

Quectel EC20 R2.1

IoT/M2M-optimized LTE Cat 4 Module



Quectel EC20 R2.1 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 R2.1 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 R2.1 is an upgraded version of EC20 R2.0. Adopting laser engraving process, EC20 R2.1 features a more fashionable appearance, strong metallic texture, better thermal dissipation capability and durable label information, which makes it ideally suited for large-scale production.

EC20 R2.1 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



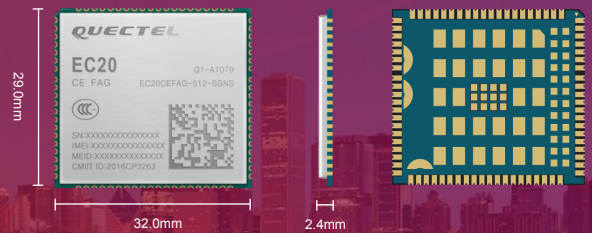
USB Drivers



Quectel Enhanced
AT Commands

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Variant for China/India

EC20-CE R2.1:

LTE FDD: B1/B3/B5/B8
LTE TDD: B38/B39/B40/B41
WCDMA: B1/B8
TD-SCDMA: B34/B39
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

VoLTE:

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 × 2 (Main Port and Debug Port)
RESET (Active Low)
PWRKEY (Active low)
Solder Pads for Primary, Rx-diversity and GNSS
Antennas
ADC × 2
SDIO × 2 (For Wi-Fi and SD Card)

Enhanced Features

SDIO for Wi-Fi Function (Optional)
UART for BT4.0* Function (Optional)
eCall*
DTMF
DFOTA: Delta Firmware Upgrade over the Air
(U)SIM Card Detection
Antenna: DL MIMO, support Rx-diversity
GNSS: GPS/GLONASS/BeiDou/Galileo/QZSS

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+2/-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:

11uA @Power off
1.8mA @LTE Sleep (PF=128)
1.5mA @LTE Sleep (PF=256)
20mA @Idle

Sensitivity:

FDD B1: -101.6dBm (10M)
FDD B3: -101.9dBm (10M)
FDD B5: -102dBm (10M)
FDD B8: -102.1dBm (10M)
TDD B38: -101.3dBm (10M)
TDD B39: -101.2dBm (10M)
TDD B40: -101.4dBm (10M)
TDD B41: -101.4dBm (10M)
WCDMA B1: -112dBm
WCDMA B8: -112dBm
TD-SCDMA B34: -110dBm
TD-SCDMA B39: -110dBm
CDMA BC0: -108dBm
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

NIDS 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/NITZ/
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. 5.3g
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