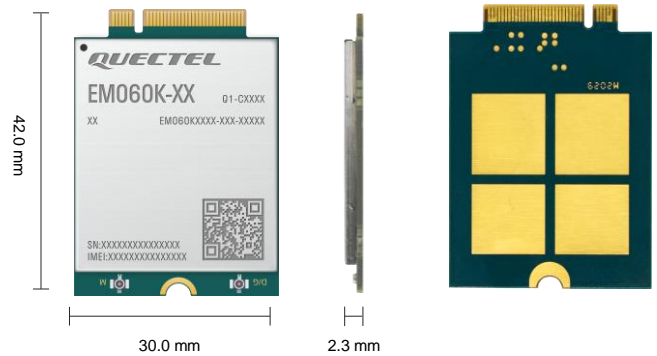




# Quectel EM060K Series

## 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 2 variants: EM060K-GL and EM060K-NA.

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 and Galileo) 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
 USB 2.0/ 3.0 Interface	 Quectel Enhanced AT Commands	

# Quectel EM060K Series

LTE Cat 6		EM060K-GL	EM060K-NA
Region/Operator		Global	North America
Package		M.2 Package, Key-B	M.2 Package, Key-B
Dimensions (mm)		30.0 × 42.0 × 2.3	30.0 × 42.0 × 2.3
Weight (g)		6.2	6.2
Temperature Range			
Operating Temperature		-25 °C to +75 °C	-25 °C to +75 °C
Extended Temperature		-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 <sup>①</sup> / 18/ 19/ 20/ 25/ 26/ 28/ 29 <sup>②</sup> / 30/ 32 <sup>②</sup> / 66/ 71	B2/ 4/ 5/ 7/ 12/ 13/ 14/ 17/ 25/ 26/ 29/ 30/ 66/ 71
	LTE-TDD	B34/ 38/ 39/ 40/ 41/ 42/ 43/ 46 <sup>②</sup> (LAA)/ 48 (CBRS)	B41/ 48
	DL 2CA	Intra-band and Inter-band	Intra-band and Inter-band
	DL 64QAM/ UL 16QAM	●	●
UMTS	WCDMA	B1/ 2/ 3/ 4/ 5/ 6/ 8/ 19	-
GNSS		GPS/ GLONASS/ BDS/ Galileo	GPS/ GLONASS/ BDS/ Galileo
Certifications			
Regulatory		<b>Global:</b> GCF <b>Europe:</b> CE <b>North America:</b> PTCRB <b>America:</b> FCC <b>Canada:</b> IC <b>Taiwan, China:</b> NCC <b>Japan:</b> JATE*/TELEC* <b>Australia/ New Zealand:</b> RCM	<b>Global:</b> GCF* <b>America:</b> FCC* <b>North America:</b> PTCRB* <b>Canada:</b> IC*
Carrier		Verizon*/ AT&T*/ T-Mobile*/ NTT DOCOMO <sup>③</sup> / KDDI <sup>③</sup>	TBD
Others		WHQL	TBD
Data Rate (Max.)			
LTE (Mbps)		300 (DL) / 50 (UL)	300 (DL) / 50 (UL)
DC-HSDPA (Mbps)		42 (DL)	-
UMTS	HSUPA (Mbps)	5.76 (UL)	-
	WCDMA (kbps)	384 (DL); 384 (UL)	-
Interfaces			
(U)SIM (1.8/3.0 V)		× 2	× 2
USB 2.0/3.0		× 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)
PCM*		× 1	× 1
SPI (Optional)		× 1	× 1
Control and Indication Interfaces*		× 6 (Airplane mode control, GNSS control, wake-up control, RF status indication, etc.)	× 6 (Airplane mode control, GNSS control, wake-up control, RF status indication, etc.)
Cellular/ WLAN COEX Interface*		× 1	-
Antenna Tuner Control Interfaces*		× 2	× 2
Configuration Pins		× 4	× 4
Antenna Interfaces		× 2 (Main, Rx-diversity/ GNSS)	× 3 (Main, Rx-diversity, GNSS)

Note:

- ①: B17 is supported through MFBI + B12.
- ②: LTE-FDD B29/ B32 and LTE-TDD B46 support Rx only and are only for secondary component carrier.
- ③: TBD.
- \*: Under development/ In progress.
- : Supported; ○: Optional.

# Quectel EM060K Series

LTE Cat 6	EM060K-GL	EM060K-NA
<b>Enhanced Features</b>		
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	●	●
<b>SMS</b>		
Point-to-point MO and MT	●	●
SMS Cell Broadcast	●	●
Text and PDU Mode	●	●
3GPP	●	●
Windows OS SMS Push Feature	●	●
<b>Software Features</b>		
3GPP	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
Protocols	QMI/ MBIM/ NITZ/ HTTP/ HTTPS/ FTP/ LwM2M*/ PING*	QMI/ MBIM/ NITZ/ HTTP/ HTTPS/ FTP/ LwM2M*/ PING*
<b>Electrical Features</b>		
Supply Voltage Range	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)
Power Consumption (USB Mode)	Power down: 0.07 mA; Sleep: 1.88 mA; Idle: 36.97 mA	Power down: 0.069 mA; Sleep: 1.63 mA; Idle: 37.01 mA

Note:

- : Supported; ○: Optional.
- \*: Under development/ In progress.