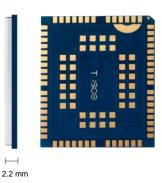


Quectel BG950S-GL

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
- ✓ Support integrated SIM (iSIM*)
- ✓ Embedded with abundant Internet service protocols
- ✓ Support 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





DEOTA

DFOTA



Compact Size



Embedded

Ultra-Low Power Consumption



Quectel Enhanced AT Commands



Integrated RAM and

Quectel BG950S-GL

PAMP			7,0.0001 =	
Dimension 10	LPWA Module	BG950S-GL		
Dimension 10 2 5 19 9 2 2 2 2 2 2 2 2				
Manual				
Septiminarian Page				
Personne Berne Personne				
Mary	Temperature Range			
Mary	Operating Temperature	-35 °C to +75 °C		
Trip				
Camino	·	40 0 10 103 0		
TITE (Dep)	Frequency Bands			
Cer Mail 11 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2	LTE-FDD	Cat M1: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 26/	7 27/ 28/ 66/ 85	
Herebook		Cat NB2: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 17/ 18/ 19/ 20/ 25	5/ 26/ 28/ 66/ 85	
TE (body 16-14) Centification 16-14 Cen	Data Rate (Max.)			
Carrier		Cat M1: 588 (DL)/ 1119 (UL)		
Carrier Carr	LTE (kbps) Rel-14	Cat NB2*: 127 (DL)/ 158 (UL)		
Carrier Europe Volation of Deutsche Teleson* and Carrier Affort* Mobile Virtion* south Korea: KTP / Tollu-P / KC ander, Rogers* / Tollu-P / KC an	Certifications			
Carrier America: ArXITY_Flootile* Verticon Control Australia: Telatra* Regulatory Control (Nova) (Monas ICT) (MON) (MON) Regulatory Control (Nova) (Monas ICT) (MON) (MON) Property CT (North America: PICR8) (MON) (Certifications	Furone: Vodafone* / Deutsche Telekom*		
Careire South Koreas LTY CGU-Y KCC Careire Canadas Rogers' Yellis'				
Autorition Community Com	Carrier			
Appair NOOP ANT DOCOMO* Service Proper CF* Europe: CF* Europe: CF* Europe: CF* Europe: CF* Europe: CF* Europe: CF* South Konesia PCR8* Americas PCR8* Am	Carrier			
Regulatory a project of North Americas PTCRs* Spanish TY (TELC* Canadas: IC* Spanish Moves Norses North Americas PTCRs* Spanish Moves Norses North Americas PTCRs* Spanish Moves Norses North Spanish Moves North				
Europie: CET Americas: PCR8* Americas: PCR8		•		
Regulatory a Marita PICIABS** Regulatory a Regulator PICIABS** Reg				
Regulatory America: FCC* South Korea: KC? South KC? S		•		
Canadar, Kr Japan; AFE / FEEC* Japan; AFE / F	Regulatory			
Maria Mari	Regulatory			
Martial Mart				
Other Formation Format				
NUMBER N	Othors			
UNRT x2 1.50 (1) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2		ROTIS		
No No No No No No No No				
No continue	UART	× 2		
GPIO x9 GREC* x2 (Indicate the module's network activity status) x x (Indicate the module's network activity status) x x (Indicate the module's network activity status) x x x x x x x x x x x x x x x x x x x	ADC*	x 2		
REPLATOR x1 (Indicate the module's operation stativity statius)	(U)SIM	× 1 (Supports 1.8 V only)		
