

FCC SDoC TEST REPORT Shenzhen Damin Energy Technology Co., Ltd Jump Starter Test Model: CAT797

Prepared for Address

Prepared by Address

Tel Fax Web Mail

Date of receipt of test sample Number of tested samples Sample No. Date of Test Date of Report

: Shenzhen Damin Energy Technology Co., Ltd

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February 28, 2023 1 A022723066 February 28, 2023 ~ April 20, 2023 :

March 28, 2024

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2

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	C SDoC TEST REPORT	Testin				
	ubpart B, Class B(SDoC), AN	ISI C63.4 -2014				
Report Reference No : LCSA022723066E001						
Date Of Issue : March 28, 2024						
Testing Laboratory Name : Shenzhen LCS Compliance Testing Laboratory Ltd.						
 Address Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □ 						
Applicant's Name : د	Shenzhen Damin Energy Technol	ogy Co., Ltd				
Address : C	3717, Tang Shang Building, No. 35 Guangshen Road, Shangxing Comi 3aoan District, Shenzhen City, Gua	munity, Xinqiao Street,				
Test Specification						
Standard FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014						
Test Report Form No [:] LCSEMC-1.0						
TRF Originator : S	Shenzhen LCS Compliance Testing	Laboratory Ltd.				
Master TRF : [Dated 2011-03					
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Test Item Description	Jump Starter					
Test Model :	CAT797					
Trade Mark	N/A					
Ratings :	Please Refer to Page 7					
Result :	Positive					
Compiled by:	Supervised by:	Approved by:				
Coco Song	Baron Wen	Jains Frang				
Coco Song/ File administrators	Baron wen/Technique principal	Gavin Liang/ Manager				



FCC -- TEST REPORT

Test Report No. :	LCSA022723066E001	March 28, 2024
•		Date of issue

Τ

Test Model	: CAT797
EUT	: Jump Starter
	 Shenzhen Damin Energy Technology Co., Ltd B717, Tang Shang Building, No. 35 Xinqiao Section of Guangshen Road, Shangxing Community, Xinqiao Street, Baoan District, Shenzhen City, Guangdong Province, China
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Telephone Fax	:/ / ISI LOS Testing Lab ISI LOS Testing Lab ISI LOS Testing Lab

Test Result according to the standards on page 6: Positive

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.





Revision History

Revision Issue Date		Revisions Content	Revised By
000	April 21, 2023	Initial Issue	
001 De travérille de	March 28, 2024	Declared by applicant, other information and results contained in this report are not changed, original test report become invalid.	Coco Song





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TABLE OF CONTENTS

Test Report Description	Page
1.1. Description of Standards and Results	6
2.1. Description of Device (EUT)	7
2.2. Support equipment List	
2.3. Description of Test Facility	7
2.4. Statement of the Measurement Uncertainty	
2.5. Measurement Uncertainty	
3.1. POWER LINE CONDUCTED EMISSION MEASUREMENT	9
3.2. Radiated emission Measurement	
5. EXTERNAL AND INTERNAL PHOTOS OF THE EUT	







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1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION					
Description of Test Item	Limits	Results			
Conducted disturbance at mains terminals	FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014		PASS		
Radiated disturbance	FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014		PASS		
N/A is an abbreviation for Not Ap	Lintesting	LCS Tes	ting		

Test mode:		
Mode 1	Charging	Record
Mode 2	Full Load	Record
***Note: All test modes were tested, but we only recorded the worst case in this report.		



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2. GENERAL INFORMATION

2.1. Description of	Device (EUT)
EUT	: Jump Starter

Trade Mark : N/A

Test Model : CAT797

Power Supply

 Rating Capacity: 64000mAH Starting voltage :12/24V Starting current: 3000A (12V) — 1500A(24V) Input voltage: 19V-(3A) USB output: QC 18W Type-c: PD45W DC output: 12V-16.5V Max 10A Vehicle charging source port: 12-16.5V Max 10A

Highest internal freq. : Fx≤108MHz

Highest internal frequency (Fx)	Highest measured frequency	CTING
Fx ≤1.705 MHz	30 MHz	TESI
1.705 MHz < Fx ≤ 108 MHz	1 GHz	9421
108 MHz < Fx ≤ 500 MHz	2 GHz	
500 MHz < Fx ≤ 1000 MHz	5 GHz	4000
Fx > 1 GHz	5 × Fx up to a maximum of 40 GHz	TPPR

2.2. Support equipment List

Name	Manufacturers	M/N	S/N
Adapter			

2.3. Description of Test Facility

Site Description EMC Lab.

: NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024.

CAB identifier is CN0071.

