Shenzhen CTA Testing Technology Co., Ltd.

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

FCC PART 15 SUBPART C TEST REPORT

FCC PART 15.231

Report Reference No....... CTA22112400201 FCC ID....... : 2ATEO-DT310

Compiled by

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Date of issue...... Dec. 02, 2022

Testing Laboratory Name: Shenzhen CTA Testing Technology Co., Ltd.

Address....... Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community,

Fuhai Street, Bao'an District, Shenzhen, China

Applicant's name Dongguan Dogreat Electronic Technology Co., Ltd

Dalang Town, Dongguan City, Guangdong Province, China

Test specification:

Standard FCC Part 15.231

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Test item description: remote dog training collar

Trade Mark N/A

Manufacturer...... Dongguan Dogreat Electronic Technology Co., Ltd

Model/Type reference...... DT310

Modulation ASK

Ratings...... DC 3.7V From Battery and DC 5.0V From external circuit

Result..... PASS

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TEST REPORT

remote dog training collar **Equipment under Test**

DT310 Model /Type

Listed Models DT320, DT510, DT520, DT530, DT540, DT740, DT750, DT760, AT868

PCB board, structure and internal of these model(s) are the same, Model Declaration

So no additional models were tested.

Dongguan Dogreat Electronic Technology Co., Ltd Applicant

CTA TESTING 2nd Floor, Building B, Chongji Industrial Park, No.121, Fusheng Road, Address

Dalang Town, Dongguan City, Guangdong Province, China

Manufacturer Dongguan Dogreat Electronic Technology Co., Ltd

Address		chongji Industrial Park, No.121, Fusheng Road, In City, Guangdong Province, China
CTATES	-5	_{IN} G
Те	est Result:	PASS

It is not permitted to copy extracts of these test result without the written permission of the test laboratory. laboratory.



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1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15.231: Periodic operation in the band 40.66-40.70 MHz and above 70 MHz. ANSI C63.10:2013: American National Standard for Testing Unlicensed Wireless Devices

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SUMMARY

2.1 General Remarks

2.1 General Remarks		
Date of receipt of test sample	:	Nov. 24, 2022
Testing commenced on		Nov. 24, 2022
Testing definitioned on		1100. 24, 2022
Testing concluded on	:	Dec. 02, 2022

2.2 Product Description

Testing concluded on	: Dec. 02, 2022					
2.2 Product Description						
Product Name:	remote dog training collar					
Model/Type reference:	DT310					
Testing sample ID:	CTA221124002-1# (Engineer sample), CTA221124002-2#(Normal sample)					
Power supply:	DC 3.7V From Battery and DC 5.0V From external circuit					
Adapter information (Auxiliary test supplied by test Lab):	Model: EP-TA20CBC Input: AC 100-240V 50/60Hz Output: DC 5V 2A					
Modulation:	ASK					
Operation frequency:	433.92MHz					
Channel number:	1 ING					
Antenna type:	Built-in spring antenna					
Antenna gain:	0 dBi					

2.3 Equipment Under Test

Power supply system utilised

Power supply voltage	:	0	230V / 50 Hz	0	120V / 60Hz
,		0	12 V DC	0	24 V DC
cTl	Me	•	Other (specified in blank bel	ow))
162					

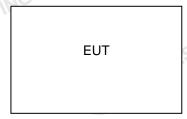
DC 3.7V From Battery and DC 5.0V From external circuit

2.4 Short description of the Equipment under Test (EUT)

This is a remote dog training collar.

For more details, refer to the user's manual of the EUT.

Block Diagram of Test Setup



2.6 Special Accessories

Follow auxiliary equipment(s) test with EUT that provided by the manufacturer or laboratory is listed as follow:

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Description	Manufacturer	Model	Technical Parameters	Certificate	Provided by
1	ES 1	/	/	/	/
TO US	/	/	STING	/	/

2.7 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for the device filing to comply with Section 15.231 of the FCC Part 15, Subpart C Rules.

2.8 Modifications

No modifications were implemented to meet testing criteria.

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3 TEST ENVIRONMENT

3.1 Address of the test laboratory

Shenzhen CTA Testing Technology Co., Ltd.

