EMC TEST REPORT

Application No.	:	TB170916712
Applicant	:	ShenZhen Fengjie Bathroom Co., LTD.
Equipment Under Test (EUT)		
EUT Name	:	Automatic Soap Dispensor
Model(s)	:	F1408, F1301, F1302, F1303, F1304, F1305, F1306, F1307, F1308, F1309, F1406, F1407, F1409
Brand Name	:	N/A
Receipt Date	:	2017-09-06
Test Date	:	2017-09-06 to 2017-09-11
Issue Date	:	2017-09-11
Standards	:	EN 55014-1:2006+A1:2009+A2:2011 EN 61000-3-2:2014 EN 61000-3-3:2013 EN 55014-2:1997+A1:2001+A2:2008
Conclusions	:	**PASS** In the configuration tested, the EUT complied with the standards specified above, The EUT technically complies with the 2014/30/EU directive requirements.
Test/Witness Engineer	:	
Approved & Authorized	:	

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

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1. General Information

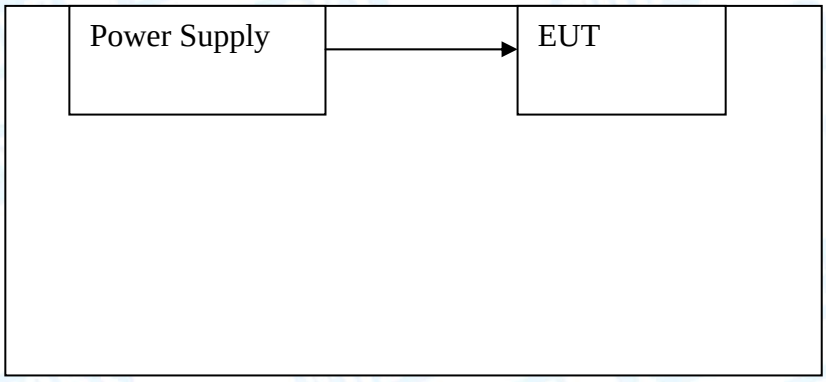
1.1. Client Information

Applicant	:	ShenZhen Fengjie Bathroom Co., LTD.
Address	:	2nd Floor, Haoting Industry Building, Xia'nansan Industrial Zone, Shang Village, Gongming Subdistrict, Guangming New District, Shenzhen City, Guangdong Province, China
Manufacturer	:	DongGuan Fengjie Bathroom Co., LTD.
Address	:	No1-6, Shengtai Road, Xingguang Village, Huangjiang Town, Dongguan City, Guangdong Province, China

1.2. General Description of EUT (Equipment Under Test)

EUT Name	:	Automatic Soap Dispensor
Model(s)	:	F1408, F1301, F1302, F1303, F1304, F1305, F1306, F1307, F1308, F1309, F1406, F1407, F1409
Power Supply	:	Input: AC 100-240V, 50/60Hz, 0.5VA Output: DC 6V 1A
Remark: All above models are identical in schematic, structure, critical components and input/output voltage except for output power, therefore, EMI and EMS testing was performed with F1408 only.		

1.3. Block Diagram Showing the Configuration of System Tested



1.4. Description of Support Units

The EUT has been tested as an independent unit.

1.5. Performance Criterion

Criterion A: The equipment shall continue to operate as intended without operator intervention. No degradation of performance of loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended.

Criterion B: After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended.

Criterion C: Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.

1.6. Classification of Apparatus

Category I: Apparatus containing no electronic control circuitry.

Category II: Transformer toys, dual supply toys, mains powered motor operated appliances, tools, heating appliances and similar electric apparatus(for example-UV radiators, IR radiators and microwave ovens) containing electronic control circuitry with no internal clock frequency or oscillator frequency higher than 15MHz.

Category III: Battery powered apparatus (with built-in batteries or external batteries), which in normal use is not connected to the mains, containing an electronic control circuitry with no internal clock frequency or oscillator frequency higher than 15MHz.

This category includes apparatus provided with rechargeable batteries which can be charged by connecting the apparatus to the mains power. However, this apparatus shall also be tested as an apparatus in category III while it is connected to the mains network.

Category IV: All other apparatus covered by the scope of this standard.

1.7. Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)
The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

FCC List No.: (811562)
The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number is 811562.

IC Registration No.: (11950A-1)
The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.

2. Test Results Summary

EMISSION		
Description of test items	**Standards**	**Results**
Conducted disturbance at mains terminals	EN55014-1:2006+A1:2009+A2: 2011	Pass
Disturbance Power	EN55014-1:2006+A1:2009+A2: 2011	Pass
Click measurement	EN55014-1:2006+A1:2009+A2: 2011	N/A
Radiated disturbance	EN55014-1:2006+A1:2009+A2: 2011	Pass
Harmonic current emissions	EN61000-3-2: 2014	Pass
Voltage fluctuation and flicker	EN61000-3-3: 2013	Pass
Immunity		
Description of test items	**Basic Standards**	**Results**
Electrostatic Discharge (ESD)	EN61000-4-2: 2009	Pass
Radio-frequency, Continuous Radiated Disturbance	EN61000-4-3: 2006+A1: 2008 +A2:2010	Pass
EFT/B Immunity	EN61000-4-4: 2012	Pass
Surge Immunity	EN61000-4-5: 2014	Pass
Conducted RF Immunity	EN61000-4-6: 2014	Pass
Voltage dips, 40% reduction	EN61000-4-11: 2004	Pass
Voltage dips, 70% reduction		
Voltage interruptions		

3. Test Equipment Used

Conducted Emission Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal.Due Date**
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 20, 2017	Jul. 19, 2018
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 20, 2017	Jul. 19, 2018
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 20, 2017	Jul. 19, 2018
LISN	Rohde & Schwarz	ENV216	101131	Jul. 21, 2017	Jul. 20, 2018
ISN	SCHWARZBECK	NTFM 8131	8131-193	Jul. 03, 2017	Jul. 02, 2018
ISN	SCHWARZBECK	CAT3 8158	cat3 8158-0094	Jul. 03, 2017	Jul. 02, 2018
ISN	SCHWARZBECK	NTFM8158	NTFM8158 0145	Jul. 03, 2017	Jul. 02, 2018
ISN	SCHWARZBECK	CAT 8158	cat5 8158-179	Jul. 03, 2017	Jul. 02, 2018
Disturbance Power Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal.Due Date**
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 20, 2017	Jul. 19, 2018
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 20, 2017	Jul. 19, 2018
Power Clamp	LUTHI	MDS21	3938	Jul. 21, 2017	Jul. 20, 2018
Radiation Emission Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal.Due Date**
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 20, 2017	Jul. 19, 2018
EMI Test Receiver	Rohde & Schwarz	ESCI	101165	Jul. 20, 2017	Jul. 19, 2018
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar.25, 2017	Mar. 24, 2018
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Mar.25, 2017	Mar. 24, 2018
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.24, 2017	Mar. 23, 2018
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar.24, 2017	Mar. 23, 2018
Pre-amplifier	HP	11909A	185903	Mar.24, 2017	Mar. 23, 2018
Pre-amplifier	HP	8449B	3008A00849	Mar.25, 2017	Mar. 24, 2018
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar. 24, 2017	Mar. 23, 2018
Signal Generator	Rohde & Schwarz	SML03	IKW682-054	Mar. 24, 2017	Mar. 23, 2018
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Harmonic Current and Voltage Fluctuation and Flicker Test					

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
Harmonic Flicker Test System	CI	5001ix-CTS-400	100321	Jul. 20, 2017	Jul. 19, 2018
5K VA	CI	500liX	59468	Jul. 20, 2017	Jul. 19, 2018
Discharge Immunity Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal.Due Date**
ESD Generator	HAFELY	PESD 1610	H808671	Mar. 27, 2017	Mar.26, 2018
ESD Tester	TESEQ	NSG437	304	Jul. 21, 2017	Jul. 20, 2018
Radiated Immunity Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal.Due Date**
Signal Generator	Rohde & Schwarz	SMT03	200754	Mar. 24, 2017	Mar. 23, 2018
Power Meter	Rohde & Schwarz	NRVD	110562	Feb. 14, 2017	Feb. 13, 2018
Voltage Probe	Rohde & Schwarz	URV5-Z2	12056	Feb. 14, 2017	Feb. 13, 2018
Voltage Probe	Rohde & Schwarz	URV5-Z2	12074	Feb. 14, 2017	Feb. 13, 2018
RF Amplifier	AR	50S1G4A	326720	Feb. 14, 2017	Feb. 13, 2018
Bilog Antenna	ETS	3142C	00047662	Feb. 14, 2017	Feb. 13, 2018
Horn Antenna	ARA	DRG-118A	16554	Feb. 14, 2017	Feb. 13, 2018
Electrical Fast Transient/ Surge/ Voltage Dip and Interruption Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal.Due Date**
Simulator	EMTEST	UCS500N5	V0948105575	Jul. 20, 2017	Jul. 19, 2018
Auto-transformer	EMTEST	V4780S2	0109-41	Jul. 20, 2017	Jul. 19, 2018
Coupling Clamp	EMTEST	HFK	1109-04	Jul. 20, 2017	Jul. 19, 2018
Conducted Immunity Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal.DueDate**
RF Generator	FRANKONIA	CIT-10/75	126B1126	Jul. 20, 2017	Jul. 19, 2018
Attenuator	FRANKONIA	59-6-33	A413	Jul. 20, 2017	Jul. 19, 2018
M-CDN	LUTHI	L-801 M2/M3	2599	Jul. 20, 2017	Jul. 19, 2018
AF2-CDN	LUTHI	L-801:AF2	2538	Mar.25, 2017	Mar. 24, 2018
EM Injection Clamp	LUTHI	EM101	35958	Jul. 20, 2017	Jul. 19, 2018

4. Conducted Emission Test

4.1. Test Standard and Limit

4.1.1. Test Standard

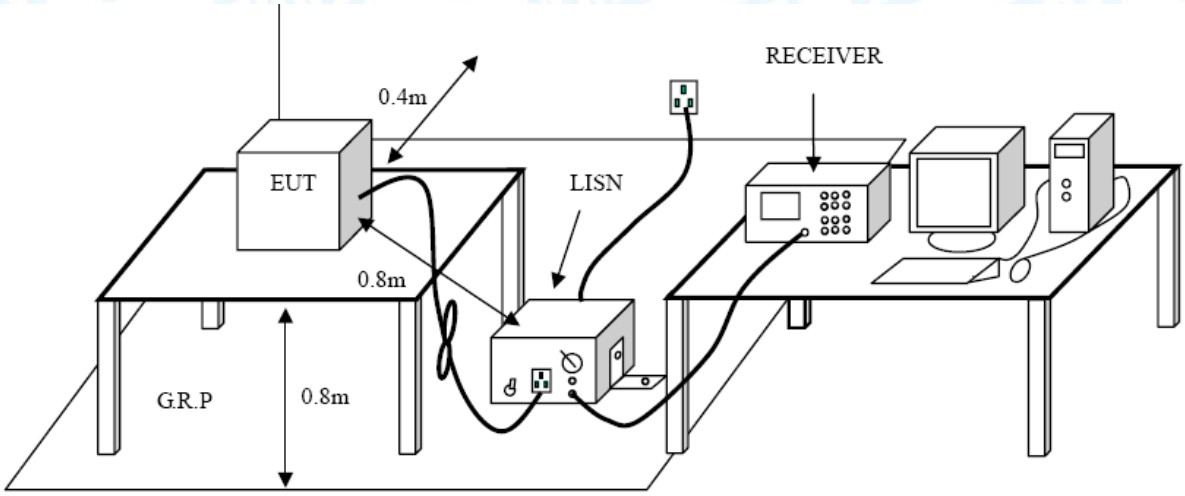
EN55014-1: 2006+A1: 2009+A2: 2011.

