



A Test Lab Techno Corp.

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MPE Report

Test Report No.	: 1509FS16
Applicant	: Ubiquiti Networks, Inc.
Manufacturer	: Ubiquiti Networks, Inc.
Product Type	: Access Point
Trade Name	: UBIQUITI
Model Number	: UAP-AC-LITE
Date of Received	: Apr. 08, 2015
Test Period	: May. 29, 2015
Date of Issued	: Sep. 08, 2015
Test Specification	: IEEE Std. 1528-2013 IEEE Std. 1528a-2005 47 CFR § 2.1091 47 CFR §1.1310 ANSI / IEEE Std.C95.1-1992
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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(Bill Hu)

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1. Description of Equipment under Test (EUT)

Applicant	Ubiquiti Networks, Inc. 2580 Orchard Parkway, San Jose, California, United States, 95131				
Manufacturer	Ubiquiti Networks, Inc. 2580 Orchard Parkway, San Jose, California, United States, 95131				
Product Type	Access Point				
Trade Name	UBIQUITI				
Model Number	UAP-AC-LITE				
FCC ID	SWX-UAPACL				
Class II Permissive Change	Add U-NII Band II function by software control. The change reference Class II Permissive Change Letter in detail.				
Frequency Range	IEEE 802.11a Band II-A : 5260 ~ 5320 MHz IEEE 802.11a Band II-C : 5500 ~ 5700 MHz IEEE 802.11n 5GHz 20MHz Band II-A : 5260 ~ 5320 MHz IEEE 802.11n 5GHz 20MHz Band II-C : 5500 ~ 5700 MHz IEEE 802.11n 5GHz 40MHz Band II-A : 5270 ~ 5310 MHz IEEE 802.11n 5GHz 40MHz Band II-C : 5510 ~ 5670 MHz IEEE 802.11ac 80MHz Band II-A : 5290 MHz IEEE 802.11ac 80MHz Band II-C : 5530 ~ 5610 MHz				
Transmit Power (conducted power)	IEEE 802.11a Band II-A :	0.15	W /	21.69	dBm
	IEEE 802.11a Band II-C :	0.19	W /	22.88	dBm
	IEEE 802.11n 5GHz 20MHz Band II-A :	0.15	W /	21.84	dBm
	IEEE 802.11n 5GHz 20MHz Band II-C :	0.19	W /	22.74	dBm
	IEEE 802.11n 5GHz 40MHz Band II-A :	0.10	W /	19.88	dBm
	IEEE 802.11n 5GHz 40MHz Band II-C :	0.13	W /	21.16	dBm
	IEEE 802.11ac 80MHz Band II-A :	0.09	W /	19.39	dBm
	IEEE 802.11ac 80MHz Band II-C :	0.12	W /	20.71	dBm
Antenna Type	Dual band antenna				
Max. Antenna Gain	3 dBi				
Antenna Delivery	2TX + 2RX				
Temperature Range	-10 ~ 70 °C				
RF Evaluation	1.04 W/m 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

Freq. Band	Data Rate	Frequency (MHz)	Average Conducted Power					
			Antenna 0		Antenna 1		Antenna 0+1	
			(dBm)	(W)	(dBm)	(W)	(dBm)	(W)
IEEE 802.11a	6M	5260.0	17.59	0.06	18.47	0.07	21.06	0.13
		5280.0	17.46	0.06	18.90	0.08	21.25	0.13
		5300.0	17.56	0.06	18.98	0.08	21.34	0.14
		5320.0	17.95	0.06	19.30	0.09	21.69	0.15
		5500.0	19.51	0.09	19.59	0.09	22.56	0.18
		5520.0	19.42	0.09	19.67	0.09	22.56	0.18
		5540.0	19.25	0.08	19.74	0.09	22.51	0.18
		5560.0	19.22	0.08	19.77	0.09	22.51	0.18
		5580.0	19.55	0.09	19.74	0.09	22.66	0.18
		5600.0	19.39	0.09	20.30	0.11	22.88	0.19
		5620.0	19.34	0.09	19.59	0.09	22.48	0.18
		5640.0	19.47	0.09	19.14	0.08	22.32	0.17
		5660.0	19.45	0.09	19.32	0.09	22.40	0.17
		5680.0	19.68	0.09	19.25	0.08	22.48	0.18
		5700.0	19.66	0.09	18.66	0.07	22.20	0.17
	54M	5260.0	17.39	0.05	18.28	0.07	20.87	0.12
		5280.0	17.11	0.05	18.77	0.08	21.03	0.13
		5300.0	17.43	0.06	18.74	0.07	21.14	0.13
		5320.0	17.64	0.06	19.03	0.08	21.40	0.14
		5500.0	19.11	0.08	19.26	0.08	22.20	0.17
		5520.0	19.02	0.08	19.55	0.09	22.30	0.17
		5540.0	19.10	0.08	19.63	0.09	22.38	0.17
		5560.0	18.83	0.08	19.72	0.09	22.31	0.17
		5580.0	19.38	0.09	19.71	0.09	22.56	0.18
		5600.0	19.14	0.08	20.05	0.10	22.63	0.18
		5620.0	19.23	0.08	19.43	0.09	22.34	0.17
		5640.0	19.34	0.09	18.75	0.07	22.07	0.16
		5660.0	19.25	0.08	18.98	0.08	22.13	0.16
		5680.0	19.59	0.09	19.02	0.08	22.32	0.17
		5700.0	19.62	0.09	18.44	0.07	22.08	0.16