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao 'an District, Shenzhen, China

3.2 Test Facility

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

FCC-Registration No.: 517856 Designation Number: CN1318

Shenzhen CTA Testing Technology Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

Industry Canada Registration Number. Is: 27890 CAB identifier: CN0127

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

A2LA-Lab Cert. No.: 6534.01

Shenzhen CTA Testing Technology Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010.

Environmental conditions

CTA TESTING During the measurement the environmental conditions were within the listed ranges:

Radiated Emission:

-			
	Temperature:	The state of the s	25 ° C
	Humidity:		45 %
	•		
	Atmospheric pressure:		950-1050mbar
	INC		
CTP C	onducted testing:		
	Temperature:	1E51"	25 ° C

Conducted testing:

oridacted testing.		
Temperature:	25 ° C	
CTA		ING
Humidity:	44 %	ESTIN
		TATE
Atmospheric pressure:	950-1050mbar	
	H-12.	_ '

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Summary of measurement results

FCC and IC Requirements					
FCC Part 15.207	Conducted Emission	PASS			
FCC Part 15.231(a)(2)	Automatically Deactivate	PASS			
FCC Part 15.231(b)	Electric Field Strength of Fundamental Emission	PASS			
FCC Part 15.205 &15.209& 15.231(b)	Electric Field Strength of Spurious Emission	PASS			
FCC Part 15.231(c)	-20dB bandwidth	PASS			

Remark: The measurement uncertainty is not included in the test result.

3.5 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen CTA Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen CTA Testing Technology Co., Ltd.:

	Test	Range	Measurement Uncertainty	Notes
	Radiated Emission	30~1000MHz	4.10 dB	(1)
P	Radiated Emission	1~18GHz	4.32 dB	(1)
	Radiated Emission	18-40GHz	5.54 dB	(1)
	Conducted Disturbance	0.15~30MHz	3.12 dB	(1)

⁽¹⁾ This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



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3.6 Equipments Used during the Test

