Quectel EM120K-GL

LTE-A Cat 12 M.2 Module

42.0 mm

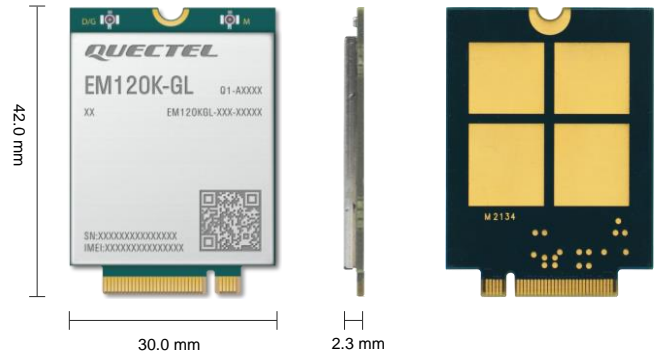30.0 mm 2.3 mm

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 supports Qualcomm® IZat™ location technology gpsOne 9HT (GPS, GLONASS, BDS and Galileo). 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

4G LTE
Cat 12
Max. 600 Mbps (DL)
Max. 150 Mbps (UL)

3G HSPA+
Max. 42 Mbps (DL)
Max. 5.76 Mbps (UL)

M.2
M.2 Form Factor

Embedded Abundant Protocols

PCIe Gen2 Interface

Multi-constellation GNSS

USB 2.0/3.0 Interface

AT
Quectel Enhanced AT Commands

Version: 1.1 | Status: Released

Quectel EM120K-GL

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/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29①/B30/B32①/B66/B71	
	LTE-TDD	B34/B38/B39/B40/B41/B42/B43/B46① (LAA)/B48 (CBRS)	
	DL 3CA	Intra-band and Inter-band	
	DL 256QAM/ UL 64QAM	●	
UMTS	**WCDMA**	B1/B2/B3/B4/B5/B6/B8/B19	
GNSS		GPS/GLONASS/BDS/Galileo	
Certifications			
Regulatory	**Europe:** CE; **America:** FCC; **Canada:** IC; **Taiwan, China**: NCC; **Australia/New Zealand:** RCM		
Carrier	TBD		
Others	WHQL		
Data Rate (Max.)			
LTE		600 Mbps (DL); 150 Mbps (UL)	
UMTS	**DC-HSDPA**	42 Mbps (DL)	
	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, etc.)		
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. ①: LTE-FDD B29/B32 and LTE-TDD B46 support Rx only and are only for secondary component carrier.
2. *: Under development/In progress.
3. TBD: To Be Determined.
4. ●: Supported; ○: Optional.

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