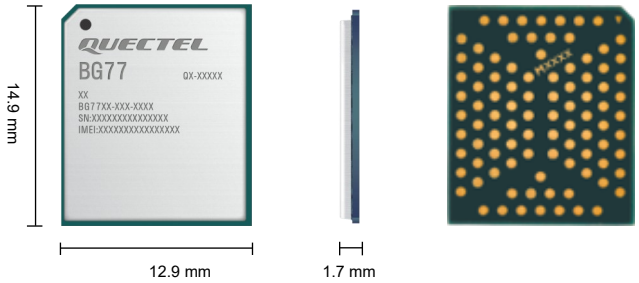
Quectel BG77

Ultra-Compact
LTE Cat M1/Cat NB2 Module



BG77 is an ultra-compact LPWA module supporting LTE Cat M1, LTE Cat NB2 and integrated GNSS. It is fully compliant with 3GPP Rel-14 specification and provides maximum data rates of 588 kbps downlink and 1119 kbps uplink. 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.

BG77 boasts a comprehensive set of hardware-based security features and enables trusted applications to run directly on the Cortex A7 TrustZone engine. With an ultra-compact SMT form factor of 14.9 mm × 12.9 mm × 1.7 mm and high integration level, it 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 functionalities 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

- Extremely compact LTE Cat M1/Cat NB2 module with ultra-low power consumption
- Integrated RAM and flash in baseband chipset
- Comprehensive set of hardware-based security features
- Super slim profile in LGA package
- Support VoLTE (Cat M1 only), QuecOpen®, DFOTA, etc.
- Fast time-to-market: reference designs, evaluation tools and timely technical support minimize design-in time and development efforts
- Robust mounting and interfaces

LTE Cat M1 & Cat NB2

LGA Package


Super Compact Size


Embedded Abundant Protocols

DFOTA


USB 2.0 Interface


Ultra-low Power Consumption

Quectel Enhanced AT Commands


Integrated RAM/ Flash in Chipset

Version: 1.8 | Status: Released

Quectel BG77

Ultra-Compact LTE Cat M1/Cat NB2 Module

Variant for the Global

BG77

Cat M1:

LTE-FDD: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 26/ 27/ 28/ 66/ 85*

Cat NB2:

LTE-FDD: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 28/ 66/ 71/ 85*

Data

Cat M1:

Max. 588 kbps (DL)/ 1119 kbps (UL)

Cat NB2:

Max. 127 kbps (DL)/ 158.5 kbps (UL)

Cat NB1:

Max. 32 kbps (DL)/ 70 kbps (DL)

Voice

VoLTE (For Cat M1 Only)

SMS

Point-to-point MO and MT

SMS Cell Broadcast

Text and PDU Mode

Interfaces

USB 2.0 × 1

UART × 3

PCM × 1 (For VoLTE Only)

I2C × 1 (For VoLTE Only)

ADC × 2

(U)SIM × 1

GPIO × 7

GRFC × 2

NET_STATUS × 1 (For Network Status Indication)

STATUS × 1 (For Power ON/OFF Indication)

Antenna × 2 (For LTE & GNSS Antennas)

Enhanced Features

GNSS:

GPS/GLONASS/BeiDou/Galileo/QZSS

Firmware Upgrade:

via USB interface

DFOTA:

Delta Firmware Upgrade Over-the-Air

Processor:

ARM A7 Processor

QuecOpen®:

Simplify the Development of Embedded Applications

QuecLocator®:

Support Cell ID Positioning

Electrical Characteristics

Output Power:

Max. Power: 21 dBm

Consumption @ LTE Cat M1 (Typical):

Power Saving Mode: 3.44 μA

Sleep Mode: 1.61 mA @ DRX = 1.28 s

0.67 mA @ e-I-DRX = 81.92 s

Idle Mode: 19.7 mA @ DRX = 1.28 s

19.3 mA @ e-I-DRX = 81.92 s

Active Mode: 228 mA @ 21dBm, GNSS off

Consumption @ LTE Cat NB1 (Typical):

Power Saving Mode: 3.44 μA

Sleep State: 1.55 mA @ DRX = 1.28 s

0.66 mA @ e-I-DRX = 81.92 s

Idle State: 15.8 mA @ DRX = 1.28 s

15.4 mA @ e-I-DRX = 81.92 s

Active Mode: 165 mA @ 21dBm, GNSS off

Software Features

USB Serial Driver:

Windows 7/8/8.1/10/11,

Linux 2.6–5.15,

Android 4.x–12.x

GNSS/RIL Driver:

Android 4.x–12.x

Protocols:

PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/NITZ/PING/MQTT/LwM2M/CoAP/IPv6

General Features

LGA Package

3GPP E-UTRA Release 14

Supply Voltage①: 2.6–4.8 V, Typ. 3.3 V

Operating Temperature Range: -35 °C to +75 °C

Extended Temperature Range: -40 °C to +85 °C

Dimensions: 14.9 mm × 12.9 mm × 1.7 mm

3GPP TS27.007, 3GPP TS 27.005 and Quectel Enhanced AT Commands

Certifications

Carrier:

Vodafone/Deutsche Telekom (Europe)

Verizon/AT&T/T-Mobile/Sprint/U.S. Cellular/ (America)

Regulatory:

GCF (Global)

CE (Europe)

PTCRB (North America)

FCC (America)

UKCA (The UK))

IC (Canada)

NCC (Taiwan, China)

JATE/TELEC (Japan)

RCM (Australia/New Zealand)

Other:

RoHS

* means under development/on-going/planning.

① please refer to the hardware design manual for more specific requirements on the minimum power supply voltage.

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