



MPE Calculations

**Control4 Model: C4-APD120, C4-APD277, C4-KD120
& C4-KD277**

**FCC ID: R33C4APDKD
IC ID: 7848A-C4APDKD**

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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 REFERENCE 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**

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 114.7 dB μ V/m, peak detection vertical polarity with a power level at the output of the RF chip = 0 (20 dB amplifier)

Converting the 114.7 dB μ V/m at 3 meters to EIRP = 88.5 mW or 0.0885 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 88.5 mW

R = Distance to the center of radiation of the antenna 20 cm

$$S_{FCC} = 0.017 \text{ mW/cm}^2$$

$$S_{FCC} \text{ Limit} = 1.0 \text{ mW/cm}^2$$

S_{IC} = Power density in W/m² for IC

$$S_{IC} = EIRP/4\pi \cdot R^2$$

EIRP = Equivalent isotropically radiated power in watts 0.0885 W

R = Distance to the center of radiation of the antenna 0.2 m

$$S_{IC} = 0.176 \text{ W/m}^2$$

$$S_{IC} \text{ Limit} = 10 \text{ W/m}^2 \text{ for IC}$$

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.