

## 1. Maximum Permissible Exposure (MPE)

### 1.1. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended to comply with § 2.1091 Radiofrequency radiation exposure evaluation: mobile devices of the FCC CFR 47 Rules, CFR 1.1310 (b) Radio frequency Radiation Exposure Requirement.

### 1.2. Special Accessories

Not available for this EUT intended for grant

### 1.3. Equipment Modifications

Not available for this EUT intended for grant.

### 1.4. Limitation

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-15000	/	/	1.0	30

F = frequency in MHz

\* = Plane-wave equipment power density

### 1.5. Exposure (MPE) Evaluation

The evaluation and calculation as deduces below presents only worst-case that produces highest value of the result:

Operation Configuration of the Worst-Case picked up to evaluate:

**LTE Band 4 / 13**

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## Operation in LTE Band 4 (1710 to 1755 MHz)

BAND 4 / BW: 5M / QPSK / RB: 1,0

EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 4	1712.5	19975	V	19.44	9.2	-2.5	26.14	30
			H	16.49	9.2	-2.5	23.19	30
	1732.5	20175	V	20.58	9.24	-2.51	27.31	30
			H	16.32	9.24	-2.51	23.05	30
	1752.5	20375	V	21.37	9.8	-2.51	28.66	30
			H	15.46	9.8	-2.51	22.75	30

$$\text{Power Density} = \text{EIRP} \times \text{Duty Cycle} / (4\pi R^2)$$

Duty Cycle is 1 for LTE band operation and R is 20cm.

EIRP	28.66	(dBm)
EIRP	734.514	(mW)
Duty cycle:	1	(%)
Maximum Pav :	7.34513868	(mW)
Prediction distance:	20	(cm)
Prediction frequency:	1752.5	(MHz)
MPE limit for uncontrolled exposure at prediction	1.0000	(mW/cm <sup>2</sup> )
Power density at predication frequency at 20 (cm)	0.00146	(mW/cm <sup>2</sup> )

### Measurement Result

The predicted power density level at 20 cm is 0.00146 mW/cm<sup>2</sup>.

This is below the uncontrolled exposure limit of 1 mW/cm<sup>2</sup> at 1752.5MHz.

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## Operation in LTE Band 13 (777 to 787 MHz)

BAND 13 / BW: 5M / QPSK / RB: 1,0

EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
LTE BAND 13	779.5	23205	V	21.76	0.06	-1.62	20.2	44.77
			H	25.61	0.06	-1.62	24.05	44.77
	782.0	23230	V	23.51	0.09	-1.61	21.99	44.77
			H	27.69	0.09	-1.61	26.17	44.77
	784.5	23255	V	22.45	0.1	-1.6	20.95	44.77
			H	26.89	0.1	-1.6	25.39	44.77

$$\text{Power Density} = \text{EIRP} \times \text{Duty Cycle} / (4\pi R^2)$$

Duty Cycle is 1 for LTE band operation and R is 20cm.

ERP	26.17	(dBm)
ERP	414.000	(mW)
Duty cycle:	1	(%)
Maximum Pav :	4.13999675	(mW)
Prediction distance:	20	(cm)
Prediction frequency:	782	(MHz)
MPE limit for uncontrolled exposure at prediction	0.5213	(mW/cm <sup>2</sup> )
Power density at predication frequency at 20 (cm)	0.00082	(mW/cm <sup>2</sup> )

### Measurement Result

The predicted power density level at 20 cm is 0.00082 mW/cm<sup>2</sup>.

This is below the uncontrolled exposure limit of 0.5213 mW/cm<sup>2</sup> at 782MHz.

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