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# **FCC TEST REPORT**

Shenzhen USV Technology Co.,Ltd Client Name

4th to the south, building B20, Hengfeng Industrial City,

Hangchen, Bao'an District, Shenzhen City, Guangdong Address

Province China 518100

**Product Name** 4-IN-1 Magnetic wireless charger

Date Mar. 18, 2022

Compliance Laborate **Anbotek** Shenzhen Anbotek Compliance Laboratory Limited \* Approved >

400-003-0500 www.anbotek.com



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## TEST REPORT

Applicant : Shenzhen USV Technology Co.,Ltd

Manufacturer : Shenzhen USV Technology Co.,Ltd

Product Name : 4-IN-1 Magnetic wireless charger

Model No. : T2, T3

Trade Mark : N.A.

Input: 5V-9V/2A

Rating(s) Phone output: 10W /7.5W/ 5W

Watch output: 2.0W
Headphone output: 2.5W

Test Standard(s) : FCC Part15 Subpart C, Paragraph 15.209

Test Method(s) : ANSI C63.10: 2020

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt	Feb. 21, 2022
Date of Test	Feb. 21~ Mar. 04, 2022
	Nian xiu Chen
Prepared By	Potek Aupo, W. Otek Vubotes, Wup
	(Nianxiu Chen)
	And tek hotek Anbor at hotek An
	(ingkong)in
Approved & Authorized Signer	Article D. Article M.
An Anbores And	(Kingkong Jin)



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## 1. General Information

## 1.1. Client Information

V.	Applicant	:	Shenzhen USV Technology Co.,Ltd
0	Address	:	4th to the south, building B20, Hengfeng Industrial City, Hangchen, Bao'an District, Shenzhen City, Guangdong Province China 518100
,g	Manufacturer	•	Shenzhen USV Technology Co.,Ltd
	Address	:	4th to the south, building B20, Hengfeng Industrial City, Hangchen, Bao'an District, Shenzhen City, Guangdong Province China 518100
4	Factory	:	Shenzhen USV Technology Co.,Ltd
37	Address	:	4th to the south, building B20, Hengfeng Industrial City, Hangchen, Bao'an District, Shenzhen City, Guangdong Province China 518100

## 1.2. Description of Device (EUT)

Product Name	:	4-IN-1 Magnetic wireless char	ger		
Model No.	:	T2, T3 (Note: All samples are the sar so we prepare "T2" for test on	me except the model number and appearance, ly.)		
Trade Mark	:	N.A.	botek Anbores And abotek Anborek		
Test Power Supply	:	AC 120V, 60Hz for adapter/ A	C 240V, 60Hz for adapter		
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)			
		Operation Frequency:	Phone/Headphone: 110.1-205KHz Watch: 216KHz, 325KHz		
Product :		Modulation Type:	ASK Anborek Anborek		
		Antenna Type:	Inductive loop coil Antenna		
		Antenna Gain(Peak):	0 dBi (Provided by customer)		
		Adapter:	N/A hootek Anborek Anborek		

**Remark:** 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

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### 1.3. Auxiliary Equipment Used During Test

Adapter	:	Model: MDY-11-EX Input: 100-240V~50/60Hz, 07A Output: 5V-3A/ 9V-3A/ 12V-2.25A/ 20V-1.35A/ 11V-3A Max
Wireless charging load	:	Manufacturer: Shenzhen Ouju Technology Co., Ltd. M/N: CD2577 Power: 5W/7.5W/10W/15W Last Cal.: Oct. 26, 2021 Cal. Interval: 1 Year
Apple AirPods	:	M/N: AirPods Pro
Apple Watch	:	M/N: WR-50M

### 1.4. Description of Test Modes

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description		
Made 1 shotek	Wireless Charging Mode		
Mode 1	(Watch+AirPods+10W Wireless charging load)		
Mode 2	Wireless Charging Mode		
Wode 2	(Watch+10W Wireless charging load)		
Mode 3	Wireless Charging Mode		
Autora Mode 3	(AirPods+10W Wireless charging load)		
Mode 4	Wireless Charging Mode(Watch+AirPods)		
Mode 5	Wireless Charging Mode(10W Wireless charging load)		
Mode 6 Wireless Charging Mode(Apple Watch)			
Mode 7 Wireless Charging Mode(Apple AirPods)			





