

# Notified Body

## EU Type Examination Certificate

Manufacturer company name: Quectel Wireless Solutions Co., Ltd  
Manufacturer address: Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233  
Description of the radio equipment: 5G Sub-6 GHz M.2 Module  
Trade name/brand name: **QUECTEL**  
Model/type indication: RM500Q-AE  
Software version: RM500QAEAAR11A01M4G  
Hardware version: R1.0  
Frequency bands of operation: UMTS/E-UTRA/5GNR transceivers  
GNSS receiver  
TD reference: RM500Q-AE  
ACB project number: ATCB027073  
Certificate number: ATCB027073, issue 1

ACB, Inc. is designated as a Notified Body under the  
U.S.-EU Mutual Recognition Agreement for Radio Equipment Directive 2014/53/EU

**ACB, Inc.**  
**Notified Body Number 1588**  
6731 Whittier Avenue, Suite C110  
McLean, VA 22101, USA

In the opinion of ACB, Inc., the examination of the technical documentation as drawn up by the manufacturer demonstrates that the essential requirements of Article 3.1a, Article 3.1b and Article 3.2, of Radio Equipment Directive 2014/53/EU have been met. The conformity assessment on the radio equipment listed above and as described in Annex 1 to this EU-type examination certificate has been carried out in accordance with Annex III, Module B, of Radio Equipment Directive 2014/53/EU. This EU-type examination certificate relates only to the documents as provided to ACB, Inc.

A list of documentation forming the basis for the EU-type examination is provided in  
Annex 2 to this EU-type examination certificate.



Notified Body: Ivan Wen

10 June 2021  
Date



**Annex 1 to EU-type examination certificate for Radio Equipment Directive 2014/53/EU**

**Date of issue: 10 June 2021**

**TD reference: RM500Q-AE**

**ACB project number/certificate number: ATCB027073, issue 1**

The radio equipment as described and documented in the technical documentation as drawn up by the manufacturer is a 5G Sub-6 GHz M.2 Module.

It supports UMTS technology in the bands I/III/VIII.

It supports LTE technology in the bands: 1/3/7/8/20/28/32/34/38/40/42/43/46.

It supports HPUE power class 2 in the bands 38/40/42/43 of LTE mode.

It supports intra-band contiguous carrier aggregation (CA) for downlink and uplink in the bands 3/7/40/42.

It supports inter-band carrier aggregation (CA) for downlink in the bands:

CA\_20A-32A, CA\_1A-46A, CA\_3A-46A, CA\_7A-46A.

It supports 5G NR standalone (SA) technology in the bands: n1/n3/n7/n8/n20/n28/n38/n40/n41/n77/n78.

It supports HPUE power class 2 in the bands n41(2X2 UL-MIMO)/n77/n78 of 5G NR standalone (SA) mode.

It supports 5G NR non-standalone (NSA) technology in the bands n28/n41/n77/n78.

It supports inter-band EN-DC configurations within FR1 (two bands):

DC\_1A\_n28A, DC\_3A\_n28A, DC\_7A\_n28A, DC\_3A\_n41A, DC\_8A\_n41A, DC\_1A\_n77A, DC\_3A\_n77A, DC\_8A\_n77A, DC\_28A\_n77A, DC\_1A\_n78A, DC\_3A\_n78A, DC\_7A\_n78A, DC\_8A\_n78A, DC\_20A\_n78A, DC\_28A\_n78A, DC\_38A\_n78A

This radio equipment also supports operation in frequency bands which are not available for use in Member States of the European Union and EFTA countries and which have not been included in this conformity assessment.

The conformity assessment of this radio equipment is limited to those frequency bands of operation which are available for use in one or more Member States of the European Union and EFTA countries as detailed below.

