



A Test Lab Techno Corp.

Changan Lab : N o. 140-1, Changan Street, Bade District, Taoyuan City 33465, Taiwan (R.O.C)
Tel : 886-3-271-0188 / Fax : 886-3-271-0190



MPE Report

Test Report No.	: 1605FS16-01
Applicant	: EDIMAX TECHNOLOGY CO., LTD.
Product Type	: AC900 Outdoor AP
Trade Name	: EDIMAX
Model Number	: EW-7429HOA, GAP-429HOA, OAP900
Date of Received	: Feb. 22, 2016
Test Period	: Feb. 26, 2016
Date of Issued	: Jul. 20, 2016
Test Specification	: ANSI / IEEE Std.C95.1-1992 / IEEE Std. 1528-2013 47 CFR § 2.1091 47 CFR § 1.1310
Location of Test Lab.	: Chang-an Lab.

1. The test operations have to be performed with cautious behavior, the test results are as attached.
2. The test results are under chamber environment of A Test Lab Techno Corp. A Test Lab Techno Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples.
3. The measurement report has to be written approval of A Test Lab Techno Corp. It may only be reproduced or published in full. This report shall not be reproduced except in full, without the written approval of A Test Lab Techno Corp.
4. This document may be altered or revised by A Test Lab Techno. Corp. personnel only, and shall be noted in the revision section of the document.

Approved By : Bill Hu
(Bill Hu)

Tested By : Mark Duan
(Mark Duan)



Contents

1.	Description of Equipment under Test (EUT).....	3
2.	Human Exposure Assessment.....	4
3.	RF Output Power.....	5
4.	Test Result.....	8



1. Description of Equipment under Test (EUT)

Applicant	EDIMAX TECHNOLOGY CO., LTD. No.3, Wu-Chuan 3rd Road, Wu-Gu, New Taipei City 24891, Taiwan			
Manufacturer	EDIMAX TECHNOLOGY CO., LTD. No.3, Wu-Chuan 3rd Road, Wu-Gu, New Taipei City 24891, Taiwan			
Product Type	AC900 Outdoor AP			
Trade Name	EDIMAX			
Model Number	EW-7429HOA, GAP-429HOA, OAP900			
Model Number Different Description	Those model numbers differ from each other in selling region.			
FCC ID	NDD9574291601			
Class II Permissive Change	Add U-NII Band II function by software control.			
Frequency Range	IEEE 802.11a U-NII Band II-A : 5260 - 5320 MHz IEEE 802.11a U-NII Band II-C : 5550 - 5700 MHz IEEE 802.11n 5GHz 20MHz U-NII Band II-A : 5260 - 5320 MHz IEEE 802.11ac 20MHz U-NII Band II-A : 5260 - 5320 MHz IEEE 802.11n 5GHz 20MHz U-NII Band II-C : 5550 - 5700 MHz IEEE 802.11ac 20MHz U-NII Band II-C : 5550 - 5700 MHz IEEE 802.11n 5GHz 40MHz U-NII Band II-A : 5270 - 5310 MHz IEEE 802.11ac 40MHz U-NII Band II-A : 5270 - 5310 MHz IEEE 802.11n 5GHz 40MHz U-NII Band II-C : 5510 - 5670 MHz IEEE 802.11ac 40MHz U-NII Band II-C : 5510 - 5670 MHz IEEE 802.11ac 80MHz U-NII Band II-A : 5290 MHz IEEE 802.11ac 80MHz U-NII Band II-C : 5530 - 5610 MHz			
Transmit Power	IEEE 802.11a U-NII Band II-A : 0.028 W / 14.46 dBm IEEE 802.11a U-NII Band II-C : 0.013 W / 11.16 dBm IEEE 802.11ac 20MHz U-NII Band II-A : 0.015 W / 11.78 dBm IEEE 802.11ac 20MHz U-NII Band II-C : 0.016 W / 12.12 dBm IEEE 802.11ac 40MHz U-NII Band II-A : 0.017 W / 12.24 dBm IEEE 802.11ac 40MHz U-NII Band II-C : 0.017 W / 12.25 dBm IEEE 802.11ac 80MHz U-NII Band II-A : 0.018 W / 12.45 dBm IEEE 802.11ac 80MHz U-NII Band II-C : 0.018 W / 12.58 dBm			
Antenna information	Antenna	Model	Type	Max. Gain (dBi)
	Internal	C059-690332-A	PCB Antenna	13.9
	External	C059-690332-FOD	PCB Antenna	12.9
Antenna Delivery	IEEE 802.11a U-NII Band: 1*T _x + 1*R _x (ANT-0) IEEE 802.11ac 20MHz/40MHz/80MHz U-NII Band: 2*T _x + 2*R _x (MIMO)			
Temperature Range	-30 ~ +60°C			
RF Evaluation	0.182 mW/cm ²			

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



2. 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.



