Digi-Code

R.F. Exposure Compliance Calculations

Requirement: Less than 1 mW/cm^2 of radiated power at the surface of the device.

Model CR-5010 and Model CR-5020: The following calculations will demonstrate that the Models CR-5010 and CR-5020 garage door remote control transmitters comply with this requirement. Both of these devices operate on a fixed frequency of 300.0 mHz.

The physical size of these devices is such that the nearest surface is approximately one cm from the radiating portion of the transmitter.

Assuming a point source of ratiation, the radiated power is related to the field strength by the equation:

$$E = \{(30 * P_t)^{1/2}\}/R$$

where: E = field strength in V/m
P_t = radiated power in Watts
R = distance in meters from the point source

The test report contained elswhere in this report indicates compliance of these models with a 5,433 μV/m maximum radiated field strength at a measurement distance of 3 meters.

Solving the equation above for P_t at this distance,

$$P_t = \{(E * R)^2\}/30$$

Using R = 3 meters, and a maximum field strength of 5.433×10^{-3} V/m, the radiated power is calculated to be less than 8.9×10^{-6} Watts, or 8.9×10^{-3} mW.

The area of shere with a radius of 1 cm is:

$$A = 4\pi r^2$$
$$A = 4 * \pi * 1 = 12.5 \text{ cm}^2$$

Conclusion: Using the above calculations, the radiated power per unit area at a distance of 1 cm is:

$P/A = (8.9 \times 10^{-3})/12.5 = 0.7 \times 10^{-3}$ mW/cm^2 or more than 3 orders of magnitude below the limit requirement of 1 mW/cm^2.

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Model CR-5012 and Model CR-5022: The following calculations will demonstrate that the Models CR-5010 and CR-5020 garage door remote control transmitters comply with this same requirement. Both of these devices operate on a fixed frequency of 310.0 mHz.

The physical size of these devices is such that the nearest surface is approximately one cm from the radiating portion of the transmitter.

The test report contained elswhere in this report indicates compliance of these models with a 5,821 μV/m maximum radiated field strength at a measurement distance of 3 meters.

In a calculation similar to the one above, the maximum radiated power per unit area for these models at a distance of 1 cm is 0.8×10^{-3} mW/cm^2.

Conclusion: Again, the radiated power per unit area is more than 3 orders of magnitude below the limit requirement of 1 mW/cm^2.