

## 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

For 5G Band 1

Maximum peak output power at antenna input terminal: 26.17 (dBm)

EIRP : 13100 (mW)

Antenna gain(directional): 15 (dBi)

Maximum antenna gain: 31.62 (numeric)

Prediction distance: 50 (cm)

Source Based Time Average Duty Cycle: 100 (%)

MPE limit for uncontrolled exposure at prediction frequency: 1 (mW/cm<sup>2</sup>)

Power density at prediction frequency: 0.42 (mW /cm<sup>2</sup>)

Power density at prediction frequency: 4.2 (W/cm<sup>2</sup>)

Power density at a given distance is 0.42 <1 mW/cm<sup>2</sup>

For 5G Band4

Maximum peak output power at antenna input terminal: 28.25 (dBm)

EIRP : 21135 (mW)

Antenna gain(directional): 15 (dBi)

Maximum antenna gain: 31.62 (numeric)

Prediction distance: 50 (cm)

Source Based Time Average Duty Cycle: 100 (%)

MPE limit for uncontrolled exposure at prediction frequency: 1 (mW/cm<sup>2</sup>)

Power density at prediction frequency: 0.7 (mW /cm<sup>2</sup>)

Power density at prediction frequency: 7 (W/cm<sup>2</sup>)

Power density at a given distance is 0.7 <1 mW/cm<sup>2</sup>