CNAS Registration Number is L4595.





2.4. Statement of the Measurement Uncertainty

Page 8 of 32

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 CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the LCS 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.

2.5. Measurement Uncertainty

	Test	Parameters	Expanded Uncertainty (Ulab)	Expanded Uncertainty (Ucispr)
2	Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 2.63 dB ± 2.35 dB	\pm 3.8 dB \pm 3.4 dB
	Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.68 dB	N/A
	Radiated Emission	Level accuracy (30MHz to 1000MHz)		± 5.3 dB
	Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	\pm 5.2 dB

(1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.

(2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.







3. TEST RESULTS

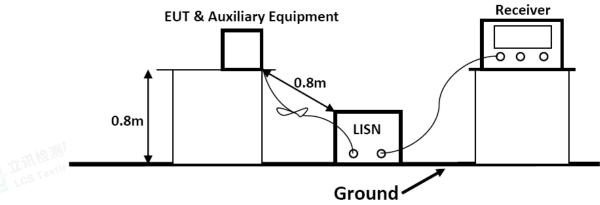
3.1. POWER LINE CONDUCTED EMISSION MEASUREMENT

3.1.1. Test Equipment

The following test equipments are used during the power line conducted measurement:

	The second se		Ŭ T	•		
Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Software	Farad	EZ	/	N/A	N/A
2	EMI Test Receiver	R&S	ESR3	102312	2023-02-25	2024-02-24
3	Artificial Mains	R&S	ENV216	101288	2022-06-16	2023-06-15
4	Pulse Limiter	R&S	ESH3-Z2	102750-NB	2022-08-17	2023-08-16
	0.165		0.169			

3.1.2.Block Diagram of Test Setup



3.1.3.Test Standard

Power Line Conducted Emission Limits

Frequency				Limit (dBµV)
(MHz)		Quasi-peak Level	Average Level	
0.15	~	0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50	~	5.00	56.0	46.0
5.00	~	30.00	60.0	50.0
NOTE1 The lower limit shall apply at the transition frequencies				

NOTE1-The lower limit shall apply at the transition frequencies. NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

3.1.4.EUT Configuration on Test

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.





3.1.5.Operating Condition of EUT

- 3.1.5.1.Setup the EUT as shown on Section 3.1.2
- 3.1.5.2. Turn on the power of all equipments.
- 3.1.5.3.Let the EUT work in measuring Mode 1 and measure it.

Page 10 of 32

3.1.6.Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides 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 C63.4-2014 on Conducted Emission Measurement.

The bandwidth of the test receiver is set at 9kHz.

The frequency range from 150kHz to 30MHz is investigated 3.1.7.Test Results

PASS.

The test result please refer to the next page.



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Test Model	CAT797	Test Mode	Mode 1	
Environmental Conditions	24.3℃, 53.5% RH	Test Engineer	Xf Peng	
Pol	Line	Test Voltage	AC 120V/60Hz	
80.0 dBuV				
70				
60		FCC PART 158	Conduction(QP)	
50		FCC PART 158	Conduction(AVG)	
	7	9 11		
30	Martin Martin Martin Contraction of B		peal	
20			www.William avg	
10				
0				
-10				
-20				
0.150 0.500	0.800 (MHz)	5.000	30.000	
No. Mk. Freq. Level Fa	orrect Measure- actor ment Limit Mar	-		
	dB dBuV dBuV dB		it	
	9.63 51.79 64.83 -13 9.63 33.10 54.01 -20			
	9.63 28.65 51.12 -20			
	0.63 41.41 60.93 -19			
	0.66 37.35 56.00 -18			
6 0.6134 4.84 19	0.66 24.50 46.00 -21	.50 AVG		
	9.68 34.28 56.00 -21			
	0.68 23.23 46.00 -22			
	9.70 34.64 56.00 -21			
	9.70 23.01 46.00 -22			
	0.79 39.82 60.00 -20 0.79 27.90 50.00 -22			
	ain= Reading level + Co			

Note: Margin= Reading level + Correct factor – Limit Correct Factor= Lisn Factor+Cable Factor+Limiter Factor



