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

FCC ID: 2A3PX-R1

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 Produce power	Maximum peak output power (dBm)	Output power to antenna (mW)	Antenna Gain (numeric)	Power Density (S) (mW/cm2)	Limit (mW/cm2)	Result
BLE	0±1	1	1.2589	1.183 (0.73dBi)	0.000296	1	Pass
EDR	3±1	4	2.51	1.183 (0.73dBi)	0.000591	1	Pass
2.4G WIFI	9±1	10	10	1.183 (0.73dBi)	0.002355	1	Pass
5.1G WIFI	8±1	9	7.94	1.208 (0.82dBi)	0.00191	1	Pass
LTE BADN 2	23±1	24	251.19	1.099 (0.41dBi)	0.054948	1	Pass
LTE BADN 5	23±1	24	251.19	0.550 (-2.6dBi)	0.027476	0.549	Pass
LTE BADN 7	24±1	25	316.23	1.343 (1.28dBi)	0.084518	1	Pass
LTE BADN 38	24±1	25	316.23	1.265 (1.02dBi)	0.079607	1	Pass
LTE BADN 41	23±1	24	251.19	1.191 (0.76dBi)	0.059559	1	Pass

S=0.084518/1+0.000591/1+0.002355/1=0.087464