

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

FCC Rules 47 CFR §2.1093

KDB 447498 D04 interim General RF Exposure Guidance v01

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 | 2441 | 50 | 5.093 | 3.2307 | 0.00010 | 1 | Yes |
| 2.4GWIFI | 2452 | 50 | 16.942 | 49.4538 | 0.00157 | 1 | Yes |
| 5GWIFI | 5210 | 50 | 14.479 | 28.0479 | 0.00089 | 1 | Yes |
| UHF | 469.95 | 50 | 29.283 | 847.8129 | 0.06779 | 0.3133 | Yes |
| | | | | | | | |

Maximum Simultaneous transmission MPE Ratios for EDR+WIFI+UHF:

| Max MPE ratio EDR/Limit | Max MPE ratio WIFI/Limit | Max MPE ratio UHF/Limit | ΣMPE ratios | Limit | Result |
|----------------------------|-----------------------------|----------------------------|-------------|-------|--------|
| 0.00010 | 0.00157 | 0.06779 | 0.06946 | 1 | PASS |

EDR Antenna Gain: 0dBi, 1(numeric)

WIFI Antenna Gain: 0dBi, 1(numeric)

UHF Antenna Gain: 4dBi, 2.51(numeric)

Meet MPE requirements, then SAR evaluation is not required.