Test Equipment			Equipment	Calibration	Calibration	1
	Manufacturer	Model No.	No.	Date	Due Date	
LISN	R&S	ENV216	CTA-308	2022/08/03	2023/08/02	
LISN	R&S	ENV216	CTA-314	2022/08/03	2023/08/02	
EMI Test Receiver	R&S	ESPI	CTA-307	2022/08/03	2023/08/02	-
EMI Test Receiver	R&S	ESCI	CTA-306	2022/08/03	2023/08/02	, ,
Spectrum Analyzer	Agilent	N9020A	CTA-301	2022/08/03	2023/08/02	
Spectrum Analyzer	R&S	FSP	CTA-337	2022/08/03	2023/08/02	
Vector Signal generator	Agilent	N5182A	CTA-305	2022/08/03	2023/08/02	
Analog Signal Generator	R&S	SML03	CTA-304	2022/08/03	2023/08/02	3
Universal Radio Communication	CMW500	R&S	CTA-302	2022/08/03	2023/08/02	
Temperature and humidity meter	Chigo	ZG-7020	CTA-326	2022/08/03	2023/08/02	
Ultra-Broadband Antenna	Schwarzbeck	VULB9163	CTA-310	2021/08/07	2024/08/06	
Horn Antenna	Schwarzbeck	BBHA 9120D	CTA-309	2021/08/07	2024/08/06	
Loop Antenna	Zhinan	ZN30900C	CTA-311	2021/08/07	2024/08/06	
Horn Antenna	Beijing Hangwei Dayang	OBH100400	CTA-336	2021/08/07	2024/08/06	
Amplifier	Schwarzbeck	BBV 9745	CTA-312	2022/08/03	2023/08/02	
Amplifier	Taiwan chengyi	EMC051845B	CTA-313	2022/08/03	2023/08/02	
Directional coupler	NARDA	4226-10	CTA-303	2022/08/03	2023/08/02	×1
High-Pass Filter	XingBo	XBLBQ-GTA18	CTA-402	2022/08/03	2023/08/02	, \'
High-Pass Filter	XingBo	XBLBQ-GTA27	CTA-403	2022/08/03	2023/08/02	
Automated filter bank	Tonscend	JS0806-F	CTA-404	2022/08/03	2023/08/02	
Power Sensor	Agilent	U2021XA	CTA-405	2022/08/03	2023/08/02	
Amplifier	Schwarzbeck	BBV9719	CTA-406	2022/08/03	2023/08/02	
Con		CTA CTA	TES		TESTING)
	LISN EMI Test Receiver EMI Test Receiver Spectrum Analyzer Spectrum Analyzer Vector Signal generator Analog Signal Generator Universal Radio Communication Temperature and humidity meter Ultra-Broadband Antenna Horn Antenna Loop Antenna Horn Antenna Amplifier Amplifier Directional coupler High-Pass Filter High-Pass Filter Automated filter bank Power Sensor	EMI Test Receiver R&S EMI Test Receiver R&S Spectrum Analyzer Agilent Spectrum Analyzer R&S Vector Signal generator Agilent Analog Signal Generator CMW500 Universal Radio Communication Temperature and humidity meter Ultra-Broadband Antenna Schwarzbeck Horn Antenna Schwarzbeck Loop Antenna Zhinan Horn Antenna Beijing Hangwei Dayang Amplifier Schwarzbeck Amplifier Schwarzbeck Amplifier Taiwan chengyi Directional coupler NARDA High-Pass Filter XingBo Automated filter bank Power Sensor Agilent	LISN R&S ENV216 EMI Test Receiver R&S ESPI EMI Test Receiver R&S ESCI Spectrum Analyzer Agilent N9020A Spectrum Analyzer R&S FSP Vector Signal generator Agilent N5182A Analog Signal Generator Communication CMW500 R&S Temperature and humidity meter Ultra-Broadband Antenna Schwarzbeck BBHA 9120D Loop Antenna Chiga DBHA 9120D Loop Antenna Dayang OBH100400 Amplifier Schwarzbeck BBV 9745 Amplifier Taiwan chengyi EMC051845B Directional coupler NARDA 4226-10 High-Pass Filter XingBo XBLBQ-GTA27 Automated filter bank Power Sensor Agilent U2021XA Amplifier Schwarzbeck BBV9719	EMI Test Receiver R&S ESPI CTA-307 EMI Test Receiver R&S ESCI CTA-306 Spectrum Analyzer Agilent N9020A CTA-301 Spectrum Analyzer R&S FSP CTA-337 Vector Signal generator Agilent N5182A CTA-305 Analog Signal Generator R&S SML03 CTA-304 Universal Radio Communication CMW500 R&S CTA-302 Ultra-Broadband Antenna Schwarzbeck VULB9163 CTA-310 Horn Antenna Schwarzbeck BBHA 9120D CTA-309 Loop Antenna Zhinan ZN30900C CTA-311 Horn Antenna Beijing Hangwei Dayang Dayang BBV 9745 CTA-312 Amplifier Schwarzbeck BBV 9745 CTA-313 Directional coupler NARDA 4226-10 CTA-303 High-Pass Filter XingBo XBLBQ-GTA27 CTA-403 Automated filter bank CTA-405 Power Sensor Agilent U2021XA CTA-405	LISN R&S ENV216 CTA-314 2022/08/03 EMI Test Receiver R&S ESPI CTA-307 2022/08/03 EMI Test Receiver R&S ESCI CTA-306 2022/08/03 Spectrum Analyzer Agilent N9020A CTA-301 2022/08/03 Spectrum Analyzer R&S FSP CTA-307 2022/08/03 Vector Signal generator Agilent N5182A CTA-305 2022/08/03 Analog Signal Generator R&S SML03 CTA-304 2022/08/03 Universal Radio Communication CMW500 R&S CTA-302 2022/08/03 Temperature and humidity meter Chigo ZG-7020 CTA-302 2022/08/03 Ultra-Broadband Antenna Schwarzbeck VULB9163 CTA-310 2021/08/07 Horn Antenna Schwarzbeck BBHA 9120D CTA-309 2021/08/07 Loop Antenna Zhinan ZN30900C CTA-311 2021/08/07 Amplifier Schwarzbeck BBV 9745 CTA-312 2022/08/03	LISN R&S ENV216 CTA-314 2022/08/03 2023/08/02 EMI Test Receiver R&S ESPI CTA-307 2022/08/03 2023/08/02 EMI Test Receiver R&S ESCI CTA-306 2022/08/03 2023/08/02 Spectrum Analyzer Agilent N9020A CTA-301 2022/08/03 2023/08/02 Spectrum Analyzer R&S FSP CTA-337 2022/08/03 2023/08/02 Spectrum Analyzer R&S FSP CTA-337 2022/08/03 2023/08/02 Spectrum Analyzer Agilent N9020A CTA-301 2022/08/03 2023/08/02 Spectrum Analyzer Agilent N9182A CTA-305 2022/08/03 2023/08/02 Vector Signal generator Agilent N5182A CTA-305 2022/08/03 2023/08/02 Universal Radio Communication CMW500 R&S CTA-304 2022/08/03 2023/08/02 Universal Radio Communication CMW500 R&S CTA-302 2022/08/03 2023/08/02 Ultra-Broadbard Ante

