

Quectel EC21

IoT/M2M-optimized LTE Cat 1 Module



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



Key Benefits

- Low-cost, lower-power LTE connectivity optimized for broad-band 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*, QuecLocator and DTMF
- MIMO technology meets demands for data rate and link reliability in modem wireless communication systems

Quectel EC21 is a series of LTE category 1 module optimized specially 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 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.

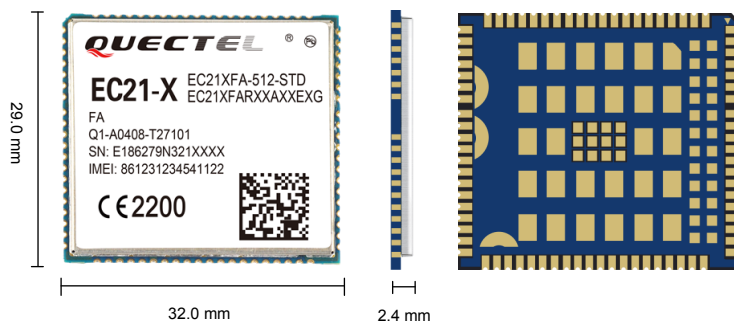
EC21 is compatible with Quectel UMTS/HSPA+ UC20 module and multi-mode LTE EC20/EC25 module in the compact and unified form factor. It contains 10 variants: EC21-E, EC21-A, EC21-V, EC21-AUT, EC21-AUTL, EC21-AUV, EC21-J, EC21-KL, EC21-AU and EC21-CT. This makes it backward-compatible with existing EDGE and GSM/GPRS networks, ensuring that it can easily migrate from LTE to 2G or 3G networks.

EC21 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 and IoT applications such as smart metering, wearable devices, environmental monitoring, asset tracking, fleet management, security and alarm systems, and so on.

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General Features

Frequency Bands	EC21-E	LTE FDD: B1/B3/B5/B7/B8/B20 WCDMA: B1/B5/B8 GSM: B3/B8
	EC21-A	LTE FDD: B2/B4/B12 WCDMA: B2/B4/B5
	EC21-V	LTE FDD: B4/B13
	EC21-AUT	LTE FDD: B1/B3/B5/B7/B28 WCDMA: B1/B5
	EC21-AUTL	LTE FDD: B3/B7/B28
	EC21-AUV	LTE FDD: B1/B3/B5/B8/B28 WCDMA: B1/B5/B8
	EC21-J	LTE FDD: B1/B3/B8/B18/B19/B26
	EC21-KL	LTE FDD: B1/B3/B5/B7/B8
	EC21-AU	LTE FDD: B1/B2/B3/B4/B5/B7/B8/B28 LTE TDD: B40 WCDMA: B1/B2/B5/B8 GSM: B2/B3/B5/B8
	EC21-CT	LTE FDD: B1/B3/B5 LTE TDD: B41
LTE Version	3GPP E-UTRA Release 11	
Bandwidth	1.4/3/5/10/15/20MHz	
Antenna	Supports Rx-diversity	
Supply Voltage Range	3.3V~4.3V, 3.8V Typ.	
Operation Temperature	-40°C ~ +85°C	
Dimensions	32.0mm × 29.0mm × 2.4mm	
Package	LCC	
Weight	Approx. 4.9g	
Control via AT Commands	3GPP TS27.007 and enhanced AT Commands	

Specifications

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
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*/ SMTPS*/ SSL*

Interfaces

USB 2.0 Device	High Speed, 480Mbps
PCM	× 1, Digital Audio through PCM Interface (Optional)
USIM	1.8V/3V
NETLIGHT	× 2, NET_STATUS and NET_MODE
UART	× 1, UART
RESET	
PWRKEY	
Antenna	Pads for Primary, Rx-diversity and GNSS
ADC	× 2

Special Features

Drivers	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
	NIDS	Windows XP, Windows Vista, Windows 7, Windows 8/8.1, Windows 10
	ECM	Linux 2.6 or later
	Gobinet	Linux 2.6 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

Electrical Characteristics

Output Power	Class 3 (23dBm±2dB) for LTE FDD Class 3 (23dBm±2dB) for LTE TDD Class 3 (24dBm+1/-3dB) for UMTS Class E2 (27dBm ±3dB) for EDGE 850/900MHz Class E2 (26dBm +3/-4dB) for EDGE 1800/1900MHz Class 4 (33dBm ±2dB) for GSM 850/900MHz Class 1 (30dBm ±2dB) for GSM 1800/1900MHz	
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 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

Certification

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