Freq. Band	Data Rate	Frequency (MHz)	Average Conducted Power					
			Antenna 0		Antenna 1		Antenna 0+1	
			(dBm)	(W)	(dBm)	(W)	(dBm)	(W)
IEEE 802.11n 5GHz 20MHz	13M	5260.0	17.76	0.06	18.51	0.07	21.16	0.13
		5280.0	17.88	0.06	18.85	0.08	21.40	0.14
		5300.0	18.00	0.06	18.95	0.08	21.51	0.14
		5320.0	18.31	0.07	19.30	0.09	21.84	0.15
		5500.0	19.54	0.09	19.67	0.09	22.62	0.18
		5520.0	19.52	0.09	19.89	0.10	22.72	0.19
		5540.0	19.41	0.09	20.02	0.10	22.74	0.19
		5560.0	19.33	0.09	20.06	0.10	22.72	0.19
		5580.0	19.43	0.09	19.90	0.10	22.68	0.19
		5600.0	19.39	0.09	19.80	0.10	22.61	0.18
		5620.0	19.33	0.09	19.62	0.09	22.49	0.18
		5640.0	19.53	0.09	19.28	0.08	22.42	0.17
		5660.0	19.43	0.09	19.05	0.08	22.25	0.17
		5680.0	19.63	0.09	19.38	0.09	22.52	0.18
		5700.0	19.62	0.09	18.71	0.07	22.20	0.17
	130M	5260.0	17.71	0.06	18.34	0.07	21.05	0.13
		5280.0	17.66	0.06	18.62	0.07	21.18	0.13
		5300.0	17.92	0.06	18.71	0.07	21.34	0.14
		5320.0	18.18	0.07	18.85	0.08	21.54	0.14
		5500.0	18.96	0.08	19.44	0.09	22.22	0.17
		5520.0	19.22	0.08	19.71	0.09	22.48	0.18
		5540.0	19.04	0.08	19.85	0.10	22.47	0.18
		5560.0	18.95	0.08	20.03	0.10	22.53	0.18
		5580.0	19.26	0.08	19.68	0.09	22.49	0.18
		5600.0	19.08	0.08	19.71	0.09	22.42	0.17
		5620.0	18.99	0.08	19.43	0.09	22.23	0.17
		5640.0	19.48	0.09	19.12	0.08	22.31	0.17
		5660.0	19.22	0.08	18.92	0.08	22.08	0.16
		5680.0	19.47	0.09	19.29	0.08	22.39	0.17
		5700.0	19.51	0.09	18.66	0.07	22.12	0.16

Freq. Band	Data Rate	Frequency (MHz)	Average Conducted Power					
			Antenna 0		Antenna 1		Antenna 0+1	
			(dBm)	(W)	(dBm)	(W)	(dBm)	(W)
IEEE 802.11n 5GHz 40MHz	27M	5270.0	16.18	0.04	17.01	0.05	19.63	0.09
		5310.0	16.20	0.04	17.45	0.06	19.88	0.10
		5510.0	18.11	0.06	18.17	0.07	21.15	0.13
		5550.0	17.91	0.06	18.38	0.07	21.16	0.13
		5590.0	17.78	0.06	18.17	0.07	20.99	0.13
		5630.0	17.81	0.06	17.87	0.06	20.85	0.12
		5670.0	17.95	0.06	17.46	0.06	20.72	0.12
	270M	5270.0	16.11	0.04	16.63	0.05	19.39	0.09
		5310.0	15.85	0.04	17.32	0.05	19.66	0.09
		5510.0	17.99	0.06	17.97	0.06	20.99	0.13
		5550.0	17.77	0.06	18.03	0.06	20.91	0.12
		5590.0	17.66	0.06	17.88	0.06	20.78	0.12
		5630.0	17.75	0.06	17.61	0.06	20.69	0.12
		5670.0	17.92	0.06	17.37	0.05	20.66	0.12

