

# Global United Technology Services Co., Ltd.

Report No.: GTSL202212000213F01

# **TEST REPORT**

Applicant: Shenzhen Jinshengyang Electronic Technology Co., Ltd

301, Building 1, Industrial Zone, No. 3, 1st Lane, Wayao **Address of Applicant:** 

Garden.Bao'an District 33, Shenzhen, China

Manufacturer: Shenzhen Jinshengyang Electronic Technology Co., Ltd

301, Building 1, Industrial Zone, No. 3, 1st Lane, Wayao Address of

Garden.Bao'an District 33, Shenzhen, China Manufacturer:

**Equipment Under Test (EUT)** 

**Product Name:** Dog Training Collar

Model No.: PD01, PD02, PD03

FCC ID: 2A9ZD-PD01

FCC CFR Title 47 Part 15 Subpart C Section 15.249 Applicable standards:

December 29, 2022 Date of sample receipt:

**Date of Test:** December 30, 2022-January 09, 2023

Date of report issued: January 09, 2023

PASS \* Test Result:

In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Robinson Luo Laboratory Manager



## 2 Version

Version No.	Date	Description		
00	January 09, 2023	Original		

Prepared By:	Joseph Cu	Date:	January 09, 2023
	Project Engineer		
Check By:	John sona lust	Date:	January 09, 2023
	Reviewer		



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# 4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	Pass
Field strength of the fundamental signal	15.249 (a)	Pass
Spurious emissions	15.249 (a) (d)/15.209	Pass
Band edge	15.249 (d)/15.205	Pass
20dB Occupied Bandwidth	15.215 (c)	Pass

#### Remarks:

- 1. Test according to ANSI C63.10: 2013.
- 2. Pass: The EUT complies with the essential requirements in the standard.

## 4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	30MHz-200MHz	3.8039dB	(1)
Radiated Emission	200MHz-1GHz	3.9679dB	(1)
Radiated Emission	1GHz-18GHz	4.29dB	(1)
Radiated Emission	18GHz-40GHz	3.30dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	3.44dB	(1)
Note (1): The measurement unce	ertainty is for coverage factor of ka	=2 and a level of confidence of 9	95%.



# 5 General Information

# 5.1 General Description of EUT

Product Name:	Dog Training Collar
Model No.:	PD01, PD02, PD03
Test Model No.:	PD01
Remark: All above models are	identical in the same PCB layout, interior structure and electrical circuits.
The differences are appearance	e color and model name for commercial purpose.
Serial No.:	0000001-1000000
Test sample(s) ID:	GTSL202212000213-1
Sample(s) Status	Engineered sample
Operation Frequency:	915MHz
Channel numbers:	1
Modulation type:	ASK
Antenna Type:	Internal antenna
Antenna gain:	0.5dBi(Declared by applicant)
Power supply:	TX: DC 3.7V, 300mAh, 1.11Wh for Li-ion battery

Note: The report is only for TX device



## 5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode.
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#### Per-test mode.

We have verified the construction and function in typical operation, The EUT was placed on three different polar directions; i.e. X axis, Y axis, Z axis. which was shown in this test report and defined as follows:

Axis	X	Υ	Z
Field Strength(dBuV/m)	89.26	90.20	88.34

## 5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
APPLE	USB Charger	A1399	N/A

## 5.4 Deviation from Standards

None.

## 5.5 Abnormalities from Standard Conditions

None.

## 5.6 Test Facility

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

• FCC—Registration No.: 381383

Designation Number: CN5029

Global United Technology Services Co., Ltd., Shenzhen 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 files.

