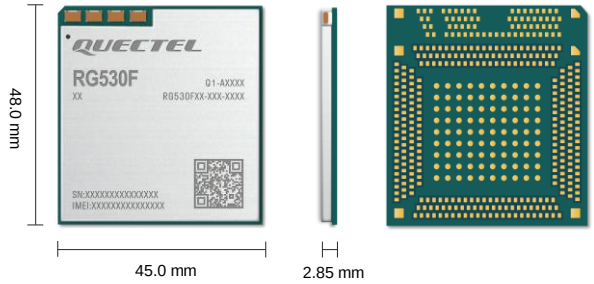
# Quectel RG530F Series

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




Quectel RG530F is a series of 5G 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, which makes it backward compatible with the 4G/ 3G network. It is compatible with Quectel 5G module RG50xQ series and LTE-A module EG512R-EA (while some additional pins are added to RG530F series). The module can meet customers' different application demands for high speed, large capacity, low latency, high reliability, etc.

RG530F series is an industrial-grade module for industrial and commercial applications only.

RG530F series supports Qualcomm® IZat™ location technology Gen9C Lite (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, 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 PDA, 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 VoLTE (optional)

5G NR Sub-6 GHz & mmWave Bands

LTE Cat 20 (DL)
LTE Cat 18 (UL)

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

Embedded Abundant Protocols

LGA Package

Multi-constellation GNSS

USB 3.1
High Speed Interface

PCIe 3.0
Interface

Quectel Enhanced AT Commands

RoHS Compliant

VoLTE (optional)

Version: 1.0 | Status: Released

# Quectel RG530F Series

| | | RG530F-EU | RG530F-NA |
|---|---|---|---|
| **Region/Operator** | | EMEA/Oceania/Brazil | North America |
| **Dimensions (mm)** | | 48.0 × 45.0 × 2.85 | 48.0 × 45.0 × 2.85 |
| **Weight (g)** | | Approx. 14.15 | Approx. 14.12 |
| **Temperature Range** | | | |
| **Operating Temperature** | | -30 °C to +75 °C | -30 °C to +75 °C |
| **Extended Temperature** | | -40 °C to +85 °C | -40 °C to +85 °C |
| **Frequency Bands** | | | |
| **5G** | **5G NR** | **3GPP Rel-16 NSA/ SA operation, Sub-6 GHz, mmWave** | **3GPP Rel-16 NSA/ SA operation, Sub-6 GHz, mmWave** |
| | **5G NR NSA** | n1/ 3/ 5/ 7/ 8/ 20/ 28/ 38/ 40/ 41/ 75/ 76/ 77/ 78 / 257①/ 258①/ 260①/ 261① | n2/ 5/ 7/ 12/ 13/ 14/ 25/ 26/ 29/ 30/ 38/ 41/ 48/ 66/ 70/ 71/ 77/ 78/ 257①/ 258①/ 260①/ 261① |
| | **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/ 14/ 25/ 26/ 29/ 30/ 38/ 41/ 48/ 66/ 70/ 71/ 77/ 78 |
| **LTE** | **LTE Category** | **Cat 20 (DL)/ Cat 18 (UL)** | **Cat 20 (DL)/ Cat 18 (UL)** |
| | **LTE-FDD** | B1/ 3/ 5/ 7/ 8/ 20/ 28/ 32 | B2/ 4/ 5/ 7/ 12 (17)/ 13/ 14/ 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 | - |
| **GNSS** | | GPS/ GLONASS/ BDS/ Galileo/ QZSS | GPS/ GLONASS/ BDS/ Galileo/ QZSS |
| **Certifications** | | | |
| **Regulatory** | | TBD | TBD |
| **Carrier** | | TBD | TBD |
| **Others** | | RoHS | RoHS |
| **Data Rates (Max.)②** | | | |
| **5G SA Sub-6** | | 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) |
| **5G NSA mmWave** | | 8.8 Gbps (DL)/ 2.6 Gbps (UL) | 8.8 Gbps (DL)/ 2.6 Gbps (UL) |
| **5G TDD + mmWave** | | 8.0 Gbps (DL)/ 3.4 Gbps (UL) | 8.0 Gbps (DL)/ 3.4 Gbps (UL) |
| **5G FDD + mmWave** | | 8.9 Gbps (DL)/ 2.7 Gbps (UL) | 8.9 Gbps (DL)/ 2.7 Gbps (UL) |
| **LTE** | | 2.0 Gbps (DL)/ 200 Mbps (UL) | 2.0 Gbps (DL)/ 200 Mbps (UL) |
| **WCDMA** | | 42 Mbps (DL)/ 5.76 Mbps (UL) | - |
| **Interfaces** | | | |
| **(U)SIM** | | × 2, 1.8/2.95 V | × 2, 1.8/2.95 V |
| **UART** | | × 3 | × 3 |
| **SDIO** | | × 1 | × 1 |
| **USB 2.0/3.0/3.1** | | × 1 | × 1 |
| **PCIe 3.0** | | Gen 3, Lane × 2 | Gen 3, Lane × 2 |
| **PCM*** | | × 1 | × 1 |
| **I2S*** | | × 1 | × 1 |
| **I2C** | | × 1 | × 1 |
| **SPI** | | × 1 | × 1 |
| **ADC** | | ● | ● |
| **RESET_N** | | ● | ● |
| **GPIOs (QuecOpen®)** | | ● | ● |
| **Antenna** | | Sub-6 GHz: 4 + 2 (optional); GNSS: × 1; mmWave: × 8 | Sub-6 GHz: × 4; GNSS: × 1; mmWave: × 8 |
| **Voice** | | | |
| **VoLTE** | | Digital Audio and VoLTE (Voice over LTE) (optional) | Digital Audio and VoLTE (Voice over LTE) (optional) |
| **Enhanced Features** | | | |
| **DTMF*** | | ● | ● |
| **DFOTA** | | ● | ● |
| **(U)SIM Card Detection** | | ● | ● |