### **Details of operation:**

Description of service: UMTS 900 MHz Band VIII  
Transmit frequency: 880 MHz to 915 MHz  
Receive frequency: 925 MHz to 960 MHz  
Modulation: QPSK, 16QAM, 64QAM (DL)  
Power class: Class 3  
Transmit power: 24.68 dBm, conducted

Description of service: UMTS 1800 MHz Band III  
Transmit frequency: 1710 MHz to 1785 MHz  
Receive frequency: 1805 MHz to 1880 MHz  
Modulation: QPSK, 16QAM, 64QAM (DL)  
Power class: Class 3  
Transmit power: 24.59 dBm, conducted

Description of service: UMTS 2100 MHz Band I  
Transmit frequency: 1920 MHz to 1980 MHz  
Receive frequency: 2110 MHz to 2170 MHz  
Modulation: QPSK, 16QAM, 64QAM (DL)  
Power class: Class 3  
Transmit power: 24.75 dBm, conducted



**Annex 1 to EU-type examination certificate for Radio Equipment Directive 2014/53/EU**

**Date of issue: 10 June 2021      TD reference: RM500Q-AE**

**ACB project number/certificate number: ATCB027073, issue 1**

Description of service: E-UTRA LTE Band 1  
Transmit frequency: 1920 MHz to 1980 MHz  
Receive frequency: 2110 MHz to 2170 MHz  
Modulation: QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 3  
Transmit power: 22.70 dBm, conducted

Description of service: E-UTRA LTE Band 3 (UL CA\_3C)  
Transmit frequency: 1710 MHz to 1785 MHz  
Receive frequency: 1805 MHz to 1880 MHz  
Modulation: QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 3  
Transmit power: 22.91 dBm, conducted

Description of service: E-UTRA LTE Band 7 (UL CA\_7C)  
Transmit frequency: 2500 MHz to 2570 MHz  
Receive frequency: 2620 MHz to 2690 MHz  
Modulation: QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 3  
Transmit power: 22.71 dBm, conducted

Description of service: E-UTRA LTE Band 8  
Transmit frequency: 880 MHz to 915 MHz  
Receive frequency: 925 MHz to 960 MHz  
Modulation: QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 3  
Transmit power: 24.66 dBm, conducted

Description of service: E-UTRA LTE Band 20  
Transmit frequency: 832 MHz to 862 MHz  
Receive frequency: 791 MHz to 821 MHz  
Modulation: QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 3  
Transmit power: 24.56 dBm, conducted

Description of service: E-UTRA LTE Band 28  
Transmit frequency: 703 MHz to 748 MHz  
Receive frequency: 758 MHz to 803 MHz  
Modulation: QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 3  
Transmit power: 23.25 dBm, conducted

Description of service: E-UTRA LTE Band 32 (DL CA-only)  
Transmit frequency: N/A  
Receive frequency: 1452 MHz to 1496 MHz  
Modulation: QPSK, 16QAM, 64QAM, 256QAM  
Power class: N/A  
Transmit power: N/A



**Annex 1 to EU-type examination certificate for Radio Equipment Directive 2014/53/EU**

**Date of issue: 10 June 2021      TD reference: RM500Q-AE**  
**ACB project number/certificate number: ATCB027073, issue 1**

Description of service: E-UTRA LTE Band 34  
Transmit frequency: 2010 MHz to 2025 MHz  
Receive frequency: 2010 MHz to 2025 MHz  
Modulation: QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 3  
Transmit power: 22.73 dBm, conducted

Description of service: E-UTRA LTE Band 38  
Transmit frequency: 2570 MHz to 2620 MHz  
Receive frequency: 2570 MHz to 2620 MHz  
Modulation: QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 2, 3  
Transmit power: 25.81 dBm, 22.89 dBm, conducted

Description of service: E-UTRA LTE Band 40 (UL CA\_40C)  
Transmit frequency: 2300 MHz to 2400 MHz  
Receive frequency: 2300 MHz to 2400 MHz  
Modulation: QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 2, 3  
Transmit power: 25.43 dBm, 22.66 dBm, conducted

Description of service: E-UTRA LTE Band 42 (UL CA\_42C)  
Transmit frequency: 3400 MHz to 3600 MHz  
Receive frequency: 3400 MHz to 3600 MHz  
Modulation: QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 2, 3  
Transmit power: 25.46 dBm, 22.59 dBm, conducted