• IC —Registration No.: 9079A

CAB identifier: CN0091

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

NVLAP (LAB CODE:600179-0)

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

## 5.7 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 123- 128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480 Fax: 0755-27798960

## 5.8 Additional Instructions

Test Software	Continuously transmitter provided by manufacturer
Power level setup	Default



# 6 Test Instruments list

Rad	Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)	
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July 02, 2020	July 01, 2025	
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A	
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	April 22, 2022	April 21, 2023	
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	GTS640	March 21, 2022	March 20, 2023	
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June 12, 2022	June 11, 2023	
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June 23, 2022	June 22, 2023	
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A	
8	Coaxial Cable	GTS	N/A	GTS213	April 22, 2022	April 21, 2023	
9	Coaxial Cable	GTS	N/A	GTS211	April 22, 2022	April 21, 2023	
10	Coaxial cable	GTS	N/A	GTS210	April 22, 2022	April 21, 2023	
11	Coaxial Cable	GTS	N/A	GTS212	April 22, 2022	April 21, 2023	
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	April 22, 2022	April 21, 2023	
13	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 23, 2022	June 22, 2023	
14	Band filter	Amindeon	82346	GTS219	June 23, 2022	June 22, 2023	
15	Power Meter	Anritsu	ML2495A	GTS540	June 23, 2022	June 22, 2023	
16	Power Sensor	Anritsu	MA2411B	GTS541	June 23, 2022	June 22, 2023	
17	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	April 22, 2022	April 21, 2023	
18	Splitter	Agilent	11636B	GTS237	June 23, 2022	June 22, 2023	
19	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov. 29, 2022	Nov. 28, 2023	
20	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	April 22, 2022	April 21, 2023	
21	Breitband hornantenna	SCHWARZBECK	BBHA 9170	GTS579	Oct. 16, 2022	Oct. 15, 2023	
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 16, 2022	Oct. 15, 2023	
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 16, 2022	Oct. 15, 2023	
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June 23, 2022	June 22, 2023	
25	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	April 22, 2022	April 21, 2023	



Con	Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)	
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May 14, 2022	May 13, 2025	
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 24, 2022	April 23, 2023	
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June 23, 2022	June 22, 2023	
4	ENV216 2-L-V- NETZNACHB.DE	ROHDE&SCHWARZ	ENV216	GTS226	April 22, 2022	April 21, 2023	
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A	
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A	
7	Thermo meter	JINCHUANG	GSP-8A	GTS639	April 28, 2022	April 27, 2023	
8	Absorbing clamp	Elektronik- Feinmechanik	MDS21	GTS229	April 15, 2022	April 14, 2023	
9	ISN	SCHWARZBECK	NTFM 8158	GTS565	April 22, 2022	April 21, 2023	
10	High voltage probe	SCHWARZBECK	TK9420	GTS537	April 22, 2022	April 21, 2023	

RF C	onducted Test:					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	April 22, 2022	April 21, 2023
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 22, 2022	April 21, 2023
3	Spectrum Analyzer	Agilent	E4440A	GTS536	April 22, 2022	April 21, 2023
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	April 22, 2022	April 21, 2023
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	April 22, 2022	April 21, 2023
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	April 22, 2022	April 21, 2023
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	April 22, 2022	April 21, 2023
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	April 22, 2022	April 21, 2023

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	April 25, 2022	April 24, 2023
2	Barometer	KUMAO	SF132	GTS647	July 26, 2022	July 25, 2023