4.1.2. Test Limit

Conducted Disturbance Test Limit

Frequency	Maximum RF Line Voltage (dBμV)	
	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50
Remark: "*" Decreasing linearly with logarithm of the frequency		

4.2. Test Setup



4.3. Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

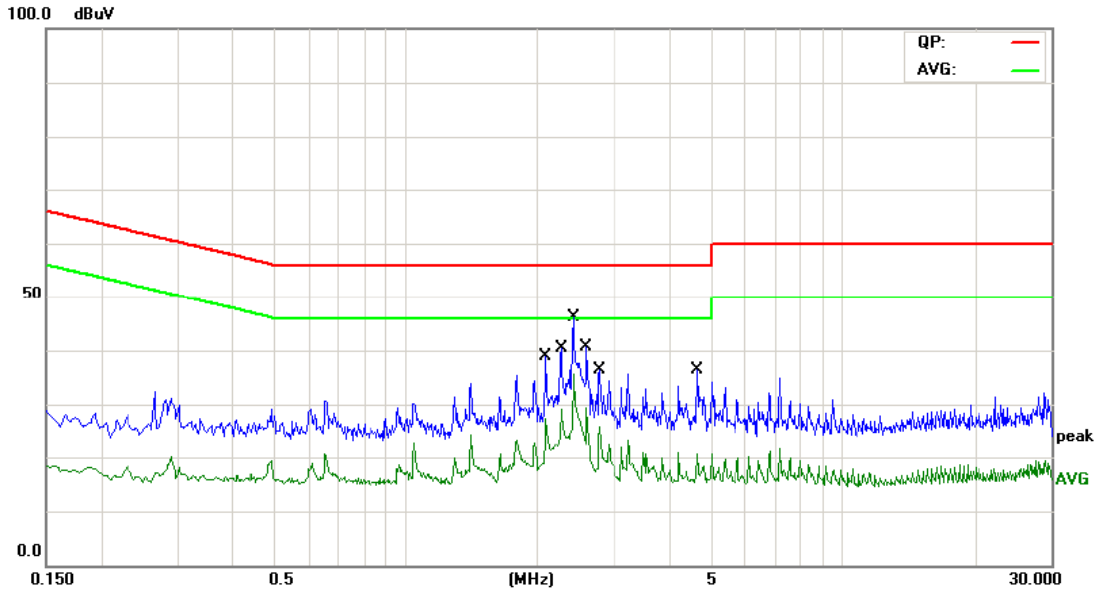
4.4. Test Condition

Temperature	:	25℃
Relative Humidity	:	55 %
Pressure	:	1010 hPa
Test Power	:	AC 230V/50Hz

4.5. Test Data

Please refer to the following pages.

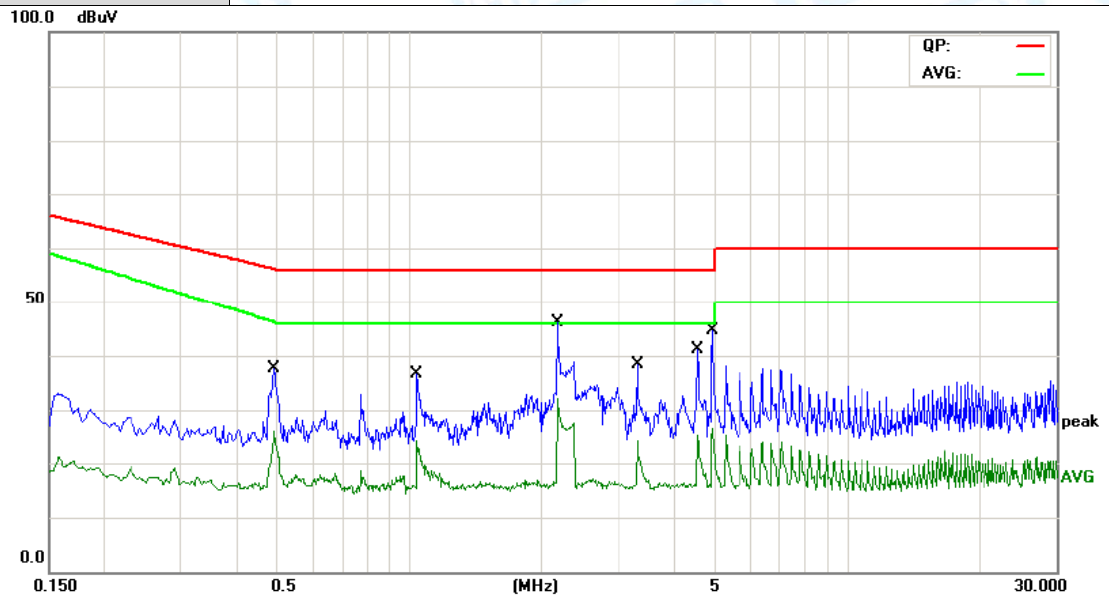
EUT:	Automatic Soap Dispensor	**Model Name :**	F1408
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 230V/50 Hz		
Terminal:	Line		
Test Mode:	Normal Mode		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		2.0940	16.00	9.61	25.61	56.00	-30.39	QP
2		2.0940	8.23	9.61	17.84	46.00	-28.16	AVG
3		2.2700	19.19	9.62	28.81	56.00	-27.19	QP
4		2.2700	11.97	9.62	21.59	46.00	-24.41	AVG
5		2.4180	21.47	9.62	31.09	56.00	-24.91	QP
6	*	2.4180	13.98	9.62	23.60	46.00	-22.40	AVG
7		2.5860	17.15	9.63	26.78	56.00	-29.22	QP
8		2.5860	7.23	9.63	16.86	46.00	-29.14	AVG
9		2.7700	15.45	9.64	25.09	56.00	-30.91	QP
10		2.7700	8.10	9.64	17.74	46.00	-28.26	AVG
11		4.6340	13.23	9.72	22.95	56.00	-33.05	QP
12		4.6340	7.00	9.72	16.72	46.00	-29.28	AVG

Emission Level= Read Level+ Correct Factor

EUT:	Automatic Soap Dispensor	Model Name :	F1408
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 230V/50 Hz		
Terminal:	Neutral		
Test Mode:	Normal Mode		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.4900	18.97	9.58	28.55	56.17	-27.62	QP
2		0.4900	9.45	9.58	19.03	46.22	-27.19	AVG
3		1.0420	14.63	9.59	24.22	56.00	-31.78	QP
4		1.0420	7.03	9.59	16.62	46.00	-29.38	AVG
5		2.1780	23.89	9.62	33.51	56.00	-22.49	QP
6	*	2.1780	14.98	9.62	24.60	46.00	-21.40	AVG
7		3.3140	17.46	9.68	27.14	56.00	-28.86	QP
8		3.3140	10.10	9.68	19.78	46.00	-26.22	AVG
9		4.5420	13.78	9.82	23.60	56.00	-32.40	QP
10		4.5420	7.43	9.82	17.25	46.00	-28.75	AVG
11		4.9020	19.21	9.89	29.10	56.00	-26.90	QP
12		4.9020	9.84	9.89	19.73	46.00	-26.27	AVG

Emission Level= Read Level+ Correct Factor

5. Disturbance Power Measurement

5.1. Test Standard and Limit

5.1.1. Test Standard

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

5.1.2. Test Limit

Disturbance Power Limits

	Household and similar appliances		Tools					
1	2	3	4	5	6	7	8	9
Frequency range			Rated motor power not exceeding 700W		Rated motor power above 700W and not exceeding 1000W		Rated motor power above 1000W	
(MHz)	dB(pW) Quasi-pesk	dB(pW) Avergge[a]	dB(pW) Quasi-pesk	dB(pW) Avergge[a]	dB(pW) Quasi-pesk	dB(pW) Avergge[a]	dB(pW) Quasi-pesk	dB(pW) Avergge[a]
30 to 300	Increasing linearly with the frequency from:							
	45 to 55	35 to 45	45 to 55	35 to 45	49 to 59	39 to 49	55 to 65	45 to 55

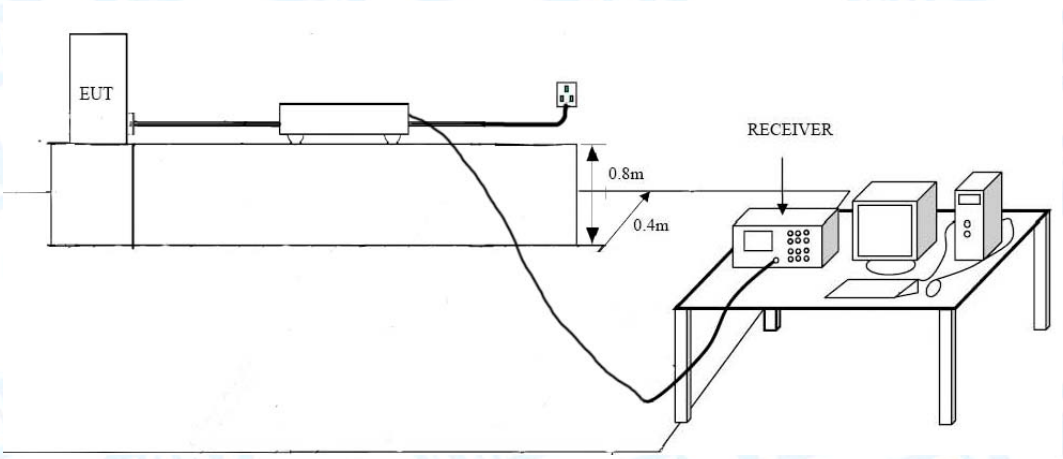
[a] If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement using the receiver with an average detector need not be carried out.
At the transition frequency the lower limit applies.