3. RF Output Power

Band	Data Rate	CH	Frequency (MHz)	Average Conducted power (dBm)		
				ANT-0	ANT-1	ANT-0+1
IEEE 802.11a	6M	52	5260.0	14.07	---	---
		56	5280.0	14.31	---	---
		60	5300.0	14.46	---	---
		64	5320.0	11.63	---	---
		100	5500.0	10.29	---	---
		104	5520.0	10.59	---	---
		108	5540.0	11.16	---	---
		112	5560.0	10.73	---	---
		116	5580.0	10.80	---	---
		120	5600.0	10.78	---	---
		124	5620.0	10.67	---	---
		128	5640.0	10.62	---	---
		132	5660.0	10.79	---	---
		136	5680.0	10.90	---	---
		140	5700.0	7.86	---	---
	54M	52	5260.0	14.02	---	---
		56	5280.0	14.29	---	---
		60	5300.0	14.41	---	---
		64	5320.0	11.58	---	---
		100	5500.0	10.26	---	---
		104	5520.0	10.53	---	---
		108	5540.0	11.10	---	---
		112	5560.0	10.70	---	---
		116	5580.0	10.74	---	---
		120	5600.0	10.75	---	---
		124	5620.0	10.62	---	---
		128	5640.0	10.58	---	---
		132	5660.0	10.73	---	---
		136	5680.0	10.88	---	---
		140	5700.0	7.82	---	---



Band	Data Rate	CH	Frequency (MHz)	Average Conducted power (dBm)		
				ANT-0	ANT-1	ANT-0+1
IEEE 802.11ac 20MHz	13M	52	5260.0	8.58	8.79	11.70
		56	5280.0	8.42	8.68	11.56
		60	5300.0	8.52	8.54	11.54
		64	5320.0	8.68	8.86	11.78
		100	5500.0	8.96	9.26	12.12
		104	5520.0	8.65	8.86	11.77
		108	5540.0	8.64	9.09	11.88
		112	5560.0	8.73	9.05	11.90
		116	5580.0	8.90	9.07	12.00
		120	5600.0	8.96	9.04	12.01
		124	5620.0	8.68	8.77	11.74
		128	5640.0	8.65	8.61	11.64
		132	5660.0	8.73	8.66	11.71
		136	5680.0	8.69	8.69	11.70
		140	5700.0	8.44	8.67	11.57
	156M	52	5260.0	8.58	8.79	11.70
		56	5280.0	8.42	8.68	11.56
		60	5300.0	8.52	8.54	11.54
		64	5320.0	8.68	8.86	11.78
		100	5500.0	8.96	9.26	12.12
		104	5520.0	8.65	8.86	11.77
		108	5540.0	8.64	9.09	11.88
		112	5560.0	8.73	9.05	11.90
		116	5580.0	8.90	9.07	12.00
		120	5600.0	8.96	9.04	12.01
		124	5620.0	8.68	8.77	11.74
		128	5640.0	8.65	8.61	11.64
		132	5660.0	8.73	8.66	11.71
		136	5680.0	8.69	8.69	11.70
		140	5700.0	8.44	8.67	11.57



Band	Data Rate	CH	Frequency (MHz)	Average Conducted power (dBm)		
				ANT-0	ANT-1	ANT-0+1
IEEE 802.11ac 40MHz	27M	54	5270	9.07	9.38	12.24
		62	5310	9.00	9.19	12.11
		102	5510	8.95	9.44	12.21
		110	5550	8.66	9.45	12.08
		118	5590	8.89	9.28	12.10
		126	5630	8.83	9.62	12.25
		134	5670	8.88	9.58	12.25
	360M	54	5270	9.01	9.35	12.19
		62	5310	8.98	9.18	12.09
		102	5510	8.89	9.40	12.16
		110	5550	8.63	9.40	12.04
		118	5590	8.85	9.23	12.05
		126	5630	8.79	9.59	12.22
		134	5670	8.82	9.54	12.21
IEEE 802.11ac 80MHz	58.6M	58	5290.0	9.21	9.65	12.45
		106	5530.0	9.27	9.83	12.57
		122	5610.0	8.93	10.12	12.58
	780M	58	5290.0	9.19	9.61	12.42
		106	5530.0	9.24	9.81	12.54
		122	5610.0	8.91	10.11	12.56

