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 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

Worse case is as below:

Mode	Frequency (MHz)	Prediction distance (cm)	RF output power		MPE (mW/cm^2)	Limit (mW/cm^2)	SAR Test Exclusion
			dBm	mW			
BLE GFSK (1Mbps)	2440	20	0.588	1.1450	0.0001043	1	Yes
EDR GFSK	2441	20	2.979	1.9856	0.0001810	1	Yes
2.4G WIFI n20	2412	20	17.243	53.0029	0.0096376	1	Yes
5G WIFI B1 n20	5180	20	17.937	62.1871	0.0138794	5	Yes
5G WIFI B2 ac40	5310	20	17.773	59.8825	0.0133650	5	Yes
5G WIFI B3 n40	5510	20	17.451	55.6032	0.0124100	5	Yes
5G WIFI B4 n20	5785	20	17.655	58.2774	0.0130068	5	Yes

Max MPE ratio $_{BT4.1}$/Limit	Max MPE ratio $_{5G\ WIFI}$/Limit	∑MPE ratios	Limit	Result
0.0001810	0.0138794	0.0140604	1	PASS

Then SAR evaluation is not required.