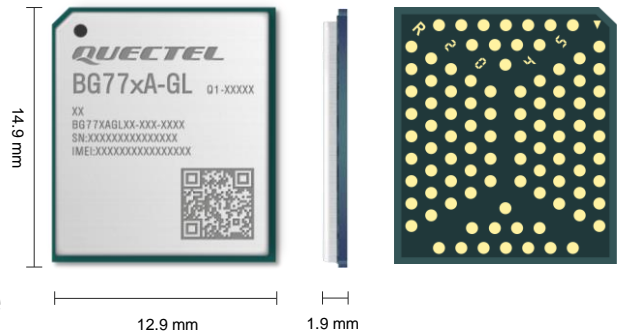


Quectel BG77xA-GL

Ultra-Compact LTE Cat M1/ NB1/ NB2 Module



BG77xA-GL is 5G-ready ultra-compact LPWA modules 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, e-I-DRX, etc. It is further integrated with a GNSS engine that supports GPS and GLONASS systems and a cellular-based positioning engine that supports QuecLocator®. BG77xA-GL comes in three 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
- ✓ Super slim profile in LGA package
- ✓ Support integrated SIM (iSIM)
- ✓ Embedded with abundant Internet service protocols
- ✓ Support QuecLocator® and DFOTA
- ✓ Support second development of embedded applications, ARM Cortex M4 processor, running FreeRTOS
- ✓ 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



LTE Cat M1 & Cat NB1/ NB2



LGA Package



Super Compact Size



Abundant Protocols Embedded



DFOTA



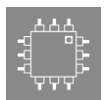
USB 2.0 Interface



Ultra-Low Power Consumption



Quectel Enhanced AT Commands



iSIM

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/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 26/ 27/ 28/ 66		Cat M1: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 26/ 27/ 28/ 66	
		Cat NB1/ NB2: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 17/ 18/ 19/ 20/ 25/ 28/ 66		Cat NB2: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 17/ 18/ 19/ 20/ 25/ 28/ 66	
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: Vodafone/ Deutsche Telekom America: Verizon/ AT&T South Korea: KT/ SKT/ LGU+ Australia: Telstra* Japan: NTT DOCOMO/ KDDI	Europe: Deutsche Telekom America: AT&T/ T-Mobile ^① South Korea: KT 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* Canada: IC* Japan: JATE/ TELEC Australia/New Zealand: RCM*	
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	
Enhanced Features					
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	
QuecLocator®		Cell ID Positioning	Cell ID Positioning	Cell ID Positioning	
QuecOpen®		-	•	-	

Note:

1. *: Under development/ planning/ in progress.

3. TBD: To Be Determined.

2. •: Supported.

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 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	-	-	•
Protocols	PPP/ TCP/ UDP/ SSL/ DTLS/ FTP(S)/ HTTP(S)/ NITZ/ PING/ NIDD/ MQTT(S)/ NTP/ LwM2M/ CoAP		
Firmware Upgrade	UART/ DFOTA/ USB*		UART/ DFOTA/ USB*
Electrical Features			
Output Power (Max.)	23 dBm		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 Saving Mode: 1.4 µA Rock Bottom: 45 µA Sleep Mode: Cat M1: <ul style="list-style-type: none"> 1.1 mA @ DRX = 1.28 s 0.06 mA @ e-I-DRX = 40.96 s; PTW = 1.28 s; DRX = 1.28 s 0.05 mA @ e-I-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s Cat NB1: <ul style="list-style-type: none"> 2.2 mA @ DRX = 1.28 s 0.16 mA @ e-I-DRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s 0.12 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s 	VBAT_BB: 2.2–4.35 V, typ. 3.3 V VBAT_RF: 3.1–4.2 V, typ. 3.3 V 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: <ul style="list-style-type: none"> 1.1 mA @ DRX = 1.28 s 0.06 mA @ e-I-DRX = 40.96 s; PTW = 1.28 s; DRX = 1.28 s 0.05 mA @ e-I-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s Cat NB1: <ul style="list-style-type: none"> 2.2 mA @ DRX = 1.28 s 0.16 mA @ e-I-DRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s 0.12 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s 	VBAT_BB: 2.2–4.35 V, typ. 3.3 V VBAT_RF: 3.1–4.2 V, typ. 3.3 V Power Saving Mode: 1.4 µA Rock Bottom: 45 µA Sleep Mode: Cat M1: <ul style="list-style-type: none"> 1.1 mA @ DRX = 1.28 s 0.06 mA @ e-I-DRX = 40.96 s; PTW = 1.28 s; DRX = 1.28 s 0.05 mA @ e-I-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s Cat NB1: <ul style="list-style-type: none"> 2.2 mA @ DRX = 1.28 s 0.16 mA @ e-I-DRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s 0.12 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s
Power Consumption (Typical)	Idle Mode: Cat M1: <ul style="list-style-type: none"> 16.5 mA @ DRX = 1.28 s 16.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s Cat NB1: <ul style="list-style-type: none"> 17.0 mA @ DRX = 1.28 s 16.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s Active Mode (GNSS off): Cat M1: 192.7 mA @ 23 dBm Cat NB1: 184.3 mA @ 23 dBm	Idle Mode + QuecOpen @ Standby mode: Cat M1: <ul style="list-style-type: none"> 16.5 mA @ DRX = 1.28 s 16.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s Cat NB1: <ul style="list-style-type: none"> 17.0 mA @ DRX = 1.28 s 16.0 mA @ e-I-DRX = 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	Idle Mode: Cat M1: <ul style="list-style-type: none"> 16.5 mA @ DRX = 1.28 s 16.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s Cat NB1: <ul style="list-style-type: none"> 17.0 mA @ DRX = 1.28 s 16.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s Active Mode (GNSS off): Cat M1: 192.7 mA @ 23 dBm Cat NB2: 184.3 mA @ 23 dBm

Note:

•: Supported.