

379.00 EUR incl. 19% VAT, plus shipping



Support: Driver (Windows) | 🔁 AT Commands Manual | 🔁 Specifications

Quectel RM500Q-AE is a 5G module optimized specially for IoT/eMBB applications. Adopting the 3GPP Rel. 15 LTE technology, it supports both 5G NSA and SA modes. Designed in an M.2 form factor, RM500Q-AE is compatible with Quectel LTE-A Cat 6 module EM06, Cat 12 module EM12 and Cat 16 module EM160R-GL, which will facilitate customers to migrate from LTE-A to 5G.

The global version RM500Q-AE nearly covers all the mainstream carriers worldwide. The module supports Qualcomm® IZat[™] location technology Gen8C Lite (GPS, GLONASS, BeiDou/Compass and Galileo). The integrated GNSS receiver 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/PCIe drivers for Windows 7/8/8.1/10, Linux, Android) extend the applicability of the module to a wide range of M2M and IoT applications such as industrial router, home gateway, STB, industrial laptop, consumer laptop, industrial PDA, rugged tablet PC, video surveillance and digital signage.

Features

- 5G/4G/3G Multi-mode module with M.2 form factor, optimized for IoT and eMBB applications
- Worldwide 5G and LTE-A coverage
- Both NSA and SA modes
- · Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment
- Feature refinements: DFOTA and VoLTE (optional)

	JOINR.
Frequency Bands	n1/n2/n3/n5/n7/n8/n12/n20/n25/n28/n38/n40/n41/n48/n66/n71/n77/n78/n7
	LTE-FDD :
	B1/B2/B3/B4/B5/B7/B8/B9/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B
	LTE-TDD : B34/B38/39/B40/B41/B42/B43/B48
	LTE LAA : B46 (only support 2x2 MIMO)
	WCDMA : B1/B2/B3/B4/B5/B6/B8/B19
	GNSS : GPS/GLONASS/BeiDou (Compass)/Galileo
Power Supply	Supply voltage range: 3.3–4.4 V
	Typical supply voltage: 3.7 V

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	Class 3 (24 dBm +1/-3 dB) for WCDMA bands
	Class 3 (23 dBm ±2 dB) for LTE bands
T W D	Class 3 (23 dBm ±2 dB) for 5G NR bands
Transmitting Power	Class 2 (26 dBm ±2 dB) for LTE B38/B40/B41/B42 bands HPUE
	Class 2 (26 dBm +2/-3 dB) for 5G NR n41/n77/n78/n79 bands
	HPUE
	5G SA Sub-6 Data Rate (Mbps) : DL 2.1 Gbps; UL 900 Mbps
	5G NSA Sub-6 Data Rate (Mbps) : DL 2.5 Gbps; UL 650 Mbps
Data Transmission	LTE Data Rate (Mbps) : DL 1.0 Gbps; UL 200 Mbps
	WCDMA Data Rate (Mbps) : DL 42 Mbps; UL 5.76 Mbps
	Supports 3GPP Rel-15
	Supported modulations:
	Uplink: π/2-BPSK, QPSK, 16QAM, 64QAM and 256QAM
	Downlink: QPSK, 16-QAM, 64-QAM and 256-QAM
	Supported MIMO:
	Uplink: 2 × 2 MIMO* on n41/n77/n78/n79
	Downlink: 4 × 4 MIMO on
	n1/n2/n3/n7/n25/n38/n40/n41/n48/n66/n77/
	n78/n79
	Supports SCS 15 kHz and 30 kHz
5G NR Features	Supports SA and NSA operation modes
	Supports Option 3x, 3a and Option 2
	RG500Q-EA:
	NSA: Max. 2.5 Gbps (DL)/650 Mbps (UL)
	SA: Max. 2.1 Gbps (DL)/900 Mbps (UL)
	RG500Q-NA*:
	NSA: Max. 2.5 Gbps (DL)/650 Mbps (UL)
	SA: Max. 2.1 Gbps (DL)/450 Mbps (UL)
	RG502Q-EA:
	NSA: Max. 5.0 Gbps (DL)/650 Mbps (UL)
	SA: Max. 4.2 Gbps (DL)/900 Mbps (UL)
	Supports 3GPP Rel-15
	Supports up to CA Cat 16 FDD and TDD
	Supported modulations:
	Uplink: QPSK, 16-QAM, 64-QAM and 256-QAM
	Downlink: QPSK, 16-QAM, 64-QAM and 256-QAM
	Supports 1.4/3/5/10/15/20 MHz RF bandwidth
	Supports DL 4 × 4 MIMO on
LTE Features	B1/B2/B3/B4/B7/B25/B30/B32/B34/B38/B39/
	B40/B41/B42/B43/B46/B48/B66
	RG500Q-EA:
	LTE: Max. 1.0 Gbps (DL)/200 Mbps (UL)
	RG500Q-NA*:
	LTE: Max. 1.0 Gbps (DL)/200 Mbps (UL)
	RG502Q-EA:
	LTE: Max. 2.0 Gbps (DL)/200 Mbps (UL)
	Supports 3GPP Rel-9 DC-HSDPA, HSPA+, HSDPA, HSUPA and
	WCDMA
	Supports QPSK, 16-QAM and 64-QAM modulations
UMTS Features	DC-HSDPA: Max. 42 Mbps
	HSUPA: Max. 5.76 Mbps
	WCDMA: Max. 384 kbps (DL)/384 kbps (UL)
	Supports
Internet Protocol Features	QMI/TCP*/UDP*/FTP*/HTTP*/NTP*/PING*/HTTPS*/SMTP*/
	MMS*/FTPS*/SMTPS*/SSL* protocols

