

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



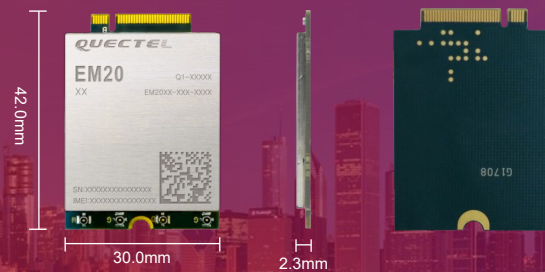
PCIe standard interface



Quectel Enhanced AT Commands

Quectel EM20-G

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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