

## 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

Friis Formula

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

Where

$P_d$  = power density in  $mW/cm^2$

$P_{out}$  = 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,  $1 mW/cm^2$ . 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 % R.H.

### 3. Test Result of RF Exposure Evaluation

Operating mode	Frequency	RF Output Power (dBm)
BCDMA	2410 ~ 2474 MHz	6.23
BCDMA	5733 ~ 5813 MHz	12.14

Maximum RF Power = 12.14 dBm = 16.37 mW

$$16.37 / (4 * 3.14 * 400) = 0.003258$$

Frequency Band (MHz)	Maximum RF Power (mW)	Power Density at R = 20 cm ( $mW/cm^2$ )
5733 ~ 5813	16.37	0.003258

Note :

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