

MPE Calculation

RF feature(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)
WLAN(802.11g)	2 412.00 ~ 2 462.00	10.00	-1.19	8.81	7.604	0.001 6	1.000 0
WLAN(802.11a)	5 180.00 ~ 5 240.00	9.50	0.59	10.09	10.210	0.002 1	1.000 0
WLAN(802.11a)	5 260.00 ~ 5 320.00	9.50	2.00	11.50	14.126	0.002 9	1.000 0
WLAN(802.11a)	5 500.00 ~ 5 720.00	8.50	4.58	13.08	20.324	0.004 1	1.000 0
WLAN(802.11a)	5 745.00 ~ 5 825.00	8.50	4.19	12.69	18.579	0.003 7	1.000 0
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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.

$$\begin{aligned}
 S &= \text{EIRP} / (4 R^2 \pi) \\
 &= 7.604 / (4 \times 20^2 \times \pi) \\
 &= 0.002 \text{ mW/cm}^2
 \end{aligned}$$

- Note

S= Maximum power density(mW/cm²)

EIRP= Equivalent Isotropic Radiated Power(mW)

R= Distance to the center of the radiation of the antenna(2

▪ 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

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Bluetooth(1Mbps)	2 402.00 ~ 2 480.00	2.50	-0.38	2.12	1.630	0.000 4	1.000 0
Bluetooth(2,3Mbps)	2 402.00 ~ 2 480.00	-2.00	-0.38	-2.38	0.579	0.000 2	1.000 0
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Note: Please refer to the operation description for Max tune-up power.

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The MPE sample calculation for this exposure is shown below.

$$\begin{aligned}
 S &= \text{EIRP} / (4 R^2 \pi) \\
 &= 1.630 / (4 \times 20^2 \times \pi) \\
 &= 0.000 \text{ mW/cm}^2
 \end{aligned}$$

- Note

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LTE(Band 13)	777.00	~ 787.00	26.20	2.65	28.85	767.362	0.152 7	0.518 0
LTE(Band 5)	824.70	~ 848.30	26.20	2.43	28.63	729.458	0.145 2	0.549 0
LTE(Band 4)	1 710.70	~ 1 754.30	26.20	4.48	30.68	1169.500	0.232 7	1.000 0
LTE(Band 2)	1 850.70	~ 1 909.30	26.20	4.55	30.75	1188.503	0.236 5	1.000 0
CDMA(Band 850)	824.70	~ 848.31	26.20	2.43	28.63	729.458	0.145 2	0.549 0
CDMA(Band 1900)	1 851.25	~ 1 908.75	26.20	4.55	30.75	1188.503	0.236 5	1.000 0
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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.

$$\begin{aligned}
 S &= \text{EIRP} / (4 R^2 \pi) \\
 &= 767.362 / (4 \times 20^2 \times \pi) \\
 &= 0.153 \text{ mW/cm}^2
 \end{aligned}$$

- Note

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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 + W-LAN(5GHz) + LTE (Band 13)

RF feature or mode	BT	WLAN	LTE	-	-	-	-	Σ of MPE ratios
Band(Worst case)	2.4GHz	5GHz	Band 13	-	-	-	-	
Power Density (mW/cm ²)	0.000 4	0.004 1	0.152 7	-	-	-	-	
Requirement (mW/cm ²)	1.000 0	1.000 0	0.518 0	-	-	-	-	
MPE ratio (Power Density/Requirement)	0.000 4	0.004 1	0.294 8	-	-	-	-	
Worst case(MPE ratio)	0.000 4	0.004 1	0.294 8	-	-	-	-	

- Requirement = Σ of MPE ratios ≤ 1

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