4. Test Result

Band	Data Rate	Frequency (MHz)	Limit (mw/cm ²)	Distance (cm) [R]	Max Tune-up power (dBm) [P]	ANT Gain (dBi)	Numeric Gain [G]	Duty Cycle	[P] x [G] With Duty Cycle (mW) [TP]	Power Density [S] (mw/cm ²)
IEEE 802.11a	6M	5260	1	20	14.20	13.9	24.55	1	645.73	0.128
		5280	1	20	14.50	13.9	24.55	1	691.91	0.138
		5300	1	20	14.60	13.9	24.55	1	708.03	0.141
		5320	1	20	11.80	13.9	24.55	1	371.58	0.074
		5500	1	20	10.40	13.9	24.55	1	269.19	0.054
		5520	1	20	10.70	13.9	24.55	1	288.44	0.057
		5540	1	20	11.30	13.9	24.55	1	331.17	0.066
		5560	1	20	10.90	13.9	24.55	1	302.03	0.060
		5580	1	20	10.90	13.9	24.55	1	302.03	0.060
		5600	1	20	10.90	13.9	24.55	1	302.03	0.060
		5620	1	20	10.80	13.9	24.55	1	295.16	0.059
		5640	1	20	10.80	13.9	24.55	1	295.16	0.059
		5660	1	20	10.90	13.9	24.55	1	302.03	0.060
		5680	1	20	11.00	13.9	24.55	1	309.07	0.061
		5700	1	20	8.00	13.9	24.55	1	154.90	0.031
IEEE 802.11ac 20MHz	13M	5260	1	20	11.80	16.91	49.09	1	743.01	0.148
		5280	1	20	11.70	16.91	49.09	1	726.09	0.144
		5300	1	20	11.70	16.91	49.09	1	726.09	0.144
		5320	1	20	11.90	16.91	49.09	1	760.31	0.151
		5500	1	20	12.30	16.91	49.09	1	833.67	0.166
		5520	1	20	11.90	16.91	49.09	1	760.31	0.151
		5540	1	20	12.00	16.91	49.09	1	778.02	0.155
		5560	1	20	12.10	16.91	49.09	1	796.15	0.158
		5580	1	20	12.10	16.91	49.09	1	796.15	0.158
		5600	1	20	12.20	16.91	49.09	1	814.69	0.162
		5620	1	20	11.90	16.91	49.09	1	760.31	0.151
		5640	1	20	11.80	16.91	49.09	1	743.01	0.148
		5660	1	20	11.90	16.91	49.09	1	760.31	0.151
		5680	1	20	11.90	16.91	49.09	1	760.31	0.151
		5700	1	20	11.70	16.91	49.09	1	726.09	0.144

Note:

1. The Numeric Gain calculated by $10^{(\text{ant. Gain(dBi)} / 10)}$.
2. Each band max power which perform MPE of any configurations.
3. The device operating 802.11a mode is Only with transmit signals to 1TX.
Directional Gain = Antenna Gain
4. The device operating 802.11n & 802.11ac mode is MIMO with transmit signals to 2TX.
Directional Gain = $10 \cdot \log\{[10^{(G1/20)} + 10^{(G2/20)}]^{2/NANT}\}$
5. Internal antenna of the antenna gain is 13.9dBm, the antenna of the external antenna gain 12.9dBm, so that the maximum antenna gain is 13.9dBm.

Band	Data Rate	Frequency (MHz)	Limit (mw/cm ²)	Distance (cm) [R]	Max Tune-up power (dBm) [P]	ANT Gain (dBi)	Numeric Gain [G]	Duty Cycle	[P] x [G] With Duty Cycle (mW) [TP]	Power Density [S] (mw/cm ²)
IEEE 802.11ac 40MHz	27M	5270	1	20	12.40	16.91	49.09	1	853.09	0.170
		5310	1	20	12.30	16.91	49.09	1	833.67	0.166
		5510	1	20	12.40	16.91	49.09	1	853.09	0.170
		5550	1	20	12.20	16.91	49.09	1	814.69	0.162
		5590	1	20	12.20	16.91	49.09	1	814.69	0.162
		5630	1	20	12.40	16.91	49.09	1	853.09	0.170
		5670	1	20	12.40	16.91	49.09	1	853.09	0.170
IEEE 802.11ac 80MHz	58.6M	5290	1	20	12.60	16.91	49.09	1	893.29	0.178
		5530	1	20	12.70	16.91	49.09	1	914.1	0.182
		5610	1	20	12.70	16.91	49.09	1	914.1	0.182

Note:

1. The Numeric Gain calculated by $10^{(\text{ant. Gain(dBi)} / 10)}$.
2. Each band max power which perform MPE of any configurations.
3. The device operating 802.11a mode is Only with transmit signals to 1TX.
Directional Gain = Antenna Gain
4. The device operating 802.11n & 802.11ac mode is MIMO with transmit signals to 2TX.
Directional Gain = $10 \cdot \log\{[10^{(G1/20)} + 10^{(G2/20)}]^{2/NANT}\}$
5. Internal antenna of the antenna gain is 13.9dBm, the antenna of the external antenna gain 12.9dBm, so that the maximum antenna gain is 13.9dBm.