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For Conducted Emission				
Final Test Mode	Description			
Mode 1	Wireless Charging Mode (Watch+AirPods+10W Wireless charging load)			
Mode 2	Wireless Charging Mode (Watch+10W Wireless charging load)			
Mode 3	Wireless Charging Mode (AirPods+10W Wireless charging load)			
Mode 4	Wireless Charging Mode(Watch+AirPods)			
Mode 5 Wireless Charging Mode(10W Wireless charging loa				
Mode 6	Wireless Charging Mode(Apple Watch)			
Mode 7	Wireless Charging Mode(Apple AirPods)			

For Radiated Emission				
Final Test Mode	Description			
Mode 1	Wireless Charging Mode (Watch+AirPods+10W Wireless charging load)			
Mode 2	Wireless Charging Mode (Watch+10W Wireless charging load)			
Mode 3	Wireless Charging Mode (AirPods+10W Wireless charging load)			
Mode 4	Wireless Charging Mode(Watch+AirPods)			
Mode 5	Wireless Charging Mode(10W Wireless charging load)			
Mode 6 Wireless Charging Mode(Apple Watch)				
Mode 7	Wireless Charging Mode(Apple AirPods)			

Note: (1)Test channel is 0.1276MHz and 0.325MHz.

- (2) All the situation(full load, half load and empty load) has been tested, only the worst situation (full load 14.5W) was recorded in the report.
- (3) The two frequency points of 0.216MHz and 0.325MHz are the working frequency points of watch wireless charging. Only one of the two frequency points can work at the same time. During the test, 0.325MHz is measured.



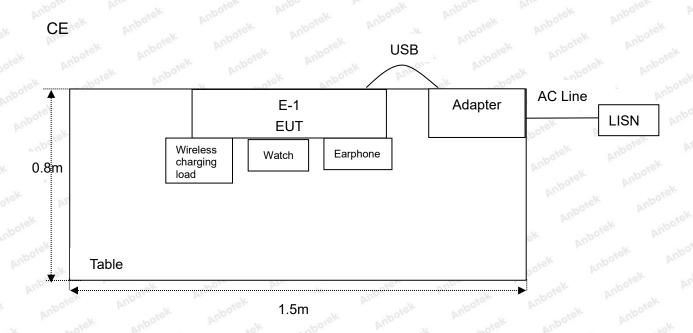
Hotline 400-003-0500 www.anbotek.com

Fax: (86) 755-26014772

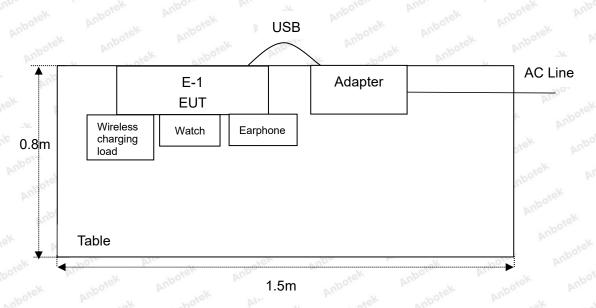


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## 1.5. Description Of Test Setup



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## 1.6. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Three Phase V-type  1. Artificial Power  Network		CYBERTEK	EM5040DT	E215040DT001	Jul 05, 2021	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Oct. 22, 2021	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	Oct. 22, 2021	1 Year
4.0tel	RF Switching Unit	Compliance Direction	RSU-M2	38303	Oct. 22, 2021	1 Year
5. nb	MAX Spectrum Analysis	Agilent	N9020A	MY51170037	Oct. 22, 2021	1 Year
6.	Preamplifier	SKET Electronic	BK1G18G30D	KD17503	Oct. 22, 2021	1 Year
o\7 <sup>k</sup>	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Oct. 22, 2021	2 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Oct. 22, 2021	2 Year
9.	Loop Antenna	Schwarzbeck	FMZB1519B	00053	Oct. 22, 2021	2 Year
£10.	Horn Antenna	A-INFO	LB-180400-KF	J211060628	Oct. 22, 2021	2 Year
11.	Pre-amplifier	SONOMA	310N	186860	Oct. 22, 2021	1 Year
12.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
13.	RF Test Control System	YIHENG	YH3000	2017430	Oct. 22, 2021	1 Year
14.	Power Sensor	DAER	RPR3006W	15I00041SN045	Oct. 22, 2021	1 Year
15.	Power Sensor	DAER	RPR3006W	15I00041SN046	Oct. 22, 2021	1 Year
16.	MXA Spectrum  Analysis	KEYSIGHT	N9020A	MY53280032	Oct. 22, 2021	1 Year
17.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Oct. 22, 2021	1 Year
18.	Signal Generator	Agilent	E4421B	MY41000743	Oct. 22, 2021	1 Year
19.	DC Power Supply	IVYTECH	IV3605	1804D360510	Oct. 22, 2021	1 Year
20.	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80B	N/A	Oct. 22, 2021	1 Year



