

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

Mode	Frequency (MHz)	Prediction distance (cm)	Rated Peak RF power output		MPE (mW/cm ²)	Limit (mW/cm ²)	SAR Test Exclusion
			dBm	mW			
BT EDR	2402-2480	40	6.5	4.467	0.0003	1	Yes
BT LE	2402-2480	40	6	3.981	0.0002	1	Yes
WIFI	2412-2472	40	19	79.433	0.0049	1	Yes
GSM 850	824.20-848.80	40	33	1995.262	0.2671	0.549	Yes
PCS 1900	1850.20-1909.80	40	30	1000.000	0.1339	1	Yes
WCDMA B5	826.40-846.60	40	24	251.189	0.0336	0.551	Yes
WCDMA B2	1852.40-1907.60	40	24	251.189	0.0336	1	Yes
LTE B2	1850-1910	40	24	251.189	0.0336	1	Yes
LTE B4	1710-1755	40	23	199.526	0.0267	1	Yes
LTE B5	824-849	40	24	251.189	0.0336	0.549	Yes
LTE B7	2500-2570	40	23	199.526	0.0267	1	Yes

Maximum Simultaneous transmission MPE Ratios for BT+WIFI +GSM:

Max MPE Ratio BT/Limit	Max MPE ratio WIFI/Limit	Max MPE ratio GSM/Limit	ΣMPE ratios	Limit	Result
0.0003	0.0049	0.2671	0.2723	1	PASS

BT&WIFI Antenna Gain: 0.93dBi, 1.24(numeric)

GSM, WCDMA & LTE Antenna Gain: 4.3dBi, 2.69(numeric)

Then SAR evaluation is not required.