107 *



Report No.: LCSA022723066E001

Test Model	CAT797	Test Mode	Mode 1		
Environmental Conditions	24.3℃, 53.5% RH	Test Engineer	Xf Peng		
Pol	Neutral	Test Voltage	AC 120V/60Hz		
80.0 dBuV 70 60 50 40		11	Conduction(AV 5)		
	war while man rate to republic more		pear and a second se		
	8		AVE		
20			MAC		
10					
0					
-10					
-20 0.150 0.500	0.800 (MHz)		30.00		
0.000	0.800 (MHz) Correct Measure-	5.000	50.00		
	Factor ment Limit	Margin			
MHz dBuV	dB dBuV dBuV	dB Detector Comm	nent		
1 * 0.1726 31.92	19.63 51.55 64.83	-13.28 QP			
2 0.1906 12.39	19.63 32.02 54.01	-21.99 AVG			
3 0.2941 22.27	19.63 41.90 60.41	-18.51 QP			
4 0.3256 8.22	19.63 27.85 49.56	-21.71 AVG			
5 0.6496 15.25	19.65 34.90 56.00	-21.10 QP			
6 0.6631 4.79	19.65 24.44 46.00	-21.56 AVG			
7 1.6441 15.85	19.67 35.52 56.00	-20.48 QP			
8 1.8511 3.83	19.68 23.51 46.00	-22.49 AVG			
	19.80 23.99 50.00	-26.01 AVG			
	19.80 35.09 60.00	-24.91 QP			
11 8.4481 20.14	19.84 39.98 60.00	-20.02 QP			
12 8.6101 7.66	19.84 27.50 50.00	-22.50 AVG			

Note: Margin= Reading level + Correct factor – Limit Correct Factor= Lisn Factor+Cable Factor+Limiter Factor Note: Pre-Scan all mode, Thus record worse case mode result in this report.





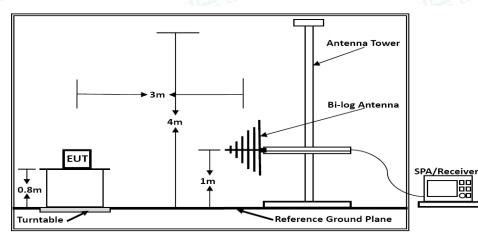
3.2. Radiated emission Measurement

3.2.1. Test Equipment

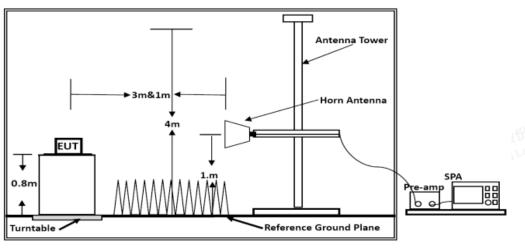
The following test equipments are used during the radiated emission measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Software	AUDIX	E3	/	N/A	N/A
2	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2021-09-12	2024-09-11
3	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2021-09-05	2024-09-04
4	EMI Test Receiver	R&S	ESR3	102311	2022-08-17	2023-08-16
5	Broadband Preamplifier	/	BP-01M18G	P190501	2022-06-16	2023-06-15

3.2.2. Block Diagram of Test Setup







Above 1GHz



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3.2.3. Radiated Emission Limit

Limits for Radiated Disturbance Below 1GHz

FREQUENCY	DISTANCE	FIELD STRE	NGTHS LIMIT
MHz	Meters	μV/m	dB(µV)/m
30 ~ 88	3	100	40
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46
960 ~ 1000	3	500	54

Remark : (1) Emission level (dB) μ V = 20 log Emission level μ V/m

- (2) The smaller limit shall apply at the cross point between two frequency bands.
 - (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

Limits for Radiated Emission Above 1GHz			
Frequency Distance Peak Limit Average Limit			
(MHz) (Meters) (dBµV/m) (dBµV/m)			
Above 1000 3 74 54			
***Note: The lower limit applies at the transition frequency.			

3.2.4. EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

3.2.5. Operating Condition of EUT

3.2.5.1.Setup the EUT as shown in Section 3.2.2.

3.2.5.2.Let the EUT work in test Mode 1 and measure it.

3.2.6. Test Procedure

EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated by-log antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2014 on radiated emission measurement.



3.2.7. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of spectrum analyzer and receiver

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB/VB 200Hz/1KHz for QP/AVG
Start ~ Stop Frequency	150kHz~30MHz / RB/VB 9kHz/30KHz for QP/AVG
Start ~ Stop Frequency	30MHz~1000MHz / RB/VB 120kHz/1MHz for QP

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10 th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average

The frequency range from 30MHz to 1000MHz and above 1000MHz is checked.

