MPE Report

Applicant	:	Wirepath Home Systems, LLC, DBA SnapAV
Product Type	:	WAVE 2 AC WIRELESS ACCESS POINT
Trade Name	:	Araknis Networks
Model Number	:	AN-530-AP-I-AC
Applicable Standard	:	IEEE Std.C95.1
		47 CFR § 2.1091 / 47 CFR § 1.1310
Received Date	:	Jul. 15, 2020
Test Period	:	Jul. 15 ~ Jul. 20, 2020
Issue Date	:	Aug. 07, 2020

Issued by

Approved By : Kris Pan

(Kris Pan)

A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade District,
Taoyuan City 33465, Taiwan (R.O.C.)
Tel：+886-3-2710188 / Fax：+886-3-2710190

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 or completeness of the information provided by the customer, if there is any doubt or error in the information which affects the validity of the test results, the laboratory does not take the responsibility.

Revision History

Rev.	Issued Date	Revisions	Revised By
00	Aug. 07, 2020	Initial Issue	Nicole Chu

Contents

1. Reference Applicable Standard

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.	1992
47 CFR Part §2.1091	Radiofrequency radiation exposure evaluation: mobile devices.	-
47 CFR Part §1.1310	Radiofrequency radiation exposure limits.	-

2. Description of Equipment under Test (EUT)

Applicant	Wirepath Home Systems, LLC, DBA SnapAV 1800 Continental Blvd Suite 200 Charlotte, North Carolina 28273 USA				
Manufacturer	Emplus Technologies Inc. No. 42, Sec. 1, Minsheng N. Rd., Guishan Dist., Taoyuan City 333, Taiwan				
Product Type	WAVE 2 AC WIRELESS ACCESS POINT				
Trade Name	Araknis Networks				
Model Number	AN-530-AP-I-AC				
FCC ID	2AJACAN530APIAC				
Frequency Range	Operate Band				Frequency Range (MHz)
	IEEE 802.11b / 802.11g				2412 - 2462
	IEEE 802 11n 2.4 GHz 20 MHz(256-QAM)				2412 - 2462
	IEEE 802.11n 2.4 GHz 40 MHz (256-QAM)				2422 - 2452
	IEEE 802.11a U-NII Band I				5180 - 5240
	IEEE 802.11a U-NII Band III				5745 - 5825
	IEEE 802.11n 5 GHz 20 MHz U-NII Band I				5180 - 5240
	IEEE 802.11n 5 GHz 20 MHz U-NII Band III				5745 - 5825
	IEEE 802.11n 5 GHz 40 MHz U-NII Band I				5190 - 5230
	IEEE 802.11n 5 GHz 40 MHz U-NII Band III				5755 - 5795
	IEEE 802.11ac 80 MHz IEEE 802.11ax 80 MHz				5210 5775
Antenna Information	Antenna	Model	Type	Max. Gain (dBi)	
	ANT-0	5718A0539300	PIFA Antenna	2412 - 2462	2.89
	ANT-1	5718A0540300	PIFA Antenna	2412 - 2462	2.39
	G_{ANT}			2412 - 2462	2.65
	Directional			2412 - 2462	5.65
	ANT-0	5718A0541300	PIFA Antenna	5150 - 5250	4.75
			PIFA Antenna	5725 - 5850	4.77
	ANT-1	5718A0542300	PIFA Antenna	5150 - 5250	4.26
			PIFA Antenna	5725 - 5850	4.60
	G_{ANT}			5150 - 5250	4.51
				5725 - 5850	4.69
	Directional			5150 - 5250	7.52
				5725 - 5850	7.70
Antenna Delivery	IEEE 802.11b / 802.11g : 2TX / 2RX (CDD) IEEE 802.11n 2.4 GHz 20 MHz / 40 MHz: 2TX / 2RX (CDD / Beamforming on) IEEE 802.11a: 2TX / 2RX (CDD) IEEE 802.11ac 20 MHz / 40 MHz / 80 MHz: 2TX / 2RX (CDD / Beamforming on)				
RF Evaluation	0.429 mW/cm^2				
Operate Temp. Range	0 ~ +50°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
$$S_{eirp} = \frac{EIRP}{4\pi d^2} = \frac{PG}{4\pi d^2}\left(W/m^2\right)$$

Where

S: is the input power (W);

G: is the antenna gain;

d : is the distance between antennas and evaluation point (m).

