

Quectel EM05

IoT/M2M-optimized
LTE Cat 4 M.2 Module



Quectel EM05 is an LTE category 4 module adopting standard M.2 (NGFF) form factor. The space-saving M.2 form factor allows EM05 to be easily integrated into smaller and thinner devices. With a maximum data rate of 150Mbps downlink and 50Mbps uplink, it is optimized specially for M2M and IoT applications.

EM05 contains three variants: EM05-CE, EM05-CML and EM05-E*, which can provide data connectivity on LTE-FDD, LTE-TDD, DC-HSDPA, HSPA+, HSDPA, HSUPA, WCDMA and CDMA networks.

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 applications such as industrial router, industrial PDA, rugged tablet PC, video surveillance and digital signage.



Key Benefits

- ✓ LTE category 4 module optimized for broadband IoT applications
- ✓ Worldwide LTE and UMTS/HSPA+ coverage
- ✓ Standard M.2 (NGFF) form factor ideal for manufacturers to easily integrate wireless connectivity into devices
- ✓ Feature refinements: supports DFOTA, eCall* and DTMF
- ✓ MIMO technology meets demands for data rate and link reliability in modem wireless communication systems



Cat 4

Max 150/50Mbps @FDD
Max 130/35Mbps @TDD



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



Embedded Abundant
Protocols



USB 2.0 High Speed
Interface



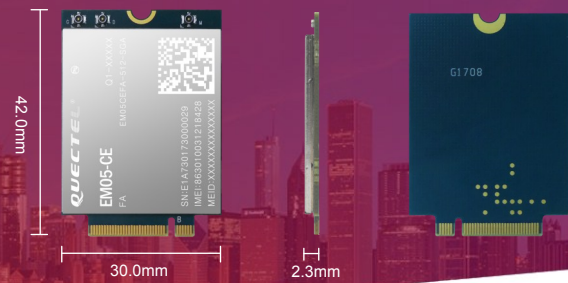
USB Drivers



Quectel Enhanced AT
Commands

Quectel EM05

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Variant for China/Thailand/India

EM05-CE:

LTE-FDD: B1/B3/B5/B8

LTE-TDD: B38/B39/B40/B41

WCDMA: B1/B8

CDMA: BC0

Variant for China

EM05-CML:

LTE-TDD: B38/B39/B40/B41

Variant for Europe/Australia/New Zealand

EM05-E*:

LTE-FDD: B1/B3/B7/B8/B20/B28

LTE-TDD: B38

WCDMA: B1/B8

Data

LTE:

LTE-FDD: Max 150Mbps (DL)/Max 50Mbps (UL)

LTE-TDD: Max 130Mbps (DL)/Max 35Mbps (UL)

UMTS:

DC-HSDPA: Max 42Mbps (DL)

HSUPA: Max 5.76Mbps (UL)

WCDMA: Max 384Kbps (DL)/Max 384Kbps (UL)

CDMA2000:

EVDO: Max 3.1Mbps (DL)/Max 1.8Mbps (UL)

1X Advanced: Max 307.2Kbps (DL)/
Max 307.2Kbps (UL)

Voice

Speech Codec Modes:

HR/FR/EFR/AMR/AMR-WB

Echo Arithmetic:

Echo Cancellation/Noise Reduction

Digital Audio through PCM Interface (Optional)

Interfaces

USB 2.0 with High Speed up to 480Mbps

WOWWAN#: Wake up the Host (AP)

FUL_CARD_POWER_OFF#: Power on/off the
Module

1.8V/3.0V (U)SIM Interface

W_DISABLE1#: Control RF Function

LED#: Indicate RF Status

DPR*: Body SAR Detection

Antenna Interfaces: Main Antenna, Diversity

Antenna and GNSS Antenna

RESET#: Reset the Module

Enhanced Features

eCall*

DFOTA

DTMF

Electrical Characteristics

Output Power:

Class 3 (23dBm $\pm$ 2dB)) for LTE-FDD

Class 3 (23dBm $\pm$ 2dB)) for LTE-TDD

Class 3 (24dBm+1/-3dB) for WCDMA

Class 3 (24dBm+2/-1dB) for CDMA BC0

Consumption:

5uA @Power off

3.3mA @LTE Sleep, PF=128

3.0mA @LTE Sleep, PF=256

20mA @Idle

Sensitivity:

LTE-FDD B1 (10M): -101.7dBm

LTE-FDD B3 (10M): -102.2dBm

LTE-FDD B5 (10M): -102.7dBm

LTE-FDD B7: TBD

LTE-FDD B8 (10M): -102.5dBm

LTE-FDD B20: TBD

LTE-FDD B28: TBD

LTE-TDD B38 (10M): -101.2dBm

LTE-TDD B39 (10M): -102.5dBm

LTE-TDD B40 (10M): -101.3dBm

LTE-TDD B41 (10M): -101.0dBm

WCDMA B1: -109.5dBm

WCDMA B8: -110.0dBm

CDMA BC0: -109.0dBm

Software Features

MBIM Driver: Windows 8 or Later

USB Serial Driver:

Windows XP, Windows Vista, Windows 7,

Windows 8/8.1, Windows 10,

WinCE 5.0/6.0/7.0*, Linux 2.6/3.x/4.1,

Android 4.x/5.x/6.0

RIL Driver: Android 4.x/5.x/6.0/7.0

NDIS Driver: Windows 7, Windows 8/8.1,

Windows 10

ECM Driver: Linux 2.6/3.x/4.1

Gobinet Driver: Linux 2.6/3.x/4.1

QMI_WWAN Driver: Linux 3.x (3.4 or later)/4.1

Protocols:

TCP/UDP/PPP/FTP/HTTP/NTP/PING/QMI/NITZ/

HTTPS/SMT/PPS/FTPS/SMT/SSL/FILE*

General Features

LTE Version: 3GPP E-UTRA Release 11

Bandwidth: 1.4/3/5/10/15/20MHz

Antenna: DL MIMO, Supports Rx-diversity

Supply Voltage: 3.135V~4.4V, 3.3V Typ.

3GPP Compliant Temperature Range:

-30°C ~ +70°C

Extended Temperature Range: -40°C ~ +85°C

Dimensions: 42.0mm $\times$ 30.0mm $\times$ 2.3mm

Package: M.2 Type 3042-S3-B

Weight: Approx. 6.0g

3GPP TS 27.005, 3GPP TS 27.007 and

Quectel Enhanced AT Commands

Approvals

RoHS Compliant

CCC/RRC/NAL (China)

* Under Development