



BSL Testing Co.,Ltd.

RF EXPOSURE Test Report

FCC ID:	2AKLL-ADM5
Applicant	Zhejiang Flashforge 3D Technology CO., Ltd.
Address	No. 518, Xianyuan Road, Jinhua, Zhejiang, China
Manufacturer	Zhejiang Flashforge 3D Technology CO., Ltd.
Address	No. 518, Xianyuan Road, Jinhua, Zhejiang, China
Product Name:	3D Printer
Model/Type reference:	Adventurer 5M
Power supply:	AC 100-120/220-240V,50-60Hz, 350W
Adapter information	N/A
Hardware version:	V1.0
Software version:	V1.0
Standards:	N/A
Test procedure :	KDB 447498 D01 v06
Date of Test	
Date of tests	December 25, 2023~ January 15, 2024
Test Result.	Pass
This device described above has been tested by BSL Testing Co., Ltd. and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.	

RF Exposure Evaluation

Limits

The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

According to KDB 447498 D01 General RF Exposure Guidance v06, Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Test Exclusion Threshold condition(s), listed below, is (are) satisfied.

Limits for Maximum Permissible Exposure (MPE)

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

f = frequency in MHz

Friis transmission formula: $Pd = (P_{out} * G) / (4 * \pi * r^2)$

Where

Pd = power density in mW/cm², **Pout** = output power to antenna in mW;

G = gain of antenna in linear scale, **Pi** = 3.1416;

R = distance between observation point and center of the radiator in cm

Pd is the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.



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Test Result of RF Exposure Evaluation

2.4GWiFi:

Operation Frequency: WIFI 802.11b/g/n HT20/40:

2412-2462MHz, Power density limited: 1mW/ cm²

5GWiFi:

802.11a: 20 MHz

802.11n: 20 MHz, 40 MHz

802.11ac: 20 MHz, 40 MHz, 80MHz .

Antenna Type: FPC Antenna

Antenna gain:

WIFI 2.4G ANT: 3.2dBi

WIFI 5G ANT: 4.9dBi

R=20cm

mW= 10^{^(dBi/10)}

Antenna gain Numeric= 10^{^(dBi/10)}= 10^{^(3.2/10)}=2.09

Antenna gain Numeric= 10^{^(dBi/10)}= 10^{^(4.9/10)}=3.09

WiFi 2.4G

Channel	Frequency (MHz)	Output power to antenna (dBm)	Output power to antenna (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
802.11b	2412	4.562	2.86	0.00119	1.0	PASS
	2437	4.235	2.65	0.00110	1.0	PASS
	2462	4.101	2.57	0.00107	1.0	PASS
802.11g	2412	2.525	1.79	0.00074	1.0	PASS
	2437	2.112	1.63	0.00068	1.0	PASS
	2462	1.865	1.54	0.00064	1.0	PASS
802.11n (HT20)	2412	-1.526	0.70	0.00029	1.0	PASS
	2437	-1.685	0.68	0.00028	1.0	PASS
	2462	-2.154	0.61	0.00025	1.0	PASS
802.11n (HT40)	2422	-4.652	0.34	0.00014	1.0	PASS
	2437	-4.785	0.33	0.00014	1.0	PASS
	2452	-5.632	0.27	0.00011	1.0	PASS

WiFi 5G UNII-1

Channel	Frequency (MHz)	Output power to antenna (dBm)	Output power to antenna (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
802.11a	5180	3.425	2.20	0.00135	1.0	PASS
	5200	3.845	2.42	0.00149	1.0	PASS
	5240	3.961	2.49	0.00153	1.0	PASS
802.11n (HT20)	5180	2.564	1.80	0.00111	1.0	PASS
	5200	2.854	1.93	0.00119	1.0	PASS
	5240	2.964	1.98	0.00122	1.0	PASS
802.11n (HT40)	5190	-2.564	0.55	0.00034	1.0	PASS
	5230	-1.024	0.79	0.00049	1.0	PASS
802.11ac (HT20)	5180	1.423	1.39	0.00085	1.0	PASS
	5200	1.214	1.32	0.00081	1.0	PASS
	5240	0.896	1.23	0.00076	1.0	PASS
802.11ac (HT40)	5200	-3.456	0.45	0.00028	1.0	PASS
	5240	-5.124	0.31	0.00019	1.0	PASS
802.11ac (HT80)	5210	-3.456	0.45	0.00028	1.0	PASS

UNII-3

Channel	Frequency (MHz)	Output power to antenna (dBm)	Output power to antenna (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
802.11a	5745	0.564	1.14	0.00070	1.0	PASS
	5785	1.241	1.33	0.00082	1.0	PASS
	5825	1.658	1.46	0.00090	1.0	PASS
802.11n (HT20)	5745	2.456	1.76	0.00108	1.0	PASS
	5785	3.458	2.22	0.00136	1.0	PASS
	5825	3.965	2.49	0.00153	1.0	PASS
802.11n (HT40)	5755	-2.412	0.57	0.00035	1.0	PASS
	5795	-2.015	0.63	0.00039	1.0	PASS
802.11ac (HT20)	5745	1.124	1.30	0.00080	1.0	PASS
	5785	1.856	1.53	0.00094	1.0	PASS
	5825	2.142	1.64	0.00101	1.0	PASS
802.11ac (HT40)	5755	-2.125	0.61	0.00038	1.0	PASS
	5795	-2.564	0.55	0.00034	1.0	PASS
802.11ac (HT80)	5775	-3.152	0.48	0.00030	1.0	PASS

Conclusion: No SAR is required.

-----END OF REPORT-----