



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

FCC ID: 2APRDULTRA

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

	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
GPRS850	32±1.0	33	1995.26	-4.5 (0.35)	0.13900	0.549	Pass
EGPRS850	26±1.0	27	501.19	-4.5 (0.35)	0.03492	0.549	Pass
GPRS1900	29±1.0	30	1000.00	-4.0 (0.40)	0.07962	1.000	Pass
EGPRS1900	25±1.0	26	398.11	-4.0 (0.40)	0.03170	1.000	Pass
WCDMA Band 5	25±1.0	26	398.11	-4.5 (0.35)	0.02773	0.549	Pass
HSDPA Band 5	23±1.0	24	251.19	-4.5 (0.35)	0.01750	0.549	Pass
HSDPA Band 5	23±1.0	24	251.19	-4.5 (0.35)	0.01750	0.549	Pass
WCDMA Band 2	24±1.0	25	316.23	-4.0 (0.40)	0.02518	1.000	Pass
HSDPA Band 2	22±1.0	23	199.53	-4.0 (0.40)	0.01589	1.000	Pass
HSDPA Band 2	22±1.0	23	199.53	-4.0 (0.40)	0.01589	1.000	Pass

2.4g-WIFI

IEEE 802.11b

max possible output power (PK,conducted) : 11±1dbm

IEEE 802.11g

max possible output power (PK,conducted) : 10±1dbm



IEEE 802.11n(20)

max possible output power (PK,conducted) : $10\pm 1\text{dbm}$

The max possible output power (PK,conducted) of All (IEEE 802.11b , IEEE 802.11g, IEEE 802.11n(20)) is IEEE 802.11b.

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
802.11b	11 ± 1.0	12	15.85	1.0 (1.258)	0.00397	1.0	Pass