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#### 1.7. Measurement Uncertainty

Radiation Uncertainty	:	Ur = 3.9 dB (Horizontal)	Anbor P	nbolek	Anboten
		Ur = 3.8 dB (Vertical)	Anbo otek	nbotek	Anbore
Conduction Uncertainty	:	Uc = 3.4 dB	Anboard	nbotek	Anbore

#### 1.8. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

#### FCC-Registration No.: 184111

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 184111.

#### ISED-Registration No.: 8058A

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

#### **Test Location**

Shenzhen Anbotek Compliance Laboratory Limited.

1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102



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## 2. Summary of Test Results

Standard Section	Test Item	Result
FCC Part 15, Paragraph 15.207	Conducted Emission Test	PASS
FCC Part 15, Paragraph 15.209(a)(f)	Spurious Emission	PASS
Part 15.203	Antenna Requirement	PASS



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### 3. Conducted Emission Test

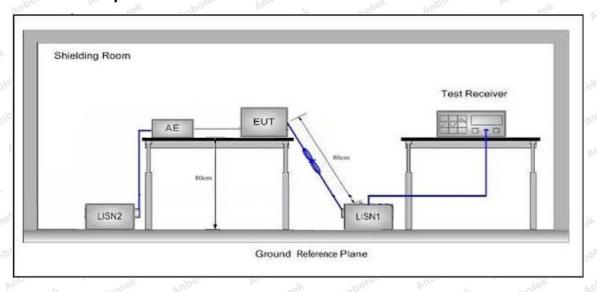
### 3.1. Test Standard and Limit

Test Standard	FCC Part15 Section 15.2	207	ak Ambotek Anbotek			
	Fraguenav	Maximum RF Line Voltage (dBuV)				
Test Limit	Frequency	Quasi-peak Level	Average Level			
	150kHz~500kHz	66 ~ 56 *	56 ~ 46 *			
	500kHz~5MHz	56	46 Aborek			
	5MHz~30MHz	60	50 Mootek			

Remark: (1) \*Decreasing linearly with logarithm of the frequency.

(2) The lower limit shall apply at the transition frequency.

#### 3.2. Test Setup



#### 3.3. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.10-2020 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

#### 3.4. Test Data

Please to see the following pages

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#### **Conducted Emission Test Data**

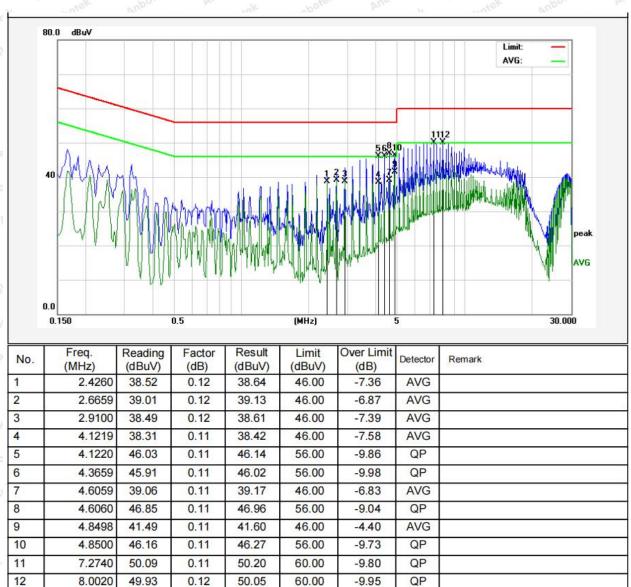
Test Site: 1# Shielded Room

Operating Condition: Mode 1

Test Specification: AC 240V, 60Hz for adapter

Comment: Live Line

Tem.: 23.1℃ Hum.: 49%





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#### **Conducted Emission Test Data**

