

# Quectel EM20-G

## IoT/M2M-optimized LTE-A Cat 20 M.2 Module



Quectel EM20-G is LTE Advanced category 20 module optimized specially for M2M and IoT applications. Adopting the 3GPP Rel. 13 LTE technology, it delivers M2M-optimized speeds of **2Gbps** downlink and 150Mbit/s uplink peak data rates. Designed in the M.2 form factor.

EM20-G which are designed for global and nearly cover all the main stream carriers worldwide.

EM20-G supports Qualcomm® IZat™ location technology Gen8C Lite (GPS, GLONASS, BeiDou, 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 (PCIe interface/USB drivers for Windows 7, Windows 8/8.1, Windows 10, Linux, Android/eCall) 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 surveillance and digital signage, etc.



### Key Benefits

- ✓ LTE-A Cat 20 module with M.2 form factor, optimized for eMBB and IoT applications;
- ✓ Support DL 7x carrier aggregation and 256QAM
- ✓ Worldwide LTE-A and UMTS/HSPA+ coverage
- ✓ Support PCIe standard interface for PC/Laptop application
- ✓ Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment
- ✓ MIMO technology meets demands for data rate and link reliability in modem wireless communication systems



LTE Cat 20  
Max 2 Gbps (DL)  
Max 150Mbps (UL)



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



M.2 Form Factor



Embedded Abundant Protocols



Voice over LTE



Multi-constellation GNSS



USB 2.0/3.0 High Speed Interface



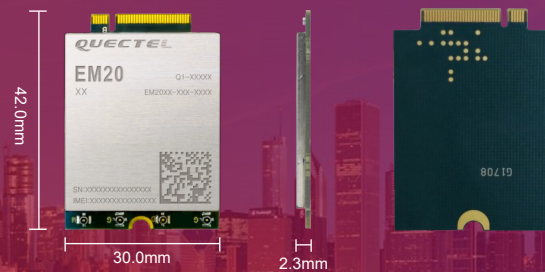
PCIe standard interface



Quectel Enhanced AT Commands

# Quectel EM20-G

## IoT/M2M-optimized LTE-A Cat 20 M.2 Module



### For Global

#### EM20-G

LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/  
B17/B18/B19/B20/B25/B26/B28/B29/B30/B66;

LTE-TDD: B38/39/B40/B41/B42/B43/B46 (LAA)/  
B48(CBRS)

#### DL 2×CA:

B1+3/5/18/19/20/26;  
B2+2/4/5/12/13/14/17/29/30/66;  
B3+3/5/7/8/19/20/28;  
B4+4/5/12/13/17/29/30;  
B5+7/30/66;  
B7+7/20/28;  
B12+30;  
B13+66;  
B29+30;  
B38+38;  
B39+39/41;  
B40+40;  
B41+41;  
B66+66/12/29/30/5;  
B14+B30;B14+B66;

#### DL 3×CA:

##### DL inter-band 3CA:

B1+3+5/7/19/20/28  
B1+7+20,  
B2+4+5,B2+4+13, B2+5+30, B2+12+30,  
B2+29+30 ,B3+7+20, B3+7+28, B3+7+8,  
B4+5+30, B4+12+30, B4+29+30 ,  
B5+66+2, B13+66+2,  
B66+12+30,B66+29+30,B66+5+30;  
B2+B14+B66;  
DL 2 intra-band plus inter-band 3CA:  
B2+2+5, B2+2+13 ,  
B3+3+7, B3+7+7, B3+3+20 ,B3+3+28,  
B4+4+5, B4+4+13,  
B7+7+28,  
B5+66+66, B13+66+66, B66+66+2,  
B39+B39+B41; B39+B41+B41;  
B14+B66+B66

