

1330



## **MPE Report**

Applicant : OpenPath Security, Inc.

Product Type : Single Door Controller

Trade Name : openpath

Model Number : OP-2ESH-POE

Applicable Standard : IEEE Std.C95.1

47 CFR § 2.1091 / 47 CFR § 1.1310

Received Date : Dec. 27, 2019

Test Period : Jan. 17 ~ Jan. 22, 2020

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Issued by

Approved By : Krus Par

Aark Duan) (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

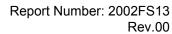
Taiwan Accreditation Foundation accreditation number: 1330

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.

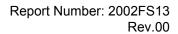
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**Revision History** 

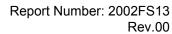
Rev.	Issued Date	Revisions	Revised By
00	Feb. 15, 2020	Initial Issue	Jennifer Liu





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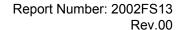
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1. Reference Applicable Standard

Standard	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	OpenPath Security, Inc.	Marina Dal Barr OA 0000							
Manufacturer	13428 Maxella Ave, #866, Marina Del Rey, CA 90292 OpenPath Security, Inc.								
Manufacturer	13428 Maxella Ave, #866, Marina Del Rey, CA 90292								
Product Type	Single Door Controller	Single Door Controller							
Trade Name	openpath								
Model Number	OP-2ESH-POE								
FCC ID	2APJV2ESH								
		Operate Band		Freq	uency Range (MHz)				
	IEEE 802.11b / 802.11g /	802.11n 2.4 GHz 20 MHz		24	112 - 2462				
	IEEE 802.11a U-NII Band	I		51	180 - 5240				
	IEEE 802.11a U-NII Band	II-A		52	260 - 5320				
	IEEE 802.11a U-NII Band	II-C		5500 - 5700					
Frequency Range	IEEE 802.11a U-NII Band	5745 - 5825							
	IEEE 802.11n 5 GHz / 802	5180 - 5240							
	IEEE 802.11n 5 GHz / 802	5260 - 5320							
	IEEE 802.11n 5 GHz / 802	5500 - 5700							
	IEEE 802.11n 5 GHz / 802	57	745 - 5825						
	Bluetooth BR/EDR	24	102 - 2480						
	Bluetooth LE	2402 - 2480							
	Model	Туре	Frequenc (MHz)	СУ	Max. Gain (dBi)				
			2412 - 2480		2.7				
Antenna Information			5150 - 5250		3.8				
	ALX19P-222AA3-00	Embedded Antenna	5250 - 5350		3.8				
			5470 - 5725		3.8				
	5725 - 5850								
Antenna Delivery	1TX								
RF Evaluation	0.117 mW/cm <sup>2</sup>								
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.



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### 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

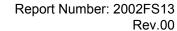
$$S_{eirp} = \frac{EIRP}{4\pi d^2} = \frac{PG}{4\pi d^2} \left( W / m^2 \right)$$

Where

S: is the input power (W);

G: is the antenna gain;

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

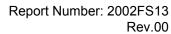




## 4. Power Density Limit – RF Exposure Evaluation

Thy 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/cm²)	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 <sup>2</sup> )*	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 O	ccupational / Controlled	Exposure						
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm²)	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 <sup>2</sup> )*	6					
30-300	30-300 61.4		1.0	6					
300-1,500	-	-	F/300	6					
1,500-100,000	-	-	5	6					





### 4.1 Conducted Power

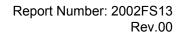
Band	Data Rate (Mbps)	Frequency (MHz)	Average Conducted power (dBm)		
	1	2412.0	20.49		
IEEE 802.11b	6	2437.0	24.45		
	11	2462.0	19.28		
	1	2412.0	18.55		
IEEE 802.11g	6	2437.0	21.43		
	11	2462.0	18.66		
	1	2412.0	16.96		
IEEE 802.11n 2.4 GHz 20 MHz	6	2437.0	21.42		
Z.4 GHZ ZU WHZ	11	2462.0	16.81		



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Band	Frequency (MHz)	Packet Type	Average Conducted power (dBm)
		DH1	9.43
	2402.0	DH3	9.44
		DH5	9.47
Bluetooth BR		DH1	9.40
	2441.0	DH3	9.42
GFSK		DH5	9.52
		DH1	9.66
	2480.0	DH3	9.67
		DH5	9.70
		DH1	5.01
	2402.0	DH3	5.12
		DH5	5.20
Bluetooth EDR		DH1	5.12
	2441.0	DH3	5.26
$\pi$ /4-DQPSK		DH5	5.33
		DH1	5.03
	2480.0	DH3	5.06
		DH5	5.21
		DH1	5.05
	2402.0	DH3	5.18
		DH5	5.24
Bluetooth EDR		DH1	5.19
	2441.0	DH3	5.33
8DPSK		DH5	5.39
		DH1	5.09
	2480.0	DH3	5.13
_		DH5	5.26
	2402.0		5.65
Bluetooth LE	2440.0		5.34
	2480.0		4.35





Dond	Data Rate	Frequency	Average Power
Band	(Mbps)	(MHz)	(dBm)
		5180.0	19.35
		5200.0	22.28
		5220.0	22.22
		5240.0	22.19
		5260.0	22.08
		5280.0	22.07
		5300.0	22.03
		5320.0	18.94
		5500.0	17.77
		5520.0	20.42
IEEE 802.11a	6	5540.0	20.49
		5560.0	20.52
		5580.0	20.45
		5660.0	20.57
		5680.0	20.44
		5700.0	19.33
		5745.0	22.25
		5765.0	22.11
		5785.0	22.07
		5805.0	21.93
		5825.0	21.88
		5180.0	18.06
		5200.0	22.05
		5220.0	22.08
		5240.0	22.11
		5260.0	21.80
		5280.0	21.74
		5300.0	21.77
		5320.0	21.81
		5500.0	19.56
		5520.0	20.94
IEEE 802.11ac 20 MHz	6.5	5540.0	20.86
		5560.0	20.90
		5580.0	20.85
		5660.0	20.73
		5680.0	20.81
		5700.0	20.77
		5745.0	22.03
		5765.0	21.88
		5785.0	21.81
		5805.0	21.77
		5825.0	21.56



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### 5. Test Result

Antenna	Band	Frequency (MHz)	Limit (w)/m <sup>2</sup>	Distance (m) [d]	Max Tune-up Power [P] (dBm)	ANT Gain (dBi)	Numeric Gain [G]	Duty Cycle	Power with Duty cycle [TP] (W)	Power Density [S] (w)/m <sup>2</sup>
Bluetooth Antenna	Bluetooth LE	2402-2480	1	20	10.00	2.70	1.86	1	18.60	0.004
Wi-Fi Antenna	2.4 GHz	2412-2462	1	20	25.00	2.70	1.86	1	588.18	0.117
		5150-5250	1	20	22.50	3.80	2.40	1	426.79	0.085
	5 GHz	5250-5350	1	20	22.50	3.80	2.40	1	426.79	0.085
		5470-5725	1	20	21.00	3.80	2.40	1	302.14	0.060
		5725-5850	1	20	22.50	3.80	2.40	1	426.79	0.085

#### Note:

- 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.

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