

TEST REPORT

Applicant: Yongkang Yizhuo Auto Jewelry Co., Ltd.

Address of Applicant: No. 2, Lidian Village, Xicheng Street, Yongkang City, Zhejiang Province, China

Manufacturer: Yongkang Yizhuo Auto Jewelry Co., Ltd.

Address of Manufacturer: No. 2, Lidian Village, Xicheng Street, Yongkang City, Zhejiang Province, China

Equipment Under Test (EUT)

Product Name: Car Vacuum Cleaner

Model No.: XH1

Trade Mark: ZhongHui

Applicable standards: FCC CFR Title 47 Part 15 Subpart B

Date of sample receipt: October 31, 2018

Date of Test: October 31- November 05, 2018

Date of report issued: November 05, 2018

Test Result : PASS *

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

Authorized Signature:

A handwritten signature in black ink is written over a circular blue stamp. The stamp contains the text 'GTS' in the center, 'GLOBAL UNITED TECHNOLOGY SERVICES' around the top inner edge, and '2018-11-05' at the bottom. The signature is written in a cursive style.

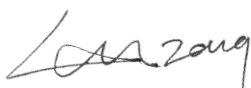
Robinson Lo
Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	November 05, 2018	Original

Prepared by:



Date:

November 05, 2018

Project Engineer

Reviewed by:



Date:

November 05, 2018

Reviewer

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4 Test Summary

Test Item	Test Requirement	Test Method	Class / Severity	Result
Conducted Emission	FCC Part15.107	ANSI C63.4	Class B	PASS
Radiated Emissions #	FCC Part15.109	ANSI C63.4	Class B	PASS

Remark:

1. Pass: The EUT complies with the essential requirements in the standard.
2. N/A: Not applicable.
3. # Refer to FCC Part 15.33 (b)(1) conditional testing procedure :

The highest frequency generated or used in the EUT	Test frequency range of Radiated emission
<108MHz	30MHz ~ 1GHz
108MHz ~ 500MHz	30MHz ~ 2GHz
500MHz ~ 1GHz	30MHz ~ 5GHz
>1GHz	30MHz ~ 5th harmonic of the highest frequency or 40 GHz, whichever is lower.

The highest frequency of the internal sources of the EUT is less than 108MHz.

5 General Information

5.1 General Description of EUT

Product Name:	Car Vacuum Cleaner
Model No.:	XH1
Power supply:	LI-ION CHARGER Model: GA-126080 Input: AC100-240V, 50/60Hz Output: DC9V, 800mA

5.2 Test mode and Test voltage

Test mode:	
On mode	Keep the EUT in the operation status
Charge mode	Keep the EUT in the charge status
Test voltage:	
AC120V/60Hz	

5.3 Description of Support Units

None.

5.4 Deviation from Standards

None.

5.5 Abnormalities from Standard Conditions

None.

5.6 Test Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> ● FCC —Registration No.: 381383 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. Registration No.: 381383, January 08, 2018. ● Industry Canada (IC) —Registration No.: 9079A-2 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 with Registration No.: 9079A-2, August 15, 2016
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5.7 Test Location

The test was performed at:
Global United Technology Services Co., Ltd. Address: No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102 Tel: 0755-27798480 Fax: 0755-27798960

