

EMC Test Report

Equipment under Test : Hydrogen-rich water cup

Model /Type : HE-X5

Listed Models : HE-X5F

Applicant : Yunshen Smart Tech(shenzhen) Co., Ltd

Address : Room 201, Building A, No.1 Qianwan 1st Road, Qianhai
Shenzhen Hong Kong Cooperation Zone, Shenzhen (settled
inShenzhen Qianhai Business Secretary Co., Ltd.)

Laboratory : **Dongguan Anhua Testing Technology Co., Ltd.**

Address : Room 401, Building 1, No. 35, Liaobu Jinyuan Road, Liaobu,
Dongguan, Guangdong, China

Tel : 0769-86057700

Fax : 0769-86057700

Website : www.anhua-lab.com

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

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

TEST RESULT CERTIFICATION

Applicant's name.....: Yunshen Smart Tech(shenzhen) Co., Ltd
Room 201, Building A, No.1 Qianwan 1st Road, Qianhai
Address.....: Shenzhen Hong Kong Cooperation Zone, Shenzhen (settled in
Shenzhen Qianhai Business Secretary Co., Ltd.)

Product description

Product name.....Hydrogen-rich water cupT
est Model: HE-X5

Standards.....: EN IEC 55014-1-2021
EN IEC 55014-2-2021
EN IEC 61000-3-2: 2019/A1:2021
EN 61000-3-3:2013/A2:2021

This device described above has been tested by Dongguan Anhua Testing Technology Co., Ltd., and the test results show that the equipment under test (EUT) is in compliance with the 2014/30/EU requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of Dongguan Anhua Testing Technology Co., Ltd., this document may be altered or revised by Dongguan Anhua Testing Technology Co., Ltd., personal only, and shall be noted in the revision of the document.

Date of Test..... :

Date (s) of performance of tests.....: Oct.22, 2024~ Oct.24, 2024

Date of Issue.....: Oct.24, 2024

Test Result.....: **Pass**

Testing Engineer : *kai fu kuang*

Technical Manager : *baofeng ma*

Authorized Signatory : *fanyong zeng*

(Fanyong Zeng)




Table of Contents	Page
1 . TEST SUMMARY	5
1.1 TEST FACILITY	6
1.2 MEASUREMENT UNCERTAINTY	6
2 . GENERAL INFORMATION	7
2.1 GENERAL DESCRIPTION OF EUT	7
2.2 DESCRIPTION OF TEST MODES	8
2.3 DESCRIPTION OF TEST SETUP	9
2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL	9
2.5 MEASUREMENT INSTRUMENTS LIST	10
3 . EMC EMISSION TEST	13
3.1 CONDUCTED EMISSION MEASUREMENT	13
3.1.1 POWER LINE CONDUCTED EMISSION	13
3.1.3 TEST PROCEDURE	14
3.1.4 TEST SETUP	14
3.1.5 EUT OPERATING CONDITIONS	14
3.1.6 TEST RESULTS	15
3.2 RADIATED EMISSION MEASUREMENT	17
3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT	17
3.2.2 LIMITS OF DISTURBANCE POWER MEASUREMENT	17
3.2.3 TEST PROCEDURE	17
3.2.4 TEST SETUP	18
3.2.5 EUT OPERATING CONDITIONS	19
3.2.6 TEST RESULTS(30MHz-1000MHz)	20
3.2.7 TEST RESULTS(30MHz ~300MHz)	22
3.3 HARMONICS CURRENT	23
3.3.1 LIMITS OF HARMONICS CURRENT	23
3.3.1.1 TEST PROCEDURE	24
3.3.1.2 EUT OPERATING CONDITIONS	24
3.3.1.3 TEST SETUP	24
3.3.2 TEST RESULTS	25
3.4 VOLTAGE FLUCTUATION AND FLICKERS	27
3.4.1 LIMITS OF VOLTAGE FLUCTUATION AND FLICKERS	27
3.4.1.1 TEST PROCEDURE	27
3.4.1.2 EUT OPERATING CONDITIONS	27
3.4.1.3 TEST SETUP	28
3.4.2 TEST RESULTS	28

Table of Contents	Page
4 . EMC IMMUNITY TEST	29
4.1 STANDARD COMPLIANCE/ SERVIRTY LEVEL/ CRITERIA	29
4.2 GENERAL PERFORMANCE CRITERIA	30
4.3 GENERAL PERFORMANCE CRITERIA TEST SETUP	30
4.4 ESD TESTING	31
4.4.1 TEST SPECIFICATION	31
4.4.2 TEST PROCEDURE	31
4.4.3 TEST SETUP	32
4.4.4 TEST RESULTS	33
4.5 RS TESTING	34
4.5.1 TEST SPECIFICATION	34
4.5.2 TEST PROCEDURE	34
4.5.3 TEST SETUP	35
4.5.4 TEST RESULTS	36
4.6 EFT/BURST TESTING	37
4.6.1 TEST SPECIFICATION	37
4.6.2 TEST PROCEDURE	37
4.6.3 TEST SETUP	38
4.6.4 TEST RESULTS	39
4.7 SURGE TESTING	40
4.7.1 TEST SPECIFICATION	40
4.7.2 TEST PROCEDURE	40
4.7.3 TEST SETUP	41
4.7.4 TEST RESULTS	42
4.8 INJECTION CURRENT TESTING	43
4.8.1 TEST SPECIFICATION	43
4.8.2 TEST PROCEDURE	43
4.8.3 TEST SETUP	43
4.8.4 TEST RESULTS	44
4.9 VOLTAGE INTERRUPTION/DIPS TESTING	45
4.9.1 TEST SPECIFICATION	45
4.9.2 TEST PROCEDURE	45
4.9.3 TEST SETUP	45
4.9.4 TEST RESULTS	46

TEST SUMMARY

Test procedures according to the technical standards:

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
EN IEC 55014-1-2021	Conducted Emission	Class B	PASS	
	Radiated Emission	Class B	PASS	
EN IEC 61000-3-2: 2019/A1:2021	Harmonic Current Emission	Class A or D NOTE (2)	PASS	
EN 61000-3-3:2013/A2:2021	Voltage Fluctuations & Flicker	-----	PASS	
EMC Immunity				
Section EN IEC 55014-2-2021	Test Item	Performance Criteria	Judgment	Remark
EN 61000-4-2: 2009	Electrostatic Discharge	B	PASS	
EN 61000-4-3:2006+A1:2008+A2: 2010	RF electromagnetic field	A	PASS	
EN 61000-4-4: 2012	Fast transients	B	PASS	
EN 61000-4-5: 2006	Surges	B	PASS	
EN 61000-4-6: 2012	Injected Current	A	PASS	
EN 61000-4-11: 2004	Volt. Interruptions Volt. Dips	C / C / C NOTE (3)	PASS	

NOTE:

- (1) 'N/A' denotes test is not applicable in this Test Report
 - (2) No limits apply for equipment with an active input power up to and including 75W.
 - (3) Voltage dip: 0% reduction – Performance Criteria **C**
Voltage dip: 30% reduction – Performance Criteria **C**
Voltage dip: 60% reduction – Performance Criteria **C**
- For client's request and manual description, the test will not be executed.

TEST FACILITY

Dongguan Anhua Testing Technology Co., Ltd.

Room 401, Building 1, No. 35, Liaobu Jinyuan Road, Liaobu, Dongguan, Guangdong, China

MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$ · where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$ · providing a level of confidence of approximately **95** %.

Test Item	Uncertainty
Conducted Emission	2.6dB
Radiated Emission(Below 1G)	4.56dB(distance:3m; Polarize:V)
	4.42dB(distance:3m; Polarize:H)
Radiated Emission(1GHz-18GHz)	3.78dB(distance:3m; Polarize:V)
	3.69dB(distance:3m; Polarize:H)
Flicker test	1.7%
Harmonic test	1.88dB
R/S Test	0.92dB
C/S Test	0.68 dB
Test Site Temperature And Humidity	0.6°C
	3%

GENERAL INFORMATION

GENERAL DESCRIPTION OF EUT

Equipment	Hydrogen-rich water cup				
Brand	N/A				
Model Name	HE-X5				
Additional Model Number(s)	HE-X5F				
Model Difference	Different models of the same product				
Product Description	<p>The EUT is a Hydrogen-rich water cup</p> <table border="1" data-bbox="512 891 1302 960"> <tr> <td>Operating frequency:</td> <td>N/A</td> </tr> <tr> <td>Connecting I/O port:</td> <td>N/A</td> </tr> </table> <p>Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an Household Device. More details of EUT technical specification, please refer to the User's Manual.</p>	Operating frequency:	N/A	Connecting I/O port:	N/A
Operating frequency:	N/A				
Connecting I/O port:	N/A				
Power Source	DC Voltage				
Power Rating	DC 5V,3W				

DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Running

For Conducted Test	
Final Test Mode	Description
Mode 1	Running

For Radiated Test	
Final Test Mode	Description
Mode 1	Running

For EMS Test	
Final Test Mode	Description
Mode 1	Running

DESCRIPTION OF TEST SETUP

Mode 1:

E-1
EUT

DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Hydrogen-rich water cup	N/A	HE-X5	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) 'YES' means 'shielded' 'with core'; 'NO' means 'unshielded' 'without core'.

MEASUREMENT INSTRUMENTS LIST

CONDUCTED EMISSION

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	LISN	R&S	ENV216	101334	Nov. 10,23	Nov. 9,24	1 year
2	LISN	SCHWARZBECK	NNLK 8129	8129267	Nov. 10,23	Nov. 9,24	1 year
3	Pulse Limiter	SCHWARZBECK	VTSD 9561F	9716	Nov. 10,23	Nov. 9,24	1 year
4	50Ω Switch	ANRITSU CORP	MA59B	6200983704	Nov. 10,23	Nov. 9,24	1 year
5	Test Cable	N/A	C01	N/A	Nov. 10,23	Nov. 9,24	1 year
6	Test Cable	N/A	C02	N/A	Nov. 10,23	Nov. 9,24	1 year
7	Test Cable	N/A	C03	N/A	Nov. 10,23	Nov. 9,24	1 year
8	EMI Test Receiver	R&S	ESCI	101318	Nov. 10,23	Nov. 9,24	1 year
9	Passive Voltage Probe	ESH2-Z3	R&S	100173	Nov. 10,23	Nov. 9,24	1 year
10	Triple-Loop Antenna	EVERFINE	LIA-2	11020016	Nov. 10,23	Nov. 9,24	1 year
11	Absorbing Clamp	R&S	MDS-21	100423	Nov. 10,23	Nov. 9,24	1 year

RADIATED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Bilog Antenna	TESEQ	CBL6111D	31437	Nov. 10,23	Nov. 9,24	1 year
2	Test Cable	N/A	R-01	N/A	Nov. 10,23	Nov. 9,24	1 year
3	Test Cable	N/A	R-02	N/A	Nov. 10,23	Nov. 9,24	1 year
4	EMI Test Receiver	Rohde&Schwarz	ESVD	847312/008	Nov. 10,23	Nov. 9,24	1 year
5	Antenna Mast	EM	SC100_1	N/A	N/A	N/A	N/A
6	Turn Table	EM	SC100	060533	N/A	N/A	N/A
7	50Ω Switch	Anritsu Corp	MA59B	6200983705	Nov. 10,23	Nov. 9,24	1 year
8	Spectrum Analyzer	Aglient	E4407B	160400005	Nov. 10,23	Nov. 9,24	1 year
9	Horn Antenna	EM	EM-AH-10180	2011071402	Nov. 10,23	Nov. 9,24	1 year
10	Amplifier	EM	EM-30180	060536	Nov. 10,23	Nov. 9,24	1 year

HARMONICS AND FILCK

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Harmonic & Flicker	EM TEST	DPA500	0303-08	Nov. 10,23	Nov. 9,24	1 year
2	AC Power Source	EM TEST	ACS500	0203-06	Nov. 10,23	Nov. 9,24	1 year

