

EMC TEST REPORT

For

HYSO LLC

Electronic Fragrance dispenser

Model No.: Stealth

Prepared for : HYSO LLC
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Date of Test : August 25, 2017 to August 30, 2017
Date of Report : August 31, 2017

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APPENDIX (Photos of EUT) (4 pages)

TEST REPORT VERIFICATION

Applicant : HYSO LLC
Manufacturer : Hana Electronic Ltd
EUT : Electronic Fragrance dispenser
Model No. : Stealth
Input Rating : DC 15V from adapter

Measurement Procedure Used:

EN 55014-1: 2006+A1: 2009+A2: 2011
EN 61000-3-2: 2014, EN 61000-3-3: 2013
EN 55014-2: 2015
(IEC 61000-4-2: 2008, IEC 61000-4-4: 2012, IEC 61000-4-5: 2014, IEC 61000-4-6: 2013, IEC 61000-4-11: 2004)

The device described above is tested by EMTEK(DONGGUAN) CO., LTD. and EMTEK(SHENZHEN) CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and EMTEK(DONGGUAN) CO., LTD. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the EN 55014-1, EN 61000-3-2, EN 61000-3-3 and EN 55014-2 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of EMTEK(DONGGUAN) CO., LTD.

Date of Test : August 25, 2017 to August 30, 2017

Lizzy Li

Prepared by :

Lizzy Li/ Editor

Rance Ye

Reviewer :

Rance Ye/ Supervisor

Approved & Authorized Signer :

Sam Lv
EMTEK(DONGGUAN) CO., LTD.
TESTING
Sam Lv/ Manager

Modified Information

Version	Summary	Revision Date	Report No.
Ver.1.0	Original Report	/	ED170825061E

1. MDESCRIPTION OF STANDARDS AND RESULTS (EUT)

EMISSION			
Description of Test Item	Standard	Limits	Results
Disturbance Voltage at the Mains Terminal	EN55014-1: 2006+A1: 2009+A2: 2011	Table 1	Pass
Clicks measurement	EN55014-1: 2006+A1: 2009+A2: 2011	Clause 4.2	N/A
Disturbance Power	EN55014-1: 2006+A1: 2009+A2: 2011	Table 2a	Pass
Radiated Disturbance	EN55014-1: 2006+A1: 2009+A2: 2011	--	N/A
Harmonic Current Emissions	EN 61000-3-2: 2014	Class A	N/A
Voltage Fluctuation and Flicker	EN 61000-3-3: 2013	Clause 5	Pass
IMMUNITY			
Description of Test Item	Basic Standard	Performance Criteria	Results
Electrostatic Discharge (ESD)	IEC 61000-4-2: 2008	B	Pass
RF Strength Susceptibility Test	IEC 61000-4-3: 2006: A1: 2007+A2: 2010	A	N/A
Electro Fast Transient (EFT)	IEC 61000-4-4: 2012	B	Pass
Surge (Input AC Power Port)	IEC 61000-4-5: 2014	B	Pass
Radio-Frequency, Continuous Conducted Disturbance	IEC 61000-4-6: 2013	A	Pass
Voltage Dips, 100%	IEC 61000-4-11: 2004	C	Pass
Voltage Dips, 60%		C	Pass
Voltage Dips, 30%		C	Pass
Note: N/A is an abbreviation for Not Applicable.			

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	: Electronic Fragrance dispenser
Model Number	: Stealth
Trade Mark	: N/A
Power Supply For Test	: AC 230V/50Hz for adapter
Adapter	: Model: XY24S-1501500Q-UW Input: 100-240VAC, 0.5A Max 50/60Hz Output: 15V  1.5A
Operate Mode	: ON
Applicant	: HYSO LLC
Address	: 746 Gotham Parkway Carlstadt, NJ 07072 USA
Manufacturer	: Hana Electronic Ltd
Address	: 17/F Concord Commercial Bldg, 155-157 King's Rd, Hong Kong
Date of sample receiver	: August 25, 2017
Date of Test	: August 25, 2017 to August 30, 2017

2.2. Description of Test Facility

Site Description

EMC Lab : Accredited by CNAS, 2015.09.24
The certificate is valid until 2018.07.03
The Laboratory has been assessed and proved to be in compliance with CNAS/CL01:2006
The Certificate Registration Number is L3150

Registered on Industry Canada, January 13, 2017
The Certificate Number is 9444A.

Name of Firm : EMTEK(DONGGUAN) CO., LTD.
Site Location : No.281, Guantai Road, Nancheng District, Dongguan, Guangdong, China.

2.3. Measurement Uncertainty

Test Item	Uncertainty
Conducted Emission Uncertainty	: 2.8dB
Power clamp	: 2.6dB
Radiated Emission Uncertainty (3m Chamber)	: 3.3dB (30M~1GHz Polarize: H) 3.2dB (30M~1GHz Polarize: V)
Uncertainty for Flicker test	: 0.25%
Uncertainty for Harmonic test	: 0.014%
Uncertainty for R/S Test	: 2.10dB(80MHz-200MHz) 1.76dB(200MHz-1000MHz)
Uncertainty for C/S Test	: 1.45(Using CDN Test) 2.37(Using EM Clamp Test)
Uncertainty for test site temperature and humidity	: 0.6℃ 4%

3. MEASURING DEVICES AND TEST EQUIPMENT

3.1. For Power Line Conducted Emission

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde&Schwarz	ESCI	100137	May 16, 2017	1 Year
2.	L.I.S.N.	Schwarzbeck	NNLK8121	8121-641	May 16, 2017	1 Year
3.	Pulse Limiter with 10dB Attenuation	Schwarzbeck	VTSD 9561-F	9561-F028	May 16, 2017	1 Year

3.2. For Disturbance Power Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI	100137	May 16, 2017	1 Year
2.	Power Clamp	Rohde & Schwarz	MDS21	100220	May 16, 2017	1Year
3.	RF Switching Unit	CDS	RSU-M2	38401	May 16, 2017	1 Year

3.3. For Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI	1166.5950.03	May 16, 2017	1 Year
2.	Bilog Antenna	Schwarzbeck	VULB9163	000141	May 16, 2017	1 Year
3.	Power Amplifier	CDS	RSU-Stealth5 2	818	May 16, 2017	1 Year
4.	Power Amplifier	HP	8447F	OPT H64	May 16, 2017	1 Year
5.	Color Monitor	SUNSPO	SP-140A	N/A	May 16, 2017	1 Year
6.	Single Line Filter	JIANLI	XL-3	N/A	May 16, 2017	1 Year
7.	Single Phase Power Line Filter	JIANLI	DL-2X100B	N/A	May 16, 2017	1 Year
8.	3 Phase Power Line Filter	JIANLI	DL-4X100B	N/A	May 16, 2017	1 Year
9.	DC Power Filter	JIANLI	DL-2X50B	N/A	May 16, 2017	1 Year
10.	Cable	Schwarzbeck	PLF-100	519489	May 16, 2017	1 Year
11.	Cable	Rosenberger	CIL02	A0783566	May 16, 2017	1 Year
12.	Cable	Rosenberger	RG 233/U	525178	May 16, 2017	1 Year

3.4. For Harmonic / Flicker Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Power Frequency Test System	EMTEST	DPA500	U0526100506	May 16, 2017	1 Year
2.	AC Frequency Conversion Power	EMTEST	ACS 500	V526100507	May 16, 2017	1 Year
3.	PC	LENOVO	T2900D	SS12485803	May 16, 2017	1 Year

3.5. For Electrostatic Discharge Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	TESEQ AG	NSG437	EE166	May 16, 2017	1 Year

3.6. For Electrical Fast Transient/Burst Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Burst Tester	EM TEST	UCS500M6B	V0526100502	May 16, 2017	1 Year
2.	Coupling Clamp	EM TEST	HFK	0605-10	May 16, 2017	1 Year

3.7. For Surge Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Surge Generator	EM TEST	VCS 500M6T	V0526100503	May 16, 2017	1 Year

3.8. For Injected Currents Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Simulator	EM TEST	CWS500C	0900-12	May 17, 2017	1 Year
2.	CDN	EM TEST	CDN-M2	5100100100	May 17, 2017	1 Year
3.	CDN	EM TEST	CDN-Stealth	0900-11	May 17, 2017	1 Year
4.	Injection Clamp	EM TEST	F-2031-23MM	368	May 17, 2017	1 Year
5.	Attenuator	EM TEST	ATT6	0010222A	May 17, 2017	1 Year