Margin when performing disturbance power measurement

	Household and similar appliances		Tools					
1	2	3	4	5	6	7	8	9
Frequency Range			Rated motor power not exceeding 700W		Rated motor power above 700W and not exceeding 1000W		Rated motor power above 1000W	
(MHz)	dB(pW) Quasi-peak	dB(pW) Average	dB(pW) Quasi-peak	dB(pW) Average	dB(pW) Quasi-peak	dB(pW) Average	dB(pW) Quasi-peak	dB(pW) Average
30 to 300	Increasing linearly with the frequency from							
	0 to 10 dB	-	0 to 10 dB	-	0 to 10 dB	-	0 to 10 dB	-

NOTE 1 This table only applies if specified 4.1.2.3.2.
NOTE 2 The measured result at a particular frequency shall be less than the relevant limit minus the corresponding margin (at that frequency)

5.2. Test Setup



5.3. 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 is set at 120kHz.

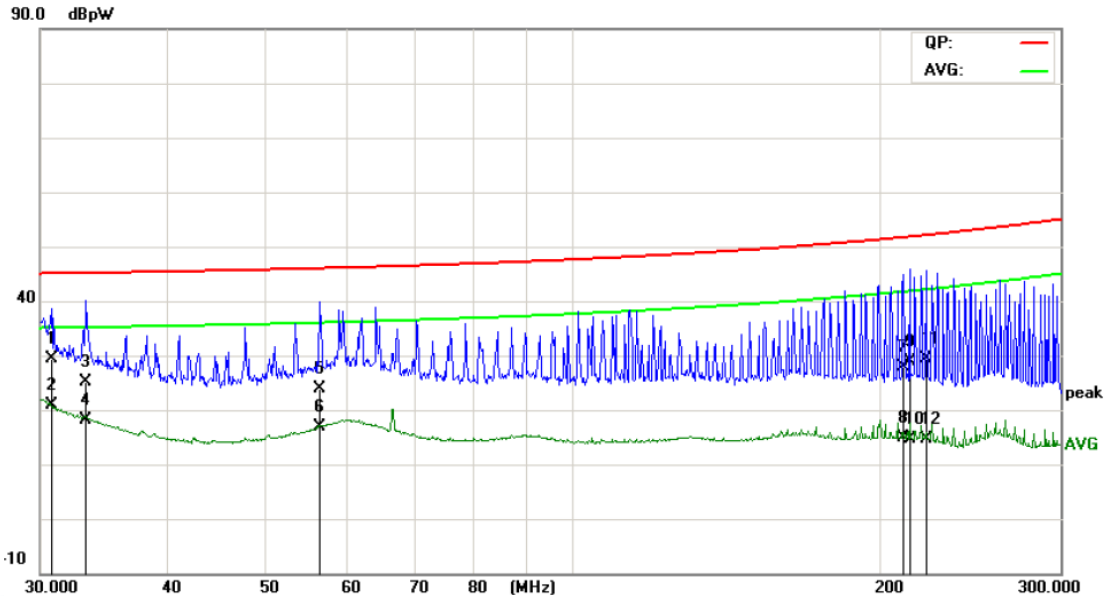
5.4. Test Condition

Temperature	:	23 ℃
Relative Humidity	:	52 %
Pressure	:	1010 hPa
Test Power	:	AC 230V/50Hz

5.5. Test Data

Please refer to the following pages.

EUT:	Automatic Soap Dispensor	Model Name :	F1408
Temperature:	23 ℃	Relative Humidity:	52%
Test Voltage:	AC 230V/50 Hz		
Terminal	AC Mains		
Test Mode:	Normal Mode		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBpW	dB	dBpW	dBpW	dB	Detector
1		30.8000	0.87	28.58	29.45	45.03	-15.58	QP
2	*	30.8000	-7.60	28.58	20.98	35.03	-14.05	AVG
3		33.3200	-1.65	26.90	25.25	45.12	-19.87	QP
4		33.3200	-8.72	26.90	18.18	35.12	-16.94	AVG
5		56.4400	-3.29	27.18	23.89	45.98	-22.09	QP
6		56.4400	-10.41	27.18	16.77	35.98	-19.21	AVG
7		210.4800	2.98	24.92	27.90	51.68	-23.78	QP
8		210.4800	-10.02	24.92	14.90	41.68	-26.78	AVG
9		213.4400	4.07	24.91	28.98	51.79	-22.81	QP
10		213.4400	-10.19	24.91	14.72	41.79	-27.07	AVG
11		221.6000	4.52	24.76	29.28	52.10	-22.82	QP
12		221.6000	-10.13	24.76	14.63	42.10	-27.47	AVG

Emission Level= Read Level+ Correct Factor

6. Radiated Disturbance Test

6.1. Test Standard and Limit

6.1.1. Test Standard

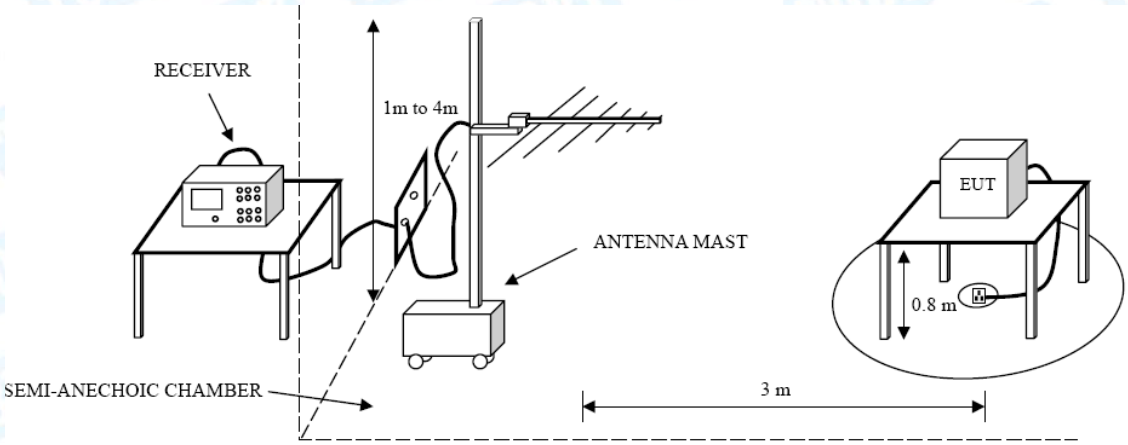
EN55014-1: 2006+A1: 2009+A2: 2011.

6.1.2. Test Limit

Radiated Disturbance Test Limit

Frequency	Limit (DbμV/m)
	Quasi-peak Level
30MHz~230MHz	40
230MHz~300MHz	47
300MHz~1000MHz	47
Remark: 1. The lower limit shall apply at the transition frequency. 2. The test distance is 3m.	

6.2. Test Setup



6.3. Test Procedure

The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m. The table was rotated 360 degrees to determine the position of the highest radiation.

The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

The initial step in collecting radiated emission data is a spectrum Quasi Peak detector mode scanning the measurement frequency range.

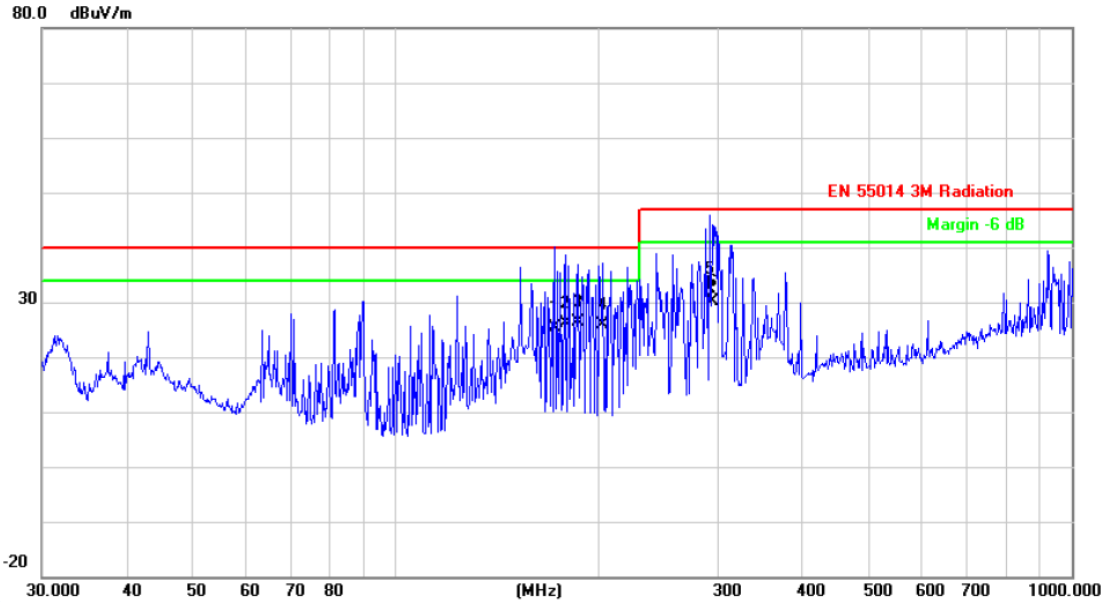
If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.

6.4. Test Condition

Temperature	:	25 ℃
Relative Humidity	:	55 %
Pressure	:	1010 hPa
Test Power	:	AC 230V/50Hz

6.5. Test Data

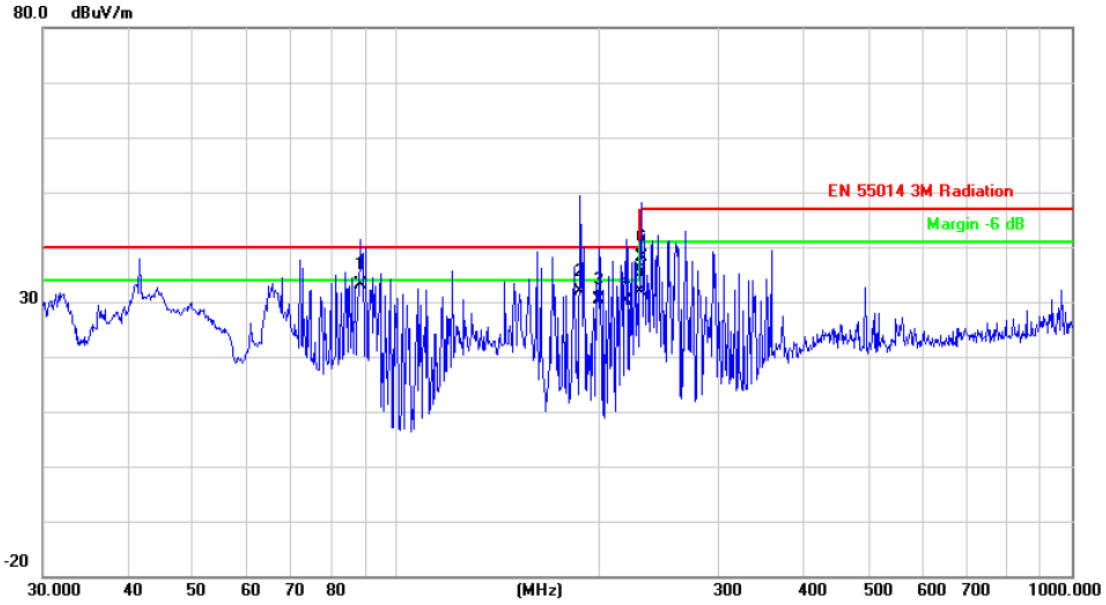
EUT:	Automatic Soap Dispensor	**Model Name :**	F1408
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 230V/50 Hz		
Ant. Pol.	Horizontal		
Test Mode:	Normal Mode		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		171.9946	45.94	-20.54	25.40	40.00	-14.60	QP
2		178.1327	46.26	-20.14	26.12	40.00	-13.88	QP
3	*	186.4409	46.52	-20.21	26.31	40.00	-13.69	QP
4		202.8104	45.46	-19.64	25.82	40.00	-14.18	QP
5		291.0360	48.87	-16.47	32.40	47.00	-14.60	QP
6		294.1137	46.64	-16.41	30.23	47.00	-16.77	QP

