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

FCC ID: 2AUVX-NT07E

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
LTE BADN 2	22±1	23	199.53	1.259 (1.00dBi)	0.04997	1	Pass
LTE BADN 4	21±1	22	158.49	1.259 (1.00dBi)	0.03969	1	Pass
LTE BADN 12	22±1	23	199.53	1.259 (1.00dBi)	0.04997	1	Pass
LTE BADN 13	22±1	23	199.53	1.259 (1.00dBi)	0.04997	1	Pass

Portable device
According to §15.247(e)(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.
According to KDB447498 D01 General RF Exposure Guidance V06
The 1-g SAR and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f(GHZ)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where:

- f(GHZ) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

WIFI:

Modulation	Channel Freq. (GHz)	Conducted power (dBm)	Conducted power (mW)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Distance (mm)	Result calculation	SAR Exclusion threshold	SAR test exclusion
802.11b	2.412	7.504	5.63	8±1	9.00	7.94	<5	2.46728	3.00	YES
	2.437	7.542	5.68	8±1	9.00	7.94	<5	2.48003	3.00	YES
	2.462	7.299	5.37	8±1	9.00	7.94	<5	2.49272	3.00	YES
802.11g	2.412	6.071	4.05	7±1	8.00	6.31	<5	1.95983	3.00	YES
	2.437	6.198	4.17	7±1	8.00	6.31	<5	1.96996	3.00	YES
	2.462	6.49	4.46	7±1	8.00	6.31	<5	1.98004	3.00	YES
802.11n(HT20)	2.412	5.491	3.54	6±1	7.00	5.01	<5	1.55675	3.00	YES
	2.437	5.896	3.89	6±1	7.00	5.01	<5	1.56480	3.00	YES
	2.462	5.785	3.79	6±1	7.00	5.01	<5	1.57280	3.00	YES
802.11n(HT40)	2.412	3.008	2.00	4±1	5.00	3.16	<6	0.98224	3.00	YES
	2.437	3.324	2.15	4±1	5.00	3.16	<7	0.98732	3.00	YES
	2.462	3.052	2.02	4±1	5.00	3.16	<8	0.99237	3.00	YES

Conclusion:
For the max result : 2.49272≤ FCC Limit 3.0 for 1g SAR.