ESD

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	ESD TEST GENERATOR	SCHAFFNER	NSG438	858	Nov. 10,23	Nov. 9,24	1 year

RS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Signal Generator	R&S	SMT 06	832080/007	Nov. 10,23	Nov. 9,24	1 year
2	Log-Bicon Antenna	Schwarzbeck	VULB9161	4022	Nov. 10,23	Nov. 9,24	1 year
3	Power Amplifier	AR	150W1000M1	320946	Nov. 10,23	Nov. 9,24	1 year
4	Microwave Horn Antenna	AR	AT4002A	321467	Nov. 10,23	Nov. 9,24	1 year
5	Power Amplifier	AR	25S1G4A	308598	Nov. 10,23	Nov. 9,24	1 year

SURGE, EFT/BURST, VOLTAGE INTERRUPTION/DIPS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Surge Generator	EVERFINE	EMS61000-5A	1101002	Nov. 10,23	Nov. 9,24	1 year
2	DIPS Generator	EVERFINE	EMS61000-11 K	1011002	Nov. 10,23	Nov. 9,24	1 year
3	EFT/B Generator	EVERFINE	EMS61000-4A-V2	1012005	Nov. 10,23	Nov. 9,24	1 year

INJECTION CURRENT

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Signal Generator	IFR	2023A	202301/368	Nov. 10,23	Nov. 9,24	1 year
2	Power Amplifier	AR	75A250AM1	0320709	Nov. 10,23	Nov. 9,24	1 year
3	CDN	FCC	FCC-801-M2	06043	Nov. 10,23	Nov. 9,24	1 year

4	EM Clamp	FCC	F-203I-23MM	504	Nov. 10,23	Nov. 9,24	1 year
---	----------	-----	-------------	-----	------------	-----------	--------

2.4.8 MF

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Generator	EVERFINE	EMS61000-8K	1007001	Nov. 10,23	Nov. 9,24	1 year

EMC EMISSION TEST

CONDUCTED EMISSION MEASUREMENT

POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

Frequency Range (MHz)	At mains terminals		At load terminals and additional terminals	
	Quasi-peak (dBuV)	Average (dBuV)	Quasi-peak (dBuV)	Average (dBuV)
0.15 -0.5	66 - 56 *	56 - 46 *	80.00	70.00
0.50 -5.0	56.00	46.00	74.00	64.00
5.0 -30.0	60.00	50.00	74.00	64.00

MAINS TERMINALS OF TOOLS

Frequency Range (MHz)	Rated motor power not exceeding 700W		Rated motor power above 700W and not exceeding 1 000 W		Rated motor power above 1 000 W	
	dB (uV) Quasi-peak	dB (uV) Average**	dB (uV) Quasi-peak	dB (uV) Average**	dB (uV) Quasi-peak	dB (uV) Average**
0.15 -0.5	66.0 to 59.0*	59.0 to 49.0*	70.0 to 63.0*	63.0 to 53.0*	76.0 to 69.0*	69.0 to 59.0*
0.50 -5.0	59.0	49.0	63.0	53.0	69.0	59.0
5.0 -30.0	64.0	54.0	68.0	58.0	74.0	64.0

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of ' * ' marked band means the limitation decreases linearly with the logarithm of the frequency in the range.
- (3) '**' 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.

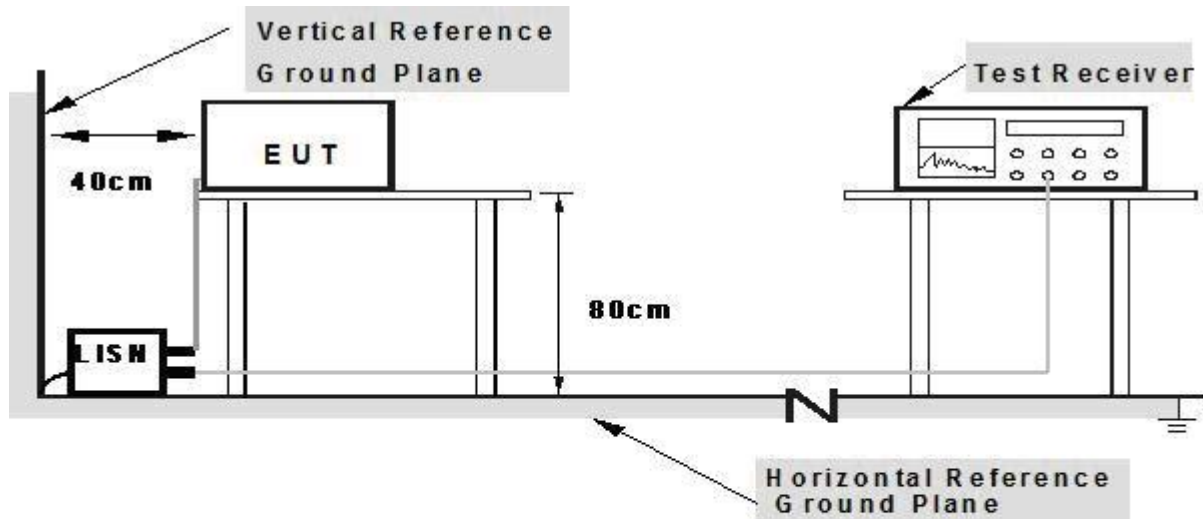
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

TEST PROCEDURE

- a. 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.
- b. 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.
- c. 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.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

