



RADIO TEST REPORT

Report No: STS2108163H03

Issued for

SHENZHEN PUDU TECHNOLOGY CO., LTD.

Room 501, Building A, Block 1, Phase 1, Shenzhen International Inno Valley, Dashi 1st Road, Nanshan District, Shenzhen, China

Product Name:	FlashBot
Brand Name:	PUDU
Model Name:	FBBDR1
Series Model:	N/A
FCC ID:	2AXDW-FBBDR1
Test Standard:	FCC 47CFR §2.1091

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Test Report Certification

Applicant's Name..... : SHENZHEN PUDU TECHNOLOGY CO., LTD.
Address : Room 501, Building A, Block 1, Phase 1, Shenzhen International Inno Valley, Dashi 1st Road, Nanshan District, Shenzhen, China
Manufacturer's Name : SHENZHEN PUDU TECHNOLOGY CO., LTD.
Address : Room 501, Building A, Block 1, Phase 1, Shenzhen International Inno Valley, Dashi 1st Road, Nanshan District, Shenzhen, China

Product Description

Product Name..... : FlashBot
Brand Name : PUDU
Model Name..... : FBBDR1
 :
Series Model..... : N/A

Standards..... : FCC 47CFR §2.1091

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Date of Test..... :

Date of receipt of test item : 25 Aug. 2021
Date (s) of performance of tests..... : 25 Aug. 2021 ~ 22 Sept. 2021
Date of Issue..... : 22 Sept. 2021
Test Result..... : **Pass**

Testing Engineer : *Chris Chen*

 (Chris Chen)

Technical Manager : *Sean She*

 (Sean she)

Authorized Signatory : *Vita Li*

 (Vita Li)





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Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	22 Sept. 2021	STS2108163H03	ALL	Initial Issue





1. GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF THE EUT

Product Name	FlashBot
Brand Name	PUDU
Model Name	FBBDR1
Series Model	N/A
Model Difference	N/A
Product Description	<p>The EUT is Router</p> <p>WCDMA 1900: 1850 MHz ~1910MHz WCDMA 850: 824 MHz ~849MHz WCDMA 1700: 1710 MHz ~1755 MHz LTE Band 2:1850~1910MHz LTE Band 4:1710~1755MHz LTE Band 5:824~849MHz LTE Band 7:2500~2570MHz LTE Band 12:699~716MHz LTE Band 13:777~787MHz LTE Band 25:1850~1915MHz LTE Band 26:814~849MHz LTE Band 41:2555~2655MHz LTE Band 66:1710~1780MHz AP6353S module: BT/BLE: 2402~2480 MHz 2.4G WLAN: 802.11b/g/n(20MHz): 2412~2472MHz 802.11n(40MHz):2422~2462MHz 5G WLAN: 802.11a/n/ac (20MHz): 5180~5700MHz 802.11n/ac(40MHz):5190~5670MHz 802.11ac(80MHz):5210~5610MHz 5.8G WLAN: 802.11a/n/ac (20MHz): 5745~5825MHz 802.11n /ac(40MHz):5755~5795MHz 802.11ac (80MHz):5775MHz ESP32 module: BT/BLE: 2402~2480 MHz 2.4G WLAN: 802.11b/g/n(20MHz): 2412~2472MHz 802.11n(40MHz):2422~2462MHz BL262T-H8 module: SRD: 903~927 MHz(125K) SRD: 903~927 MHz(500K)</p>



	Modulation Type:	WCDMA: QPSK; 16QAM; BPSK LTE: QPSK; 16QAM BT: GFSK, π/4-DQPSK,8DPSK BLE: GFSK 2.4G WLAN: 802.11b(DSSS):CCK,DQPSK,DBPSK 802.11g(OFDM):BPSK,QPSK,16-QAM,64-QAM 802.11n(OFDM):BPSK,QPSK,16-QAM,64-QAM 5G WLAN: 802.11a(OFDM): BPSK,QPSK,16-QAM,64-QAM 802.11n(OFDM): BPSK,QPSK,16-QAM,64-QAM 802.11ac(OFDM): BPSK,QPSK,16-QAM,64-QAM,256-QAM BL262T-H8 module: SRD:FSK
	Antenna gain:	WCDMA 850: 1.94dBi, WCDMA1900: 2.1dBi, WCDMA1700: 1.4dBi LTE: B2: 2.12dBi, B4: 1.4dBi, B5: 1.94dBi, B7: 2.62dBi, B12: 1.94dBi, B13: 1.94dBi, B25: 2.10dBi, B26: 1.94dBi, B66: 1.40dBi, B41: 1.87dBi AP6353S module: BT/BLE: 3.99dBi 2.4G WLAN: ANT A: 3.99dBi, ANT B: 3.99dBi MIMO: 7dBi 5G WLAN: ANT A : 4.01dBi, ANT B: 4.01dBi MIMO: 7.02dBi ESP32 module: BT/BLE/2.4G WLAN:3.87dBi BL262T-H8 module: SRD: 3dBi
	Antenna Designation:	FPC
Input	DC 29.4V, 3.5A	
Battery	Rated Voltage: 25.41V Charge Limit Voltage:29.4V Capacity: 15300mAh	
Hardware Version	V3	
Software Version	V8.1.0.12	

1.2 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD

Add. : A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

A2LA Certificate No.: 4338.01



2. FCC 47CFR §2.1091 REQUIREMENT

2.1 TEST STANDARDS

The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The gain of the antennas used in the product is extracted from the Antenna data sheets provided and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.

