



A Test Lab Techno Corp.

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MPE Report

Test Report No.	: 1707FS12-01
Applicant	: Edimax Technology Co., Ltd..
Product Type	: AC1300 DBDC Ceiling-mount AP
Trade Name	: EDIMAX
Model Number	: EW-7479CAP, CAP1300, Office 1-2-3, Office +1, Office +3, Office WiFi System, Office WiFi System +1
Date of Received	: May 11, 2017
Test Period	: May 15, 2017
Date of Issued	: Sep. 06, 2017
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.
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1. Description of Equipment under Test (EUT)

Applicant	Edimax Technology Co., Ltd.. No.278, Xinhu 1st Rd., Neihu Dist., Taipei City, Taiwan				
Manufacturer	Edimax Technology Co., Ltd.. No.278, Xinhu 1st Rd., Neihu Dist., Taipei City, Taiwan				
Product Type	AC1300 DBDC Ceiling-mount AP				
Trade Name	EDIMAX				
Model Number	EW-7479CAP, CAP1300, Office 1-2-3, Office +1, Office +3, Office WiFi System, Office WiFi System +1				
Models different description	Those model numbers differ from each other in selling region.				
FCC ID	NDD9574791704				
Frequency Range	Operate Band			Frequency Range (MHz)	
	IEEE 802.11b / 802.11g IEEE 802.11n 2.4GHz 20MHz(256QAM)			2412 - 2462	
	IEEE 802.11n 2.4GHz 40 MHz(256QAM)			2422 - 2452	
	IEEE 802.11a U-NII Band I			5180 - 5240	
	IEEE 802.11a U-NII Band III			5745 - 5825	
	IEEE 802.1ac / 802.11n 5GHz 20MHz U-NII Band I			5180 - 5240	
	IEEE 802.1ac / 802.11n 5GHz 20MHz U-NII Band III			5745 - 5825	
	IEEE 802.1ac / 802.11n 5GHz 40MHz U-NII Band I			5190 - 5230	
	IEEE 802.1ac / 802.11n 5GHz 40MHz U-NII Band III			5755 - 5795	
	IEEE 802.11ac 80MHz U-NII Band I			5210	
	IEEE 802.11ac 80MHz U-NII Band III			5775	
Antenna information	Antenna		Model	Type	Max. Gain (dBi)
	2.4GHz	ANT-0	RFMTA300710IMAB401	PIFA antenna	3.94
		ANT-1	RFMTA300712IMAB401	PIFA antenna	3.72
	5GHz	ANT-0	RFMTA180704IM5B301	PIFA Antenna	4.56
		ANT-1	RFMTA180717IM5B301	PIFA Antenna	4.13
	2.4GHz G _{ANT}			3.83	
	5GHz G _{ANT}			4.35	
	2.4GHz Directional Gain (refer to RF report)			6.84	
	5GHz Directional Gain (refer to RF report)			7.36	
Antenna Delivery	2TX / 2RX (CDD/Beamforming on)				
RF Evaluation	0.322 mW/cm ²				
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



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

The conducted power turn-up tolerance reference manufacturer specification.

Band	Data Rate (Mbps)	Frequency (MHz)	Average Conducted power (dBm)		
			ANT-0	ANT-1	ANT-0+1+2
IEEE 802.11b	1	2412.0	15.20	16.79	19.08
		2437.0	17.47	16.70	20.11
		2462.0	12.76	13.75	16.29
	2	2437.0	17.11	16.50	19.83
	5.5	2437.0	16.89	16.37	19.65
	11	2437.0	16.66	16.15	19.42
IEEE 802.11g	6	2412.0	15.23	16.80	19.10
		2437.0	17.77	18.24	21.02
		2462.0	15.05	16.69	18.96
	9	2437.0	17.62	18.17	20.91
	12	2437.0	17.54	18.20	20.89
	18	2437.0	17.50	18.11	20.83
	24	2437.0	17.68	18.15	20.93
	36	2437.0	17.31	17.92	20.64
	48	2437.0	17.42	17.85	20.65
	54	2437.0	17.25	17.80	20.54
IEEE 802.11n 2.4GHz 20MHz	13	2412.0	15.42	16.30	18.89
		2437.0	17.69	18.16	20.94
		2462.0	15.33	15.94	18.66
	28.8	2437.0	17.52	17.93	20.74
	43.4	2437.0	17.37	17.80	20.60
	57.8	2437.0	17.45	17.85	20.66
	86.6	2437.0	17.28	17.77	20.54
	115.6	2437.0	17.33	17.80	20.58
	130	2437.0	17.20	17.44	20.33
	144.4	2437.0	17.29	17.37	20.34
	173.4	2437.0	17.40	17.52	20.47
IEEE 802.11n 2.4GHz 40MHz	27	2422.0	13.93	15.32	17.69
		2437.0	15.23	15.31	18.28
		2452.0	13.53	13.79	16.67
	60	2437.0	15.11	15.25	18.19
	90	2437.0	15.02	15.21	18.13
	120	2437.0	14.93	15.11	18.03
	180	2437.0	15.07	15.18	18.14
	240	2437.0	15.18	14.90	18.05
	270	2437.0	15.05	15.04	18.06
	300	2437.0	15.15	15.22	18.20
	360	2437.0	14.99	15.14	18.08
	400	2437.0	15.12	15.06	18.10