	Text and PDU modes
SMS	Point-to-point MO and MT
3110	SMS cell broadcast
	SMS storage: ME by default
(U)SIM Interfaces	Supports SIM/USIM cards: 1.8/2.95 V
	Supports two digital audio interfaces: PCM* and I2S 2)
	WCDMA: AMR/AMR-WB
Audio Features	LTE: AMR/AMR-WB
	Supports echo cancellation and noise suppression
	Supports 16-bit linear data format
	Supports long frame synchronization and short frame
	synchronization
PCM Interface	Supports master and slave modes, but must be in master mode for
	long
	frame synchronization
	Supports 16-bit linear data format
	I2S is commonly used as a 4-wire DAI (normally I2S_MCLK is not
	used in
	the design) in Hi-Fi, STB and portable devices. The Tx and Rx lines
I2S Interface	are
	used for audio transmission, while the bit clock and left/right clock
	synchronize the link. I2S is flexible in that either the controller or
	codec can
	drive (master) the bit clock and left/right clock lines.
	Can be multiplexed to PCM function
	Compliant with USB 3.1 and 2.0 specifications, with maximum transmission
	rates of up to 10 Gbps on USB 3.1 and 480 Mbps on USB 2.0
	Used for AT command communication, data transmission, GNSS NMEA
	output, software debugging and firmware upgrade
	Supports USB serial drivers for: Windows 7/8/8.1/10, Linux 2.6–5.4,
	Android 4.x–9.x
USB Interface	
	USB Serial Driver : Windows 7/8/8.1/10, Linux 2.6–5.4, Android
	4.x/5.x/6.x/7.x/8.x/9.x/10
	GNSS Driver : Android 4.x/5.x/6.x/7.x/8.x/9.x/10
	RIL Driver : Android 4.x/5.x/6.x/7.x/8.x/9.x/10
	NDIS Driver : Windows 7/8/8.1/10
	MBIM Driver : Windows 7/8/8.1/10, Linux 3.18–5.4
	GobiNet Driver : Linux 2.6–5.4
	QMI_WWAN Driver : Linux 3.4–5.4
	Main UART:
	Used for AT command communication
	Baud rate: 115200 bps by default
	Supports RTS and CTS hardware flow control
	Debug UART:
	Used for Linux console and log output
UART Interfaces	Baud rate: 115200 bps
	BT UART:
	Used for BT communication
	Baud rate: 115200 bps
	COEX UART:
	Used for WWAN/WLAN coexistence algorithms

PCIe Interface Rx-diversity GNSS Features Antenna Tuner Control	Compliant with PCI Express Specification Revision 3.0 Supports 2 lanes, 8 Gbps/lane Can be used to connect an external WLAN IC Supports 5G NR/LTE/WCDMA Rx-diversity Gen9C Lite of Qualcomm Supports dual-band GNSS: L1 and L5 Protocol: NMEA 0183 Data update rate: 1 Hz
Interface AT Commands	GRFC interface dedicated for external antenna tuner Compliant with 3GPP TS 27.007, 27.005 and Quectel enhanced AT commands
Network Indication	Two pins NET_MODE* and NET_STATUS to indicate network connectivity status Eight cellular antenna interfaces (ANT0–ANT7) and one GNSS
Antenna Interfaces	antenna interface (ANT_GNSS)
Physical Characteristics	52.0mm x 30.0mm x 2.3mm, 8.4g Standard operating temperature range : -20 to 60°C
	Operating temperature range: -30 °C to +75 °C To meet this operating temperature range, you need to ensure effective thermal dissipation, for example, by adding passive or active heatsinks, heat pipes, vapor chambers, etc. Within this range, the module can meet 3GPP specifications. Extended temperature range: -40 °C to +85 °C To meet this extended temperature range, you need to ensure
Operating Temperature	effective thermal dissipation, for example, by adding passive or active heatsinks, heat pipes, vapor chambers, etc. Within this range, the module remains the ability to establish and maintain functions such as voice, SMS, emergency call, etc., without any unrecoverable malfunction. Radio spectrum and radio network are not influenced, while one or more specifications, such as Pout, may undergo a reduction in value, exceeding the specified tolerances of 3GPP. When the temperature returns to the normal operating temperature level, the module will meet 3GPP specifications again.
Firmware Upgrade	Storage temperature range: -40 °C to +90 °C USB 2.0 and DFOTA