





MPE TEST REPORT

Applicant Quectel Wireless Solutions Co., Ltd

FCC ID XMR201909EG95NAX

Product LTE Module

Brand Quectel

Model EG95-NAX

Report No. R1907A0407-M2V1

Issue Date November 28, 2019

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC 47 CFR Part 1 1.1310**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Performed by: Peng Tao

Approved by: Kai Xu

TA Technology (Shanghai) Co., Ltd.

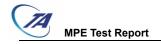
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1 Test Laboratory

1.1 Notes of the Test Report

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1.2 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.

Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China

City: Shanghai

Post code: 201201

Country: P. R. China

Contact: Xu Kai

Telephone: +86-021-50791141/2/3

Fax: +86-021-50791141/2/3-8000

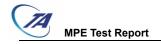
Website: http://www.ta-shanghai.com

E-mail: xukai@ta-shanghai.com

1.3 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25 °C		
Relative humidity	Min. = 30%, Max. = 70%		
Ground system resistance	< 0.5 Ω		
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Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.



2 Description of Equipment under Test

Client Information

Applicant	Quectel Wireless Solutions Co., Ltd		
Applicant address	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233		
Manufacturer	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		

General Technologies

Model	EG95-NAX
SN	865026040005000
Hardware Version	R1.0
Software Version	EG95NAXGAR07A01M1G
Date of Testing:	May 25, 2018 ~ June 27, 2018

EG95-NAX (Report No.: R1907A0407-M2) is a variant of the EG95-NA (Report No.: R1805A0249-M1V1). Test values duplicated from Original for variant. There is no test for variant in this report.



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3 Maximum conducted output power (measured) and antenna Gain

The numeric gain (G) of the antenna with a gain specified in dB is determined by Numeric gain (G)=10^(antenna gain/10)

Band	Maximum Conducted Output Power		
Bana	(dBm)	(mW)	
WCDMA Band II	25.00	316.23	
WCDMA Band IV	25.00	316.23	
WCDMA Band V	25.00	316.23	
LTE Band 2	25.00	316.23	
LTE Band 4	25.00	316.23	
LTE Band 5	25.00	316.23	
LTE Band 12	25.00	316.23	
LTE Band 13	25.00	316.23	

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According to section 1.1310 of FCC 47 CFR Part 1, limits for maximum permissible exposure (MPE) are as following

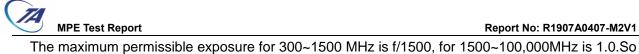
TABLE 1 - LIMITS FOR MAXIMUN PERMISSIBLE EXPOSURE (MPE)

Frequency Range	Electric Field	Magnetic Field	Power Density	Averaging Time
(MHz)	Strength	Strength		100
44.000 VA	(V/m)	(A/m)	(mVV/cm2)	(minutes)
	(A) Limits for Occu	upational/Controlle	d Exposures	
0.3-3.0	614	1.63	*(100)	6
3-30	1842/f	4.89/f	*(900/f2)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B)	Limits for General	Population/Uncont	rolled Exposure	
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f2)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

f = frequency in MHz

- Note1. Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational / controlled limits apply provided he or she is made aware of the potential for exposure.
- Note2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

^{* =} Plane-wave equivalent power density



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Band	The maximum permissible exposure
WCDMA II	1.0mW/cm ²
WCDMA IV	1.0mW/cm ²
WCDMA V	0.55mW/cm ²
LTE Band 2	1.0mW/cm ²
LTE Band 4	1.0mW/cm ²
LTE Band 5	0.55mW/cm ²
LTE Band 12	0.47mW/cm ²
LTE Band 13	0.52mW/cm ²

Band	Maximum Conducted EIRP Output limit Power (dBm) (dBm)	Margin1	Power density Limit		Margin2	Final	
Бапи			(dB)	(mW/cm²)	(dBm)	(dB)	Margin (dB)
WCDMA II	25.000	33.000	8.000	1.000	37.013	12.013	8.000
WCDMA IV	25.000	30.000	5.000	1.000	37.013	12.013	5.000
WCDMA V	25.000	40.600	15.600	0.550	34.416	9.416	9.416
LTE Band 2	25.000	33.000	8.000	1.000	37.013	12.013	8.000
LTE Band 4	25.000	30.000	5.000	1.000	37.013	12.013	5.000
LTE Band 5	25.000	40.600	15.600	0.550	34.416	9.416	9.416
LTE Band 12	25.000	36.920	11.920	0.470	33.734	8.734	8.734
LTE Band 13	25.000	36.920	11.920	0.520	34.173	9.173	9.173

Note: 1. The Maximum allowed antenna gain per Band should be less than or equal to the **Final Margin** which is the allowable maximum gain value to comply with limits for maximum permissible exposure (MPE).

- 2. The Final Margin is determined and selected to the worst-case of Margin1 and Margin2.
- 3. Margin1=EIRP Limit(dBm)-Maximum Conducted Power (dBm). EIRP limit reference standard part22/ part24/part27and part90 for each band, EIRP = ERP + 2.15 (dB).
- 4. Margin2=Power density Limit(dBm)-Maximum Conducted Power (dBm). Power density Limit(dBm): The max. obtained by MPE with 20cm.

IMPORTANT NOTE: To comply with the FCC RF exposure compliance requirements, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. No change to the antenna or the device is permitted. Any change to the antenna or the device could result in the device exceeding the RF exposure requirements and void user's authority to operate the device.



RF Exposure Calculations:

The following information provides the minimum separation distance for the highest gain antenna provided. This calculation is based on the conducted power, considering maximum power and antenna gain. The formula shown in KDB 447498 D01 is used in the calculation.

Equation from KDB 447498 D01 General RF Exposure Guidance v06 (10/23/2015) is:

S= PG /
$$4 \square R^2$$

Where: S = power density (in appropriate units, e.g. mW/cm²)

P = Time-average maximum tune up procedure (in appropriate units, e.g., mW)

G = the numeric gain of the antenna

R = distance to the center of radiation of the antenna (20 cm = limit for MPE)

Band	PG (mW)	Test Result (mW/cm ²)	Limit Value (mW/cm²)
WCDMA Band II	1995.262	0.397	1.000
WCDMA Band IV	1000.000	0.199	1.000
WCDMA Band V	2764.394	0.550	0.550
LTE Band 2	1995.262	0.397	1.000
LTE Band 4	1000.000	0.199	1.000
LTE Band 5	2764.394	0.550	0.550
LTE Band 12	2362.653	0.470	0.470
LTE Band 13	2613.966	0.520	0.520
Note: R = 20cm			

Note: For transmitters, minimum separation distance is 20cm, even if calculations indicate MPE distance is less.