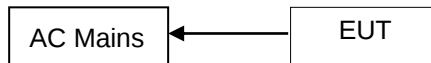
3.9. For Voltage Dips and Interruptions Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Dips Tester	HAEFELY	Pline1610	083732-12	May 17, 2017	1 Year

4. POWER LINE CONDUCTED MEASUREMENT

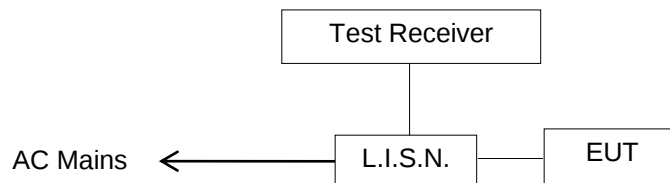
4.1. Block Diagram of Test Setup

4.1.1. Block diagram of connection between the EUT and simulators



(EUT: Electronic Fragrance dispenser)

4.1.2. Block Diagram of Test Setup



(EUT: Electronic Fragrance dispenser)

4.2. Conducted Power Line Emission Measurement Standard and Limits

4.2.1. Standard:

EN55014-1: 2006+A1: 2009+A2: 2011

4.2.2. Limits

Frequency (MHz)	Limit (dB μ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56 *	59 ~ 46 *
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

1. At the transition frequency the lower limit applies.
2. * decreasing linearly with logarithm of the frequency.

4.3. EUT Configuration on Measurement

The following equipments are installed on Conducted Emission Measurement to meet EN55014-1 requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

EUT : Electronic Fragrance dispenser
Model Number : Stealth
Manufacturer : Hana Electronic Ltd

4.4. Operating Condition of EUT

- 4.4.1. Setup the EUT as shown in Section 4.1.
- 4.4.2. Turn on the power of all equipments.
- 4.4.3. Let the EUT work in measuring mode (ON) and measure it.

4.5. Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground and connected to the AC mains through a Line Impedance Stabilization Network (L.I.S.N.). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission according to the EN55014-1 regulations during conducted emission measurement.

The bandwidth of the test receiver (ESCI) is set at 200Hz in 9KHz~150KHz range and 9KHz in 150KHz~30MHz range.

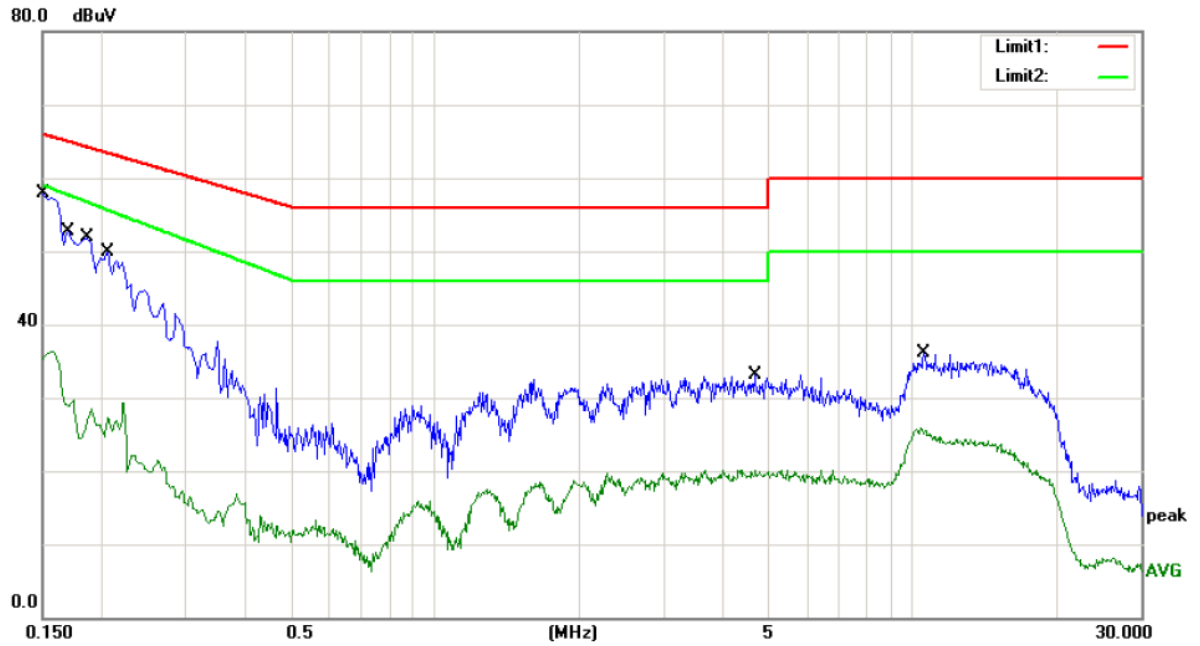
The frequency range from 150KHz to 30MHz is checked.

4.6. Measurement Results

PASS.

The frequency range from 150KHz to 30MHz is investigated.

The data of the worst test mode are attached the following pages.



Site site #1

Phase: **L1**

Temperature: 24

Limit: (CE)EN55014-1_QP

Power: AC 230V/50Hz

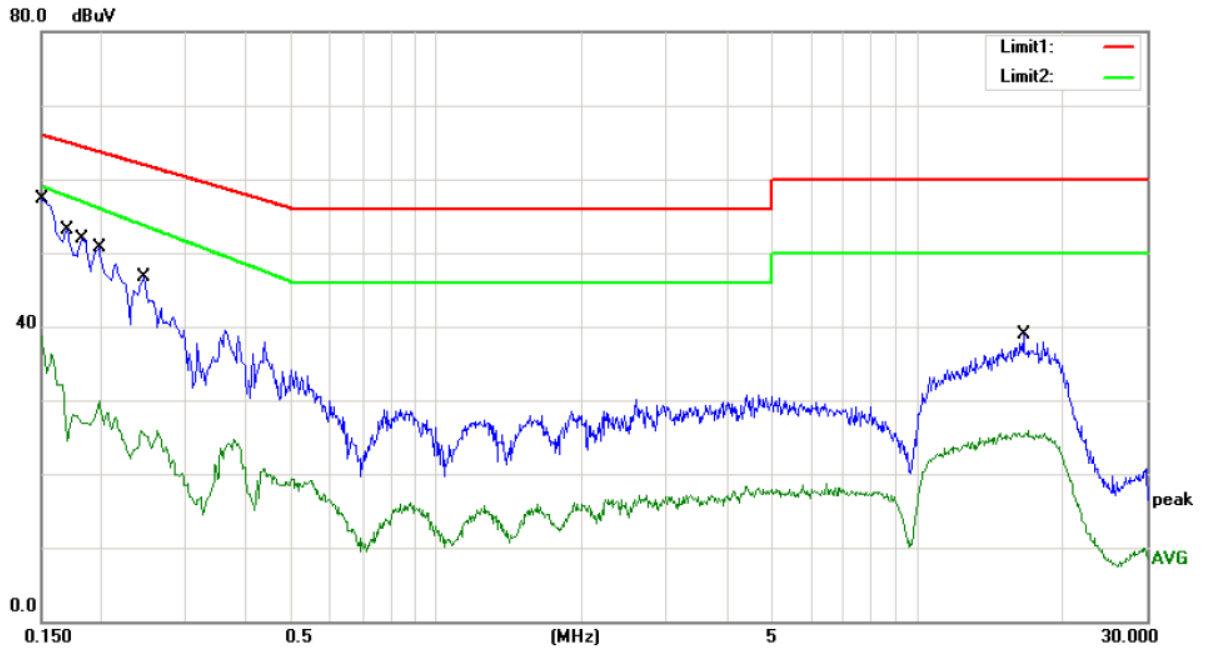
Humidity: 55 %

Mode: ON

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1500	44.32	9.78	54.10	66.00	-11.90	QP	
2		0.1500	25.55	9.78	35.33	59.00	-23.67	AVG	
3		0.1700	38.87	9.78	48.65	64.96	-16.31	QP	
4		0.1700	19.32	9.78	29.10	57.65	-28.55	AVG	
5		0.1860	38.41	9.79	48.20	64.21	-16.01	QP	
6		0.1860	17.49	9.79	27.28	56.68	-29.40	AVG	
7		0.2060	36.44	9.79	46.23	63.37	-17.14	QP	
8		0.2060	17.46	9.79	27.25	55.57	-28.32	AVG	
9		4.6660	21.35	9.85	31.20	56.00	-24.80	QP	
10		4.6660	10.20	9.85	20.05	46.00	-25.95	AVG	
11		10.5420	22.66	9.99	32.65	60.00	-27.35	QP	
12		10.5420	15.08	9.99	25.07	50.00	-24.93	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: washington