NETSTATUS X 1 (Indicate the module's network activity status) Antenna X 1 (Indicate the module's operation status) Antenna X 2 (Main Antenna: x1; GNSS Antenna*: x 2) Short Message Service* Short Message Service* Point-to-Point MO and MT Short Message Service* Short Message Service* Point-do-Point MO and MT Short Message Service* Short Message Service* Poss MS cell broadcast Text and PDU mode Scott Service Serv	GPIO	×9		
NETSTATUS X 1 (Indicate the module's network activity status) Antenna X 1 (Indicate the module's operation status) Antenna X 2 (Main Antenna: x1; GNSS Antenna*: x 2) Short Message Service* Short Message Service* Point-to-Point MO and MT Short Message Service* Short Message Service* Point-do-Point MO and MT Short Message Service* Short Message Service* Poss MS cell broadcast Text and PDU mode Scott Service Serv	GREC*	x ?		
STATUS X (Indicate the module's operation status) X 2 2 2 2 2 2 2 2 2				
Antena x 2 (Main Antenana* x 1; GNSS Antenana* x 2) Some of the point MO and MT of the point MO and Point MO and MT of the point MO and Point MO and MT of the point MO and Point MO and MT of the point MO and Point MO and MT of the point MO and Point MO				
SMS Point-to-Point MO and MT SMS cell broadcast Text and PDU mode SMS cell broadcast Text and PDU mode SMS cell broadcast Text and PDU mode SMS scell broadcast Text and PDU mode SMS	STATUS	× 1 (Indicate the module's operation status)		
Short Message Service* Since of Local and MT Subscription and MT Subscription and MT Exet and PDU mode Subscription and Storage: ME by default ENDAGE GNS's GPS/ GLONASS DFOTA* • Possible of Manage Subscription and Subs	Antenna	× 2 (Main Antenna: × 1; GNSS Antenna*: × 2)		
Short Message Service* Sins cell broadcast Text and PDU mode SMS storage: ME by default Enhanced Features Finance Features GNS* GPS/GIONASS FOFTA* e QuecOpen* e SIM* e SRD* e SOTWAN SOFP FOR 27.007 3GPP SOPP TS 27.007 AT Commands 3GPP TS 27.007 Quectel Enhanced AT Commands Protocols TCP/ PPP*/ UDP/ SSL*/ MQTT/ FTP(S)* / HTTP(S)* / LMV2M* / IPV4/ IPV6* / TLS* / DTLS* / PING* / COAP* / NITZ* LECTION FOR THE STANDARD AND THE STANDARD AN	SMS			
Text and PDU mode Storage: ME by default				
Enhanced Features SMS storage: ME by default SMS storage: ME by def	Short Message Service*			
Enhanced Features GPS/G GIONASS DFOTA* 4 QuecOpen*	· ·			
GMSS* GMS	Enhanced Features	Sivis storage. Wit by default		
DFOTA* * QueCopen® - ISIM* • SRD* • SOFWARE FEATURES *** CALL PRINT A Release 14 AT Commands 3GPP TS 27.007 3GPP TS 27.007 3GPP TS 27.007 3GPP TS 27.005 Quectel Enhanced AT Commands *** CALL PRINT A Release 14 Protocols TCP/ PPP*/ UDP/ SSL*/ MQTT/ FTP(S)*/ HTTP(S)* LWLZM*/ IPV4/ IPV6*/ TLS*/ DTLS*/ PING*/ COAP*/ NITZ* *** CALL PRINT A RELEASE AND A PRINT A PR		000 / 01 011100		