6 Test Instruments list

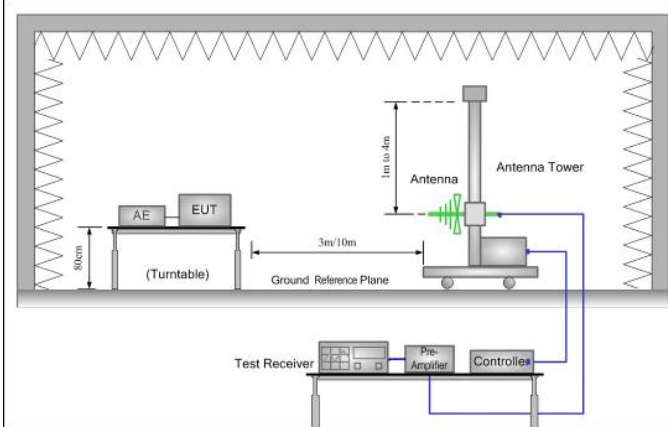
Radiated Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 03 2015	July. 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 27 2018	June. 26 2019
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 27 2018	June. 26 2019
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 27 2018	June. 26 2019
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 27 2018	June. 26 2019
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 27 2018	June. 26 2019
9	Coaxial Cable	GTS	N/A	GTS211	June. 27 2018	June. 26 2019
10	Coaxial cable	GTS	N/A	GTS210	June. 27 2018	June. 26 2019
11	Coaxial Cable	GTS	N/A	GTS212	June. 27 2018	June. 26 2019
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 27 2018	June. 26 2019
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 27 2018	June. 26 2019
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 27 2018	June. 26 2019
15	Band filter	Amindeon	82346	GTS219	June. 27 2018	June. 26 2019
16	Power Meter	Anritsu	ML2495A	GTS540	June. 27 2018	June. 26 2019
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 27 2018	June. 26 2019
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 27 2018	June. 26 2019
19	Splitter	Agilent	11636B	GTS237	June. 27 2018	June. 26 2019
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 27 2018	June. 26 2019

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.16 2014	May.15 2019
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 27 2018	June. 26 2019
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 27 2018	June. 26 2019
4	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June. 27 2018	June. 26 2019
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	KTJ	TA328	GTS233	June. 27 2018	June. 26 2019
8	Absorbing clamp	Elektronik- Feinmechanik	MDS21	GTS229	June. 27 2018	June. 26 2019

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	June. 27 2018	June. 26 2019
2	Barometer	ChangChun	DYM3	GTS255	June. 27 2018	June. 26 2019

