Section 15.247 (b) (5) – Radio Frequency Hazard Information

As per Section 15.247 (b) (4) spread spectrum transmitters operating in the 902 – 928 MHz band are required to be operated in a manner that ensures that the public is not exposed to RF energy levels in accordance with CFR 47, Section 1.1307(b)(1).

In accordance with this section, and also Section 2.1091, this device has been defined as a mobile device whereby a distance of 20 cm can normally be maintained between the user and the device.

In accordance with Section 1.1310 the Maximum Permissible Exposure (MPE) limits for the General Population / Uncontrolled Exposure of f/1500 have been applied.

The maximum distance from the antenna at which the MPE is met or exceeded is calculated from the equation relating field strength in V/m, transmit power in watts, transmit antenna gain and separation distance in metres:

$$E, V/m = (\sqrt{(30 * P * G)}) / d$$

$$\text{Power density, } mW/m^2 = E^2/3770$$

$$E \text{ for MPE: } (902/1500) = E^2/3770$$
$$E = \sqrt{(902/1500)*3770}$$
$$E = \underline{47.6\ V/m}$$

The antenna used with this system has a gain of 10.0 dBi and a coax loss of 4 dB which gives an overall gain of 6 dBi (3.98).

The maximum transmitter power measured being measured at 29.3 dBm or 0.85 watts.

Therefore:
$$E = \sqrt{(30 * P * G)} / d$$
$$= \sqrt{(30 * 0.85 * 3.98\ )} / 0.2$$
$$= \underline{50.3\ V/m}$$

Calculations show that this device with the described antenna does not meet the MPE requirement for mobile devices falling below the 20 cm clearance required and a minimum safe distance of at least 25 cm will be required.

Result: Complies

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