Site site #1 Phase: **N** Temperature: 24
 Limit: (CE)EN55014-1_QP Power: AC 230V/50Hz Humidity: 55 %
 Mode: ON
 Note:

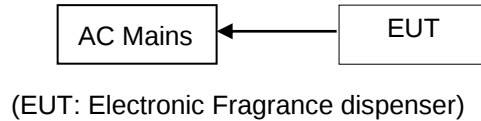
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1500	44.42	9.78	54.20	66.00	-11.80	QP	
2		0.1500	28.99	9.78	38.77	59.00	-20.23	AVG	
3		0.1700	40.32	9.78	50.10	64.96	-14.86	QP	
4		0.1700	14.73	9.78	24.51	57.65	-33.14	AVG	
5		0.1820	37.86	9.79	47.65	64.39	-16.74	QP	
6		0.1820	17.12	9.79	26.91	56.91	-30.00	AVG	
7		0.1980	36.71	9.79	46.50	63.69	-17.19	QP	
8		0.1980	20.01	9.79	29.80	56.00	-26.20	AVG	
9		0.2460	33.40	9.80	43.20	61.89	-18.69	QP	
10		0.2460	15.52	9.80	25.32	53.66	-28.34	AVG	
11		16.6460	25.15	10.15	35.30	60.00	-24.70	QP	
12		16.6460	14.90	10.15	25.05	50.00	-24.95	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: washington

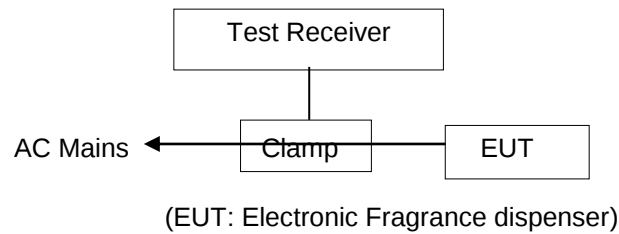
5. DISTURBANCE POWER MEASUREMENT

5.1. Block Diagram of Test Setup

5.1.1. Block diagram of connection between the EUT and simulators



5.1.2. Block Diagram of Test Setup



5.2. Measuring Standard

EN 55014-1: 2006+A1:2009+A2: 2011

5.3. Disturbance Power Limits

All emanations from devices or system shall not exceed the level of field strengths specified below:

5.3.1. (Table A)

Frequency MHz	Limits dB(pW)	
	Quasi-peak Value	Average Value
30 ~ 300	45 Increasing Linearly with Frequency to 55	35 Increasing Linearly with Frequency to 45

5.3.2. (Table B)

Frequency MHz	Limits dB(pW)	
	Quasi-peak Value	Average Value
200 ~ 300	0 to 10 dB	-

5.4. EUT Configuration on Measurement

The EN55014-1 Regulations test method must be used to find the maximum emission during radiated emission measurement. The configuration of the EUT is the same as used in conducted emission measurement.

5.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 4.4 except the test set up replaced as Section 5.1.

5.6. Test Procedure

The EUT is placed on the plane 0.8m high above the ground by insulating support and away from other metallic surface at least 0.4m. It is connected to the power mains through an extension cord of 6m min. The absorber clamp clamps the cord and moves from the far end to the EUT to measure the disturbing energy emitted from the cord.

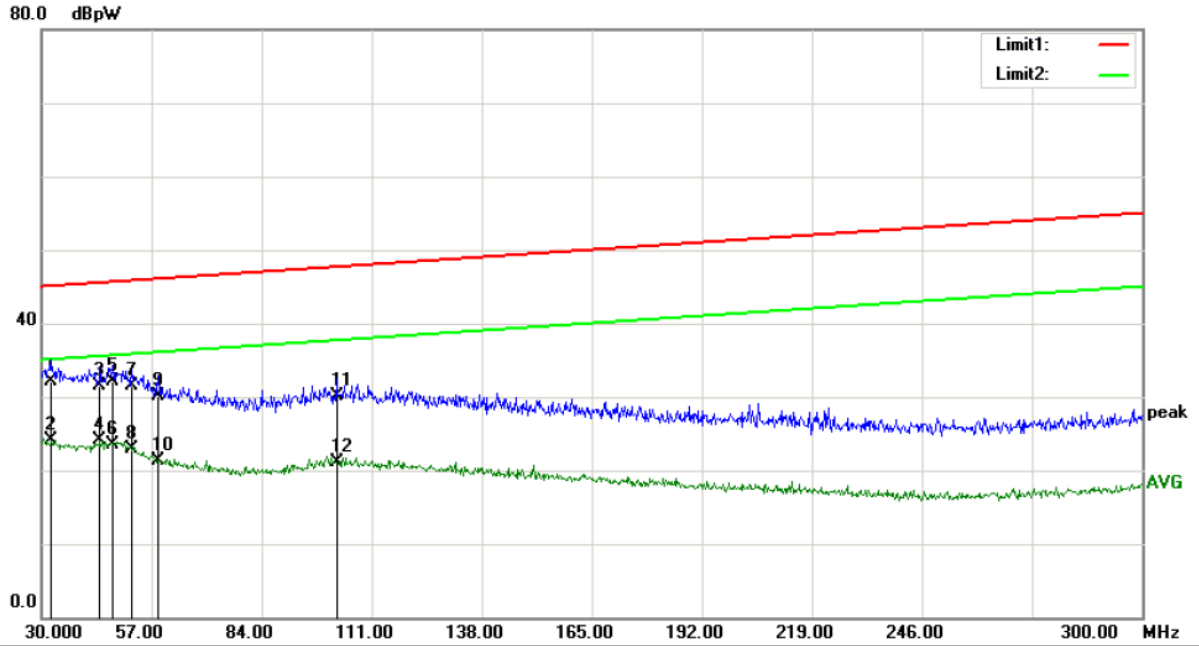
The bandwidth of the field strength meter (ESCI) is set at 120kHz.

5.7. Measuring Results

PASS.

The frequency spectrum from 30 MHz to 300 MHz is investigated.

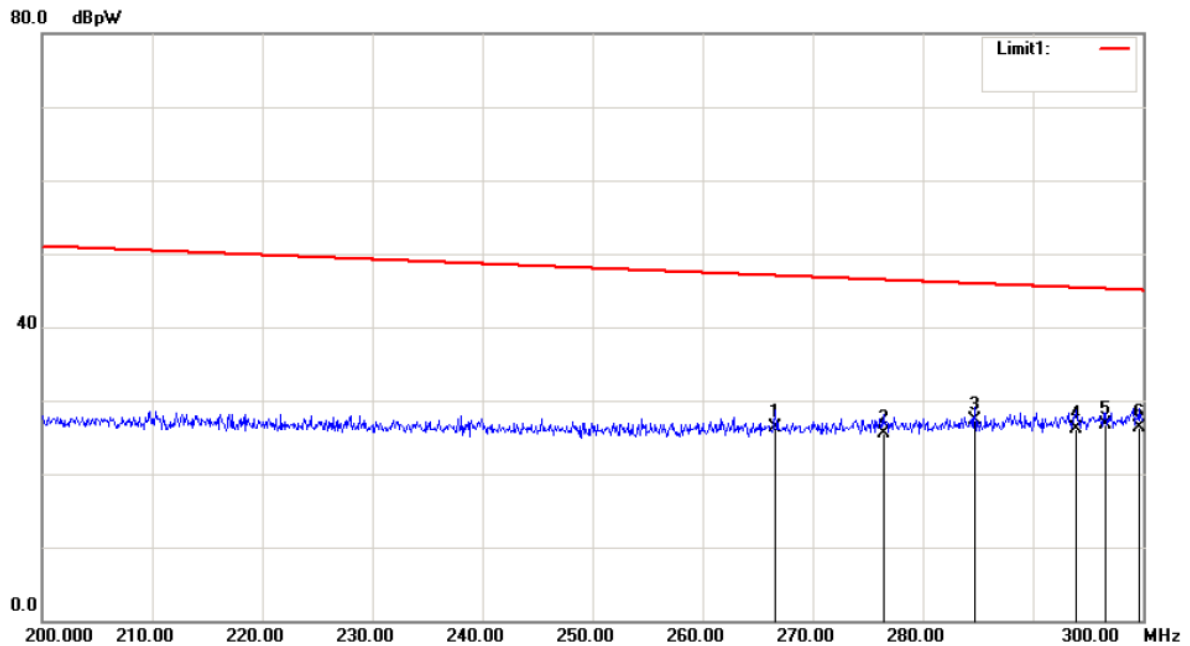
The data of the test mode are attached the following pages.



