



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
FA111911A	Rev. 01	Initial issue of report	Jul. 21, 2021



1. Description of Equipment Under Test (EUT)

Table with 2 columns: EUT Type, Brand Name, Model Name, FCC ID, Wireless Technology and Frequency Range, Mode, EUT Stage. Row 1: Plume Adaptive WiFi, Plume Design Inc, G1A, 2AG7G-G1A, WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz, WLAN U-NII 1: 5150 MHz ~ 5250 MHz, WLAN U-NII 3: 5725 MHz ~ 5825 MHz, Bluetooth: 2400 MHz ~ 2483.5 MHz, WLAN: 802.11a/b/g/n/ac/ax HT20/HT40/VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160, Bluetooth BR/EDR/LE, 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>

Table with 7 columns: Antenna type, Ant L0, Ant L1, Ant L2, Ant L3, Ant H0, Ant H1. Rows: BLE (IFA Antenna), 2.4G (IFA Antenna), 5G B1 (IFA Antenna), 5G B4 (IFA Antenna)

<Beamforming Gain>

Table with 2 columns: Bands, BF gain (dBi). Rows: 2.4G 2Tx, 5G LB(B1) 2Tx, 5G LB(B1) 3Tx, 5G LB(B1) 4Tx, 5G HB(B4) 2Tx

2. Maximum RF average output power among production units

Table with 3 columns: (blank), tune up (non TXBF), tune up (TXBF). Rows: BLE, WLAN 2.4G, WLAN 5G B1, WLAN 5G B4



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/f ²)	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/f ²)	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 ²)	Limit (mW/cm ²)	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 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 ²)	Limit (mW/cm ²)	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 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	Σ (Power Density / Limit) of WLAN+Bluetooth
0.324	0.485	0.031	0.840

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)], 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.