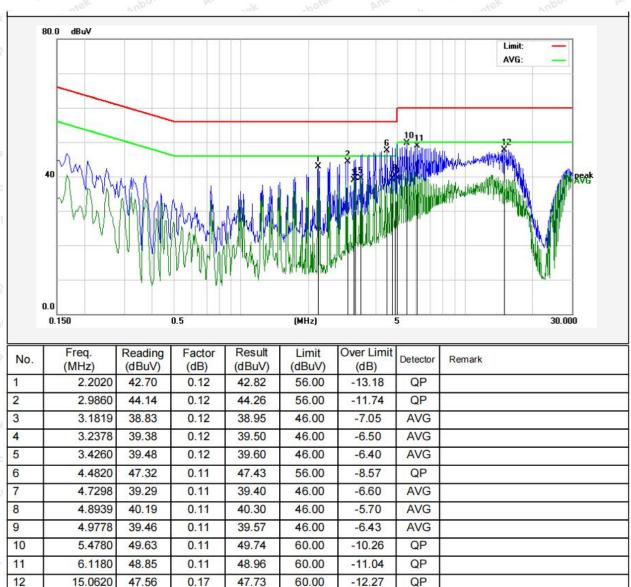
Test Site: 1# Shielded Room

Operating Condition: Mode 1

Test Specification: AC 240V, 60Hz for adapter

Comment: Neutral Line

Tem.: 23.1℃ Hum.: 49%





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#### **Conducted Emission Test Data**

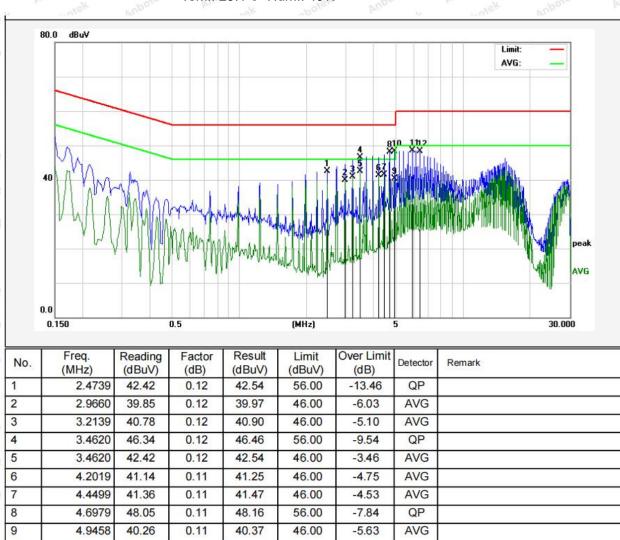
Test Site: 1# Shielded Room

Operating Condition: Mode 1

Test Specification: AC 120V, 60Hz for adapter

Comment: Live Line

Tem.: 23.1℃ Hum.: 49%



56.00

60.00

60.00

-7.71

-11.57

-11.69

QP

QP

QP

10

11

12

4.9460

5.9340

6.4300

48.18

48.32

48.20

0.11

0.11

48.29

48,43

48.31



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#### **Conducted Emission Test Data**

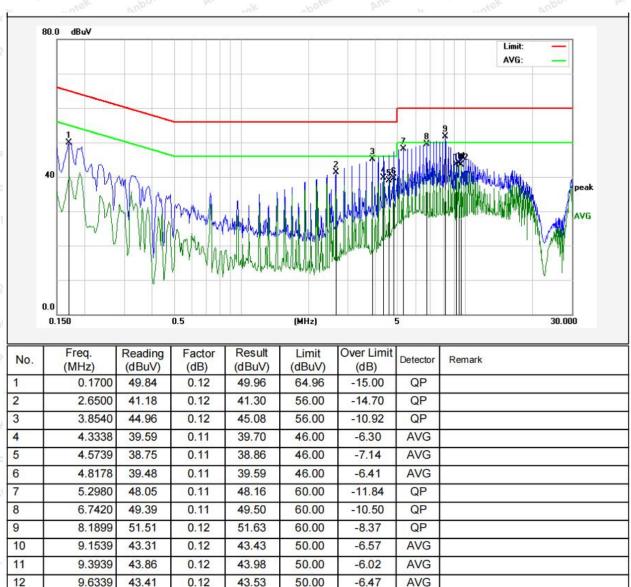
Test Site: 1# Shielded Room

Operating Condition: Mode 1

Test Specification: AC 120V, 60Hz for adapter

Comment: Neutral Line

Tem.: 23.1℃ Hum.: 49%





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## 4. Radiation Spurious Emission

