

Quectel

EC21 Mini PCIe

IoT/M2M-optimized LTE Cat 1 Module



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



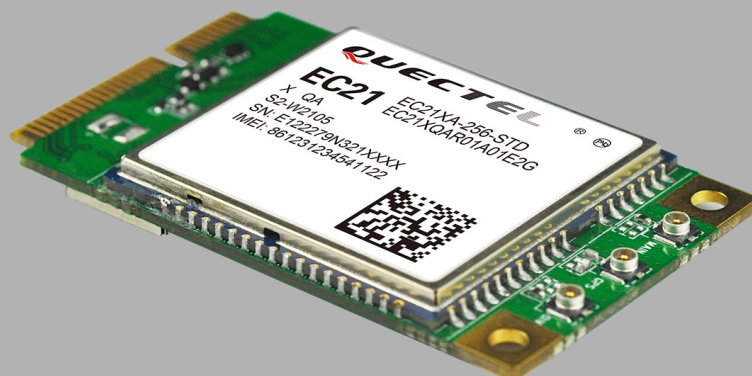
USB 2.0 High Speed
Interface



USB Drivers



Quectel Enhanced
AT Commands



Quectel EC21 Mini PCIe 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 9 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, EC21-AUTL Mini PCIe, EC21-CT 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, Windows 8/8.1, Windows 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

- Low-cost, 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

Quectel EC21 Mini PCIe

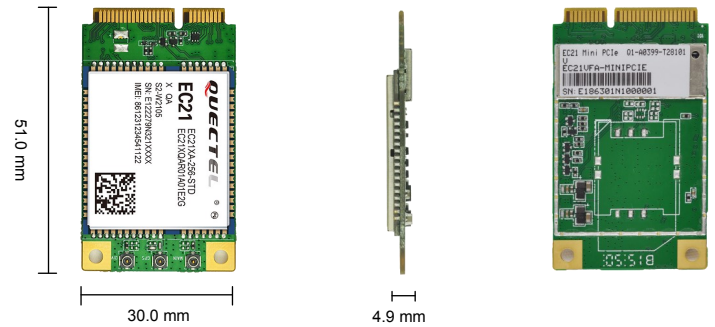
IoT/M2M-optimized LTE Cat 1 Module

General Features

EC21-V Mini PCIe	FDD LTE: B4/B13
EC21-A Mini PCIe	FDD LTE: B2/B4/B12 WCDMA: B2/B4/B5
EC21-CT Mini PCIe	FDD LTE: B1/B3/B5* TDD LTE: B41
EC21-AUT Mini PCIe	FDD LTE: B1/B3/B5/B7/B28 WCDMA: B1/B5
EC21-AUTL Mini PCIe	FDD LTE B3/B7/B28
EC21-AU Mini PCIe	FDD LTE: B1/B3/B4/B5/B7/B8/B28 TDD LTE: B40 WCDMA: B1/B2/B5/B8 GSM: B2/B3/B5/B8
EC21-J Mini PCIe	FDD LTE: B1/B3/B8/B18/B19/B26
EC21-KL Mini PCIe	FDD LTE: B1/B3/B5/B7/B8
EC21-E Mini PCIe	FDD LTE: B1/B3/B5/B7/B8/B20 WCDMA: B1/B5/B8 GSM: B3/B8
LTE Version	3GPP E-UTRA Release 11
Bandwidth	1.4/3/5/10/15/20MHz
Antenna	DL MIMO, supports Rx-diversity, GNSS
Supply Voltage Range	3.0V~ 3.6V, 3.3V Typ.
Operation Temperature	-40 °C ~ +80 °C
Dimensions	51.0mm × 30.0mm × 4.9mm
Weight	Approx. 9.8g
Control via AT commands	3GPP TS27.007 and enhanced AT commands

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



Special Features

USB Serial	Windows XP, Windows Vista, Windows 7, Windows 8/8.1, Windows 10, Linux 2.6 or later, Android 4.0/4.2/4.4/5.0/5.1/6.0
RIL	Android 4.0/4.2/4.4/5.0/5.1/6.0
Driver	NDIS Windows XP, Windows Vista, Windows 7, Windows 8/8.1, Windows 10
ECM	Linux 2.6 or later
Gobinet	Linux 3.4 or later
Linux qmi wwan	Linux 3.4 or later
DFOTA*	Delta firmware upgrade over the air
BT4.0*/Wi-Fi	Optional
GNSS	GPS/GLONASS/BeiDou/Galileo/QZSS

Specifications

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)
Data	UMTS Max 384Kbps (DL) Max 384Kbps (UL)
EDGE	Max 236.8Kbps (DL) Max 236.8Kbps
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
eCall*	Accident, Emergency Services
VoLTE*	Digital Audio and VoLTE (Voice over LTE) (Optional)
Protocols	TCP/ UDP/ PPP/ FTP/ HTTP/ NTP/ PING/ QMI/ HTTPS*/ SMTP*/ MMS*/ FTPS*/ SMTSPS*/ SSL*

Interfaces

USB 2.0 Device	High Speed, 480Mbps
PCM	×1, Digital Audio through PCM Interface (Optional)
USIM	1.8V/3V
LED_WWAN#	Network Status Indication
W_DISABLE#	Disable RF Function
UART	×1, UART
PERST#	Reset Pin

Certification

Approval	FCC/ CE*/ CCC*/ SRRC*/ NAL*/ PTCRB*/ AT&T* GCF*/ Verizon*/ RCM*/ Telstra*/ JATE&TELEC*
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* Under development

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Build a Smarter World

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