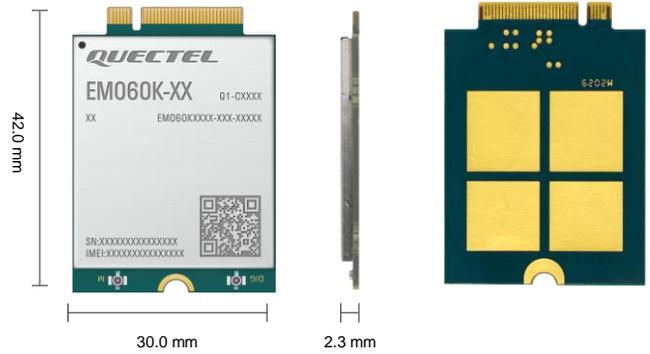




Quectel EM060K Series

LTE-A Cat 6 M.2 Module



Quectel EM060K is a series of LTE Advanced Category 6 module. Adopting the 3GPP Release 12 technology, the module supports a theoretical peak data rate of 300 Mbps in the downlink and a theoretical peak data rate of 50 Mbps in the uplink. Designed in M.2 form factor, the module is compatible with Quectel LTE-A Cat 6 module EM06 Series, Cat 12 modules EM12-G/ EM120K-GL/ EM121R-GL/ EM120R-GL, Cat 16 module EM160R-GL, and 5G modules RM500Q/ RM502Q Series, which facilitates customers' migration between different modules. EM060K series contains 3 variants: EM060K-GL, EM060K-NA, and EM060K-EA.

EM060K series is designed for the global market and nearly covers all the mainstream carriers worldwide. The module is embedded with a multi-constellation and high-sensitivity GNSS (GPS, GLONASS, BDS, Galileo and QZSS) receiver for positioning. The integrated GNSS greatly simplifies product design, and provides quicker, more accurate and more dependable positioning capability.

A rich set of Internet protocols, industry-standard interfaces and abundant functionalities (USB drivers for Windows, Linux, Android/ optional built-in eSIM) extend the applicability of the module to a wide range of applications such as industrial routers, home gateways, set-top boxes, industrial laptops, consumer laptops, industrial PDAs, rugged tablet PCs, and digital signage, etc.



Key Features

- ✓ LTE-A Cat 6 module with M.2 form factor
- ✓ Support DL 2 Carrier Aggregation and 64QAM
- ✓ Worldwide LTE-A and UMTS/ HSPA+ coverage
- ✓ Built-in eSIM (optional), DSSS (Dual SIM Single Standby)
- ✓ Low power mode
- ✓ Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment
- ✓ MIMO technology meets demands for data rate and link reliability in modem wireless communication systems

 Max. 300 Mbps (DL) Max. 50 Mbps (UL)	 Max. 42 Mbps (DL) Max. 5.76 Mbps (UL)	 M.2 Form Factor
 Embedded Abundant Protocols	 PCIe Gen2 Interface	 Multi-constellation GNSS (Optional)
 USB 2.0/ 3.0 Interface	 Quectel Enhanced AT Commands	

Quectel EM060K Series

LTE Cat 6		EM060K-GL	EM060K-NA	EM060K-EA
Region/Operator		Global	North America	EMEA/ APAC ^① / Brazil
Package		M.2 Package, Key-B	M.2 Package, Key-B	M.2 Package, Key-B
Dimensions (mm)		30.0 × 42.0 × 2.3	30.0 × 42.0 × 2.3	30.0 × 42.0 × 2.3
Weight (g)		6.2	6.2	6.2
Temperature Range				
Operating Temperature		-25 °C to +75 °C	-25 °C to +75 °C	-25 °C to +75 °C
Extended Temperature		-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
Frequency Bands				
LTE	LTE-FDD	B1/ 2/ 3/ 4/ 5/ 7/ 8/ 12/ 13/ 14/ 17 ^② / 18/ 19/ 20/ 25/ 26/ 28/ 29 ^③ / 30/ 32 ^③ / 66/ 71	B2/ 4/ 5/ 7/ 12/ 13/ 14/ 17 ^② / 25/ 26/ 29 ^③ / 30/ 66/ 71	B1/ 3/ 5/ 7/ 8/ 20/ 28/ 32 ^③
	LTE-TDD	B34/ 38/ 39/ 40/ 41/ 42/ 43/ 46 ^③ (LAA)/ 48 (CBRS)	B41/ 42/ 43/ 48	B38/ 40/ 41
	DL 2CA	Intra-band and Inter-band	Intra-band and Inter-band	Intra-band and Inter-band
	DL 64QAM/ UL 16QAM	●	●	●
UMTS	WCDMA	B1/ 2/ 3/ 4/ 5/ 6/ 8/ 19	-	B1/ 3/ 5/ 8
GNSS (Optional)		GPS/ GLONASS/ BDS/ Galileo/ QZSS	GPS/ GLONASS/ BDS/ Galileo/ QZSS	GPS/ GLONASS/ BDS/ Galileo/ QZSS
Certifications				
Regulatory		Global: GCF Europe: CE North America: PTCRB America: FCC Canada: IC Taiwan, China: NCC Japan: JATE/ TELEC Australia/ New Zealand: RCM	Global: GCF America: FCC North America: PTCRB Canada: IC	Global: GCF Europe: CE Australia/ New Zealand: RCM
Carrier		Europe: Vodafone/ Deutsche Telekom/ Swisscom/ Telefonica France: Orange America: Verizon/AT&T/ T-mobile Japan: NTT DOCOMO/ KDDI/ SoftBank* Australia: Telstra British: British Telecom	America: Verizon/ AT&T/ T-mobile	TBD
Others		WHQL	TBD	TBD
Data Rate (Max.)				
LTE (Mbps)		300 (DL)/ 50 (UL)	300 (DL)/ 50 (UL)	300 (DL)/ 50 (UL)
UMTS	DC-HSDPA (Mbps)	42 (DL)	-	42 (DL)
	HSUPA (Mbps)	5.76 (UL)	-	5.76 (UL)
	WCDMA (kbps)	384 (DL)/ 384 (UL)	-	384 (DL)/ 384 (UL)
Interfaces				
(U)SIM (1.8/ 3.0 V)		× 2	× 2	× 2
USB 2.0/ 3.0		× 1	× 1	× 1
PCIe (Optional)		× 1 (RC mode: PCIe Gen 2, for Wi-Fi, ethernet functions)	× 1 (RC mode: PCIe Gen 2, for Wi-Fi, ethernet functions)	× 1 (RC mode: PCIe Gen 2, for Wi-Fi, ethernet functions)
PCM*		× 1	× 1	× 1