Site site #1 AC Mains Temperature: 24
 Limit: (Clamp)EN55014-1_QP Power: AC 230V/50Hz Humidity: 55 %
 Mode: ON
 Note:

No.	Mk.	Freq. MHz	Reading Level dBpW	Final Correct dB	Measure- ment dBpW	Limit dBpW	Over dB	Detector	Position cm	Comment
1		32.1600	9.27	22.93	32.20	45.08	-12.88	QP	0	
2	*	32.1600	1.18	22.93	24.11	35.08	-10.97	AVG	0	
3		44.3100	9.05	22.55	31.60	45.53	-13.93	QP	0	
4		44.3100	1.48	22.55	24.03	35.53	-11.50	AVG	0	
5		47.5500	9.52	22.58	32.10	45.65	-13.55	QP	0	
6		47.5500	1.02	22.58	23.60	35.65	-12.05	AVG	0	
7		52.1400	9.48	22.12	31.60	45.82	-14.22	QP	0	
8		52.1400	0.75	22.12	22.87	35.82	-12.95	AVG	0	
9		58.6200	9.46	20.64	30.10	46.06	-15.96	QP	0	
10		58.6200	0.70	20.64	21.34	36.06	-14.72	AVG	0	
11		102.3600	10.01	20.09	30.10	47.68	-17.58	QP	0	
12		102.3600	0.92	20.09	21.01	37.68	-16.67	AVG	0	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: washington



Site site #1

AC Mains

Temperature: 24

Limit: (Clamp)EN55014-1_QP(200M-300M)

Power: AC 230V/50Hz

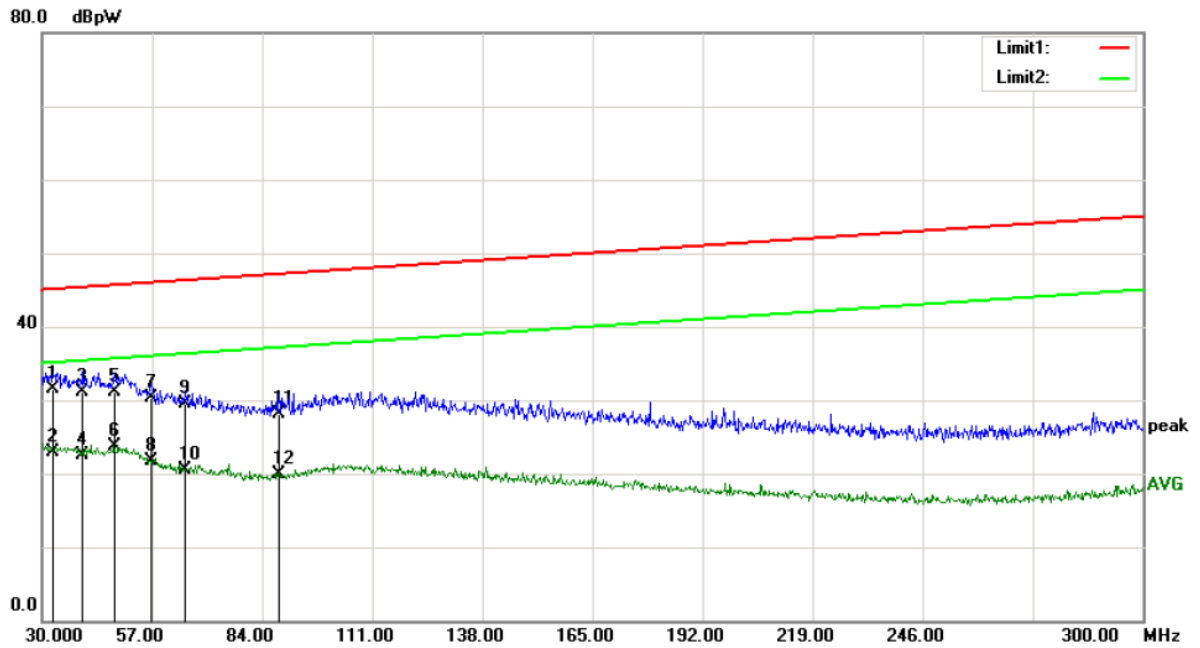
Humidity: 55 %

Mode: ON

Note:

No.	Mk.	Freq.	Reading Level	Final Correct	Measure-ment	Limit	Over	Position	
		MHz	dBpW	dB	dBpW	dBpW	dB	Detector	cm
1		266.6000	10.10	16.22	26.32	47.00	-20.68	QP	0
2		276.4000	9.11	16.49	25.60	46.42	-20.82	QP	0
3		284.7000	10.58	16.72	27.30	45.92	-18.62	QP	0
4		293.9000	9.23	16.97	26.20	45.37	-19.17	QP	0
5	*	296.6000	9.75	17.05	26.80	45.20	-18.40	QP	0
6		299.6000	9.22	17.13	26.35	45.02	-18.67	QP	0

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: washington



Site site #1

DC Line

Temperature: 24

Limit: (Clamp)EN55014-1_QP

Power: AC 230V/50Hz

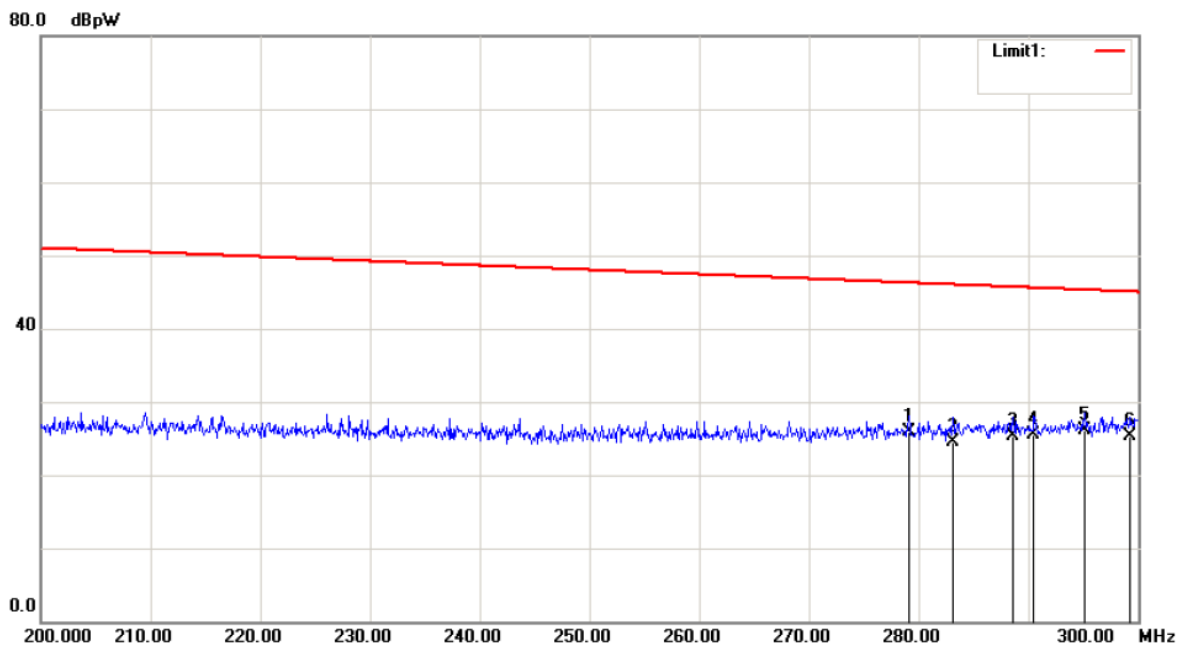
Humidity: 55 %

Mode: ON

Note:

No.	Mk.	Freq. MHz	Reading Level dBpW	Final Correct dB	Measure- ment dBpW	Limit dBpW	Over dB	Detector	Position cm	Comment
1		32.7000	8.70	22.90	31.60	45.10	-13.50	QP	0	
2		32.7000	-0.05	22.90	22.85	35.10	-12.25	AVG	0	
3		39.9900	8.70	22.50	31.20	45.37	-14.17	QP	0	
4		39.9900	-0.08	22.50	22.42	35.37	-12.95	AVG	0	
5		47.8200	8.61	22.59	31.20	45.66	-14.46	QP	0	
6	*	47.8200	1.06	22.59	23.65	35.66	-12.01	AVG	0	
7		56.7300	9.22	21.08	30.30	45.99	-15.69	QP	0	
8		56.7300	0.61	21.08	21.69	35.99	-14.30	AVG	0	
9		65.1000	9.57	20.03	29.60	46.30	-16.70	QP	0	
10		65.1000	0.43	20.03	20.46	36.30	-15.84	AVG	0	
11		88.0500	8.99	19.21	28.20	47.15	-18.95	QP	0	
12		88.0500	0.74	19.21	19.95	37.15	-17.20	AVG	0	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: washington



Site site #1 DC Line Temperature: 24
 Limit: (Clamp)EN55014-1_QP(200M-300M) Power: AC 230V/50Hz Humidity: 55 %
 Mode: ON
 Note:

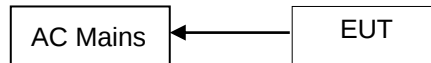
No.	Mk.	Freq. MHz	Reading Level dBpW	Final Correct dB	Measure- ment dBpW	Limit dBpW	Over dB	Detector	Position cm	Comment
1		279.1000	9.44	16.56	26.00	46.25	-20.25	QP	0	
2		283.1000	7.93	16.67	24.60	46.01	-21.41	QP	0	
3		288.6000	8.47	16.83	25.30	45.68	-20.38	QP	0	
4		290.5000	8.72	16.88	25.60	45.57	-19.97	QP	0	
5	*	295.1000	9.20	17.00	26.20	45.29	-19.09	QP	0	
6		299.3000	8.18	17.12	25.30	45.04	-19.74	QP	0	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: washington

6. RADIATED EMISSION MEASUREMENT

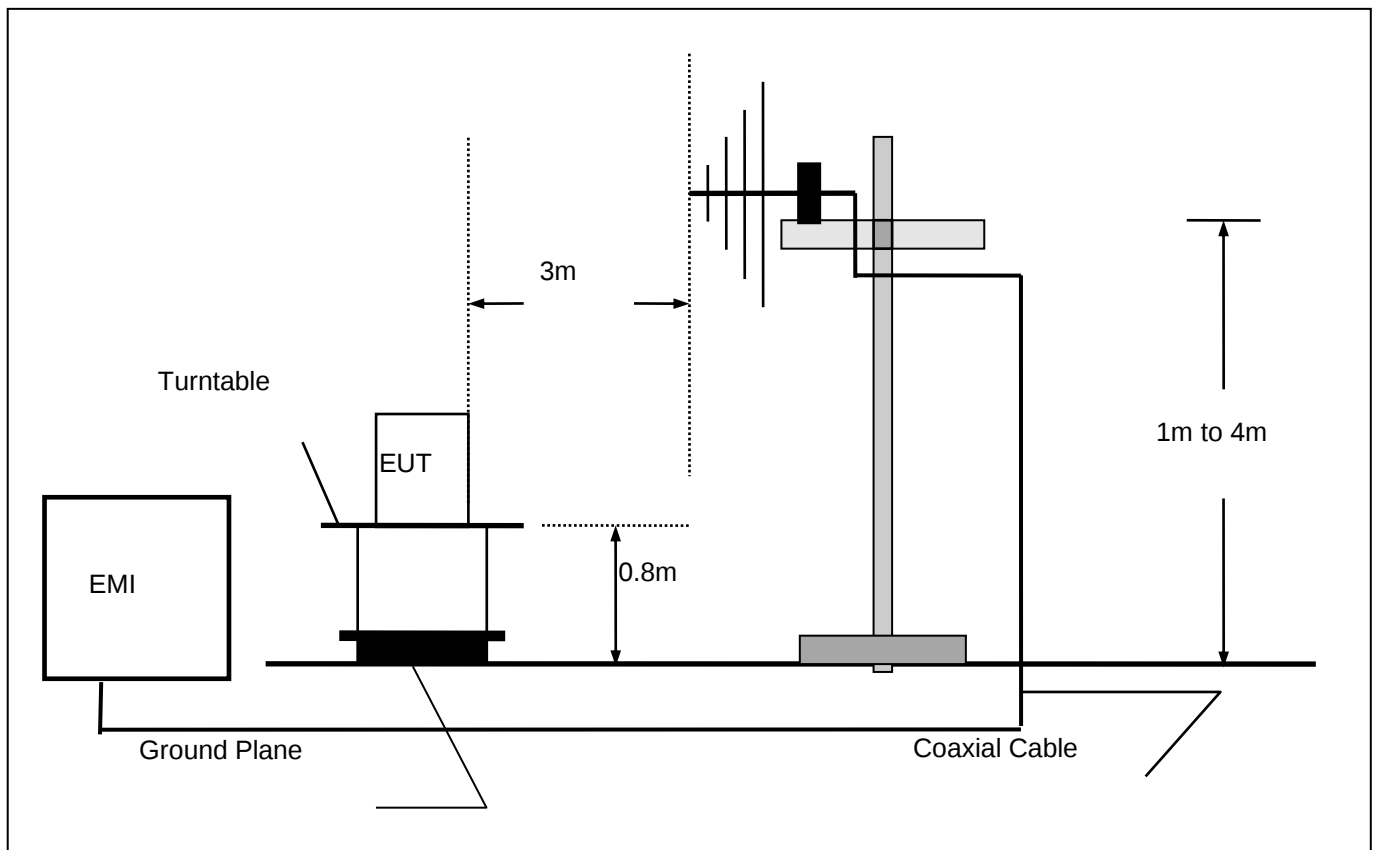
6.1. Block Diagram of Test

6.1.1. Block diagram of connection between the EUT and simulators



(EUT: Electronic Fragrance dispenser)

6.1.2. Block diagram of test setup (In chamber)



(EUT: Electronic Fragrance dispenser)

6.2. Measuring Standard

EN 55014-1: 2006+A1: 2009+A2: 2011

6.3. Radiated Emission Limits

All emanations from devices or system shall not exceed the level of field strengths specified below:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dB μ V/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Note: (1) The smaller limit shall apply at the combination point between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

6.4. EUT Configuration on Test

The EN55014-1 regulations test method must be used to find the maximum emission during radiated emission measurement.

6.5. Operating Condition of EUT

6.5.1. Turn on the power.

6.5.2. After that, let the EUT work in test mode(ON) and measure it.

6.6. Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on an antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Bilog antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarizations of the antenna are set on test.

The bandwidth of the Receiver (ESCI) is set at 120kHz.

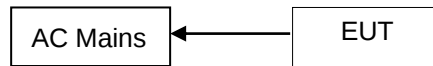
6.7. Measuring Results

For the test data of disturbance power is lower than the applicable limits (Table A) reduced by the margin (Table B), and the maximum clock frequency is less than 30 MHz. so the radiated measurements in the frequency range from 300 MHz to 1000 MHz shall not be tested.

7. HARMONIC CURRENT MEASUREMENT

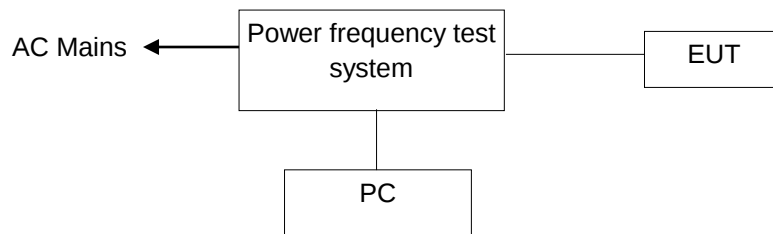
7.1. Block Diagram of Test Setup

7.1.1. Block Diagram of connection between the EUT and simulators



(EUT: Electronic Fragrance dispenser)

7.1.2. Block Diagram of Test Setup



(EUT: Electronic Fragrance dispenser)

7.2. Measuring Standard

EN 61000-3-2: 2014

Class A

Power $\leq$ 75W

7.3. Operating Condition of EUT

Same as Section 4.4 except that the test setup replaced by Section 7.1.