TEST SETUP



Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

EUT OPERATING CONDITIONS

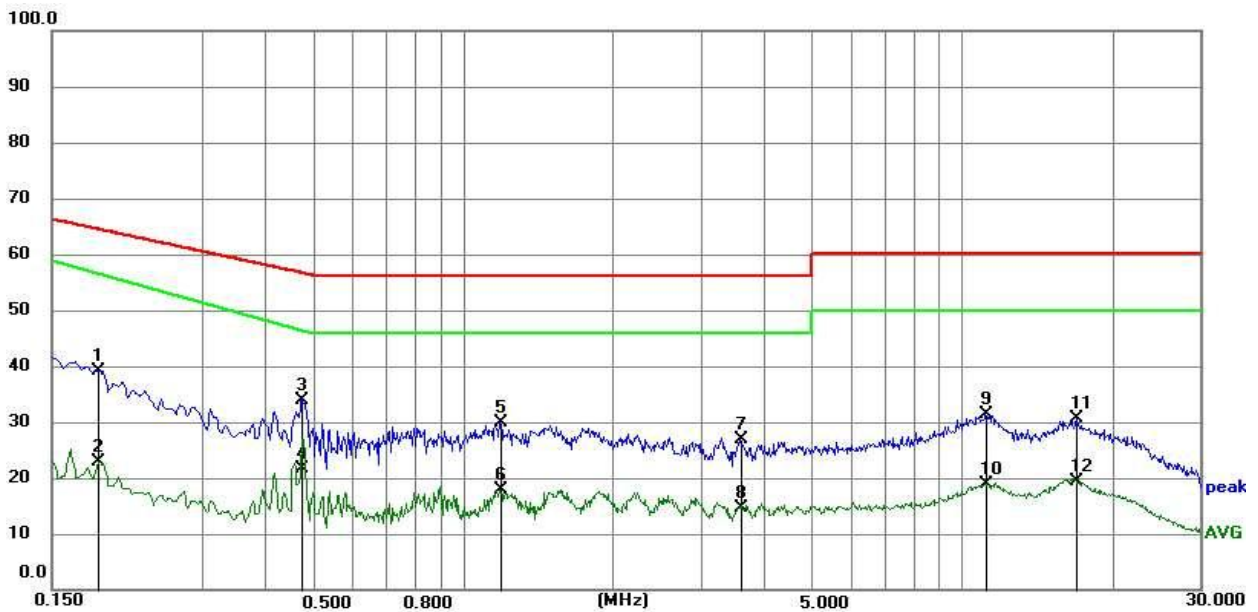
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

TEST RESULTS

EUT :	Hydrogen-rich water cup	Model Name. :	HE-X5
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2024-10-23
Test Mode :	Running	Phase :	L
Test Voltage :	AC/DC ADAPTOR 230V To DC5V		

Remark:

Factor = Insertion Loss + Cable Loss.

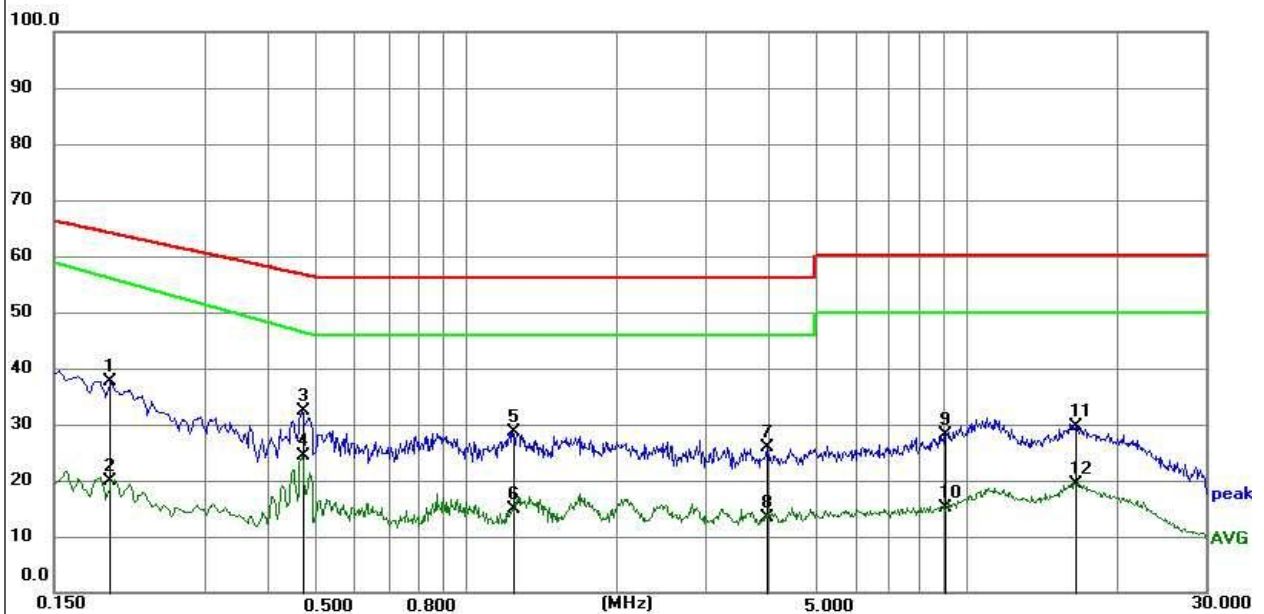


No.	Mk.	Freq. MHz	Reading Level	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1859	29.14	10.06	39.20	64.22	25.02	peak	
2		0.1859	12.75	10.06	22.81	56.68	33.87	AVG	
3	*	0.4739	23.94	10.01	33.95	56.45	22.50	peak	
4		0.4739	11.65	10.01	21.66	46.58	24.92	AVG	
5		1.1894	19.92	9.98	29.90	56.00	26.10	peak	
6		1.1894	7.92	9.98	17.90	46.00	28.10	AVG	
7		3.5969	16.87	9.92	26.79	56.00	29.21	peak	
8		3.5969	4.61	9.92	14.53	46.00	31.47	AVG	
9		11.1705	21.54	9.81	31.35	60.00	28.65	peak	
10		11.1705	9.16	9.81	18.97	50.00	31.03	AVG	
11		16.9755	20.62	9.89	30.51	60.00	29.49	peak	
12		16.9755	9.56	9.89	19.45	50.00	30.55	AVG	

EUT :	Hydrogen-rich water cup	Model Name. :	HE-X5
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2024-10-23
Test Mode :	Running	Phase :	N
Test Voltage :	AC/DC ADAPTOR 230V To DC5V		

Remark:

Factor = Insertion Loss + Cable Loss.