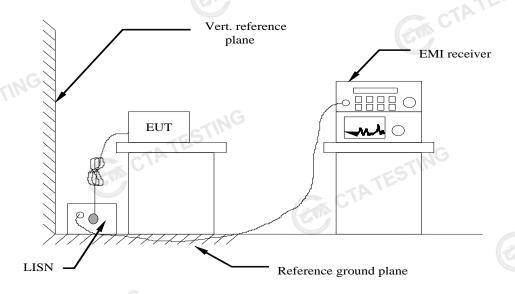


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TEST CONDITIONS AND RESULTS

4.1 AC Power Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

- 1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10-2013.
- 2 Support equipment, if needed, was placed as per ANSI C63.10-2013
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2013
- 4 The EUT received DC 12V power from adapter, the adapter received AC120V/60Hz and AC 240V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5 All support equipments received AC power from a second LISN, if any.
- 6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 8 During the above scans, the emissions were maximized by cable manipulation.

AC Power Conducted Emission Limit

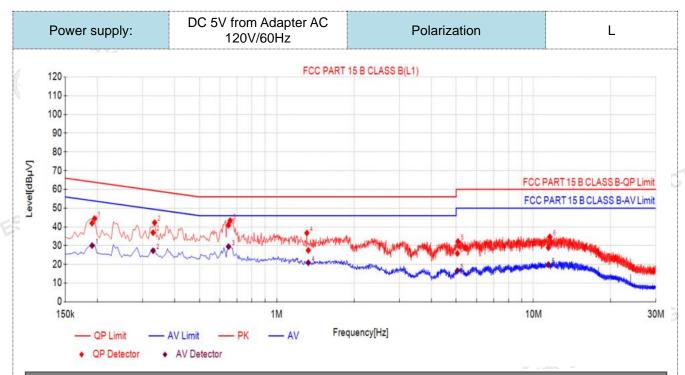
For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following:

Frequency range (MHz)	Limit	(dBuV)				
1 requericy rarige (Wi112)	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 RESULTS	CTAT	TATESTING				
Passed						
Please refer to the below test data:						

