





## Revision History

Report No.	Version	Description	Issue Date
1312RSU00103	Rev. 01	Initial report	01-28-2014

## 1. RF Exposure Evaluation

### 1.1. Limits

According to FCC 1.1310: 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> )	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	f/1500	6
1500-100,000	--	--	1	30

f= Frequency in MHz

Calculation Formula:  $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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 (The minimum distance is 20cm)

$P_d$  is the limit of MPE, 1mW/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.

## 1.2. Test Result of RF Exposure Evaluation

Product	Router
Test Item	RF Exposure Evaluation

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 5.9dBi for 2.4GHz, 5.7dBi for 5.2GHz and 6.8dBi for 5.8GHz in logarithm scale.

### For 2.4G Band:

Test Mode	Frequency Band (MHz)	Maximum Average output power (dBm)	Power Density S(mW/cm <sup>2</sup> )
802.11b/g/n-HT20	2412 ~ 2462	28.82	1
802.11n-HT40	2422 ~ 2452	22.70	1

### For 5G ISM Band:

Test Mode	Frequency Band (MHz)	Maximum Average output power (dBm)	Power Density S(mW/cm <sup>2</sup> )
80.211a/n-HT20/ac-VHT20	5745 ~ 5825	29.12	1
802.11n-HT40/ac-VHT40	5755 ~ 5795	28.16	1
802.11ac-VHT80	5210	27.29	1

### For 5G UNII Band:

Test Mode	Frequency Band (MHz)	Maximum Average output power (dBm)	Power Density S(mW/cm <sup>2</sup> )
80.211a/n-HT20/ac-VHT20	5180 ~ 5240	15.18	1
802.11n-HT40/ac-VHT40	5190 ~ 5230	15.97	1
802.11ac-VHT80	5210	13.84	1

**CONCLUSION:**

Both of the WLAN 2.4GHz Band and WLAN 5GHz Band can transmit simultaneously.

Therefore, the worst-case distance =  $\sqrt{(P_{out} * G)(2.4GHz + 5GHz) / (4 * \pi)}$  = 23.39cm.

*The Safety Distance of this equipment was 23.39 cm.*

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The End

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