3.2.8. Radiated Emission Noise Measurement Result

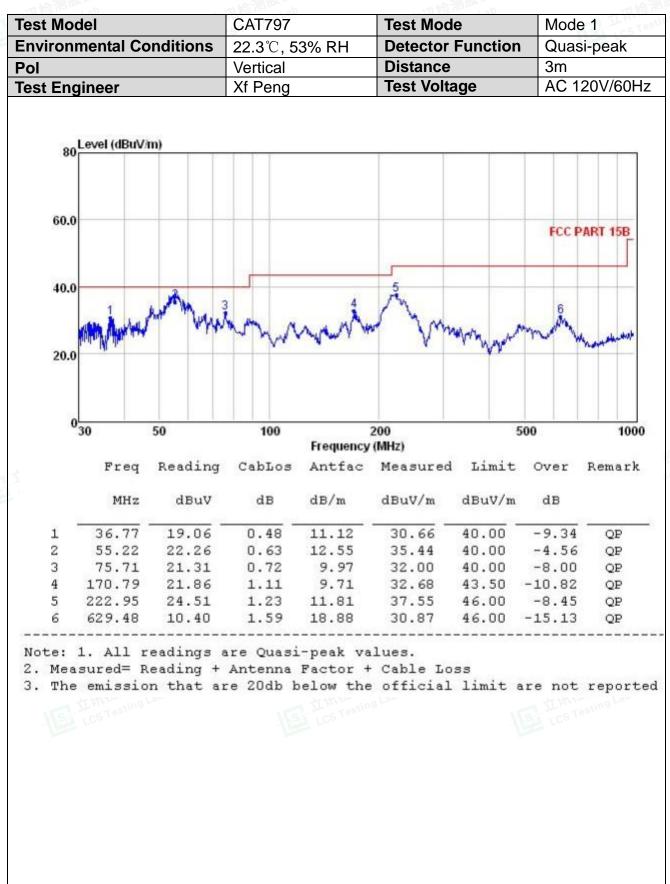
PASS.

The scanning waveforms please refer to the next page.



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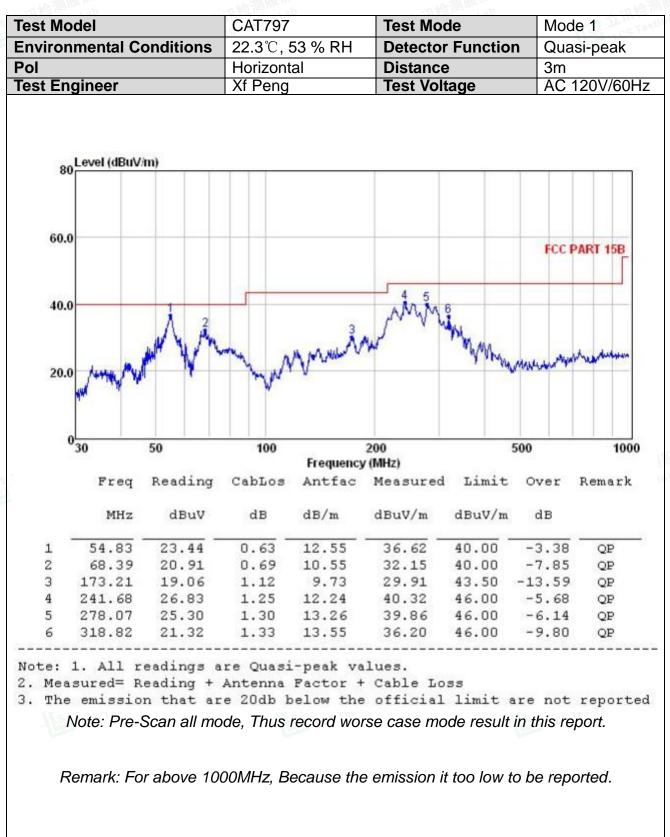








