

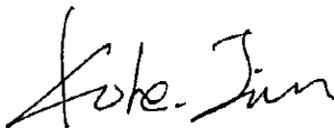
TEST REPORT

Application No.: GZEM2005012457HS
Applicant: Shenzhen SVAVO Intelligent Technology CO.,Ltd.
Address of Applicant: No.4 factory, Xinwu Industrial Estate, Shabo Community, Maluan Street, Pingshan District, Shenzhen, China
Manufacturer: The same as applicant
Address of Manufacturer: The same as applicant
Factory: The same as applicant
Address of Factory: The same as applicant
Equipment Under Test (EUT):
EUT Name: Automatic Hand Sanitizer Dispenser
Model No.: PL-151049, PL-151047 ☒
 ☒ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade Mark: SVAVO
Standard(s): 47 CFR Part 15, Subpart B
Date of Receipt: 2020-05-19
Date of Test: 2020-05-25 to 2020-06-11
Date of Issue: 2020-06-23

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

This report GZEM200501245702 supersedes the previous report GZEM200501245701, issued on 2020-06-23 which is hereby deemed null and void.



Kobe Jian
 EMC Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2020-06-23		Original (NULL)
02		2020-06-23		Amendment report: Changed applicant's address.

Authorized for issue by:			
Tested By			2020-05-25 to 2020-06-11
	Simon_Cai /Project Engineer		Date
Checked By			2020-06-23
	Terry_Lai /Reviewer		Date



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2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at Mains Terminals (150kHz-30MHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass**

** : The EUT passed Radiated Emissions (30MHz-1GHz) test after modification.

Internal Source	Upper Frequency
Below 1.705MHz	30MHz
1.705MHz to 108MHz	1GHz
108MHz to 500MHz	2GHz
500MHz to 1GHz	5GHz
Above 1GHz	5th harmonic of the highest frequency or 40GHz, whichever is lower

▣ Remark for the report GZEM200501245702:

This report **GZEM200501245702** supersedes the previous report **GZEM200501245701**, only changing applicant's address as per the Applicant request.

▣ Declaration of EUT Family Grouping:

Model No.: PL-151049, PL-151047

According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only difference being the silk-screen.

Therefore only one model PL-151049 was tested in this report.



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4 General Information

4.1 Details of E.U.T.

Power Supply:	DC 6V or DC 6V=DC 1.5V "AA" battery x 4
Cable:	2 wires X 1.0m unscreened DC cable by SGS
Highest operating frequency:	Below 108MHz

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
DC power	ZHAOXIN	RXN-305D	REF. No.SEA2700

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conducted Disturbance Voltage at Mains Terminals	±3.63dB (9kHz to 150kHz)
		±3.22dB (150kHz to 30MHz)
2	Disturbance Power	±3.78dB
3	Radiated Emissions	±5.0dB (30MHz-1GHz)
		±5.0dB (1GHz-6GHz)

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.



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4.5 Test Facility

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

● **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

● **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

● **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

● **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

● **FCC Recognized 2.948 Listed Test Firm(Registration No.: 282399)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 282399, May 31, 2002.

● **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818, Jul 13, 2017.

● **Industry Canada (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

● **VCCI (Registration No.: R-12460, C-12584, G-10449 and T-11179)**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-10449 and T-11179 respectively.

● **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.



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4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

The EUT passed Radiated Emissions (30MHz-1GHz) test after modification.



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5 Equipment List

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	ChangZhou ZhongYu	8m x 3m x 3.8m	EMC0306	N/A	N/A
Two-Line V-Network	Rohde & Schwarz	ENV216	EMC0118	2020-01-10	2021-01-09
LISN	Rohde & Schwarz	ENV216	EMC2135	2019-09-16	2020-09-15
EMI Test Receiver	Rohde & Schwarz	ESCS30	EMC0506	2019-11-18	2020-11-17
Coaxial Cable	HangTianXing	2m	EMC0107	2018-09-20	2020-09-19
Voltage Probe	SGS-EMC	N/A	EMC0106	2019-05-10	2021-05-09
Conical Metal Housing	SGS-EMC	N/A	EMC0167	2020-04-19	2022-04-18
Test Software E3c	Audix	Ver. 5.4.1221b	GZE100-62	N/A	N/A

