

RF Exposure

The total Effective Radiated Power of the Transmitter (E.U.T.) in mW can be calculate from the following equation:

$$ERP_{mw} = \frac{4 \cdot \pi \cdot R^2 \cdot E^2}{377} \cdot 1000$$

Where E is the electric field in $\mu\text{V/m}$ at a distance R from the E.U.T.. 15.231(e) limit is $4400\mu\text{V/m}$ at 3meter. Substituting the limit in the above equation:

$$ERP = \frac{4 \cdot \pi \cdot 3^2 \cdot (4.4 \cdot 10^{-3})^2}{377} \cdot 1000$$

We get: **ERP = 0.0058 mW**

The E.U.T. is not a portable or mobile unit, hence the limit of §1.1310 table 1 will apply:

$$\text{Limit}(\text{mW}/\text{cm}^2) = 433.93/300 = 1.5$$

The E.U.T. ERP is very low i.e. $5.8 \mu\text{W}$. Even if all the power will be directed through an area of 1cm^2 the outcome will be a significant margin below the limit:

$$\text{Margin}_{dB} = 10 \cdot \log\left(\frac{0.0058}{1.5}\right) = -24$$

In reality the margin is even greater.

Conclusion

The E.U.T. complies with the radio-frequency exposure limits.