Description of service: E-UTRA LTE Band 43  
Transmit frequency: 3600 MHz to 3800 MHz  
Receive frequency: 3600 MHz to 3800 MHz  
Modulation: QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 2, 3  
Transmit power: 25.40 dBm, 23.55 dBm, conducted

Description of service: E-UTRA LTE Band 46 (DL CA-only)  
Transmit frequency: N/A  
Receive frequency: 5150 MHz to 5925 MHz  
Modulation: QPSK, 16QAM, 64QAM, 256QAM  
Power class: N/A  
Transmit power: N/A

Description of service: 5G NR\_n1 (SA)  
Transmit frequency: 1920 MHz to 1980 MHz  
Receive frequency: 2110 MHz to 2170 MHz  
Modulation:  $\pi/2$ -BPSK, QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 3  
Transmit power: 23.99 dBm, conducted



**Annex 1 to EU-type examination certificate for Radio Equipment Directive 2014/53/EU**

**Date of issue: 10 June 2021      TD reference: RM500Q-AE**

**ACB project number/certificate number: ATCB027073, issue 1**

Description of service: 5G NR \_n3 (SA)  
Transmit frequency: 1710 MHz to 1785 MHz  
Receive frequency: 1805 MHz to 1880 MHz  
Modulation:  $\pi/2$ -BPSK, QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 3  
Transmit power: 23.51 dBm, conducted

Description of service: 5G NR \_n7 (SA)  
Transmit frequency: 2500 MHz to 2570 MHz  
Receive frequency: 2620 MHz to 2690 MHz  
Modulation:  $\pi/2$ -BPSK, QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 3  
Transmit power: 24.05 dBm, conducted

Description of service: 5G NR \_n8 (SA)  
Transmit frequency: 880 MHz to 915 MHz  
Receive frequency: 925 MHz to 960 MHz  
Modulation:  $\pi/2$ -BPSK, QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 3  
Transmit power: 23.97 dBm, conducted

Description of service: 5G NR \_n20 (SA)  
Transmit frequency: 832 MHz to 862 MHz  
Receive frequency: 791 MHz to 821 MHz  
Modulation:  $\pi/2$ -BPSK, QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 3  
Transmit power: 23.47 dBm, conducted

Description of service: 5G NR \_n28 (SA, NSA)  
Transmit frequency: 703 MHz to 748 MHz  
Receive frequency: 758 MHz to 803 MHz  
Modulation:  $\pi/2$ -BPSK, QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 3  
Transmit power: 23.61 dBm, conducted

Description of service: 5G NR \_n38 (SA)  
Transmit frequency: 2570 MHz to 2620 MHz  
Receive frequency: 2570 MHz to 2620 MHz  
Modulation:  $\pi/2$ -BPSK, QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 3  
Transmit power: 23.99 dBm, conducted

Description of service: 5G NR \_n40 (SA)  
Transmit frequency: 2300 MHz to 2400 MHz  
Receive frequency: 2300 MHz to 2400 MHz  
Modulation:  $\pi/2$ -BPSK, QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 3  
Transmit power: 24.54 dBm, conducted



**Annex 1 to EU-type examination certificate for Radio Equipment Directive 2014/53/EU**

**Date of issue: 10 June 2021      TD reference: RM500Q-AE**  
**ACB project number/certificate number: ATCB027073, issue 1**

Description of service: 5G NR n41 (SA, NSA)  
Transmit frequency: 2496 MHz to 2690 MHz  
Receive frequency: 2496 MHz to 2690 MHz  
Modulation:  $\pi/2$ -BPSK, QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 2, 3  
Transmit power: 26.92 dBm, 24.04 dBm, conducted