TEST RESULTS

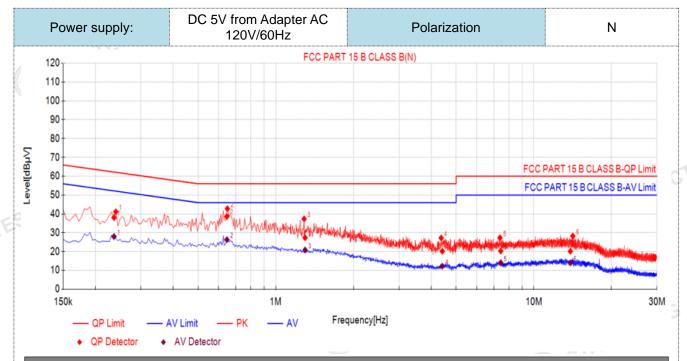
Passed

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I Data Lis	, ,										
Freq. [MHz]	Factor [dB]	QP Reading[dB μV]	QP Value [dΒμV]	QP Limit [dΒμV]	QP Margin [dB]	AV Reading [dΒμV]	ΑV Value [dBμV]	ΑV Limit [dBμV]	AV Margin [dB]	Verdict	
0.1908	10.50	31.47	41.97	64.00	22.03	19.52	30.02	54.00	23.98	PASS	
0.3297	10.50	26.44	36.94	59.46	22.52	16.77	27.27	49.46	22.19	PASS	
0.6487	10.50	30.38	40.88	56.00	15.12	18.97	29.47	46.00	16.53	PASS	
1.3275	10.50	16.99	27.49	56.00	28.51	10.38	20.88	46.00	25.12	PASS	
5.0586	10.50	15.30	25.80	60.00	34.20	6.12	16.62	50.00	33.38	PASS	
11.4441	10.50	18.39	28.89	60.00	31.11	9.38	19.88	50.00	30.12	PASS	
Note:1).Level (dBµV)= Reading (dBµV)+ Factor (dB) 2). Factor (dB)=insertion loss of LISN (dB) + Cable loss (dB) 3). Margin(dB) = Limit (dBµV) - Level (dBµV)											
	0.1908 0.3297 0.6487 1.3275 5.0586 11.4441 0.Level (dB	[MHz] [dB] 0.1908 10.50 0.3297 10.50 0.6487 10.50 1.3275 10.50 5.0586 10.50 11.4441 10.50 Clevel (dBµV)= Reference (dB)=insert	Freq. [MHz] Factor [dB] Reading[dB	Freq. [MHz] Factor [dB] Reading[dB μV] Value [dBμV] 0.1908 10.50 31.47 41.97 0.3297 10.50 26.44 36.94 0.6487 10.50 30.38 40.88 1.3275 10.50 16.99 27.49 5.0586 10.50 15.30 25.80 11.4441 10.50 18.39 28.89 Cevel (dBμV)= Reading (dBμV)+ Factor (dB)=insertion loss of LISN (Freq. [MHz] Factor [dB] Reading[dB μV] [dB μV] 0.1908 10.50 31.47 41.97 64.00 0.3297 10.50 26.44 36.94 59.46 0.6487 10.50 30.38 40.88 56.00 1.3275 10.50 16.99 27.49 56.00 5.0586 10.50 15.30 25.80 60.00 11.4441 10.50 18.39 28.89 60.00 0.00 0.Level (dB μV)= Reading (dB μV)+ Factor (dB Factor (dB)=insertion loss of LISN (dB) + Ca	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Freq. [MHz] Factor [dB] Reading[dB μV] [dB	Freq. [MHz] Factor [dB] Reading[dB μV] Value [dBμV] Limit [dBμV] Margin [dBμV] Value [dBμV] Limit [dBμV] Margin [dBμV] Value [dBμV] Limit [dBμV] Margin [dBμV] Verdict 0.1908 10.50 31.47 41.97 64.00 22.03 19.52 30.02 54.00 23.98 PASS 0.3297 10.50 26.44 36.94 59.46 22.52 16.77 27.27 49.46 22.19 PASS 0.6487 10.50 30.38 40.88 56.00 15.12 18.97 29.47 46.00 16.53 PASS 1.3275 10.50 16.99 27.49 56.00 28.51 10.38 20.88 46.00 25.12 PASS 5.0586 10.50 15.30 25.80 60.00 34.20 6.12 16.62 50.00 33.38 PASS 11.4441 10.50 18.39 28.89 60.00 31.11 9.38 19.88 50.00 30.12 PASS

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Final Data List											
NO.	Freq. [MHz]	Factor [dB]	QP Reading[dB μV]	QP Value [dBµV]	QP Limit [dΒμV]	QP Margin [dB]	AV Reading [dΒμV]	AV Value [dBµV]	ΑV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.2362	10.50	27.56	38.06	62.23	24.17	17.47	27.97	52.23	24.26	PASS
2	0.6468	10.50	28.15	38.65	56.00	17.35	15.81	26.31	46.00	19.69	PASS
3	1.2995	10.50	16.84	27.34	56.00	28.66	10.35	20.85	46.00	25.15	PASS
4	4.4219	10.50	9.66	20.16	56.00	35.84	1.75	12.25	46.00	33.75	PASS
5	7.4460	10.50	9.80	20.30	60.00	39.70	3.58	14.08	50.00	35.92	PASS
6	13.8642	10.50	9.65	20.15	60.00	39.85	3.49	13.99	50.00	36.01	PASS

Note:1).Level ($dB\mu V$)= Reading ($dB\mu V$)+ Factor (dB)

2). Factor (dB)=insertion loss of LISN (dB) + Cable loss (dB)

3). Margin(dB) = Limit (dBuV) - Leval (dBuV)

S).

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4.2 **Radiated Emission**

Limit

For intentional device, according to 15.209(a) the general requirement of field strength of radiated emission

from intentional radiators at a distance of 3 meters shall not exceed the following table.