Emission Level= Read Level+ Correct Factor

EUT:	Automatic Soap Dispensor	**Model Name :**	F1408
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 230V/50 Hz		
Ant. Pol.	Vertical		
Test Mode:	Normal Mode		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	88.6524	55.58	-22.38	33.20	40.00	-6.80	QP
2		187.0958	52.13	-20.23	31.90	40.00	-8.10	QP
3		199.9856	50.21	-19.76	30.45	40.00	-9.55	QP
4		219.0753	49.11	-18.91	30.20	40.00	-9.80	QP
5		229.2931	50.24	-18.43	31.81	40.00	-8.19	QP
6		230.9068	56.48	-18.35	38.13	47.00	-8.87	QP

Emission Level= Read Level+ Correct Factor

7. Harmonic Current Emission Test

7.1. Test Standard and Limit

7.1.1. Test Standard

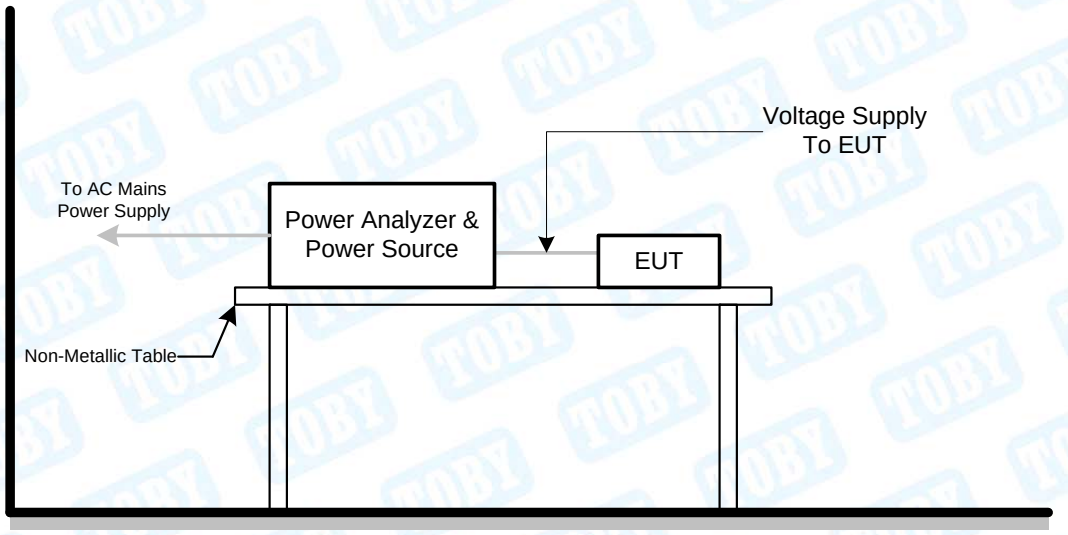
EN 61000-3-2:2014

7.1.2. Limits

Harmonic Current Test Limit (Class A)

Harmonic order (**n**)	Maximum permissible harmonic current (A)
Odd harmonics	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33
13	0.21
15≤n≤39	0.15×15/n
Even harmonics	
2	1.08
4	0.43
6	0.30
8≤n≤40	0.23×8/n

7.2. Test Setup



7.3. Test Procedure

The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions.

The classification of EUT is according to section 5 of EN 61000-3-2. The EUT is classified as follows:

Class A: Balanced three-phase equipment, Household appliances excluding equipment as Class D, Tools excluding portable tools, Dimmers for incandescent lamps, audio equipment, equipment not specified in one of the three other classes.

Class B: Portable tools. Arc welding equipment which is not professional equipment.

Class C: Lighting equipment.

Class D: Equipment having a specified power less than or equal to 600 W of the following types: Personal computers and personal computer monitors and television receivers.

7.4. Test Condition

Temperature	:	24 ℃
Relative Humidity	:	52 %
Pressure	:	1010 hPa
Test Power	:	AC 230V/50Hz

7.5. Test Data

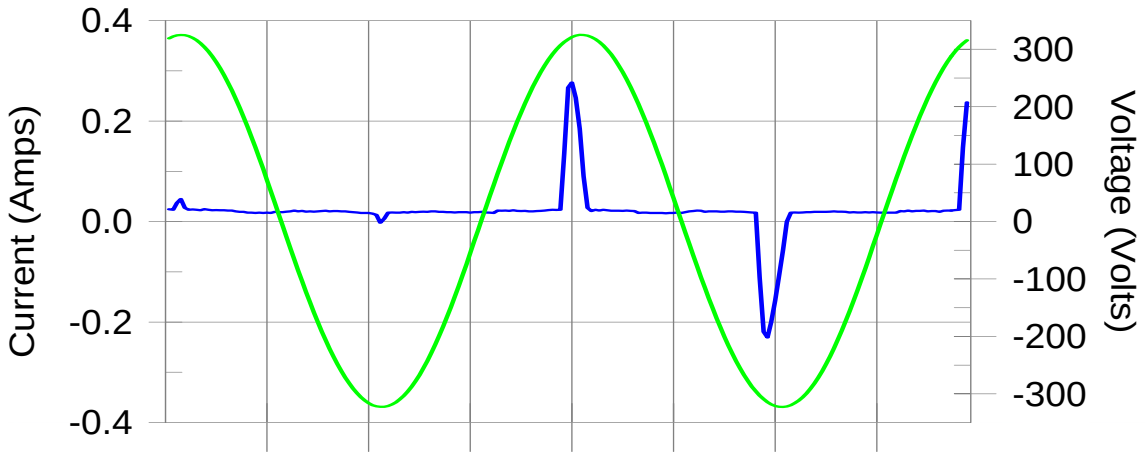
Please refer to the following pages.

Harmonics – Class-A per Ed. 4.0 (2014)(Run time)

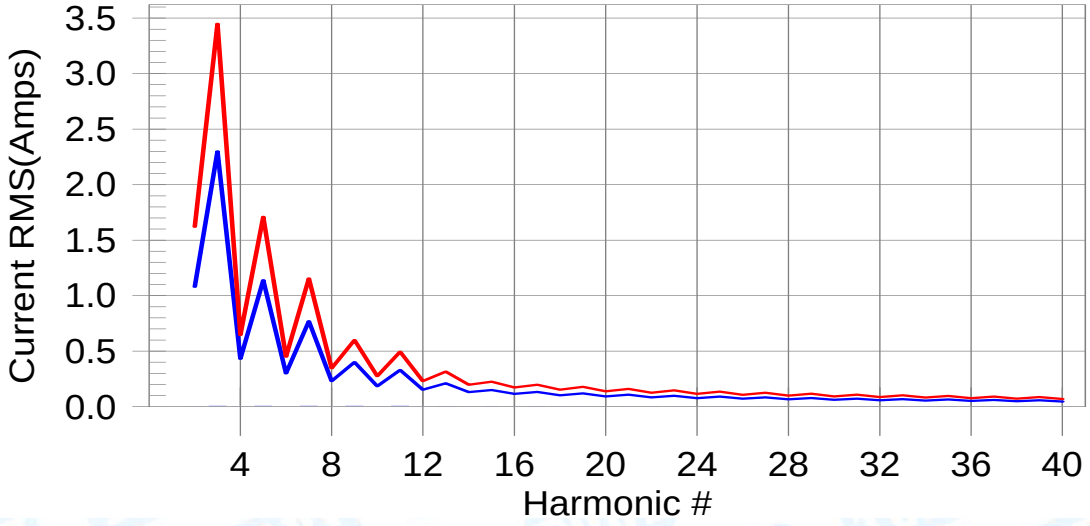
EUT: Automatic Soap Dispensor **Tested by: Tested by**
Test category: Class-A per Ed. 4.0 (2014) (European limits) **Test Margin: 100**
Test date: 2017/9/6 **Start time: 15:26:07** **End time: 15:28:48**
Test duration (min): 2.5 **Data file name: H-000024.cts_data**
Comment: F1408
Customer: Customer information

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass **Worst harmonics H0-0.0% of 150% limit, H0-0% of 100% limit**

Current Test Result Summary (Run time)

EUT: Automatic Soap Dispensor Tested by: Tested by
Test category: Class-A per Ed. 4.0 (2014) (European limits) Test Margin: 100
Test date: 2017/9/6 Start time: 15:26:07 End time: 15:28:48
Test duration (min): 2.5 Data file name: H-000024.cts_data
Comment: F1408
Customer: Customer information

Test Result: Pass Source qualification: Normal
THC(A): 0.011 I-THD(%): 130.0 POHC(A): 0.003 POHC Limit(A): 0.251

Highest parameter values during test:

V_RMS (Volts):	229.12	Frequency(Hz):	50.00
I_Peak (Amps):	0.280	I_RMS (Amps):	0.042
I_Fund (Amps):	0.008	Crest Factor:	9.206
Power (Watts):	1.9	Power Factor:	0.375

