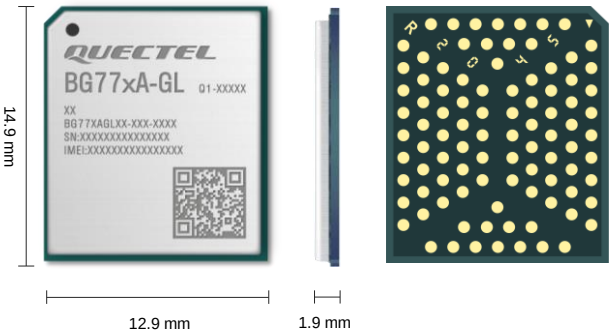
Quectel BG77xA-GL

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



BG77xA-GL is an ultra-compact LPWA module compliant with 3GPP E-UTRA Release 13/14* specification. The module supports LTE Cat M1 and LTE Cat NB1/NB2* bands and integrated SIM(iSIM). Besides, it features ultra-low power consumption implemented by MIPS 5150 processor and integrated RAM and flash, which help reduce current consumption to rather low levels in various modes, including PSM, eDRX etc. It is further integrated with a GNSS engine that supports GPS and GLONASS systems and a cellular-based positioning engine that supports Polte and QuecLocator®. BG77xA-GL comes in two variants: BG770A-GL ,BG772A-GL and BG773A-GL*.

BG77xA-GL boasts 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 BG77xA-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
- Support integrated SIM (iSIM)
- Embedded with abundant Internet service protocols
- Support QuecLocator®, Polte and DFOTA
- Support QuecOpen® to simplify the development of embedded applications
- A rich set of external interfaces (including RF control 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: 1.4 | Status: Released

Quectel BG77xA-GL

LTE Cat M1/NB1/NB2*			BG770A-GL	BG772A-GL	BG773A-GL
Region/Operator			Global	Global	Global
Dimensions (mm)			14.9 × 12.9 × 1.9	14.9 × 12.9 × 1.9	14.9 × 12.9 × 1.9
Package			LGA	LGA	LGA
Temperature Range					
Operating Temperature			-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C
Extended Temperature			-40 °C to +85 °C	-40 °C to +85 °C	-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.)					
LTE (kbps)	**Rel-13**	**Cat M1**	300 (DL)/375 (UL)	300 (DL)/375 (UL)	300 (DL)/375 (UL)
		Cat NB1	27.2 (DL)/62.5 (UL)	27.2 (DL)/62.5 (UL)	27.2 (DL)/62.5 (UL)
	Rel-14*	**Cat M1**	588 (DL)/1119 (UL)	588 (DL)/1119 (UL)	588 (DL)/1119 (UL)
		Cat NB2	127 (DL)/158 (UL)	127 (DL)/158 (UL)	127 (DL)/158 (UL)
Certifications					
Carrier			**Europe:** Deutsche Telekom/ Vodafone* **America:** Verizon*/AT&T **South Korea:** KT/SKT/LGU+* **Australia**: Telstra* **Japan:** NTT DOCOMO*/KDDI*	**Europe:** Deutsche Telekom **America:** Verizon*/AT&T* **South Korea:** SKT*/LGU+* **Australia**: Telstra*	TBD
Regulatory			**Global:** GCF **Europe:** CE **North America:** PTCRB **America:** FCC **Canada:** IC **South Korea:** KC **Japan:** JATE/TELEC **Australia/New Zealand:** RCM **South Africa**: ICASA	**Global:** GCF* **Europe:** CE **North America:** PTCRB* **America:** FCC **Canada:** IC **South Korea:** KC **Japan:** JATE/TELEC **Australia/New Zealand:** RCM	**Global:** GCF* **Europe:** CE* **North America:** PTCRB* **America:** FCC*
Others			RoHS	RoHS	RoHS
Interfaces					
USB 2.0*			× 1 (Full speed only)	× 1 (Full speed only)	× 1 (Full speed only)
UART			× 3	Max. × 2	× 3
I2C*			-	Max. × 2	-
SPI			-	Max. × 2 (1 for master only, 1 for master/slave)	-
ADC			× 2	Max. × 2	× 2
(U)SIM			× 1 (Supports 1.8 V only)	× 1 (Supports 1.8 V only)	× 1 (Supports 1.8 V only)
GPIO			× 7	Max. × 15	× 7
GRFC			× 2	× 2	× 2
NET_STATUS			× 1 (For network status indication)	× 1 (For network status indication)	× 1 (For network status indication)
STATUS			× 1 (For power on/off indication)	× 1 (For power on/off indication)	× 1 (For power on/off indication)
Antenna			× 2 (For the main antenna and GNSS antenna, respectively)	× 2 (For the main antenna and GNSS antenna, respectively)	× 2 (For the main antenna and GNSS antenna, respectively)
SMS					
Short Message Service			• Point-to-point MO and MT • SMS Cell Broadcast • Text and PDU Mode	• Point-to-point MO and MT • SMS Cell Broadcast • Text and PDU Mode	• Point-to-point MO and MT • SMS Cell Broadcast • Text and PDU Mode
GNSS			GPS, GLONASS	GPS, GLONASS	GPS, GLONASS
DFOTA			Delta Firmware Upgrade Over The Air	Delta Firmware Upgrade Over The Air	Delta Firmware Upgrade Over The Air
Polte			Positioning over LTE	Positioning over LTE	Positioning over LTE
QuecLocator®			Cell ID Positioning	Cell ID Positioning	Cell ID Positioning
QuecOpen®			-	Support the second development of embedded applications, ARM Cortex M4 processor, running FreeRTOS	-

