

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 ²)	Requirement (mW/cm ²)
Bluetooth(1Mbps)	2402.00	~	2480.00	1.00	-0.18	0.82	1.208	0.0003	1.000
Bluetooth(2,3Mbps)	2402.00	~	2480.00	-4.00	-0.18	-4.18	0.382	0.0001	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.

$$\begin{aligned}
 S &= \text{EIRP} / (4 R^2 \pi) \\
 &= 1.208 / (4 \times 20^2 \times \pi) \\
 &= 0.0003 \text{ mW/cm}^2
 \end{aligned}$$

- Note

S= Maximum power density(mW/cm²)

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 ²)	Averageing time (minutes)
0.3	~	1.34	614	1.63	*100	30
1.34	~	30	824/f	2.19 / f	*180 / f ²	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 ²)	Requirement (mW/cm ²)
802.11b	2412.00	~	2462.00	11.00	-0.01	10.99	12.561	0.0025	1.000
802.11a	5180.00	~	5240.00	9.00	-0.61	8.39	6.903	0.0014	1.000
802.11a	5260.00	~	5320.00	9.00	-0.18	8.82	7.621	0.0016	1.000
802.11a	5500.00	~	5720.00	8.00	-0.77	7.23	5.285	0.0011	1.000
802.11a	5745.00	~	5825.00	7.50	-0.18	7.32	5.396	0.0011	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.

$$\begin{aligned}
 S &= \text{EIRP} / (4 R^2 \pi) \\
 &= 6.903 / (4 \times 20^2 \times \pi) \\
 &= 0.001 \text{ mW/cm}^2
 \end{aligned}$$

- Note

S= Maximum power density(mW/cm²)

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 ²)	Averageing time (minutes)
0.3	~	1.34	614	1.63	*100	30
1.34	~	30	824/f	2.19 / f	*180 / f ²	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/cm2)	0.0003	0.0016					-	
Requirement (mW/cm2)	1.0000	1.0000					-	
MPE ratio (Power Density/Requirement)	0.0003	0.0016					-	0.0019
Worst case(MPE ratio)	0.0003	0.0016						

- Requirement = $\Sigma \text{ of MPE ratios} \leq 1$

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