NOTE:
1. ①: Works with mmWave antennas.
2. ②: The presented data rates are theoretical only, and actual values depend on network conditions.
3. *: Under development/Ongoing.
4. ●: Supported.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# Quectel RG530F Series

| | RG530F-EU | RG530F-NA |
|---|---|---|
| **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 |
| **GNSS Driver** | Android 4.x–12.x | Android 4.x–12.x |
| **RIL Driver** | Android 4.x–12.x | Android 4.x–12.x |
| **USB NDIS Driver** | Windows 7/8/8.1/10/11 | Windows 7/8/8.1/10/11 |
| **USB MBIM Driver** | Windows 8/8.1/10/11; Linux 3.18–5.18 | Windows 8/8.1/10/11; Linux 3.18–5.18 |
| **USB GobiNet Driver** | Linux 2.6–5.18 | Linux 2.6–5.18 |
| **USB QMI_WWAN Driver** | Linux 3.4–5.18 | Linux 3.4–5.18 |
| **PCIe MHI Driver** | Linux 3.10–5.18 | Linux 3.10–5.18 |
| **Electrical Features** | | |
| **Supply Voltage Range** | 3.3–4.4 V, typ. 3.8 V | 3.3–4.4 V, typ. 3.8 V |
| **Output Power** | **5G NR:**<br>- Class 2 (26 dBm +2/-3 dB) for n38/ 40/ 41/ 77/ 78<br>- Class 3 (23 dBm +2/-2 dB) for Other Sub-6 bands<br>- Follow QTM545 (Class 3)/ QTM547 (Class 1) for n257/n258/n260/n261<br>**LTE:**<br>- Class 2 (26 dBm +2/-2 dB) for B38/ 41/ 42/ 43<br>- Class 3 (23 dBm +2/-2 dB) for Other LTE bands<br>**WCDMA:**<br>- Class 3 (23 dBm +2/-2 dB) | **5G NR:**<br>- Class 1.5 (29 dBm +2/-3 dB) for n41/ 77/ 78<br>- Class 2 (26 dBm +2/-3 dB) for n38/ 41/ 77/ 78<br>- Class 3 (23 dBm+2/-2dB) for Other Sub-6 bands<br>- Follow QTM545 (Class 3)/ QTM547 (Class 1) for n257/n258/n260/n261<br>**LTE:**<br>- Class 2 (26 dBm +2/-2 dB) for B38/ 41/ 42/ 43<br>- Class 3 (23 dBm +2/-2 dB) for Other LTE bands |
| **Power Consumption** | 125 uA @ Power down<br>4.96 mA @ Sleep<br>34.88 mA @ USB 2.0, Idle<br>52.23 mA @ USB 3.0, Idle | 124 uA @ Power down<br>5.01 mA @ Sleep<br>36.29 mA @ USB 2.0, Idle<br>54.26 mA @ USB 3.0, Idle |


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