

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			
EDR	2402	50	7.306	5.3777	0.00017	1	Yes
2.4GWIFI	2437	50	15.493	35.4242	0.00113	1	Yes
5GWIFI BAND1	5210	50	12.851	19.2797	0.00061	1	Yes
5GWIFI BAND4	5775	50	13.087	20.3564	0.00065	1	Yes
UHF	469.95	50	30.540	1132.4004	0.05713	0.3133	Yes

Maximum Simultaneous transmission MPE Ratios for EDR+2.4GWIFI+UHF:

Max MPE ratio EDR/Limit	Max MPE ratio WIFI/Limit	Max MPE ratio UHF/Limit	ΣMPE ratios	Limit	Result
0.00017	0.00113	0.18235	0.18365	1	PASS

EDR Antenna Gain: 0dBi, 1(numeric)

WIFI Antenna Gain: 0dBi, 1(numeric)

UHF Antenna Gain: 2dBi, 1.58(numeric)

Meet MPE requirements, then SAR evaluation is not required.