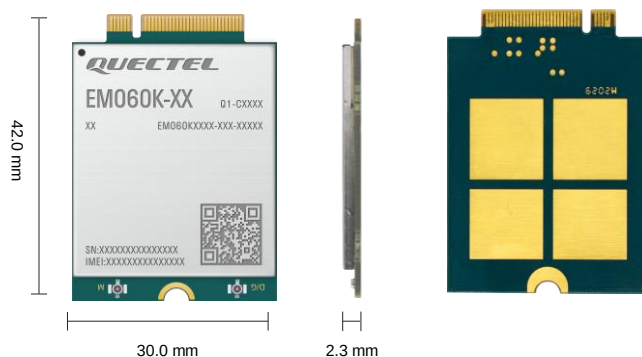




Quectel EM060K Series

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.

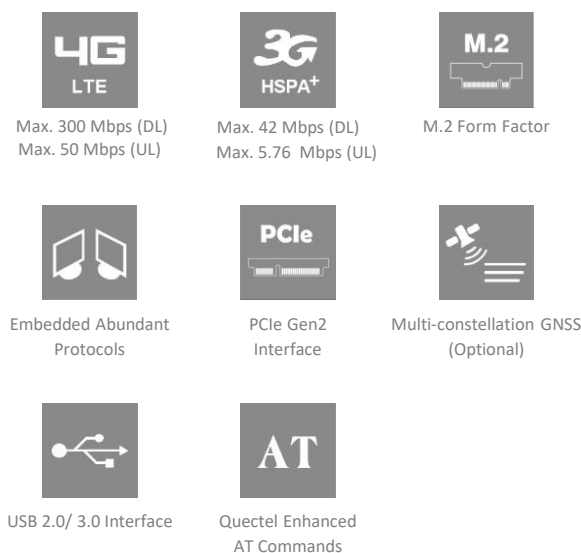
EM060K series is designed for the global market and nearly covers all the mainstream carriers worldwide. The module is embedded with a multi-constellation and high-sensitivity GNSS (GPS, GLONASS, BDS, Galileo and QZSS) receiver for positioning. The integrated GNSS greatly simplifies product design, and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



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/ 25/ 26/ 29/ 30/ 66/ 71	B1/ 3/ 5/ 7/ 8/ 20/ 28/ 32 ^③ / 71 ^④
	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 ^④		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 France: Orange America: Verizon/AT&T/ T-mobile Japan: DOCOMO/ KDDI/ SoftBank* Australia: Telstra British: British Telecom Mexico: Telefonica*	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
SPI (Optional)		× 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.
- ④: Optional.
- : 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.