MPE Calculation : Bluetooth

Mode	Frequency range (MHz)			Max Target Power (dBm)	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm^2)	Requriment (mW/cm^2)
Bluetooth(1Mbps)	2 402.0	~	2 480.0	1.00	3.25	4.25	2.661	0.000 6	1.000
Bluetooth(2,3Mbps)	2 402.0	~	2 480.0	-3.00	3.25	0.25	1.060	0.000 3	1.000
		~							
		~							
		~							
		~							
		~							
		~							

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.

▪ **S** = EIRP / (4 R^2 π)

= 2.661 / (4 X 20^2 X π)

= 0.0006 mW/cm^2

- Note

S= Maximum power density(mW/cm^2)

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(Antenna)	Frequency range (MHz)			Max Target Power (dBm)	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm^2)	Requriment (mW/cm^2)
802.11g(Ant 2)	2 412.0	~	2 462.0	6.00	3.22	9.22	8.357	0.001 7	1.000
802.11a(Ant 1)	5 180.0	~	5 240.0	8.00	2.95	10.95	12.446	0.002 5	1.000
802.11a(Ant 1)	5 745.0	~	5 825.0	8.00	1.93	9.93	9.841	0.002 0	1.000
802.11a(Ant 2)	5 180.0	~	5 240.0	8.00	0.25	8.25	6.684	0.001 4	1.000
802.11a(Ant 2)	5 745.0	~	5 825.0	8.00	2.99	10.99	12.561	0.002 5	1.000
802.11a(MIMO)	5 180.0	~	5 240.0	11.00	4.71	15.71	37.240	0.008 0	1.000
802.11a(MIMO)	5 745.0	~	5 825.0	11.00	5.49	16.49	44.566	0.009 0	1.000

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.

▪ **S =** EIRP / (4 R^2 π)

= 12.446 / (4 X 20^2 X π)

= 0.0025 mW/cm^2

- Note

S= Maximum power density(mW/cm^2)

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(Antenna 1) + WLAN 5GHz(Antenna 2)

RF function or mode(Worst case)	BT	WLAN	-	-	-	-	-	Σ of MPE ratios
Band	2.4GHz	5GHz(NII-3)	-	-	-	-	-	
Mode(Antenna)	1Mbps(Ant 1)	802.11a(Ant 2)	-	-	-	-	-	
Power Density (mW/cm2)	0.000 6	0.002 5	-	-	-	-	-	
Requirement (mW/cm2)	1.000 0	1.000 0	-	-	-	-	-	
MPE ratio (Power Density/Requirement)	0.000 6	0.002 5	-	-	-	-	-	
Worst case(MPE ratio)	0.000 6	0.002 5	-	-	-	-	-	0.003 1

- **Requirment = Σ of MPE ratios ≤ 1**

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