



RADIO TEST REPORT

Report No: STS2106180H02

Issued for

Chengdu Just Do It Information and Technology Co., Ltd.
 Rm 604&605, Unit 1, Building 2, No. 1, Section 1, Huafu Avenue, Huayang Street, Tianfu New District, Chengdu, China.

Product Name:	Bobcat IoT hotspot
Brand Name:	BOBCAT
Model Name:	Bobcat Miner 300
Series Model:	N/A
FCC ID:	2AZCKMINER300
Test Standard:	FCC 47CFR §2.1091

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Test Report Certification

Applicant's Name..... : Chengdu Just Do It Information and Technology Co., Ltd.
Address : Rm 604&605, Unit 1, Building 2, No. 1, Section 1, Huafu Avenue, Huayang Street, Tianfu New District, Chengdu, China.
Manufacturer's Name : Chengdu Just Do It Information and Technology Co., Ltd.
Address : Rm 604&605, Unit 1, Building 2, No. 1, Section 1, Huafu Avenue, Huayang Street, Tianfu New District, Chengdu, China.

Product Description

Product Name..... : Bobcat IoT hotspot
Brand Name : BOBCAT
Model Name : Bobcat Miner 300
Series Model..... : N/A

Standards : FCC 47CFR §2.1091

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Date of Test

Date of receipt of test item : 25 June 2021
Date (s) of performance of tests : 25 June 2021 ~ 07 July 2021
Date of Issue..... : 07 July 2021
Test Result..... : **Pass**

Testing Engineer :

(Chris Chen)

Technical Manager :

(Sean she)

Authorized Signatory :

(Vita Li)





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Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	07 July 2021	STS2106180H02	ALL	Initial Issue





1. GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF THE EUT

Product Name	Bobcat IoT hotspot	
Brand Name	BOBCAT	
Model Name	Bobcat Miner 300	
Series Model	N/A	
Model Difference	N/A	
Product Description	The EUT is Bobcat IoT hotspot	
	Operation Frequency:	BT/BLE: 2402~2480 MHz 2.4G WIFI: 802.11b/g/n 20: 2412~2462 MHz LongFi: 902-928MHz
	Modulation Type:	BT: GFSK(1Mbps), $\pi/4$ -DQPSK(2Mbps), 8DPSK(3Mbps) BLE/ LongFi: GFSK 2.4G WIFI: 802.11b(DSSS):CCK,DQPSK,DBPSK 802.11g(OFDM): BPSK,QPSK,16-QAM,64-QAM 802.11n(OFDM): BPSK,QPSK,16-QAM,64-QAM
	Antenna gain:	BT/BLE/2.4G WLAN: 0.8dBi LongFi: 4dBi
	Antenna Designation:	BT/BLE/2.4G WLAN: PCB Antenna LongFi: External Antenna
Rating	Model: AD012A120100UV Input: 100-240V~ 50/60Hz 0.4A Max Output: DC 12V 1A Model: PS120W1000U Input:100-240V~ 50/60Hz 0.5A Max Output: DC 12V 1A	
Battery	Rated Voltage: 3V Capacity: 40mAh	
Hardware version number	G285-V1.0	
Software versionnumber	2019.11.06.0	

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			
0.3-3.0	614	1.63	*(100)
3.0-30	1842/f	4.89/f	*(900/f ²)
30-300	61.4	0.163	1.0
300 - 1500	--	--	F/300
1500 – 100000	--	--	5.0
Limits for General population / Uncontrolled Exposure			
0.3-1.34	614	1.63	*(100)
1.34-30	824/f	2.19/f	*(180/f ²)
30-300	27.5	0.073	0.2
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)
802.11b	AV	13±1dBm
802.11g	AV	4±1dBm
802.11n(HT20)	AV	4±1dBm
GFSK	AV	8±1dBm
DSSS	AV	2±1dBm
LongFi	AV	11±1dBm
LongFi	AV	11±1dBm

ANT Gain (G)

2402-2483.5MHz: 0.8dBi (gain of antenna in linear scale=1.202)

902-928MHz: 4dBi (gain of antenna in linear scale=2.512)

Protocol	Max Turn up power (dBm)	Max Turn up power (mW)	ANT Gain(gain of antenna in linear scale)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Result
802.11b	14	25.119	1.202	0.00601	1	Pass
802.11g	5	3.162	1.202	0.00076	1	Pass
802.11n(HT20)	5	3.162	1.202	0.00076	1	Pass
GFSK	9	7.943	1.202	0.00190	1	Pass
DSSS	3	1.995	1.202	0.00048	1	Pass
LongFi	12	15.849	2.512	0.00792	0.651	Pass
LongFi	12	15.849	2.512	0.00792	0.603	Pass

Multiple Evaluation

WIFI/1+LongFi/0.603=(0.00601/1)+(0.00792/0.603)=0.0191(mW/cm²) < 1(mW/cm²)

BT/1+LongFi/0.603=(0.00190/1)+(0.00792/0.603)=0.0150(mW/cm²) < 1(mW/cm²)

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

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