MPE Report

Applicant	:	Plasma Cloud Limited
Product Type	:	WiFi Access Point
Trade Name	:	Plasma Cloud
Model Number	:	PA300E
Test Specification	:	ANSI / IEEE Std.C95.1-1992 / IEEE Std. 1528-2013
		47 CFR § 2.1091
		47 CFR § 1.1310
Received Date	:	Jul. 11, 2019
Test Period	:	Jul. 12, 2019
Issue Date	:	Aug. 16, 2019

Issue by

Approved By : Jet Lu (Jet Lu)

Tested By : Kris Pan (Kris Pan)

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Taiwan Accreditation Foundation accreditation number: 1330
Test Firm MRA designation number: TW0010

Note:
1.The test results are valid only for samples provided by customers and under the test conditions described in this report.
2.This report shall not be reproduced except in full, without the written approval of A Test Lab Technology Corporation.
3.The relevant information is provided by customers in this test report. According to the correctness, appropriateness

Revision History

Rev.	Issue Date	Revisions	Revised By
00	Jul. 30, 2019	Initial Issue	Jennifer Liu
01	Aug. 16, 2019	Page 7 Revised Frequency.	Jennifer Liu

Contents

1. Reference Testing Standards

Standard	Description	Version
ANSI/IEEE C95.1	American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 300 KHz to 100 GHz, New York.	2005

2. Description of Equipment under Test (EUT)

Applicant	Plasma Cloud Limited 5/F, Yat Chau Building 262 Des Voeux Road Central Hong Kong			
Manufacturer	Emplus Technologies, Inc. Bldg. B, 10F., No.209, Sec. 1, Nangang Rd., Nangang Dist., Taipei City 11568, Taiwan			
Product Type	WiFi Access Point			
Trade Name	Plasma Cloud			
Model Number	PA300E			
FCC ID	2ASXXPA300E			
Frequency Range	Operate Band			Frequency Range (MHz)
	IEEE 802.11b / 802.11g IEEE 802.11n 2.4 GHz 20 MHz			2412 - 2462
	IEEE 802.11n 2.4 GHz 40 MHz			2422 - 2452
Antenna Information	Antenna	Model	Type	Max. Gain (dBi)
	ANT-0	98143MRSX002	Dipole Antenna (Reverse SMA)	1.93
	ANT-1	98143MRSX002	Dipole Antenna (Reverse SMA)	1.93
	G_{ANT}			1.93
	Directional Gain			4.94
Antenna Delivery	2TX (CDD)			
Temperature Range	0 ~ +40°C			

The above equipment was tested by A Test Lab Techno Corp. For compliance with the requirements set forth in 47 CFR § 2.1091 / 47 CFR § 1.1310. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties

3. Human Exposure Assessment

Due to the design and installation of this product, it is not possible to conduct SAR evaluation. This is because client either manufactures or supplies the antenna(s) that will be used in the installation of this product. Therefore, this product will be evaluated as a mobile device per 47 CFR § 1.1310 titled “Radiofrequency radiation exposure limits”, generally referred to as MPE limits.

In 47 CFR § 2.1091, paragraph (b) defines a mobile device as “a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 cm is normally maintained between the transmitter’s radiating structure(s) and the body of the user or nearby persons. ” This product is intended to be installed into a vehicle such that the unit is physically secured at one location. In the installation guide supplied with the product,

Client has made the following statement: “IMPORTANT: To meet the FCC’s RF Exposure Guidelines, the antenna should be installed so there is at least 20 cm of separation between the body of the user and nearby persons and the antenna”. Based on the installation of the transceiver and the antenna, the transmitters radiating structure is more than 20 cm from the user. Thus, this product is a “mobile device” as defined in section § 2.1091 paragraph (b).

Exposure evaluation
$$S = \frac{PG}{4\pi R^2}$$ Where   S: power density   P: power input to the antenna   G: power gain of the antenna in the direction of interest relative to an isotropic radiator.   R: distance to the center of radiation of the antenna.

4. RF Output Power

The conducted power turn-up tolerance reference manufacturer specification.

Band	Date Rate (Mbps)	Frequency (MHz)	Average Conducted power (dBm)		
			ANT-0	ANT-1	ANT-0+1
IEEE 802.11b	1M	2412.0	23.08	22.92	**26.01**
		2437.0	22.59	22.55	25.58
		2462.0	22.64	23.11	25.89
IEEE 802.11g	6M	2412.0	22.63	22.54	**25.60**
		2437.0	22.25	22.48	25.38
		2462.0	22.47	22.35	25.42
IEEE 802.11n 2.4 GHz 20 MHz	13M	2412.0	22.83	22.41	25.64
		2437.0	22.14	22.58	25.38
		2462.0	22.65	22.73	**25.70**
IEEE 802.11n 2.4 GHz 40 MHz	27M	2422.0	23.09	22.96	**26.04**
		2437.0	23.18	22.37	25.80
		2452.0	23.22	22.78	26.02

Note: The relevant measured result has the offset with cable loss already.

5. Test Results

Antenna	Band	Frequency (MHz)	Limit (mw)	Distance [R] (cm)	Max tune-up Power (upper limit) [P] (dBm)	ANT Gain (dBi)	Numeric Gain [G]	Duty Cycle	Power with Duty cycle [TP] (mW)	Power Density [S] (mw/cm^2)
Wi-Fi Antenna	2.4 GHz	2412-2462	1	20	26.54	1.93	1.56	1	702.59	0.140

Note:

1. Mobile or fixed location transmitters, minimum separation distance is 20 cm, even if calculations indicate MPE distance is less.
2. We used the maximum power and gain to provide MPE results.
3. The Numeric Gain calculated by 10^(ant. Gain(dBi) /10).
4. The MPE results are evaluated by lowest data rate for WLAN.
5. The device operating IEEE 802.11 b/g/n mode is 2TX CDD.

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