## 7 Test results and Measurement Data

## 7.1 Antenna requirement

Standard requirement: FCC Part15 C Section 15.203

## 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.

#### **EUT Antenna:**

The antenna is internal antenna, reference to the appendix II for details



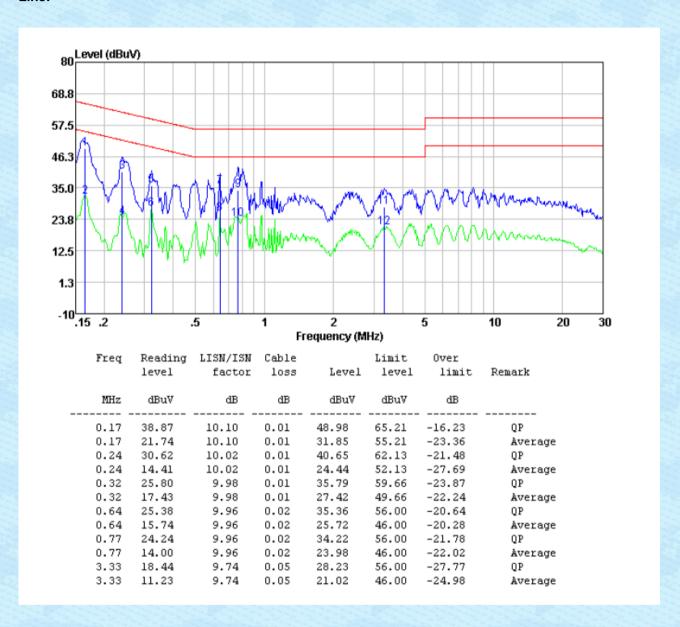
## 7.2 Conducted Emissions

Test Method:  ANSI C63.10:2013  Test Frequency Range: Class / Severity: Class B  Receiver setup:  RBW=9KHz, VBW=30KHz, Sweep time=auto  Limit:  Limit:  Limit:  Limit:  Limit (dBuV)  Quasi-peak Average  0.15-0.5 66 to 56° 56 to 46° 0.5-5 56 46  0.5-5 56 46  0.5-5-30 60 50  * Decreases with the logarithm of the frequency.  Test setup:  Reference Plane  LISN  ANX Equipment  LISN  ADX  ANX Equipment  LISN  AC power  EMI  Filter  AC power  EM							
Test Frequency Range:  Class / Severity:  Class B  Receiver setup:  RBW=9KHz, VBW=30KHz, Sweep time=auto  Limit:  Limit:  Limit (dBuV)  Quasi-peak Average  0.15-0.5 66 to 56* 56 to 46*  0.5-5 56 46  5-30 60 50  * Decreases with the logarithm of the frequency.  Test setup:  Reference Plane  LISN  Fedurative Receiver  Test table/Insulation plane  Filter  Ac power  Fedurative Receiver  Test table/Insulation plane  In the E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 500n/m/50uH coupling impedance for the measuring equipment.  2. The peripheral devices are also connected to the main power through a LISN that provides a 500n/m/50uH coupling impedance with 500n/m termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.  Test Instruments:  Refer to section 6.0 for details  Test environment:  Temp.: 25 °C Humid.: 52% Press.: 1012mbar  Test voltage:  Ac 120V 60Hz	Test Requirement:		FCC Part15 C Section 15.207				
Class / Severity:  Receiver setup:  RBW=9KHz, VBW=30KHz, Sweep time=auto  Limit:  Limit (dBuV)  Quasi-peak Average  0.15-0.5 66 to 56* 56 to 46*  0.5-5 56 46  5-30 60 50  * Decreases with the logarithm of the frequency.  Test setup:  Reference Plane  LISN  Fedurative  EUT Equipment United Test List Liber Impedence Stabilization plane  Test procedure:  1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 500nh/50uH coupling impedance for the measuring equipment.  2. The peripheral devices are also connected to the main power through a LISN that provides a 500nh/50uH coupling impedance with 500nh termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.  Test Instruments:  Refer to section 5.2 for details  Test environment:  Test voltage:  AC 120V 60Hz			ANSI C63.10:2013				
Receiver setup:  RBW=9KHz, VBW=30KHz, Sweep time=auto  Limit:  Frequency range (MHz)  Quasi-peak Average  0.15-0.5 66 to 56* 56 to 46*  0.5-5 56 46  5-30 60 50  *Decreases with the logarithm of the frequency.  Test setup:  Reference Plane  LISN  Figuratic  E.U.T  Test table/Insulation plane  LISN   Decreases with the logarithm of the frequency.  Test procedure:  1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 500hm/50uH coupling impedance for the measuring equipment.  2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.  Test Instruments:  Refer to section 5.2 for details  Test environment:  Temp.: 25 °C Humid.: 52% Press.: 1012mbar	Test Frequency Range:	150KHz to 30MHz	150KHz to 30MHz				
Limit:    Frequency range (MHz)	Class / Severity:	Class B					
Frequency range (MHz)  Quasi-peak  Average  0.15-0.5  66 to 56* 56 to 46*  0.5-5  56  46  5-30  *Decreases with the logarithm of the frequency.  Reference Plane  LISN  Aux  EU.I Toest table/insulation plane  Resonant  EU.I Toest satisfication network (L.I.S.N.). This provides a 500hm/50uH coupling impedance for the measuring equipment.  2. The peripheral devices are also connected to the main power through a LisN that provides a 500hm/50uH coupling impedance with 500hm termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.  Test mode:  Refer to section 6.0 for details  Test environment:  Temp.: 25 °C Humid.: 52% Press.: 1012mbat  Test voltage:  Average  Average  Average  66 to 56* 56 to 46* 56 to 46* 60 50 50 50 50 50 50 60 50 50 60 50 60 50 60 50 60 50 60 50 60 60 50 60 60 60 60 60 60 60 60 60 60 60 60 60	Receiver setup:	RBW=9KHz, VBW=30KHz, Sw	veep time=auto				
