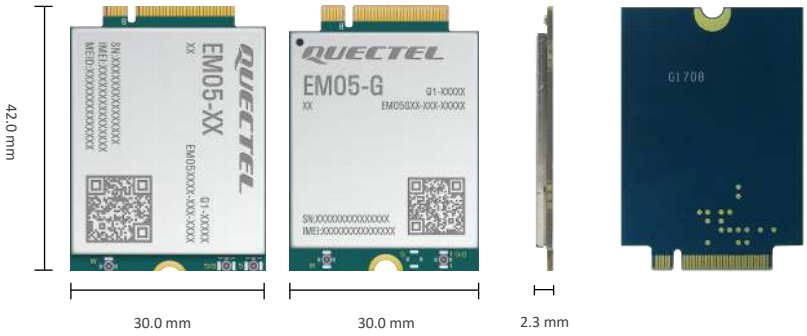
Quectel EM05 Series

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



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

EM05 series contains three variants: EM05-CN, EM05-E and EM05-G, 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 7/8/8.1/10/11, Linux and Android, DFOTA, etc.) extend the applicability of the module to a wide range of M2M applications such as industrial router, industrial PDA, rugged tablet PC, video transmission and digital signage.

Key Features

- LTE Cat 4 module optimized for broadband IoT/M2M applications
- Worldwide LTE and UMTS/HSPA+ coverage
- Standard M.2 (NGFF) form factor ideal for manufacturers to easily integrate wireless connectivity into devices
- Supports DFOTA
- MIMO technology meets demands for data rate and link reliability in wireless communication systems

LTE Cat 4
Max. 150 Mbps (DL)
Max. 50 Mbps (UL)

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

M.2 Package

USB 2.0 High Speed Interface

DFOTA

Quectel Enhanced AT Commands

Embedded Abundant Protocols

USB Drivers

Multi-constellation GNSS (Optional)

Version: 1.6 | Status: Released

Quectel EM05 Series

LTE Cat 4	EM05-CN	EM05-E	EM05-G
Region/Operator	China/Thailand/India	Europe/Australia/New Zealand	Global
Dimensions (mm)	30.0 × 42.0 × 2.3	30.0 × 42.0 × 2.3	30.0 × 42.0 × 2.3
Temperature Range			
Operating Temperature	-30 °C to +70 °C	-30 °C to +70 °C	-30 °C to +70 °C
Extended Temperature	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
Frequency Bands			
LTE-FDD	B1/3/5/8	B1/3/7/8/20/28	B1/2/3/4/5/7/8/12/13/14/18/19/20/25/26/28/66/71
LTE-TDD	B34/38/39/40/41	B38/41	B38/39/40/41
WCDMA	B1/5/8	B1/8	B1/2/4/5/6/8/19
EVDO/CDMA	BC0	-	-
GNSS (Optional)	GPS, GLONASS, BDS, Galileo, QZSS	GPS, GLONASS, BDS, Galileo, QZSS	GPS, GLONASS, BDS, Galileo, QZSS
Certifications			
Carrier	**China:** China Telecom/China Mobile/China Unicom	-	**Europe:** Vodafone/Swisscom/EE **America:** Verizon/AT&T/T-Mobile **China:** China Telecom/China Mobile/China Unicom **Japan:** NTT DOCOMO/SoftBank/KDDI **Australia:** Telstra
Regulatory	**China:** SRRC/NAL/CCC	**Europe:** CE **Taiwan, China:** NCC **Australia/New Zealand:** RCM **South Africa:** ICASA	SRRC/NAL/CCC/GCF/CE/PTCRB/FCC/UKCA/IC/Anatel/KC/NCC/JATE/TELEC/RCM/NBTC/IMDA/ICASA
Others	WHQL/RoHS Compliant	WHQL/RoHS Compliant	WHQL/RoHS Compliant
Data Transmission (Max.)			
LTE-FDD data rate (Mbps)	150 (DL)/50 (UL)	150 (DL)/50 (UL)	150 (DL)/50 (UL)
LTE-TDD data rate (Mbps)	130 (DL)/30 (UL)	130 (DL)/30 (UL)	130 (DL)/30 (UL)
DC-HSPA+ data rate (Mbps)	42 (DL)/5.76 (UL)	42 (DL)/5.76 (UL)	42 (DL)/5.76 (UL)
WCDMA data rate (kbps)	384 (DL)/384 (UL)	384 (DL)/384 (UL)	384 (DL)/384 (UL)
EVDO data rate (Mbps)	3.1 (DL)/1.8 (UL)	-	-
1X Advanced data rate (kbps)	307.2 (DL)/307.2 (UL)	-	-
Interfaces			
(U)SIM	× 1	× 1	× 1
USB 2.0	× 1	× 1	× 1
Control and Indication Signals	W_DISABLE1#, WWAN_LED#, WOWWAN#, DPR*	W_DISABLE1#, LED#, WOWWAN#, DPR*	W_DISABLE1#, WWAN_LED#, WOWWAN#, DPR
Antenna Interfaces	Main, Rx-diversity, GNSS	Main, Rx-diversity, GNSS	Main, Rx-diversity/GNSS
Audio Digital (PCM&I2C) (Optional)	× 1	× 1	-
Voice			
Speech Codec Modes	-	HR/FR/EFR/AMR/AMR-WB	-
Echo Arithmetic	-	Echo cancellation/Noise suppression	-
Enhanced Features			
DFOTA	●	●	●
QMI/RmNet	●	-	●
Audio Playback/Audio Recording*	-	Optional	-
QuecLocator®	●	●	●
QuecFile®	●	●	●
SMS	●	●	●
eSIM	-	-	●
(U)SIM Card Detection	●	●	●
Drivers			
USB Serial Driver	Windows 7/8/8.1/10/11, Linux 2.6–6.5, Android 4.x–13.x	Windows 7/8/8.1/10/11, Linux 2.6–6.5, Android 4.x–13.x	Windows 7/8/8.1/10/11, Linux 2.6–6.5, Android 4.x–13.x
GNSS Driver	Android 4.x–13.x	Android 4.x–13.x	Android 4.x–13.x
RIL Driver	Android 4.x–13.x	Android 4.x–13.x	Android 4.x–13.x
USB NDIS Driver	Windows 7/8/8.1/10/11	-	Windows 7/8/8.1/10/11
USB MBIM Driver	Windows 8/8.1/10/11, Linux 3.18–6.5	Windows 8/8.1/10/11, Linux 3.18–6.5	Windows 8/8.1/10/11, Linux 3.18–6.5
USB GobiNet Driver	Linux 2.6–6.5	-	-
USB QMI_WWAN Driver	Linux 3.4–6.5	-	Linux 3.4–6.5
Electrical Features			
Supply Voltage Range	3.135–4.4 V, 3.3 V Typ.	3.135–4.4 V, 3.3 V Typ.	3.135–4.4 V, 3.3 V Typ.
Power Consumption	TBD	5.0 μA @ Power off 3.3 mA @ LTE Sleep, PF = 128 3.0 mA @ LTE Sleep, PF = 256 20 mA @ Idle	15.0 μA @ Power off 2.5 mA @ LTE Sleep, PF = 128 2.0 mA @ LTE Sleep, PF = 256 25 mA @ LTE Idle, PF = 64, USB active

NOTE:

1. *: Under development. 2. ●: Supported.
3. TBD: To Be Determined.

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