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2020-01-10	2021-01-09
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2020-01-10	2021-01-09
Chamber cable	HangTianXing	N/A	EMC0542	2019-06-28	2021-06-27
Trilog Broadband Antenna 25MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	EMC2174	2018-09-06	2021-09-05
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Bi-log Type Antenna	Schaffner Chase	CBL6143	EMC0519	2020-06-08	2023-06-07
Horn Antenna 1GHz-18GHz	Rohde & Schwarz	HF906	EMC0518	2018-09-02	2021-09-01
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2020-01-10	2021-01-09
Amplifier	HP	8447F	EMC2065	2020-05-26	2021-05-25
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2019-11-18	2020-11-17
Active Loop Antenna	ETS-Lindgren	6502	EMC2190	2019-12-27	2021-12-26
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2020-01-10	2021-01-09
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2020-01-10	2021-01-09
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-12-19	2020-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2019-11-18	2020-11-17
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2019-11-18	2020-11-17
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A



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General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2019-07-16	2020-07-15
DMM	Fluke	73	EMC0007	2019-07-16	2020-07-15



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6 Emission Test Results

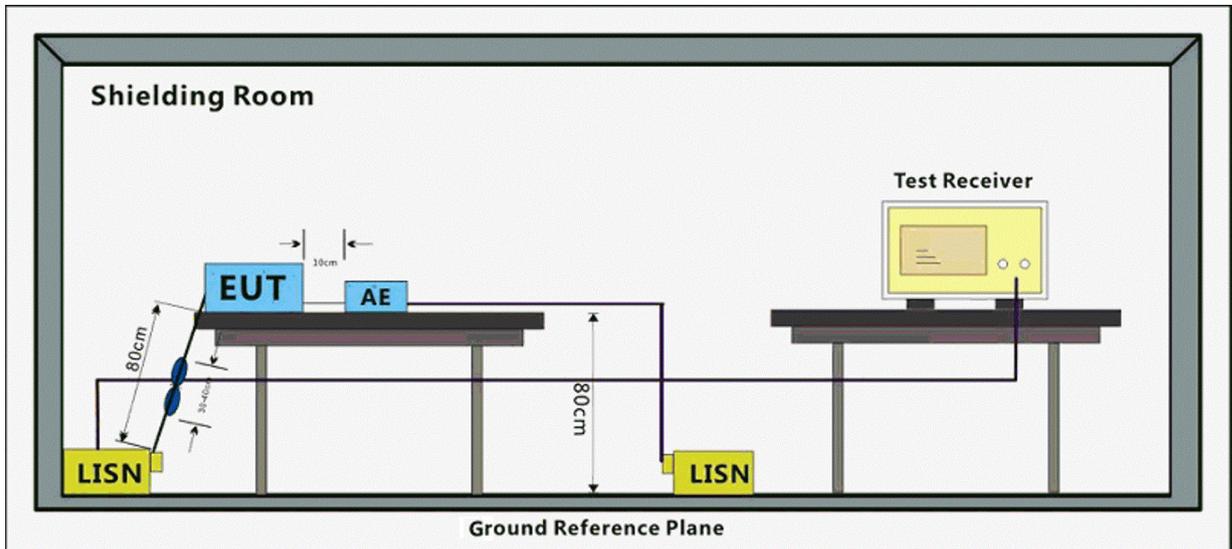
6.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)

Test Requirement:	47 CFR Part 15, Subpart B
Test Method:	ANSI C63.4:2014
Frequency Range:	150kHz to 30MHz
Limit:	
0.15M-0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5M-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

6.1.1 E.U.T. Operation

Operating Environment:	
Temperature:	25.1 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar
Test Mode:	b: Test the EUT in motor running mode power with DC power.

