



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

## FCC ID: 2BN5S-2503N

### 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

**Main Power: 93dB $\mu$ V/m=93-95.2=-2.2dBm**

**30MHz-1G:-2.2+4.7=2.5dBm**

	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
915	2 $\pm$ 1	3	2.0	1.33 (1.25dBi)	0.000529	0.61	Pass

## WIFI module

	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
WIFI 2.4G	13±1	14	25.12	2.86 (4.57dBi)	0.014297	1	Pass
WIFI 5.1G	13±1	14	25.12	3.20 (5.05dBi)	0.015996	1	Pass
WIFI 5.3G	13±1	14	25.12	3.20 (5.05dBi)	0.015996	1	Pass
WIFI 5.6G	13±1	14	25.12	3.20 (5.05dBi)	0.015996	1	Pass
WIFI 5.8G	13±1	14	25.12	3.20 (5.05dBi)	0.015996	1	Pass

## Simultaneous transmitting evaluation:

### WIFI and 915

Mode	Power Density (S) (mW/ cm2)	Simultaneous transmitting (mW/ cm2)	Limit (mW/ cm2)
2.4G WIFI	0.014297	0.030822	1
5G WIFI	0.015996		
915	0.000529		

Simultaneous transmitting= $0.014297/1+0.015996/1+0.000529/0.61=0.031160213$

For the max result :  $0.031160213 \leq 1.0$ , compliance with FCC's RF Exposure