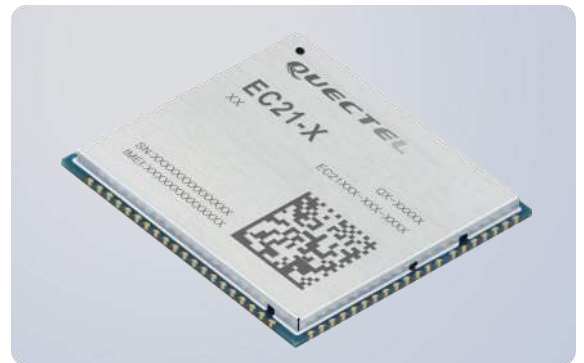


Quectel EC21

IoT/M2M-optimized LTE Cat 1 Module



Quectel EC21 is a series of LTE category 1 module optimized specially for M2M and IoT applications. It features cost-effective, low power LTE connectivity, and delivers M2M-optimized speeds of 10Mbps downlink and 5Mbps uplink. These make EC21 an ideal solution for numerous IoT applications that are not reliant on high speed connectivity but still require the longevity and reliability of LTE networks.

EC21 is compatible with Quectel UMTS/HSPA+ UC20 module and multi-mode LTE EC20/EC25 module in the compact and unified form factor. It contains 11 variants: EC21-E, EC21-EU, EC21-EC, EC21-A, EC21-V, EC21-AU, EC21-AUT, EC21-AUV, EC21-J, EC21-KL and EC20-CEL. This makes it backward-compatible with existing EDGE and GSM/GPRS networks, ensuring that it can easily migrate from LTE to 2G or 3G network.

EC21 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 serial drivers for 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 smart metering, wearable devices, environmental monitoring, asset tracking, fleet management, security and alarm systems, and so on.



Key Benefits

- ✓ Cost-effective, lower-power LTE connectivity optimized for broadband 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 1
Max 10Mbps (DL)
Max 5Mbps (UL)



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



LCC Package



Embedded Abundant Protocols



eCall*



Multi-constellation GNSS



USB 2.0 High Speed Interface



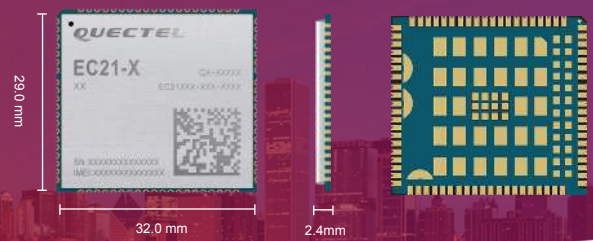
USB Drivers



Quectel Enhanced AT Commands

Quectel EC21

IoT/M2M-optimized LTE Cat 1 Module



Variants for EMEA/Korea/Thailand

EC21-E:

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

EC21-EU:

LTE FDD: B1/B3/B7/B8/B20/B28A
WCDMA: B1/B8
GSM: B3/B8

EC21-EC:

LTE FDD: B1/B3/B7/B8/B20/B28A
WCDMA: B1/B8
GSM: B3/B8

Variants for North America

EC21-A:

LTE FDD: B2/B4/B12
WCDMA: B2/B4/B5

EC21-V:

LTE FDD: B4/B13

Variants for Australia/New Zealand/Taiwan/ Brazil

EC21-AU:

LTE FDD: B1/B2^①/B3/B4/B5/B7/B8/B28
LTE TDD: B40
WCDMA: B1/B2/B5/B8
GSM: B2/B3/B5/B8

EC21-AUT:

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

EC21-AUV:

LTE FDD: B1/B3/B5/B8/B28
WCDMA: B1/B5/B8

Variant for Japan

EC21-J:

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

Variant for Korea

EC21-KL:

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

Variant for China

EC20-CEL:

LTE FDD: B1/B3/B5

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 Suppression

Audio:

Digital Audio and VoLTE (Voice over LTE)
(Optional)