Freq. Band	Data Rate	Frequency (MHz)	Average Conducted Power					
			Antenna 0		Antenna 1		Antenna 0+1	
			(dBm)	(W)	(dBm)	(W)	(dBm)	(W)
IEEE 802.11ac 80MHz	58.6M	5290.0	15.83	0.04	16.87	0.05	19.39	0.09
		5530.0	17.53	0.06	17.86	0.06	20.71	0.12
		5610.0	17.42	0.06	17.60	0.06	20.52	0.11
	780M	5290.0	15.75	0.04	16.67	0.05	19.24	0.08
		5530.0	16.83	0.05	17.51	0.06	20.19	0.10
		5610.0	16.69	0.05	17.58	0.06	20.17	0.10

4. Test Result

Freq. Band	Data Rate	Frequency (MHz)	Limit (mw/cm ²)	Distance (cm) [R]	Max Tune-up power (dBm) [P]	ANT Gain (dBi)	Numeric Gain [G] (dBi)	Duty Cycle	[P] x [G] With Duty Cycle (mW) [TP]	Power Density [S] (mw/cm ²)
IEEE 802.11a (MIMO)	6M	5260.0	1.000	20	23	3	2	1	399.05	0.079
		5280.0	1.000	20	23	3	2	1	399.05	0.079
		5300.0	1.000	20	23	3	2	1	399.05	0.079
		5320.0	1.000	20	23	3	2	1	399.05	0.079
		5500.0	1.000	20	23	3	2	1	399.05	0.079
		5520.0	1.000	20	23	3	2	1	399.05	0.079
		5540.0	1.000	20	23	3	2	1	399.05	0.079
		5560.0	1.000	20	23	3	2	1	399.05	0.079
		5580.0	1.000	20	23	3	2	1	399.05	0.079
		5600.0	1.000	20	23	3	2	1	399.05	0.079
		5620.0	1.000	20	23	3	2	1	399.05	0.079
		5640.0	1.000	20	23	3	2	1	399.05	0.079
		5660.0	1.000	20	23	3	2	1	399.05	0.079
		5680.0	1.000	20	23	3	2	1	399.05	0.079
		5700.0	1.000	20	23	3	2	1	399.05	0.079
IEEE 802.11n 5GHz 20MHz (MIMO)	13M	5260.0	1.000	20	23	3	2	1	399.05	0.079
		5280.0	1.000	20	23	3	2	1	399.05	0.079
		5300.0	1.000	20	23	3	2	1	399.05	0.079
		5320.0	1.000	20	23	3	2	1	399.05	0.079
		5500.0	1.000	20	23	3	2	1	399.05	0.079
		5520.0	1.000	20	23	3	2	1	399.05	0.079
		5540.0	1.000	20	23	3	2	1	399.05	0.079
		5560.0	1.000	20	23	3	2	1	399.05	0.079
		5580.0	1.000	20	23	3	2	1	399.05	0.079
		5600.0	1.000	20	23	3	2	1	399.05	0.079
		5620.0	1.000	20	23	3	2	1	399.05	0.079
		5640.0	1.000	20	23	3	2	1	399.05	0.079
		5660.0	1.000	20	23	3	2	1	399.05	0.079
		5680.0	1.000	20	23	3	2	1	399.05	0.079
		5700.0	1.000	20	23	3	2	1	399.05	0.079

Note: The Numeric Gain calculated by $10^{(\text{ant. Gain(dBi)} / 10)}$.



Freq. Band	Data Rate	Frequency (MHz)	Limit (mw/cm ²)	Distance (cm) [R]	Max Tune-up power (dBm) [P]	ANT Gain (dBi)	Numeric Gain [G] (dBi)	Duty Cycle	[P] x [G] With Duty Cycle (mW) [TP]	Power Density [S] (mw/cm ²)
IEEE 802.11n 5GHz 40MHz (MIMO)	27M	5270.0	1.000	20	21.5	3	2	1	282.51	0.056
		5310.0	1.000	20	21.5	3	2	1	282.51	0.056
		5510.0	1.000	20	21.5	3	2	1	282.51	0.056
		5550.0	1.000	20	21.5	3	2	1	282.51	0.056
		5590.0	1.000	20	21.5	3	2	1	282.51	0.056
		5630.0	1.000	20	21.5	3	2	1	282.51	0.056
		5670.0	1.000	20	21.5	3	2	1	282.51	0.056
IEEE 802.11ac 80MHz (MIMO)	58.6M	5290.0	1.000	20	21	3	2	1	251.79	0.050
		5530.0	1.000	20	21	3	2	1	251.79	0.050
		5610.0	1.000	20	21	3	2	1	251.79	0.050

Note: The Numeric Gain calculated by $10^{(\text{ant. Gain(dBi)} / 10)}$.

Simultaneous Transmitting:

Simultaneous MPE = 2.4GHz MPE (Original) + 5GHz MPE (U-NII Band II) = 0.023+0.079 = 0.104
mw/cm²