QuecOpen® - ISIM® ● SRD® ● Software Features SOPP E-UTRA Release 14 AT Commands 3GPP TS 27.007 3GPP TS 27.007 Quectel Enhanced AT Commands Quectel Enhanced AT Commands ACTOMPAPY (DIDPY SIX*/ MQTT/ FTP(S)*/ HTTP(S)/ LWM2M*/ IPV4/ IPV6*/ TLS*/ DTLS*/ PING*/ COAP*/ NITZ* POST ON TO PYP*/ UDPY SIX*/ MQTT/ FTP(S)*/ HTTP(S)*/ HTTP(S)*/ LWM2M*/ IPV4/ IPV6*/ TLS*/ DTLS*/ PING*/ COAP*/ NITZ* POST ON TO PYP*/ UDPY SIX*/ MQTT/ FTP(S)*/ HTTP(S)*/ HTTP(S)*/ LWM2M*/ IPV4/ IPV6*/ TLS*/ DTLS*/ PING*/ COAP*/ NITZ* POST ON TO PYP*/ UDPY SIX*/ MQTT/ FTP(S)*/ HTTP(S)*/ HTTP(S)*/ LWM2M*/ IPV4/ IPV6*/ TLS*/ DTLS*/ PING*/ COAP*/ NITZ* POST ON TO PYP*/ UDPY SIX*/ MQTT/ FTP(S)*/ HTTP(S)*/ HTTP(S)*/ HTTP(S)*/ LWM2M*/ IPV4/ IPV6*/ TLS*/ DTLS*/ PING*/ COAP*/ NITZ* POST ON TO PYP*/ UDPY SIX*/ MQTT/ FTP(S)*/ HTTP(S)*/ H		GPS/ GLONASS		
ISIM* • SRD* • SOFTWARE FEATURES FORTOGON 3GPP TS 27.007 3GPP TS 27.007 2QUESTE Inhanced AT Commands 3GPP TS 27.007 2QUESTE Inhanced AT Commands Protocols TCP/ PPP*/ UDP/ SSI.*/ MQTT/ FTP(S)* / HTTP(S)* / LWM 2M*/ IPV4/ IPV6*/ TLS*/ DTLS*/ PING*/ COAP*/ NITZ* Firmware Ugrade UART/ DFOTA* Coutput Power (Max.) 23 dBm ± 2 dB Supply Voltage Range 22-4.35 V, typ. 3.3 V Power Saving Mode*: 1.5 µA Sleep Mode@QSCLK=2: Cat MI: Cat MI: Cat MI: 1.38 mA@23 dbm Cat MI: 1.38 mA@23 dbm Cat MI: 1.5 µA Power Consumption (Typical) Idle Mode: 1.6 µA @ CFUN=0, QSCLK=2 1.28 s 1.2 µA @ e+-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s 1.2 µA @ e+-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s 1.2 µA @ e+-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s 1.2 µA @ e+-DR	DFOTA*	•		
Software Features Sof	QuecOpen®	-		
3GPP 3GPP E-UTRA Release 14 3GPP TS 27.007 3GPP TS 27.007 3GPP TS 27.005 Queetel Enhanced AT Commands 4T Commands	iSIM*	•		
3GPP 3GPP E-UTRA Release 14 3GPP TS 27.007 3GPP TS 27.007 3GPP TS 27.005 Queetel Enhanced AT Commands 4T Commands		•		
3GPP 3GPP TS 27.007 3GPP TS 27.005 4GP TS 27.005				
AT Commands		2CDD 5 HTDA D.L.		
AT Commands 3GPP TS 27.005 Quectel Enhanced AT Commands Quectel Enhanced AT Commands Quectel Enhanced AT Commands Quectel Enhanced AT Commands Crept PPP*/ UDP/ SSL*/ MQTT/ FTP(S)*/ HTTP(S)*/ LWM2M*/ IPv4/ IPv6*/ TLS*/ PING*/ CoAP*/ NITZ* Coap (PPP*/ UDP/ SSL*/ MQTT/ FTP(S)*/ HTTP(S)*/ HTTP(S)*/ LWM2M*/ IPv4/ IPv6*/ TLS*/ PING*/ CoAP*/ NITZ* Coap (PPP*/ UDP/ SSL*/ MQTT/ FTP(S)*/ HTTP(S)*/ HTTP(S)*/ LWM2M*/ IPv4/ IPv6*/ TLS*/ PING*/ COAP*/ NITZ* Coap (PPP*/ UDP/ SSL*/ MQTT/ FTP(S)*/ HTTP(S)*/ HTTP(S)*/ HTTP(S)*/ LWM2M*/ IPv4/ IPv6*/ TLS*/ PING*/ COAP*/ NITZ* Coap (PPP*/ UDP/ SSL*/ PING*/ COAP*/ NITZ* Active Mode (GNSS disabled Cas Mil: 138 ma @ 23 dbm Cas Mil: 138 ma	3GPP			
Protocols TCP/ PPP* / UDP/ SSL* / MQTT/ FTP(S)* / HTTP(S)/ LWM2M* / IPv4/ IPv6* / TLS* / DTLS* / PING* / CoAP* / NITZ*	AT Commands			
Protocols TCP/PPP*/UDP/SSL*/MQTT/FTP(S)*/HTTP(S)*/LWUZM*/IPv4/IPv6*/TLS*/DTLS*/PING*/CoAP*/NITZ* Lettical Features Firmware Upgrade UART/DFOTA* Lettical Features Output Power (Max.) 23 dBm ±2 dB Lettical Features Supply Voltage Range VBAT_BB/VBAT_RF: 2.2-4.35 V, typ. 3.3 V Lettical Features Power Saving Mode*: 1.5 μA Sleep Mode @ QSCLK-2: Cat M1: 0.5 mA @ DRX = 1.28 S 16 μA @ C+UN=0, QSCLK=3 5.6 μA @ CFUN=0, QSCLK=2 5.6 μA @ CFUN=0, QSCLK=2 5.6 μA @ CFUN=0, QSCLK=2 1.6 μ				
