



MPE Calculations

Control4 Model:

C4-T4IW8-XX

C4-T4IW10-XX

FCC ID: 2AJACT4TS

IC: 7848A-T4TS

1.0	SCOPE	3
2.0	REVISION LEVEL	3
3.0	REFERENCE DOCUMENTS	3
4.0	CALCULATIONS	4
5.0	CONCLUSION	4

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 and Title 47, Part 2 Subpart J Section 2.1091**
- 2. Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) – ISED RSS-102 Issue 5, 2.5.2**

2.0 REVISION LEVEL:

DATE	COMMENTS	REVISION
10/10/08	Created.	1.0
08/16/10	Added RSS-102 references	2.0
09/30/20	Update logo, FCC ID grantee code, FCC and ISED standards references	2.1

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 5**

4.0 CALCULATIONS:

The following worst-case emissions was calculated by using Method 1 below

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

Effective/Equivalent Isotropic Radiated Power [EIRP] dBm = Total power into the antenna [dBm] + antenna gain [dBi]

To convert the values from dBm to mW

$$\text{mW} = 10^{\text{dBm}/10}$$

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

After obtaining the EIRP, the Power density is calculated and compared against the FCC and IC limits. Calculations for 20 cm are shown below.

S_{FCC} = Power density in *mW/cm²* for FCC

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

EIRP = Equivalent isotropically radiated power (*mW*)

R = Distance to the center of radiation of the antenna (*20 cm*)

S_{FCC} = see table below

Mode	Channel	Power setting	Total power into the antenna [dBm]	antenna gain [dBi]	Tune-up procedure variance[dB]	EIRP (dBm)	EIRP (mW)	4π	R (cm)	R ² (cm)	S _{FCC} (mW/cm ²)	S _{FCC} (mW/cm ²) FCC Limit	FCC Margin	Result (Pass/Fail)
B	2437	20	18.9	5.289	0.5	24.73	297.2	12.6	20	400	0.06	1	-0.94	Pass
G	2437	17	16.3	5.289	0.5	22.11	162.4	12.6	20	400	0.03	1	-0.97	Pass
N	2437	18	16.9	5.289	0.5	22.69	185.9	12.6	20	400	0.04	1	-0.96	Pass
UNII N	5260	20	18.8	7.503	0.5	26.83	481.4	12.6	20	400	0.10	1	-0.90	Pass

S_{IC} = Power density in *W/m²* for IC

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

EIRP = Equivalent isotropically radiated power in watts (*W*)

R = Distance to the center of radiation of the antenna (*0.2 m*)

S_{IC} = see table below

Mode	Channel	Power setting	Total power into the antenna [dBm]	antenna gain [dBi]	Tune-up procedure variance[dB]	EIRP (dBm)	EIRP (W)	4π	R (m)	R ² (m)	S _{IC} (W/m ²)	S _{IC} (W/m ²) IC Limit	IC Margin	Result (Pass/Fail)
B	2437	20	18.9	5.289	0.5	24.73	0.30	12.6	0.20	0.040	0.59	10.00	-9.41	Pass
G	2437	17	16.3	5.289	0.5	22.11	0.16	12.6	0.20	0.040	0.32	10.00	-9.68	Pass
N	2437	18	16.9	5.289	0.5	22.69	0.19	12.6	0.20	0.040	0.37	10.00	-9.63	Pass
UNII N	5260	20	18.8	7.503	0.5	26.83	0.48	12.6	0.20	0.040	0.96	10.00	-9.04	Pass

5.0 CONCLUSION:

- 1. Based upon the limits for Maximum Permissible Exposure (MPE) given in Table 1 of reference document (A) as $1\text{mW}/\text{cm}^2$, this device falls under the required limits at 20 cm.**
- 2. Based upon the limits given in section 4.2 of the reference document (C) as $10\text{W}/\text{m}^2$, this device falls under the required limits at 20 cm.**