

RF Exposure Compliance Requirement

1. Standard requirement

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

(a) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S)(mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	F/300	6
1500-100000	--	--	5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S)(mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	F/1500	30
1500-100000	--	--	1.0	30

Note: f=frequency in MHz; *Plane-wave equivalent power density

2. MPE Calculation Method

$$E \text{ (V/m)} = (30 \cdot P \cdot G)^{0.5} / d \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = E^2 / 377$$

E=Electric Field (V/m)

P=Peak RF output Power (W)

G=EUT Antenna numeric gain (numeric)

d= Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = (30 \cdot P \cdot G) / (377 \cdot d^2)$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained.

3. Calculated Result and Limit(2.4GHz)

Mode	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
CCK	2.51	25.5	354.81339	0.17730	1	Complies
Non HT20	2.51	25.4	346.73685	0.17327	1	Complies
HT/VHT20	5.01	25.5	354.81339	0.35377	1	Complies
HT/VHT40	5.01	25.5	354.81339	0.35377	1	Complies

4. Calculated Result and Limit(5.15 GHz -5.25GHz)

(1) Corner Two Antennas:

Mode	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
Non HT20	5.01	20.5	112.20185	0.11187	1	Complies
Non HT40	5.01	21.3	134.89629	0.13450	1	Complies
Non HT80	5.01	13.1	20.41738	0.02036	1	Complies
HT/VHT20	5.01	20.7	117.48976	0.11714	1	Complies
HT/VHT40	5.01	20.7	117.48976	0.11714	1	Complies
VHT80	5.01	15.8	38.01894	0.03791	1	Complies

(2) Middle Two Antennas:

Mode	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
Non HT20	5.01	21.3	134.89629	0.13450	1	Complies
Non HT40	5.01	22.4	173.78008	0.17327	1	Complies
Non HT80	5.01	12.7	18.62087	0.01857	1	Complies
HT/VHT20	5.01	21.5	141.25375	0.14084	1	Complies
HT/VHT40	5.01	21.7	147.91084	0.14748	1	Complies
VHT80	5.01	15.4	34.67369	0.03457	1	Complies

5. Calculated Result and Limit(5.25 GHz -5.25GHz)

(1) Corner Two Antennas:

Mode	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
Non HT20	5.01	20.3	107.15193	0.10684	1	Complies
Non HT40	5.01	20.5	112.20185	0.11187	1	Complies
Non HT80	5.01	13.8	23.98833	0.02392	1	Complies
HT/VHT20	5.01	20.4	109.64782	0.10933	1	Complies
HT/VHT40	5.01	20.9	123.02688	0.12266	1	Complies
VHT80	5.01	16.6	45.70882	0.04557	1	Complies

(2) Middle Two Antennas:

Mode	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
Non HT20	5.01	20.1	102.32930	0.10203	1	Complies
Non HT40	5.01	21.6	144.54398	0.14412	1	Complies
Non HT80	5.01	14.9	30.90295	0.03081	1	Complies
HT/VHT20	5.01	20.5	112.20185	0.11187	1	Complies
HT/VHT40	5.01	22.3	169.82437	0.16932	1	Complies
VHT80	5.01	16.0	39.81072	0.03969	1	Complies

6. Calculated Result and Limit(5.47 GHz -5.725GHz)

(1) Corner Two Antennas:

Mode	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
Non HT20	5.01	19.9	97.72372	0.09744	1	Complies
Non HT40	5.01	22.6	181.97009	0.18143	1	Complies
Non HT80	5.01	21.7	147.91084	0.14748	1	Complies
HT/VHT20	5.01	21.0	125.89254	0.12552	1	Complies
HT/VHT40	5.01	22.7	186.20871	0.18566	1	Complies
VHT80	5.01	23.0	199.52623	0.19894	1	Complies

(2) Middle Two Antennas:

Mode	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
Non HT20	5.01	20.2	104.71285	0.10440	1	Complies
Non HT40	5.01	19.8	95.49926	0.09522	1	Complies
Non HT80	5.01	18.0	63.09573	0.06291	1	Complies
HT/VHT20	5.01	20.5	112.20185	0.11187	1	Complies
HT/VHT40	5.01	21.6	144.54398	0.14412	1	Complies
VHT80	5.01	21.9	154.88166	0.15443	1	Complies

7. Calculated Result and Limit(5.725 GHz -5.85GHz)

(1) Corner Two Antennas:

Mode	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
Non HT20	5.01	25.2	331.13112	0.33016	1	Complies
Non HT40	5.01	24.6	288.40315	0.28755	1	Complies
Non HT80	5.01	19.4	87.09636	0.08684	1	Complies
HT/VHT20	5.01	24.5	281.83829	0.28101	1	Complies
HT/VHT40	5.01	24.7	295.12092	0.29425	1	Complies
VHT80	5.01	23.4	218.77616	0.21813	1	Complies

(2) Middle Two Antennas:

Mode	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
Non HT20	5.01	23.4	218.77616	0.21813	1	Complies
Non HT40	5.01	23.8	239.88329	0.23918	1	Complies
Non HT80	5.01	19.4	87.09636	0.08684	1	Complies
HT/VHT20	5.01	24.5	281.83829	0.28101	1	Complies

HT/VHT40	5.01	24.7	295.12092	0.29425	1	Complies
VHT80	5.01	23.4	218.77616	0.21813	1	Complies