7 Test Results and Measurement Data

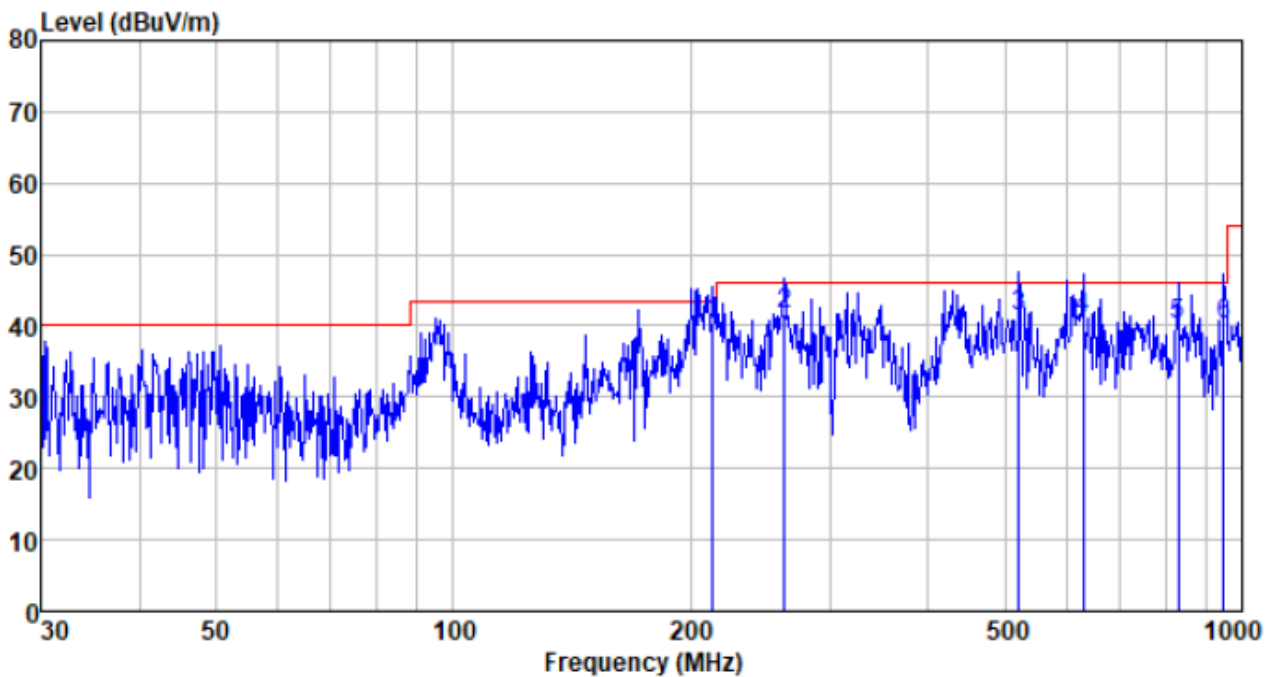
7.1 Radiated Emission

Test Requirement:	FCC Part15 B Section 15.109				
Test Method:	ANSI C63.4:2014				
Test Frequency Range:	30MHz to 1GHz				
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
Limit:	Frequency	Limit (dB μ V/m @3m)		Value	
	30MHz-88MHz	40.00		Quasi-peak	
	88MHz-216MHz	43.50		Quasi-peak	
	216MHz-960MHz	46.00		Quasi-peak	
	960MHz-1GHz	54.00		Quasi-peak	
Test setup:					
Test Procedure:	<ol style="list-style-type: none"> 1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. 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 rotatable 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 environment:	Temp.: 25 °C Humid.: 52% Press.: 1 012mbar
Measurement Record:	Uncertainty: ± 4.50dB
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

