrated with abundant Internet protocols, thus greatly expanding its applications in the IoT and eMBB industries. RG500U series can be widely used in vertical industries such as smart energy, Internet of Vehicles, industrial Internet, telemedicine, smart education, high-definition video, smart city, and home entertainment.



### Key Features

- ✓ 5G Sub-6 GHz module with LGA form factor, optimized for IoT/ eMBB applications
- ✓ Worldwide 5G/ 4G/ 3G coverage
- ✓ 5G NSA and SA modes supported
- ✓ High performance and cost-effective
- ✓ Feature refinements: DFOTA, VoLTE and VoNR



5G NR Sub-6 GHz Band



Max. 600 Mbps (DL)  
Max. 150 Mbps (UL)



Max. 42.2 Mbps (DL)  
Max. 11 Mbps (UL)



Embedded Abundant Protocols



LGA Form Factor



Quectel Enhanced AT Commands



USB 3.0 High Speed Interface



VoLTE/ VoNR



PCIe 2.0 Interface

# Quectel RG500U Series

5G Sub-6	RG500U-EA	RG500U-EB	RG500U-JO	RG500U-LA	RG500U-CN
Region/Operator	EMEA/ APAC/ Latin America	EMEA/ APAC/ Latin America	India	Latin America	EMEA/ APAC
Dimensions (mm)	41.0 × 44.0 × 2.85	41.0 × 44.0 × 2.85	41.0 × 44.0 × 2.85	41.0 × 44.0 × 2.85	41.0 × 44.0 × 2.85
Weight (g)	12.78	12.5	TBD	12.2	13.0
<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 Release 15 NSA/ SA operation, Sub-6 GHz	3GPP Release 15 NSA/ SA operation, Sub-6 GHz	3GPP Release 15 SA operation, Sub-6 GHz	3GPP Release 15 NSA/ SA operation, Sub-6 GHz	3GPP Release 15 NSA/ SA operation, Sub-6 GHz
5G NR NSA	n1/ 3/ 7/ 38/ 40/ 41/ 77/ 78/ 79 <sup>②</sup>	n1/ 3/ 7/ 20/ 28/ 38/ 40/ 41/ 77/ 78	-	n2/ 5/ 7/ 28/ 40/ 66/ 78	n41/ 78/ 79
5G NR SA	n1/ 3/ 5 <sup>②</sup> / 7/ 8/ 20/ 28/ 38/ 40/ 41/ 66 <sup>②</sup> / 71 <sup>*</sup> / 77/ 78/ 79 <sup>②</sup>	n1/ 3/ 5/ 7/ 8/ 20/ 28/ 38/ 40/ 41/ 66/ 77/ 78	n78	n2/ 5/ 7/ 8/ 28/ 38/ 40/ 66/ 71/ 78	n1/ 28/ 41/ 77/ 78/ 79
5G MIMO	DL 4 × 4 MIMO: n1/ 3/ 7/ 38/ 40/ 41/ 66 <sup>②</sup> / 77/ 78/ 79 <sup>②</sup> UL 2 × 2 MIMO: n38/ 40/ 41/ 77/ 78/ 79 <sup>②</sup> DL 2 × 2 MIMO: n5 <sup>②</sup> / 8/ 20/ 28/ 71 <sup>*</sup>	DL 4 × 4 MIMO: n1/ 3/ 7/ 28/ 38/ 40/ 41/ 66/ 77/ 78 UL 2 × 2 MIMO: n38/ 40/ 41/ 77/ 78 DL 2 × 2 MIMO: n5/ 8/ 20	DL 4 × 4 MIMO: n78 UL 2 × 2 MIMO: n78	DL 4 × 4 MIMO: n2/ 7/ 28/ 38/ 40/ 66/ 78 UL 2 × 2 MIMO: n38/ 40/ 78 DL 2 × 2 MIMO: n5/ 8/ 71	UL 2 × 2 MIMO: n41/ 77/ 78/ 79 DL 4 × 4 MIMO: n1/ 41/ 77/ 78/ 79 DL 2 × 2 MIMO: n28
LTE Category	DL Cat 12, UL Cat 13	DL Cat 12, UL Cat 13	-	DL Cat 12, UL Cat 13	DL Cat 12, UL Cat 13
LTE-FDD	B1/ 2/ 3/ 4/ 5/ 7/ 8/ 20/ 28/ 66/ 71 <sup>*</sup>	B1/ 2/ 3/ 4/ 5/ 7/ 8/ 20/ 28/ 66	-	B2/ 4/ 5/ 7/ 8/ 26/ 28/ 66/ 71	B1/ 2/ 3/ 5/ 7/ 8/ 20/ 28
LTE-TDD	B38/ 40/ 41	B38/ 40/ 41	-	B38/ 40	B34/ 38/ 39/ 40/ 41
DL 2 × 2 MIMO	B1/ 2/ 3/ 4/ 5/ 7/ 8/ 20/ 28/ 38/ 40/ 41/ 66/ 71 <sup>*</sup>	B1/ 2/ 3/ 4/ 5/ 7/ 8/ 20/ 28/ 66/ 38/ 40/ 41	-	B2/ 3/ 4/ 5/ 7/ 8/ 26/ 28/ 38/ 40/ 66/ 71	B1/ 2/ 3/ 5/ 7/ 8/ 20/ 28/ 34/ 38/ 39/ 40/ 41
UMTS WCDMA	B1/ 2/ 5/ 8	B1/ 2/ 5/ 8	-	B2/ 4/ 5	B1/ 2/ 5/ 8
<b>Certifications</b>					
Regulatory	Global: GCF Europe: CE Australia/ New Zealand: RCM	Global: GCF* Europe: CE* Australia/ New Zealand: RCM *	Global: GCF*	America: FCC*	China: SRR/ NAL/ CCC
Carrier	TBD	TBD	TBD	TBD	China: China Telecom/ China Mobile <sup>③</sup> / China Unicom <sup>③</sup>
Others	RoHS/ WHQL	RoHS/ WHQL	RoHS/ WHQL	RoHS/ WHQL	RoHS/ WHQL
<b>Data Rates (Max.) <sup>①</sup></b>					
5G SA Sub-6	2 Gbps (DL), 1 Gbps (UL)	2 Gbps (DL), 1 Gbps (UL)	2 Gbps (DL), 1 Gbps (UL)	2 Gbps (DL), 1 Gbps (UL)	2 Gbps (DL), 1 Gbps (UL)
5G NSA Sub-6	2.6 Gbps (DL), 650 Mbps (UL)	2.6 Gbps (DL), 650 Mbps (UL)	-	2.6 Gbps (DL), 650 Mbps (UL)	2.2 Gbps (DL), 575 Mbps (UL)
LTE	600 Mbps (DL), 150 Mbps (UL)	600 Mbps (DL), 150 Mbps (UL)	-	600 Mbps (DL), 150 Mbps (UL)	600 Mbps (DL), 150 Mbps (UL)
WCDMA	42.2 Mbps (DL), 11 Mbps (UL)	42.2 Mbps (DL), 11 Mbps (UL)	-	42.2 Mbps (DL), 11 Mbps (UL)	42.2 Mbps (DL), 11 Mbps (UL)
<b>Interfaces</b>					
(U)SIM	× 2	× 2	× 2	× 2	× 2
USB 2.0	× 1	× 1	× 1	× 1	× 1
USB 3.0	× 1	× 1	× 1	× 1	× 1
PCIe 2.0	× 1	× 1	× 1	× 1	× 1
SDIO 3.0	× 1	× 1	× 1	× 1	× 1
SPI	× 1	× 1	× 1	× 1	× 1
UART	× 2	× 2	× 2	× 2	× 2
I2S	× 1	× 1	× 1	× 1	× 1
I2C	× 1	× 1	× 1	× 1	× 1
PCM	× 1	× 1	× 1	× 1	× 1
Antennas	× 6	× 4	× 4	× 6	× 4

