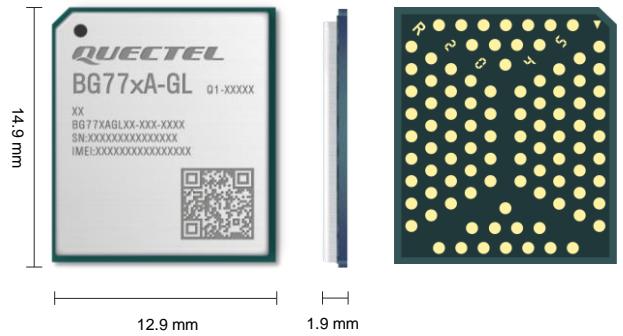




Quectel BG77xA-GL

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 | <ul style="list-style-type: none"> ● Point-to-point MO and MT ● SMS Cell Broadcast ● Text and PDU Mode | <ul style="list-style-type: none"> ● Point-to-point MO and MT ● SMS Cell Broadcast ● Text and PDU Mode | <ul style="list-style-type: none"> ● 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.

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 | <ul style="list-style-type: none"> ● 3GPP TS 27.007 ● 3GPP TS 27.005 ● Quectel Enhanced AT Commands | <ul style="list-style-type: none"> ● 3GPP TS 27.007 ● 3GPP TS 27.005 ● Quectel Enhanced AT Commands | <ul style="list-style-type: none"> ● 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 | <ul style="list-style-type: none"> ● UART ● DFOTA ● USB* | <ul style="list-style-type: none"> ● UART ● DFOTA ● USB* | <ul style="list-style-type: none"> ● 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 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 | 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: 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 | VBAT_BB: 2.2–4.35 V, typ. 3.3 V VBAT_RF: 3.1–4.2 V, typ. 3.3 V TBD |
| Power Consumption (Typical) | | | |

Note:

*: Under development / in progress.