Beamforming on

Band	Data Rate (Mbps)	Frequency (MHz)	Average Conducted power (dBm)		
			ANT-0	ANT-1	ANT-0+1+2
IEEE 802.11b	1	2412.0	11.11	12.91	15.11
		2437.0	12.44	14.08	16.35
		2462.0	9.18	9.97	12.60
	2	2437.0	12.21	13.92	16.16
	5.5	2437.0	12.05	13.69	15.96
IEEE 802.11g	6	2437.0	11.89	13.41	15.73
		2412.0	11.28	12.89	15.17
		2437.0	13.84	14.65	17.27
	9	2462.0	11.29	12.63	15.02
		2437.0	13.75	14.43	17.11
	12	2437.0	13.53	14.27	16.93
	18	2437.0	13.38	14.12	16.78
	24	2437.0	13.22	14.01	16.64
	36	2437.0	13.15	13.86	16.53
	48	2437.0	13.02	13.64	16.35
IEEE 802.11n 2.4GHz 20MHz	13	2437.0	12.93	13.41	16.19
		2412.0	11.07	12.88	15.08
		2437.0	13.10	14.78	17.03
	28.8	2462.0	11.23	12.38	14.85
		2437.0	12.92	14.55	16.82
	43.4	2437.0	12.79	14.23	16.58
	57.8	2437.0	12.65	14.00	16.39
	86.6	2437.0	12.43	13.85	16.21
	115.6	2437.0	12.26	13.64	16.01
	130	2437.0	12.11	13.39	15.81
IEEE 802.11n 2.4GHz 40MHz	27	144.4	11.98	13.11	15.59
		2437.0	11.82	12.88	15.39
		2412.0	10.14	11.57	13.92
	60	2437.0	10.63	12.29	14.55
		2452.0	9.11	10.58	12.92
	90	2437.0	10.48	12.13	14.39
	120	2437.0	10.29	11.99	14.23
	180	2437.0	10.10	11.82	14.05
	240	2437.0	9.98	11.69	13.93
	270	2437.0	9.79	11.53	13.76
	300	2437.0	9.62	11.41	13.62
	360	2437.0	9.45	11.28	13.47
	400	2437.0	9.33	11.20	13.38
		2437.0	9.18	11.09	13.25
		2437.0	9.18	11.09	13.25

Band	Data Rate (Mbps)	Frequency (MHz)	Average Conducted power (dBm)		
			ANT-0	ANT-1	ANT-0+1+2
IEEE 802.11a	6	5180.0	18.13	18.51	21.33
		5200.0	21.03	20.99	24.02
		5220.0	21.02	20.93	23.99
		5240.0	20.96	21.03	24.01
		5745.0	20.38	23.15	24.99
		5765.0	20.74	23.17	25.13
		5785.0	20.81	23.13	25.13
		5805.0	21.14	22.83	25.08
		5825.0	21.40	23.10	25.34
	54	5180.0	17.81	18.24	21.04
		5200.0	20.72	20.65	23.70
		5220.0	20.63	20.63	23.64
		5240.0	20.64	20.80	23.73
		5745.0	20.10	22.90	24.73
		5765.0	20.46	22.88	24.85
		5785.0	20.57	22.81	24.84
		5805.0	20.91	22.59	24.84
		5825.0	21.11	22.85	25.08
IEEE 802.11ac 20MHz	13	5180.0	17.44	17.90	20.69
		5200.0	20.96	20.98	23.98
		5220.0	21.08	21.10	24.10
		5240.0	21.03	21.20	24.13
		5745.0	20.35	23.20	25.02
		5765.0	20.63	23.23	25.13
		5785.0	20.11	23.25	24.97
		5805.0	21.07	23.70	25.59
		5825.0	21.18	23.23	25.34
	173.4	5180.0	17.18	17.58	20.39
		5200.0	20.69	20.63	23.67
		5220.0	20.75	20.83	23.80
		5240.0	20.77	20.88	23.84
		5745.0	20.10	22.93	24.75
		5765.0	20.42	22.88	24.83
		5785.0	19.87	22.90	24.65
		5805.0	20.77	23.42	25.30
		5825.0	20.82	22.88	24.98