	Frequency (MHz)	Distance (Meters)	Radiated (dBµV/m)	Radiated (µV/m)
	0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
	0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
	1.705-30	3	20log(30)+ 40log(30/3)	30
	30-88	3	40.0	100
TE	88-216	3	43.5	150
CTA	216-960	3	46.0	200
1	Above 960	3	54.0	500

In addition to the provisions of 15.231(b), the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

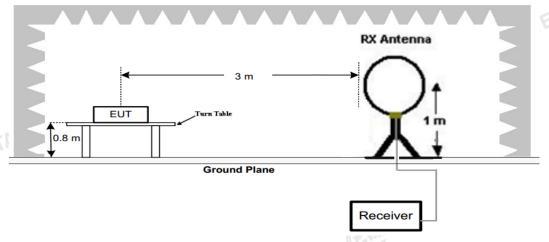
Funda- mental fre- quency (MHz)	Field strength of funda- mental (microvolts/ meter)	Field strength of spurious emissions (microvolts/meter)	
40.66– 40.70.	2,250	225	
70-130	1,250	125	
130-174	¹ 1,250 to 3,750	¹ 125 to 375	
174-260	3,750	375	
260-470	¹ 3,750 to 12,500	1375 to 1,250	
Above 470	12,500	1,250	

¹ Linear interpolations.

TATE CTATE [Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 260-470 MHz, 20*log(41.6667*433.890-7083.3333)=80.82dBuV/m The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]

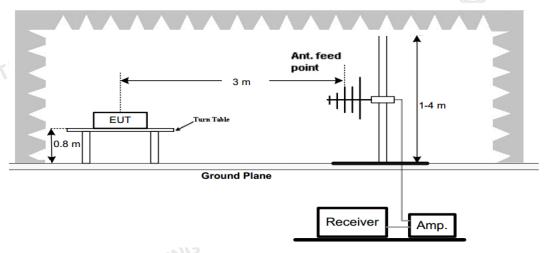
TEST CONFIGURATION

(A) Radiated Emission Test Set-Up, Frequency Below 30MHz

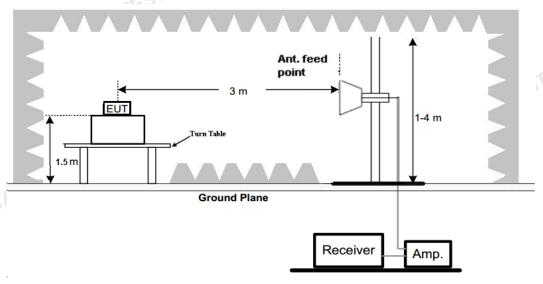


(B) Radiated Emission Test Set-Up, Frequency below 1000MHz

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(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



Test Procedure

- Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane, and above 1GHz measurement EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
- 2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0°C to 360°C to acquire the highest emissions from EUT
- And also, each emission was to be maximized by changing the polarization of receiving antenna both 3. CTATESTING horizontal and vertical.
- Repeat above procedures until all frequency measurements have been completed.

TEST RESULTS

The emissions from 30MHz to 5GHz are measured peak and average level, below 1 GHz measured QP level, detailed test data please see below. Besides, we tested 3 directions and recorded the worst data. CTATES

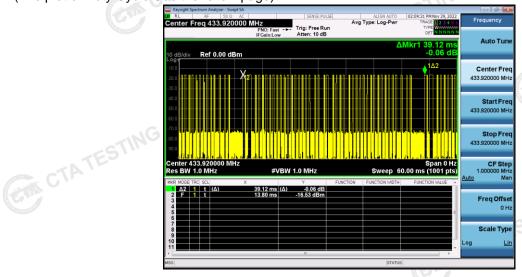
		1	,		1	1	NAME OF TAXABLE PARTY.		1
	Emission Styles	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Direction (H/V)
	Fundamental	433.92	98.02	-11.26	86.76	100.83	14.07	PK	Н
	Spurious	480.12	47.46	-12.49	34.97	46	11.03	PK	Н
	Harmonics	867.84	75.57	-17.69	57.88	80.83	22.95	PK	Н
	Harmonics	1301.76	50.21	5.29	55.50	74	18.50	PK	Н
	Fundamental	433.92	96.18	-11.26	84.92	100.83	15.91	PK	V
	Spurious	480.12	47.27	-12.49	34.78	46	11.22	PK	V
TES	Harmonics	867.84	74.45	-17.69	56.76	80.83	24.07	PK	V
CTATES	Harmonics	1301.76	49.95	5.29	55.24	74	18.76	PK	V
1			TES.						