Test procedure:  1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 500hm/50uH coupling impedance for the main power through a LISN that provides a 250hm/50uH coupling impedance of the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.  Test Instruments:  Refer to section 6.0 for details  Test environment:  Temp.: 25 °C Humid.: 52% Press.: 1012mbat Test voltage:	Limit:		Limit	(dBuV)			
Test setup:  Reference Plane  LISN AUX Equipment E.U.T Test table/Insulation plane  Remark EUT F Equipment Under Test LISN Line impedence Stabilization network (L.I.S.N.). This provides a 500hm/50uH coupling impedance stabilization network (L.I.S.N.). This provides a 500hm/50uH coupling impedance for the measuring equipment.  2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.  Test Instruments:  Refer to section 6.0 for details  Test environment:  Temp.: 25 °C Humid.: 52% Press.: 1012mball Test voltage:  AC 120V 60Hz		Frequency range (MHz)	Quasi-peak	Average			
*Decreases with the logarithm of the frequency.  Test setup:  **Reference Plane  **LISN		0.15-0.5	66 to 56*	56 to 46*			
* Decreases with the logarithm of the frequency.  Test setup:  **Reference Plane  **LISN		0.5-5	56	46			
Test setup:  Reference Plane  LISN  AUX Equipment Under Test LISN Line impedence Stabilization Network Test table height-0 im In E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.  Test Instruments: Refer to section 6.0 for details Test mode: Refer to section 5.2 for details Test environment: Temp.: 25 °C Humid.: 52% Press.: 1012mbat Test voltage: AC 120V 60Hz		5-30	60	50			
Test procedure:  1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.  2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.  Test Instruments:  Refer to section 6.0 for details  Test mode:  Refer to section 5.2 for details  Test environment:  Temp.: 25 °C Humid.: 52% Press.: 1012mbat Test voltage:		* Decreases with the logarithm of the frequency.					
Test procedure:  1. The Equipment Under Test LISN Line Impedence Stabilization Network Test abole height-0 im line impedance stabilization network (L.I.S.N.). This provides a 500hm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.  Test Instruments:  Refer to section 6.0 for details  Test mode:  Refer to section 5.2 for details  Test environment:  Temp.: 25 °C Humid.: 52% Press.: 1012mbat Test voltage:  AC 120V 60Hz	Test setup:	Reference Plane					
line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.  2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.  Test Instruments:  Refer to section 6.0 for details  Test mode:  Refer to section 5.2 for details  Test environment:  Temp.: 25 °C Humid.: 52% Press.: 1012mbar AC 120V 60Hz		Remark E.U.T  EMI Receiver  Remark E.U.T: Equipment Under Test LISN: Line Impedence Stabilization Network					
Test mode: Refer to section 5.2 for details Test environment: Test voltage:  Refer to section 5.2 for details Temp.: 25 °C Humid.: 52% Press.: 1012mbar AC 120V 60Hz	Test procedure:	<ol> <li>line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.</li> <li>The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).</li> <li>Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed</li> </ol>					
Test environment: Temp.: 25 °C Humid.: 52% Press.: 1012mbar Test voltage: AC 120V 60Hz	Test Instruments:	Refer to section 6.0 for details					
Test voltage: AC 120V 60Hz	Test mode:	Refer to section 5.2 for details					
	Test environment:	Temp.: 25 °C Hum	id.: 52%	Press.: 1012mbar			
Test results: Pass	Test voltage:	AC 120V 60Hz					
	Test results:	Pass					



