RF EXPOSURE EVALUATION REPORT

FCC ID	:	2AG7G-J2A
Equipment	:	Plume Adaptive Wi-Fi
Brand Name	:	Plume Design, Inc.
Model Name	:	J2A
Applicant	:	Plume Design, Inc. 325 Lytton Ave., Palo Alto, CA 94301
Manufacturer	:	Plume Design, Inc. 325 Lytton Ave., Palo Alto, CA 94301
Standard	:	47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part2.1091 and it complies with applicable limit.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.

The results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full

Cona Huang

Approved by: Cona Huang / Deputy Manager

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History of this test report

Report No.	Version	Description	Issued Date
FA292109	Rev. 01	Initial issue of report	Dec. 12, 2022

1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Plume Adaptive Wi-Fi
Brand Name	Plume Design, Inc.
Model Name	J2A
FCC ID	2AG7G-J2A
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.5GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8GHz Band: 5725 MHz ~ 5855 MHz WLAN U-NII 5: 5925 MHz ~ 6425 MHz WLAN U-NII 6: 6425 MHz ~ 6525 MHz WLAN U-NII 7: 6525 MHz ~ 6875 MHz WLAN U-NII 8: 6875 MHz ~ 7125 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz
Mode	WLAN: 802.11a/b/g/n/ac/ax HT20/HT40/VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE
EUT Stage	Production Unit
Remark: 1. Variant report to remove UWB operation, the maximum output power refer to original RF report, FCC ID: 2AG7G-J1A to power density calculation.	

<Beamforming Gain>

Bands	BF gain (dBi)
2.4G	5.03
WLAN5GHz Band 1	8.65
WLAN5GHz Band 2	9.28
WLAN5GHz Band 3	9.76
WLAN5GHz Band 4	9.58
6G	10.03

<Non-Beamforming Gain>

Antenna Gain (dBi)								
Bands	**Ant 1**	**Ant 2**	**Ant 3**	**Ant 4**	**Ant 5**	**Ant 6**	**Ant 7**	**Ant 8**
BLE (IFA Antenna)	3							
2.4G (IFA Antenna)			1.4	2.6				
5G B1 (IFA antenna)	3	2.8	2.4	2.3				
5G B2 (IFA/Slot antenna)	4.1	3.8	2.4	2.6				
5G B3 (IFA/Slot antenna)	4.6	4.8	2.7	2.6				
5G B4 (IFA/Slot antenna)	4.3	4.7	2.4	2.6				
6G UNII5(IFA Antenna)					4	3.5	3	3.8
6G UNII6(IFA Antenna)					4	4.2	3.4	4.4
6G UNII7(IFA Antenna)					4	4.2	3.4	4.4
6G UNII8(IFA Antenna)					3.4	4.2	4	3.4

Reviewed by: Jason Wang

Report Producer: Carlie Tsai

2. Maximum RF average output power

Mode	Maimum Power (non TXBF) (dBm)	Maimum Power (TXBF) (dBm)
BLE	18.70	
WLAN 2.4G	29.06	25.31
WLAN5GHz Band 1	24.90	23.87
WLAN5GHz Band 2	21.48	18.93
WLAN5GHz Band 3	23.92	18.60
WLAN5GHz Band 4	27.17	24.22
WLAN 6G	14.55	7.15

3. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f2)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f2)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

The MPE was calculated at 25 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:
S = Power Density
P = Output Power at Antenna Terminals
G = Gain of Transmit Antenna (linear gain)
R = Distance from Transmitting Antenna

4. Radio Frequency Radiation Exposure Evaluation

4.1. Standalone Power Density Calculation

<Beamforming Mode>

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 25cm (mW/cm^2)	Limit (mW/cm^2)	Power Density / Limit
WLAN2.4GHz Band	5.03	25.31	30.34	1.08	1081.43	0.138	1.000	0.138
WLAN5GHz Band 1	8.65	23.87	32.52	1.79	1786.49	0.228	1.000	0.228
WLAN5GHz Band 2	9.28	18.93	28.21	0.66	662.22	0.084	1.000	0.084
WLAN5GHz Band 3	9.76	18.60	28.36	0.69	685.49	0.087	1.000	0.087
WLAN5GHz Band 4	9.58	24.22	33.80	2.40	2398.83	0.306	1.000	0.306
WLAN6GHz	10.03	7.15	17.18	0.05	52.24	0.007	1.000	0.007

<Non-Beamforming Mode>

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 25cm (mW/cm^2)	Limit (mW/cm^2)	Power Density / Limit
WLAN2.4GHz Band	2.60	29.06	31.66	1.47	1465.55	0.187	1.000	0.187
WLAN5GHz Band 1	3.00	24.90	27.90	0.62	616.60	0.079	1.000	0.079
WLAN5GHz Band 2	4.10	21.48	25.58	0.36	361.41	0.046	1.000	0.046
WLAN5GHz Band 3	4.80	23.92	28.72	0.74	744.73	0.095	1.000	0.095
WLAN5GHz Band 4	4.70	27.17	31.87	1.54	1538.15	0.196	1.000	0.196
WLAN6GHz	4.40	14.55	18.95	0.08	78.52	0.010	1.000	0.010
Bluetooth	3.00	18.70	21.70	0.15	147.91	0.019	1.000	0.019

4.2. Collocated Power Density Calculation

<Beamforming Mode>

Maximum 2.4GHz WLAN Power Density / Limit	Maximum 5GHz WLAN Power Density / Limit	Maximum 6GHz WLAN Power Density / Limit	Maximum Bluetooth Power Density / Limit	Σ(Power Density / Limit
0.138	0.306	0.007	0.019	0.470

<Non-Beamforming Mode>

Maximum 2.4GHz WLAN Power Density / Limit	Maximum 5GHz WLAN Power Density / Limit	Maximum 6GHz WLAN Power Density / Limit	Maximum Bluetooth Power Density / Limit	Σ(Power Density / Limit
0.187	0.196	0.010	0.019	0.412

Note:

1. Σ(Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)].
2. Considering all of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1.

Conclusion:

According to 47 CFR §1.1307, the RF exposure analysis concludes that the RF Exposure is FCC compliant.