6.1.2 Test Setup Diagram



6.1.3 Measurement Data

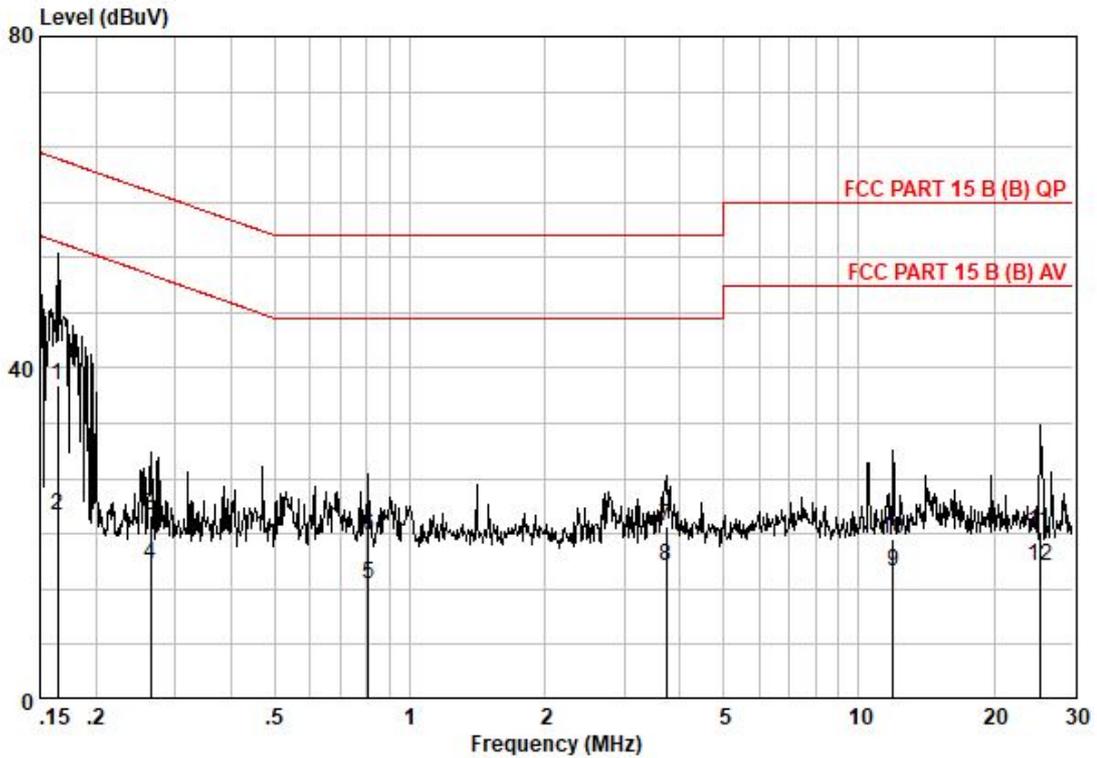
An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

Measured Level = Read level + Cable Loss + LISN Factor



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Mode:b; Line:Live Line



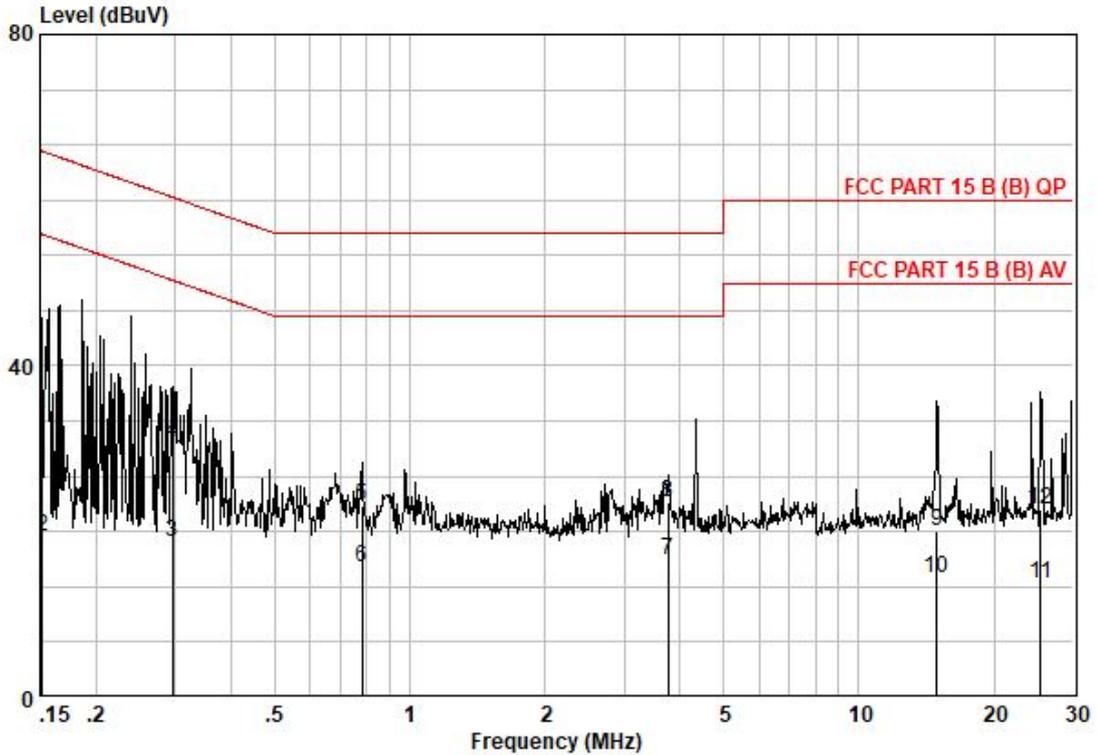
Pol :LIVE
No :
Model :

Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0.16	28.14	0.10	9.66	37.90	65.25	-27.35	QP
0.16	12.49	0.10	9.66	22.25	58.03	-35.77	AVERAGE
0.26	12.51	0.10	9.67	22.28	61.29	-39.01	QP
0.26	6.56	0.10	9.67	16.33	52.88	-36.55	AVERAGE
0.81	4.18	0.10	9.68	13.96	46.00	-32.04	AVERAGE
0.81	9.96	0.10	9.68	19.74	56.00	-36.26	QP
3.72	11.07	0.20	9.70	20.97	56.00	-35.03	QP
3.72	6.32	0.20	9.70	16.22	46.00	-29.78	AVERAGE
11.93	5.36	0.30	9.77	15.43	50.00	-34.57	AVERAGE
11.93	9.28	0.30	9.77	19.35	60.00	-40.65	QP
25.32	10.01	0.40	9.78	20.19	60.00	-39.81	QP
25.32	5.91	0.40	9.78	16.09	50.00	-33.91	AVERAGE



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Mode:b; Line:Neutral Line



Pol : NEUTRAL
No :
Model :

Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0.15	24.47	0.10	9.58	34.15	65.91	-31.76	QP
0.15	9.67	0.10	9.58	19.35	58.89	-39.53	AVERAGE
0.30	9.16	0.10	9.59	18.85	51.68	-32.83	AVERAGE
0.30	21.04	0.10	9.59	30.73	60.37	-29.64	QP
0.78	13.47	0.10	9.61	23.18	56.00	-32.82	QP
0.78	5.99	0.10	9.61	15.70	46.00	-30.30	AVERAGE
3.76	6.67	0.20	9.63	16.50	46.00	-29.50	AVERAGE
3.76	13.76	0.20	9.63	23.59	56.00	-32.41	QP
14.91	9.83	0.39	9.82	20.04	60.00	-39.96	QP
14.91	4.24	0.39	9.82	14.45	50.00	-35.55	AVERAGE
25.46	3.34	0.40	10.05	13.79	50.00	-36.21	AVERAGE
25.46	12.26	0.40	10.05	22.71	60.00	-37.29	QP



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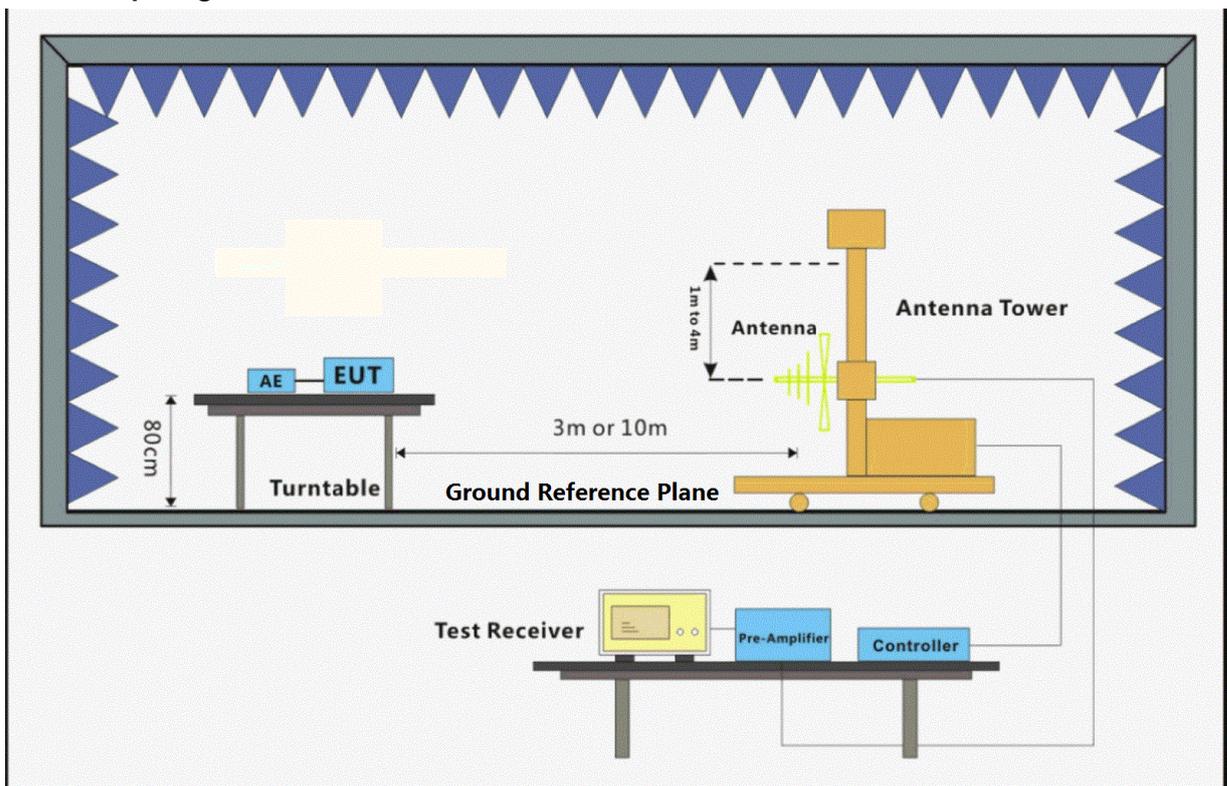
6.2 Radiated Emissions (30MHz-1GHz)

