

## 8. RF Exposure evaluation

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
(A) Limits for occupational /Control exposures				
300 – 1500	--	--	F/300	6
1500 - 100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300 – 1500	--	--	F/1500	6
<u>1500 - 100000</u>	--	--	<u>1</u>	<u>30</u>

### 8.1. Friis transmission 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

$P_d$  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 where the MPE limit is reached.

### 8.2. EUT operating condition

A software provided by client enabled the EUT to transmit and receive data at low, middle and high channel individually.

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### 8.3. Test result of RF Exposure evaluation

Test Item : RF Exposure evaluation data

Test Mode : Normal operation

#### 8.3.1. Output power into antenna & RF Exposure evaluation distance :

Operating mode	Channel	Frequency (MHz)	Peak output Power (dBm)	Antenna Gain (dBi)	Power Density at 20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
802.11b	Low	2412	20.74	0	0.02359	1
	Middle	2437	19.57	0	0.01802	
	High	2462	20.21	0	0.02088	
802.11g	Low	2412	20.64	0	0.02305	1
	Middle	2437	20.20	0	0.02083	
	High	2462	21.36	0	0.02721	

**■Note**

The power density Pd (4th column) at a distance of 20cm calculated from the friis transmission formula is far below the limit of 1 mW/ cm<sup>2</sup>.

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