7.4. Test Results

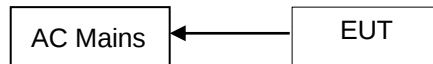
Not Applicable.

Because power of EUT is less than 75W, according to standard EN61000-3-2, Harmonics Current is not required.

8. VOLTAGE FLUCTUATIONS & FLICKER MEASUREMENT

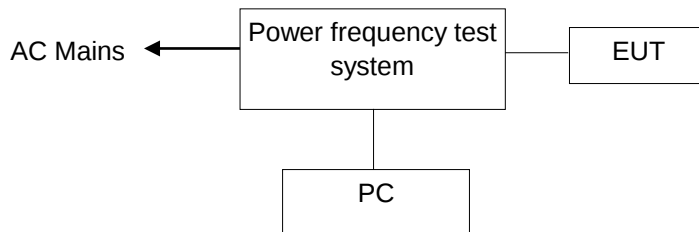
8.1. Block Diagram of Test Setup

8.1.1. Block Diagram of connection between the EUT and simulators



(EUT: Electronic Fragrance dispenser)

8.1.2. Block Diagram of Test Setup



(EUT: Electronic Fragrance dispenser)

8.2. Measuring Standard

EN 61000-3-3: 2013

8.3. Operating Condition of EUT

8.3.1. Setup the EUT as shown Section 8.1.

8.3.2. Turn on the power of all equipments.

8.3.3. Let EUT work in test mode(ON) and measure it.

8.4. Test Results

PASS.

Please refer to the following page.

Test Report

Report title:	Flicker
Company Name:	EMTEK
Date of test:	11:32 29.Aug 2017
Tester:	Alan He
Standard used:	EN/IEC 61000-3-3 Flicker
Short time (Pst):	10 min
Observation time:	10 min (1 Flicker measurement)
Flickermeter:	230V / 50Hz
Flicker Impedance:	Zref (IEC 60725)
Customer:	HYSO LLC
E. U. T.:	Electronic Fragrance dispenser
M/N	Stealth
MODE	ON

Test Result	PASS
-------------	------

Maximum Flicker results

	EUT values	Limit	Result
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.006	3.30	PASS
dmax [%]	0.079	4.00	PASS
dt [s]	0.000	0.50	PASS

9. ELECTROSTATIC DISCHARGE TEST

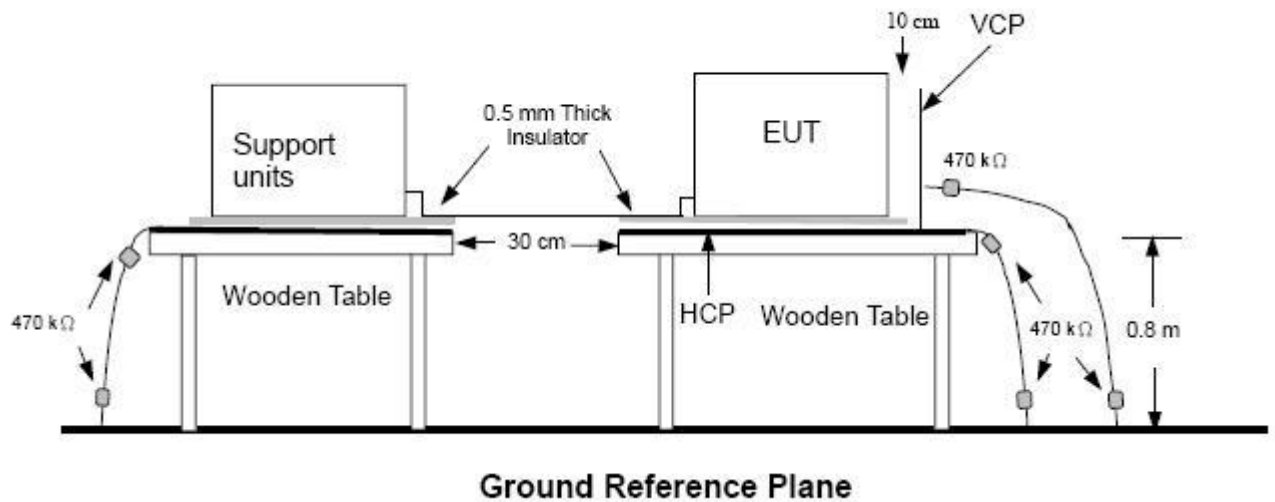
9.1. Block Diagram of Test Setup

9.1.1. Block Diagram of connection between the EUT and simulators



(EUT: Electronic Fragrance dispenser)

9.1.2. Block Diagram of ESD Test Setup



(EUT: Electronic Fragrance dispenser)

9.2. Test Standard

EN 55014-2: 2015

(IEC 61000-4-2: 2008 (Severity Level: 2 / Contact Discharge: $\pm 4\text{KV}$
Severity Level: 3 / Air Discharge: $\pm 8\text{KV}$))

9.3. Severity Levels and Performance Criterion

9.3.1. Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	±2	±2
2.	±4	±4
3.	±6	±8
4.	±8	±15
X	Special	Special

9.3.2. Performance criterion: **B**

9.4. EUT Configuration

The configuration of EUT is listed in Section 2.1

9.5. Operating Condition of EUT

9.5.1. Setup the EUT as shown in Section 9.1.

9.5.2. Turn on the power of all equipments.

9.5.3. Let the EUT work in test mode(ON) and measure it.

9.6. Test Procedure

9.6.1. Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

9.6.2. Contact Discharge:

All the procedure shall be same as Section 9.6.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

9.6.3. Indirect discharge for horizontal coupling plane:

At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

9.6.4. Indirect discharge for vertical coupling plane:

At least 20 single discharge shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

9.7. Test Results

PASS.

Please refer to the following page.

Electrostatic Discharge Test Results

EMTEK(DONGGUAN) CO., LTD.

Applicant : HYSO LLC	Test Date : August 29, 2017
EUT : Electronic Fragrance dispenser	Temperature : 24°C
M/N : Stealth	Humidity : 54%
Power Supply : AC 230V/50Hz	Test Engineer: YE
Test Mode : ON	Criterion : B

Air Discharge: $\pm 2, 4, 8$ KV
Contact Discharge: $\pm 2, 4$ KV # For each point positive 10 times and negative 10 times

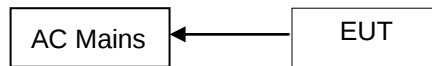
Location	Kind A-Air Discharge C-Contact Discharge	Result
Slot of EUT 10 points	A	PASS
HCP	C	PASS
VCP	C	PASS
Remark :	Test Equipment : ESD Tester (TESEQ AG, NSG437)	

Discharge should be considered on Contact and Air and Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP).