Emission Styles	Frequency (MHz)	PK Level (dBuV/m)	AV Factor (dB/m)	AV Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Direction (H/V)
Fundamental	433.92	86.76	-12.30	74.46	80.83	6.37	Н
Harmonics	867.84	57.88	-12.30	45.58	60.83	15.25	Н
Harmonics	1301.76	55.50	-12.30	43.20	54	10.80	Н
STATES			-JAG				
Fundamental	433.92	84.92	-12.30	72.62	80.83	8.21	V
Harmonics	867.84	56.76	-12.30	44.46	60.83	16.37	V
Harmonics	1301.76	55.24	-12.30	42.94	54	11.06	V
					C/L		
Note:				TO THE REAL PROPERTY.	1		1110
. Level (dBuV/r	m)= Reading (d uV/m)= PK Lev	, ,	•)			CT CT

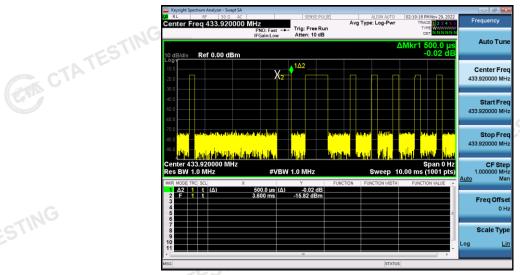
Note:

- Level (dBuV/m)= Reading (dBuV)+Factor(dB/m)
- AV Level (dBuV/m)= PK Level (dBuV/m)+ AV Factor(dB)
- In a transmit cycle 100ms period found burst 25pcs, the Duty Cycle can calculate as below: Duty Cycle= (0.500*1+0.800*1+0.200*41)/39.12=(0.500+0.800+8.2)/39.12=0.2428 AV Factor=20*log(Duty Cycle)=20*log(0.2428)=-12.30

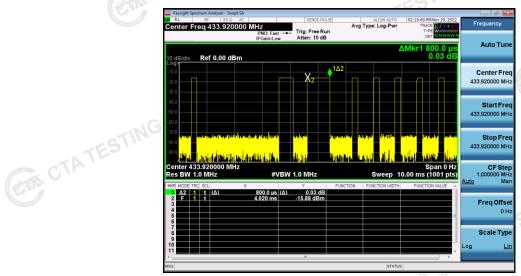
(The plot of Duty Cycle See the follow page)



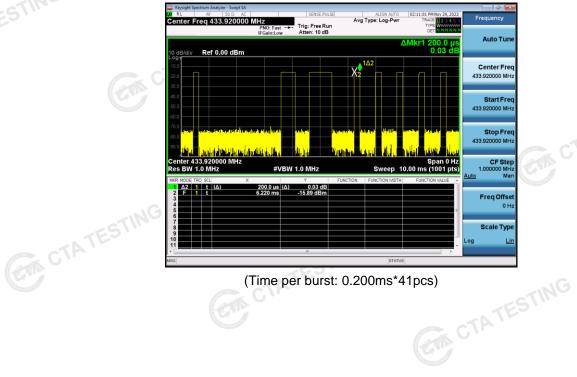
(Transmit cycle 39.12ms)



(Time per burst: 0.500ms*1pcs)



(Time per burst: 0.800ms*1pcs)



(Time per burst: 0.200ms*41pcs)

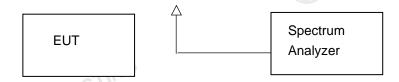
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4.3 20dB Bandwidth

Limit

According to 47 CFR 15.231(c) The bandwidth of the emission shall be no wider than 0.25% of the centre frequency for devices operating above 70MHz and below 900MHz. Bandwidth is determined at the points 20dB down from the modulated carrier.

Test Configuration



CTATESTING **Test Procedure**

The 20dB bandwidth and 99% bandwidth is measured with a spectrum analyzer connected via a receive antenna placed near the EUT while the EUT is operating in transmission mode.