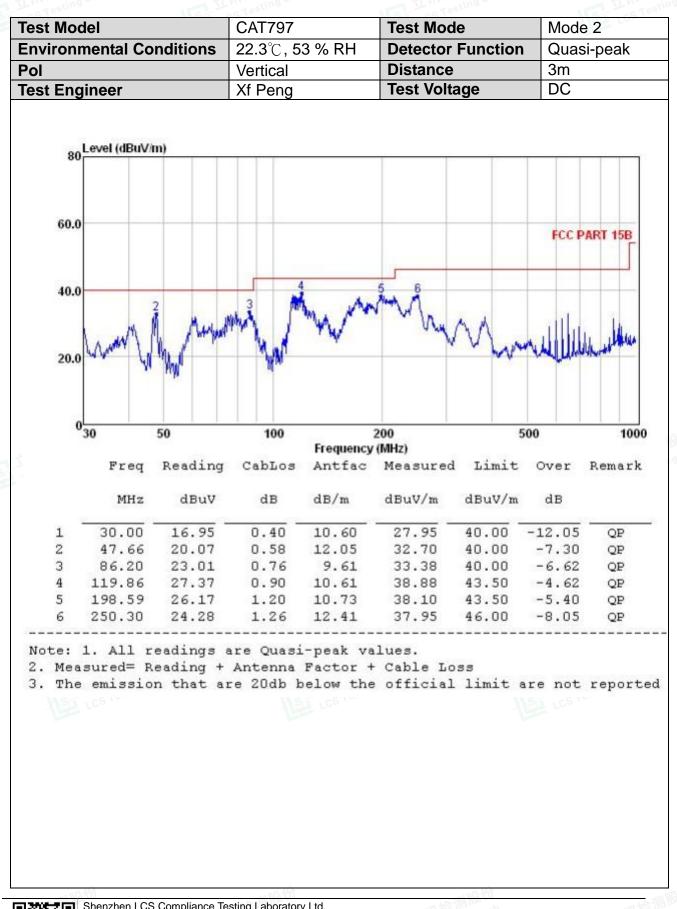






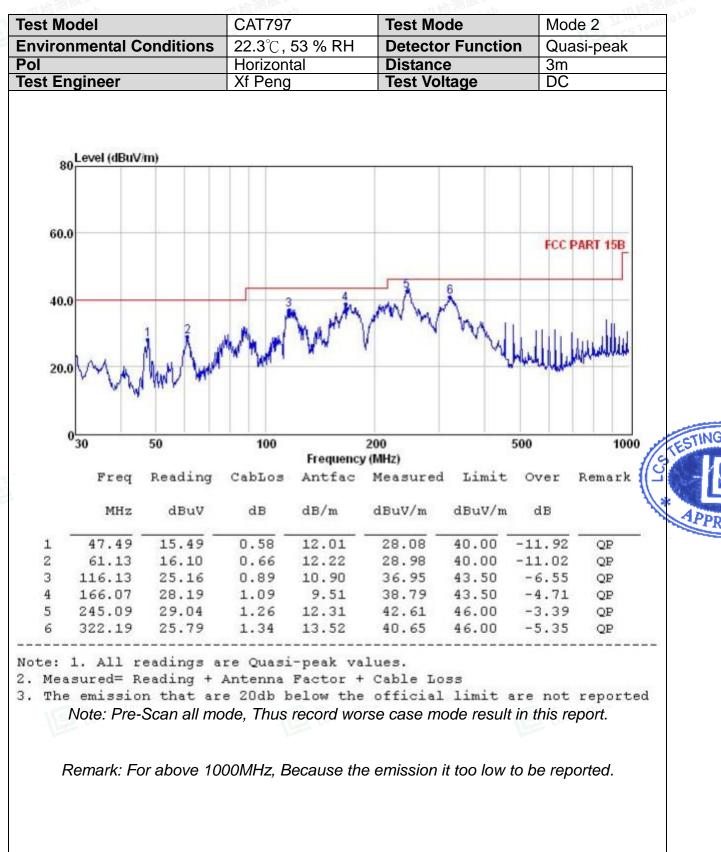






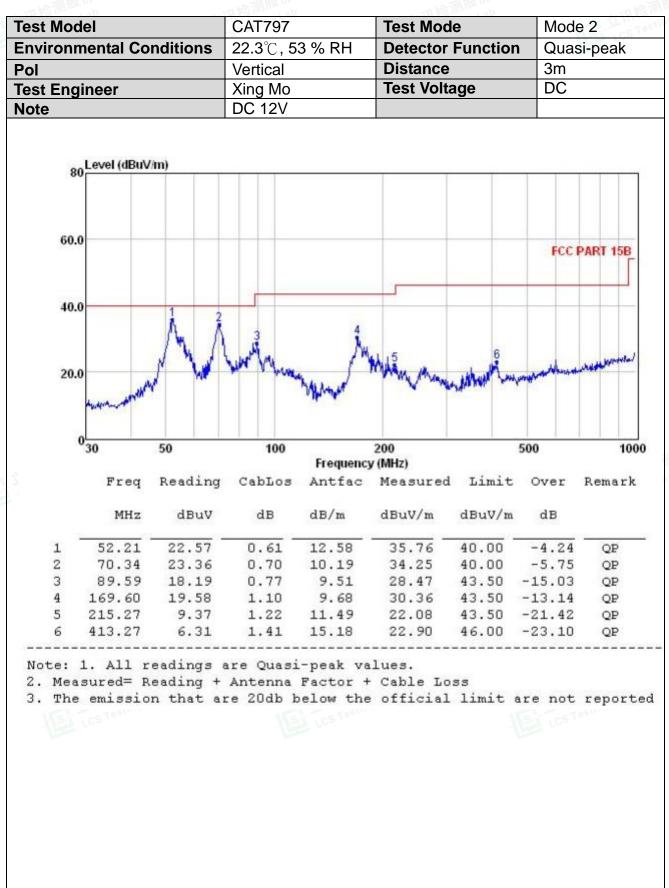






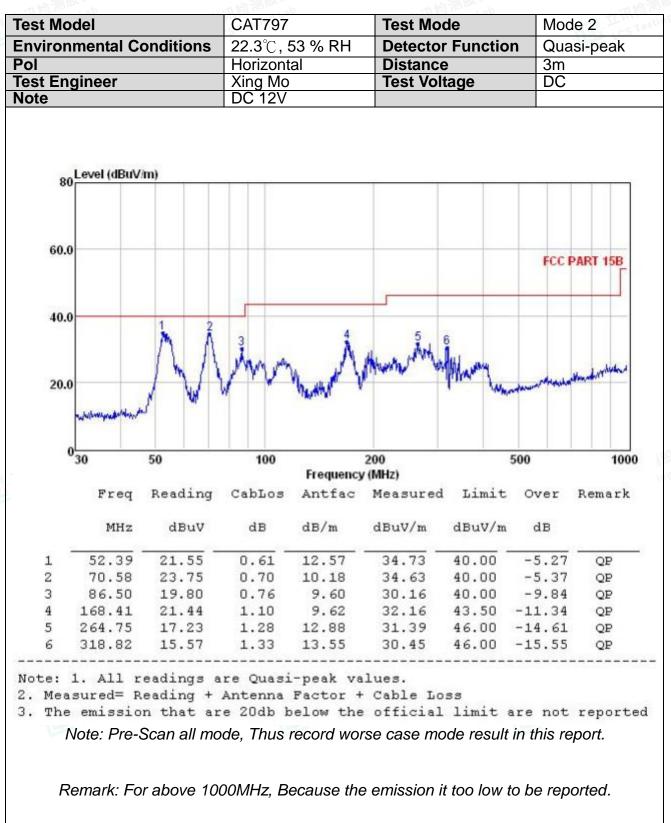






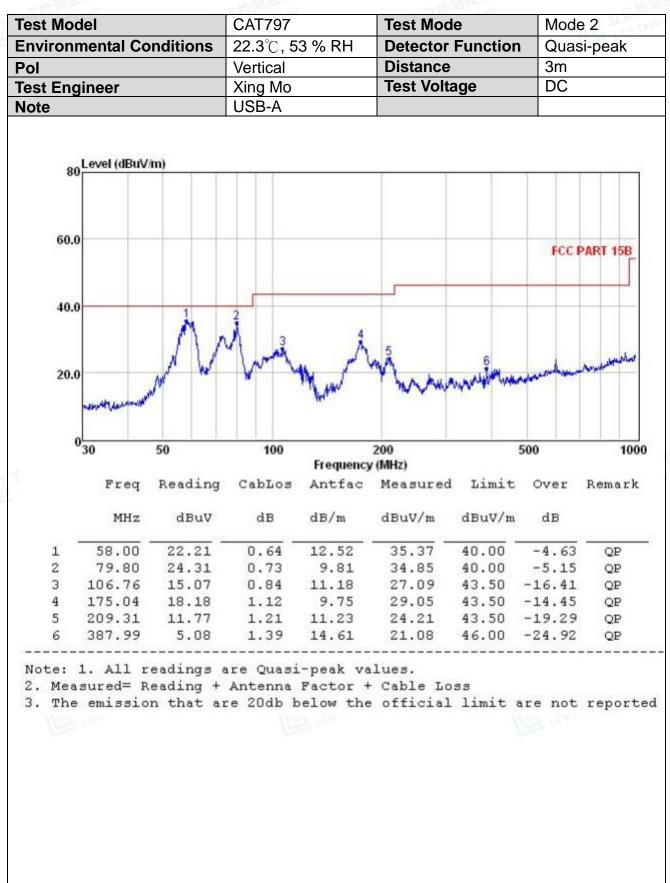








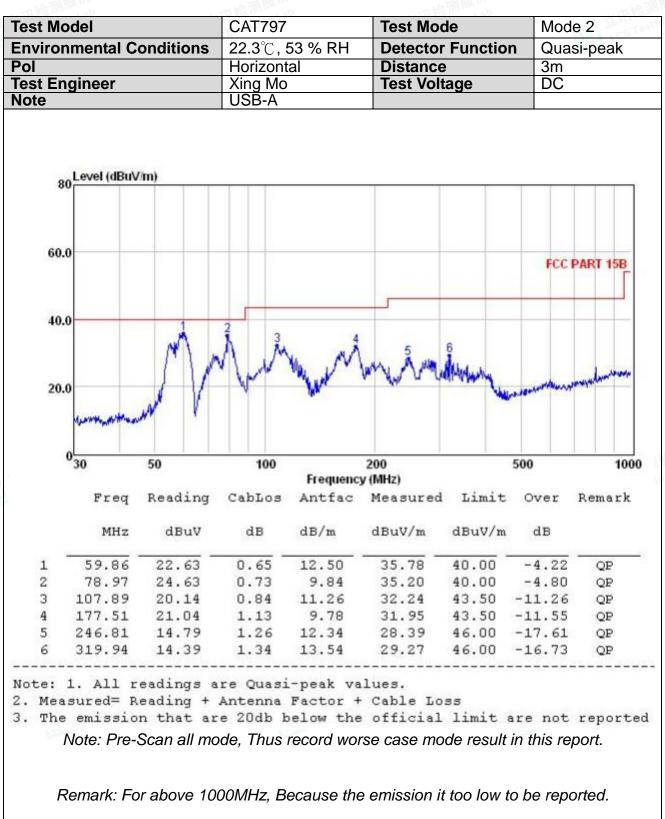