Band	Data Rate (Mbps)	Frequency (MHz)	Average Conducted power (dBm)		
			ANT-0	ANT-1	ANT-0+1+2
IEEE 802.11ac 40MHz	27	5190.0	16.11	16.41	19.27
		5230.0	20.28	20.50	23.40
		5755.0	20.57	23.13	25.05
		5795.0	21.54	23.67	25.74
	400	5190.0	15.86	16.18	19.03
		5230.0	19.98	20.27	23.14
		5755.0	20.28	22.85	24.76
		5795.0	21.18	23.29	25.37
IEEE 802.11ac 80MHz	58.6	5210.0	12.38	12.62	15.51
		5775.0	20.35	23.14	24.98
	866.6	5210.0	12.05	12.21	15.14
		5775.0	20.11	22.88	24.72

Beamforming on

Band	Data Rate (Mbps)	Frequency (MHz)	Average Conducted power (dBm)		
			ANT-0	ANT-1	ANT-0+1+2
IEEE 802.11a	6	5180.0	16.03	16.27	19.16
		5200.0	19.10	19.11	22.12
		5220.0	18.79	18.85	21.83
		5240.0	18.72	19.05	21.90
		5745.0	18.62	20.72	22.81
		5765.0	18.81	20.96	23.03
		5785.0	18.96	21.16	23.21
		5805.0	18.94	21.15	23.19
		5825.0	19.12	21.47	23.46
	54	5180.0	15.75	15.99	18.88
		5200.0	18.78	18.80	21.80
		5220.0	18.44	18.52	21.49
		5240.0	18.38	18.73	21.57
		5745.0	18.34	20.42	22.51
		5765.0	18.59	20.59	22.71
		5785.0	18.65	20.88	22.92
		5805.0	18.67	20.83	22.89
		5825.0	18.83	21.15	23.15
IEEE 802.11ac 20MHz	13	5180.0	15.43	15.87	18.67
		5200.0	19.05	19.13	22.10
		5220.0	19.18	19.26	22.23
		5240.0	19.11	19.33	22.23
		5745.0	18.47	20.77	22.78
		5765.0	18.70	21.01	23.02
		5785.0	18.72	21.10	23.08
		5805.0	19.20	21.72	23.65
		5825.0	18.88	21.59	23.45
	173.4	5180.0	15.08	15.59	18.35
		5200.0	18.75	18.80	21.79
		5220.0	18.89	18.93	21.92
		5240.0	18.81	18.99	21.91
		5745.0	18.08	20.42	22.42
		5765.0	18.48	20.77	22.78
		5785.0	18.52	20.76	22.79
		5805.0	18.93	21.39	23.34
		5825.0	18.55	21.20	23.08

Band	Data Rate (Mbps)	Frequency (MHz)	Average Conducted power (dBm)		
			ANT-0	ANT-1	ANT-0+1+2
IEEE 802.11ac 40MHz	27	5190.0	14.05	14.32	17.20
		5230.0	18.50	18.47	21.50
		5755.0	18.95	21.02	23.12
		5795.0	19.36	21.75	23.73
	400	5190.0	13.69	14.11	16.92
		5230.0	18.18	18.12	21.16
		5755.0	18.69	20.80	22.88
		5795.0	19.06	21.36	23.37
IEEE 802.11ac 80MHz	58.6	5210.0	10.24	10.57	13.42
		5775.0	18.71	21.00	23.01
	866.6	5210.0	9.98	10.28	13.14
		5775.0	18.46	20.72	22.75