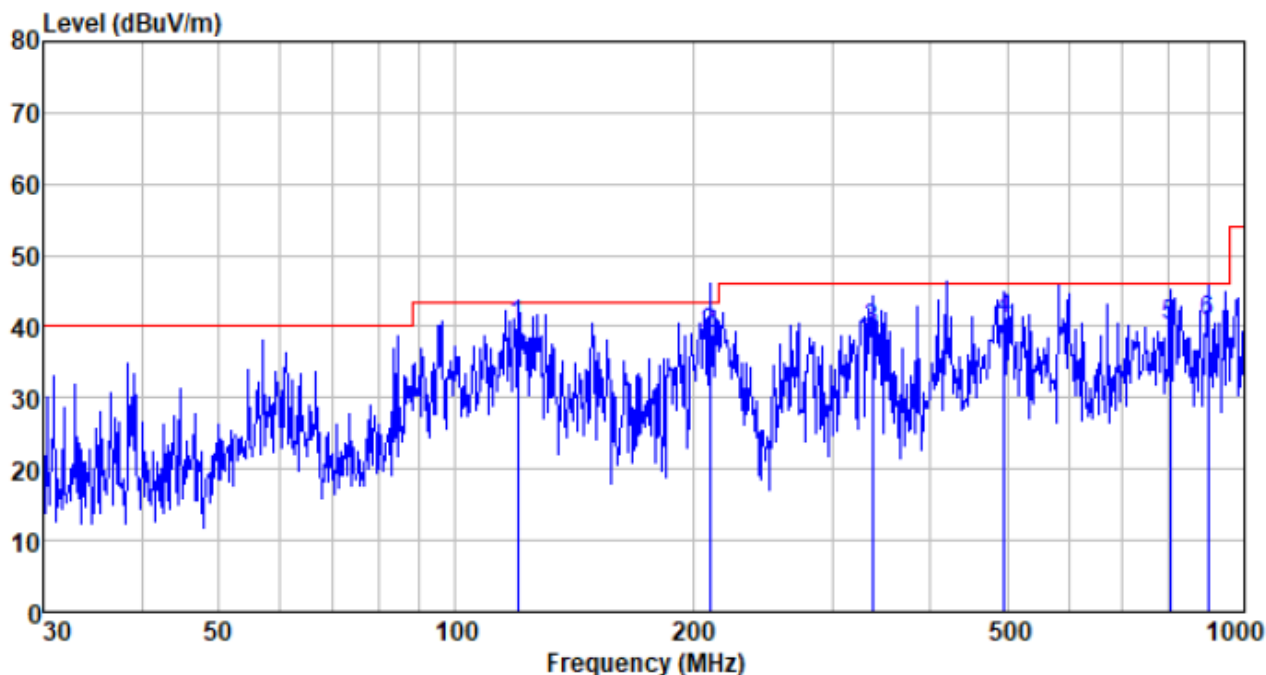
Measurement Data

Test mode:	On mode	Antenna Polarity:	Horizontal
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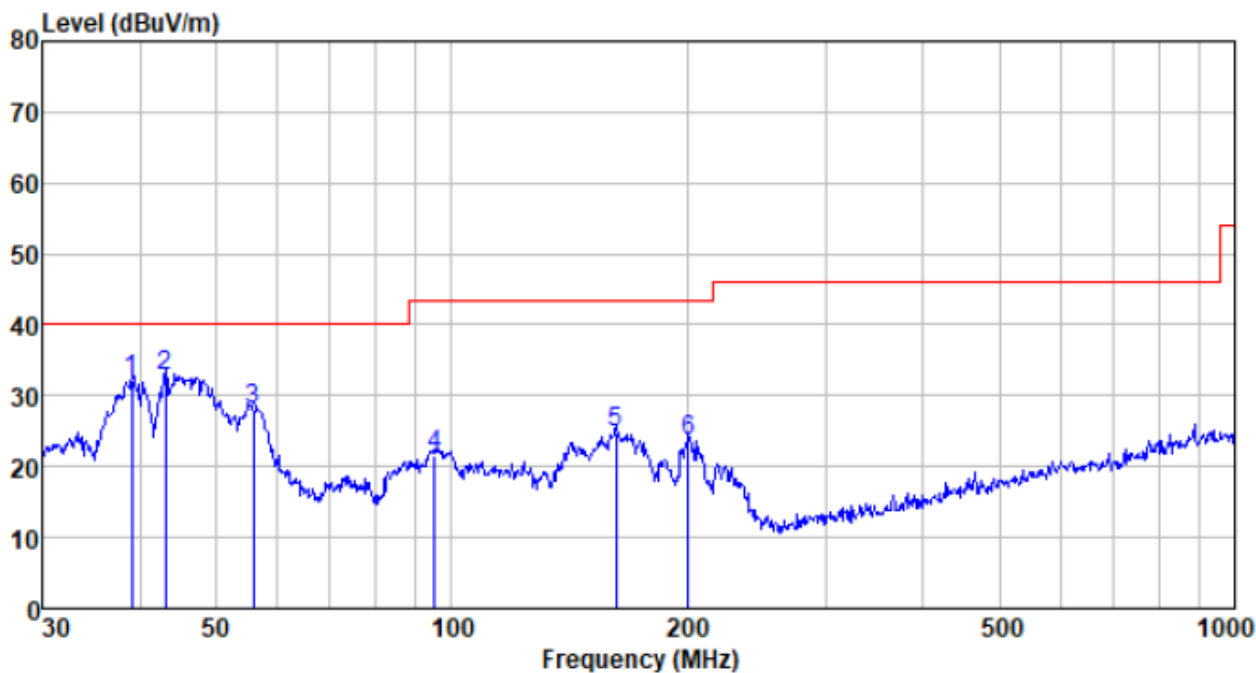
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
213.015	64.99	10.91	1.92	37.34	40.48	43.50	-3.02	QP
262.896	64.32	12.55	2.19	37.39	41.67	46.00	-4.33	QP
520.888	57.79	17.80	3.39	37.52	41.46	46.00	-4.54	QP
629.477	55.34	19.53	3.83	37.57	41.13	46.00	-4.87	QP
830.400	51.44	21.68	4.58	37.61	40.09	46.00	-5.91	QP
948.761	50.17	22.50	5.04	37.55	40.16	46.00	-5.84	QP