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.080	N/A	0.001	1.620	N/A	Pass
3	0.005	2.300	N/A	0.007	3.450	N/A	Pass
4	0.001	0.430	N/A	0.001	0.645	N/A	Pass
5	0.004	1.140	N/A	0.006	1.710	N/A	Pass
6	0.000	0.300	N/A	0.000	0.450	N/A	Pass
7	0.004	0.770	N/A	0.005	1.155	N/A	Pass
8	0.000	0.230	N/A	0.000	0.345	N/A	Pass
9	0.004	0.400	N/A	0.005	0.600	N/A	Pass
10	0.000	0.184	N/A	0.000	0.276	N/A	Pass
11	0.003	0.330	N/A	0.004	0.495	N/A	Pass
12	0.000	0.153	N/A	0.001	0.230	N/A	Pass
13	0.003	0.210	N/A	0.004	0.315	N/A	Pass
14	0.000	0.131	N/A	0.000	0.197	N/A	Pass
15	0.003	0.150	N/A	0.003	0.225	N/A	Pass
16	0.000	0.115	N/A	0.000	0.173	N/A	Pass
17	0.002	0.132	N/A	0.003	0.198	N/A	Pass
18	0.000	0.102	N/A	0.000	0.153	N/A	Pass
19	0.002	0.118	N/A	0.002	0.178	N/A	Pass
20	0.000	0.092	N/A	0.000	0.138	N/A	Pass
21	0.002	0.107	N/A	0.002	0.161	N/A	Pass
22	0.000	0.084	N/A	0.000	0.125	N/A	Pass
23	0.001	0.098	N/A	0.002	0.147	N/A	Pass
24	0.000	0.077	N/A	0.000	0.115	N/A	Pass
25	0.001	0.090	N/A	0.001	0.135	N/A	Pass
26	0.000	0.071	N/A	0.000	0.107	N/A	Pass
27	0.001	0.083	N/A	0.001	0.125	N/A	Pass
28	0.000	0.066	N/A	0.000	0.099	N/A	Pass
29	0.001	0.078	N/A	0.001	0.116	N/A	Pass
30	0.000	0.061	N/A	0.000	0.092	N/A	Pass
31	0.001	0.073	N/A	0.001	0.109	N/A	Pass
32	0.000	0.058	N/A	0.000	0.086	N/A	Pass
33	0.001	0.068	N/A	0.001	0.102	N/A	Pass
34	0.000	0.054	N/A	0.000	0.081	N/A	Pass
35	0.000	0.064	N/A	0.000	0.096	N/A	Pass
36	0.000	0.051	N/A	0.000	0.077	N/A	Pass
37	0.000	0.061	N/A	0.000	0.091	N/A	Pass
38	0.000	0.048	N/A	0.000	0.073	N/A	Pass
39	0.000	0.058	N/A	0.000	0.087	N/A	Pass
40	0.000	0.046	N/A	0.000	0.069	N/A	Pass

Voltage Source Verification Data (Run time)

EUT: Automatic Soap Dispensor Tested by: Tested by
Test category: Class-A per Ed. 4.0 (2014) (European limits) Test Margin: 100
Test date: 2017/9/6 Start time: 15:26:07 End time: 15:28:48
Test duration (min): 2.5 Data file name: H-000024.cts_data
Comment: F1408
Customer: Customer information

Test Result: Pass Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms):	229.12	Frequency(Hz):	50.00
I_Peak (Amps):	0.280	I_RMS (Amps):	0.042
I_Fund (Amps):	0.008	Crest Factor:	9.206
Power (Watts):	1.9	Power Factor:	0.375

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.059	0.458	12.94	OK
3	0.521	2.062	25.25	OK
4	0.052	0.458	11.33	OK
5	0.061	0.916	6.68	OK
6	0.023	0.458	5.06	OK
7	0.031	0.687	4.49	OK
8	0.008	0.458	1.65	OK
9	0.019	0.458	4.21	OK
10	0.013	0.458	2.76	OK
11	0.012	0.229	5.29	OK
12	0.010	0.229	4.38	OK
13	0.009	0.229	4.12	OK
14	0.005	0.229	2.32	OK
15	0.011	0.229	4.60	OK
16	0.008	0.229	3.28	OK
17	0.007	0.229	2.86	OK
18	0.010	0.229	4.17	OK
19	0.009	0.229	3.81	OK
20	0.009	0.229	4.01	OK
21	0.006	0.229	2.59	OK
22	0.003	0.229	1.33	OK
23	0.005	0.229	2.25	OK
24	0.004	0.229	1.65	OK
25	0.004	0.229	1.75	OK
26	0.003	0.229	1.15	OK
27	0.005	0.229	2.20	OK
28	0.003	0.229	1.28	OK
29	0.006	0.229	2.71	OK
30	0.003	0.229	1.24	OK
31	0.004	0.229	1.63	OK
32	0.003	0.229	1.09	OK
33	0.004	0.229	1.53	OK
34	0.002	0.229	0.84	OK
35	0.003	0.229	1.23	OK
36	0.002	0.229	0.78	OK
37	0.005	0.229	1.99	OK
38	0.002	0.229	0.78	OK
39	0.004	0.229	1.89	OK
40	0.004	0.229	1.91	OK

8. Voltage Fluctuation and Flicker test

8.1. Test Standard and Limit

8.1.1. Test Standard

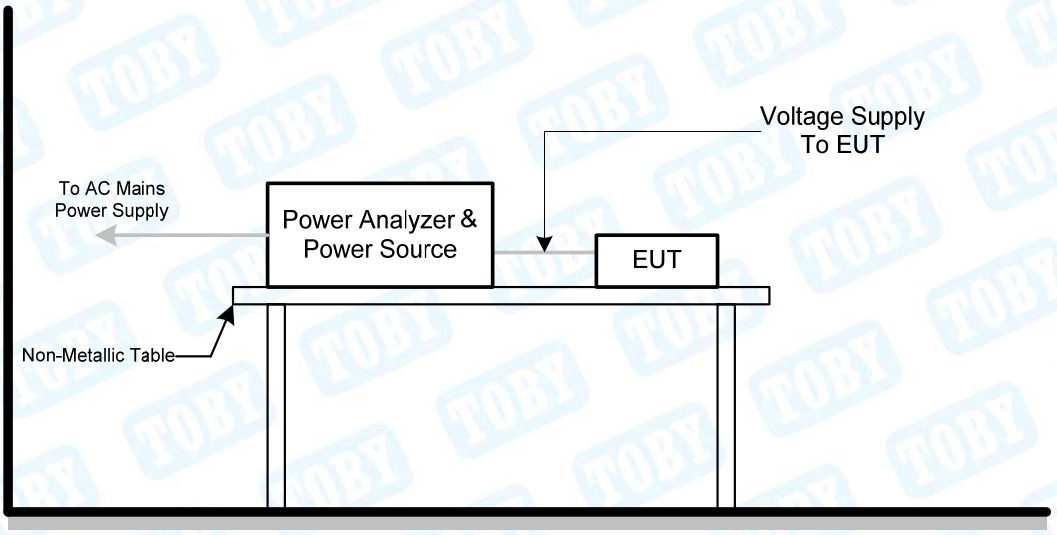
EN 61000-3-3:2013

8.1.2. Limit

Flicker Test Limit

Test items	Limits
Pst	1.0
dc	3.3%
dmax	4.0%
dt	Not exceed 3.3% for 500ms

8.2. Test Setup



8.3. Test Procedure

8.3.1. Fluctuation and Flickers Test:

Tests was performed according to the Test Conditions/Assessment of Voltage Fluctuations specified in Clause 5.0/6.0 of IEC555-3 and/or Clause 6.0/4.0 of IEC/EN 61000-3-3 depend on which standard adopted for compliance measurement.

8.3.2. All types of harmonic current and/or voltage fluctuation in this report are assessed by direct measurement using flicker-meter.

8.3.3. For the actual test configuration, please refer to the related Item –Block Diagram of system tested.

8.4. Test Condition

Temperature	:	23 ℃
Relative Humidity	:	53 %
Pressure	:	1010 hPa
Test Power	:	AC 230V/50Hz

8.5. Test Data

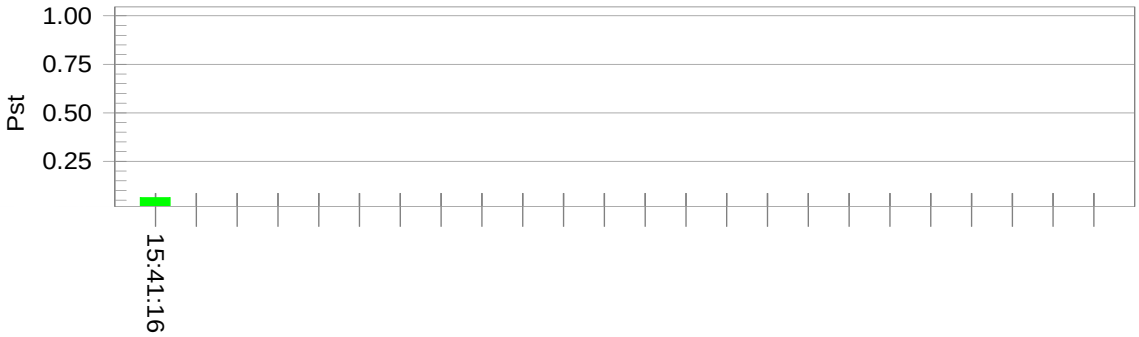
Please refer to the following page.

Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)

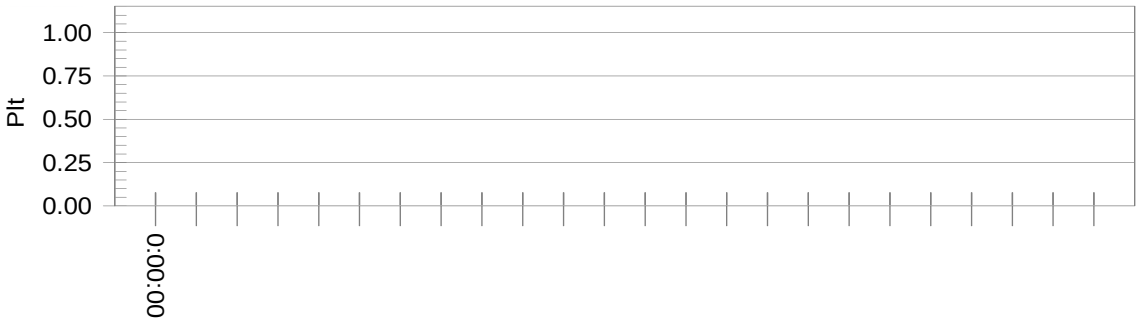
EUT: Automatic Soap Dispensor **Tested by: Tested by**
Test category: All parameters (European limits) **Test Margin: 100**
Test date: 2017/9/6 **Start time: 15:30:55** **End time: 15:41:22**
Test duration (min): 10 **Data file name: F-000025.cts_data**
Comment: F1408
Customer: Customer information

Test Result: Pass **Status: Test Completed**

Pst_i and limit line **European Limits**



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	**229.07**			
T-max (mS):	**0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.00**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.064**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.028**	**Test limit:**	**0.650**	**Pass**

9. Electrostatic Discharge Immunity Test

9.1. Test Requirements

9.1.1. Test Standard

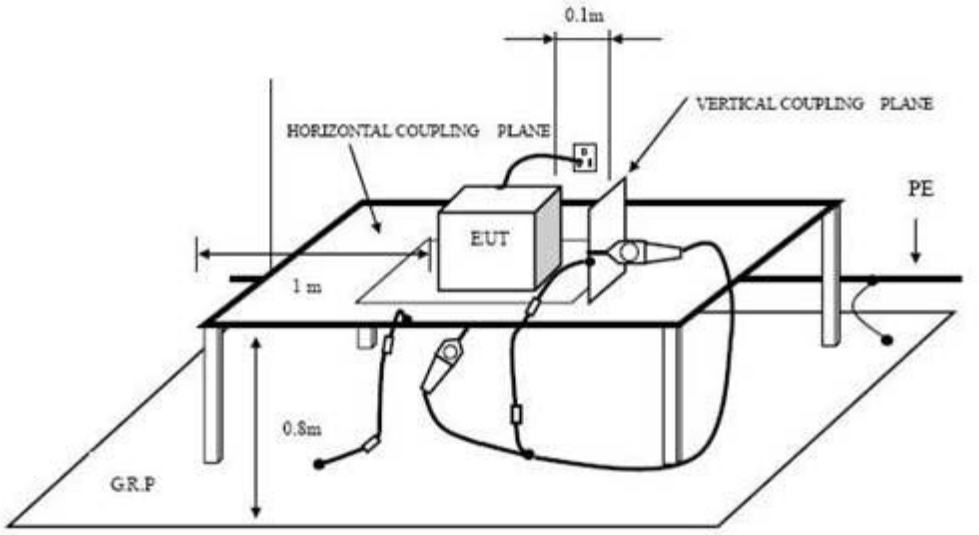
EN55014-2: 1997+A1: 2001+A2: 2008 (EN 61000-4-2:2009)

9.1.2. Test 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

9.1.3. Performance criterion: B

9.2. Test Setup



INDIRECT DISCHARGE SETUP

9.3. Test Procedure

9.3.1. 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.

