

# Quectel EC20 R2.0

## IoT/M2M-optimized LTE Cat 4 Module



Quectel EC20 R2.0 is a series of LTE category 4 module optimized specially for M2M and IoT applications. Adopting the 3GPP Rel. 11 LTE technology, it delivers 150Mbit/s downlink and 50Mbit/s uplink data rates. Designed in the compact and unified form factor, EC20 R2.0 is compatible with Quectel UMTS/HSPA+ UC20 module and multi-mode LTE EC20/EC21 module, which allows for flexible migration among them in design and manufacturing.

EC20 R2.0 contains 2 variants: EC20-C R2.0 and EC20-CE R2.0. This makes it backward-compatible with existing EDGE and GSM/GPRS networks, ensuring that it can be connected even in remote areas devoid of 4G or 3G coverage.

EC20 R2.0 supports Qualcomm® IZat™ location technology Gen8C Lite (GPS, GLONASS, BeiDou, Galileo and QZSS). The integrated GNSS greatly simplifies product design, and provides quicker, more accurate and more dependable positioning.

A rich set of Internet protocols, industry-standard interfaces and abundant functionalities (USB drivers for Windows XP, Windows Vista, Windows 7/8/8.1/10, Linux, Android/eCall\*) extend the applicability of the module to a wide range of M2M and IoT applications such as industrial router, industrial PDA, rugged tablet PC, video surveillance, and digital signage.



### Key Benefits

- ✓ LTE category 4 module optimized for M2M and IoT applications
- ✓ Worldwide LTE, UMTS/HSPA+ and GSM/GPRS/EDGE coverage
- ✓ Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment
- ✓ Feature refinements: supports DFOTA\*, eCall\* and DTMF
- ✓ MIMO technology meets demands for data rate and link reliability in modem wireless communication systems



LTE Cat 4  
Max 150Mbps (DL)  
Max 50Mbps (UL)



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



LCC Package



Embedded Abundant  
Protocols



eCall\*



Multi-constellation  
GNSS



USB 2.0 High Speed  
Interface



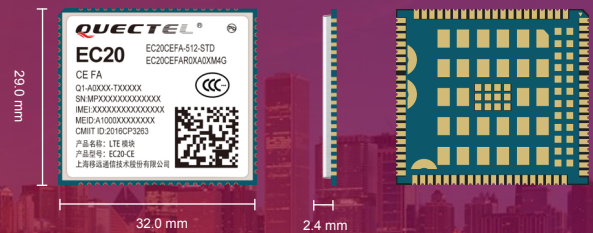
USB Drivers



Quectel Enhanced  
AT Commands

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### Variant for China

#### EC20-C R2.0:

LTE FDD: B1/B3/B8  
LTE TDD: B38/B39/B40/B41  
TD-SCDMA: B34/B39  
WCDMA: B1/B8  
GSM: 900/1800MHz

### Variant for China/India

#### EC20-CE R2.0:

LTE FDD: B1/B3/B8  
LTE TDD: B38/B39/B40/B41  
TD-SCDMA: B34/B39  
WCDMA: B1/B8  
CDMA: BC0  
GSM: 900/1800MHz

### Data

#### LTE:

LTE FDD: Max 150Mbps (DL)/Max 50Mbps (UL)  
LTE TDD: Max 130Mbps (DL)/Max 35Mbps (UL)

#### UMTS:

DC-HSDPA: Max 42Mbps (DL)  
HSUPA: Max 5.76Mbps (UL)  
WCDMA: Max 384Kbps (DL)/Max 384Kbps (UL)

#### TD-SCDMA:

Max 4.2Mbps (DL)/Max 2.2Mbps (UL)

#### CDMA2000:

EVDO: Max 3.1Mbps (DL)/Max 1.8Mbps (UL)  
1X Advanced: Max 307.2Kbps (DL/UL)

#### GSM:

EDGE: Max 296Kbps (DL)/Max 236.8Kbps (UL)  
GPRS: Max 107Kbps (DL)/Max 85.6Kbps (UL)

### Voice

#### Speech Codec Modes:

HR/FR/EFR/AMR/AMR-WB

#### Echo Arithmetic:

Echo Cancellation/Noise Reduction

#### Audio:

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

### Interfaces

USB 2.0 with High Speed up to 480Mbps  
Digital Audio through PCM (Optional)  
1.8V/3.0V (U)SIM Interface  
NETLIGHT × 2 (NET\_STATUS and NET\_MODE)  
UART × 1

RESET (Active Low)

PWRKEY (Active low)

Solder Pads for Primary, Rx-diversity and GNSS

Antennas

ADC × 2

### Enhanced Features

BT4.0\*/Wi-Fi (Optional)

eCall\*

DTMF

(U)SIM Card Detection

#### DFOTA\*:

Delta Firmware Upgrade over the Air

#### Antenna:

DL MIMO, support Rx-diversity

#### GNSS:

GPS/GLONASS/BeiDou/Galileo/QZSS (Optional)

### Electrical Characteristics

#### Output Power:

Class 3 (23dBm±2dB) for LTE FDD  
Class 3 (23dBm±2dB) for LTE TDD  
Class 2 (24dBm+1/-3dB) for TD-SCDMA  
Class 3 (24dBm+1/-3dB) for WCDMA  
Class 3 (24dBm±1dB) for CDMA BC0  
Class E2 (27dBm±3dB) for EDGE 900MHz  
Class E2 (26dBm±3dB) for EDGE 1800MHz  
Class 4 (33dBm±2dB) for GSM 900MHz  
Class 1 (30dBm±2dB) for GSM 1800MHz

#### Consumption:

20uA @Power off  
3mA @Sleep, Typ.  
22mA @Idle

#### Sensitivity:

FDD B1: -97dBm (10M)  
FDD B3: -95dBm (10M)  
FDD B8: -94dBm (10M)  
TDD B38: -97dBm (10M)  
TDD B39: -97dBm (10M)  
TDD B40: -97dBm (10M)  
TDD B41: -96dBm (10M)  
WCDMA B1: -111dBm  
WCDMA B8: -110dBm  
TD-SCDMA B34: -109dBm  
TD-SCDMA B39: -109dBm  
CDMA BC0: -109dBm  
GSM 900: -109dBm  
GSM 1800: -109dBm

### Software Features

#### USB Serial Driver:

Windows XP, Windows Vista,  
Windows 7/8/8.1/10, Windows CE 5.0/6.0/7.0\*,  
Linux 2.6/3.x/4.1, Android 4.x/5.x/6.x/7.x

#### RIL Driver:

Android 4.x/5.x/6.x/7.x

#### NDIS Driver:

Windows 7/8/8.1/10

#### ECM Driver\*:

Linux 2.6/3.x/4.1

#### Gobinet Driver:

Linux 2.6/3.x/4.1

#### Linux qmi wwan Driver:

3.x (3.4 and later)/4.1

#### Protocols:

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

### General Features

3GPP E-UTRA Release 11  
Bandwidth: 1.4/3/5/10/15/20MHz  
Extended Temperature: -40°C ~ +85°C  
Dimensions: 29.0mm x 32.0mm x 2.4mm  
LCC Package  
Approx. 4.9g  
Supply Voltage: 3.3V~4.3V, 3.8V Typ.  
3GPP TS27.007 and Enhanced AT Commands

### Approvals

RoHS Compliant  
CCC/SRRC/NAL (China)

\* Under development