Test mode:	On mode	Antenna Polarity:	Vertical
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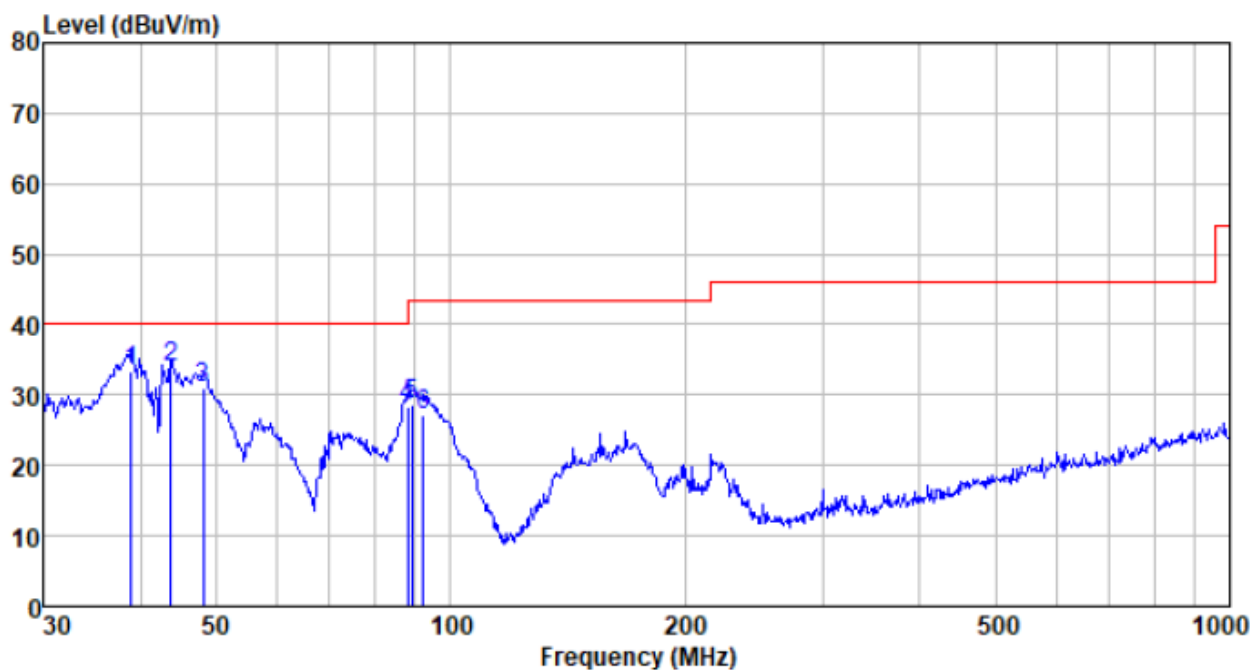
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
119.856	66.19	9.50	1.36	36.88	40.17	43.50	-3.33	QP
210.048	63.72	10.80	1.90	37.34	39.08	43.50	-4.42	QP
337.216	60.03	14.29	2.56	37.46	39.42	46.00	-6.58	QP
495.934	57.92	17.22	3.29	37.51	40.92	46.00	-5.08	QP
804.603	51.85	21.43	4.48	37.62	40.14	46.00	-5.86	QP
900.147	51.22	22.30	4.85	37.60	40.77	46.00	-5.23	QP

Test mode:	Charge mode	Antenna Polarity:	Horizontal
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
39.024	55.15	12.04	0.65	35.61	32.23	40.00	-7.77	QP
43.050	55.65	12.23	0.70	35.83	32.75	40.00	-7.25	QP
55.805	51.84	11.70	0.82	36.27	28.09	40.00	-11.91	QP
95.093	45.56	11.52	1.15	36.68	21.55	43.50	-21.95	QP
162.041	52.04	8.34	1.64	37.14	24.88	43.50	-18.62	QP
200.688	48.78	10.44	1.84	37.33	23.73	43.50	-19.77	QP

