Prediction of MPE at a given distance

1. Limits

The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)				
(A) Limits for Occupational/Controlled Exposure								
0.3-3.0	614	1.63	*100	6				
3.0-30	1842/f	4.89/f	*900/f ²	6				
30-300	61.4	0.163	1.0	6				
300-1,500			f/300	6				
1,500-100,000			5	6				
	(B) Limits for Gener	al Population/Uncontrolled	Exposure					
0.3-1.34	614	1.63	*100	30				
1.34-30	824/f	2.19/f	*180/f ²	30				
30-300	27.5	0.073	0.2	30				
300-1,500			f/1500	30				
1,500-100,000			1.0	30				

2. Test Procedure

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{P \times G}{4 \times \pi \times R^2}$$

Where:

S = power density

- P = power input to the antenna
- G = numeric gain of the antenna in the direction of interest relative to an isotropic radiator
- R = distance to the centre of radiation of the antenna

3. Test Facility

Shenzhen Alpha Product Testing Co., Ltd Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103, Shenzhen, Guangdong, China

June 21, 2018 File on Federal Communication Commission Registration Number: 293961

4. Result

Worse case is as below:

Mode	Frequency (MHz)	Prediction distance (cm)	RF output power		MDE	Limit	SAR Tost
			dBm	mW	(mW/cm ²)	(mW/cm ²)	Exclusion
EDR	2480	20	5.175	3.2923	0.00135	1	Yes
BLE	2480	20	4.074	2.5551	0.00105	1	Yes
2.4GWIFI	2412	20	14.896	30.8745	0.01269	1	Yes
5GWIFI	5200	20	12.598	18.1886	0.00827	1	Yes
Band 1							
5GWIFI	5000	20	13.709	23.4909	0.01068	1	Yes
Band 2	5520						
5GWIFI	5500	20	15.889	38.8061	0.01765	1	Yes
Band 3	5500						
5GWIFI	5005	20	12.789	19.0064	0.00864	1	Yes
Band 4	5025						

Maximum Simultaneous transmission MPE Ratios for 2.4G+GSM:

Max MPE ratio _{EDR} /Limit	Max MPE ratio _{WIFI} /Limit	∑MPE ratios	Limit	Result
0.00135	0.01765	0.019	1	PASS

EDR Antenna Gain: 3.15dBi, 2.07(numeric)

BLE Antenna Gain: 3.15dBi, 2.07(numeric)

2.4GWIFI Antenna Gain: 3.15dBi, 2.07(numeric)

5GWIFI Antenna Gain: 3.59dBi, 2.29(numeric)

Meet MPE requirements, RF Exposure evaluation is not required.