##### DL 3 intra-band 3CA:

B40+40+40, B41+41+41, B66+66+66

#### DL 4CA & 5CA combination

1A-1A-3A-28A,1A-3A-40C,1A-3A-7C  
1A-3C-7A,1A-3C-7C,1A-3C-40C,1A-3A-7C-28A  
2A-13A-66D,3C-7C-28A

#### DL 6CA & 7CA combination

2A-46C-48D-66A,2A-46C-48C-66A

2A-46E-48C,2A-48E-66A

(Note: B29/B46 is only for secondary component  
carrier)

DL 256QAM

#### UL Intra-band Continuous 2×CA:

B3+3;B7+7;B38+38;B40+40;B41+41;  
UL 64QAM

#### LTE DL 4\*4 MIMO Band:

LTE-FDD: B1/B2/B3/B4/B7/B25/B30/B66

LTE-TDD: B38/B39/B40/B41

#### WCDMA Band:

B1/B2/B3/B5/B8

### Data

#### LTE:

LTE-FDD: Max 2.0Gbps (DL), Max 150Mbps (UL)

LTE-TDD: Max 430Mbps (DL), Max 30Mbps (UL)

#### UMTS:

DC-HSDPA: Max 42Mbps (DL)

HSUPA: Max 5.76Mbps (UL)

WCDMA: Max 384Kbps (DL), Max 384Kbps (UL)

### SMS

Point-to-point MO and MT

SMS Cell Broadcast

Text and PDU Mode

### Interfaces

PCIe standard Interface

USB 2.0/3.0, Supports Slave Mode

I2S x 1

(U)SIM Interface x 2: 1.8V/3.0V

ANTCTL x 4

MIPI interface

W\_DISABLE1#: Control Airplane Mode

RESET#: Reset the Module

WAKE\_ON\_WAN#: Wake up the Host

WWAN\_LED#: Indicate Network Status

Main, MIMOx2, Div & GNSS Antenna Interfaces

### Enhanced Features

MIMO: 4 x 4, 2 x 4, 2 x 2 DL

eCall: Emergency Service\*

Digital Audio and VoLTE (Voice over LTE)

(Optional)

(U)SIM Card Detection

DTMF: Dual-tone Multi-frequency\*

DFOTA: Delta Firmware over the Air

GNSS: GPS/GLONASS/BeiDou/Galileo

### Electrical Characteristics

#### Output Power:

Class 3 (23dBm±2dB) for LTE-FDD

Class 3 (23dBm±2dB) for LTE-TDD

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

#### Consumption:

TBD @Power off

TBD @Sleep, Typ.

TBD @Idle

### Software Features

MBIM Driver: Windows 10

USB Serial Driver: Windows 7/8/8.1/10, Linux  
2.6/3.x/4.1-4.14, Android 4.x/5.x/6.x/7.x

RIL Driver: Android 4.x/5.x/6.x

NDIS Driver: Windows 7/8/8.1/10

ECM Driver\*: Linux 2.6/3.x/4.1-4.14

Gobinet Driver: Linux 2.6/3.x/4.1-4.14

QMI\_WWAN Driver: Linux 3.x (3.4 or later)/4.1-  
4.14

#### Protocols:

PPP/QMI/NTP\*/TCP\*/UDP\*/FTP\*/HTTP\*/PING\*/  
HTTPS\*/SMTP\*/MMS\*/FTPS\*/SMTPS\*/SSL\*

### General Features

3GPP E-UTRA Release 13

Bandwidth: 1.4/3/5/10/15/20MHz

Supply Voltage: 3.1V~4.4V, 3.7V Typ.

#### Temperature Range:

Operating temperature Range:

-30°C ~ +70°C

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

Dimensions: 42.0mm x 30.0mm x 2.3mm

M.2 Package

Approx. TBD

3GPP TS27.007 and Quectel Enhanced AT

Commands

### Approvals

CE\*/FCC\*/CCC\*

GCF\*/PTCRB\*

Microsoft WHQL\*

Carrier approval (TBD)

\*under development