Although the Friis Transmission formula is far field assumption, the calculated result of that is an over-prediction for near field power density. It is taken as worst case to specify the safety range.

2.2 LIMIT

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of the human exposure to radio-frequency (RF) radiation as specified in 1.1307 (b)

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)
Limits for Occupational / controlled Exposures			
300 - 1500	--	--	F/300
1500 – 100000	--	--	5.0
Limits for General population / Uncontrolled Exposure			
300 - 1500	--	--	F/1500
1500 – 100000	--	--	1.0

F= Frequency in MHz

Friss Formula

Friss Transmission Formula: $Pd = (Pout * G) / (4*pi*r^2)$

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 the center of radiator in cm

If we know the maximum gain of the antenna and the total output power to the antenna, through calculation, we will know MPE value at distance 20cm.

2.3 EUT OPERATION CONDITION

EUT was enabled to transmit and receive at lowest, middle and highest channels.

2.4 CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. Warning statement to the user for keeping at least 20cm or more separation distance from the antenna should be included in the User manual. So, this device is classified as Mobile device.



2.5 TEST RESULT

Turn up

Mode	Detector	Turn up Power(dBm)
WCDMA 1900	AV	24±1
WCDMA 1700	AV	24±1
WCDMA 850	AV	24±1
LTE Band 2	AV	24±1
LTE Band 4	AV	24±1
LTE Band 5	AV	24±1
LTE Band 7	AV	24±1
LTE Band 12	AV	24±1
LTE Band 13	AV	24±1
LTE Band 25	AV	24±1
LTE Band 26	AV	24±1
LTE Band 41	AV	24±1
LTE Band 66	AV	24±1
AP6353S module:		
BT	AV	5±1
BLE	AV	4±1
2.4G WLAN	AV	21±1
5.2G WLAN	AV	16±1
5.3G WLAN	AV	15±1
5.6G WLAN	AV	15±1
5.8G WLAN	AV	16±1
ESP32 module:		
BT	AV	7±1
BLE	AV	-2±1
2.4G WLAN	AV	16±1
BL262T-H8 module:		
903-927 MHz(125k)	AV	17±1
903-927 MHz(500k)	AV	-2±2



Protocol	Max Turn up Power (dBm)	Max Turn up Power (mW)	ANT Gain(dBi)	ANT Gain(gain of antenna in linear scale)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Result
WCDMA 1900	25	316.23	2.1	1.62	0.1020	1.000	Pass
WCDMA 1700	25	316.23	1.4	1.38	0.0868	1.000	Pass
WCDMA 850	25	316.23	1.94	1.56	0.0983	0.564	Pass
LTE Band 2	25	316.23	2.12	1.63	0.1025	1.000	Pass
LTE Band 4	25	316.23	1.4	1.38	0.0868	1.000	Pass
LTE Band 5	25	316.23	1.94	1.56	0.0983	0.563	Pass
LTE Band 7	25	316.23	2.62	1.83	0.1150	1.000	Pass
LTE Band 12	25	316.23	1.94	1.56	0.0983	0.474	Pass
LTE Band 13	25	316.23	1.94	1.56	0.0983	0.521	Pass
LTE Band 25	25	316.23	2.1	1.62	0.1020	1.000	Pass
LTE Band 26	25	316.23	1.94	1.56	0.0983	0.561	Pass
LTE Band 41	25	316.23	1.4	1.38	0.0868	1.000	Pass
LTE Band 66	25	316.23	1.87	1.54	0.0968	1.000	Pass
BT	6	3.98107	3.99	2.50611	0.00198	1.000	Pass
BLE	5	3.16228	3.99	2.50611	0.00158	1.000	Pass
2.4G WLAN	22	158.48932	3.99	2.50611	0.07902	1.000	Pass
5.2G WLAN	17	50.11872	4.01	2.51768	0.02510	1.000	Pass
5.3G WLAN	16	39.81072	4.01	2.51768	0.01994	1.000	Pass
5.6G WLAN	16	39.81072	4.01	2.51768	0.01994	1.000	Pass
5.8G WLAN	17	50.11872	4.01	2.51768	0.02510	1.000	Pass
BT	8	6.30957	3.87	2.43781	0.00306	1.000	Pass
BLE	-1	0.79433	3.87	2.43781	0.00039	1.000	Pass
2.4G WLAN	17	50.11872	3.87	2.43781	0.02431	1.000	Pass
SRD 903-927 MHz (125K)	18	63.0957	3	1.99526	0.02505	0.602	Pass
SRD 903-927 MHz (500K)	0	1.0000	3	1.99526	0.00040	0.618	Pass

Multiple Evaluation

LTE B13/0.474 + 2.4G WIFI/1(AP6353S module)+ 2.4G WIFI/1(ESP32 module)+SRD/0.602(BL262T-H8 module) =(0.0983/0.474)+(0.07902/1)+(0.02431/1)+(0.02505/0.602)=0.3523 < 1

The Bluetooth and WLAN can't simultaneous transmission at the same time, WCDMA and LTE can't simultaneous transmission at the same time.

*****END OF THE REPORT*****