No.	Mk.	Freq. MHz	Reading Level	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1949	27.59	10.05	37.64	63.83	26.19	peak	
2		0.1949	9.74	10.05	19.79	56.17	36.38	AVG	
3		0.4695	22.43	10.01	32.44	56.52	24.08	peak	
4	*	0.4695	14.45	10.01	24.46	46.68	22.22	AVG	
5		1.2389	18.70	9.98	28.68	56.00	27.32	peak	
6		1.2389	5.00	9.98	14.98	46.00	31.02	AVG	
7		3.9975	15.92	9.91	25.83	56.00	30.17	peak	
8		3.9975	3.39	9.91	13.30	46.00	32.70	AVG	
9		9.0375	18.36	9.82	28.18	60.00	31.82	peak	
10		9.0375	5.23	9.82	15.05	50.00	34.95	AVG	
11		16.5390	19.69	9.88	29.57	60.00	30.43	peak	
12		16.5390	9.51	9.88	19.39	50.00	30.61	AVG	

RADIATED EMISSION MEASUREMENT

LIMITS OF RADIATED EMISSION MEASUREMENT (Below 1000MHz)

FREQUENCY (MHz)	At 10m	At 3m
	dBuV/m	dBuV/m
30 – 230	30	40
230 – 1000	37	47

LIMITS OF DISTURBANCE POWER MEASUREMENT (Below 1000MHz)

Frequency Range	Household and similar appliances		Tools					
			Rated motor power not exceeding 700 W		Rated motor power above 700 W and not exceeding 1 000 W		Rated motor power above 1 000 W	
(MHz)	dB (pW) Quasi-peak	dB (pW) Averag*	dB (pW) Quasi-peak	dB (pW) Averag*	dB (pW) Quasi-peak	dB (pW) Averag*	dB (pW) Quasi-peak	dB (pW) Average*
30-300	44-55	35-45	44-55	35-45	49-59	39-49	55-65	45-55

* 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.

Notes:

- (1) The limit for radiated test was performed according to as following: CISPR 14.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

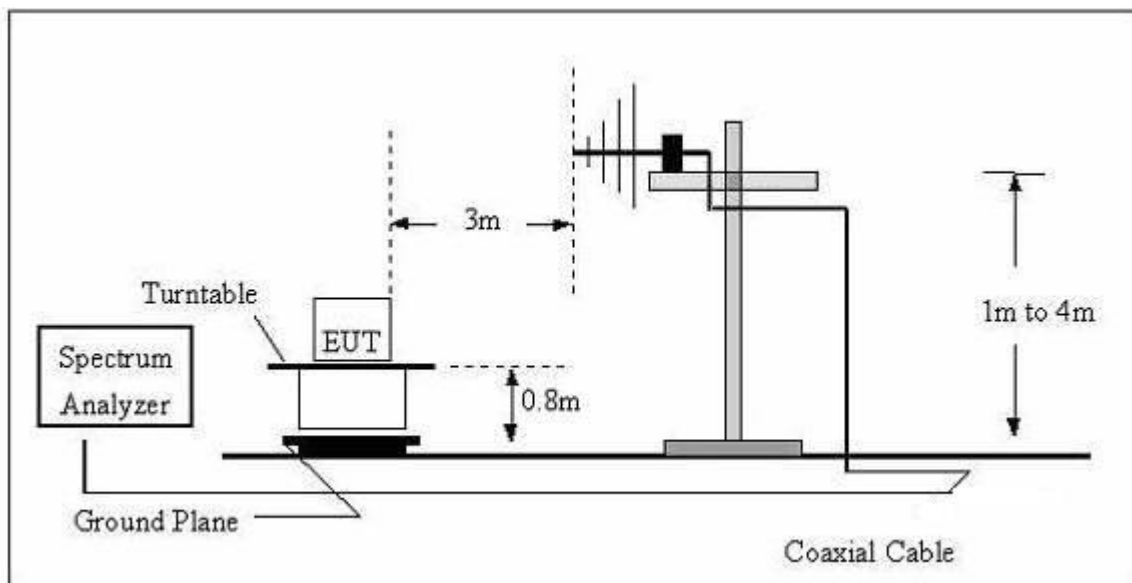
TEST PROCEDURE

- a. The measuring distance of at 10 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. 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.

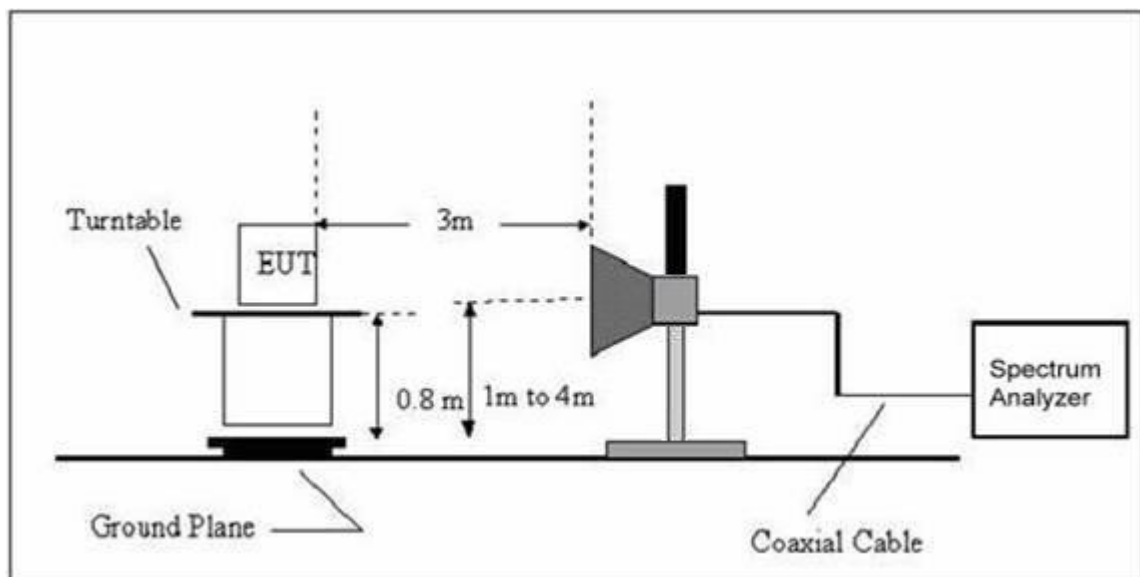
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP(AV) Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz.