Test Requirement: 47 CFR Part 15, Subpart B
 Test Method: ANSI C63.4:2014
 Frequency Range: 30MHz to 1GHz
 Measurement Distance: 10m
 Limit:
 30MHz -88MHz 29.5(dBμV/m) quasi-peak
 88MHz-216MHz 33.1(dBμV/m) quasi-peak
 216MHz-960MHz 35.6(dBμV/m) quasi-peak
 960MHz-1000MHz 43.5(dBμV/m) quasi-peak
 Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to1000MHz

6.2.1 E.U.T. Operation

Operating Environment:
 Temperature: 22 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar
 Pretest these modes to find the worst case:
 a: Test the EUT in motor running mode power with DC battery.
 b: Test the EUT in motor running mode power with DC power.
 The worst case for final test:
 b: Test the EUT in motor running mode power with DC power.

6.2.2 Test Setup Diagram



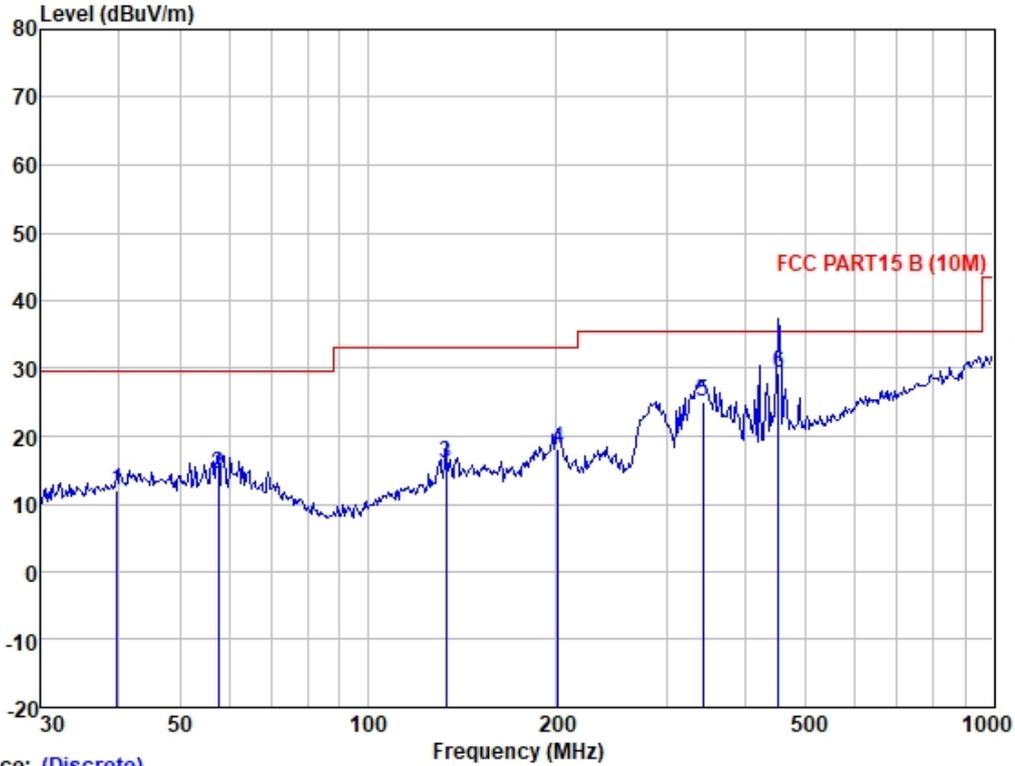
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6.2.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

Mode:b; Polarization:Horizontal



Trace: (Discrete)