Note:

- ①: Excl. China/ Japan.
- ②: B17 is supported through MFBI + B12.
- ③: LTE-FDD B29/ B32 and LTE-TDD B46 support Rx only and are only for secondary component carrier.
- : Supported
- TBD: To Be Determined.
- *: Under development/ In progress.

Quectel EM060K Series

LTE Cat 6	EM060K-GL	EM060K-NA	EM060K-EA
Control and Indication Interfaces*	× 6 (Airplane mode control, GNSS control, wake-up control, RF status indication, dynamic power reduction and self-protection of QLN control.)	× 5 (Airplane mode control, GNSS control, wake-up control, RF status indication and dynamic power reduction.)	× 5 (Airplane mode control, GNSS control, wake-up control, RF status indication and dynamic power reduction.)
Cellular/ WLAN COEX Interface*	× 1	× 1	× 1
Antenna Tuner Control Interfaces*	× 2	× 2	× 2
Configuration Pins	× 4	× 4	× 4
Antenna Interfaces	× 2 (Main, Rx-diversity/ GNSS)	× 3 (Main, Rx-diversity, GNSS)	× 3 (Main, Rx-diversity, GNSS)
Enhanced Features			
MIMO: DL 2 × 2	●	●	●
(U)SIM Card Detection & Hot-plug detect	●	●	●
Built-in eSIM	○	○	○
DSSA: Dual SIM, Single Active	●	●	●
DFOTA: Delta Firmware Over-the-Air	●	●	●
Embedded GNSS	○	○	○
SMS			
Point-to-point MO and MT	●	●	●
SMS Cell Broadcast	●	●	●
Text and PDU Mode	●	●	●
3GPP	●	●	●
Windows OS SMS Push Feature	●	●	●
Software Features			
3GPP	3GPP E-UTRA Release 12	3GPP E-UTRA Release 12	3GPP E-UTRA Release 12
AT Command	3GPP TS 27.007; Quectel Enhanced AT Commands	3GPP TS 27.007; Quectel Enhanced AT Commands	3GPP TS 27.007; Quectel Enhanced AT Commands
Protocols	QMI/ MBIM/ NITZ/ HTTP/ HTTPS/ FTP/ LwM2M/ PING	QMI/ MBIM/ NITZ/ HTTP/ HTTPS/ FTP/ LwM2M/ PING	QMI/ MBIM/ NITZ/ HTTP/ HTTPS/ FTP/ LwM2M/ PING
Electrical Features			
Supply Voltage Range	3.135–4.4 V, typ. 3.7 V	3.135–4.4 V, typ. 3.7 V	3.135–4.4 V, typ. 3.7 V
Transmitting Power (USB Mode)	LTE-FDD: Class 3 (23 dBm ±2 dB) LTE-TDD: Class 3 (23 dBm ±2 dB) WCDMA: Class 3 (23 dBm ±2 dB)	LTE-FDD: Class 3 (23 dBm ±2 dB) LTE-TDD: Class 3 (23 dBm ±2 dB)	LTE-FDD: Class 3 (23 dBm ±2 dB) LTE-TDD: Class 3 (23 dBm ±2 dB) WCDMA: Class 3 (23 dBm ±2 dB)
Power Consumption (USB Mode)	Power down: 0.07 mA; Sleep: 3.47 mA; Idle: 38 mA	Power down: 0.07 mA; Sleep: 3.31 mA; Idle: 38 mA	Power down: 0.064 mA; Sleep: 3.42 mA; Idle: 40.10 mA

Note:

1. ●: Supported; ○: Optional.

2. *: Under development/ In progress.