9.3.2. Contact Discharge:

All the procedure shall be same as air discharge. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

9.3.3. Indirect discharge for horizontal coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

9.3.4. Indirect discharge for vertical coupling plane

At least 10 single discharges (in the most sensitive polarity) 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.

9.4. Test Data

Please refer to the following page.

Electrostatic Discharge Test Result

EUT	:	Automatic Soap Dispensor	M/N	:	F1408
Temperature	:	23℃	Humidity	:	53%
Power supply	:	AC 230V/50Hz	Test Mode	:	Normal Mode

Criterion: B

Air Discharge: ±8kV Contact Discharge: ±4kV

For each point positive 10 times and negative 10 times discharge.

Location	**Kind** A-Air Discharge C-Contact Discharge	**Result**
Nonconductive Enclosure	A	PASS
Slot of EUT	A	PASS
LED Light	A	PASS
HCP	C	PASS
VCP of front	C	PASS
VCP of rear	C	PASS
VCP of left	C	PASS
VCP of right	C	PASS

10. Radiated Electromagnetic Field Immunity test

10.1. Test Requirements

10.1.1. Test Standard

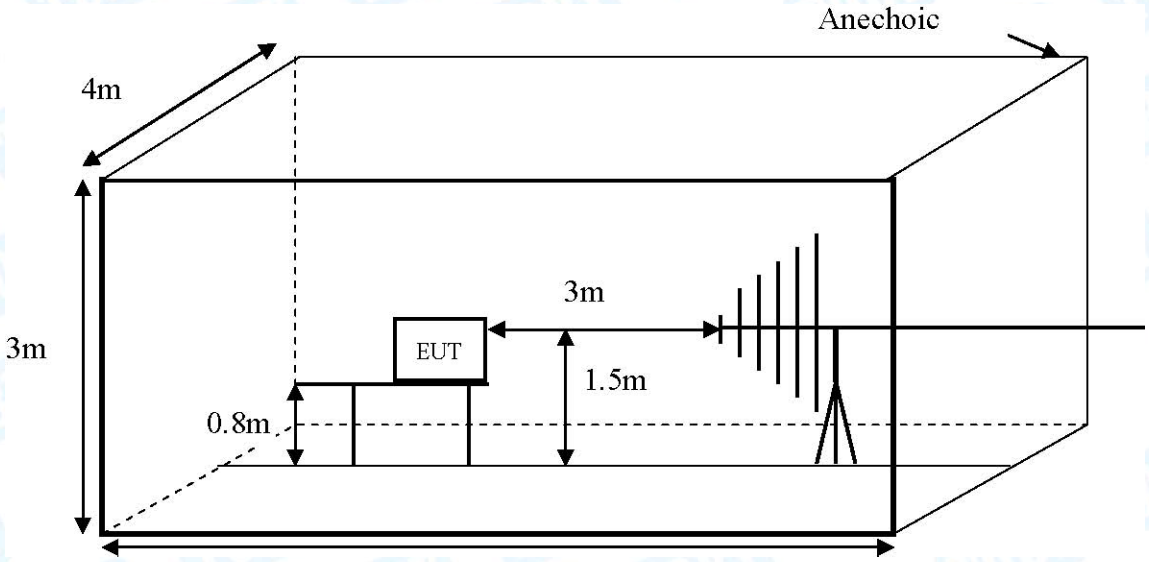
EN55014-2: 1997+A1: 2001+A2: 2008 (EN 61000-4-3:2006+A1:2008+A2:2010)

10.1.2. Test Level

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

10.1.3. Performance criterion: A

10.2. Test Setup



10.3. Test Procedure

The EUT are placed on a table, which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna, which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna is set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.

In order to judge the EUT performance, a camera is used to monitor its screen.

All the scanning conditions are as following:

Condition of Test	Remark
1. Fielded Strength	3V/m (Severity Level 2)
2. Radiated Signal	Modulated
3. Scanning Frequency	80-1000MHz
4. Sweep time of radiated	0.0015 Decade/s
5. Dwell Time	1 Sec.

10.4. Test Data

Please refer to the following page.

RF Field Strength Susceptibility Test Results

EUT :	Automatic Soap Dispensor	M/N :	F1408
Temperature :	23℃	Humidity :	53%
Power supply :	AC 230V/50Hz	Test Mode :	Normal Mode

Criterion: A

Modulation: Unmodulated

Pulse: AM 1KHz 80%

	Frequency Range 1		Frequency Range 2	
	80~1000MHz		/	
	Horizontal	Vertical	Horizontal	Vertical
Front	PASS	PASS	/	/
Right	PASS	PASS	/	/
Rear	PASS	PASS	/	/
Left	PASS	PASS	/	/

Remark:

11. Electrical Fast Transient/Burst Test

11.1. Test Requirements

11.1.1. Test Standard

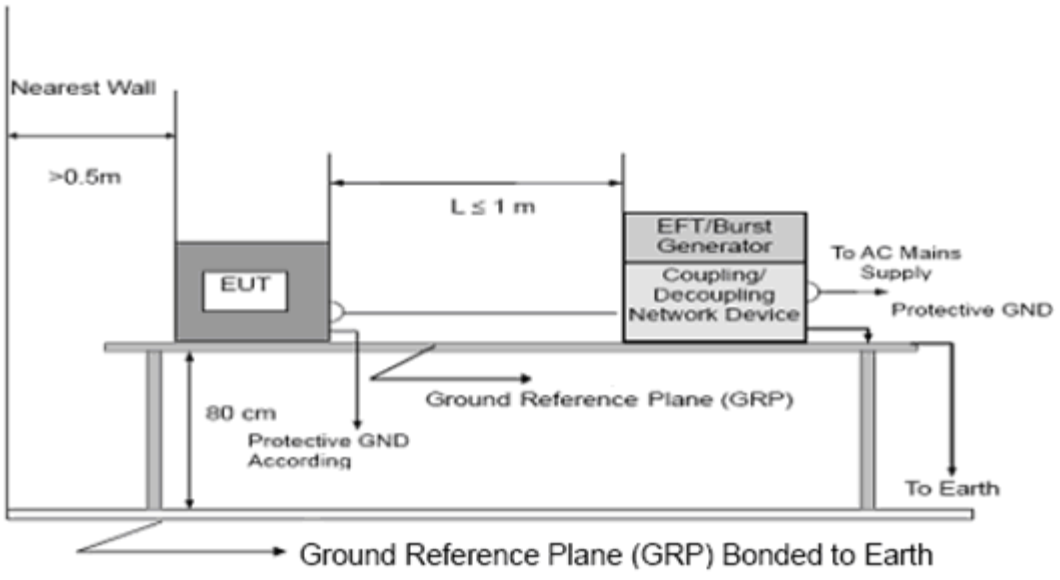
EN55014-2: 1997+A1: 2001+A2: 2008 (EN 61000-4-4:2012)

11.1.2. Level

Open Circuit Output Test Voltage ±10%		
Level	On Switching Adapter Lines	On I/O (Input/Output) Signal data and control lines
1.	0.5 KV	0.25 KV
2.	1 KV	0.5 KV
3.	2 KV	1 KV
4.	4 KV	2 KV
X	Special	Special

11.1.3. Performance criterion: B

11.2. Test Setup



11.3. Test Procedure

11.3.1. 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 minute.

11.3.2. For signal lines and control lines ports:

A coupling clamp is use to couple the EFT interference signal to the signal and control lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 minute.

11.3.3. For DC input and DC output power ports:

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

11.4. Test Data

Please refer to the following page.

Electrical Fast Transient/Burst Test Results

EUT :	Automatic Soap Dispensor	M/N :	F1408
Temperature :	23℃	Humidity :	53%
Power supply :	AC 230V/50Hz	Test Mode :	Normal Mode

Criterion: B

Line : ☒ AC Mains Coupling : ☐ Direct

Line : ☐ Signal ☐ I/O Cable Coupling : ☐ Capacitive

Line	Voltage(kV)	Result(+)	Result(-)
L	1	PASS	PASS
N	1	PASS	PASS
L-N	1	PASS	PASS
PE	1	PASS	PASS
L-PE	/	/	/
N-PE	/	/	/
L-N-PE	/	/	/

12. Surge Immunity Test

12.1. Test Requirements

12.1.1. Test Standard

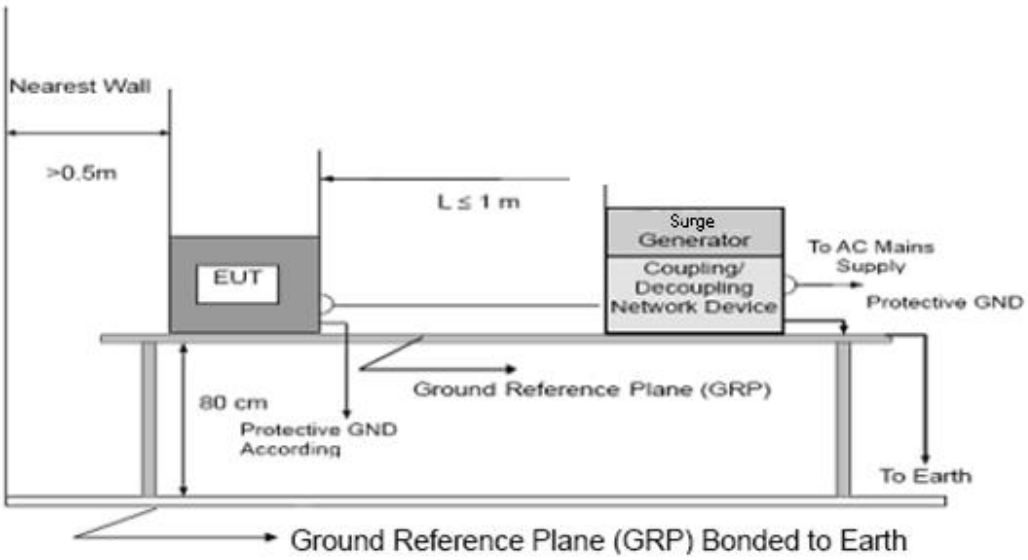
EN55014-2: 1997+A1: 2001+A2: 2008 (EN 61000-4-5:2014)

12.1.2. Level

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

12.1.3. Performance criterion: B

12.2. Test Setup



12.3. Test Procedure

12.3.1. Set up the EUT and test generator.

12.3.2. For line to line coupling mode, provide a 1.0 KV 1.2/50us voltage surge

12.3.3. (at open-circuit condition) and 8/20us current surge to EUT selected points.

