

### MPE Calculation : Bluetooth

RF function or Mode	Frequency range (MHz)	Max Target Power (dBm)	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm <sup>2</sup> )	Requirement (mW/cm <sup>2</sup> )
Bluetooth(1Mbps)	2402.00 ~ 2480.00	1.50	3.25	4.75	2.986	0.0006	1.000
Bluetooth(2,3Mbps)	2402.00 ~ 2480.00	-3.50	3.25	-0.25	0.945	0.0002	1.000
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Note: Please refer to the operation description for Max tune-up power.

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the user.

The MPE sample calculation for this exposure is shown below.

$$\begin{aligned}
 S &= \text{EIRP} / (4 R^2 \pi) \\
 &= 2.986 / (4 \times 20^2 \times \pi) \\
 &= 0.0006 \text{ mW/cm}^2
 \end{aligned}$$

- Note

S= Maximum power density(mW/cm<sup>2</sup>)

EIRP= Equivalent Isotropic Radiated Power(mW)

R= Distance to the center of the radiation of the antenn

#### ▪ 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> )	Averageing time (minutes)
0.3 ~ 1.34	614	1.63	*100	30
1.34 ~ 30	824/f	2.19 / f	*180 / f <sup>2</sup>	30
30 ~ 300	27.5	0.073	0.2	30
300 ~ 1,500			f / 1500	30
1,500 ~ 100,000			1.0	30

**Conclusion : The exposure condition of this device is compliant with FCC**

## MPE Calculation : WLAN

Mode(Worst case)	Frequency range (MHz)	Max Target Power (dBm)	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm <sup>2</sup> )	Requirement (mW/cm <sup>2</sup> )
802.11n(HT20)	2412.00 ~ 2462.00	8.50	3.23	11.73	14.894	0.0030	1.000
802.11n(HT20)	5180.00 ~ 5240.00	8.00	4.71	12.71	18.664	0.0038	1.000
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Note: Please refer to the operation description for Max tune-up power.

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the user.

The MPE sample calculation for this exposure is shown below.

$$\begin{aligned}
 S &= \text{EIRP} / (4 R^2 \pi) \\
 &= 18.664 / (4 \times 20^2 \times \pi) \\
 &= 0.004 \text{ mW/cm}^2
 \end{aligned}$$

- Note

S= Maximum power density(mW/cm<sup>2</sup>)

EIRP= Equivalent Isotropic Radiated Power(mW)

R= Distance to the center of the radiation of the antenn

▪ 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> )	Averageing time (minutes)
0.3 ~ 1.34	614	1.63	*100	30
1.34 ~ 30	824/f	2.19 / f	*180 / f <sup>2</sup>	30
30 ~ 300	27.5	0.073	0.2	30
300 ~ 1,500			f / 1500	30
1,500 ~ 100,000			1.0	30

**Conclusion : The exposure condition of this device is compliant with FCC**

## RF Exposure Compliance for simultaneous operations

- Worst case for simultaneous operations
- BT + WLAN(5GHz)

RF function or mode(Worst case)	BT	WLAN 5GHz	-	-	-	-	-	Σ of MPE ratios
Band(Worst case)	2.4GHz	NII-2A	-	-	-	-	-	
Power Density (mW/cm <sup>2</sup> )	0.0006	0.0038					-	
Requirement (mW/cm <sup>2</sup> )	1.0000	1.0000					-	
MPE ratio (Power Density/Requirement)	0.0006	0.0038					-	
Worst case(MPE ratio)	0.0006	0.0038					0.0044	

- Requirement =  $\Sigma$  of MPE ratios  $\leq 1$

Conclusion : The exposure condition of this device is compliant with FCC rules.