Quectel BG95-M9

LTE Cat M1/Cat NB2 Module For 450 MHz & 410 MHz Spectrum

QUECTEL
BG95-XX   Q1-AXXXX
XX
BG95XXXX-XXX-XXXX
SN:XXXXXXXXXXXXXX
IMEI:XXXXXXXXXXXXXXX

23.6 mm

19.9 mm

2.2 mm
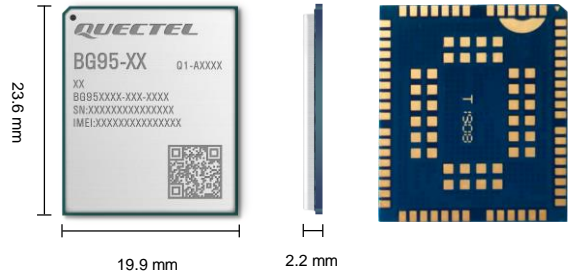
The BG95-M9 LTE Cat M1/Cat NB2 module is specially designed for LTE networks deployed over the 450 MHz (B31/B72/B73) and 410 MHz (B87/B88) spectrum. The 450 MHz and 410 MHz bands support Power Class levels at Power Class 2 (26 dBm) while other LTE-FDD bands support Power Class 3 (23 dBm). The module is 3GPP Rel-14 compliant and offers maximum data rates of 588 kbps downlink and 1119 kbps uplink under LTE Cat M1. It features ultra-low power consumption by leveraging the integrated RAM/flash as well as the ARM Cortex A7 processor supporting ThreadX, achieving up to 70 % reduction in PSM leakage and 85 % reduction in eDRX current consumption compared to its predecessor.

BG95-M9 boasts a comprehensive set of hardware-based security features and enables trusted applications to run directly on the Cortex A7 TrustZone engine. Additionally, it provides pin-to-pin compatibility with Quectel LTE Cat 1/Cat 4 modules EG91/EG95, LTE Cat M1/Cat NB1/EGPRS module BG96, UMTS/HSPA modules UG95/UG96 and GSM/GPRS module M95.

With a cost-effective SMT form factor of 23.6 mm × 19.9 mm × 2.2 mm and high integration level, BG95-M9 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 wireless POS, smart metering, tracking, wearable devices, etc.

Key Features

- ✔ LTE Cat M1/Cat NB2 module with ultra-low power consumption
- ✔ Easy migration from Quectel GSM/GPRS, UMTS/HSPA and LTE modules
- ✔ Support **450 MHz** LTE-FDD bands B31, B72 and B73 at **Power Class 2**
- ✔ Support **410 MHz** LTE-FDD bands B87 and B88 at **Power Class 2**
- ✔ Support **Power Class 3** for other LTE-FDD bands
- ✔ Integrated RAM and flash in the baseband chipset
- ✔ Comprehensive set of hardware-based security features
- ✔ Fast time-to-market: reference designs, evaluation tools and timely technical support minimize design-in time and development efforts
- ✔ Compact SMT form factor ideal for size-constrained applications with tight space
- ✔ Robust mounting and interfaces

NB-IoT
LTE-M

LTE Cat M1 & Cat NB2

MHz Alliance
450
410

450 MHz and 410 MHz Bands Supported

LGA

LGA Package

Embedded Abundant Protocols

DFOTA

DFOTA

USB 2.0 Interface

Ultra-low Power Consumption

AT

Quectel Enhanced AT Commands

Integrated RAM/ Flash in Chipset

LPWA Module	BG95-M9
Region/Operator	Global
Dimensions	23.6 mm × 19.9 mm × 2.2 mm
Temperature Range	
Operating Temperature	-35 °C to +75 °C
Extended Temperature	-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/B31*[1]/B66/B72*[1]/B73*[1]/ B85/B86*/B87*[1]/B88*[1] Cat NB2: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B28/B31*[1]/B66/B72*[1]/B73*[1]/ B85/B86*/B87*[1]/B88*[1]
GNSS	GPS/GLONASS/BeiDou/Galileo/QZSS
Certifications	
Regulatory	CE*, Anatel*
Carrier	TBD
Data Rate	
LTE-M	Cat M1: Max. 588 kbps (DL)/ Max. 1119 kbps (UL)
NB-IoT	Cat NB2: Max. 127 kbps (DL)/Max. 158.5 kbps (UL) Cat NB1: Max. 32 kbps (DL)/Max. 70 kbps (UL)
Interfaces	
(U)SIM	× 1 (1.8 V only)
UART	× 3
USB 2.0	× 1
PCM*	× 1 (For VoLTE Only)
I2C*	× 1 (For VoLTE Only)
GPIO	× 9
Antenna	× 2 (For LTE & GNSS Antennas)
Voice*	
Voice *	VoLTE for Cat M1
SMS	
SMS	Point-to-point MO/MT; SMS Cell Broadcast; Text and PDU Mode
Enhanced Features	
Firmware Upgrade	Via USB interface
DFOTA	Delta Firmware Upgrade Over-the-Air
Processor	ARM A7 Processor
QuecOpen®	Simplifies the Development of Embedded Applications
QuecLocator®	Supports Cell ID Positioning
SoftSIM	Supported
Software Features	
Protocols	PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/NITZ/PING/MQTT/LwM2M/CoAP/IPv6
Drivers	USB Serial Driver: Windows 7/8/8.1/10; Linux 2.6–5.14; Android 4.x–11.x GNSS/RIL Driver: Android 4.x–11.x
Electrical Features	
Supply Voltage Range	3.2–4.2 V, typ. 3.8 V
Max. Output Power	26 dBm @ B31/B72/B73/B87/B88 23 dBm @ other LTE Bands
Power Consumption @ PSM	TBD

Power Consumption @ LTE Cat M1	**Sleep Mode**	TBD
	Idle Mode	TBD
	Active Mode	TBD

Power Consumption @ LTE Cat NB1	**Sleep Mode**	TBD
	Idle Mode	TBD
	Active Mode	TBD

NOTE:

1. *: under development/in-progress.
2. [1]: LTE-FDD B31, B72, B73, B87 and B88 support Power Class 2 (26 dBm).

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