Quectel EC20 R2.1

IoT/M2M-optimized
LTE Cat 4 Module

Quectel EC20 R2.1 is a series of LTE category 4 module optimized specially for M2M and IoT applications. Adopting the 3GPP Rel. 11 LTE technology, it delivers 150Mbit/s downlink and 50Mbit/s uplink data rates. Designed in the compact and unified form factor, EC20 R2.1 is compatible with Quectel UMTS/HSPA+ UC20 module and multi-mode LTE EC20/EC21 module, which allows for flexible migration among them in design and manufacturing.

EC20 R2.1 is an upgraded version of EC20 R2.0. Adopting laser engraving process, EC20 R2.1 features a more fashionable appearance, strong metallic texture, better thermal dissipation capability and durable label information, which makes it ideally suited for large-scale production.

EC20 R2.1 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 7/8/8.1/10, Linux, Android/eCall*) extend the applicability of the module to a wide range of M2M and IoT applications such as industrial router, industrial PDA, rugged tablet PC, video surveillance, and digital signage.

Key Benefits

- LTE category 4 module optimized for M2M and 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 modern wireless communication systems

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**Variant for China/India**
EC20-CE R2.1:
- LTE FDD: B1/B3/B5/B8
- LTE TDD: B38/B39/B40/B41
- WCDMA: B1/B8
- TD-SCDMA: B34/B39
- CDMA: BC0
- GSM: 900/1800MHz

**Data**

**LTE:**
- LTE FDD: Max 150Mbps (DL)/Max 50Mbps (UL)
- LTE TDD: Max 130Mbps (DL)/Max 35Mbps (UL)

**UMTS:**
- DC-HSUPA: Max 42Mbps (DL)
- HSUPA: Max 5.76Mbps (UL)
- WCDMA: Max 384Kbps (DL)/Max 384Kbps (UL)

**TD-SCDMA:**
- Max 4.2Mbps (DL)/Max 2.2Mbps (UL)
- CDMA2000:
  - EVDO: Max 3.1Mbps (DL)/Max 1.8Mbps (UL)
  - 1X Advanced: Max 307.2Kbps (DL/UL)
- GSM:
  - 900/1800MHz

**Voice**

**Speech Codec Modes:**
- HR/FR/EFR/AMR/AMR-WB
- Echo Arithmetic:
- Echo Cancellation/Noise Reduction
- VolTE:
  - Digital Audio and VoLTE (Voice over LTE) (Optional)

**Interfaces**

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

**Enhanced Features**

- SDIO for Wi-Fi Function (Optional)
- UART for BT4.0* Function (Optional)
- eCall*
- DTMF
- DFOTA: Delta Firmware Upgrade over the Air (U)SIM Card Detection
- Antenna: DL MIMO, support Rx-diversity
- 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 2 (24dBm+1/-3dB) for TD-SCDMA
- Class 3 (24dBm+1/-3dB) for WCDMA
- Class 3 (24dBm+2/-1dB) for CDMA BC0
- Class E2 (33dBm+2dB) for EDGE 1800MHz
- Class E2 (26dBm+3dB) for EDGE 900MHz
- Class 1 (30dBm+2dB) for GSM 900MHz
- Class 1 (30dBm+2dB) for GSM 1800MHz

**Consumption:**
- 11uA @Power off
- 1.8mA @LTE Sleep (PF=128)
- 1.5mA @LTE Sleep (PF=256)
- 20mA @Idle

**Sensitivity:**
- FDD B1: -101.6dBm (10M)
- FDD B3: -101.9dBm (10M)
- FDD B5: -102.1dBm (10M)
- FDD B8: -102.1dBm (10M)
- TDD B38: -101.3dBm (10M)
- TDD B39: -101.2dBm (10M)
- TDD B40: -101.4dBm (10M)
- TDD B41: -101.4dBm (10M)
- WCDMA B1: -112dBm
- WCDMA B8: -112dBm
- TD-SCDMA B34: -110dBm
- TD-SCDMA B39: -110dBm
- CDMA BC0: -108dBm
- GSM 900: -109dBm
- GSM 1800: -109dBm

**Software Features**

- USB Serial Driver:
  - Windows XP, Windows Vista,
  - Windows 7/8/8.1/10, Windows CE 5.0/6.0/7.0*,
  - Linux 2.6/3.x/4.1, Android 4.x/5.x/6.x/7.x
- RIL Driver:
  - Android 4.x/5.x/6.x/7.x
- NIDS Driver:
  - Windows 7/8/8.1/10
- ECM Driver:
  - Linux 2.6/3.x/4.1
- Gobinet Driver:
  - Linux 2.6/3.x/4.1
- Linux qmi wwan Driver:
  - 3.x (3.4 and later)/4.1
- Protocols:
  - TCP/UDP/PPP/FTP/HTTP/PING/QMI/NITZ/CMUX/HTTPS/SMT/TFTP/SS/TFTP/SSL/FILE

**General Features**

- 3GPP E-UTRA Release 11
- Bandwidth: 1.4/3/5/10/15/20MHz
- Extended Temperature: -40°C ~ +85°C
- Dimensions: 29.0mm x 32.0mm x 2.4mm
- LCC Package
- Approx. 5.3g
- Supply Voltage: 3.3V~4.3V, 3.8V Typ.
- 3GPP TS27.007 and Enhanced AT Commands

**Approvals**

- RoHS Compliant
- CCC/SRRC/NAL (China)

* Under Development