



Canada

## **Exhibit: RF Exposure – FCC**

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Client	<b>Rutherford Controls Int'l Inc. (RCI)</b>	 Canada
Product	<b>Lock N' Prox, Model 3590</b>	

## **RF Exposure – FCC**

The device contains a 0.125MHz RFID transmitter and the minimum separation distance from the radiating structure to any part of the body or extremity of a user is 5mm during normal operation.

### **General SAR test exclusion guidance:**

As per FCC KDB 447498 Section and 4.3.1 c) 2), the 10-g extremity SAR Test Exclusion Threshold is given by

$$\{[\text{Power allowed at numeric threshold for 50 mm in step 4.3.1 a}]\} + [(\text{test separation distance} - 50 \text{ mm}) \cdot (f_{(\text{MHz})}/150)]\} \cdot \frac{1}{2} [1 + \log(100/f_{(\text{MHz})})] \text{ mW}$$

Where:

Test separation distance is 50 mm and  $f = 100\text{MHz}$ .

Which results in

$$\frac{1}{2} [\text{Power allowed at numeric threshold for 50 mm in step 4.3.1 a}] \text{ mW}$$

### **SAR Calculations: 0.125 MHz RFID transmitter**

The power allowed for *numeric threshold* of 7.5, for  $f = 0.1 \text{ GHz}$ , and for a min. test distance of 50 mm

$$\frac{(\text{max. power, mW})}{(\text{min. test distance, mm})} \times \sqrt{f} = 7.5$$

$$(\text{max. power, mW}) = \frac{7.5 \times 50 \text{ mm}}{\sqrt{0.1}}$$

$$(\text{max. power, mW}) = 1185.8 \text{ mW}$$

And therefore,  $\frac{1}{2}$  power allowed is 592.9 mW.

The EIRP was calculated from field strength measurement at 3m using ANSI C63.10:2013 Section 9.5, Equation 22 and guidance from Annex G.

$$\text{EIRP} = \text{E}_{\text{Meas}} - 95.2$$

The 0.125MHz transmitter has a field strength of 74.5 dBuV/m @ 3 m

$$\text{EIRP} = 74.5 - 95.2 = -20.7 \text{ dBm} = 0.008 \text{ mW}$$

SAR Exclusion Threshold condition is met with peak EIRP.