RF EXPOSURE REPORT

Product:	LTE Cat 1 Module
Model Name:	EG91-VX
FCC ID:	XMR201907EG91VX
Applicant:	Quectel Wireless Solutions Co., Ltd.
Address:	7th Floor, Hongye Building, No.1801 Hongmei Road, Xuhui District, Shanghai 200233, China
Manufacturer:	Quectel Wireless Solutions Co., Ltd.
Address:	7th Floor, Hongye Building, No.1801 Hongmei Road, Xuhui District, Shanghai 200233, China
Prepared by:	BV 7Layers Communications Technology (Shenzhen) Co. Ltd
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Report No.:	SA190513W004
Received Date:	May. 13, 2019
Test Date:	May. 14, 2019 ~ Jun. 05, 2019
Issued Date:	Jun. 10, 2019

This report should not be used by the client to claim product certification, approval, or endorsement by A2LA or any government agencies.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA190513W004	Original release	Jun. 10, 2019

BV 7Layers Communications Technology (Shenzhen) Co. Ltd

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1 CERTIFICATION

PRODUCT:	LTE Cat 1 Module
BRAND NAME:	Quectel
MODEL NAME:	EG91-VX
APPLICANT:	Quectel Wireless Solutions Co., Ltd.
TESTED:	May. 14, 2019 ~ Jun. 05, 2019
TEST SAMPLE:	Production Unit
STANDARDS:	**FCC Part 2 (Section 2.1091)** **FCC OET Bulletin 65, Supplement C (01-01)** **KDB 447498 D01 General RF Exposure Guidance v06** IEEE C95.1

The above equipment has been tested by **BV 7Layers Communications Technology (Shenzhen) Co. Ltd** and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Alex , **DATE:** Jun. 10, 2019
(Alex Chen/ Engineer)

APPROVED BY : Luke Lu , **DATE:** Jun.10, 2019
(Luke Lu / Manager)

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	LTE Cat 1 Module
MODEL NAME	EG91-VX
NOMINAL VOLTAGE	3.8Vdc
OPERATING TEMPERATURE RANGE	-40 ~+85℃
MODULATION TYPE	QPSK, 16QAM
OPERATING FREQUENCY	LTE B4（TX：1710MHz-1755MHz，RX：2110MHz-2155MHz） LTE B13（TX：777MHz-787MHz，RX：746MHz-756MHz）
ANTENNA TYPE	External antenna
ANTENNA GAIN	2dBi for LTE 4 4.45dBi for LTE 13
HW VERSION	R1.0
SW VERSION	EG91VXGAR10A02M1G
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	N/A

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

3 RF EXPOSURE

3.1 LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

FREQUENCY RANGE (MHz)	ELECTRIC FIELD STRENGTH (V/m)	MAGNETIC FIELD STRENGTH (A/m)	POWER DENSITY (mW/cm^2)	AVERAGE TIME (minutes)
LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE				
300-1500	…	…	F/1500	30
1500-100,000	…	…	1.0	30

F = Frequency in MHz

3.2 MPE CALCULATION FORMULA

Pd = (Pout*G) / (4*pi*r2)

where

Pd = power density in mW/cm2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

3.3 CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Module Approve**.

3.4 CONDUCTED POWER

LTE BAND 4

BW	Modulation	RB Size	RB Offset	Low CH 19957	Mid CH 20175	High CH 20393	MPR
				Frequency 1710.7 MHz	Frequency 1732.5 MHz	Frequency 1754.3 MHz	
1.4MHz	QPSK	1	0	21.67	21.97	21.88	0
		1	2	21.68	21.91	21.87	0
		1	5	21.36	21.57	21.51	0
		3	0	21.66	21.9	21.88	0
		3	1	21.68	21.93	21.79	0
		3	3	21.56	21.79	21.73	0
		6	0	20.68	20.89	20.85	1
	16QAM	1	0	20.33	20.57	20.51	1
		1	2	20.59	20.79	20.77	1
		1	5	19.92	20.15	20.14	1
		3	0	20.11	20.36	20.28	1
		3	1	20.03	20.36	20.24	1
		3	3	20.01	20.26	20.22	1
		6	0	19.03	19.33	19.22	2
BW	Modulation	RB Size	RB Offset	Low CH 19965	Mid CH 20175	High CH 20385	MPR
				Frequency 1711.5 MHz	Frequency 1732.5 MHz	Frequency 1753.5 MHz	
3 MHz	QPSK	1	0	21.69	21.99	21.87	0
		1	7	21.64	21.92	21.87	0
		1	14	21.32	21.57	21.51	0
		8	0	20.65	20.93	20.88	1
		8	3	20.61	20.93	20.81	1
		8	7	20.53	20.86	20.77	1
		15	0	20.65	20.9	20.79	1
	16QAM	1	0	20.3	20.63	20.54	1
		1	7	20.56	20.82	20.75	1
		1	14	19.95	20.15	20.14	1
		8	0	19.07	19.37	19.28	2
		8	3	19.08	19.31	19.27	2
		8	7	19.03	19.24	19.18	2
		15	0	19.03	19.27	19.25	2

