

Quectel

EC21 Mini PCIe

IoT/M2M-optimized LTE Cat.1 Module



Quectel EC21 Mini PCIe is a series of LTE category 1 module adopting standard PCI Express® MiniCard form factor (Mini PCIe). Especially optimized for M2M and IoT applications, it features cost-saving, low power LTE connectivity, and delivers M2M-optimized speeds of 10Mbit/s downlink and 5Mbit/s uplink. These make it ideal for numerous IoT applications that are not reliant on high speed connectivity but still require the longevity and reliability of LTE networks.

EC21 Mini PCIe contains 7 variants: EC21-V Mini PCIe, EC21-A Mini PCIe, EC21-AU Mini PCIe, EC21-J Mini PCIe, EC21-KL Mini PCIe, EC21-AUT Mini PCIe and EC21-E Mini PCIe. This makes it backward-compatible with existing EDGE and GSM/GPRS networks, ensuring that it can easily migrate from LTE to 2G or 3G networks.

EC21 Mini PCIe 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 applications such as smart metering, tracking and tracing, fleet management, wearable devices, smart home gateways, digital signs, and even drones.



Key Benefits

- ✓ Cost-effective, lower-power LTE connectivity optimized for broadband IoT applications
- ✓ Worldwide LTE, UMTS/HSPA+ and GSM/GPRS/EDGE coverage
- ✓ Standard PCI Express® MiniCard form factor (Mini PCIe) ideal for manufacturers to easily integrate wireless connectivity into their devices
- ✓ MIMO technology meets demands for data rate and link reliability in modem wireless communication systems
- ✓ Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment



LTE Cat.1
Max 10Mbps (DL)
Max 5Mbps (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



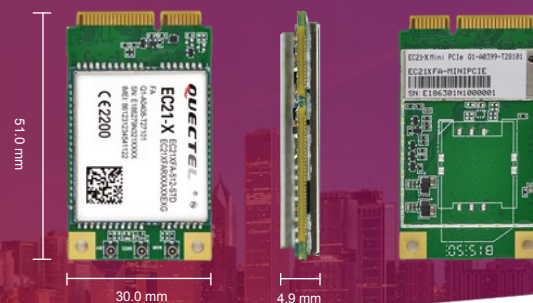
Quectel Enhanced
AT Commands

Quectel

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IoT/M2M-optimized LTE

Cat.1 Module



Variant for EMEA/Korea/Thailand

EC21-E Mini PCIe:

LTE FDD: B1/B3/B5/B7/B8/B20

WCDMA: B1/B5/B8

GSM: B3/B8

Variants for North America

EC21-A Mini PCIe:

LTE FDD: B2/B4/B12

WCDMA: B2/B4/B5

EC21-V Mini PCIe:

LTE FDD: B4/B13

Variants for Australia/Taiwan/Brazil

EC21-AU Mini PCIe:

LTE FDD: B1/B2/B3/B4/B5/B7/B8/B28

LTE TDD: B40

WCDMA: B1/B2/B5/B8

GSM: B2/B3/B5/B8

EC21-AUT Mini PCIe:

LTE FDD: B1/B3/B5/B7/B28

WCDMA: B1/B5

Variant for Japan

EC21-J Mini PCIe:

LTE FDD: B1/B3/B8/B18/B19/B26

Variant for Korea

EC21-KL Mini PCIe:

LTE FDD: B1/B3/B5/B7/B8

Data

LTE:

LTE FDD: Max 10Mbps (DL)/Max 5Mbps (UL)

LTE TDD: Max 8.96Mbps (DL)/Max 3.1Mbps (UL)

DC-HSPA+:

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

UMTS:

Max 384Kbps (DL)/Max 384Kbps (UL)

EDGE:

Max 236.8Kbps (DL)/Max 236.8Kbps (UL)

GPRS:

Max 85.6Kbps (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 Card Interface

LED_WWAN# for Network Status Indication

W_DISABLE# for Disabling RF Function

UART × 1

PERST# for Module Resetting

Enhanced Features

eCall

DFOTA*: Delta Firmware Upgrade over the Air

(U)SIM Card Detection

Rx-diversity Antenna

GNSS: GPS/GLONASS/BeiDou/Galileo/QZSS

(Optional)

Electrical Characteristics

Output Power:

Class 3 (23dBm±2dB) for LTE

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

Class E2 (27dBm±3dB) for EDGE 850/900MHz

Class E2 (26dBm±3dB) for EDGE1800/1900MHz

Class 4 (33dBm±2dB) for GSM 850/900MHz

Class 1 (30dBm±2dB) for GSM 1800/1900MHz

Consumption:

3.5mA @Sleep, Typ.

34mA @Idle

Sensitivity:

LTE B1: -101.5dBm (10M)

LTE B2: -101dBm (10M)

LTE B3: -101.5dBm (10M)

LTE B4: -101dBm (10M)

LTE B5: -101dBm (10M)

LTE B7: -99.5dBm (10M)

LTE B8: -101dBm (10M)

LTE B12: -101dBm (10M)

LTE B13: -100dBm (10M)

LTE B20: -102.5dBm (10M)

LTE B28: -102dBm (10M)

UMTS B1: -110dBm

UMTS B2: -110dBm

UMTS B4: -110dBm

UMTS B5: -110.5dBm

UMTS B8: -110.5dBm

GSM: -109dBm

DCS: -109dBm

Software Features

USB Driver 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/6.0

RIL Driver:

Android 4.x/5.x/6.0

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/

HTTPS*/SMTP*/MMS*/FTPS*/SMTPS*/SSL*

General Features

3GPP E-UTRA Release 11

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

Temperature Range: -40°C ~ +80°C

Dimensions: 51.0mm × 30.0mm × 4.9mm

Mini PCIe Package

Approx. 9.8g

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

3GPP TS27.007 and Enhanced AT Commands

Approvals

RoHS Compliant

CE/GCF/Vodafone (Europe)

FCC/PTCRB/AT&T*/Verizon* (North America)

RCM/Telstra (Australia)

JATE/TELEC/DOCOMO*/Softbank* (Japan)

NCC (Taiwan)

KC/SKT/KT*/LGU+* (Korea)

IC/Rogers (Canada)

Anatel* (Brazil)

* Under Development