

4 Maximum Permissible Exposure

4.1 Maximum Permissible Exposure

4.1.1 Limit of Maximum Permissible Exposure

| Limits for Occupational / Controlled Exposure | | | | |
|---|-----------------------------------|-----------------------------------|--|--|
| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm ²) | Averaging Time E ² , H ² or S (minutes) |
| 0.3-3.0 | 614 | 1.63 | (100)* | 6 |
| 3.0-30 | 1842 / f | 4.89 / f | (900 / f)* | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1500 | | | F/300 | 6 |
| 1500-100,000 | | | 5 | 6 |
| Limits for General Population / Uncontrolled Exposure | | | | |
| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm ²) | Averaging Time E ² , H ² or S (minutes) |
| 0.3-1.34 | 614 | 1.63 | (100)* | 30 |
| 1.34-30 | 824/f | 2.19/f | (180/f)* | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | | | F/1500 | 30 |
| 1500-100,000 | | | 1.0 | 30 |
| Note 1: f = frequency in MHz ; *Plane-wave equivalent power density | | | | |
| Note 2: For the applicable limit, see FCC 1.1310 | | | | |

4.1.2 MPE Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d}$$

$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

4.1.3 Result of Maximum Permissible Exposure

| Maximum Permissible Exposure - Power Setting 1 (Ant No. 1) | | | | | | | |
|--|-----------------|-------------------------|-----------------|------------------|---------------------------------|-------------------------------------|---|
| Worst Case Mode Abbreviations | Test Freq. (FX) | Total Cond. Power (dBm) | Dir. Gain (dBi) | EIRP Power (dBm) | User and EUT Min. Distance (cm) | Power Density (mW/cm ²) | Power Density Limit (mW/cm ²) |
| OFDM-2TX-5 | F1 | 20.44 | 15.01 | 35.45 | 20 | 0.6982 | 1 |
| OFDM-2TX-5 | F2 | 20.02 | 15.01 | 35.03 | 20 | 0.6338 | 1 |
| OFDM-2TX-5 | F3 | 20.01 | 15.01 | 35.02 | 20 | 0.6323 | 1 |
| OFDM-2TX-10 | F1 | 20.88 | 15.01 | 35.89 | 20 | 0.7726 | 1 |
| OFDM-2TX-10 | F2 | 20.69 | 15.01 | 35.70 | 20 | 0.7395 | 1 |
| OFDM-2TX-10 | F3 | 19.73 | 15.01 | 34.74 | 20 | 0.5929 | 1 |
| OFDM-2TX-20 | F2 | 20.63 | 15.01 | 35.64 | 20 | 0.7294 | 1 |
| Test Result | | | | | | Complied | |
| Note 1: antenna no., directional gain and power setting define in test report clause 1.1.2 and 2.3. Note 2: worst case mode abbreviations and test frequency define in test report clause 2.1 and 2.2. Note 3: worst case RF conducted test define in test report clause 2.4. Note 4: EUT have 2 transmitter outputs (port 1 - port 2). | | | | | | | |