MPE Calculations

Control4 Model: C4-FPD120

FCC ID: R33C4FPD
IC ID: 7848A-C4FPD

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1.0 SCOPE:

This Report Demonstrates Evaluation and Compliance to the following standards:

1. **Code of Federal Regulations Title 47, Volume 1, Section 1.1310.**
2. **Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) - RSS-102 Issue 3**

2.0 REVISION LEVEL:

DATE	COMMENTS	REVISION
10/10/08	Created.	1.0
08/16/10	Added RSS-102 references	2.0

3.0 REFERANCE DOCUMENTS:

(A) Limits for Maximum Permissible Exposure (MPE). Code of Federal Regulations Title 47, Volume 1, Section 1.1310.
(B) Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields. OET Bulletin 67 Edition 97-01.
(C) Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) - RSS-102 Issue 3

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4.0 CALCULATIONS:

The following worst case emissions was calculated by using Method 2 below

Method 1: Based on a PPt (Peak Power Total) measurement of the total power into the antenna and the worst case antenna gain.

Method 2: Based on the radiated field strength measurement at 3 meters [at a calibrated OATS site, maximizing the antenna polarity and height]

> **The worst case radiated field Strength when measured at 3 meters at the Nemko/CCL Wanship facility, was 115.1 dBµV/m, peak detection vertical polarity with a power level at the output of the RF chip = 0 (20 dB amplifier)**
> **Converting the 115.1 dBµV/m at 3 meters to EIRP = 97.1 mW or 0.0971 W**

After obtaining the EIRP, the Power density is calculated and compared against the FCC and IC limits.

> **S_{FCC} = Power density in *mW/cm²* for FCC**
> **$S_{FCC} = EIRP/4\pi \cdot R^2$**
> **EIRP = Equivalent isotropically radiated power 97.1 *mW***
> **R = Distance to the center of radiation of the antenna *20 cm***
> **S_{FCC} = 0.019 mW/cm²**
>
> **S_{FCC} Limit = 1.0 mW/cm²**
>
> **S_{IC} = Power density in *W/m²* for IC**
> **$S_{IC} = EIRP/4\pi \cdot R^2$**
> **EIRP = Equivalent isotropically radiated power in watts 0.0971 *W***
> **R = Distance to the center of radiation of the antenna *0.2 m***
> **S_{IC} = 0.193 W/m²**
>
> **S_{IC} Limit = 10 *W/m²* for IC**

5.0 CONCLUSION:

1. **Based upon the limits for Maximum Permissible Exposure (MPE) given in Table 1 of reference document (A) as 1mW/cm², this device falls under the required limits.**
2. **Based upon the limits given in section 4.2 of the reference document (C) as 10W/m², this device falls under the required limits.**

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