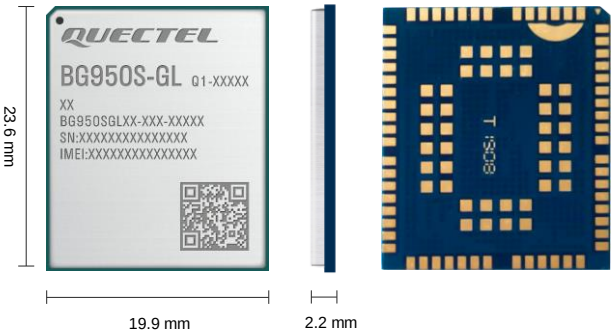
Quectel BG950S-GL

Ultra-compact
LTE Cat M1/ NB2 Module



BG950S-GL, a 5G-ready ultra-compact LPWA module, is compliant with 3GPP Release 14, which is to support 3GPP Release 15–17 easily by software upgrade. The module supports LTE Cat M1/ NB2 bands, SRD* (Short Range Device) communication in Sub-1 GHz and 2.4 GHz bands, and integrated SIM (iSIM*). Besides, it features ultra-low power consumption implemented by Sony ALT1350 processor and integrated RAM and flash, which help reduce the 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* satellite systems.

With an ultra-compact SMT form factor of 23.6 mm × 19.9 mm × 2.2 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 BG950S-GL's advanced LGA package allows for fully automated manufacturing necessary 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/ NB2 module with ultra-low power consumption
- SRD* (Short Range Device) radio with mesh capabilities
- Integrated RAM and flash
- Super slim profile in LGA package
- Supports integrated SIM (iSIM*)
- Embedded with abundant Internet service protocols
- Supports DFOTA
- 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 minimizing time and efforts in design and development
- Robust mounting and interfaces

LTE Cat M1 & Cat NB2

LGA Package

iSIM

Abundant Protocols Embedded

DFOTA

Compact Size

Ultra-low Power Consumption

Quectel Enhanced AT Commands

Integrated RAM and Flash

Version: 1.4 | Status: Released

Quectel BG950S-GL

LTE Cat M1/ NB2 Module	BG950S-GL
Region/ Operator	Global
Dimensions (mm)	23.6 × 19.9 × 2.2
Package	LGA
Weight (g)	Approx. 2.31
Temperature Range	
Operating Temperature	-35 °C to +75 °C
Extended Temperature	-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/ 85 Cat NB2: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 17/ 18/ 19/ 20/ 25/ 26/ 28/ 66/ 85
Data Rate (Max.)	
LTE (kbps) Rel-14	Cat M1: 588 (DL)/ 1119 (UL) Cat NB1/NB2: 127 (DL)/ 158 (UL)
Certifications	
Carrier	**Europe:** Vodafone*/ Deutsche Telekom* **America:** AT&T/ T-Mobile*/ Verizon* **South Korea:** KT*/ LGU+* **Australia**: Telstra* **Canada**: Rogers*/ Telus* **Japan**: KDDI*/ NTT DOCOMO*
Regulatory/ Conformance	**Global:** GCF **Europe:** CE **North America:** PTCRB **America:** FCC **Canada:** IC **South Korea:** KC* **Japan:** JATE/ TELEC **Australia/New Zealand:** RCM
Others	RoHS
Interfaces	
UART	× 2
ADC	× 2
USIM	× 1 (Supports 1.8 V only)
GPIO	× 9
GRFC	× 2
NET_STATUS	× 1 (Indicates the module's network activity status)
STATUS	× 1 (Indicates the module's operation status)
Antenna	× 2 (Main Antenna: × 1; GNSS Antenna: × 1)
SMS	
Short Message Service	Point-to-Point MO and MT SMS cell broadcast Text and PDU mode SMS storage: ME by default
Enhanced Features	
GNSS	GPS/ GLONASS*
DFOTA	●
QuecOpen®	-
iSIM*	●
SRD*	●
Software Features	
3GPP	3GPP E-UTRA Release 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
Electrical Features	
Output Power (Max.)	23 dBm ±2 dB
Supply Voltage Range	VBAT_BB/ VBAT_RF: 2.2–4.35 V, typ. 3.3 V
Power Consumption (Typical)	**Power Saving Mode:** 1.44 μA @ Cat M1 1.53 μA @ Cat NB1 **Rock Bottom:** 4.87 μA @ **AT+CFUN=0**, **AT+QSCLK=2** 1.97 μA @ **AT+CFUN=0**, **AT+QSCLK=3** **Idle Mode:** Cat M1 9.55 mA @ DRX = 1.28 s 9.31 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s Cat NB1: 9.73 mA @ DRX = 1.28 s 9.66 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s **Sleep Mode @ AT+QSCLK=2:** Cat M1: 0.75 mA @ DRX = 1.28 s 31.39 μA @ e-I-DRX = 40.96 s; PTW = 1.28 s; DRX = 1.28 s 13.87 μA @ e-I-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s Cat NB1: 1.1 mA @ DRX = 1.28 s 69.29 μA @ e-I-DRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s 37.73 μA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s **Sleep Mode @ AT+QSCLK=3:** Cat M1: 0.76 mA @ DRX = 1.28 s 28.08 μA @ e-I-DRX = 40.96 s; PTW = 1.28 s; DRX = 1.28 s 15.49 μA @ e-I-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s Cat NB1: 1.09 mA @ DRX = 1.28 s 67.08 μA @ e-I-DRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s 34.54 μA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s **Active Mode (GNSS disabled):** Cat M1: 205 mA @ 23 dBm Cat NB1: 218 mA @ 23 dBm

Note:
*: Under development/ planning/ in progress. ●: Supported. - : Not supported.

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