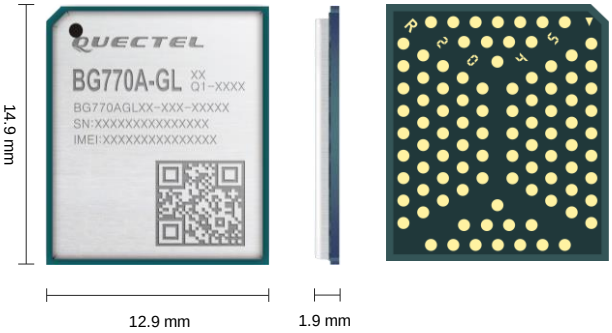
Quectel BG770A-GL

Ultra-Compact
LTE Cat M1/NB1/NB2* Module



The BG770A-GL is an ultra-compact LPWA module compliant with the 3GPP E-UTRA Release 13/14* specification and has an integrated GNSS and cellular-based positioning engine that supports GPS and GLONASS systems. The module supports LTE Cat M1 and LTE Cat NB1/NB2* bands and global carrier band combinations. Besides, it features the MIPS 5150 processor and integrated RAM and flash, which help reduce current consumption to rather low levels in various standby/hibernation modes, including PSM and eDRX.

The BG770A-GL has a comprehensive hardware-based security feature - Integrated Security Elements (ISE). With an ultra-compact SMT form factor of 14.9 mm × 12.9 mm × 1.9 mm and a high integration level, the module enables integrators and developers to design applications easily leveraging its low power consumption and compact structure design. The BG770A-GL's advanced LGA package allows for fully automated manufacturing required for large-scale 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, and many more.

Key Features

- Extremely compact LTE Cat M1/NB1/NB2* module with ultra-low power consumption
- Integrated RAM and flash
- Super slim profile in LGA package
- Embedded with abundant Internet service protocols
- Supports VoLTE* (Cat M1 only), QuecLocator®, and DFOTA
- A rich set of external, multi-band interfaces that ensure convenient applications
- Fast time-to-market: reference designs, evaluation tools and timely technical support minimize time and efforts in design and development
- Robust mounting and interfaces

LTE Cat M1 & Cat NB1/NB2*

LGA Package

Super Compact Size

Abundant Protocols Embedded

DFOTA

USB 2.0 Interface*

Ultra-Low Power Consumption

Quectel Enhanced AT Commands

Integrated RAM and Flash

Version: 1.0 | Status: Released

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LTE Cat M1/NB1/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/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66
	Cat NB1/NB2*: B1/B2/B3/B4/B5/B8/B12/B13/B17/B18/B19/B20/B25/B28/B66
Data Rate (Max.)	
Cat M1	588 kbps (DL)/ 1119 kbps (UL)
Cat NB2*	127 kbps (DL)/ 158 kbps (UL)
Certifications	
Carrier*	**Europe:** Vodafone/Deutsche Telekom **America:** Verizon/AT&T **South Korea:** SKT **Japan:** NTT DOCOMO/KDDI
Regulatory	**Global:** GCF* **Europe:** CE **North America:** PTCRB* **America:** FCC **Canada:** IC **South Korea:** KC* **Japan:** JATE/TELEC* **Australia/New Zealand:** RCM
Others*	RoHS
Interfaces	
USB 2.0*	× 1 (Full speed only)
UART	× 3
PCM*	× 1 (For VoLTE only)
I2C*	× 1 (For VoLTE only)
ADC	× 2
(U)SIM	× 1 (Supports 1.8 V only)
GPIO	× 7
GRFC*	× 2
NET_STATUS	× 1 (For network status indication)
STATUS	× 1 (For power on/off indication)
Antenna	× 2 (For the main antenna and GNSS antenna, respectively)
Voice	
VoLTE*	Voice over LTE (For Cat M1 only)
SMS	
Short Message Service	● Point-to-point MO and MT ● SMS Cell Broadcast ● Text and PDU Mode
Enhanced Features	
GNSS	GPS, GLONASS
DFOTA	Delta Firmware Upgrade Over The Air
QuecLocator®	Cell ID Positioning

Note:
*: Under development / in progress.

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LTE Cat M1/NB1/NB2*	BG770A-GL
Software Features	
3GPP	3GPP E-UTRA Release 13/14*
AT Commands	● 3GPP TS 27.007 ● 3GPP TS 27.005 ● Quectel Enhanced AT Commands
Protocols	TCP/ PPP/ UDP/ SSL/ MQTT/ FTP(S) / HTTP(S) / LwM2M/ IPv4/ IPv6/ TLS/ DTLS/ PING/ CoAP/ NITZ
Firmware Upgrade	● UART ● DFOTA ● USB*
Electrical Features	
Output Power	Max. 23 dBm
Supply Voltage Range	**VBAT_BB:** 2.2–4.35 V, Typ. 3.3 V **VBAT_RF:** 3.1–4.2 V, Typ. 3.3 V
Power Consumption (Typical)	**Power Saving Mode:** 1.4 μA **Sleep Mode (modem disabled):** 45 μA **Sleep Mode (ECL0):** Cat M: 1.1 mA @ DRX = 1.28 s 0.06 mA @ eDRX Cycle = 40.96 s; PTW = 1.28 s; DRX = 1.28 s 0.05 mA @ eDRX Cycle = 81.92 s; PTW = 1.28 s; DRX = 1.28 s NB-IoT: 2.2 mA @ DRX = 1.28 s 0.16 mA @ eDRX Cycle = 40.96 s; PTW = 1.28 s; DRX = 1.28 s 0.12 mA @ eDRX Cycle = 81.92 s; PTW = 1.28 s; DRX = 1.28 s **Active Mode (GNSS disabled):** Cat M: 189 mA @ 23 dBm, B1/2/3/4/5/18/19/20/25/26/27/66 201 mA @ 23 dBm, B8/B13 225 mA @ 23 dBm, B12/B28 NB-IoT (max power mode 3.75 kHz): 322 mA @ 23 dBm, B1/B2/B3/B4/B25/B66 359 mA @ 23 dBm, B5/B8/B13/B18/B19/B20 225 mA @ 23 dBm, B12/B17/B28 NB-IoT (max power mode 15 kHz): 169 mA @ 23 dBm, B1/B2/B3/B4/B25/B66 191 mA @ 23 dBm, B5/B8/B13/B18/B19/B20 225 mA @ 23 dBm, B12/B17/B28

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