## NOTE:

- ①: Theoretical only. The actual values depend on network conditions.
- ②: Optional band.
- ③: TBD. To Be Determined.
- : Supported.
- \*: Under planning/ongoing.

# Quectel RG500U Series

5G Sub-6	RG500U-EA	RG500U-EB	RG500U-JO	RG500U-LA	RG500U-CN
<b>Audio</b>					
Voice (Optional)	Digital Audio, VoLTE and VoNR	Digital Audio, VoLTE and VoNR	Digital Audio and VoNR	Digital Audio, VoLTE and VoNR	Digital Audio, VoLTE and VoNR
<b>Enhanced Features</b>					
DTMF	•	•	•	•	•
DFOTA	•	•	•	•	•
(U)SIM Card Detection	•	•	•	•	•
5G Network Slicing	•	•	•	•	•
<b>Drivers</b>					
USB Serial Driver	Windows 8/ 8.1/ 10/ 11 Linux 2.6–6.5 Android 4.x–13.x	Windows 8/ 8.1/ 10/ 11 Linux 2.6–6.5 Android 4.x–13.x	Windows 8/ 8.1/ 10/ 11 Linux 2.6–6.5 Android 4.x–13.x	Windows 8/ 8.1/ 10/ 11 Linux 2.6–6.5 Android 4.x–13.x	Windows 8/ 8.1/ 10/ 11 Linux 2.6–6.5 Android 4.x–13.x
RIL Driver	Android 4.x–13.x	Android 4.x–13.x	Android 4.x–13.x	Android 4.x–13.x	Android 4.x–13.x
PCIe Driver	Linux 3.10–6.5	Linux 3.10–6.5	Linux 3.10–6.5	Linux 3.10–6.5	Linux 3.10–6.5
USB RNDIS Driver	Windows 8/ 8.1/ 10/ 11 Linux 2.6–6.5	Windows 8/ 8.1/ 10/ 11 Linux 2.6–6.5	Windows 8/ 8.1/ 10/ 11 Linux 2.6–6.5	Windows 8/ 8.1/ 10/ 11 Linux 2.6–6.5	Windows 8/ 8.1/ 10/ 11 Linux 2.6–6.5
USB ECM Driver	Linux 2.6–6.5	Linux 2.6–6.5	Linux 2.6–6.5	Linux 2.6–6.5	Linux 2.6–6.5
USB NCM Driver	Linux 2.6–6.5	Linux 2.6–6.5	Linux 2.6–6.5	Linux 2.6–6.5	Linux 2.6–6.5
<b>Electrical Features</b>					
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	3.3–4.3 V, typ. 3.8 V
Power Consumption	86 $\mu$ A @ Power off 4.4 mA @ Sleep 56 mA @ idle, USB 2.0 70 mA @ idle, USB 3.0	88 $\mu$ A @ Power off 5.0 mA @ Sleep 56 mA @ idle, USB 2.0 70 mA @ idle, USB 3.0	88 $\mu$ A @ Power off 5.0 mA @ Sleep 56 mA @ idle, USB 2.0 70 mA @ idle, USB 3.0	82 $\mu$ A @ Power off 5.0 mA @ Sleep 60 mA @ idle, USB 2.0 73 mA @ idle, USB 3.0	70 $\mu$ A @ Power off 4.0 mA @ Sleep 55 mA @ idle, USB 2.0 70 mA @ idle, USB 3.0