



Quectel EM120K-GL

LTE-A Cat 12 M.2 Module



Quectel EM120K-GL is an LTE Advanced Category 12 module. Adopting the 3GPP Release 12 technology, the module supports a theoretical peak data rate of 600 Mbps in the downlink and a theoretical peak data rate of 150 Mbps in the uplink. Designed in M.2 form factor, the module is compatible with Quectel LTE-A Cat 6 module EM06 Series/ EM060K-GL, Cat 12 modules EM12-G/ EM121R-GL/ EM120R-GL, Cat 16 module EM160R-GL and 5G modules RM500Q/ RM502Q Series, which facilitates customers' migration between different modules.

EM120K-GL 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). 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 12 module with M.2 form factor
- ✓ Support DL 3 Carrier Aggregation and 256QAM
- ✓ Worldwide LTE-A and UMTS/ HSPA+ coverage
- ✓ Built-in eSIM (optional), DSSA
- ✓ 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. 600 Mbps (DL)
Max. 150 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

Version: 1.2 | Status: Released

LTE Cat 12		EM120K-GL
Region/ Operator		Global
Package		M.2 Package, Key-B
Dimensions		30.0 mm × 42.0 mm × 2.3 mm
Weight		6.2 g
Temperature Range		
Operation Temperature		-25 °C to +75 °C
Extended Temperature		-40 °C to +85 °C
Frequency Bands		
LTE	LTE-FDD	B1/ 2/ 3/ 4/ 5/ 7/ 8/ 12/ 13/ 14/ 17/ 18/ 19/ 20/ 25/ 26/ 28/ 29 ^① / 30/ 32 ^① / 66/ 71
	LTE-TDD	B34/ 38/ 39/ 40/ 41/ 42/ 43/ 46 ^① (LAA)/ 48 (CBRS)
	DL 3CA	Intra-band and Inter-band
	DL 256QAM/ UL 64QAM	●
UMTS	WCDMA	B1/ 2/ 3/ 4/ 5/ 6/ 8/ 19
GNSS		GPS/ GLONASS/ BDS/ Galileo/ QZSS
Certifications		
Regulatory	Global: GCF	
	Europe: CE	
	North America: PTCRB	
	America: FCC	
Carrier	Canada: IC	
	Taiwan, China: NCC	
	Japan: JATE/ TELEC	
	Australia/ New Zealand: RCM	
Others	America: Verizon/ AT&T/ T-Mobile	
	Japan: NTT DOCOMO/ KDDI/ Softbank*	
	Australia: Telstra	
	WHQL	
Data Rate (Max.)		
LTE	600 Mbps (DL); 150 Mbps (UL)	
	DC-HSDPA	42 Mbps (DL)
UMTS	HSUPA	5.76 Mbps (UL)
	WCDMA	384 kbps (DL); 384 kbps (UL)
Interfaces		
(U)SIM Interfaces (1.8/ 3.0 V)		× 2
USB 2.0/ 3.0		× 1
PCIe Interface (Optional)		× 1 (RC mode*: PCIe Gen 2, for Wi-Fi, ethernet functions)
PCM*		× 1
SPI (Optional)		× 1
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.)
Cellular/ WLAN COEX Interface*		× 1
Antenna Tuner Control Interfaces*		× 2
Configuration Pins		× 4
Antenna Interfaces		× 2 (Main, Rx-diversity/ GNSS)
Enhanced Features		
MIMO: DL 2 × 2		●
(U)SIM Card Detection		●
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
AT Command		3GPP TS 27.007; Quectel Enhanced AT Commands
Protocols		QMI/ MBIM/ NITZ/ HTTP/ HTTPS/ FTP/ LwM2M*/ PING*
Electrical Features		
Supply Voltage Range		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)
Power Consumption (USB Mode)		Power down: 0.061 mA; Sleep: 2.58 mA; Idle: 17.35 mA

Note:

- ①: LTE-FDD B29/ 32 and LTE-TDD B46 support Rx only and are only for secondary component carrier.
- *: Under development/ In progress.
- TBD: To Be Determined.
- : Supported; ○: Optional.