

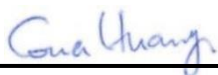
# RF EXPOSURE EVALUATION REPORT

FCC ID : 2AG7G-G1A  
Equipment : Plume Adaptive WiFi  
Brand Name : Plume Design Inc  
Model Name : G1A  
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 Part 2.1091 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



Approved by: Cona Huang / Deputy Manager



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## History of this test report

Report No.	Version	Description	Issued Date
FA111911B	Rev. 01	Initial issue of report	Jul. 21, 2021



## 1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Plume Adaptive WiFi
Brand Name	Plume Design Inc
Model Name	G1A
FCC ID	2AG7G-G1A
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz WLAN U-NII 1: 5150 MHz ~ 5250 MHz WLAN U-NII 2-A: 5250 MHz ~ 5350 MHz WLAN U-NII 2-C: 5470 MHz ~ 5725 MHz WLAN U-NII 3: 5725 MHz ~ 5825 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:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

**Reviewed by:** Jason Wang

**Report Producer:** Carlie Tsai

### <Non-Beamforming Gain>

Antenna type	Ant L0	Ant L1	Ant L2	Ant L3	Ant H0	Ant H1
BLE (IFA Antenna)				2.4		
2.4G (IFA Antenna)					3.5	2.7
5G B1 (IFA Antenna)	4	2.5	3.8	3		
5G B2 (IFA Antenna)	3.3	2.4	3.8	2.3		
5G B3 (IFA Antenna)					5.9	3.8
5G B4 (IFA Antenna)					5.9	3.7

### <Beamforming Gain>

Bands	BF gain (dBi)
2.4G 2Tx	6.12
5G LB(B1) 2Tx	6.29
5G LB(B1) 3Tx	8.23
5G LB(B1) 4Tx	9.37
5G LB(B2) 2Tx	5.87
5G LB(B2) 3Tx	7.96
5G LB(B2) 4Tx	8.99
5G HB(B3) 2Tx	7.92
5G HB(B4) 2Tx	7.88

**2. Maximum RF average output power among production units**

	tune up (non TXBF)	tune up (TXBF)
BLE	19.50	-
WLAN 2.4G	26.00	26.00
WLAN 5G B1	27.00	24.50
WLAN 5G B2	18.00	19.00
WLAN 5G B3	24.00	17.50
WLAN 5G B4	27.50	25.00

### 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 <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposures</b>				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
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/1500	30
1500-100,000			1.0	30

The MPE was calculated at 20 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

#### <Non-Beamforming Mode>

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Power Density / Limit
WLAN2.4GHz Band	3.50	26.00	29.50	0.89	891.25	0.177	1.000	0.177
WLAN5GHz Band 1	4.00	27.00	31.00	1.26	1258.93	0.251	1.000	0.251
WLAN5GHz Band 2	3.80	18.00	21.80	0.15	151.36	0.030	1.000	0.030
WLAN5GHz Band 3	5.90	24.00	29.90	0.98	977.24	0.195	1.000	0.195
WLAN5GHz Band 4	5.90	27.50	33.40	2.19	2187.76	0.435	1.000	0.435
Bluetooth	2.40	19.50	21.90	0.15	154.88	0.031	1.000	0.031

#### <Beamforming Mode>

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Power Density / Limit
WLAN2.4GHz Band	6.12	26.00	32.12	1.63	1629.30	0.324	1.000	0.324
WLAN5GHz Band 1	9.37	24.50	33.87	2.44	2437.81	0.485	1.000	0.485
WLAN5GHz Band 2	8.99	19.00	27.99	0.63	629.51	0.125	1.000	0.125
WLAN5GHz Band 3	7.92	17.50	25.42	0.35	348.34	0.069	1.000	0.069
WLAN5GHz Band 4	7.88	25.00	32.88	1.94	1940.89	0.386	1.000	0.386

### 4.2. Collocated Power Density Calculation

2.4GHz WLAN Power Density / Limit	5GHz WLAN Power Density / Limit	Bluetooth Power Density / Limit	$\Sigma$ (Power Density / Limit) of WLAN+Bluetooth
0.324	0.485	0.031	0.840

#### Note:

1.  $\Sigma$  (Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WLAN + Bluetooth.
2. Considering the all of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of all collocated transmitters is compliant

### Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.