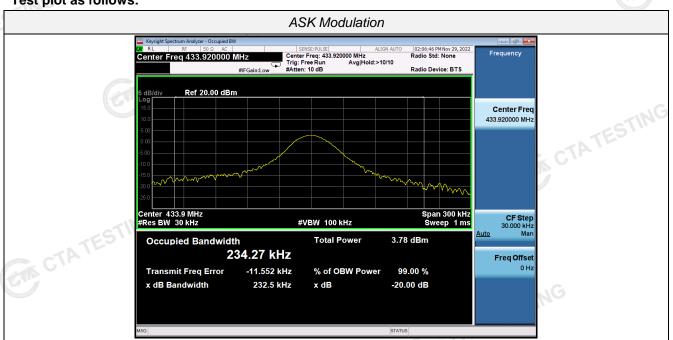
The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

The occupied bandwidth (OBW), that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Test Results

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Modulation	Channel Frequency (MHz)	99% OBW (KHz)	20dB bandwidth (KHz)	Limit (KHz)	Result
ASK	433.92	234.27	232.50	0.25%*433.92=1084.8	Pass

Test plot as follows:





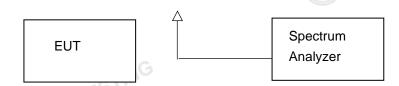
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Deactivation Time 4.4

Limit

According to FCC §15.231(a)(2), A transmitter activated automatically shall cease transmission within 5 ...s CTATESTING seconds after activation.

Test Configuration



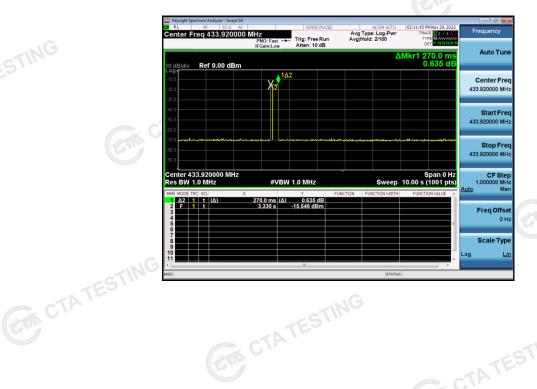
CTATESTING **Test Procedure**

- The EUT was placed on a wooded table which is 0.8m height and close to receiver antenna of spectrum 1. analyzer.
- The spectrum analyzer resolution bandwidth was set to 1 MHz and video bandwidth was set to 1 MHz to encompass all significant spectral components during the test. The spectrum analyzer was operated in linear scale and zero span mode after tuning to the transmitter carrier frequency.

TEST RESULTS

Note: The transmitter was automatically activated, and the carrier frequency 433.8828MHz:

			2011112.
Frequency	One transmission time	Limit(S)	Result
(MHz)	(S)	Littill(S)	Result
433.92	0.270	5	Pass



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4.5 Antenna Requirement

Standard Applicable

According to FCC Part 15C 15.203

- a) An intentional radiator shall be de-signed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
- b) 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.

Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Antenna Connected Construction

The antenna used in this product is an Internal Antenna, The directional gains of antenna used for transmitting is 0 dBi.

Remark: The antenna gain is provided by the customer, if the data provided by the customer is not accurate, Shenzhen CTA Testing Technology Co., Ltd. does not assume any responsibility.



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5 Test Setup Photos of the EUT







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6 Photos of the EUT







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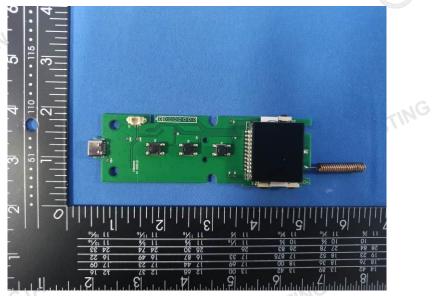


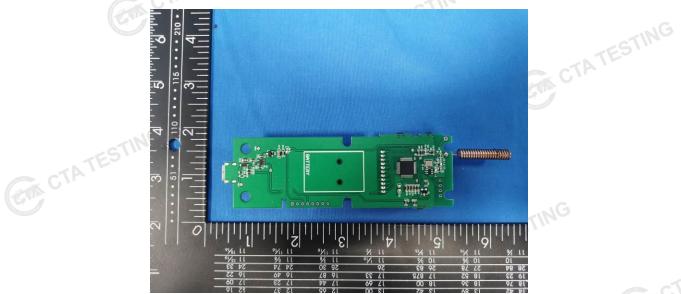
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Antenna

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