Note:
*: Under development / in progress.

HQ address: Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China
Tel: +86 21 51086236 Email: info@quectel.com

Quectel BG77xA-GL

LTE Cat M1/NB1/NB2*	BG770A-GL	BG772A-GL	BG773A-GL
Software Features			
3GPP	3GPP E-UTRA Release 13/14*	3GPP E-UTRA Release 13/14*	3GPP E-UTRA Release 13/14*
AT Commands	● 3GPP TS 27.007 ● 3GPP TS 27.005 ● Quectel Enhanced AT Commands	● 3GPP TS 27.007 ● 3GPP TS 27.005 ● Quectel Enhanced AT Commands	● 3GPP TS 27.007 ● 3GPP TS 27.005 ● Quectel Enhanced AT Commands
iSIM	-	-	Supported
Protocols	PPP/ TCP/ UDP/ SSL/ DTLS/ FTP(S)/ HTTP(S)/ NITZ/ PING/ NIDD/ MQTT/ NTP/ LwM2M/ CoAP		
Firmware Upgrade	● UART ● DFOTA ● USB*	● UART ● DFOTA ● USB*	● UART ● DFOTA ● USB*
Electrical Features			
Output Power	Max. 23 dBm	Max. 23 dBm	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	**VBAT_BB:** 2.2–4.35 V, typ. 3.3 V **VBAT_RF:** 3.1–4.2 V, typ. 3.3 V	**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 **Rock Bottom:** 45 μA **Sleep Mode:** Cat M1: 1.1 mA @ DRX = 1.28 s 0.06 mA @ eDRX = 40.96 s; PTW = 1.28 s; DRX = 1.28 s 0.05 mA @ eDRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s Cat NB1: 2.2 mA @ DRX = 1.28 s 0.16 mA @ eDRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s 0.12 mA @ eDRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s **Idle Mode:** Cat M1: 16.5 mA @ DRX = 1.28 s 16.0 mA @ eDRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s Cat NB1: 17.0 mA @ DRX = 1.28 s 16.0 mA @ eDRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s **Active Mode (GNSS disabled):** Cat M1: 192.7 mA @ 23 dBm Cat NB1: 184.3 mA @ 23 dBm	**Power Saving Mode + QuecOpen @Shutdown mode:** 1.4 μA **Rock Bottom:** QuecOpen @Shutdown mode: 43 μA QuecOpen @Standby mode: 45 μA QuecOpen @Stop mode: 0.68 mA **Sleep Mode + QuecOpen @Standby mode:** Cat M1: 1.1 mA @ DRX = 1.28 s 0.06 mA @ eDRX = 40.96 s; PTW = 1.28 s; DRX = 1.28 s 0.05 mA @ eDRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s Cat NB1: 2.2 mA @ DRX = 1.28 s 0.16 mA @ eDRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s 0.12 mA @ eDRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s **Idle Mode + QuecOpen @Standby mode:** Cat M1: 16.5 mA @ DRX = 1.28 s 16.0 mA @ eDRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s Cat NB1: 17.0 mA @ DRX = 1.28 s 16.0 mA @ eDRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s **Active Mode (GNSS disabled):** Cat M1: 192.7 mA @ 23 dBm Cat NB1: 184.3 mA @ 23 dBm	TBD

Note:
*: Under development / in progress.

HQ address: Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China
Tel: +86 21 51086236 Email: info@quectel.com