4. Test Results

Band	Data Rate (Mbps)	Frequency (MHz)	Limit (mw)	Distance [R] (cm)	Max tune-up Power (upper limit) [P] (dBm)	ANT Gain (dBi)	Numeric Gain [G]	Duty Cycle	[P] x [G] with Duty cycle [TP] (mW)	Power Density [S] (mw/cm ²)
IEEE 802.11b_CDD	1	2412.0	1	20	19.10	3.83	2.42	1	196.700	0.039
		2437.0	1	20	20.20	3.83	2.42	1	253.410	0.050
		2462.0	1	20	16.40	3.83	2.42	1	105.640	0.021
IEEE 802.11g_CDD	6	2412.0	1	20	19.20	3.83	2.42	1	201.290	0.040
		2437.0	1	20	21.10	3.83	2.42	1	311.760	0.062
		2462.0	1	20	19.00	3.83	2.42	1	192.230	0.038
IEEE 802.11n 2.4GHz 20MHz_CDD	13	2412.0	1	20	19.00	3.83	2.42	1	192.230	0.038
		2437.0	1	20	21.00	3.83	2.42	1	304.660	0.061
		2462.0	1	20	18.70	3.83	2.42	1	179.400	0.036
IEEE 802.11n 2.4GHz 40MHz_CDD	27	2422.0	1	20	17.80	3.83	2.42	1	145.820	0.029
		2437.0	1	20	18.30	3.83	2.42	1	163.610	0.033
		2452.0	1	20	16.70	3.83	2.42	1	113.190	0.023

Band	Data Rate (Mbps)	Frequency (MHz)	Limit (mw)	Distance [R] (cm)	Max tune-up Power (upper limit) [P] (dBm)	ANT Gain (dBi)	Numeric Gain [G]	Duty Cycle	[P] x [G] with Duty cycle [TP] (mW)	Power Density [S] (mw/cm ²)
IEEE 802.11a_CDD	6	5180.0	1	20	21.40	4.35	2.72	1	375.460	0.075
		5200.0	1	20	24.10	4.35	2.72	1	699.150	0.139
		5220.0	1	20	24.10	4.35	2.72	1	699.150	0.139
		5240.0	1	20	24.10	4.35	2.72	1	699.150	0.139
		5745.0	1	20	25.40	4.35	2.72	1	943.120	0.188
		5765.0	1	20	25.40	4.35	2.72	1	943.120	0.188
		5785.0	1	20	25.40	4.35	2.72	1	943.120	0.188
		5805.0	1	20	25.40	4.35	2.72	1	943.120	0.188
		5825.0	1	20	25.40	4.35	2.72	1	943.120	0.188
IEEE 802.11ac 20MHz_CDD	13	5180.0	1	20	20.70	4.35	2.72	1	319.570	0.064
		5200.0	1	20	24.20	4.35	2.72	1	715.430	0.142
		5220.0	1	20	24.20	4.35	2.72	1	715.430	0.142
		5240.0	1	20	24.20	4.35	2.72	1	715.430	0.142
		5745.0	1	20	25.70	4.35	2.72	1	1010.580	0.201
		5765.0	1	20	25.70	4.35	2.72	1	1010.580	0.201
		5785.0	1	20	25.70	4.35	2.72	1	1010.580	0.201
		5805.0	1	20	25.70	4.35	2.72	1	1010.580	0.201
		5825.0	1	20	25.70	4.35	2.72	1	1010.580	0.201
IEEE 802.11ac 40MHz_CDD	27	5190.0	1	20	19.30	4.35	2.72	1	231.510	0.046
		5230.0	1	20	23.50	4.35	2.72	1	608.930	0.121
		5755.0	1	20	25.10	4.35	2.72	1	880.170	0.175
		5795.0	1	20	25.80	4.35	2.72	1	1034.120	0.206
IEEE 802.11ac 80MHz_CDD	58.6	5210.0	1	20	15.60	4.35	2.72	1	98.760	0.020
		5775.0	1	20	25.00	4.35	2.72	1	860.140	0.171