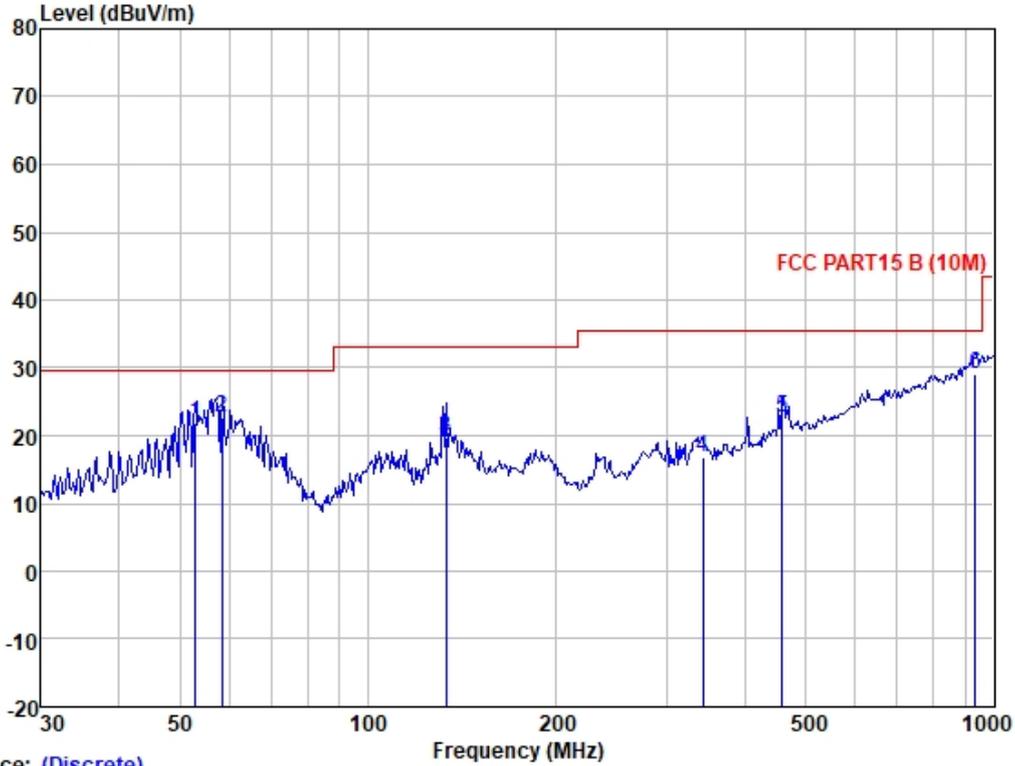
	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Preamp Factor	Limit Level	Over Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	39.715	24.51	13.48	1.06	27.18	11.87	29.50	-17.63	HORIZONTAL	QP
2	57.594	26.63	13.62	1.30	27.16	14.39	29.50	-15.11	HORIZONTAL	QP
3	133.151	28.61	12.40	1.88	27.01	15.88	33.10	-17.22	HORIZONTAL	QP
4	201.393	32.26	10.07	2.51	26.79	18.05	33.10	-15.05	HORIZONTAL	QP
5	343.180	35.26	14.50	3.12	27.70	25.18	35.60	-10.42	HORIZONTAL	QP
6	452.720	35.78	17.37	4.12	27.99	29.28	35.60	-6.32	HORIZONTAL	QP



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Mode:b; Polarization:Vertical



Trace: (Discrete)

	ReadAntenna	Cable	Preamp	Limit	Over				
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	52.945	33.78	13.90	1.24	27.17	21.75	29.50	-7.75	VERTICAL QP
2	58.407	34.84	13.56	1.32	27.16	22.56	29.50	-6.94	VERTICAL QP
3	133.151	32.57	12.40	1.88	27.01	19.84	33.10	-13.26	VERTICAL QP
4	343.180	26.92	14.50	3.12	27.70	16.84	35.60	-18.76	VERTICAL QP
5	459.114	29.06	17.48	4.18	28.00	22.72	35.60	-12.88	VERTICAL QP
6	932.272	26.26	23.80	6.82	27.88	29.00	35.60	-6.60	VERTICAL QP

