

VMD-TX-100-S RF Exposure

Calculation method of RF power density:

The power density, S, at a distance of 20 cm, in mW/cm² is:

$$S = (P * G) / (4 * \pi * r^2) \quad \text{Eq. 1}$$

Where:

S = allowable power density in mW/cm²

P = power to the antenna in mW

G = numeric gain of the antenna

R = 20 cm (minimum distance for a mobile product)

The limit for Maximum Permissible Exposure (MPE) General Population in the frequency band 1.50 – 100 GHz is 1 mW/cm² (47 CFR 1.1310).

Antennas intended for use with this device have a gain of 2.1 dBi.

The maximum rated transmitter power is 110 mW.

Conversion of antenna gain from dB to numeric:

$$G = 10^{(2.1/10)} = 1.62$$

Substitute P, G, and r into Eq. 1 to solve for the power density in mW:

$$S = (P * G) / (4 * \pi * r^2)$$

$$S = (110 * 1.62) / 4 * 3.14 * 20^2$$

$$S = 0.040 \text{ mW} / \text{cm}^2$$

Therefore, the Maximum Permissible Exposure (MPE) limits as specified in FCC 47 CFR 1.1310 for general population use are not exceeded when the device is used as described in the Operator's Manual.