#### Measurement data:

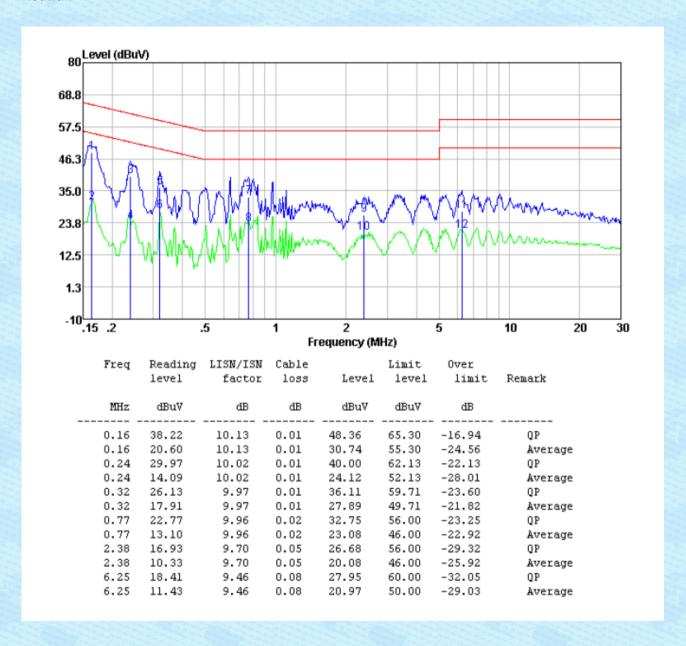
#### Line:



Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102 Telephone: +86 (0) 755 2779 8480 Fax: +86 (0) 755 2779 8960



#### Neutral:



#### Notes:

- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level = Receiver Read level + LISN Factor + Cable Loss



## 7.3 Radiated Emission Method

	7.3 Radiated Ellission We	etillod						
	Test Requirement:	FCC Part15 C S	FCC Part15 C Section 15.209, 15.205					
	Test Method:	ANSI C63.10:20	ANSI C63.10:2013					
	Test Frequency Range:	9kHz to 10GHz						
3	Test site:	Measurement Distance: 3m						
	Receiver setup:	Frequency	Detector	RBW	VBW	Remark		
	•	9kHz-	Quasi-pea	k 200Hz	300Hz	Quasi-peak Value		
		150kHz						
		150kHz-	Quasi-pea	k 9kHz	10kHz	Quasi-peak Value		
		30MHz						
		30MHz-	Quasi-pea	k 120KHz	300KHz	Quasi-peak Value		
166 <sub>7</sub>		1GHz						
		Above 1GHz	Peak	1MHz	3MHz	Peak Value		
		Above Toriz	Peak	1MHz	10Hz	Average Value		
3	Limit:	Freque	ency	Limit (dBuV	/m @3m)	Remark		
	(Field strength of the	0151	94.00 Δν					
	fundamental signal)	915101	915MHz 915MHz 114.00 Peak Value					
8	Limit:	Freque	Frequency Limit (uV/m) Remai					
	(Spurious Emissions)	0.009MHz-0.490MHz 2400/F(kHz) @300m				Quasi-peak Value		
		0.490MHz-1	.705MHz	24000/F(kH	z) @30m	Quasi-peak Value		
		1.705MHz-	1.705MHz-30.0MHz 30 @30m					
66 -		30MHz-8	8MHz	3m	Quasi-peak Value			
		88MHz-2	88MHz-216MHz 150 @3m					
		216MHz-960MHz 200 @3m				Quasi-peak Value		
33		960MHz-1GHz 500 @3m				Quasi-peak Value		
		Above 1GHz 500 @3m				Average Value		
		5000 @3m				Peak Value		
	Limit:	Emissions radiated outside of the specified frequency bands, except for						
	(band edge)	harmonics, shall be attenuated by at least 50 dB below the level of the						
		fundamental or to the general radiated emission limits in Section 15.209,						
	Task askura	whichever is the lesser attenuation.						
	Test setup:	For radiated emissions from 9kHz to 30MHz						
		***************************************						
3								
		<3m>						
		Test Antenna						
		EUT-) ? Y						
		< 80cm >+	< 80cm >- Turn Table-					
			1	<u> </u>				
		Ī		Receiver	v			
100								
		For radiated emissions from 30MHz to1GHz						