Beamforming on

Band	Data Rate (Mbps)	Frequency (MHz)	Limit (mw)	Distance [R] (cm)	Max tune-up Power (upper limit) [P] (dBm)	ANT Gain (dBi)	Numeric Gain [G]	Duty Cycle	[P] x [G] with Duty cycle [TP] (mW)	Power Density [S] (mw/cm ²)
IEEE 802.11b_CDD	1	2412.0	1	20	15.20	6.84	4.83	1	159.940	0.032
		2437.0	1	20	16.40	6.84	4.83	1	210.840	0.042
		2462.0	1	20	12.70	6.84	4.83	1	89.940	0.018
IEEE 802.11g_CDD	6	2412.0	1	20	15.20	6.84	4.83	1	159.940	0.032
		2437.0	1	20	17.30	6.84	4.83	1	259.390	0.052
		2462.0	1	20	15.10	6.84	4.83	1	156.300	0.031
IEEE 802.11n 2.4GHz 20MHz_CDD	13	2412.0	1	20	15.10	6.84	4.83	1	156.300	0.031
		2437.0	1	20	17.10	6.84	4.83	1	247.710	0.049
		2462.0	1	20	14.90	6.84	4.83	1	149.260	0.030
IEEE 802.11n 2.4GHz 40MHz_CDD	27	2422.0	1	20	14.00	6.84	4.83	1	121.320	0.024
		2437.0	1	20	14.60	6.84	4.83	1	139.300	0.028
		2452.0	1	20	13.00	6.84	4.83	1	96.370	0.019

Band	Data Rate (Mbps)	Frequency (MHz)	Limit (mw)	Distance [R] (cm)	Max tune-up Power (upper limit) [P] (dBm)	ANT Gain (dBi)	Numeric Gain [G]	Duty Cycle	[P] x [G] with Duty cycle [TP] (mW)	Power Density [S] (mw/cm ²)
IEEE 802.11a_CDD	6	5180.0	1	20	19.20	7.36	5.45	1	453.310	0.090
		5200.0	1	20	22.20	7.36	5.45	1	904.470	0.180
		5220.0	1	20	22.20	7.36	5.45	1	904.470	0.180
		5240.0	1	20	22.20	7.36	5.45	1	904.470	0.180
		5745.0	1	20	23.50	7.36	5.45	1	1220.100	0.243
		5765.0	1	20	23.50	7.36	5.45	1	1220.100	0.243
		5785.0	1	20	23.50	7.36	5.45	1	1220.100	0.243
		5805.0	1	20	23.50	7.36	5.45	1	1220.100	0.243
		5825.0	1	20	23.50	7.36	5.45	1	1220.100	0.243
IEEE 802.11ac 20MHz_CDD	13	5180.0	1	20	18.70	7.36	5.45	1	404.010	0.080
		5200.0	1	20	22.30	7.36	5.45	1	925.540	0.184
		5220.0	1	20	22.30	7.36	5.45	1	925.540	0.184
		5240.0	1	20	22.30	7.36	5.45	1	925.540	0.184
		5745.0	1	20	23.70	7.36	5.45	1	1277.600	0.254
		5765.0	1	20	23.70	7.36	5.45	1	1277.600	0.254
		5785.0	1	20	23.70	7.36	5.45	1	1277.600	0.254
		5805.0	1	20	23.70	7.36	5.45	1	1277.600	0.254
		5825.0	1	20	23.70	7.36	5.45	1	1277.600	0.254
IEEE 802.11ac 40MHz_CDD	27	5190.0	1	20	17.30	7.36	5.45	1	292.680	0.058
		5230.0	1	20	21.60	7.36	5.45	1	787.760	0.157
		5755.0	1	20	23.20	7.36	5.45	1	1138.670	0.227
		5795.0	1	20	23.80	7.36	5.45	1	1307.360	0.260
IEEE 802.11ac 80MHz_CDD	58.6	5210.0	1	20	13.50	7.36	5.45	1	122.010	0.024
		5775.0	1	20	23.10	7.36	5.45	1	1112.750	0.221

Note:

- 1.Mobile or fixed location transmitters, minimum separation distance is 20cm, even if calculations indicate MPE distance is less.
- 2.The Numeric Gain calculated by $10^{(\text{ant. Gain(dBi)} / 10)}$.
- 3.The MPE results are evaluated by lowest data rate for WLAN.
- 4.The device operating IEEE 802.11 a/b/g/n/ac mode is 2TX CDD.

Simultaneous Transmitting:

$$\text{Simultaneous MPE} = 2.4\text{GHz MPE} + 5\text{GHz MPE} = 0.062 + 0.260 = 0.322 \text{ mw/cm}^2 < 1 \text{ mw/cm}^2$$