



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

# FCC ID: 2ATJ8-S100A-CR-W

**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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> 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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> 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=0.2m

**TEST RESULTS**

	Tune up Produce power	Maximum peak output power (dBm)	Output power to antenna (mW)	Antenna Gain (numeric)	Power Density (S) (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
BLE	0±1	1	1.26	1.66 (2.21dBi)	0.00042	1	Pass
802.11 b	11±1	12	15.85	1.66 (2.21dBi)	0.00523	1	Pass

**433M**

Below 1GHz: dBm=dBuV/m-95.2-4.7

Modulation	Channel Freq. (MHz)	Output Power (dBuV/m)	Output Power (dBm)	Tune up Produce power
ASK	433.92	92.74	-7.16	-7±1

Maximum peak output power (dBm)	Output power to antenna (mW)	Antenna Gain (numeric)	Power Density (S) (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
-6	0.25	1.26 (1dBi)	0.000063	1	Pass

**For the Max simultaneous transmission MPE**

Evaluation mode	Power Density/Limit	Sum of the MPE rate	Limit	Result
BLE	0.00042	0.00571	1	Pass
802.11 b	0.00523			
433M	0.00006			

**Conclusion:**

For the max Power Density(S)(mW/cm<sup>2</sup>) : 0.00571 < 1, the SAR testing is not required.