(B) Disturbance Power Test Set-UP Frequency Below 1GHz

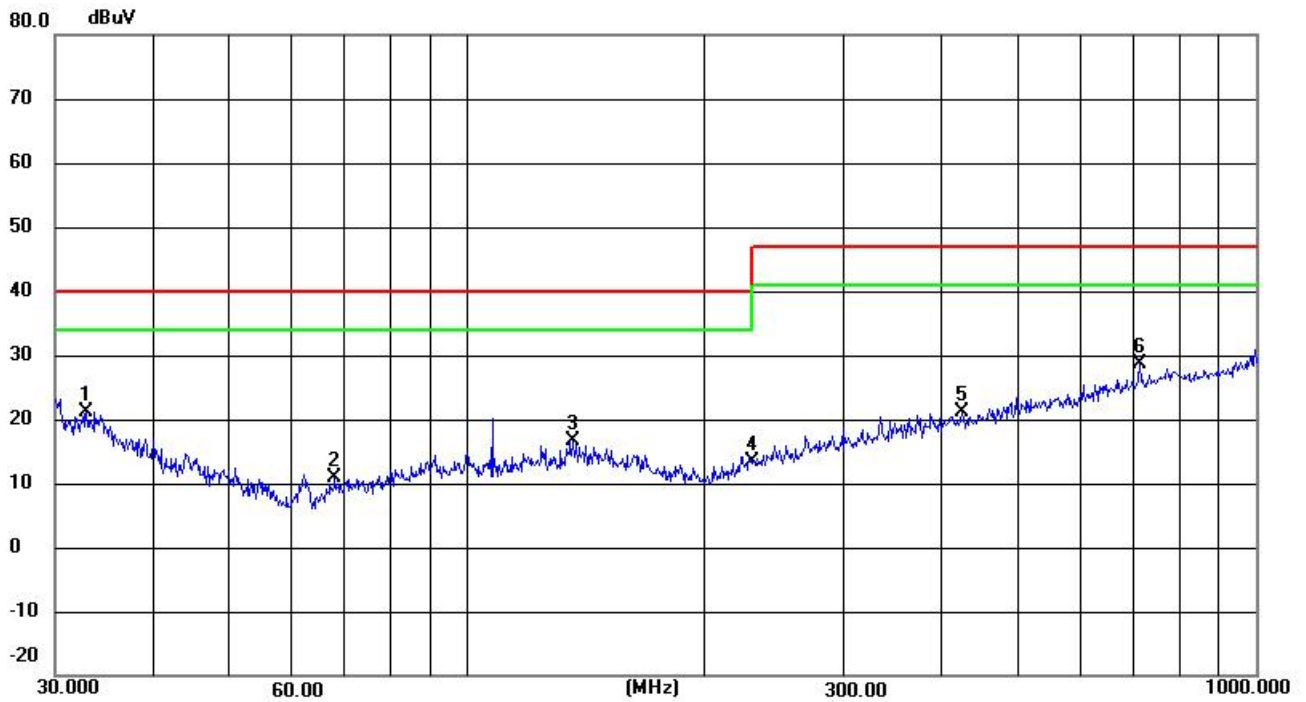


EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

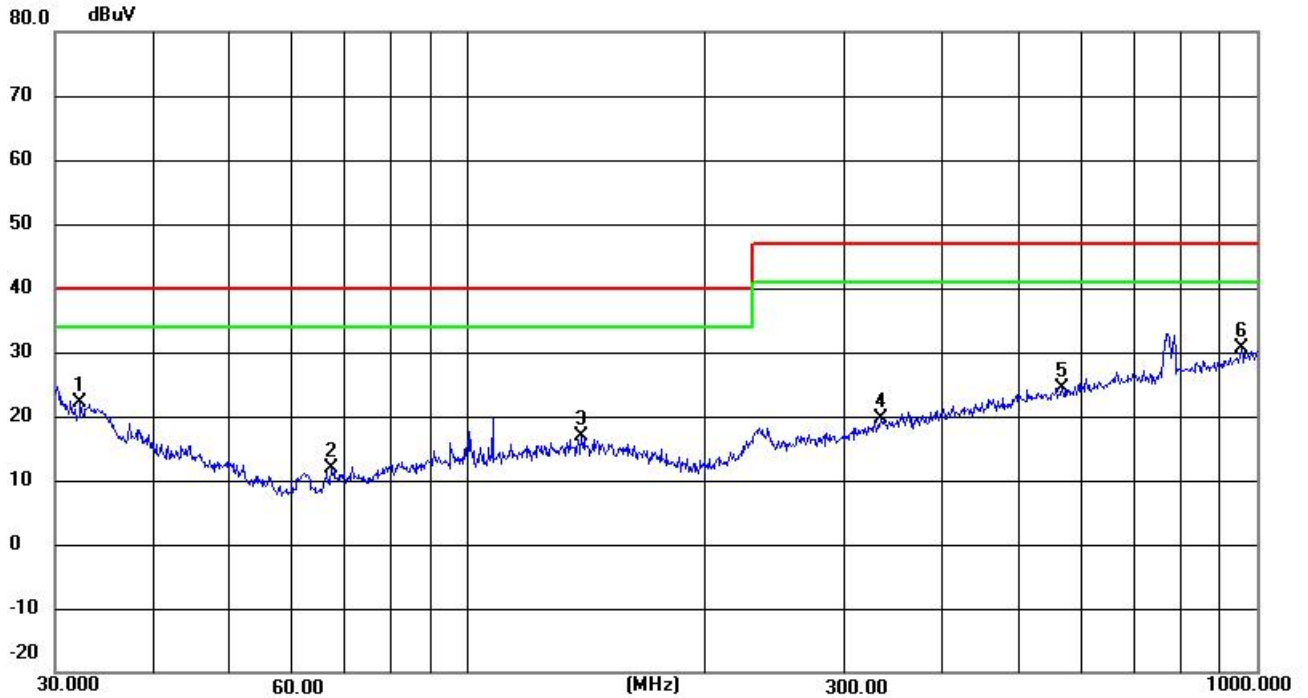
TEST RESULTS(30MHz-1000MHz)