Test mode:	Charge mode	Antenna Polarity:	Vertical
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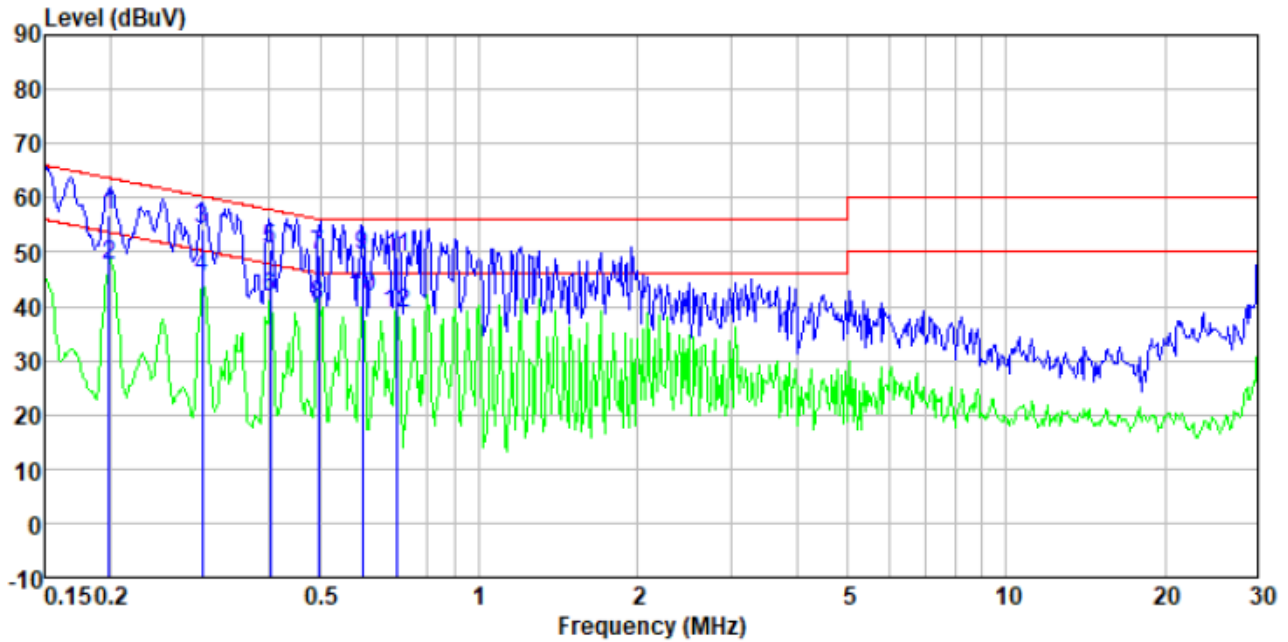
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
38.888	56.36	12.01	0.65	35.60	33.42	40.00	-6.58	QP
43.812	56.80	12.24	0.71	35.87	33.88	40.00	-6.12	QP
48.163	54.17	12.28	0.75	36.09	31.11	40.00	-8.89	QP
88.033	53.94	10.07	1.09	36.62	28.48	43.50	-15.02	QP
89.276	53.83	10.45	1.10	36.63	28.75	43.50	-14.75	QP
92.139	51.52	11.04	1.13	36.66	27.03	43.50	-16.47	QP

7.2 Conducted Emissions

Test Requirement:	FCC Part15 B Section 15.107														
Test Method:	ANSI C63.4:2014														
Test Frequency Range:	150kHz to 30MHz														
Class / Severity:	Class B														
Receiver setup:	RBW=9kHz, VBW=30kHz														
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBμV)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td>0.15-0.5</td> <td>66 to 56*</td> <td>56 to 46*</td> </tr> <tr> <td>0.5-5</td> <td>56</td> <td>46</td> </tr> <tr> <td>0.5-30</td> <td>60</td> <td>50</td> </tr> </tbody> </table>	Frequency range (MHz)	Limit (dBμV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	0.5-30	60	50
Frequency range (MHz)	Limit (dBμV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
0.5-30	60	50													
Test setup:	<p><i>Remark</i> <i>E.U.T: Equipment Under Test</i> <i>LISN: Line Impedance Stabilization Network</i> <i>Test table height=0.8m</i></p>														
Test procedure	<ol style="list-style-type: none"> 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide 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 refers 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 C63.4: 2009 on conducted measurement. 														
Test environment:	Temp.: 25 °C Humid.: 52% Press.: 1 012mbar														
Test Instruments:	Refer to section 6 for details														
Test mode:	Refer to section 5.2 for details														
Test results:	Pass														

