

FCC 22H 24E 27L, §2.1091 – RF Exposure

FCC ID: 2A5C8-MK665

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

	Tune up Product power	Maximum peak output power (dBm)	Output power to antenna (mW)	Antenna Gain (numeric)	Power Density (S) (mW/ cm ²)	Limit (mW/ cm ²)	Result
EDR GFSK&HCH	7±1	8	6.3096	1.585 (2dBi)	0.00199	1	Pass
BLE GFSK&MCH	-5±1	-4	0.3981	1.585 (2dBi)	0.00013	1	Pass
2.4GWIFI 802.11b&2412	7±1	8	6.3096	1.585 (2dBi)	0.00199	1	Pass
5GWIFI 802.11a20&52 40	7±1	8	6.3096	1.585 (2dBi)	0.00199	1	Pass
FDD-LTE BAND 2	21±1	22	158.4893	1.585 (2dBi)	0.05	1	Pass
FDD-LTE BAND 4	22±1	23	199.5262	1.585 (2dBi)	0.06294	1	Pass
FDD-LTE BAND 5	22±1	23	199.5262	1.585 (2dBi)	0.06294	0.565	Pass
FDD-LTE BAND 7	22±1	23	199.5262	1.585 (2dBi)	0.06294	1	Pass
FDD-LTE BAND 12	21±1	22	158.4893	1.585 (2dBi)	0.05	0.472	Pass
FDD-LTE BAND 17	21±1	22	158.4893	1.585 (2dBi)	0.05	0.474	Pass
FDD-LTE BAND 41	22±1	23	199.5262	1.585 (2dBi)	0.06294	1	Pass

$S=0.06294/0.565+0.00199/1=0.11339<1$ Pass