### 4.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 1	5.209 and 15.205			
Test Limit	Frequency (MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz~0.490MHz	2400/F(kHz)	Ann	Anbotek	300
	0.490MHz-1.705MHz	24000/F(kHz)	k Pur	Anbotek	30
	1.705MHz-30MHz	Marie 30 Marie	rek hove	k Aupoles	30
	30MHz~88MHz	100	40.0	Quasi-peak	3 bot
	88MHz~216MHz	150	43.5	Quasi-peak	3 Am
	216MHz~960MHz	200	46.0	Quasi-peak	Anbox 3
	960MHz~1000MHz	500	54.0	Quasi-peak	Anbo 3
	Above 1000MHz	500	54.0	Average	And 3
		Anbotek Anb	74.0	Peak	3

#### Remark:

- (1) The lower limit shall apply at the transition frequency.
- (2) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

### 4.2. Test Setup

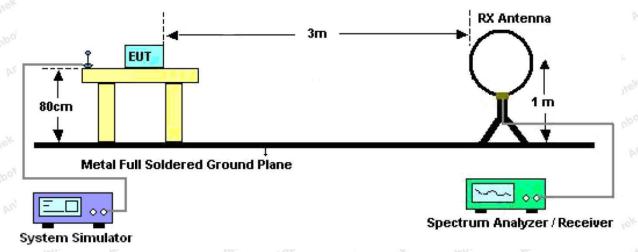


Figure 1. Below 30MHz





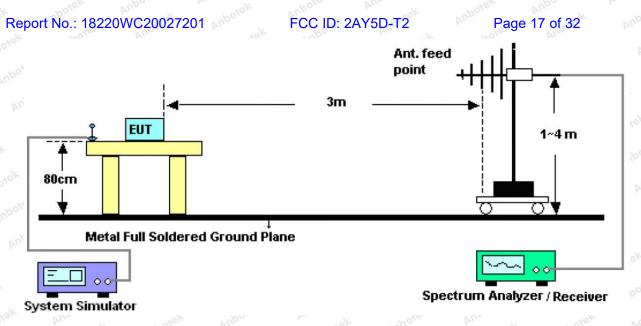


Figure 2. 30MHz to 1GHz

#### 4.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9\*6\*6 Chamber. The device is evaluated in xyz orientation.

For 9kHz to 150kHz, Set the spectrum analyzer as:

RBW = 200Hz, VBW =1kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 150kHz to 30MHz, Set the spectrum analyzer as:

RBW = 9KHz, VBW =30kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 30MHz to 1000MHz, Set the spectrum analyzer as:

RBW = 100kHz, VBW =300kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

#### 4.4. Test Data

#### PASS

Note: The data is in TX mode, and this is the worst mode





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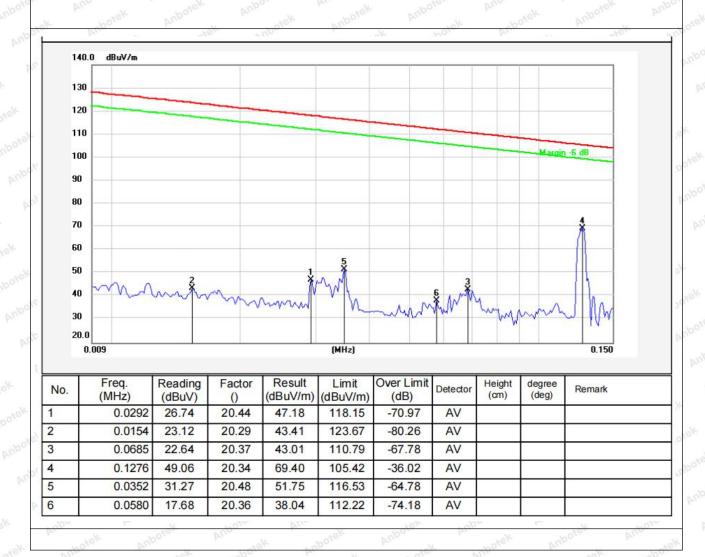
**Test Results** 

(Between 9KHz - 30MHz)

Standard: FCC PART15 C \_3m Power Source: AC 120V, 60Hz for adapter

Test item: Radiation Test Temp.(C)/Hum.(%RH): 22.7℃/49%RH

Test Mode: Mode 1 Distance: 3m







**Remark:** According to FCC PART 15.209 (d), the emission limits for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz, Radiated emission limits in these three bands are based on measurements employing an average detector.



