

Quectel EC20 R2.1 Mini PCIe

IoT/M2M-optimized LTE Cat 4 Module



Quectel EC20 R2.1 Mini PCIe is an LTE category 4 module adopting standard PCI Express® MiniCard form factor (Mini PCIe). Adopting the 3GPP Rel.11 LTE technology, it is optimized specially for M2M and IoT applications, and delivers 150Mbps downlink and 50Mbps uplink data rates.

Designed in the compact and unified form factor, EC20 R2.1 Mini PCIe is compatible with Quectel UMTS/HSPA+ UC20 Mini PCIe module, multi-mode LTE Cat 3 EC20 Mini PCIe and Cat 4 EC20 R2.0 Mini PCIe/EG25-G Mini PCIe module, which allows for flexible migration among them in design and manufacturing. Meanwhile, it is 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 R2.1 Mini PCIe supports multiple-input multiple-output (MIMO) technology. The use of multiple antennas at the receiver end at the same time and on the same frequency band greatly minimizes errors and optimizes the data speed. The module also combines high-speed wireless connectivity with embedded multi-constellation high-sensitivity GNSS (GPS, GLONASS, BeiDou, Galileo, QZSS) receiver for positioning.

A rich set of Internet protocols, industry-standard interfaces and abundant functionalities (USB drivers for Windows 7/8/8.1/10, Linux, Android/eCall*) extend the applicability of the module to a wide range of M2M applications such as CPE, 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)



Mini PCIe
Package



Embedded Abundant
Protocols



eCall*



Multi-constellation
GNSS



USB 2.0 High Speed
Interface



USB Drivers



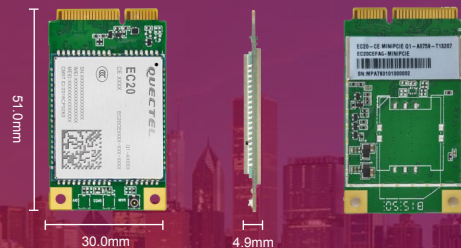
Quectel Enhanced
AT Commands

Quectel EC20 R2.1

Mini PCIe

IoT/M2M-optimized LTE

Cat 4 Module



Variant for China/India

EC20-CE R2.1 Mini PCIe

LTE FDD: B1/B3/B5/B8

LTE TDD: B34/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 30Mbps (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 Card Interface

DTR for Sleep Mode Control

UART x 1

W_DISABLE# for Airplane Mode Control

LED_WWAN# for Network Status Indication

PERST# for Module Resetting

RI for Host Wake-up

WAKE# for Host Wake-up (Need a Pull-up

Resistor)

Primary/Rx-diversity/GNSS Antenna Interfaces

Enhanced Features

eCall*

DTMF

DFOTA: Delta firmware upgrade over the air

(U)SIM Card Detection

DL MIMO, support Rx-diversity Antenna

GNSS: GPS/GLONASS/BeiDou/Galileo/QZSS

Electrical Characteristics

Output Power:

Class 3 (23dBm $\pm$ 2dB) for LTE FDD

Class 3 (23dBm $\pm$ 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 $\pm$ 3dB) for EDGE 900MHz

Class E2 (26dBm $\pm$ 3dB) for EDGE 1800MHz

Class 4 (33dBm $\pm$ 2dB) for EGSM900

Class 1 (30dBm $\pm$ 2dB) for DCS1800

Consumption (Typical) :

4.0mA @LTE Sleep (PF=128)

3.7mA @LTE Sleep (PF=256)

30mA @Idle

Sensitivity:

FDD B1: -101.6dBm (10M)

FDD B3: -101.9dBm (10M)

FDD B5: -102dBm (10M)

FDD B8: -102.1dBm (10M)

TDD B34: -101dBm (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

EGSM900: -109dBm

DCS1800: -109dBm

Software Features

USB Serial Driver:

Windows 7/8/8.1/10,

Linux 2.6/3.x/4.1~4.15, Android

4.x/5.x/6.x/7.x/9.x

RIL Driver: Android 4.x/5.x/6.x/7.x/8.x/9.x

NIDS Driver: Windows 7/8/8.1/10

ECM Driver: Linux 2.6/3.x/4.1~4.15

Gobinet Driver: Linux 2.6/3.x/4.1~4.15

Linux qmi wwan Driver:

3.x (3.4 or later)/4.1~4.15

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

Temperature Range: -40°C ~ +80°C

Dimensions: 51.0mm x 30.0mm x 4.9mm

Mini PCIe Package

Approx. 10.6g

Supply Voltage: 3.0V~3.6V, 3.3V Typ.

3GPP TS27.007 and Enhanced AT Commands

Approvals

Regulatory:

SRRC/NAL/CCC (China)

Others:

RoHS Compliant

* Under Development

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Quectel:

[EC20CEFASG-MINIPCI](#)