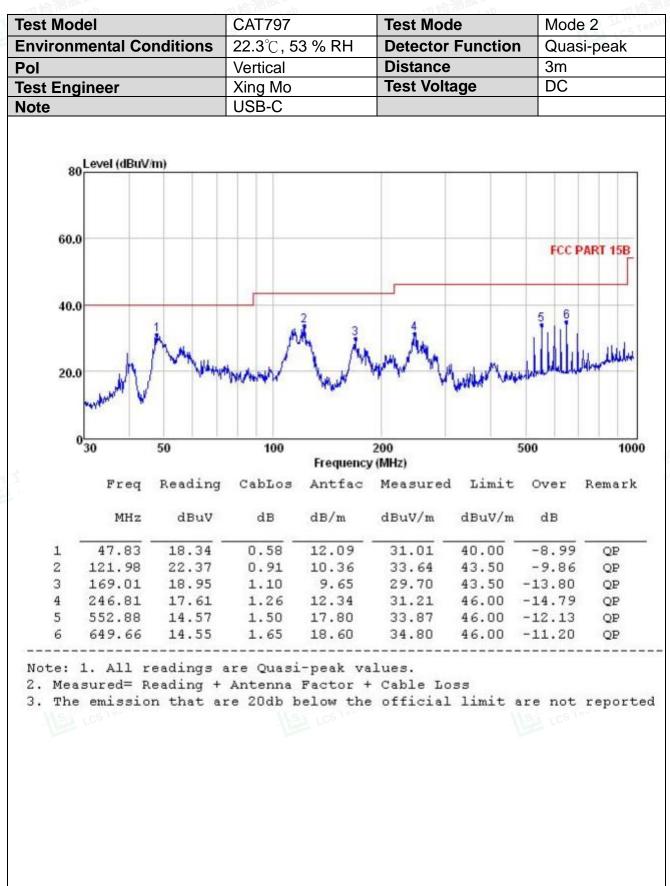






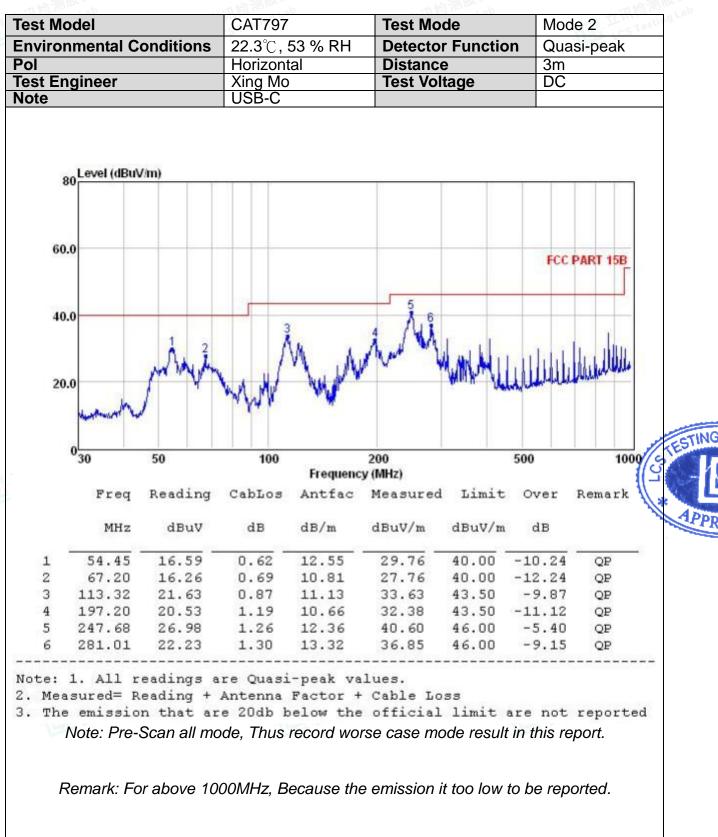
















4. PHOTOGRAPH

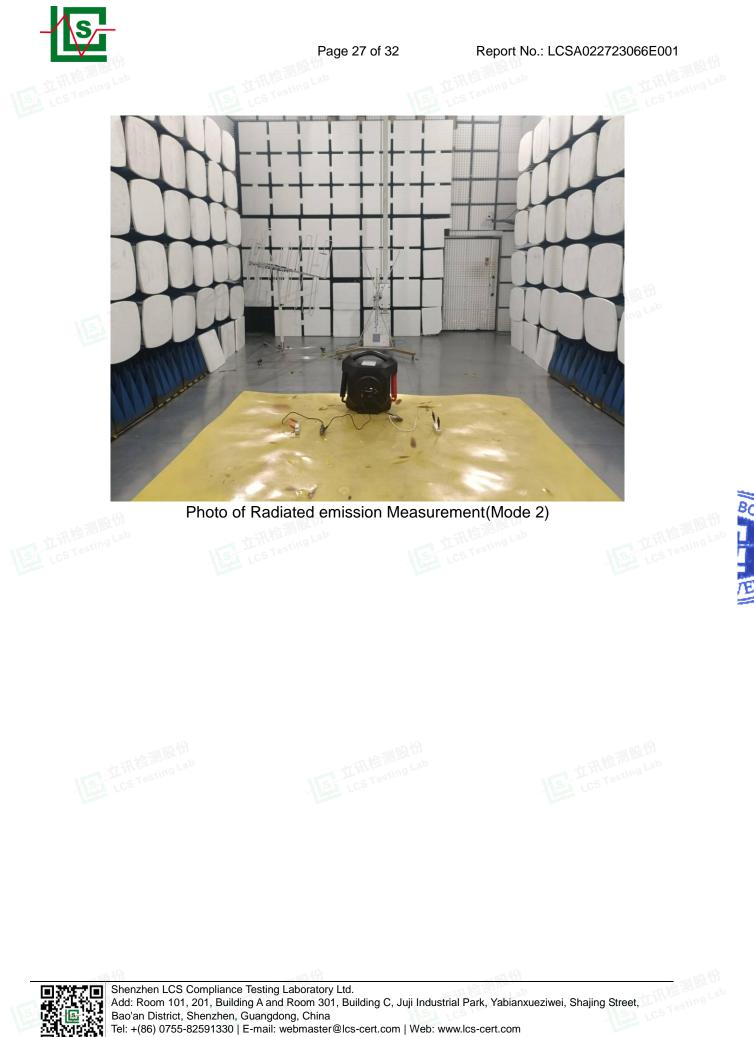


Photo of Power Line Conducted Measurement



Photo of Radiated emission Measurement(Mode 1)

