

# Quectel EC20

## Mini PCIe

### Multi-mode LTE Module

LTE



Cat3  
Max. 100Mbps(DL)  
Max. 50Mbps(UL)



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



Mini PCIe Package



Embedded Abundant  
Protocols



eCall



GLONASS+GPS



USB 2.0 High Speed  
Compliant Interface



USB Drivers



Quectel Enhanced  
AT Commands



EC20 Mini PCIe adopts the standard PCI Express® MiniCard form factor (miniPCIe) and provides global network coverage on the connectivity of LTE. It delivers 50Mbps-up and 100Mbps-down data rates on LTE FDD networks and can also be fully backward compatible with existing UMTS and GSM/GPRS networks. It contains two variants EC20 Mini PCIe-A and EC20 Mini PCIe-E, which makes it backward-compatible with existing EDGE and GSM/GPRS networks to ensure that it can connect even in remote areas devoid of 4G or 3G coverage.

EC20 Mini PCIe supports Rx diversity which allows the end-device to be equipped with two distinct cellular antennas improving the quality and reliability of the wireless connectivity. Leveraging the Multiple-input multiple-output (MIMO) technology, its antennas at each end of the communications circuit are combined to minimize errors and optimize data speed. It also combines high-speed wireless connectivity with embedded multi-constellation high-sensitivity positioning GPS+GLONASS receiver.

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, Linux, Android/eCall) extend the applicability of the module to a wide range of M2M applications such as CPE, router, data card, rugged tablet, automotive, security and industry PDA.

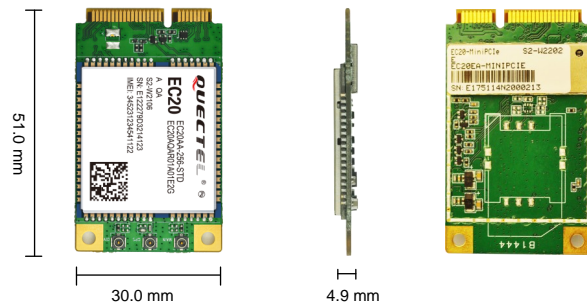
## Key Benefits

- Worldwide LTE and UMTS/HSPA+ and GSM/GPRS/EDGE coverage
- Standard form factor 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
- GNSS receiver available for applications requiring fast and accurate fixes in any environments
- Reference designs, evaluation tools and timely technical support minimize design-in time and development efforts

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#### General Features

<b>Frequency Bands</b>	<b>EC20-E Mini PCIe</b> FDD LTE:B1/B3/B5/B7/B8/B20 UMTS:B1/B5/B8 GSM:850/900/1800/1900MHz
	<b>EC20-A Mini PCIe</b> FDD LTE:B2/B4/B5/B12/B17 UMTS:B2/B4/B5 GSM:850/1900MHz
<b>LTE Version</b>	<b>EC20-C Mini PCIe</b> FDD LTE:B1/B3/B8 TDD LTE:B38/B39/B40/B41 TDSCDMA:B34/B39 UMTS:B1/B8 GSM:900/1800MHz
	3GPP E-UTRA Release 9
<b>Bandwidth</b>	1.4/3/5/10/15/20MHz
<b>Antenna</b>	DL MIMO 2x2, supports Rx-diversity, GNSS
<b>Supply Voltage Range</b>	3.0V~ 3.6V, 3.3V Typ.
<b>Operation Temperature</b>	-40 °C ~ +80 °C
<b>Dimensions</b>	51.0mmx30.0mmx4.9mm
<b>Weight</b>	Approx. 9.8g
<b>Control via AT commands</b>	3GPP TS27.007 and enhanced AT Commands

#### Specifications

<b>Data</b>	<b>LTE</b>	LTE-FDD Max 100Mbps (DL) Max 50Mbps (UL)
	<b>DC-HSPA+</b>	Max 42Mbps(DL) Max 5.76Mbps(UL)
<b>UMTS</b>	<b>EDGE</b>	Max 384Kbps (DL) Max 384Kbps(UL)
	<b>GPRS</b>	Max 236.8Kbps(DL) Max 236.8Kbps
<b>Voice</b>	<b>Speech Codec Modes</b>	HR,FR,EFR,AMR,AMR-WB
	<b>Echo Arithmetic</b>	Echo Cancellation Noise Reduction
<b>eCall*</b>		Accident, Emergency Services
<b>VoLTE*</b>		Digital Audio and VoLTE( Voice over LTE) (Optional)
<b>Protocols*</b>		TCP/UDP/PPP/FTP*/HTTP*/SMTP*/MMS*/SSL*

#### Special Features

<b>USB Serial</b>	Windows XP, Windows Vista, Windows 7, Windows 8/8.1, Windows CE5.0*/6.0*/7.0*, Linux 2.6 or later, Android 2.3/4.0/4.2/4.4	
<b>Drivers</b>	<b>RIL</b>	Windows CE6.0*, Windows Mobile 6.1*/6.5*, Android 2.3/4.0/4.2/4.4
	<b>NIDS</b>	Windows XP, Windows Vista, Windows 7, Windows 8, Windows CE5.0*/6.0*/7.0*
<b>DFOTA</b>	Firmware updated via the air	
<b>Firmware Update</b>	Firmware Update via USB	
<b>GNSS</b>	GPS/GLONASS (Optional)	

#### Electrical Characteristics

<b>Output Power</b>	Class 3 (23dBm ±2dB) for LTE Class 3 (24dBm +1/-3dB) for UMTS Class E2 (27dBm ±3dB) for EDGE 850/900MHz Class 4 (33dBm ±2dB) for GSM 850/900MHz Class 1 (30dBm ±2dB) for GSM 1800/1900MHz
<b>Consumption</b>	5.5mA@Sleep_Typ
<b>Sensitivity</b>	FDD B1: -97dBm(20M) FDD B2: -96dBm(20M) FDD B3: -96dBm(20M) FDD B4: -96dBm(20M) FDD B5: -99dBm(10M) FDD B7: -97dBm(20M) FDD B8: -98dBm(10M) FDD B12: -99dBm(20M) FDD B17: -99dBm(20M) FDD B20: -96dBm(20M) TDD B38: -94dBm(20M) TDD B39: -94dBm(20M) TDD B40: -94dBm(20M) TDD B41: -93.5dBm(20M) WCDMA B1: -110dBm WCDMA B2: -111dBm WCDMA B4: -111dBm WCDMA B5: -112dBm WCDMA B8: -111dBm TDSCDMA B34: -110dbm TDSCDMA B39: -110dbm GSM 850: -111dBm GSM 900: -110dBm GSM 1800: -109dBm GSM 1900: -109dBm

#### Interfaces

<b>USB 2.0 Device</b>	High Speed, 480Mbps Device Interface, Full Speed (12Mbps) Compliant
<b>PCM</b>	×1, Digital Audio through PCM Interface (Optional)
<b>USIM</b>	1.8V/3V
<b>LED_WWAN#</b>	Network Status
<b>W_DISABLE#</b>	Disable RF Function
<b>UART</b>	×1UART
<b>PERST#</b>	Reset Pin

#### Certification

<b>Approval</b>	CCC/CE/NAL/TA/KC*/SKT*/NCC*/ICASA*
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\* Under development

