



FCC §15.247 (i), §2.1091 – RF Exposure

FCC ID: 2A2OKRRT-200-LTE

Applied procedures / limit

According to FCC §15.247(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

Note: f is frequency in MHz

* = Power density limit is applicable at frequencies greater than 100 MHz

Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz

* = Plane-wave equivalent power density

MPE PREDICTION

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

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

Where: S = power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna, R=0.20m

$\pi = 3.1416$

TEST RESULTS

	Tune up Produce power	Maximu m peak output power (dBm)	Output power to antenna (mW)	Antenna Gain (numeric)	Power Density (S) (mW/ cm2)	Limit (mW/ cm2)	Result
802.11 n20	19±1	20	100	1.26	0.02507	1	Pass
802.11 U- NII-1	19±1	20	100	1.58	0.03144	1	Pass
802.11 U-NII-3	19±1	20	100	1.58	0.03144	1	Pass

LTE MPE Refer to FCC ID: XMR201808EC25AF

Report Number: R1806A0301-R1V1, R1806A0301-R2V1, R1806A0301-R3V1, R1806A0301-R4V1

2. General Description of Equipment under Test

Client Information	
Applicant	Quectel Wireless Solutions Co., Ltd
Applicant address	7th Floor, Hongye Building, No.1801 Hongmei Road, Xuhui District, Shanghai 200233, China
Manufacturer	Quectel Wireless Solutions Co., Ltd
Manufacturer address	7th Floor, Hongye Building, No.1801 Hongmei Road, Xuhui District, Shanghai 200233, China

General Information	
EUT Description	
Model	EC25-AF; EC25-AF MINIPICIE
IMEI	EC25-AF :866834040000767 EC25-AF MINIPICIE: 866834040002375
Hardware Version	R1.0
Software Version	EC25AFFAR07A02M4G
Power Supply	External Power Supply
Antenna Type	The EUT don't have standard Antenna, The Antenna used for testing in this report is the after-market accessory (Dipole Antenna)
Antenna Gain	4dBi
Test Mode(s)	WCDMA Band V; LTE Band 5;
Test Modulation	(WCDMA)QPSK; (LTE)QPSK 16QAM;
HSDPA UE Category	24
HSUPA UE Category	6
LTE Category	4
Maximum E.R.P.	WCDMA Band V: 23.22dBm LTE Band 5: 23.69dBm

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Software Version	EC25AFFAR07A02M4G
Power Supply	External Power Supply
Antenna Type	The EUT don't have standard Antenna, The Antenna used for testing in this report is the after-market accessory (Dipole Antenna)
Antenna Gain	4dBi
Test Mode(s)	WCDMA Band II; LTE Band 2;
Test Modulation	(WCDMA)QPSK; (LTE)QPSK, 16QAM
HSDPA UE Category	24
HSUPA UE Category	6
LTE Category	4
Maximum E.I.R.P	WCDMA Band II: 25.49dBm LTE Band 2: 25.75dBm

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General Information

EUT Description	
Model	EC25-AF; EC25-AF MINIPICIE
IMEI	EC25-AF :866834040000767 EC25-AF MINIPICIE: 866834040002375
Hardware Version	R1.0
Software Version	EC25AFFAR07A02M4G
Power Supply	External Power Supply
Antenna Type	The EUT don't have standard Antenna, The Antenna used for testing in this report is the after-market accessory (Dipole Antenna)
Antenna Gain	4dBi
Test Mode(s)	WCDMA Band IV; LTE Band 4/12/13/ 66/ 71;
Test Modulation	(WCDMA)QPSK; (LTE)QPSK 16QAM;
HSDPA UE Category	24
HSUPA UE Category	6
LTE Category	4
Maximum E.I.R.P./ E.R.P.	WCDMA Band IV: 25.62dBm
	LTE Band 4: 26.08dBm
	LTE Band 12: 20.48dBm
	LTE Band 13: 23.63dBm
	LTE Band 66: 27.51dBm
	LTE Band 71: 22.72dBm



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General Information

EUT Description	
Model	EC25-AF; EC25-AF MINIPICIE
Product IMEI	866834040000767
Hardware Version	R1.0
Software Version	EC25AFFAR07A02M4G
Power Supply	External Power Supply
Antenna Type	The EUT don't have standard Antenna, The Antenna used for testing in this report is the after-market accessory (Dipole Antenna)
Antenna Gain	4dBi
Test Mode(s)	LTE Band 14;
Test Modulation	QPSK 16QAM;
LTE Category	4
Maximum E.R.P.	LTE Band 14: 23.48dBm

	Tune up Produce power	Maximum peak output power (dBm)	Output power to antenna (mW)	Antenna Gain (numeric)	Power Density (S) (mW/ cm2)	Limit (mW/ cm2)	Result
WCDMA II	25±1	26	398.11	2.51	0.19882	1	Pass
WCDMA IV	25±1	26	398.11	2.51	0.19882	1	Pass
WCDMA V	23±1	24	251.19	2.51	0.12545	0.55	Pass
LTE Band 2	25±1	26	398.11	2.51	0.19882	1	Pass
LTE Band 4	26±1	27	501.19	2.51	0.25030	1	Pass
LTE Band 5	23±1	24	251.19	2.51	0.12545	0.55	Pass
LTE Band 12	20±1	21	125.89	2.51	0.06287	0.47	Pass
LTE Band 13	23±1	24	251.19	2.51	0.12545	0.52	Pass
LTE Band 14	23±1	24	251.19	2.51	0.12545	0.53	Pass
LTE Band 66	27±1	28	630.96	2.51	0.31510	1	Pass
LTE Band 71	22±1	23	199.53	2.51	0.09965	0.45	Pass

The maximum permissible exposure for 300~1500 MHz is #/1500, for 1500~100,000MHz is 1.0. So

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
LTE Band 14	0.53mW/cm ²
LTE Band 66	1.0mW/cm ²
LTE Band 71	0.45mW/cm ²

For the Max simultaneous transmission

Evaluation mode	Power Density/Limit	Sum of the MPE rate	Limit	Result
802.11 b/g/n	0.02507	0.05651	1	Pass
802.11 U-NII-1	0.03144			

Evaluation mode	Power Density/Limit	Sum of the MPE rate	Limit	Result
802.11 b/g/n	0.02507	0.37161	1	Pass
802.11 U-NII-1	0.03144			
LTE Band 66	0.31510			

Note: Simultaneous Transmission RF Exposure Evaluation limit is Take the minimum value of the limit. So After calculation, it can meet the requirements