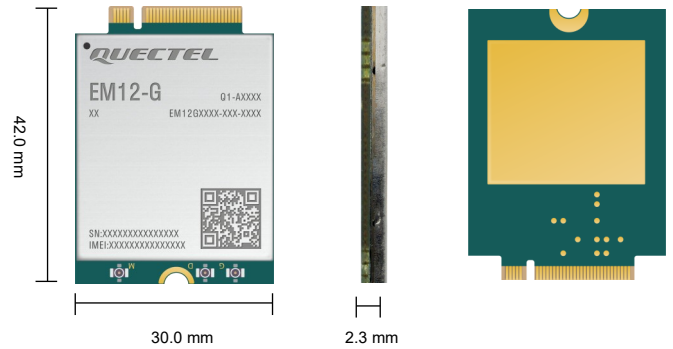




Quectel EM12-G

IoT/M2M-optimized LTE-A Cat 12 M.2 Module



Quectel EM12-G is an LTE Advanced category 12 module optimized specially for M2M and IoT applications. Adopting the 3GPP Rel-12 LTE technology, it delivers speeds of 600 Mbps downlink and 150 Mbps uplink peak data rates. Designed in the M.2 form factor, EM12-G is compatible with Quectel LTE-A Cat 6 module EM06, Quectel LTE-A Cat 12 modules EM120K-GL/EM120R-GL, LTE-A Cat 16 module EM160R-GL, and RM500Q/RM502Q modules, which will facilitate customers to migrate between different categories.

EM12-G is designed for global and nearly covers all the main stream carriers worldwide.

EM12-G, optionally, supports GPS, GLONASS, BDS, Galileo. The integrated GNSS greatly simplifies product design, and provides quicker, more accurate and more dependable positioning capability.

A rich set of Internet protocols, industry-standard interfaces and abundant functionalities (USB drivers for Windows 7, Windows 8/8.1, Windows 10, Linux, Android, etc.) extend the applicability of the module to a wide range of M2M and IoT applications such as industrial router, home gateway, STB, industrial laptop, consumer laptop, industrial PDA, rugged tablet PC, video transmission and digital signage.



Key Features

- ✓ LTE-A Cat 12 module with M.2 form factor, optimized for eMBB and IoT applications
- ✓ Worldwide LTE-A and UMTS/HSPA+ coverage, and supports DL 3 × Carrier Aggregation and 256QAM
- ✓ Supports MIMO technology which improves the data transmission rate and link reliability in wireless communication system
- ✓ Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment
- ✓ Feature refinements: supports DFOTA and VoLTE



LTE Cat 12
Max. 600 Mbps (DL)
Max. 150 Mbps (UL)



Max. 42 Mbps (DL)
Max. 5.76 Mbps (UL)



M.2 Form Factor



Embedded Abundant
Protocols



Voice over LTE
(Optional)



Multi-constellation
GNSS (Optional)



USB 2.0/3.0 High
Speed Interface



USB Drivers



Quectel Enhanced
AT Commands

Version: 1.2 | Status: Released

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Global Model

EM12-G:

LTE FDD: B1/ 2/ 3/ 4/ 5/ 7/ 8/ 9/ 12/ 13/ 14/ 17/
18/ 19/ 20/ 21/ 25/ 26/ 28/ 29 ^①/ 30/ 32 ^①/ 66

LTE TDD: B38/ 39/ 40/ 41

DL 2 × CA: Inter-band CA/Intra-band CA

DL 3 × CA: Inter-band CA/Intra-band CA

WCDMA: B1/ 2/ 3/ 4/ 5/ 8/ 9/ 19

GNSS: GPS/GLONASS/BDS/Galileo/QZSS

Data

LTE:

LTE FDD:

Max. 600 Mbps (DL) / Max. 150 Mbps (UL)

LTE TDD:

Max. 430 Mbps (DL) / Max. 90 Mbps (UL)

UMTS:

DC-HSDPA: Max. 42 Mbps (DL)

HSUPA: Max. 5.76 Mbps (UL)

WCDMA: Max. 384 kbps (DL/UL)

SMS

Text and PDU Modes

Point-to-point MO and MT

SMS Cell Broadcast

Storage: ME by default

Audio

Digital Audio Interface:

PCM interface

Speech Codec Modes:

AMR/AMR-WB

Echo Arithmetic:

Echo Cancellation/Noise Reduction

VoLTE (Optional):

CSFB (Circuit Switched FallBack)

VoLTE (Voice over LTE)

Interfaces

(U)SIM: × 2

I2C: × 1

PCM (Digital Audio): × 1

ANTCTL (Antenna Tuner Control)*: × 4

USB 2.0/USB 3.0: × 1

W_DISABLE1#: × 1

RESET#: × 1

WAKE_ON_WAN#: × 1

WWAN_LED#: × 1

Antenna: × 3 (Main, Diversity & GNSS)

Electrical Characteristics

Supply Voltage: 3.135–4.4 V, typ. 3.7 V

Current Consumption (typ.):

56 μA @ Power down

4.0 mA @ Sleep

19.4 mA @ Idle

Output Power:

Class 3 (23 dBm ±2 dB) for LTE FDD Bands

Class 3 (23 dBm ±2 dB) for LTE TDD Bands

Class 3 (24 dBm +1/-3 dB) for WCDMA Bands

Enhanced Features

MIMO (2 × 2, 4 × 2, DL)

Digital Audio & VoLTE (Voice over LTE) (Optional)

(U)SIM Card Detection

DTMF (Dual Tone Multi Frequency)

Dual SIM Single Standby

DFOTA

GNSS (Optional)

Software Features

3GPP E-UTRA Release 12

USB Serial Driver:

Windows: 7/8/8.1/10/11

Linux: 2.6-5.15

Android: 4.x-12.x

RIL Driver:

Android: 4.x-12.x

NDIS Driver:

Windows: 7/8/8.1/10/11

MBIM Driver:

Windows: 8/8.1/10/11

Linux: 3.18–5.15

Gobinet Driver:

Linux: 2.6–5.15

QMI_WWAN Driver:

Linux: 3.4–5.15

GNSS Driver:

Android: 4.x-12.x

Protocols:

QMI/MBIM/NITZ/HTTP/HTTPS/FTP/LwM2M/PING

General Features

Temperature Range:

Operating Temperature:

-30 °C to +70 °C;

-10 °C to +65 °C (Only for UL CA test)

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

Dimensions: 30.0 mm × 42.0 mm × 2.3 mm

Package: M.2

Weight: approx. 6.0 g

Approvals

Carrier:

Vodafone (Europe)

Deutsche Telekom (Germany)

British Telecom (British)

Telefónica (Spain)

Verizon/AT&T/T-Mobile/Sprint (America)

Telus/Rogers (Canada)

Telstra (Australia)

NTT DOCOMO/KDDI (Japan)

TIM (Italy)

Regulatory:

GCF (Global)

CE (Europe)

UKCA (UK)

Anatel (Brazil)

PTCRB (North America)

FCC (America)

IC (ISED) (Canada)

KC (South Korea)

NCC (Taiwan, China)

JATE/TELEC (Japan)

RCM (Australia/New Zealand)

ICASA (South Africa)

Others:

RoHS/WHQL

NOTE:

- * Under Development
- ^① LTE-FDD B29 and B32 support receiving only, and are only for secondary component carrier in 2 × CA.