

31 August 2011

Maximum Permissible Exposure

FCC, Part 1 Subpart §1.1310

Calculations for Maximum Permissible Exposure Levels

$$\text{Power Density} = P_d \text{ (mW/cm}^2\text{)} = \text{EIRP}/(4\pi d^2)$$

$$\text{EIRP} = P * G$$

P = Peak output power (mW)

G = Antenna numeric gain (numeric)

d = Separation distance (cm)

$$\text{Numeric Gain} = 10 ^ (G \text{ (dBi)}/10)$$

The calculated separation distance is for worst case i.e. highest power level.

Because the EUT belongs to the General Population/Uncontrolled Exposure the limit of power density is $f/1500$ (where $f = 896 \text{ MHz} = 0.6 \text{ mW/cm}^2$

Freq. Band (GHz)	Antenna Gain (dBi)	Numeric Gain (numeric)	Max Peak Output Power (dBm)	Peak Output Power (mW)	Calculated Safe Distance @ 0.6 mW/cm ² Limit(cm)	Minimum Separation Distance (cm)
900	3.0	2.00	+29.84	963.9	16	20

*Note: for mobile or fixed location transmitters the minimum separation distance is 20cm, even if the calculations indicate the MPE distance to be lower.

Specification

Maximum Permissible Exposure Limits

§1.1310 Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency levels in excess of the Commission's guidelines. See §1.1307 (b)(1) of this chapter.

Limit = 0.6 mW / cm² from 1.310 Table 1

Note: for mobile or fixed location transmitters the minimum separation distance is 20cm, even if calculations indicate the MPE distance to be less.

Laboratory Measurement Uncertainty for Power Measurements

Measurement uncertainty	±1.33dB
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