

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[®] Mini Card 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



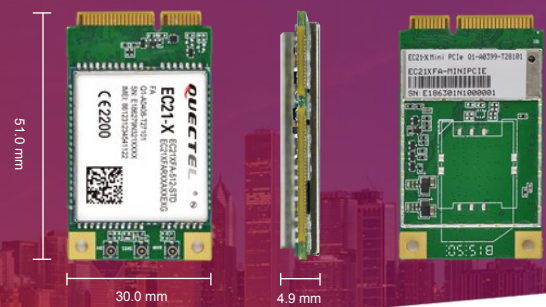
USB Drivers



Quectel Enhanced AT Commands

Quectel EC21 Mini PCIe

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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/New Zealand/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)

UMTS:

DC-HSDPA: Max 42Mbps (DL)
HSUPA: Max 5.76Mbps (UL)
WCDMA: Max 384Kbps (DL)/Max 384Kbps (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
LED_WWAN# for Network Status Indication
W_DISABLE# for Disabling RF Function
UART × 1
PERST# for Module Resetting

Enhanced Features

eCall
(U)SIM Card Detection
Antenna:
DL MIMO, Support Rx-diversity/GNSS Antennas
DFOTA*:
Delta Firmware Upgrade Over the Air
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 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
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)

①: LTE B2 of EC21-AU Mini PCIe Does Not
Support Rx-diversity

* Under Development