

# FCC ID: 2BNW9-RP15

## RF Exposure Evaluation

### Limits

KDB 447498 D01 General RF Exposure Guidance v06

The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f <sup>2</sup> )	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/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
1500–100,000			1.0	30

f = frequency in MHz

Friis transmission formula:  $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

**Pd** = power density in mW/cm<sup>2</sup>, **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

Pd is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

### Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

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### Test Result of RF Exposure Evaluation

Channel	Max Tuen up power (dBm)	Max Tuen up power (mW)	Power Density at R=20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
LTE Band2	23.0	199.53	0.09655	1.0	PASS
LTE Band4	23.0	199.53	0.09902	1.0	PASS
LTE Band5	23.0	199.53	0.12524	0.549	PASS
LTE Band12	23.0	199.53	0.12524	0.466	PASS
LTE Band13	23.0	199.53	0.12524	0.518	PASS
LTE Band66	23.0	199.53	0.09902	1.0	PASS

Remark: antenna gain:

LTE Band 2: 3.86dBi, LTE Band 4: 3.97dBi, LTE Band 5: 4.99dBi,

LTE Band 12: 4.99dBi, LTE Band 13: 4.99dBi, LTE Band 66: 3.97dBi