Industrial Technology Rese[...]

*Electronics Research & Service Organization*
Bldg. 17, 195-4 Sec. 4, Chung Hsing Rd., Chutung,Hsinchu, 310
Taiwan,Republic Of China
TEL : 886-3-5917069   FAX : 886-3-5825720

FCC ID      ：H8N-BTM800W
Report No.：510-9111-001F
Page ___1___ of ___2___

# 9. 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$^2$) | Average Time |
|---|---|---|---|---|
| (A) Limits for Occupational / Control Exposures | | | | |
| 300-1,500 | -- | -- | F/300 | 6 |
| 1,500-100,000 | -- | -- | 5 | 6 |
| (B) Limits for General Population / Uncontrol Exposures | | | | |
| 300-1,500 | -- | -- | F/1500 | 6 |
| 1,500-100,000 | -- | -- | 1 | 30 |

## 9.1 FRIIS FORMULA

Friis transmission formula : $Pd = (Pout*G)/(4*pi*r^2)$

Where
Pd = power density in mW/cm$^2$
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 id the limit of MPE, 1 mW/cm2. 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.

## 9.2 EUT OPERATING CONDITION

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

**Industrial Technology Research Institute**

*Electronics Research & Service Organization*
Bldg. 17, 195-4 Sec. 4, Chung Hsing Rd., Chutung,Hsinchu, 310
Taiwan,Republic Of China
TEL : 886-3-5917069   FAX : 886-3-5825720

FCC ID ：H8N-BTM800W
Report No. ：510-9111-001F
Page ___2___ of ___2___

## 9.3 TEST RESULT OF RF EXPOSURE EVALUATION

Product ： Wireless CABLE Router

Test Item ： RF Exposure Evaluation Data

Test Mode ： Normal Operation

m,

### 9.3.1 ANTENNA GAIN

Antenna Gain：The maximum Gain measured in fully anechoic chamber is 2dBi

linear scale.

### 9.3.2 OUTPUT POWER INTO ANTENNA & RF EXPOSURE EVALUATION DISTANCE

| Channel | Channel Frequency (MHz) | Output Power to Antenna (dBm) | Minimum Allowable Distance ® From Skin(cm) |
|---------|--------------------------|-------------------------------|---------------------------------------------|
| CH1 | 2412.00 | 16.5 | 2.373532 |
| CH6 | 2437.00 | 16.4 | 2.346362 |
| CH11 | 2462.00 | 16.5 | 2.401016 |

The distance r (4th column) calculated from the Friis transmission formula is far shorter than 20cm separation requirement. So, RF exposure limit warning or SAR test are not required.