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/cm²)	Requriment (mW/cm²)
Bluetooth(1Mbps)	2402.00	~	2480.00	2.00	-0.10	1.90	1.549	0.0004	1.000
Bluetooth(2Mbps)	2402.00	~	2480.00	0.50	-0.10	0.40	1.097	0.0003	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.

- $S = EIRP / (4 R^2 \pi)$
  $= 1.549 / (4 \times 20^2 \times \pi)$
  $= 0.0004 \ mW/cm^2$

- 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/cm²)	Averageing time (minutes)
0.3	~	1.34	614	1.63	*100	30
1.34	~	30	824/f	2.19 / f	*180 / f²	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 : LTE, CDMA

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)	Requriment (mW/cm^2)
LTE(Band 13)	776.00	~	787.00	25.00	0.44	25.44	349.946	0.0697	0.517
LTE(Band 4)	1710.70	~	1755.00	25.00	-1.35	23.65	231.740	0.0462	1.000
CDMA(Band 850)	824.70	~	848.31	26.00	-0.86	25.14	326.588	0.0650	0.549
CDMA(Band 1900)	1851.25	~	1908.75	26.00	2.06	28.06	639.735	0.1273	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 = $EIRP / (4 R^2 \pi)$

= $349.946 / (4 \times 20^2 \times \pi)$

= 0.0697 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

- **Configurations for simultaneous operations**
  - **Configuration 1:** BT + LTE, CDMA Module

  Note: Above configuration was declared from applicant.

- **Configurations for simultaneous operations(LTE, CDMA Module)**
  - LTE Band 13 + CDMA 850(Cellular)
  - LTE Band 4 + CDMA 850(Cellular)
  - LTE Band 4 + CDMA 1900(PCS)
  - LTE Band 13 + CDMA 1900(PCS)

- **Configurations for simultaneous operation**

RF function or mode	BT	LTE		CDMA		-		Σ of MPE ratios
Band	2.4GHz	Band 13	Band 4	Cellular	PCS	-	-	
Power Density (mW/cm2)	0.0004	0.0697	0.0462	0.0650	0.1273			
Requirement (mW/cm2)	1.0000	0.5170	1.0000	0.5490	1.0000			
MPE ratio (Power Density/Requirement)	0.0004	0.1348	0.0462	0.1184	0.1273			
Configuration 1 (MPE ratio)	0.0004	0.1348		0.1184				**0.2536**
	0.0004		0.0462	0.1184				0.1650
	0.0004		0.0462		0.1273			0.1739
	0.0004	0.1348			0.1273			0.2625

Note: The maximum power density in each RF function was used for above table.

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

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