BW	Modulation	RB Size	RB Offset	Low CH 19975	Mid CH 20175	High CH 20375	MPR
				Frequency 1712.5 MHz	Frequency 1732.5 MHz	Frequency 1752.5 MHz	
5 MHz	QPSK	1	0	21.7	21.94	21.88	0
		1	12	21.69	21.89	21.87	0
		1	24	21.33	21.56	21.55	0
		12	0	20.68	20.93	20.85	1
		12	6	20.61	20.94	20.82	1
		12	13	20.57	20.82	20.78	1
		25	0	20.63	20.93	20.82	1
	16QAM	1	0	20.31	20.59	20.54	1
		1	12	20.53	20.85	20.74	1
		1	24	19.95	20.15	20.13	1
		12	0	19.07	19.35	19.25	2
		12	6	19.05	19.35	19.23	2
		12	13	18.98	19.26	19.21	2
		25	0	19.03	19.28	19.22	2
BW	Modulation	RB Size	RB Offset	Low CH 20000	Mid CH 20175	High CH 20350	MPR
				Frequency 1715 MHz	Frequency 1732.5 MHz	Frequency 1750 MHz	
10 MHz	QPSK	1	0	21.67	21.97	21.88	0
		1	24	21.69	21.89	21.88	0
		1	49	21.3	21.6	21.51	0
		25	0	20.69	20.92	20.88	1
		25	12	20.67	20.88	20.82	1
		25	25	20.55	20.79	20.77	1
		50	0	20.68	20.93	20.79	1
	16QAM	1	0	20.31	20.56	20.5	1
		1	24	20.58	20.81	20.77	1
		1	49	19.95	20.16	20.1	1
		25	0	19.09	19.33	19.31	2
		25	12	19.09	19.29	19.28	2
		25	25	18.97	19.27	19.18	2
		1	0	21.67	21.97	21.88	0

BW	Modulation	RB Size	RB Offset	Low CH 20025	Mid CH 20175	High CH 20325	MPR
				Frequency 1717.5 MHz	Frequency 1732.5 MHz	Frequency 1747.5 MHz	
15 MHz	QPSK	1	0	21.74	21.97	21.85	0
		1	37	21.67	21.94	21.83	0
		1	74	21.36	21.63	21.52	0
		36	0	20.66	20.93	20.89	1
		36	19	20.68	20.93	20.82	1
		36	39	20.53	20.8	20.77	1
		75	0	20.68	20.91	20.84	1
	16QAM	1	0	20.35	20.63	20.5	1
		1	37	20.57	20.82	20.77	1
		1	74	19.91	20.21	20.12	1
BW	Modulation	RB Size	RB Offset	Low CH 20050	Mid CH 20175	High CH 20300	MPR
				Frequency 1720 MHz	Frequency 1732.5 MHz	Frequency 1745 MHz	
20MHz	QPSK	1	0	21.75	**22.01**	21.93	0
		1	50	21.71	21.97	21.89	0
		1	99	21.38	21.64	21.56	0
		50	0	20.72	20.98	20.9	1
		50	25	20.69	20.95	20.87	1
		50	50	20.61	20.87	20.79	1
		100	0	20.69	20.95	20.87	1
	16QAM	1	0	20.38	20.64	20.56	1
		1	50	20.61	20.87	20.79	1
		1	99	19.97	20.23	20.15	1

LTE BAND 13

BW	Modulation	RB Size	RB Offset	Low CH 23205 Frequency 779.5 MHz	Mid CH 23230 Frequency 782.0 MHz	High CH 23255 Frequency 784.5 MHz	MPR
5 MHz	QPSK	1	0	22.23	21.94	22.27	0
		1	12	22.62	22.33	22.66	0
		1	24	22.56	22.27	22.60	0
		12	0	21.45	21.16	21.49	1
		12	6	21.76	21.47	21.80	1
		12	13	21.68	21.39	21.72	1
		25	0	21.68	21.39	21.72	1
	16QAM	1	0	21.06	20.77	21.10	1
		1	12	21.30	21.01	21.34	1
		1	24	20.97	20.68	21.01	1
		12	0	19.99	19.70	20.03	2
		12	6	19.93	19.64	19.97	2
		12	13	19.86	19.57	19.90	2
		25	0	19.97	19.68	20.01	2
BW	**Modulation**	**RB Size**	**RB Offset**	**CH Frequency MHz**	**CH 23230 Frequency 782.0 MHz**	**CH Frequency MHz**	**MPR**
10 MHz	QPSK	1	0	--	22.01	--	0
		1	24	--	**22.41**	--	0
		1	49	--	22.35	--	0
		25	0	--	21.21	--	1
		25	12	--	21.48	--	1
		25	25	--	21.44	--	1
		50	0	--	21.41	--	1
	16QAM	1	0	--	20.82	--	1
		1	24	--	21.03	--	1
		1	49	--	20.76	--	1
		25	0	--	19.78	--	2
		25	12	--	19.72	--	2
		25	25	--	19.65	--	2

3.5 CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

MAX TUNE-UP POWER

Band	Operating Mode	Tune-Up Power And Tolerance (dBm)
LTE 4	QPSK	22.0 ± 1.0
LTE 13	QPSK	22.0 ± 1.0

LTE

Band	Frequency (MHz)	Operating Mode	Antenna Gain (dBi)	Tune-up Power (dBm)	E.I.R.P Power (mW)	Power Density (mW/cm^2)	limit (mW/cm^2)	PASS / FAIL	Max Antenna Gain Allowed
LTE 4	1732.5	QPSK	2.0	23.0	354.813	0.071	1.00	PASS	13.0
LTE 13	782	QPSK	4.45	23.0	699.842	0.139	0.52	PASS	11.0

--END--