Description of service: 5G NR\_n77 (SA, NSA)  
Transmit frequency: 3300 MHz to 4200 MHz  
Receive frequency: 3300 MHz to 4200 MHz  
Modulation:  $\pi/2$ -BPSK, QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 2, 3  
Transmit power: 26.79 dBm, 23.95 dBm, conducted

Description of service: 5G NR n78 (SA, NSA)  
Transmit frequency: 3300 MHz to 3800 MHz  
Receive frequency: 3300 MHz to 3800 MHz  
Modulation:  $\pi/2$ -BPSK, QPSK, 16QAM, 64QAM, 256QAM  
Power class: Class 2, 3  
Transmit power: 27.39 dBm, 24.20 dBm, conducted

Description of service: GPS Receiver  
Transmit frequency: None  
Receive frequency: 1575.42 MHz

Description of service: Glonass Receiver  
Transmit Frequency: None  
Receive Frequency: 1602.00 MHz + (n \* 0.5625 MHz), n = -7, -6, -5, ..., 0, ..., 6)

Description of service: Beidou Receiver  
Transmit Frequency: None  
Receive Frequency: 1561.098 MHz

Description of service: Galileo Receiver  
Transmit Frequency: None  
Receive Frequency: 1575.42 MHz



**Annex 2 to EU-type examination certificate for Radio Equipment Directive 2014/53/EU**

**Date of issue: 10 June 2021**

**TD reference: RM500Q-AE**

**ACB project number/certificate number: ATCB027073, issue 1**

1	Test report:	MRT Reports number:	Dated:
	EMC	2011RSU077-E3	18 May 2021
	Radio (GPS)	2011RSU077-E5	18 May 2021
	Radio (UMTS&LTE)	2011RSU077-E1	18 May 2021
	Radio (5G NR)	2011RSU077-E2	18 May 2021
	RF safety	2011RSU077-E4	18 May 2021
	Product safety	2011SSU005-E2	30 November 2020

2	Technical documentation provided:		
	Circuit diagram/schematics	External photographs	Internal photographs
	Label drawing/location	Operational description	PCB Layout
	Block diagram	Test reports	Test setup photographs
	User manual	EU declaration of conformity	Risk assessment

TD reference: RM500Q-AE ATCB026175, issue 1

3 Standards used to demonstrate conformity with the essential requirements of Radio Equipment Directive 2014/53/EU:

Radio Spectrum (Article 3.2):	EN 301 908-1 V13.1.1 EN 301 908-13 V13.1.1 EN 303 413 V1.1.1	EN 301 908-2 V13.1.1 EN 301 908-25 V15.1.1_15.0.2
-------------------------------	--	--

EMC (Article 3.1b):	EN 301 489-1 V2.2.3 EN 301 489-52 V2.0.3	EN 301 489-19 V2.1.1
---------------------	---	----------------------

RF safety (Article 3.1a):	EN 62311: 2008
---------------------------	----------------

Product safety (Article 3.1a):	EN 62368-1: 2014/A11: 2017
--------------------------------	----------------------------



**Annex 2 to EU-type examination certificate for Radio Equipment Directive 2014/53/EU**

**Date of issue: 10 June 2021**

**TD reference: RM500Q-AE**

**ACB project number/certificate number: ATCB027073, issue 1**

4 Additional information:

This is a Class 1 device.

E-UTRA operation in band 32 is only allowed to operate between 1452 MHz and 1492 MHz.

E-UTRA operation in bands 32/46 is only allowed to operate for inter-band Carrier Aggregation in DL-only.

NR UE in Band n28 is only allowed to operate from 703 MHz up to 736 MHz for the transmitter and between 758 MHz to 791 MHz for the receiver

NR UE operation in Band n41 is restricted to 2500 MHz - 2690 MHz frequency range.

NR UE operation in Band n77 is restricted to 3400 MHz - 4200 MHz frequency range.

NR UE operation in Band n78 is restricted to 3400 MHz - 3800 MHz frequency range.

