

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			
2.4G WIFI	2412-2462	20	19.587	90.9285	0.0347	1	Yes
5G WIFI	5500-5700	20	20.960	124.7384	0.0510	1	Yes

2.4G WIFI Antenna Gain:

FPC antenna max gain 2.81dBi, 1.91 (numeric)

Rod antenna max gain 2.83dBi. 1.92 (numeric)

5G WIFI Antenna Gain:

FPC antenna max gain 3.13dBi, 2.06 (numeric)

Rod antenna max gain 1.46dBi. 1.40 (numeric)

Note: Select the maximum gain calculation.

2.4G and 5G WIFI cannot transmit at the same time.

Then SAR evaluation is not required.