EUT :	Hydrogen-rich water cup	Model Name. :	HE-X5
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2024-10-23
Test Mode :	Running	Phase :	Horizontal
Test Voltage :	DC5V		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	32.8637	30.29	-9.10	21.19	40.00	-18.81	peak	100	0	P	
2	67.9129	31.05	-20.14	10.91	40.00	-29.09	peak	100	0	P	
3	135.9822	48.75	-32.15	16.60	40.00	-23.40	peak	100	0	P	
4	229.2931	45.45	-32.01	13.44	40.00	-26.56	peak	100	0	P	
5	423.5403	52.60	-31.53	21.07	47.00	-25.93	peak	100	0	P	
6 *	711.6734	59.63	-30.95	28.68	47.00	-18.32	peak	100	0	P	

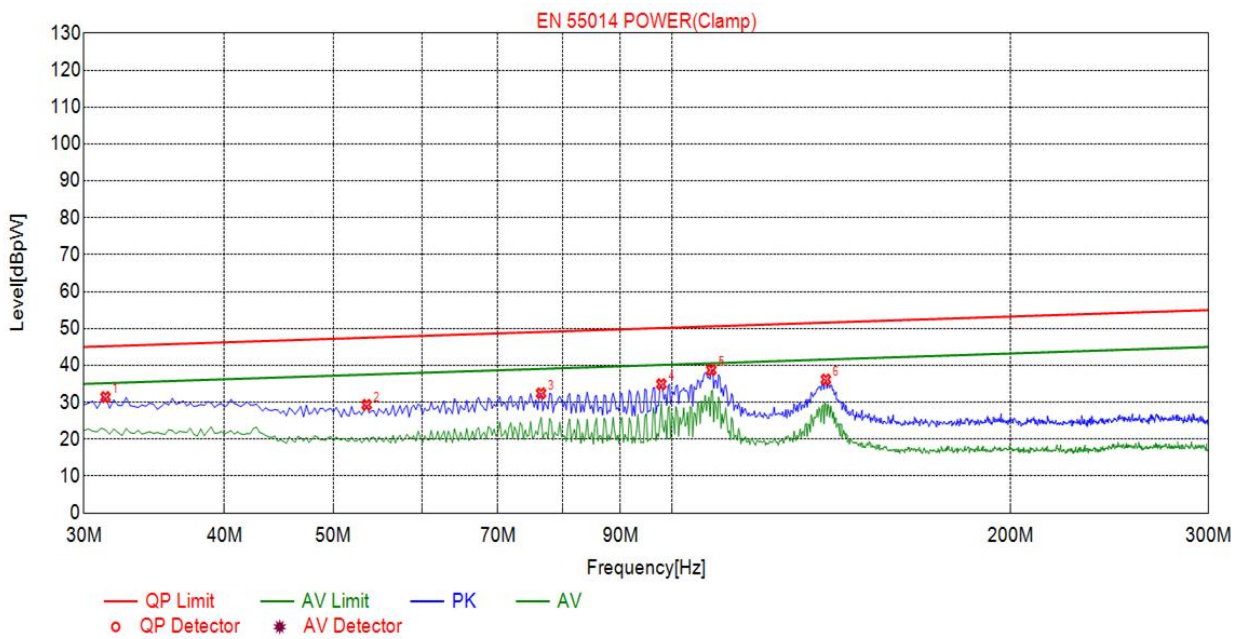
EUT :	Hydrogen-rich water cup	Model Name. :	HE-X5
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2024-10-23
Test Mode :	Running	Phase :	Vertical
Test Voltage :	DC5V		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	32.2925	30.75	-8.72	22.03	40.00	-17.97	peak	100	360	P	
2	67.2022	32.06	-20.30	11.76	40.00	-28.24	peak	100	360	P	
3	139.3613	48.92	-32.14	16.78	40.00	-23.22	peak	100	360	P	
4	333.6867	51.35	-31.80	19.55	47.00	-27.45	peak	100	360	P	
5	566.6223	55.55	-31.19	24.36	47.00	-22.64	peak	100	360	P	
6 *	955.4381	61.19	-30.64	30.55	47.00	-16.45	peak	100	360	P	

TEST RESULTS(30MHz ~300MHz)

EUT :	Hydrogen-rich water cup	Model Name. :	HE-X5
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2024-10-23
Test Mode :	Running	Phase :	AC
Test Voltage :	DC5V		



Suspected Lis								
NO.	Freq. [MHz]	Level[dBpw]	Factor [dB]	Reading [dBpW]	Limit [dBpw]	Margin [dB]	Detector	Type
1	31.3514	31.43	7.79	23.64	45.19	13.76	PK	Clamp
2	53.5135	29.32	5.50	23.82	47.51	18.19	PK	Clamp
3	76.4865	32.45	6.36	26.09	49.06	16.61	PK	Clamp
4	97.8378	34.93	4.65	30.28	50.13	15.20	PK	Clamp
5	108.3784	38.76	5.28	33.48	50.58	11.82	PK	Clamp
6	137.0270	36.18	5.36	30.82	51.60	15.42	PK	Clamp

HARMONICS CURRENT

LIMITS OF HARMONICS CURRENT

IEC 555-2					
Table - I			Table - II		
Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current (in Amperes)	Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current (in Amperes)
Non Portable Tools or TV Receivers	Odd Harmonics		TV Receivers	Odd Harmonics	
	3	2.30		3	0.80
	5	1.14		5	0.60
	7	0.77		7	0.45
	9	0.40		9	0.30
	11	0.33		11	0.17
	13	0.21		13	0.12
	15 ≤ n ≤ 39	0.15 · 15/n		15 ≤ n ≤ 39	0.10 · 15/n
	Even Harmonics			Even Harmonics	
	2	1.08		2	0.30
	4	0.43		4	0.15
	8	0.30			
	8 ≤ n ≤ 40	0.23 · 8/n		DC	0.05