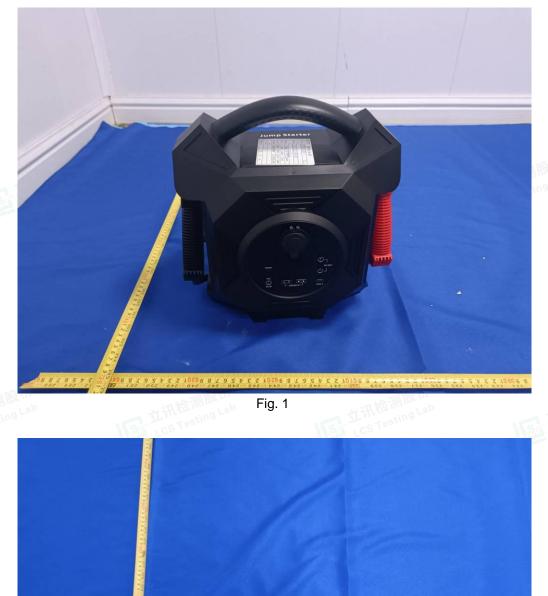




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Fig. 2



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Fig. 3



Fig. 4



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Fig. 5



Fig. 6



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Page 31 of 32



Fig. 7





Fig. 8



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Fig. 9





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Fig. 10 --THE END OF TEST REPORT------



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