The module was assessed for use with cables of less than 3m length and not for use in automotive environments. For RF Exposure, the module was assessed for use at more than 20 cm from the body. When installing this module permanently into a host product to create a new Radio Equipment Directive device; the manufacturer responsible for the final product must assess if the combination of this module and the host equipment complies with the essential requirements of the RE Directive 2014/53/EU.

Radio Equipment Directive 2014/53/EU, Article 10.4: Manufacturers shall keep the technical documentation and the EU declaration of conformity for 10 years after the radio equipment has been placed on the market.

Radio Equipment Directive 2014/53/EU, Article 10.6: Manufacturers shall ensure that radio equipment which they have placed on the market bears a type, batch or serial number or other element allowing its identification, or, where the size or nature of the radio equipment does not allow it, that the required information is provided on the packaging, or in a document accompanying the radio equipment.

Radio Equipment Directive 2014/53/EU, Article 10.7: Manufacturers shall indicate on the radio equipment their name, registered trade name or registered trade mark and the postal address at which they can be contacted or, where the size or nature of radio equipment does not allow it, on its packaging, or in a document accompanying the radio equipment. The address shall indicate a single point at which the manufacturer can be contacted. The contact details shall be in a language easily understood by end-users and market surveillance authorities.

Radio Equipment Directive 2014/53/EU, Article 10.8: Manufacturers shall ensure that the radio equipment is accompanied by instructions and safety information in a language which can be easily understood by consumers and other end-users, as determined by the Member State concerned. Instructions shall include the information required to use radio equipment in accordance with its intended use. Such information shall include, where applicable, a description of accessories and components, including software, which allow the radio equipment to operate as intended. Such instructions and safety information, as well as any labelling, shall be clear, understandable and intelligible.

The following information shall also be included in the case of radio equipment intentionally emitting radio waves:

(a) frequency band(s) in which the radio equipment operates;

(b) maximum radio-frequency power transmitted in the frequency band(s) in which the radio equipment operates.

Radio Equipment Directive 2014/53/EU, Article 10.9: Manufacturers shall ensure that each item of radio equipment is accompanied by a copy of the EU declaration of conformity or by a simplified EU declaration of conformity.

Where a simplified EU declaration of conformity is provided, it shall contain the exact internet address where the full text of the EU declaration of conformity can be obtained.





**Annex 2 to EU-type examination certificate for Radio Equipment Directive 2014/53/EU**

**Date of issue: 10 June 2021**

**TD reference: RM500Q-AE**

**ACB project number/certificate number: ATCB027073, issue 1**

Radio Equipment Directive 2014/53/EU, Article 10.10: In cases of restrictions on putting into service or of requirements for authorization of use, information available on the packaging shall allow the identification of the Member States or the geographical area within a Member State where restrictions on putting into service or requirements for authorization of use exist. Such information shall be completed in the instructions accompanying the radio equipment.

Radio Equipment Directive 2014/53/EU, Article 19.2: On account of the nature of radio equipment, the height of the CE marking affixed to radio equipment may be lower than 5 mm, provided that it remains visible and legible.

Radio Equipment Directive 2014/53/EU, Article 20.1: The CE marking shall be affixed visibly, legibly and indelibly to the radio equipment or to its data plate, unless that is not possible or not warranted on account of the nature of radio equipment. The CE marking shall also be affixed visibly and legibly to the packaging.

Radio Equipment Directive 2014/53/EU, Annex III, Module B.7: The manufacturer shall inform the notified body that holds the technical documentation relating to the EU-type examination certificate of all modifications to the approved type that may affect the conformity of the radio equipment with the essential requirements of this Directive or the conditions for validity of that certificate. Such modifications shall require additional approval in the form of an addition to the original EU-type examination certificate.

This review includes draft standards, deviations from the standards and technical justification for compliance.

In accordance with Notified Body guidance; if there are no changes, a Notified Body EU type examination certificate has a validity of 10 years from the date of issue.

**5 Contact information:**

For contact with ACB or questions regarding this EU-type examination certificate:

Web: [www.acbcert.com](http://www.acbcert.com)

<http://acbcert.com/contact>

Tel.: (+1) 703 847 4700

