# *Quectel EC20*
## *Multi-mode LTE Module*

**4G LTE**
Cat3
Max. 100Mbps(DL )
Max. 50Mbps(UL)

**3G HSPA+**
Max 42Mbps(DL)
Max 5.76Mbps(UL)

**LCC**
LCC Package

Embedded Abundant
Protocols

**eCall**
eCall

GLONASS+GPS

USB 2.0 High Speed
Compliant Interface

USB  Drivers
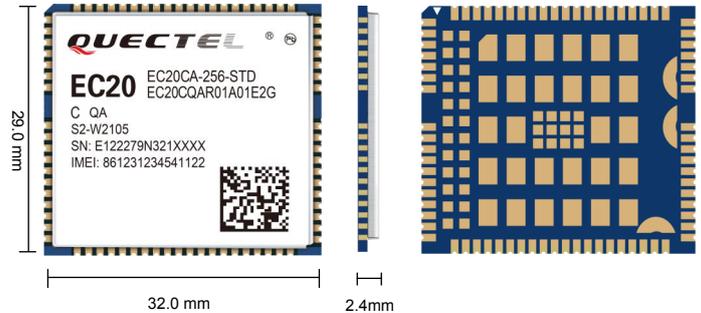
**AT**
Quectel Enhanced
AT Commands

EC20 series is the new generation of Quectel's LTE modules. Adopted the 3GPP Rel. 9 LTE technology, it delivers 100Mbps downlink and 50Mbps uplink data rates and is fallback compatible with Quectel UMTS/HSPA+UC20 module in the compact and unified form factor, providing a flexible and scalable platform for migrating from UMTS/HSPA+ to LTE. EC20 contains four variants EC20-A, EC20-C, EC20-CE and EC20-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.

It supports Multiple-input multiple-output (MIMO) technology, a cutting edge antenna technology transmitting multiple data streams on multiple transmitters to multiple receivers. The 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

- Minimal SMT form factor ideal for small end products with tight space and extended operating temperature range

- 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

- Simple migration from 3G to 4G with a flexible and scalable platform

**QUECTEL®**
Build a Smarter World

# Quectel EC20
## Multi-mode LTE Module



29.0 mm
32.0 mm
2.4mm

## General Features

| | | |
|---|---|---|
| | EC20-E | FDD LTE: B1/B3/B5/B7/B8/B20<br>UMTS: B1/B5/B8<br>GSM: 850/900/1800/1900MHz |
| | EC20-A | FDD LTE: B2/B4/B5/B12/B17<br>UMTS: B2/B4/B5<br>GSM: 850/1900MHz |
| Frequency Bands | EC20-C | FDD LTE: B1/B3/B8<br>TDD LTE: B38/B39/B40/B41<br>TDSCDMA B34/B39<br>UMTS: B1/B8<br>GSM: 900/1800MHz |
| | EC20-CE | FDD LTE: B1/B3<br>TDD LTE: B38/B39/B40/B41<br>TDSCDMA: B34/B39<br>WCDMA: B1<br>CDMA2000 1x/EVDO: BC0<br>GSM: 900/1800MHz |
| LTE Version | | 3GPP E-UTRA Release 9 |
| Bandwidth | | 1.4/3/5/10/15/20MHz |
| Antenna | | DL MIMO 2×2, 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. 4.6g |
| Control via AT commands | | 3GPP TS27.007 and enhanced AT Commands |

## Special Features

| | | |
|---|---|---|
| | USB Serial | 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 /5.0 |
| | RIL | Android 2.3/4.0/4.2/4.4/5.0 |
| Drivers | NIDS | Windows XP, Windows Vista, Windows 7, Windows 8/8.1 |
| | ECM | Linux2.6 or later |
| | Gobinet | Linux2.6 or later |
| | Linux qmi wwan | Linux3.4or later |
| DFOTA | | Firmware updated via the air |
| Firmware Update | | Firmware Update via USB |
| GNSS | | GPS/GLONASS |

## 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 | ×1UART |
| RESET | |
| PWRKEY | |
| Antenna | Pads for Primary, Rx-diversity and GNSS |
| ADC | ×2 |


### Build a Smarter World

## Electrical Characteristics

| | |
|---|---|
| Output Power | Class 3 (23dBm±2dB) for LTE FDD<br>Class 3 (23dBm±2dB) for LTE TDD<br>Class 3 (24dBm +1/-3dB) for TD-SCDMA<br>Class 3 (24dBm +1/-3dB) for UMTS<br>Class E2 (27dBm ±3dB) for EDGE 850/900MHz<br>Class E2 (26dBm +3/-4dB) for EDGE 1800/1900MHz<br>Class 4 (33dBm ±2dB) for GSM 850/900MHz<br>Class 1 (30dBm ±2dB) for GSM 1800/1900MHz |
| Consumption | 20uA @Power off<br>3mA @Sleep,Typ |
| Sensitivity | FDD B1: -97dBm(20M)<br>FDD B2: -96dBm(20M)<br>FDD B3: -96dBm(20M)<br>FDD B4: -96dBm(20M)<br>FDD B5: -99dBm(10M)<br>FDD B7: -97dBm(20M)<br>FDD B8: -98dBm(10M)<br>FDD B12: -99dBm(20M)<br>FDD B17: -99dBm(20M)<br>FDD B20: -96dBm(20M)<br>TDD B38: -94dBm(20M)<br>TDD B39: -94dBm(20M)<br>TDD B40: -94dBm(20M)<br>TDD B41: -93.5dBm(20M)<br>WCDMA B1: -110dBm<br>WCDMA B2: -111dBm<br>WCDMA B4: -111dBm<br>WCDMA B5: -112dBm<br>WCDMA B8: -111dBm<br>TDSCDMA B34: -110dbm<br>TDSCDMA B39: -110dbm<br>CDMA BC0: -108dbm<br>GSM 850: -111dBm<br>GSM 900: -110dBm<br>GSM 1800: -109dBm<br>GSM 1900: -109dBm |

## Specifications

| | | |
|---|---|---|
| | LTE | LTE-FDD Max 100Mbps (DL) Max 50Mbps (UL)<br>LTE-TDD Max 61Mbps (DL) Max18Mbps (UL) |
| | DC-HSPA+ | Max 42Mbps(DL) Max5.76Mbps(UL) |
| | UMTS | Max 384Kbps（DL) Max 384Kbps(UL) |
| Data | TD-SCDMA | Max 4.2Mbps（DL) Max 2.2Mbps(UL) |
| | CDMA | Max 5.4Mbps（DL) Max 14.7Mbps(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<br>Noise Reduction |
| eCall* | | Accident, Emergency Services |
| VoLTE* | | Digital Audio and VoLTE( Voice over LTE) (Optional) |
| Protocols* | | TCP/UDP/PPP/FTP/HTTP/SMTP*/MMS*/NTP/ PING/DTMF/FILE*/CMUX*/QMI |

## Certification

| | |
|---|---|
| Approval | CCC/CE/NAL/TA/KC*/SKT* /NCC*/ICASA* |

* Under development

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