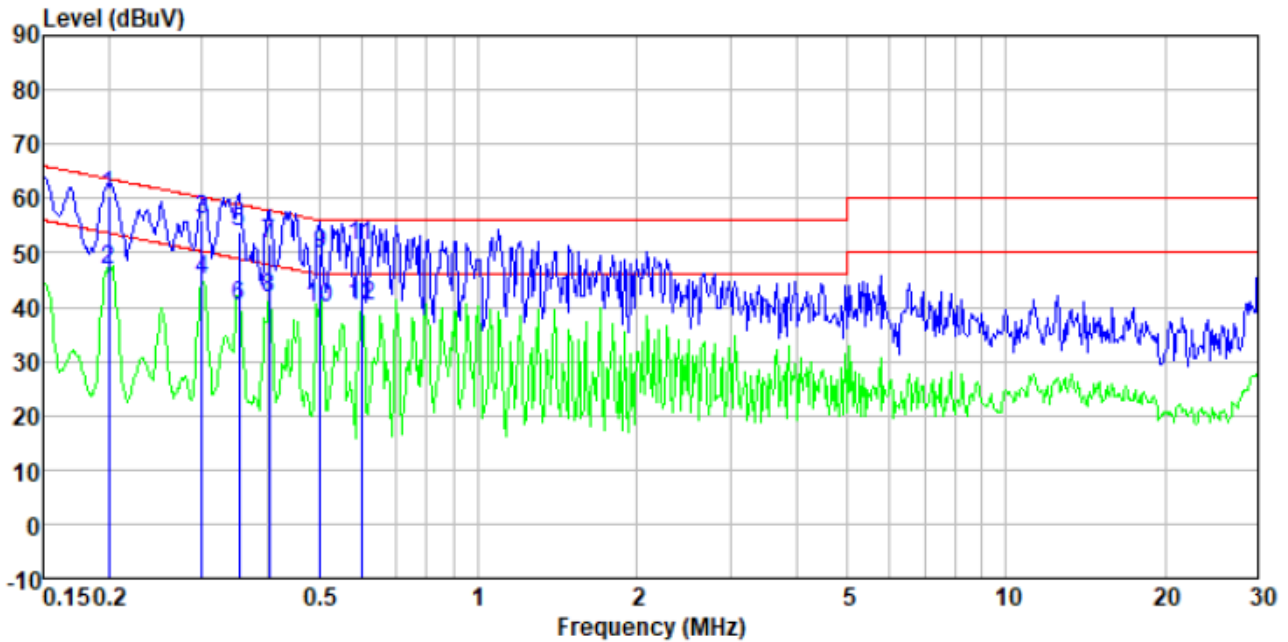
Measurement Data

Test mode:	Charge mode	Phase Polarity:	Line
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Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.20	56.24	0.40	0.11	56.75	63.67	-6.92	QP
0.20	47.17	0.40	0.11	47.68	53.67	-5.99	Average
0.30	53.57	0.40	0.10	54.07	60.28	-6.21	QP
0.30	44.68	0.40	0.10	45.18	50.28	-5.10	Average
0.40	50.19	0.35	0.11	50.65	57.81	-7.16	QP
0.40	41.18	0.35	0.11	41.64	47.81	-6.17	Average
0.50	48.96	0.32	0.11	49.39	56.05	-6.66	QP
0.50	39.84	0.32	0.11	40.27	46.05	-5.78	Average
0.60	48.99	0.28	0.12	49.39	56.00	-6.61	QP
0.60	41.42	0.28	0.12	41.82	46.00	-4.18	Average
0.70	48.50	0.26	0.13	48.89	56.00	-7.11	QP
0.70	38.46	0.26	0.13	38.85	46.00	-7.15	Average