Report No.: GTSL202212000213F01 < 3m > < 1m ... 4m > EUT. Turn Table Receiver+ Preamplifier. For radiated emissions above 1GHz < 3m > < 1m ... 4m > EUT-Tum Tables <150cm> Receiver Preamplifier-1. The EUT was placed on the top of a rotating table (0.8m for below Test Procedure: 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. Test Instruments: Refer to section 6.0 for details Refer to section 5.2 for details Test mode: Test environment: 25 °C 52% Temp.: Humid.: Press.: 1012mbar Test voltage: DC 3.7V Test results: **Pass** 



## Measurement data:

# 7.3.1 Field Strength of The Fundamental Signal

## Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
915	86.99	24.00	4.90	32.00	83.89	114	-30.11	Vertical
915	93.30	24.00	4.90	32.00	90.20	114	-23.8	Horizontal

## QP value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
915	83.65	24.00	4.90	32.00	80.55	94	-13.45	Vertical
915	90.40	24.00	4.90	32.00	87.30	94	-6.7	Horizontal



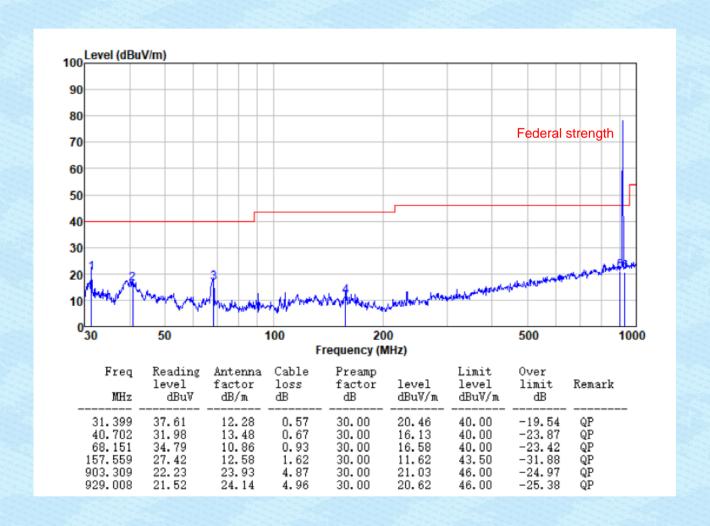
## 7.3.2 Spurious emissions and Band Edge