4. Power Density Limit – RF Exposure Evaluation

Thv In 47 CFR § 1.1310, use of the device as based upon the user's awareness and ability to exercise control over human exposure. The two categories defined are Occupational / Controlled Exposure and General Population / Uncontrolled. These two categories are defined as follow:

Limits for General Population / Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time$\|E\|^2$,$\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824 / f	2.19 / f	($180 / f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	F / 1,500	30
1,500-100,000	-	-	1.0	30
Limits for Occupational / Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time$\|E\|^2$,$\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1,842 / f	4.89 / f	($900 / f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1,500	-	-	F / 300	6
1,500-100,000	-	-	5	6

4.1 *Conducted Power*

Beamforming off

Band	Date Rate or Sub-test	CH	Frequency (MHz)	Average Conducted power (dBm)		
				ANT-0	ANT-1	All ANT
802.11b	1M	1	2412	20.32	19.93	23.14
		6	2437	24.73	24.17	27.47
		11	2462	20.65	20.27	23.47
802.11g	6M	1	2412	14.56	14.36	17.47
		6	2437	23.59	22.86	26.25
		11	2462	13.70	13.61	16.67
802.11n_HT20	13M	1	2412	13.89	13.65	16.78
		6	2437	23.07	22.52	25.81
		11	2462	12.16	12.03	15.11
802.11n_HT40	27M	3	2422	10.25	10.21	13.24
		6	2437	14.83	14.72	17.79
		9	2452	10.93	10.85	13.90
802.11n_HT20 (256-QAM)	13M	1	2412	13.97	13.72	16.86
		6	2437	23.12	22.57	25.86
		11	2462	12.23	12.09	15.17
802.11n_HT40 (256-QAM)	27M	3	2422	10.35	10.31	13.34
		6	2437	14.92	14.83	17.89
		9	2452	10.97	10.92	13.96

Beamforming on

Band	Date Rate or Sub-test	CH	Frequency (MHz)	Average Conducted power (dBm)		
				ANT-0	ANT-1	All ANT
802.11n_HT20 (256-QAM)	13M	1	2412	10.55	10.08	13.33
		6	2437	19.47	19.13	22.31
		11	2462	8.64	8.55	11.61
802.11n_HT40 (256-QAM)	27M	3	2422	7.26	6.75	10.02
		6	2437	11.62	11.17	14.41
		9	2452	7.64	7.14	10.41

Beamforming off

Band	Date Rate or Sub-test	CH	Frequency (MHz)	Average Conducted power (dBm)		
				ANT-0	ANT-1	All ANT
802.11a	6M	36	5180	22.27	22.21	25.25
		40	5200	22.70	22.41	25.57
		44	5220	22.65	22.11	25.40
		48	5240	22.82	22.55	25.70
		149	5745	23.04	21.40	25.31
		153	5765	22.99	21.21	25.20
		157	5785	23.23	21.51	25.46
		161	5805	23.02	21.22	25.22
		165	5825	23.28	21.32	25.42
802.11ac_VHT20	14.4M	36	5180	21.30	21.22	24.27
		40	5200	22.90	22.45	25.69
		44	5220	22.72	22.19	25.47
		48	5240	22.78	22.27	25.54
		149	5745	22.96	21.36	25.24
		153	5765	22.94	21.19	25.16
		157	5785	23.11	21.45	25.37
		161	5805	22.89	21.20	25.14
		165	5825	23.22	21.28	25.37
802.11ac_VHT40	30M	38	5190	15.94	15.89	18.93
		46	5230	21.69	21.43	24.57
		151	5755	22.56	20.99	24.86
		159	5795	22.60	20.90	24.84
802.11ac_VHT80	58.6M	42	5210	14.59	14.41	17.51
		155	5775	22.10	21.65	24.89

Beamforming on

Band	Date Rate or Sub-test	CH	Frequency (MHz)	Average Conducted power (dBm)		
				ANT-0	ANT-1	All ANT
802.11ac_VHT20	14.4M	36	5180	17.80	17.75	20.79
		40	5200	19.27	19.21	22.25
		44	5220	19.19	19.12	22.17
		48	5240	19.33	19.21	22.28
		149	5745	19.13	18.94	22.05
		153	5765	19.10	18.90	22.01
		157	5785	19.31	19.24	22.29
		161	5805	19.06	18.88	21.98
		165	5825	19.40	19.19	22.31
802.11ac_VHT40	30M	38	5190	12.79	12.72	15.77
		46	5230	18.21	18.02	21.13
		151	5755	18.65	18.05	21.37
		159	5795	18.71	18.49	21.61
802.11ac_VHT80	58.6M	42	5210	11.45	11.39	14.43
		155	5775	18.84	18.40	21.64

5. Test Result

Antenna	Band	Frequency (MHz)	Limit (mW)/cm²	Distance (cm) [R]	Tune-up Power (dBm) [P]	ANT Gain (dBi)	Numeric Gain [G]	Duty Cycle	Power with Duty cycle (mW) [P]x[G]	Power Density (mW)/cm² [S]
Wi-Fi Antenna	2.4GHz	2412-2462	10	20	27.50	2.65	1.84	1	1034.71	0.206
	5GHz	5150-5250	10	20	26.00	4.51	2.82	1	1122.66	0.223
		5725-5850	10	20	25.50	4.69	2.94	1	1043.15	0.208
Wi-Fi Antenna (Beamforming)	2.4GHz	2412-2462	10	20	22.50	5.65	3.67	1	652.63	0.130
	5GHz	5150-5250	10	20	22.50	7.52	5.65	1	1004.73	0.200
		5725-5850	10	20	22.50	7.70	5.89	1	1047.41	0.208

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.

Simultaneous Transmitting：

Total MPE = 2.4GHz MPE + 5GHz MPE = 0.206 + 0.223 = 0.429 (mW)/cm² < 1 (mW)/cm²

---END---