Test mode:	Charge mode	Phase Polarity:	Neutral
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Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.20	59.93	0.40	0.11	60.44	63.62	-3.18	QP
0.20	46.45	0.40	0.11	46.96	53.62	-6.66	Average
0.30	55.69	0.40	0.10	56.19	60.24	-4.05	QP
0.30	44.55	0.40	0.10	45.05	50.24	-5.19	Average
0.35	53.49	0.37	0.10	53.96	58.91	-4.95	QP
0.35	39.56	0.37	0.10	40.03	48.91	-8.88	Average
0.40	51.29	0.35	0.11	51.75	57.81	-6.06	QP
0.40	41.20	0.35	0.11	41.66	47.81	-6.15	Average
0.50	49.40	0.31	0.11	49.82	56.00	-6.18	QP
0.50	39.32	0.31	0.11	39.74	46.00	-6.26	Average
0.60	50.90	0.28	0.12	51.30	56.00	-4.70	QP
0.60	39.87	0.28	0.12	40.27	46.00	-5.73	Average

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.

8 Test Setup Photo

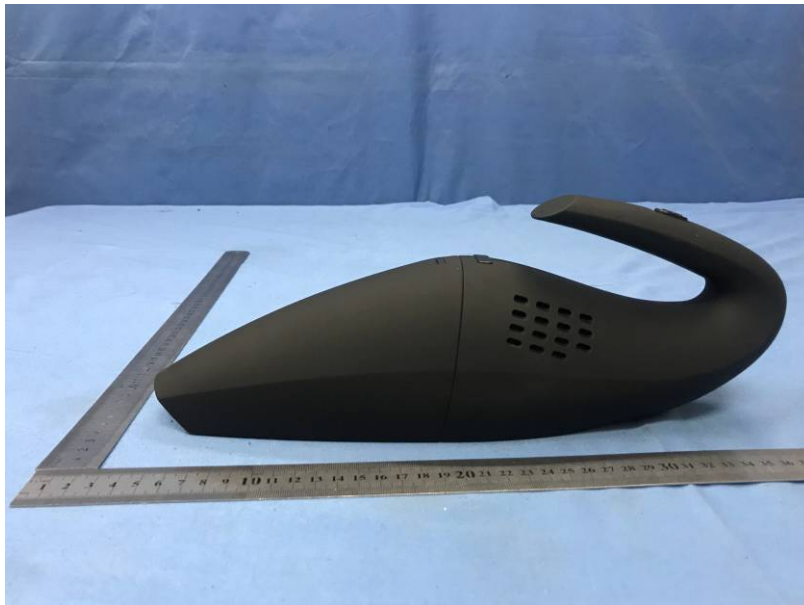
Radiated Emission:



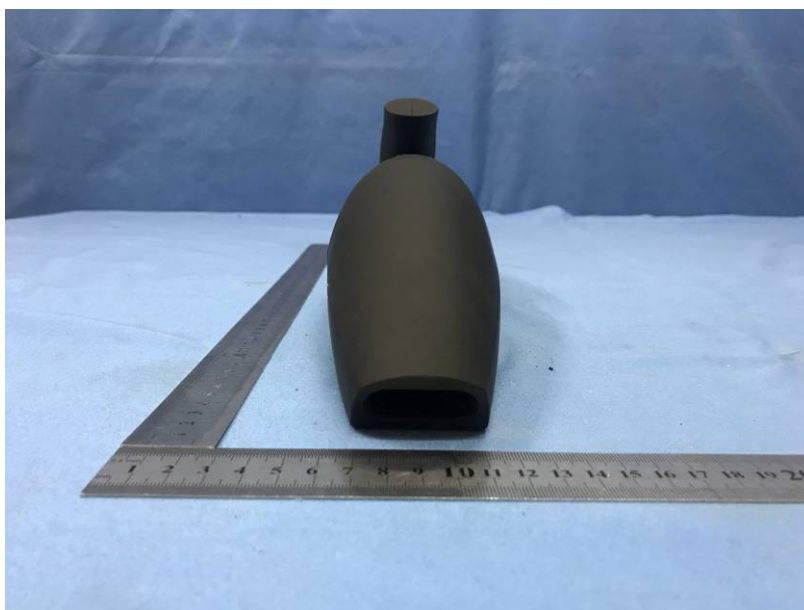
Conducted Emission



9 EUT Constructional Details









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