

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 center of radiation of the antenna

3. Result

| Mode | Frequency (MHz) | Maximum output power | Prediction distance (cm) | Rated Peak RF power output | | MPE (mW/cm ²) | Limit (mW/cm ²) | SAR Test Exclusion |
|------------|-----------------|----------------------|--------------------------|----------------------------|-------|---------------------------|-----------------------------|--------------------|
| | | | | dBm | mW | | | |
| 2.4G WiFi | 2412-2462 | 13.903 | 20 | 14 | 25.12 | 0.0078 | 1 | Yes |
| 5G WiFi B1 | 5180-5240 | 13.931 | 20 | 14 | 25.12 | 0.0092 | 1 | Yes |
| 5G WiFi B2 | 5260-5320 | 13.988 | 20 | 14 | 25.12 | 0.0092 | 1 | Yes |
| 5G WiFi B3 | 5500-5700 | 13.688 | 20 | 14 | 25.12 | 0.0092 | 1 | Yes |
| 5G WiFi B4 | 5745-5825 | 13.036 | 20 | 14 | 25.12 | 0.0092 | 1 | Yes |

2.4G WiFi Antenna Gain: 1.95dBi, 1.57(numeric)

5 WiFi Antenna Gain: 2.64dBi, 1.84(numeric)

Then SAR evaluation is not required.