MPE Calculation

Regulation(s): Part 1.1310, Part 2.1091

Method: KDB447498 D01v06

RF feature(Worst Mode)	Frequency range (MHz)			Max Target Power (dBm)[Note]	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm^2)	Requirement (mW/cm^2)
802.11b	2 412.00	~	2 462.00	17.50	-1.80	15.70	37.154	0.007 4	1.000 0
802.11a	5 180.00	~	5 240.00	13.00	-0.50	12.50	17.783	0.003 6	1.000 0
802.11n(HT20)	5 260.00	~	5 320.00	13.00	0.50	13.50	22.388	0.004 5	1.000 0
802.11a	5 500.00	~	5 720.00	13.00	0.40	13.40	21.878	0.004 4	1.000 0
802.11n(HT40)	5 755.00	~	5 795.00	13.50	0.40	13.90	24.548	0.004 9	1.000 0
		~							
		~							
		~							

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 =** $EIRP / (4 R^2 \pi)$

= $37.154 / (4 \times 20^2 \times \pi)$

= $0.007\ mW/cm^2$

- 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)

Part 1.1310

▪ 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

Regulation(s): Part 1.1310, Part 2.1091

Method: KDB447498 D01v06

RF feature(Worst Mode)	Frequency range (MHz)			Nominal. Target Power(dBm)	Tolerance (dB)	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm^2)	Requirement (mW/cm^2)
NR Band n2	1 850.00	~	1 910.00	23.0	2.7	-0.9	24.80	301.996	0.060 1	1.000 0
NR Band n5	824.00	~	849.00	23.0	2.7	-0.7	25.00	316.228	0.063 0	0.549 0
NR Band n12	699.00	~	716.00	23.0	2.7	-0.9	24.80	301.996	0.060 1	0.466 0
NR Band n66	1 710.00	~	1 780.00	23.0	2.7	0.1	25.80	380.190	0.075 7	1.000 0
NR Band n77	3 450.00	~	3 550.00	22.5	2.5	-3.5	21.50	141.254	0.028 2	1.000 0
NR Band n77	3 700.00	~	3 980.00	22.5	2.5	-4.8	20.20	104.713	0.020 9	1.000 0
Band14	788.00	~	798.00	23.0	2.7	-0.3	25.40	346.737	0.069 0	0.525 0
		~								

Note: The above LTE values are taken from cerfifed module.(FCC ID: BEJTM15FNNATY0)

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)

= 301.996 / (4 X 20^2 X π)

= 0.060 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)

Part 1.1310

▪ 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

RF Exposure Compliance for simultaneous operations

- **Worst case for simultaneous operations**
- WLAN(2.4GHz) + LTE Band 14

RF feature or mode	WLAN	LTE	-	-	-	-	-	Σ of MPE ratios
Band(Worst case)	2.4GHz	Band 14	-	-	-	-	-	
Power Density (mW/cm2)	0.007 4	0.069 0	-	-	-	-	-	
Requirement (mW/cm2)	1.000 0	0.525 0	-	-	-	-	-	
MPE ratio (Power Density/Requirement)	0.007 4	0.131 4	-	-	-	-	-	
Worst case(MPE ratio)	0.007 4	0.131 4	-	-	-	-	-	0.138 8

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

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