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To Whom It May Concern:

To investigate the RF exposure of the Tantalus Systems Corp. PP-1320 network interface card for a polyphase electricity meter (FCC ID: OZFDC1320, IC ID: 3669A-DC1320) the FCC KDB publication 447498 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 per Health Canada Safety Code 6 guidelines:

As per 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:

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

The highest EIRP measured was 0.585W

However the maximum total transmit bandwidth available on a time averaged basis is only 19.4% of this number (this number is based on the worst case time of occupancy of 0.0778 seconds for a maximum of 0.4 seconds for the low data rate mode).

The average EIRP is therefore:

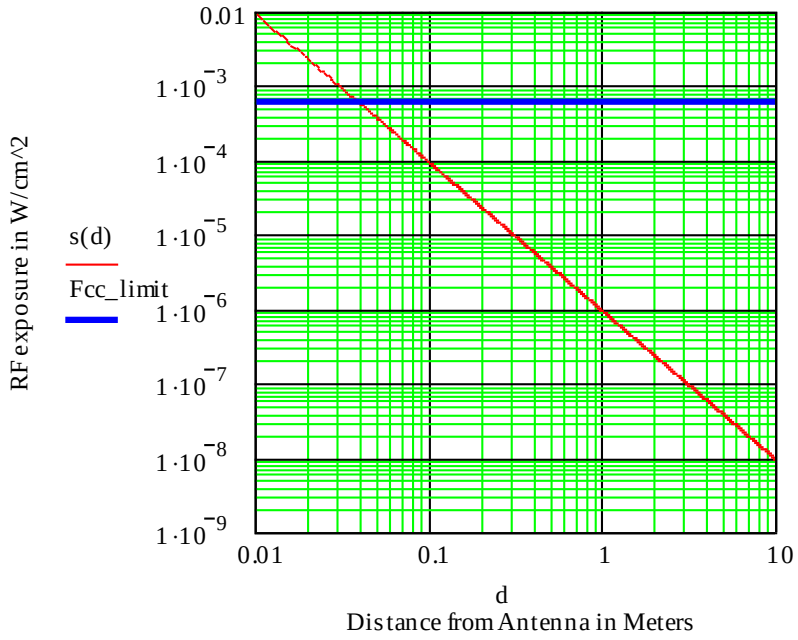
$EIRP_{(average)} = EIRP_{(continuous)} * \text{duty cycle}$
$EIRP_{(average)} = 0.585W * 0.194 = 113.5\ mW$

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

$Eirp := 0.585 \quad Duty\_cycle := 0.194 \quad Eirp\_avg := Eirp \cdot Duty\_cycle \quad Freq\_Mhz := 902$

$d := 0.01, 0.011 .. 10$ (Distance in meters) $\quad Fcc\_limit := \frac{Freq\_Mhz}{1500\,1000}$ (Fcc Limit in W /cm ^{2})

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



From the graph, it can be observed that the distance at which the RF exposure would exceed the limit would be approx. 4cm. The far field distance for a small antenna is given by any distance greater than $\lambda/2\pi$; this equates to a minimum distance of 5.3cm, therefore this calculation is valid and so the minimum distance must be 6.5cm.

Analysis as per the FCC KDB publication 447498:

As per the FCC KDB publication 447498 D06 General RF Exposure Guidance, 4.3.1(b) states that SAR tests are not required if the RF power does not exceed the following formula:-

The maximum time averaged power (mW) must not exceed:-

*Max. Power (mW) Allowed at 50mm** + (test separation distance–50 mm) *x* $F_{(MHz)}$/150

*Where *Max. Power (mW) Allowed at 50mm* = 3 *x* 50 /√ $F_{(GHz)}$ = 155mW

From the equation above, the distance at which the output power does not exceed 113.5mW is when the distance is greater than 43mm.

Result:

SAR tests are not required for this product. The RF power emitted by the module is considered not to be dangerous for the general public as long as a distance of at least 43mm is maintained during normal operation. However, since this product is for fixed applications a minimum distance of 20cm from the general public must be observed during normal operation.

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