12.3.4. At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.

12.3.5. Different phase angles are done individually.

12.3.6. Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

12.4. Test Data

Please refer to the following page.

Surge Immunity Test Results

EUT	:	Automatic Soap Dispensor	M/N	:	F1408
Temperature	:	23℃	Humidity	:	53%
Power supply	:	AC 230V/50Hz	Test Mode	:	Normal Mode

Criterion: B

Injected Line	Voltage(kV)	Phase	Result	
			(+)	(-)
L-N	1.0	0°	PASS	PASS
		90°	PASS	PASS
		180°	PASS	PASS
		270°	PASS	PASS
L-PE	/	0°	/	/
		90°	/	/
		180°	/	/
		270°	/	/
N-PE	/	0°	/	/
		90°	/	/
		180°	/	/
		270°	/	/
L-N-PE	/	0°	/	/
		90°	/	/
		180°	/	/
		270°	/	/

13. Conducted Immunity Test

13.1. Test Requirements

13.1.1. Test Standard

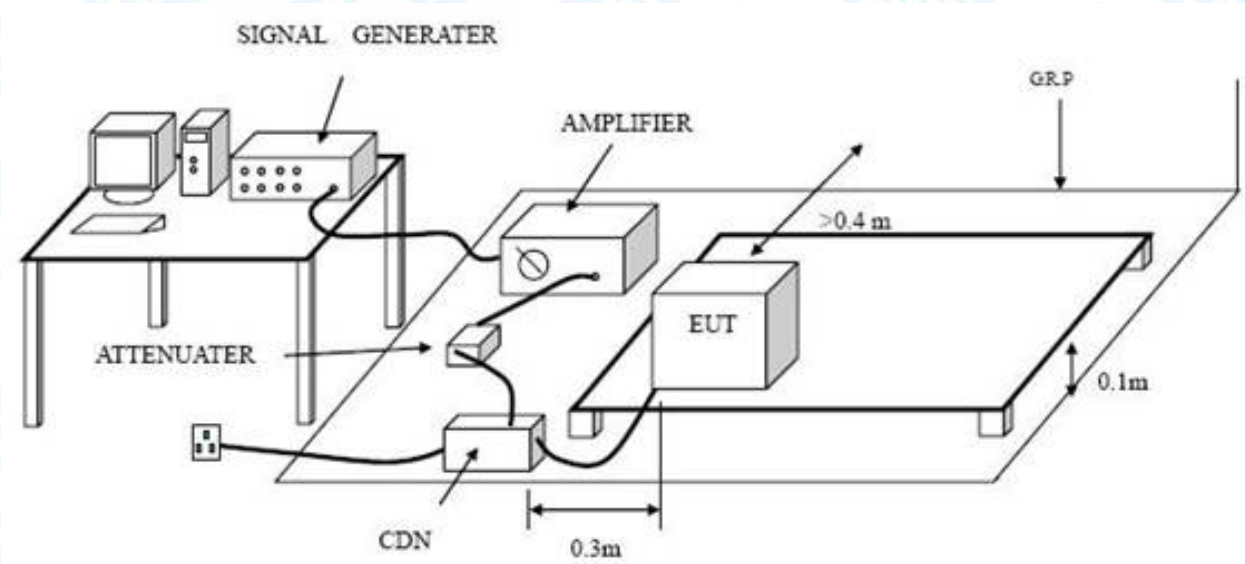
EN55014-2: 1997+A1: 2001+A2: 2008 (EN 61000-4-6:2014)

13.1.2. Level

Level	Voltage Level (e.m.f.) V
1.	1
2.	3
3.	10
X	Special

13.1.3. Performance criterion: A

13.2. Test Setup



13.3. Test Procedure

13.3.1. Set up the EUT, CDN and test generators.

13.3.2. Let the EUT work in test mode and test it.

13.3.3. 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).

13.3.4. The disturbance signal description below is injected to EUT through CDN.

13.3.5. The EUT operates within its operational mode(s) under intended climatic conditions after power on.

13.3.6. The frequency range is swept from 0.150MHz to 230MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.

13.3.7. The rate of sweep shall not exceed 1.5*10-3decades/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.

13.3.8. Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

13.4. Test Data

Please refer to the following page.

Injected Currents Susceptibility Test Results

EUT	:	Automatic Soap Dispensor	M/N	:	F1408
Temperature	:	23℃	Humidity	:	53%
Power supply	:	AC 230V/50Hz	Test Mode	:	Normal Mode

Criterion: A

Frequency Range (MHz)	Injected Position	Voltage Level (e.m.f.)	Result
0.15 ~ 230	AC Mains	3V(rms), Unmodulated	PASS
0.15 ~ 230	DC Mains	1V(rms), Unmodulated	/
0.15 ~ 230	Signal Line	1V(rms), Unmodulated	/

14. Voltage Dips and Interruptions Immunity Test

14.1. Test Requirements

14.1.1. Test Standard

EN55014-2: 1997+A1: 2001+A2: 2008 (EN 61000-4-11:2004)

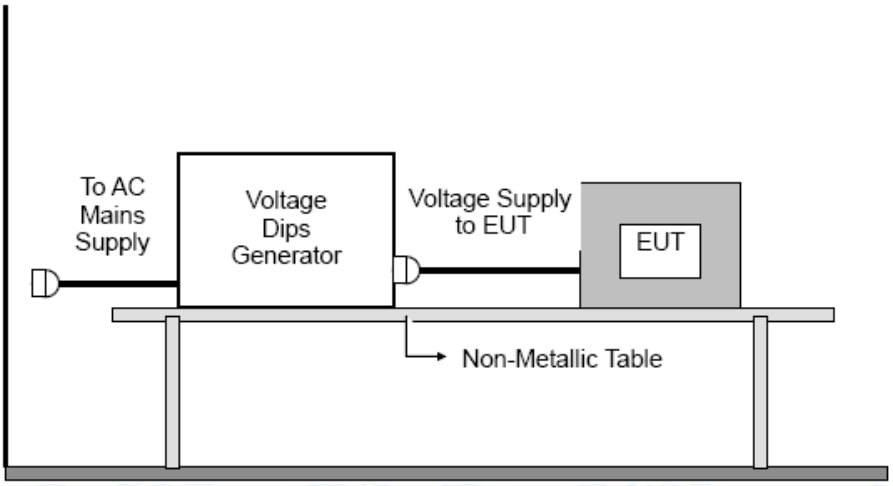
14.1.2. Level

Test Level for Voltage Dips and Interruptions

Test Level %U_T	Voltage dip and short interruptions %U_T	Duration (in period)
0	100	0.5
40	60	10
70	30	25

14.1.3. Performance criterion: C

14.2. Test Setup



14.3. Test Procedure

Set up the EUT and test generator as shown above. The EUT is tested for each selected combination of test level and duration with a sequence of three dips/interruptions with intervals of 10s minimum.

14.4. Test Data

Please refer to the following page.

Voltage Dips and Interruptions Test Results

EUT	:	Automatic Soap Dispensor	M/N	:	F1408
Temperature	:	23℃	Humidity	:	53%
Power supply	:	AC 230V/50Hz	Test Mode	:	Normal Mode

Criterion: C

Test Level % U_T	Voltage Dips & Short Interruptions % U_T	Duration (in period)	Phase Angle	Result
0	100	0.5P	0°~360°	PASS
40	60	10P	0°~360°	PASS
70	30	50P	0°~360°	PASS

Remark: U_T is the rated voltage for the equipment.

