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To Whom It May Concern:

To investigate the RF exposure of the Tantalus Systems Corp. TR-1901 RF Repeater the FCC OET Bulletin 65 and the Health Canada Safety Code 6 (as specified in RSS-102) have been used as guidelines to determine compliance with the FCC and IC RF exposure limit.

Analysis:

As per OET Bulletin 65 and Health Canada Safety Code 6 guidelines:

The EUT is classed to meet the RF exposure that it subjects to the “General Population/Uncontrolled Environment”. Under this class the limit is calculated by:

$$S = f/1500$$

Where S is the Power Density in mW/cm^2 .

F is the frequency of operation in MHz.

The EUT operates in the 902 to 928 MHz band, the lower exposure limit would be obtained by using a frequency at the lower edge of the band, therefore:

$$S = 902 / 1500 = 0.601 \text{ mW}/\text{cm}^2$$

The maximum EIRP was measured to be 2.818W

However, under normal operation the transmitter is not on continuously and therefore its power must be time averaged. The maximum total transmit cycle will be 25%.

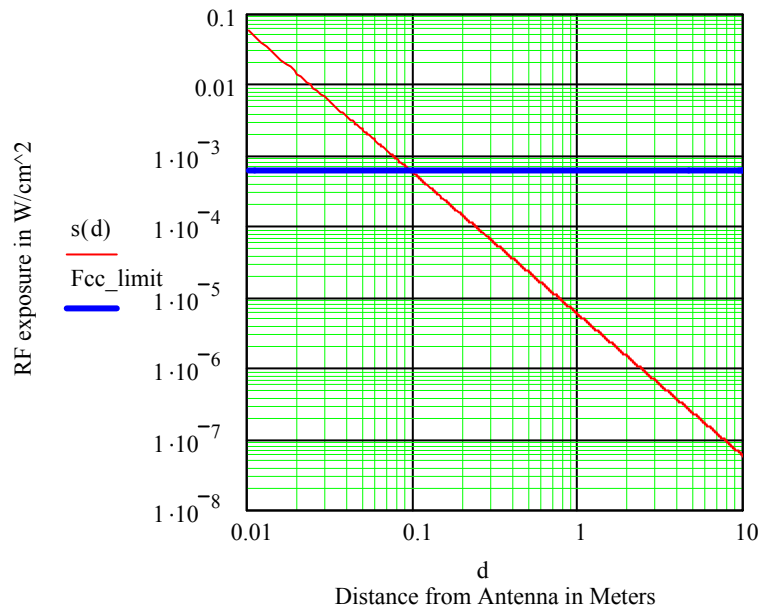
The average EIRP is therefore:

$$\begin{aligned} \text{EIRP}_{(\text{average})} &= \text{EIRP}_{(\text{continuous})} * \text{duty cycle} \\ \text{EIRP}_{(\text{average})} &= 2.818 \text{ W} * 0.25 = 0.7045 \text{ W} \end{aligned}$$

The predicted power density at a distance d, in the same horizontal plane as the elevation of the antenna is calculated and graphed below:

$$\begin{aligned} \text{Eirp} &:= 2.818 \quad \text{Duty_cycle} := 0.25 \quad \text{Eirp_avg} := \text{Eirp} \cdot \text{Duty_cycle} \quad \text{Freq_Mhz} := 902 \\ d &:= 0.01, 0.011.. 10 \quad (\text{Distance in meters}) \quad \text{Fcc_limit} := \frac{\text{Freq_Mhz}}{1500 \cdot 1000} \quad (\text{Fcc Limit in W/cm}^2) \end{aligned}$$

$$s(d) := \frac{\text{Eirp_avg}}{4 \cdot \pi \cdot (d \cdot 100)^2} \quad (\text{Power in W/cm}^2)$$



The TR-1901 is a fixed device. The minimum distance in a “General Population/Uncontrolled Environment” to meet the maximum exposure limit would be 10cm.

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