



FCC ID: 2ARTO-PPM-DC1-100  
Report No.: T180928N02-MF

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**IEEE C95.1  
KDB 447498 D03  
47 C.F.R. Part 1, Subpart I, Section 1.1310  
47 C.F.R. Part 2, Subpart J, Section 2.1091**

## **RF EXPOSURE REPORT**

**For**

**Data Collector**

**Model: PPM DC1\_100**

**Trade Name:** 

*Issued to*

**Delta Electronics, Inc.**

**39, Section 2, Huandong Rd. Shanhua Dist., 74144 Tainan, Taiwan**

*Issued By*

**Compliance Certification Services Inc.**

**Tainan Laboratory**

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**Issued Date: October 17, 2018**

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.  
除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部分複製。

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### Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	October 17, 2018	Initial Issue	ALL	Gina Lin



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## 1. TEST RESULT CERTIFICATION

### We hereby certify that:

The equipment has been tested by Compliance Certification Services Inc., and found compliance with the requirement of the applicable standards. The test record, data evaluation and Equipment under Test (EUT) configurations represented herein are true and accurate accounts of the measurement of the sample's RF characteristics under the conditions specified in this report.

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
IEEE C95.1 2005 KDB 447498 D03 47 C.F.R. Part 1, Subpart I, Section 1.1310 47 C.F.R. Part 2, Subpart J, Section 2.1091	No non-compliance noted

*Approved by:*

**Jeter Wu**  
Assistant Manager

*Reviewed by:*


**Eric Huang**  
Section Manager

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## 2. LIMIT

According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

## 3. EUT SPECIFICATION

<b>EUT</b>	Data Collector
<b>Model</b>	PPM DC1_100
<b>Trade Name</b>	
<b>Model Discrepancy</b>	N/A
<b>Frequency band (Operating)</b>	<input checked="" type="checkbox"/> 802.11b/g/n HT20: 2412MHz ~ 2462MHz 802.11n HT40: 2422MHz ~ 2452MHz <input type="checkbox"/> Others
<b>Device category</b>	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others
<b>Exposure classification</b>	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm <sup>2</sup> ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> )
<b>Antenna Specification</b>	Antenna (1TX1RX) Manufacturer: ARISTOTLE Type: Dipole Mode: RFA-02-L2M2-M10-N Gain : 2.00dBi 2.4GHz Antenna Gain: 2.00 dBi (Numeric gain: 1.58) worst
<b>Maximum Average output power</b>	IEEE 802.11b Mode : 11.45 dBm (6.520 mW) IEEE 802.11g Mode : 6.52 dBm (4.487 mW) IEEE 802.11n HT20 Mode : 5.84 dBm (3.837 mW) IEEE 802.11n HT40 Mode : 3.59 dBm (2.286 mW)
<b>Maximum Tune up Power</b>	IEEE 802.11b Mode : 11.50 dBm (6.520 mW) IEEE 802.11g Mode : 7.50 dBm (5.623 mW) IEEE 802.11n HT20 Mode : 6.50 dBm (4.467 mW) IEEE 802.11n HT40 Mode : 4.50 dBm (2.818 mW)
<b>Evaluation applied</b>	<input checked="" type="checkbox"/> MPE Evaluation* <input type="checkbox"/> SAR Evaluation <input type="checkbox"/> N/A
<b>Frequency band (Operating)</b>	<input checked="" type="checkbox"/> 802.11b/g/n HT20: 2412MHz ~ 2462MHz 802.11n HT40: 2422MHz ~ 2452MHz <input type="checkbox"/> Others

Notes: For 2.4GHz and 5GHz could not be use as transmit/receive at the same time.

## 4. TEST RESULTS

No non-compliance noted.

### Calculation

Given  $E = \frac{\sqrt{30 \times P \times G}}{d}$  &  $S = \frac{E^2}{377}$

Where  $E =$  Field strength in Volts / meter

$P =$  Power in Watts

$G =$  Numeric antenna gain

$d =$  Distance in meters

$S =$  Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{377d^2}$$

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{377 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where  $d =$  Distance in cm

$P =$  Power in mW

$G =$  Numeric antenna gain

$S =$  Power density in mW / cm<sup>2</sup>

## 5. MAXIMUM PERMISSIBLE EXPOSURE

Substituting the MPE safe distance using  $d = 20$  cm into Equation 1:

$$S = 0.000199 \times P \times G$$

Where  $P =$  Power in mW

$G =$  Numeric antenna gain

$S =$  Power density in mW / cm<sup>2</sup>

IEEE 802.11b Mode :

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm2)	Result
High	2462	6.52	1.58	20	0.0021	1	Pass

IEEE 802.11g Mode :

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm2)	Result
Mid	2437	5.623	1.58	20	0.0018	1	Pass

IEEE 802.11n HT 20 Mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm2)	Result
Low	2412	4.467	1.58	20	0.0014	1	Pass

IEEE 802.11n HT 40 Mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm2)	Result
Mid	2437	2.818	1.58	20	0.0009	1	Pass