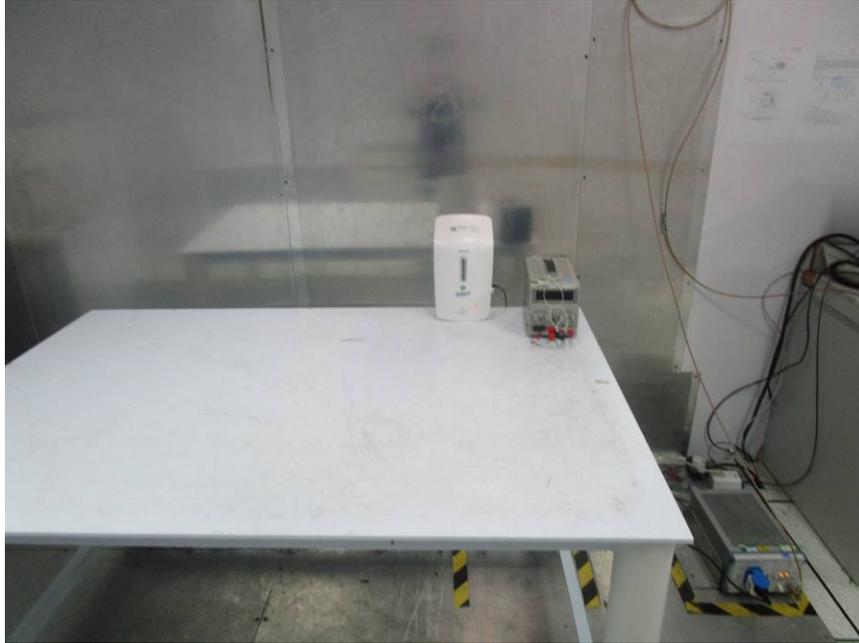


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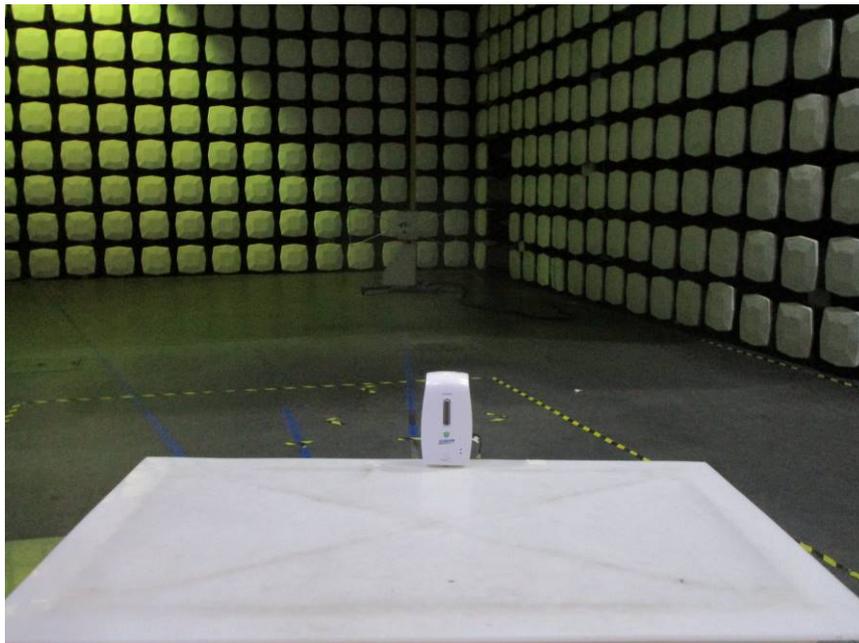
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7 Photographs

7.1 Conducted Emissions at Mains Terminals (150kHz-30MHz) Test Setup



7.2 Radiated Emissions (30MHz-1GHz) Test Setup



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7.3 EUT Constructional Details



