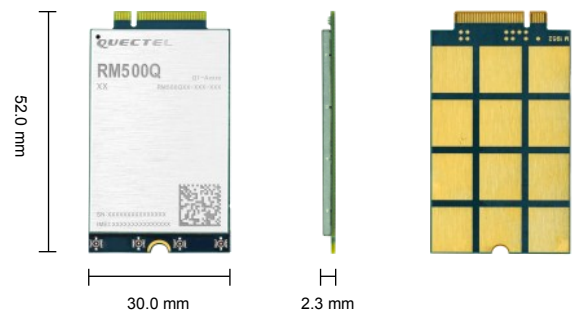




Quectel RM500Q-AE

IoT/eMBB-Optimized
5G Sub-6 GHz M.2 Module



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 20 module EM20, which facilitates customers' migration from LTE-A to 5G.

The North America & EMEA 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 the 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 and 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.



Key Benefits

- ✓ 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 supported
- ✓ Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment
- ✓ Feature refinements: DFOTA and VoLTE (optional)



5G NR Sub-6 Bands Supported



LTE Cat 16
DL: Max. 1.0 Gbps
UL: Max. 200 Mbps



DL: Max. 42 Mbps
UL: Max. 5.76 Mbps



Embedded Abundant Protocols



M.2 Form Factor



Multi-constellation GNSS



USB 3.1/PCIe 3.0 High Speed Interface



Voice over LTE (Optional)



Quectel Enhanced AT Commands

Version: 1.0 | Status: Preliminary

Quectel RM500Q-AE

RM500Q-AE	
Region/Operator	North America/Europe
Dimensions (mm)	52.0 × 30.0 × 2.3
Weight (g)	8.7
Temperature Range	
Operation Temperature	-20 °C to +70 °C
Extended Temperature	-40 °C to +85 °C
Frequency Bands	
5G NR NSA	n1 ^① /n2 ^① /n3 ^① /n5 ^① /n7 ^① /n8 ^① /n12 ^① /n20 ^① /n25 ^① /n28 ^① /n38 ^① /n40 ^① /n41*/n66 ^① /n71 ^① /n77*/n78*/n79*
5G NR SA	n1 ^① /n2 ^① /n3 ^① /n5 ^① /n7 ^① /n8 ^① /n12 ^① /n20 ^① /n25 ^① /n28 ^① /n38 ^① /n40 ^① /n41*/n66 ^① /n71 ^① /n77*/n78*/n79*
LTE-FDD	B1/B2/B3/B4/B5/B7/B8/B9/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/B32/B66/B71
LTE-TDD	B34/B38/39/B40/B41/B42/B43/B48
LTE DL 4 × 4 MIMO	B1/B2/B3/B4/B7/B25/B30/B32/B34/B38/39/B40/B41/B42/B43/B48/B66
LAA	B46 (only support 2 × 2 MIMO)
WCDMA	B1/B2/B3/B4/B5/B6/B8/B19
MIMO	DL: 4 × 4
GNSS	GPS/GLONASS/BeiDou (Compass)/Galileo
Certifications	
Carrier	Verizon*/T-mobile*/ AT&T
Regulatory	Global: GCF* Europe: CE* North America: FCC*/IC*/PTCRB*
Others	RoHS/WHQL
Data Transmission (Max.) ^②	
5G SA Sub-6 Data Rate	DL 2.1 Gbps; UL 900 Mbps
5G NSA Sub-6 Data Rate	DL 2.5 Gbps; UL 650 Mbps
LTE Data Rate	DL 1.0 Gbps; UL 200 Mbps
WCDMA Data Rate	DL 42 Mbps; UL 5.76 Mbps
Interfaces	
(U)SIM	x 1
USB 2.0	x 1
USB 3.0/3.1	x 1
PCIe 3.0	x 1
PCM	x 1
Antenna	x 4
Voice	
VoLTE	Digital Audio and VoLTE (Voice over LTE) (optional)
Enhanced Features	
e-SIM	External eSIM
DTMF*	●
DFOTA*	●
(U)SIM Card Detection	●
Drivers	
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
Electrical Features	
Supply Voltage Range	3.135–4.4 V, typical 3.7 V
Power Consumption	TBD @ Power off TBD @ Sleep, typical. TBD @ Idle

Notes:

- * means under development.
- means supported.
- ① will be supported in 2020 H2 according to chipset schedule.
- ② the presented data rates are theoretical only, and the actual value depends on network condition.