10. ELECTRICAL FAST TRANSIENT/BURST TEST

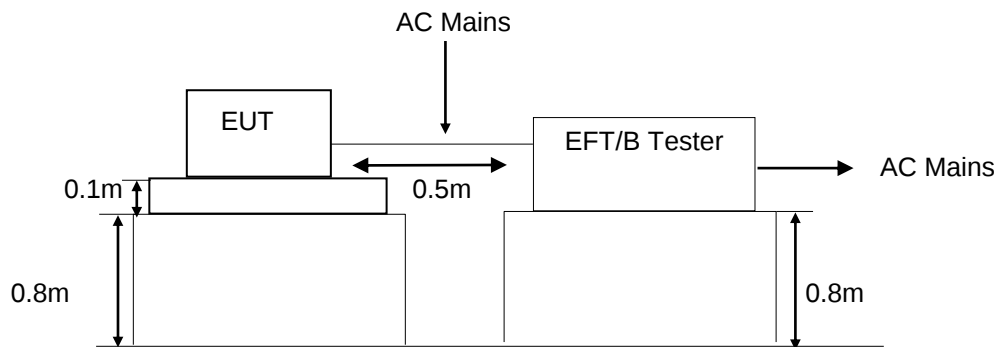
10.1. Block Diagram of Test Setup

10.1.1. Block Diagram of connection between the EUT and simulators



(EUT: Electronic Fragrance dispenser)

10.1.2. Block Diagram of EFT Test Setup



(EUT: Electronic Fragrance dispenser)

10.2. Test Standard

EN 55014-2: 2015

(IEC 61000-4-4: 2012, Severity Level, Level 2: 1KV)

10.3. Severity Levels and Performance Criterion

10.3.1. Severity level

Open circuit output test voltage and repetition rate of the impulses				
Level	On power port, PE		On I/O (Input/Output) Signal data and control ports	
	Voltage peak KV	Repetition rate KHz	Voltage peak KV	Repetition rate KHz
1.	0.5 KV	5 or 100	0.25 KV	5 or 100
1.	1 KV	5 or 100	0.5 KV	5 or 100
2.	2 KV	5 or 100	1 KV	5 or 100
4.	4 KV	5 or 100	2 KV	5 or 100
X	Special	Special	Special	Special
NOTE 1 Use of 5 KHz repetition rates is traditional; however, 100 KHz is closer to reality. Product committees should determine which frequencies are relevant for specific products or product types.				
NOTE 2 With some products, there may be no clear distinction, between power ports and I/O ports, in which case it is up to product committees to make this determination for test purposes.				
“X” is an open level. The level has to be specified in the dedicated equipment specification.				

10.3.2. Performance criterion: **B**

10.4. EUT Configuration

The configurations of EUT are listed in Section 2.1.

10.5. Operating Condition of EUT

10.5.1. Setup the EUT as shown in Section 10.1.

10.5.2. Turn on the power of all equipments.

10.5.3. Let the EUT work in test mode(ON) and measure it.

10.6. Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

10.6.1. For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

10.6.2. For signal lines and control lines ports:

No I/O ports. It's unnecessary to test.

10.6.3. For DC output line ports:

No DC ports. It's unnecessary to test.

10.7. Test Results

PASS.

Please refer to the following page.

Electrical Fast Transient/Burst Test Results

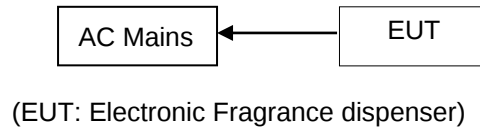
EMTEK(DONGGUAN) CO., LTD.

Standard :	☒ IEC 61000-4-4 ☐ EN 61000-4-4	Result : ☒ PASS / ☐ FAIL	
Applicant : <u>HYSO LLC</u> EUT : <u>Electronic Fragrance dispenser</u> M/N : <u>Stealth</u> Input Voltage: <u>AC 230V/50Hz</u> Criterion : <u>B</u> Ambient Condition : <u>25 °C</u> <u>50% RH</u>			
Operation Mode : ON			
Line : ☒ AC Mains		Line : ☐ Signal ☐ I/O Cable	
Coupling : ☒ Direct		Coupling : ☐ Capacitive	
Test Time : 120s			
Line	Test Voltage	Result (+)	Result (-)
L	1KV	PASS	PASS
N	1KV	PASS	PASS
P			
L、N	1KV	PASS	PASS
L、PE			
N、PE			
L、N、PE			
Signal Line			
DC Line			
Note:			
Test Equipment		Burst Tester Model : UCS500M6B	

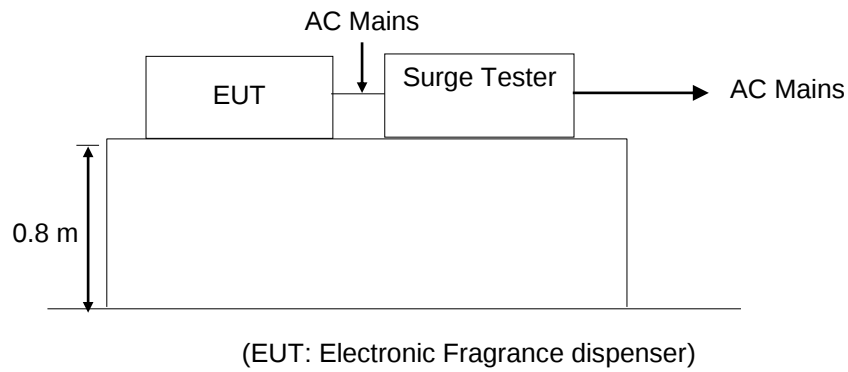
11. SURGE IMMUNITY TEST

11.1. Block Diagram of Test Setup

11.1.1. Block Diagram of connection between the EUT and simulators



11.1.2. Surge Test Setup



11.2. Test Standard

EN 55014-2: 2015

(IEC 61000-4-5: 2014, Severity Level: Line to Line: Level 2, 1.0KV)

11.3. Severity Levels and Performance Criterion

11.3.1. Severity level

Severity Level	Open-Circuit Test Voltage KV
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

11.3.2. Performance criterion: **B**

11.4. EUT Configuration

The configurations of EUT are listed in Section 2.1.

11.5. Operating Condition of EUT

11.5.1. Setup the EUT as shown in Section 11.1.

11.5.2. Turn on the power of all equipments.

11.5.3. Let the EUT work in test mode (ON) and measure it.

11.6. Test Procedure

- 1) Set up the EUT and test generator as shown on Section 11.1.2.
- 2) For line to line coupling mode, respectively provide a 1.0KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
- 3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 4) Different phase angles are done individually.
- 5) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

11.7. Test Results

PASS.

Please refer to the following page.

Surge Immunity Test Results

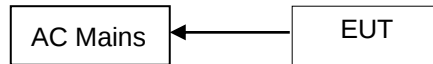
EMTEK(DONGGUAN) CO., LTD.

Applicant : <u>HYSO LLC</u> EUT : <u>Electronic Fragrance dispenser</u> M/N : <u>Stealth</u> Power Supply : <u>AC 230V/50Hz</u> Test Mode : <u>ON</u>					Test Date : <u>August 29, 2017</u> Temperature : <u>20°C</u> Humidity : <u>50%</u> Test Engineer : <u>YF</u> Criterion : <u>B</u>
Location	Polarity	Phase Angle	No of Pulse	Pulse Voltage (KV)	Result
L-N	+	90°	5	1.0	PASS
	-	270°	5	1.0	PASS
L-PE					
N-PE					
Remark:				Test Equipment : Surge Tester P surge4.1	

12. INJECTED CURRENTS SUSCEPTIBILITY TEST

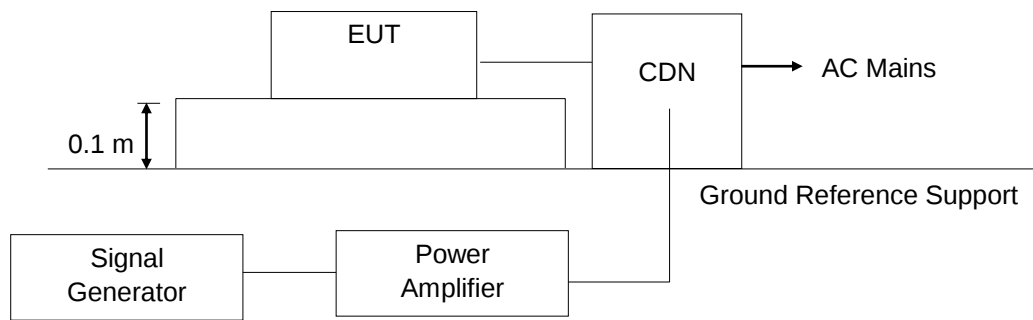
12.1. Block Diagram of Test Setup

12.1.1. Block Diagram of connection between the EUT and simulators



(EUT: Electronic Fragrance dispenser)

12.1.2. Block Diagram of Test Setup



(EUT: Electronic Fragrance dispenser)

12.2. Test Standard

EN 55014-2: 2015

(IEC 61000-4-6: 2013, Severity Level: 3V (rms), 0.15MHz ~ 230MHz)

12.3. Severity Levels and Performance Criterion

12.3.1. Severity level

Level	Field Strength V
1.	1
2.	3
3.	10
X	Special

12.3.2. Performance criterion: **A**

12.4. EUT Configuration

The configurations of EUT are listed in Section 2.1.