Firmware Upgrade UART/ DFOTA* UART/ DFOTA*	Protocols		M2M*/IPv4/IPv6*/TIS*/DTIS*/PING*/CoΔP*/NIT7*	
Electrical Features Output Power (Max.) 23 dBm ±2 dB			, vaj ii vo j 123 j bilb j i iivo j coni j Niiz	
Output Power (Max.) 23 dBm ±2 dB Supply Voltage Range VBAT_BB/ VBAT_RF: 2.2-4.35 V, typ. 3.3 V Power Saving Mode*: 1.5 μA Sleep Mode @ QSCLK-2: Cat M1: Cat M1: Cat M1: Cat M1: Cat M1: 1.6 μA @ CFUN=0, QSCLK=3 5.6 μA @ CFUN=0, QSCLK=2 Active Mode (GNSS disabled Cat M1: 138 mA @ 23 dbm Cat M1: 128 s 16 μA @ e-I-DRX = 1.28 s 12 μA @ e-I-DRX = 40.96 s; PTW = 1.28 s; DRX = 1.28 s 10.4 mA @ Cat NB, DRX = 1.28 s 10.4 mA @ Cat M1, DRX = 1.28 s 10.3 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s 50 μA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s 50 μA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s		UANI/ DEUIA.		
VBAT_BB/ VBAT_RF: 2.2-4.35 V, typ. 3.3 V	Electrical Features			
2.2-4.35 V, typ. 3.3 V	Output Power (Max.)	23 dBm ±2 dB		
Power Saving Mode*: 1.5 μA Rock Bottom: 1.6 μA @ CFUN=0, QSCLK=2 1.28 s 1.28 s 1.3 μA @ CFUN=0, QSCLK=3 1.3 μA @ CFU	Supply Voltage Range			
Rock Bottom: Cat M1: 138 mA @ 23 dbm Cat M1: 172 mA @ 23 dbm Ca	Supply voltage halige			Anti-Banda (except to 11 th
Rock Bottom: Cat M1: Cat M1: Cat M1: Cat M1: 138 IM & @ 23 dbm		Power Saving Mode*: 1.5 μA	Sleep Mode @ QSCLK=2:	
1.6 μA @ CFUN=0, QSCLK=3 5.6 μA @ CFUN=0, QSCLK=2 16 μA @ e-I-DRX = 40.96 s; PTW = 1.28 s; DRX = 1.28 s 12 μA @ e-I-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s 12 μA @ e-I-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s 10.6 mA @ Cat NB, DRX = 1.28 s 10.4 mA @ Cat M1, DRX = 1.28 s 10.4 mA @ Cat M1, DRX = 1.28 s 10.3 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s 50 μA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s 50 μA @ e-I-DRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s		Rock Bottom:	Cat M1:	
Power Consumption (Typical) Idle Mode:		1.6 μA @ CFUN=0, QSCLK=3		<u> </u>
Idle Mode: 10.6 mA @ Cat NB, DRX = 1.28 s		5.6 μA @ CFUN=0, QSCLK=2		
10.6 mA @ Cat NB, DRX = 1.28 s 10.4 mA @ Cat M1, DRX = 1.28 s 10.3 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s 10.3 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s	Power Consumption (Typical)	Idle Mode:		
10.4 mA @ Cat M1, DRX = 1.28 s 10.3 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s 27.05 μA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s 50 μA @ e-I-DRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s				
10.5 IIIA @ e-I-DRX = 81.92 S, PTW = 2.56 S; DRX = 1.26 S 50 μA @ e-I-DRX = 40.96 S; PTW = 2.56 S; DRX = 1.28 S		10.4 mA @ Cat M1, DRX = 1.28 s		
		10.3 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s		
	Note:			

Note: *: Under development/ in progress.

•: Supported.

-: Not supported.