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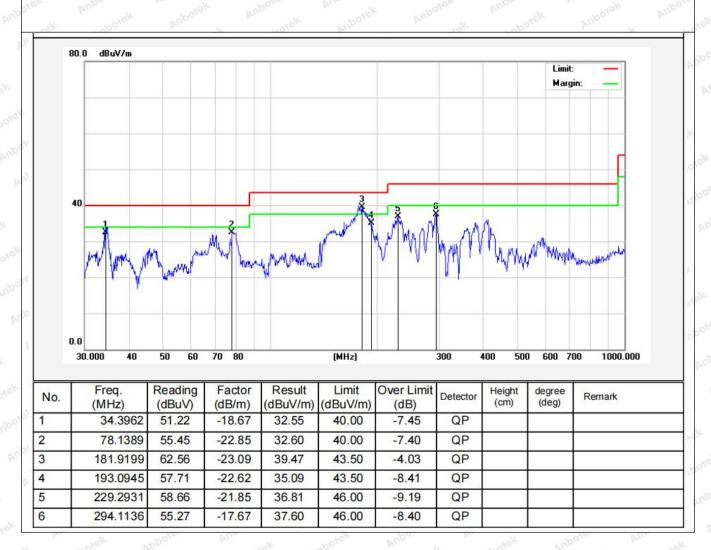
(Between 30MHz -1000 MHz)

Standard: FCC PART15 C \_3m Polarization: Horizontal

Test item: Radiation Test Power Source: AC 120V, 60Hz for adapter

Test Mode: Mode 1 Temp.(C)/Hum.(%RH): 21.5℃/49%RH

Distance: 3m





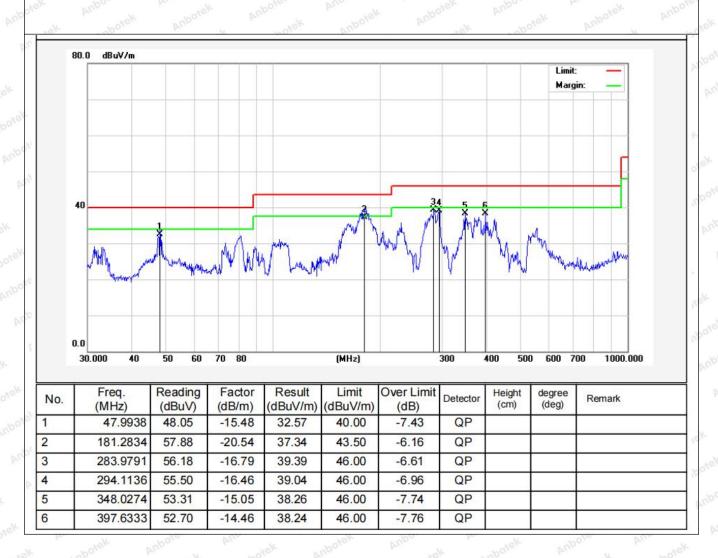
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Standard: FCC PART15 C \_3m Polarization: Vertical

Test item: Radiation Test Power Source: AC 120V, 60Hz for adapter

Test Mode: Mode 1 Temp.(C)/Hum.(%RH): 21.5℃/49%RH

Distance: 3m





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## 5. Antenna Requirement

## 5.1. Test Standard and Requirement

Test Standard	FCC Part15 Section 15.203
Requirement	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### 5.2. Antenna Connected Construction

The antenna is a Inductive loop coil Antenna which permanently attached, and the best case gain of the antenna is 0 dBi. It complies with the standard requirement.