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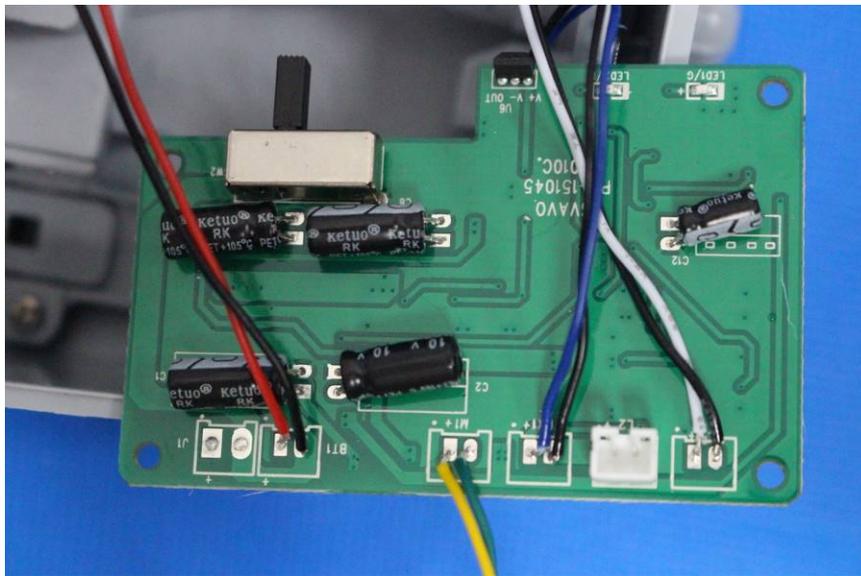
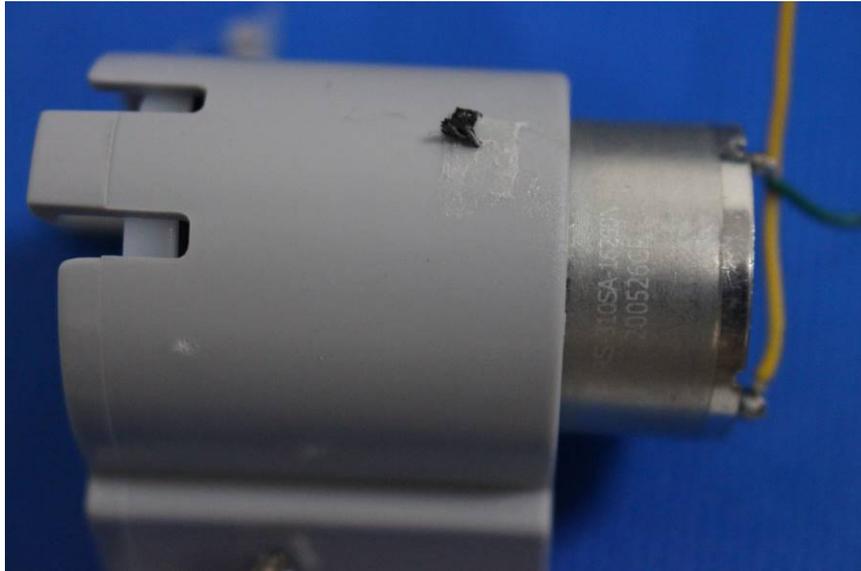
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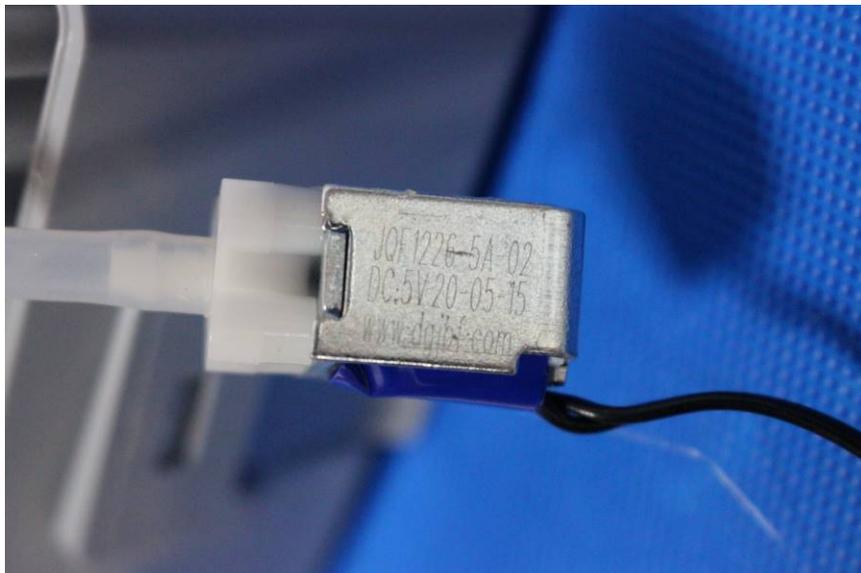
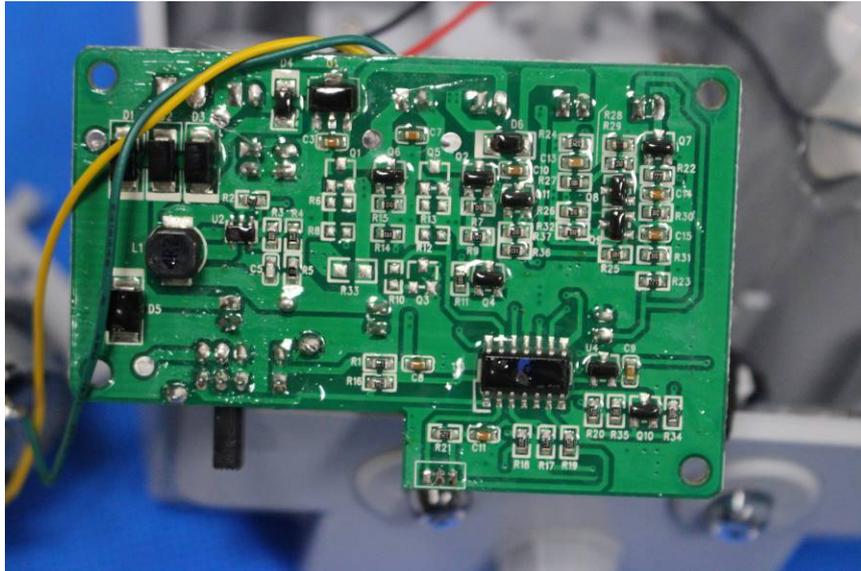
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