Appendix IV MPE

FCC ID: 2BYAH-CRS001

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)

KDB Test Methodology: KDB 447498 D01 v06.

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 General 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. Result

Mode	Frequency (MHz)	Prediction distance (cm)	RF output power(Max) (dBm)	Tune-up power (Max)		MPE (mW/cm^2)	Limit (mW/cm^2)	SAR Test Exclusion
				dBm	mW			
BT LE	2402-2480	20	0.40	1	1.2589	0.0006	1.0000	Yes
2.4G WIFI ANT1	2412-2462	20	15.73	16	39.8107	0.0177	1.0000	Yes
2.4G WIFI ANT2	2412-2462	20	15.59	16	39.8107	0.0177	1.0000	Yes
2.4G WIFI MIMO	2412-2462	20	18.08	19	79.4328	0.0354	1.0000	Yes
5G WIFI B1 ANT1	5180-5240	20	15.80	16	39.8107	0.0199	1.0000	Yes
5G WIFI B1 ANT2	5180-5240	20	15.40	16	39.8107	0.0199	1.0000	Yes
5G WIFI B1 MIMO	5180-5240	20	18.59	19	79.4328	0.0397	1.0000	Yes
5G WIFI B4 ANT1	5745-5825	20	16.05	17	50.1187	0.0250	1.0000	Yes
5G WIFI B4 ANT2	5745-5825	20	15.41	16	39.8107	0.0199	1.0000	Yes
5G WIFI B4 MIMO	5745-5825	20	18.42	19	79.4328	0.0397	1.0000	Yes

BT:

Internal antenna, Maximum Gain is 3.5dBi, 2.24(numeric).

2.4G WiFi:

Internal antenna 1, Maximum Gain is 3.5dBi, 2.24 (numeric).

Internal antenna 2, Maximum Gain is 3.5dBi, 2.24 (numeric).

5G WiFi:

Internal antenna 1, Maximum Gain is 4dBi, 2.51(numeric).

Internal antenna 2, Maximum Gain is 4dBi, 2.51 (numeric).

Maximum Simultaneous transmission MPE Ratios for BT+WIFI

Max MPE Ratio BT/Limit	Max MPE Ratio WIFI/Limit	∑MPE Ratios	Limit	Result
0.0006/1	0.0397 /1	BT+ WIFI	1	PASS
0.0006	0.0397	0.0403	1	PASS

Then SAR evaluation is not required.