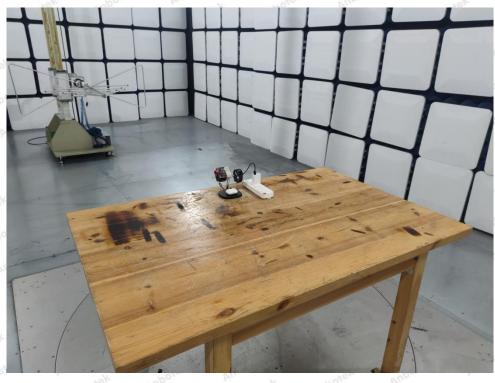
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## **APPENDIX I -- TEST SETUP PHOTOGRAPH**

Photo of Conducted Emission Measurement



Photo of Radiation Emission Test



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## **APPENDIX II -- EXTERNAL PHOTOGRAPH**





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#### **Shenzhen Anbotek Compliance Laboratory Limited**

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## **APPENDIX III -- INTERNAL PHOTOGRAPH**

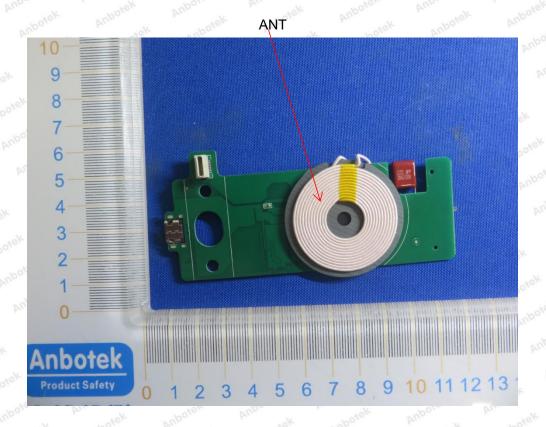


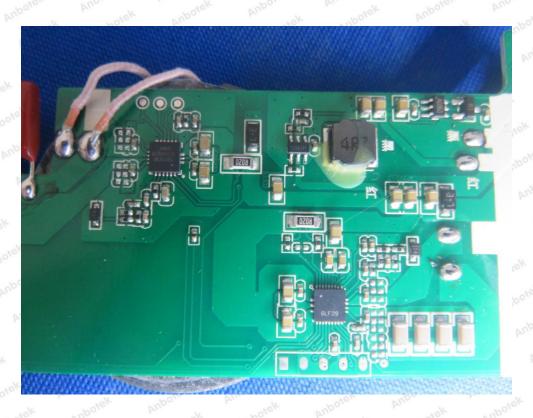


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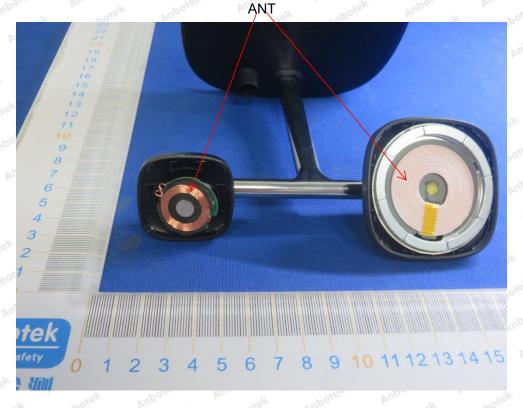


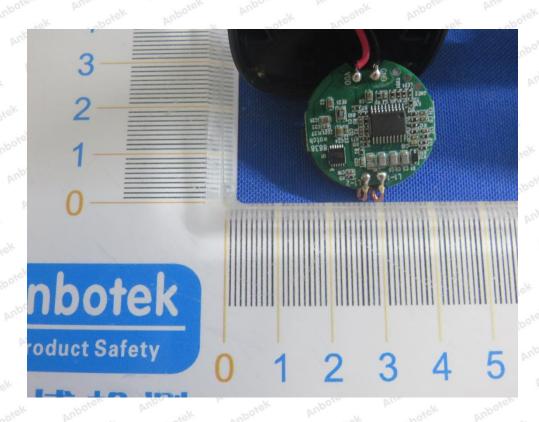


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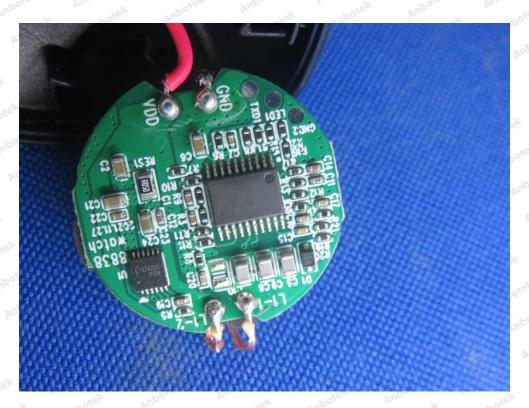




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----- End of Report -----

Code: AB-RF-05-a