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

FCC ID: 2AOQN-I01

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

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

	Modes& Channel Freq. (MHz)	Tune up Produce power	Maximum peak output power (dBm)	Output power to antenna (mW)	Antenna Gain (numeric)	Power Density (S) (mW/ cm2)	Limit (mW / cm2)	Result
EDR	π/4DQPSK&LCH	2±1	3	1.9953	1.2274 (0.89dBi)	0.00049	1	Pass
2.4G WIFI ANT1	802.11b&2462	12±1	13	19.9526	1.4928 (1.74dBi)	0.00593	1	Pass
2.4G WIFI ANT2	802.11b&2462	12±1	13	19.9526	1.6106 (2.07dBi)	0.0064	1	Pass
5.2GWIFI ANT1	802.11n(HT20)&5240	12±1	13	19.9526	2.904 (4.63dBi)	0.01153	1	Pass
5.2GWIFI ANT2	802.11n(HT20)&5240	12±1	13	19.9526	1.5524 (1.91dBi)	0.00617	1	Pass
5.8GWIFI ANT1	802.11n(HT20)&5825	12±1	13	19.9526	2.2439 (3.51dBi)	0.00891	1	Pass
5.8GWIFI ANT2	802.11a&5825	13±1	14	25.1189	3.1333 (4.96dBi)	0.01567	1	Pass

Technology	Tune up Produce power(dBm)		Maximum Tune-up (dBm)		Antenna Gain(ANT 1/ANT 2) (numeric)	Power Density (S) (mW/ cm2)		MPE Limit (mW/ cm2)	∑ MPE Ratio	∑ MPE Ratio Limit	Result
	ANT 1	ANT 2	ANT 1	ANT 2		ANT 1	ANT 2				
2.4G WIFI MIMO	12 ±1	12 ±1	13	13	ANT1:1.4928 (1.74dBi) ANT2:1.6106 (2.07dBi)	0.00049	0.00593	1	0.0064	1	Pass

Technology	Tune up Produce power(dBm)		Maximum Tune-up (dBm)		Antenna Gain(ANT 1/ANT 2) (numeric)	Power Density (S) (mW/ cm2)		MPE Limit (mW/ cm2)	∑ MPE Ratio	∑ MPE Ratio Limit	Result
	ANT 1	ANT 2	ANT 1	ANT 2		ANT 1	ANT 2				
5G WIFI MIMO	12 ±1	12 ±1	13	13	ANT1:2.2439 (3.51dBi) ANT2:3.1333 (4.96dBi)	0.00891	0.01567	1	0.0246	1	Pass