## ■ Below 30MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o), the test result no need to reported.

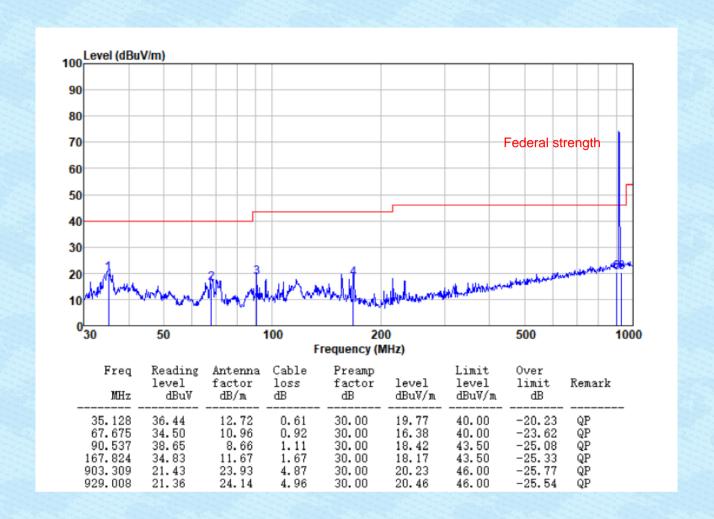
## **■** Below 1GHz

Test Frequency: 915MHz Polarization: Horizontal
---





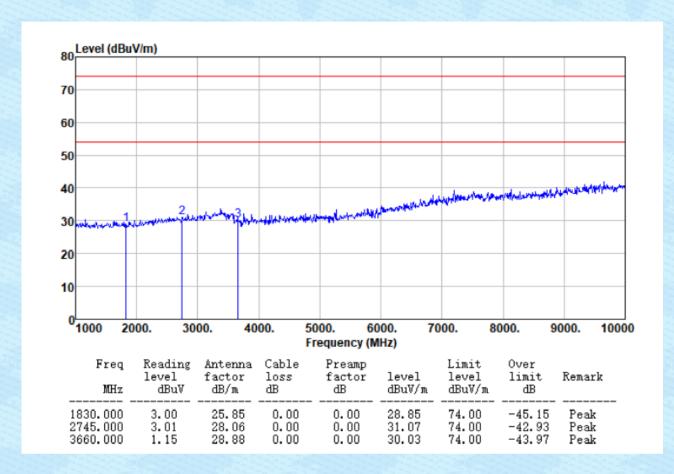
	Test Frequency:	915MHz	Polarization:	Vertical
--	-----------------	--------	---------------	----------





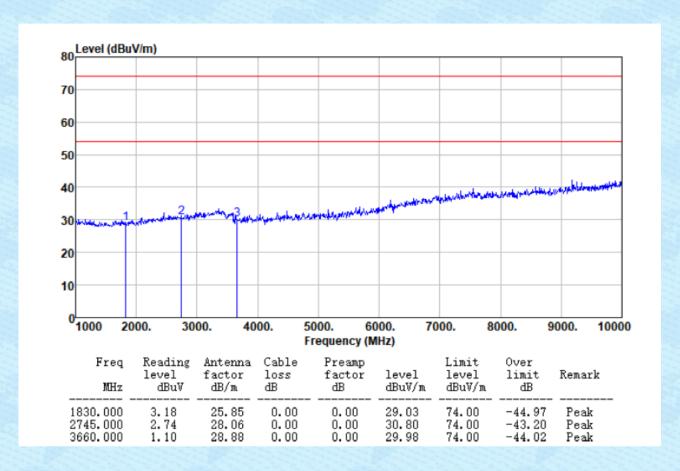
#### Above 1GHz

Test Frequency:	915MHz	Polarization:	Horizontal
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	Test Frequency:	915MHz	Polarization:	Vertical
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## Remarks:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor



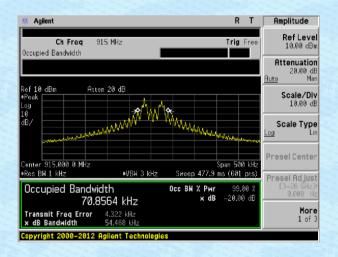
# 7.4 20dB Occupy Bandwidth

Test Requirement:	FCC Part15 C Section 15.249/15.215		
Test Method:	ANSI C63.10:2013		
Limit:	Operation Frequency range 902MHz~928MHz		
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane		
Test Instruments:	Refer to section 6.0 for details		
Test mode:	Refer to section 5.2 for details		
Test results:	Pass		

## **Measurement Data**

Test Frequency	20dB bandwidth(kHz)	Result
915MHz	54.468	Pass

## Test plot as follows:





# 8 Test Setup Photo

Reference to the appendix I for details.

9 EUT Constructional Details

Reference to the appendix II for details.

-----End-----