15. Photographs - Constructional Details

Photo 1 Appearance of EUT

Photo 2 Appearance of EUT

Photo 3 Appearance of EUT

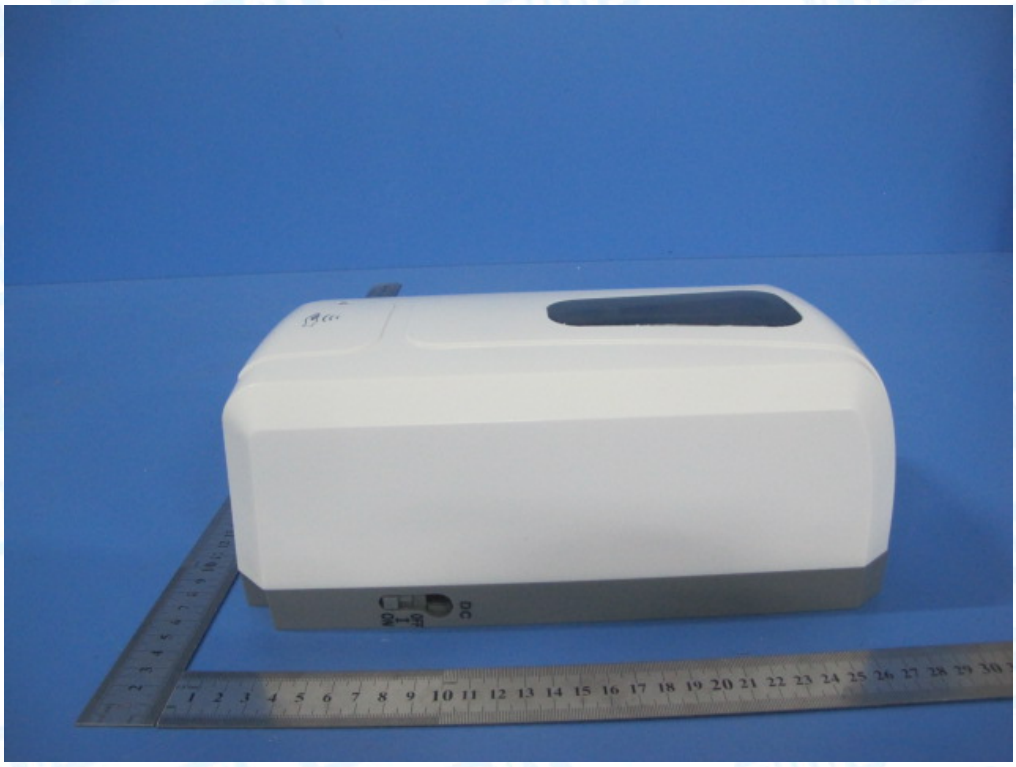


Photo 4 Appearance of EUT

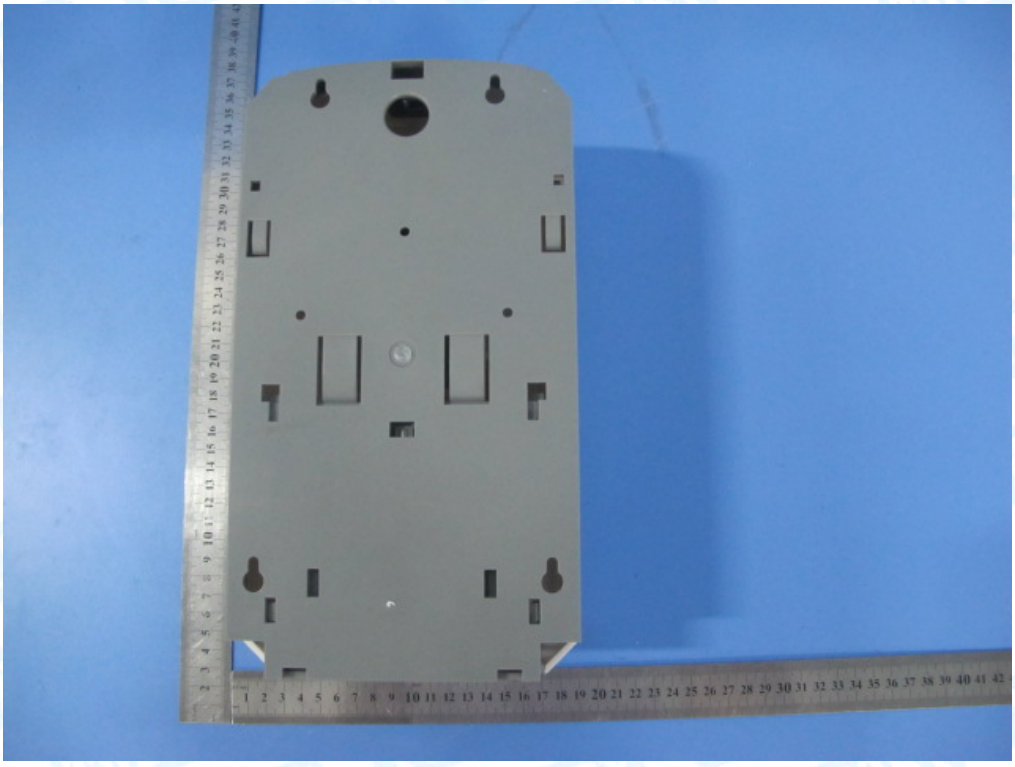
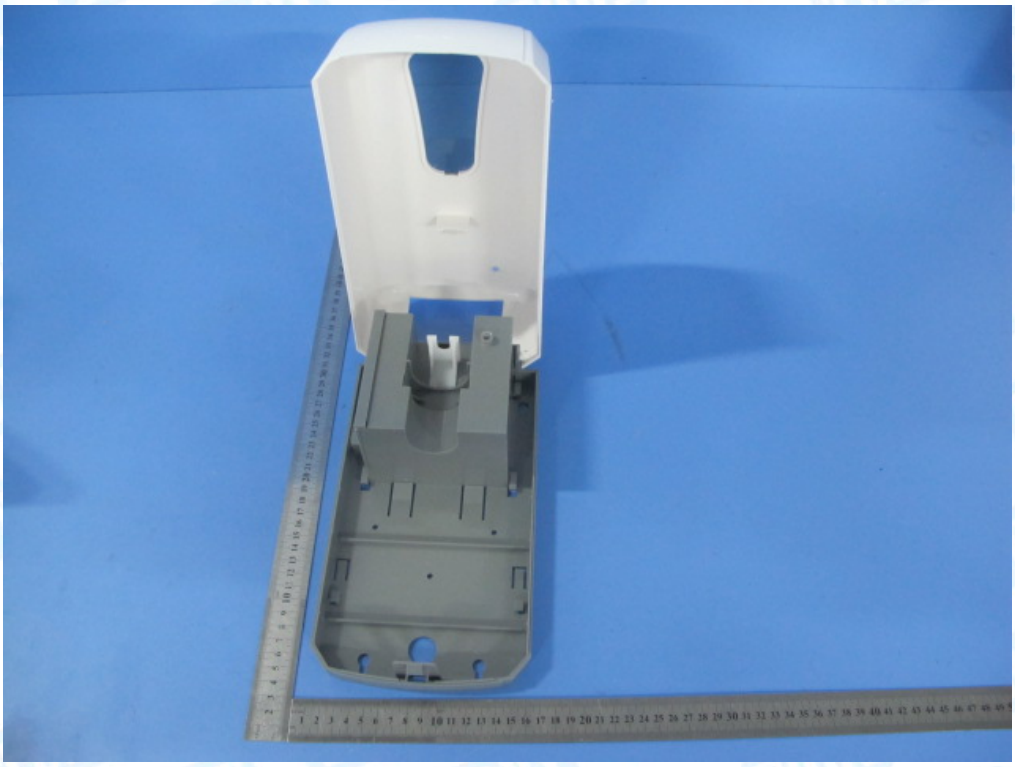


Photo 5 Internal of EUT



16. Photographs - Test Setup

Photo 1 Conducted Emission Test Setup

Photo 2 Disturbance Power Test Setup

Photo 3 Radiated Emission Test Setup

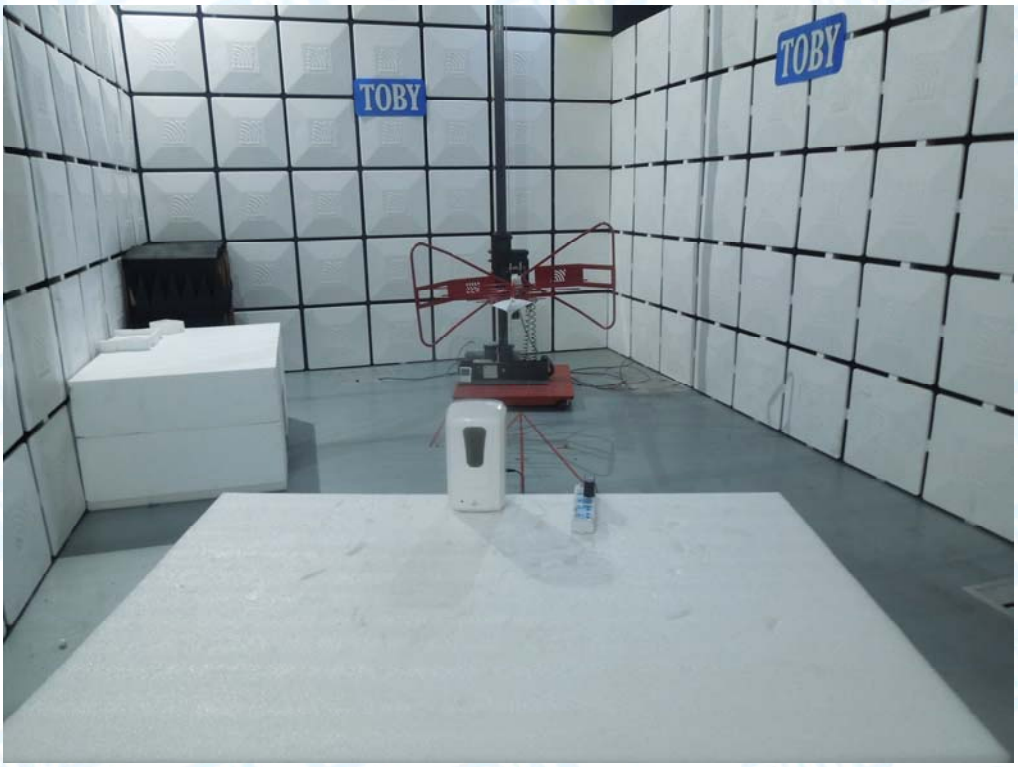
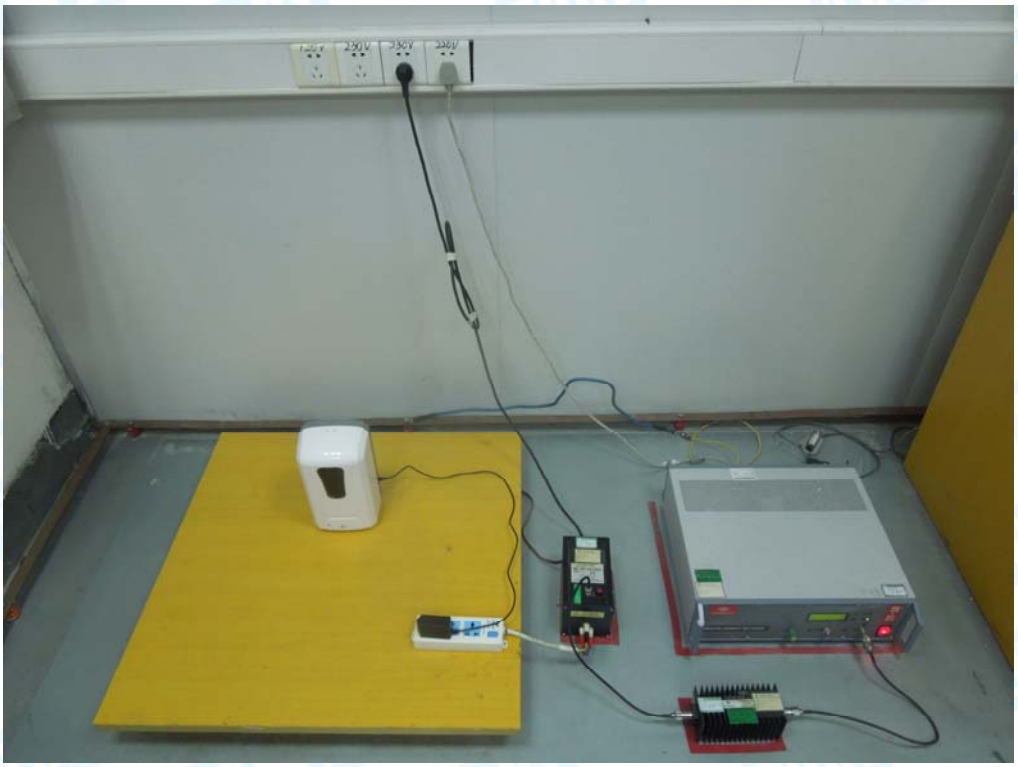


Photo 4 Harmonic current emissions and Voltage fluctuations & flicker Test Setup

Photo 5 Electrostatic Discharge Test Setup

Photo 6 EFT, Surge and Voltage Dips Test Setup

Photo 7 Radio-frequency, Continuous Conducted Disturbance Test Setup



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