MPE Calculation

RF feature(Mode)	Frequency range (MHz)			Measured Max. Average Power(dBm) Note2	Max Tune-up Power(dBm) Note1	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm^2)	Requirement (mW/cm^2)
Bluetooth LE(1Mbps)	2 402.00	~	2 480.00	2.67	3.00	2.36	5.36	3.436	0.000 7	1.000 0
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		~								
		~								
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		~								

Note1: Please refer to the operation description for Max tune-up power.

Note2: The Max.average power was measured using a wideband gated RF power meter and gate parameters was adjusted such that power is measured only then the EUT is transmitting at its maximum 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)

= 3.436 / (4 X 20^2 X π)

= 0.0007 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 antenna(20cm)

▪ Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)			Electric Field strength (V/m)	Magnetic field strength (A/m)	Power Density (mW/cm^2)	Averaging 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

RF feature(Mode)	Frequency range (MHz)			Measured Max. Average Power(dBm) Note2	Max Tune-up Power(dBm) Note1	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm^2)	Requirement (mW/cm^2)
UWB	6 489.60	~	7 987.20	-11.00	-10.00	3.25	-6.75	0.212	0.000 1	1.000 0
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		~								
		~								
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		~								
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Note1: Please refer to the operation description for Max tune-up power.

Note2: The Max.average power was measured using a wideband gated RF power meter and gate parameters was adjusted such that power is measured only then the EUT is transmitting at its maximum 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)

= 0.212 / (4 X 20^2 X π)

= 0.0001 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 antenna(20cm)

▪ Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)			Electric Field strength (V/m)	Magnetic field strength (A/m)	Power Density (mW/cm^2)	Averaging time (minutes)
0.3	~	1.34	614	1.63	*100	30
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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**
- BLE + UWB

RF feature or mode	BLE	UWB	-	-	-	-	-	Σ of MPE ratios
Band(Worst case)	2.4GHz	-	-	-	-	-	-	
Power Density (mW/cm2)	0.000 7	0.000 1	-	-	-	-	-	
Requirement (mW/cm2)	1.000 0	1.000 0	-	-	-	-	-	
MPE ratio (Power Density/Requirement)	0.000 7	0.000 1	-	-	-	-	-	
Worst case(MPE ratio)	0.000 7	0.000 1	-	-	-	-	-	0.000 8

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

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