FCC §15.247 (i), §2.1091 – RF Exposure

FCC ID: NDD6208AC

Applied procedures / limit

According to FCC §15.247(i) and §1.1307(b)(1), 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 of the Commission's guidelines.

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 Time $\|E\|^2$,$\|H\|^2$ 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
1500-100,000			5	6

Note: f is frequency in MHz

* = Power density limit is applicable at frequencies greater than 100 MHz

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 Time $\|E\|^2$,$\|H\|^2$ 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
1500-100,000			1.0	30

Note: f = frequency in MHz

* = Plane-wave equivalent power density

2.4G

IEEE 802.11b

max possible output power (AV,conducted) : 16±1dbm

IEEE 802.11g

max possible output power (AV,conducted) : 14±1dbm

IEEE 802.11N(HT20)

max possible output power (AV,conducted) : 14±1dbm

IEEE 802.11N(HT40)

max possible output power (AV,conducted) : 13±1dbm

The max possible output power (AV,conducted) of All (IEEE 802.11b , IEEE 802.11g, IEEE 802.11n(HT20)) is IEEE 802.11b.

5G

IEEE 802.11a

max possible output power (AV,conducted) : 15±1dbm

IEEE 802.11N(HT20)

max possible output power (AV,conducted) : 13±1dbm

IEEE 802.11N(HT40)

max possible output power (AV,conducted) : 12±1dbm

The max possible output power (AV,conducted) of All (IEEE 802.11a , IEEE 802.11n(HT20)) is IEEE 802.11a.

MPE PREDICTION

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = power density
P = power input to antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna,R=20cm

Test Result of RF Exposure Evaluation

2.4G

	Target power W/ tolerance (dBm)	Max tune up power tolerance (dBm)	Total Output power to antenna (mW)	Antenna Gain(dBi)	Total Power Density at R=20cm (mW/cm^2)	Limit (mW/cm^2)	Result
802.11b	16±1.0	17.0	50.12	6.0 (3.981)	0.03969	1.0	Pass

5G

	Target power W/ tolerance (dBm)	Max tune up power tolerance (dBm)	Total Output power to antenna (mW)	Antenna Gain(dBi)	Total Power Density at R=20cm (mW/cm^2)	Limit (mW/cm^2)	Result
802.11a	15±1.0	16.0	39.81	3.0 (1.995)	0.01581	1.0	Pass

For 2.4G
Note: Directional Gain=3.0dBi+10log(2)=6.0dBi