



FCC 22H 24H 27 Part 90, §2.1091 – RF Exposure

FCC ID: 2ARRL-RT-400

Applied procedures / limit

According to FCC §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

	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
WCDMA Band 2	22±1.0	23	199.53	3.15 (2.07)	0.08221	1.000	Pass
WCDMA Band 4	22±1.0	23	199.53	3.25 (2.11)	0.08380	1.000	Pass
WCDMA Band 5	22±1.0	23	199.53	3.30 (2.14)	0.08499	0.551	Pass
LTE Band 2	24±1.0	25	316.23	3.15 (2.07)	0.13029	1.000	Pass
LTE Band 4	22±1.0	23	199.53	3.25 (2.11)	0.08380	1.000	Pass
LTE Band 5	23±1.0	24	251.19	3.30 (2.14)	0.10700	0.549	Pass
LTE Band 12	24±1.0	25	316.23	3.25 (2.11)	0.13281	0.466	Pass
LTE Band 13	24±1.0	25	316.23	3.15 (2.07)	0.13048	0.518	Pass
LTE Band 14	21±1.0	22	158.49	3.20 (2.09)	0.06593	1.000	Pass
LTE Band 66	23±1.0	24	251.19	3.25 (2.11)	0.10500	0.525	Pass