

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

FCC ID: 2BA3Z-DA42

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 Produc e power	Maximum peak output power (dBm)	Output power to antenna (mW)	Antenna Gain (numeric)	Power Density (S) (mW/ cm2)	Limit (mW/ cm2)	Result
BLE GFSK&LCH	0±1	1	1.2589	1.349 (1.3dBi)	0.00034	1	Pass
EDR 8DPSK&HCH	1±1	2	1.5849	1.349 (1.3dBi)	0.0004	1	Pass
2.4GWIFI 802.11b&2412	14±1	15	31.6228	1.349 (1.3dBi)	0.0085	1	Pass
GSM850	31±1	32	1584.9	1.9953 (3dBi)	0.629	0.5	Pass
GSM1900	26±1	27	501.19	1.9953 (3dBi)	0.199	1	Pass
WCDMA Band 2	21±1	22	158.49	1.9953 (3dBi)	0.0629	1	Pass
WCDMA Band 4	22±1	23	199.53	1.9953 (3dBi)	0.0792	1	Pass
WCDMA Band 5	20±1	21	125.89	1.9953 (3dBi)	0.05	0.5	Pass
LTE BAND 2	19±1	20	100	1.9953 (3dBi)	0.0397	1	Pass
LTE BAND 4	21±1	22	158.49	1.9953 (3dBi)	0.0629	1	Pass
LTE BAND 5	22±1	23	199.53	1.9953 (3dBi)	0.0792	0.56	Pass
LTE BAND 12	22±1	23	199.53	1.9953 (3dBi)	0.0792	0.48	Pass
LTE BAND 13	23±1	24	251.19	1.9953 (3dBi)	0.0998	0.52	Pass

LTE BAND 41	20 ± 1	21	125.89	1.9953 (3dBi)	0.05	1	Pass
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$S=0.0998/0.52+0.0085/1=0.2004<1$
The result is PASS