Interfaces

UART × 2 : Main UART and Debug UART
USB x 1: USB 2.0 with High Speed up to 480Mbps
(U)SIM x 1: 1.8V/3.0V (U)SIM Interface
Digital Audio through PCM Interface (Optional)
NETLIGHT × 2 : NET_STATUS and NET_MODE
ADC × 2
SDIO × 2 (for Wi-Fi and SD Card)
RESET (Active Low)
PWRKEY (Active Low)
Solder Pads for Primary, Rx-diversity and GNSS
Antennas

Enhanced Features

SDIO Interface for Wi-Fi Function (Optional)
UART/PCM Interfaces for BT4.0 Function*
(Optional)
eCall*
DTMF
Audio Playback/Audio Recording
QuecFile*
(U)SIM Card Detection
DFOTA*:
Delta Firmware Upgrade Over the Air
GNSS:
GPS/GLONASS/BeiDou/Galileo/QZSS (Optional)

Electrical Characteristics

Output Power:

Class 3 (23dBm±2dB) for LTE FDD bands
Class 3 (23dBm±2dB) for LTE TDD bands
Class 3 (24dBm+1/-3dB) for WCDMA bands
Class E2 (27dBm±3dB) for GSM850 8-PSK
Class E2 (27dBm±3dB) for EGSM900 8-PSK
Class E2 (26dBm±3dB) for DCS1800 8-PSK
Class E2 (26dBm±3dB) for PCS1900 8-PSK
Class 4 (33dBm±2dB) for GSM850
Class 4 (33dBm±2dB) for EGSM900
Class 1 (30dBm±2dB) for DCS1800
Class 1 (30dBm±2dB) for PCS1900

Consumption:

20uA @Power off
3mA @Sleep, Typ.
22mA @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 B18: -101.7dBm (10M)
LTE B19: -101.4dBm (10M)
LTE B20: -102.5dBm (10M)
LTE B26: -101.5dBm (10M)
LTE B28: -102dBm (10M)
WCDMA B1: -110dBm
WCDMA B2: -110dBm
WCDMA B4: -110dBm

WCDMA B5: -110.5dBm
WCDMA B8: -110.5dBm
GSM850: -109dBm
EGSM900: -109dBm
DCS1800: -109dBm
PCS1900: -109dBm

Software Features

USB Serial Driver:

Windows 7/8/8.1/10, Windows CE 5.0/6.0/7.0*,
Linux 2.6/3.x/4.1~4.14, Android
4.x/5.x/6.x/7.x/8.x

RIL Driver:

Android 4.x/5.x/6.x/7.x/8.x

NDIS Driver:

Windows 7/8/8.1/10

ECM Driver*:

Linux 2.6/3.x/4.1~4.14

Gobinet Driver:

Linux 2.6/3.x/4.1~4.14

Linux qmi wwan Driver:

3.x (3.4 and later)/4.1~4.14

Protocols:

TCP/UDP/PPP/FTP/HTTP/NTP/PING/QMI/
CMUX*/HTTPS*/SMTP*/MMS*/FTPS*/SMTPS*/
SSL*/FILE*

General Features

Temperature Range: -40°C ~ +85°C
Dimensions: 29.0mm × 32.0mm × 2.4mm
Weight: Approx. 4.9g
LCC Package
Supply Voltage: 3.3V~4.3V, 3.8V Typ.
3GPP E-UTRA Release 11
Bandwidth: 1.4/3/5/10/15/20MHz
3GPP TS27.007, 27.005 and Enhanced AT Com-
mands

Approvals

RoHS Compliant
GCF (Global)
CE/Vodafone/Deutsche Telekom (Europe)
FCC/PTCRB/AT&T/Verizon (North America)
RCM/Telstra (Australia)
JATE/TELEC/DOCOMO (Japan)
NCC (Taiwan)
KC/SKT/KT (Korea)
IC/Rogers (Canada)
Anatel (Brazil)
FAC (Russia)
Telefonica* (Spain)
CCC/SRRC/NAL (China)

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

* Under Development