

## 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 <sup>2</sup> ) | 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 <sup>2</sup>                 | 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 <sup>2</sup>                 | 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 <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) | MPE Test Exclusion |
|----------|-----------------|--------------------------|-----------------|---------|---------------------------|-----------------------------|--------------------|
|          |                 |                          | dBm             | mW      |                           |                             |                    |
| EDR      | 2402-2480       | 20                       | 7.182           | 5.2264  | 0.00151                   | 1                           | Yes                |
| BLE      | 2402-2480       | 20                       | 4.965           | 3.1369  | 0.00090                   | 1                           | Yes                |
| 2.4GWIFI | 2412-2462       | 20                       | 14.566          | 28.6154 | 0.00825                   | 1                           | Yes                |

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

| Max MPE ratio<br>EDR/Limit | Max MPE ratio<br>WIFI/Limit | $\Sigma$ MPE ratios | Limit | Result |
|----------------------------|-----------------------------|---------------------|-------|--------|
| 0.00151                    | 0.00825                     | 0.00976             | 1     | PASS   |

EDR&BLE&2.4GWIFI Antenna Gain: 1.61dBi, 1.45(numeric)

Meet MPE requirements, RF Exposure evaluation is not required.