Quectel BG95-S5

3GPP NTN Satellite Communication Module

23.6 mm
19.9 mm
2.2 mm
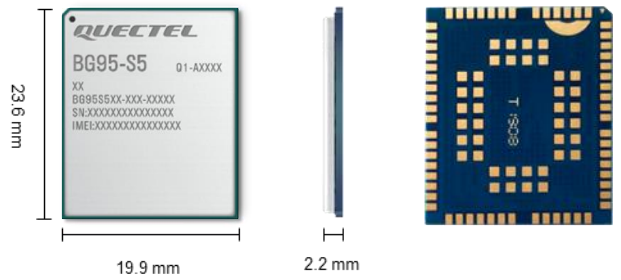
Quectel BG95-S5 is a 3GPP NTN (Non-Terrestrial Network) satellite communication module which supports S-band (B256/ B23) and L-Band (B255) based on 3GPP Rel-17, and features multi-mode supporting LTE Cat M1/ Cat NB2/ EGPRS and integrated GNSS.

With a cost-effective SMT form factor of 23.6 mm × 19.9 mm × 2.2 mm and high integration level, BG95-S5 enables integrators and developers to easily design their applications and take advantage from the module's low power consumption and mechanical intensity. Its advanced LGA package allows fully automated manufacturing for high-volume applications. A rich set of Internet protocols, industry-standard interfaces and abundant functions extend the applicability of the module to a wide range of M2M applications such as tracker, smart metering, wearable devices, etc.

Key Features

- ✓ NTN satellite communication module
- ✓ LTE Cat M1/ Cat NB2/ EGPRS module with ultra-low power consumption
- ✓ Integrated RAM/ flash in the baseband chipset
- ✓ Compact SMT form factor ideal for size-constrained applications with tight space
- ✓ Abundant embedded Internet service protocols
- ✓ Robust mounting and interfaces

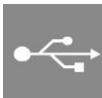|		
Compact Size	B23/ 256/ 255	Quectel Enhanced AT Commands
LGA Package	Ultra-low Power Consumption	Integrated NAND Flash/ DRAM in Chipset
Embedded Internet Service Protocols	DFOTA	USB 2.0 Interface

Satellite Communication	BG95-S5
Region/ Operator	Global
General Features	
Package	LGA
Dimensions (mm)	23.6 × 19.9 × 2.2
Temperature Range	
Operating Temperature	-35 °C to +75 °C
Extended Temperature	-40 °C to +85 °C
Frequency Bands	
IoT-NTN	**L- Band (B255):** UL: 1626.5–1660.5 MHz; DL: 1525–1559 MHz **S-Band (B256):** UL: 1980–2010 MHz; DL: 2170–2200 MHz **S-Band (B23):** UL: 2000–2020 MHz; DL: 2180–2200 MHz
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/ 18/ 19/ 20/ 25/ 28/ 66/ 71/ 85
EGPRS	GSM 850/ EGSM 900/ DCS 1800/ PCS 1900
GNSS	GPS/ GLONASS/ BeiDou/ Galileo/ QZSS
Certification	
Satellite Carrier	Skylo*, Verizon* and AT&T*
Regulatory	**Global:** GCF* **Europe:** CE **North America:** FCC、 PTCRB* **Canada:** IC **Australia, New Zealand:** RCM
Data Transmission	
LTE-M Data Rate	**Cat M1:** Max. 588 kbps (DL); Max. 1119 kbps (UL)
NB-IoT Data Rate	**Cat NB2:** Max. 127 kbps (DL); Max. 158.5 kbps (UL) **Cat NB1**: Max. 32 kbps (DL); Max. 70 kbps (UL)
EDGE Data Rate	Max. 296 kbps (DL); Max. 236.8 kbps (UL)
GPRS Data Rate	Max. 107 kbps (DL); Max. 85.6 kbps (UL)

Note:

*: Under development/ planning.

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Satellite Communication	BG95-S5
Interfaces	
(U)SIM	× 1
UART	× 3
USB	× 1
PCM *	× 1
I2C *	× 1
Antenna	× 2
GPIO	x 9
GRFC	x 2
SMS	
SMS [1]	Point-to-point MO/MT SMS Cell Broadcast Text and PDU Mode
Enhanced Features	
DFOTA [2]	Supported
Software Features	
Protocols	PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ NITZ/ NTP/PING/ MQTT/ LwM2M/ CoAP/ IPv6
USB Serial Driver	Windows 8.1/ 10/ 11 Linux 2.6–6.7 Android 4.x–13.x
GNSS/RIL Driver	Android 4.x–13.x
Electrical Characteristics	
Supply Voltage Range	3.3–4.3 V, typical 3.8 V
GPIO Voltage	1.8 V
Maximum Output Power	Power Class 3 23 dBm
Power Consumption @PSM	4.55 µA
Power Consumption @ LTE Cat M (mA)	**Sleep Mode:** 1.58 @ DRX = 1.28 s; 0.82 @ e-I-DRX = 81.92 s **Idle Mode:** 13.78 @ DRX = 1.28 s; 13.28 @ e-I-DRX = 81.92 s **Active mode:** 216 @ 23 dBm, GNSS off
Power Consumption @ LTE Cat NB (mA)	**Sleep Mode:** 1.56 @ DRX = 1.28 s; 0.83 @ e-I-DRX = 81.92 s **Idle Mode:** 13.73 @ DRX = 1.28 s; 13.35 @ e-I-DRX = 81.92 s **Active mode:** 189 @ 23 dBm, GNSS off
Power Consumption @ IoT-NTN (mA)	**Sleep Mode:** 2.19 @ DRX = 1.28 s; 0.9 @ e-I-DRX = 81.92 s **Idle Mode:** 14.46 @ DRX = 1.28 s; 13.34 @ e-I-DRX = 81.92 s **Active mode:** 54 @ 23 dBm, GNSS off

Note:

*: Under development/ planning.

[1]: BG95-S5 only supports SMS via TN, but not NTN.

[2]: BG95-S5 only supports DFOTA via TN, but not NTN.

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