

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

FCC ID: 2A9VX-X3PLUS

### 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=20cm

## Test Result of RF Exposure Evaluation

	Tune up Produce power	Maximu m peak output power (dBm)	Output power to antenna (mW)	Antenna Gain (numeric)	Power Density (S) (mW/ cm2)	Limit (mW / cm2 )	Result
BLE GFSK& LCH	0±1	1	1.2589	1.4158 (1.51dBi)	0.00035	1	Pass
EDR 8DPSK &HCH	2±1	3	1.9953	1.4158 (1.51dBi)	0.00056	1	Pass
2.4G WIFI 802.11b &2437	14±1	15	31.6228	1.3646 (1.35dBi)	0.00859	1	Pass
5.2GWIFI 802.11ac20& 5240	14±1	15	31.6228	1.256 (0.99dBi)	0.0079	1	Pass
5.8GWIFI 802.11a20& 5825	14±1	15	31.6228	1.3002 (1.14dBi)	0.00818	1	Pass

BT+WIFI supported simultaneous transmission:

EDR+2.4GWIFI MIMO :  $\Sigma$  MPE Ratio =0.00056+0.00859=0.00915 $\leq$ 1, So passed.

EDR+5GWIFI MIMO:  $\Sigma$  MPE Ratio =0.00056+0.00818=0.00874 $\leq$ 1, So passed.