12.5. Operating Condition of EUT

12.5.1. Setup the EUT as shown in Section 12.1.

12.5.2. Turn on the power of all equipments.

12.5.3. Let the EUT work in test mode(ON)and measure it.

12.6. Test Procedure

- 1) Set up the EUT, CDN and test generators as shown on Section 12.1.2.
- 2) Let the EUT work in test mode and measure it.
- 3) The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 4) The disturbance signal described below is injected to EUT through CDN.
- 5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 6) The frequency range is swept from 150KHz to 230MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave.
- 7) The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- 8) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

12.7.Test Results

PASS.

These test result outsourced to EMTEK(SHENZHEN) CO., LTD.

Please refer to the following page.

Injected Currents Susceptibility Test Results

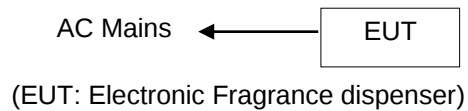
EMTEK(SHENZHEN) CO., LTD.

Applicant : <u>HYSO LLC</u>			Test Date : <u>August 30, 2017</u>	
EUT : <u>Electronic Fragrance dispenser</u>			Temperature : <u>25°C</u>	
M/N : <u>Stealth</u>			Humidity : <u>50%</u>	
Power Supply : <u>AC 230V/50Hz</u>			Test Engineer : <u>YE</u>	
Test Mode : <u>ON</u>				
Frequency Range (MHz)	Injected Position	Strength	Criterion	Result
0.15 ~ 230	AC Mains	3V(rms)	A	PASS
Test Mode : <u>ON</u>				
Frequency Range (MHz)	Injected Position	Strength	Criterion	Result
Remark : 1. Modulation Signal:1KHz 80% AM Measurement Equipment : Simulator: CWS 500C (SWITZERLAND EMTEST) CDN : ☒ CDN-M2 (SWITZERLAND EMTEST) ☐ CDN-M3 (SWITZERLAND EMTEST)			Note:	

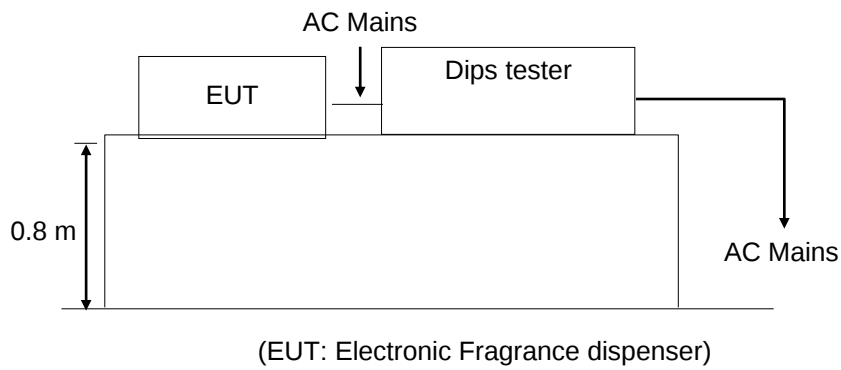
13. VOLTAGE DIPS AND INTERRUPTIONS TEST

13.1. Block Diagram of Test Setup

13.1.1. Block Diagram of connection between the EUT and simulators



13.1.2. Dips Test Setup



13.2. Test Standard

EN 55014-2: 2015
(IEC 61000-4-11: 2004)

13.3. Severity Levels and Performance Criterion

13.3.1. Severity level

Test Level %UT	Voltage dip and short interruptions %UT	Duration (in period)
0	100	0.5
40	60	1
70	30	5
		10
		25
		50
		*

13.3.2. Performance criterion: C

13.4. EUT Configuration

The configurations of EUT are listed in Section 2.1.

13.5. Operating Condition of EUT

13.5.1. Setup the EUT as shown in Section 13.1.

13.5.2. Turn on the power of all equipments.

13.5.3. Let the EUT work in test mode (ON) and measure it.

13.6. Test Procedure

- 1) Set up the EUT and test generator as shown on Section 13.1.2.
- 2) The interruptions are introduced at selected phase angles with specified duration.
- 3) Record any degradation of performance.

13.7. Test Results

PASS.

These test result outsourced to EMTEK(SHENZHEN) CO., LTD.

Please refer to the following page.

Voltage Dips And Interruptions Test Results

EMTEK(SHENZHEN) CO., LTD.

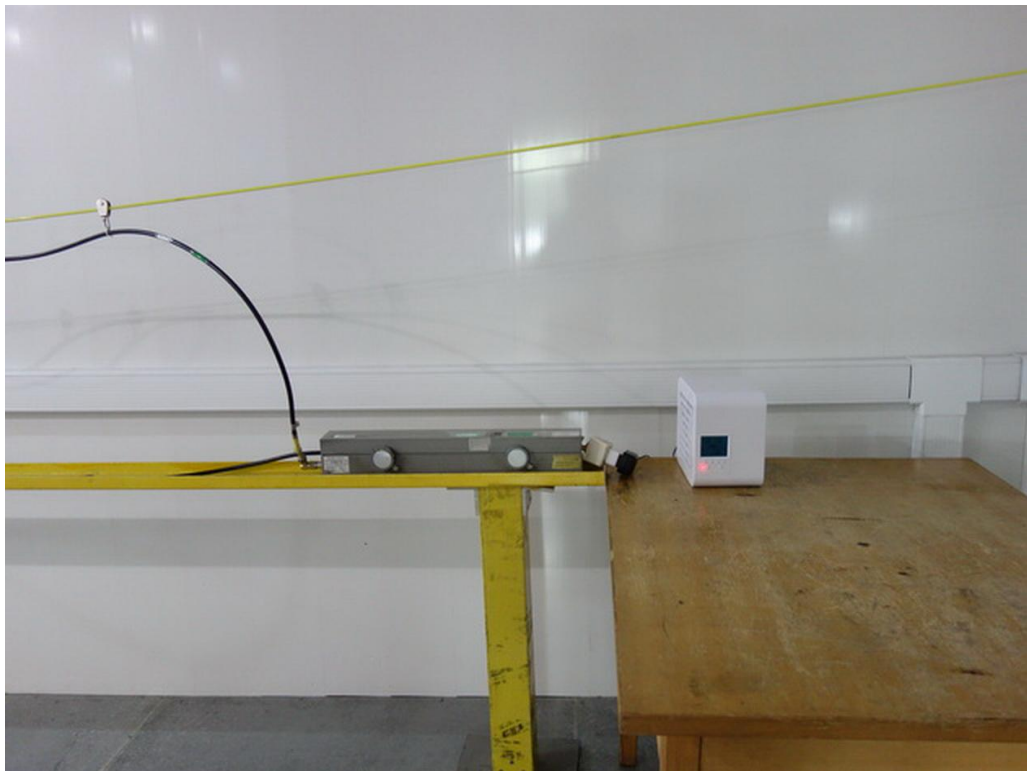
Applicant : <u>HYSO LLC</u>			Test Date : <u>August 30, 2017</u>	
EUT : <u>Electronic Fragrance dispenser</u>			Temperature : <u>20°C</u>	
M/N : <u>Stealth</u>			Humidity : <u>50%</u>	
Power Supply : <u>AC 230V/50Hz</u>			Test Engineer : <u>YE</u>	
Test Mode : <u>ON</u>				
Test Level % U _T	Voltage Dips & Short Interruptions % U _T	Duration (in period) 50 Hz	Criterion ☐ A ☐ B ☒ C ☐ D	Result
0	100	0.5 P	C	PASS
40	60	10 P	C	PASS
70	30	25 P	C	PASS
Test Mode : <u>ON</u>				
Test Level % U _T	Voltage Dips & Short Interruptions % U _T	Duration (in period)	Criterion ☐ A ☐ B ☐ C ☐ D	Result
Remark: U _T is the rated voltage for the equipment.			Test Equipment : Dips Tester PLINE1610	

14. PHOTOGRAPH

14.1. Photo of Conducted Emission Measurement



14.2. Photo of Disturbance Power Measurement



14.3.Photo of Harmonic/Flicker Measurement



14.4.Photo of Electrostatic Discharge Test



14.5.Photo of Electrical Fast Transient /Burst Test



14.6.Photo of Surge Test



APPENDIX (Photos of EUT)



