

## RF Exposure Requirement

### 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

Formula

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

Where

$P_d$  = power density in  $\text{mW/cm}^2$

$P_{out}$  = 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

$P_d$  is the limit of MPE,  $1 \text{ mW/cm}^2$ . 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.

### 2. Test Procedure

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

The temperature and related humidity: 23°C and 42% RH.

### 3. Test Result of RF Exposure Evaluation

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mW)
1	<b>2401</b>	<b>4.28</b>	<b>2.68</b>
40	2440	2.33	1.71
80	2480	-3.42	0.45

### 4. MPE Calculation

The Max Conducted Peak Output Power is 2.68mW in lowest channel  
The Antenna Gain is -0.83dBi.

For FCC:

According to the formula  $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$

$$((2.68 \cdot (-0.83)) / (4 \cdot 3.14 \cdot 0.25)) = -0.708$$

Frequency Band(MHz)	Maximum RF Power(mW)	Power Density at R = 0.5cm(mW/cm <sup>2</sup> )
2401-2480	2.68	-0.708

Note:

The power density  $P_d$  (4th column) at a distance of 0.5 cm calculated from the transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.