

MPE Calculation(BT)

Regulation(s): Part 1.1310, Part 2.1091

Method: KDB447498 D01v06

RF feature(Mode)	Frequency range (MHz)			Max Target Power (dBm)	ANT Gain including path loss (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm ²)	Requirement (mW/cm ²)
1 Mbps	2 402.00	~	2 480.00	5.50	-3.28	2.22	1.668	0.000 4	1.000 0
2, 3 Mbps	2 402.00	~	2 480.00	4.00	-3.28	0.72	1.181	0.000 3	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.

$$\begin{aligned}
 S &= \text{EIRP} / (4 R^2 \pi) \\
 &= 1.668 / (4 \times 20^2 \times \pi) \\
 &= 0.000 \text{ mW/cm}^2
 \end{aligned}$$

- Note

S= Maximum power density(mW/cm²)

EIRP= Equivalent Isotropic Radiated Power(mW)

R= Distance to the center of the radiation of the antenna(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(WLAN)

Regulation(s): Part 1.1310, Part 2.1091

Method: KDB447498 D01v06

RF feature(Mode)	Frequency range (MHz)			Max Target Power (dBm)	ANT Gain including path loss (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm ²)	Requirement (mW/cm ²)
802.11g_Antenna 2	2 412.00	~	2 462.00	17.00	-3.18	13.82	24.100	0.004 8	1.000 0
802.11ac(VHT20)_Antenna 1	5 180.00	~	5 240.00	13.50	-4.20	9.30	8.512	0.001 7	1.000 0
802.11ac(VHT20)_Antenna 2	5 180.00	~	5 240.00	13.50	-5.18	8.32	6.793	0.001 4	1.000 0
802.11ac(VHT20)_Antenna 1	5 745.00	~	5 825.00	12.00	-4.30	7.70	5.889	0.001 2	1.000 0
802.11ac(VHT20)_Antenna 2	5 745.00	~	5 825.00	12.00	-5.28	6.72	4.699	0.001 0	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.

$$\begin{aligned}
 S &= \text{EIRP} / (4 R^2 \pi) \\
 &= 24.100 / (4 \times 20^2 \times \pi) \\
 &= 0.005 \text{ mW/cm}^2
 \end{aligned}$$

- Note

S= Maximum power density(mW/cm²)

EIRP= Equivalent Isotropic Radiated Power(mW)

R= Distance to the center of the radiation of the antenna(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
- 5GHz WLAN MIMO

RF feature	WLAN(NII-1)	WLAN(NII-1)	-	-	-	-	-	Σ of MPE ratios
Worst case(MPE ratio)	Antenna 1	Antenna 2	-	-	-	-	-	
Power Density (mW/cm2)	0.001 7	0.001 4	-	-	-	-	-	
Requirement (mW/cm2)	1.000 0	1.000 0	-	-	-	-	-	
MPE ratio (Power Density/Requirement)	0.001 7	0.001 4	-	-	-	-	-	
Worst case(MPE ratio)	0.001 7	0.001 4	-	-	-	-	-	0.003 1

- Requirement = Σ of MPE ratios ≤ 1

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