# Quectel BG770A-GL

## Ultra-Compact
## LTE Cat M1/NB2 Module

14.9 mm

12.9 mm

1.9 mm
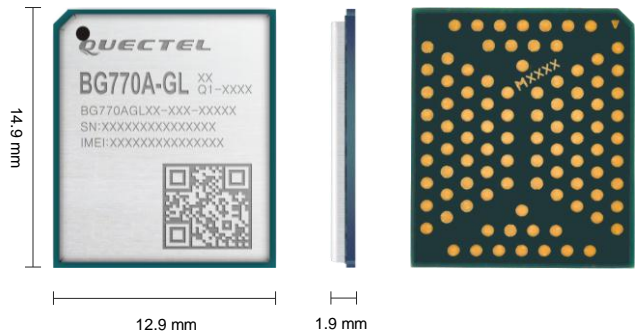
BG770A-GL is an ultra-compact LPWA module supporting LTE Cat M1, LTE Cat NB2 and integrated GNSS. It is fully compliant with 3GPP Rel-14 specification and provides global carrier band combinations. It features ultra-low power consumption by leveraging the integrated RAM and Flash as well as the MIPS 5150 processor, achieving extremely low current in various standby/hibernation modes, including 3GPP PSM and eDRX. This enables over 15 years of battery life. Further more, it contains a GNSS* and cellular based location engine which support GPS and GLONASS.

BG770A-GL boasts a comprehensive hardware-based security feature - ISE (Integrated Security Elements). With an ultra-compact SMT form factor of 14.9 mm × 12.9 mm × 1.9 mm and high integration level, it enables integrators and developers to easily design their applications and take advantage from the module's low power consumption and mechanical intensity. Its advanced LGA package allows fully automated manufacturing for high-volume applications.

A rich set of Internet protocols, industry-standard interfaces and abundant functionalities extend the applicability of the module to a wide range of M2M applications such as wireless POS, smart metering, tracking, wearable devices, etc.

## Key Features

- ✔ Extremely compact LTE Cat M1/Cat NB2 module with ultra-low power consumption
- ✔ Integrated RAM and flash
- ✔ Super slim profile in LGA package
- ✔ Embedded with abundant Internet service protocols
- ✔ Support VoLTE* (Cat M1 only), QuecLocator®*, DFOTA*, etc.
- ✔ Multi-band and rich external interfaces ensuring convenient application
- ✔ Fast time-to-market: reference designs, evaluation tools and timely technical support minimize design-in time and development efforts
- ✔ Robust mounting and interfaces

| | | |
|---|---|---|
| LTE Cat M1 & Cat NB2 | LGA Package | Super Compact Size |
| Embedded Abundant Protocols | DFOTA* | USB 2.0 Interface* |
| Ultra-low Power Consumption | Quectel Enhanced AT Commands | Integrated RAM/ Flash in Chipset |

Version: 1.0.0 | Status: Preliminary

| LTE Cat M1/NB2 | BG770A-GL |
|---|---|
| **Region/Operator** | Global |
| **Dimensions (mm)** | 14.9 × 12.9 × 1.9 |
| **Package** | LGA |
| **Temperature  Range** | |
| **Operating Temperature** | -35 °C to +75 °C |
| **Extended  Temperature** | -40 °C to +85 °C |
| **Frequency Bands** | |
| **LTE-FDD** | Cat M1: B1/B2/B3/B4/B5/B8/B9*/B10*/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66 |
| | Cat NB2: B1/B2/B3/B4/B5/B8/B9*/B10*/B12/B13/B17/B18/B19/B20/B25/B27*/B28/B66 |
| **Data Rate (Max.)** | |
| **Cat M1** | 600 kbps (DL)/ 1000 kbps (UL) |
| **Cat NB2** | 120 kbps (DL)/ 140 kbps (UL) |
| **Cat NB1** | 62.5 kbps (DL)/ 27.2 kbps (DL) |
| **Certifications** | |
| **Regulatory** | JATE*/TELEC* (Japan) <br> KC* (South Korea) <br> FCC* (America) <br> CE* (Europe) <br> PTCRB* (North America) <br> GCF* (Global) <br> IC* (Canada) <br> SRRC*/NAL*/CCC* (China) <br> NCC* (Taiwan, China) <br> RCM* (Australia/New Zealand) |
| **Carrier** | Verizon*/AT&T*/Sprint*/T-Mobile* (America) <br> Soft Bank*/KDDI*/NTT DOCOMO* (Japan) <br> Deutsche Telekom*/Vodafone* (Europe) |
| **Others** | RoHS* |
| **Interfaces** | |
| **USB 2.0*** | × 1 (FS only) |
| **UART** | × 3 |
| **PCM*** | × 1 (for VoLTE only) |
| **I2C*** | × 1 (for VoLTE only) |
| **ADC** | × 2 |
| **(U)SIM** | × 1 |
| **GPIO** | × 7 |
| **GRFC** | × 2 |
| **NET_STATUS** | × 1 (for network status indication) |
| **STATUS** | × 1 (for power on/off indication) |
| **Antenna** | × 2 (for LTE & GNSS antennas) |
| **Voice** | |
| **VoLTE*** | Voice over LTE (for Cat M1) only |
| **SMS** | |
| **Short Message Service*** | Point-to-point MO and MT <br> SMS Cell Broadcast <br> Text and PDU Mode |
| **Enhanced Features** | |
| **GNSS*** | GPS/GLONASS |
| **DFOTA*** | Delta Firmware Upgrade Over-The Air |
| **QuecLocator®*** | Cell ID Positioning |

Notes:
1. *: under development/ in progress.
2. TBD: To Be Determined.

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|---|---|
| **Software Features** | |
| **3GPP** | 3GPP E-UTRA Release 14 |
| **AT Commands** | 3GPP TS 27.007<br>3GPP TS 27.005<br>Quectel Enhanced AT Commands |
| **Drivers** | USB Serial Driver: TBD<br>GNSS/RIL Driver: TBD |
| **Protocols*** | TCP/ PPP/ UDP/ SSL/ MQTT/ FTP(S) / HTTP(S) / LWM2M/ IPv4/ IPv6/ TLS/ DTLS/ PING/ MQTT/ CoAP/ NITZ |
| **Firmware Upgrade** | UART<br>DFOTA* |
| **Electrical Features** | |
| **Output Power** | Max. 23 dBm |
| **Supply Voltage Range** | 2.2–4.35 V |
| **Power Consumption (Typical)** [1] | **PSM:** 1.4 µA<br>**Sleep Mode:**<br>82 µA @ DRX = 1.28 s / 2.56 s<br>17 µA @ e-I-DRX = 81.92 s<br>**Idle Mode:**<br>1.05 mA @ DRX = 1.28 s<br>35 µA @ e-I-DRX = 81.92 s<br>**Active Mode:**<br>TBD |

Notes:

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3. [1]: The power consumption is presented only on the platform level.

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