EN 61000-3-2/IEC 61000-3-2					
Equipment Category	Max. Permissible Harmonic Current (in Amperes)	Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current (in A)	Max. Permissible Harmonic Current (mA/w)
Class A	Same as Limits Specified in 4-2.1, Table - I, but only odd harmonics required	Class D	3	2.30	3.4
			5	1.14	1.9
			7	0.77	1.0
			9	0.40	0.5
			11	0.33	0.35
			13 ≤ n ≤ 39	see Table I	3.85/n

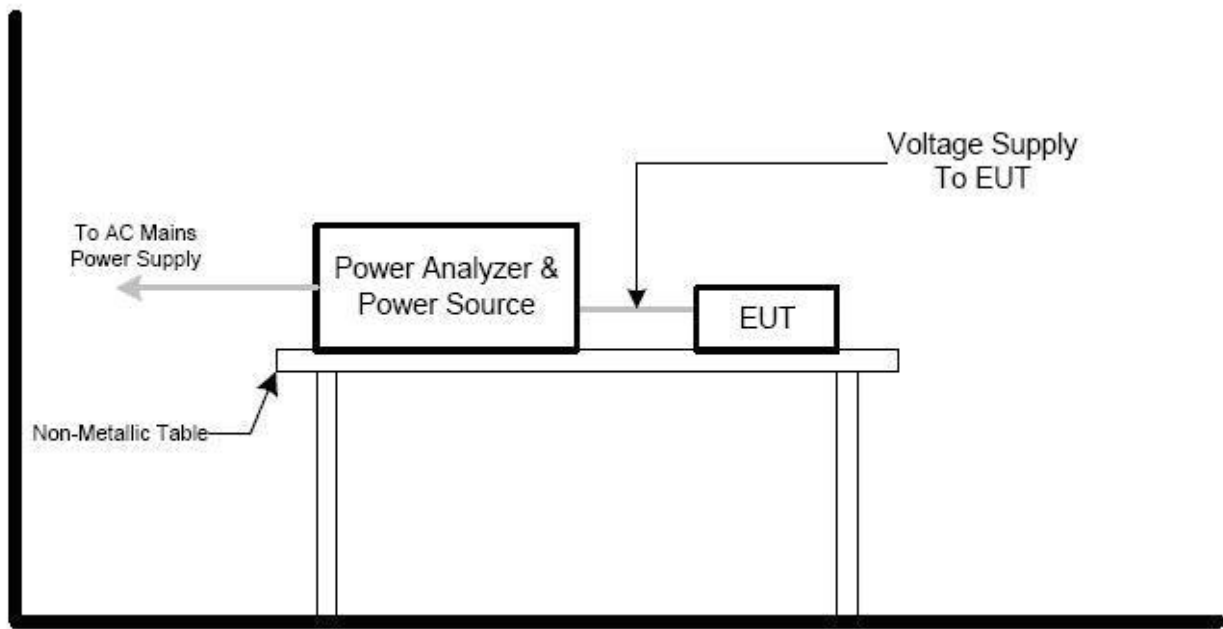
TEST PROCEDURE

- a. 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.
- b. 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. 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 600W of the following types: Personal computers and personal computer monitors and television receivers.
- c. The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the time necessary for the EUT to be exercised.

EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

TEST SETUP



TEST RESULTS

EUT :	Hydrogen-rich water cup	Model Name. :	HE-X5
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2024-10-23
Test Mode :	Running		
Test Voltage :	DC5V		

Average harmonic current results

Hn	I _{eff} [A]	I _{eff} [%]	Limit [A]	Result
1	54.280E-3	100.000		
2	879.136E-6	1.620	972.00E-3	PASS
3	53.207E-3	98.023	2.07	PASS
4	4.171E-3	7.684	387.00E-3	PASS
5	50.334E-3	92.729	1.03	PASS
6	873.771E-6	1.610	270.00E-3	PASS
7	46.261E-3	85.226	693.00E-3	PASS
8	1.540E-3	2.838	207.00E-3	PASS
9	41.384E-3	76.241	360.00E-3	PASS
10	1.479E-3	2.725	165.60E-3	PASS
11	35.950E-3	66.230	297.00E-3	PASS
12	813.505E-6	1.499	138.00E-3	PASS
13	30.390E-3	55.986	189.00E-3	PASS
14	820.178E-6	1.511	118.29E-3	PASS
15	25.051E-3	46.151	135.00E-3	PASS
16	763.358E-6	1.406	103.50E-3	PASS
17	20.403E-3	37.589	119.11E-3	PASS
18	1.256E-3	2.313	92.00E-3	PASS
19	16.785E-3	30.922	106.58E-3	PASS
20	754.383E-6	1.390	82.80E-3	PASS
21	14.348E-3	26.434	96.43E-3	PASS
22	1.302E-3	2.399	75.28E-3	PASS
23	12.971E-3	23.896	88.05E-3	PASS
24	749.844E-6	1.381	68.99E-3	PASS
25	12.243E-3	22.556	81.00E-3	PASS
26	1.268E-3	2.335	63.69E-3	PASS
27	11.711E-3	21.576	75.00E-3	PASS
28	729.747E-6	1.344	59.14E-3	PASS
29	11.032E-3	20.324	69.83E-3	PASS
30	749.859E-6	1.381	55.20E-3	PASS
31	10.193E-3	18.779	65.32E-3	PASS
32	748.461E-6	1.379	51.75E-3	PASS
33	8.993E-3	16.568	61.36E-3	PASS
34	714.008E-6	1.315	48.71E-3	PASS
35	7.758E-3	14.293	57.86E-3	PASS
36	729.180E-6	1.343	46.00E-3	PASS
37	6.346E-3	11.690	54.73E-3	PASS
38	713.340E-6	1.314	43.58E-3	PASS
39	5.144E-3	9.476	51.92E-3	PASS
40	937.976E-6	1.728	41.40E-3	PASS

Maximum harmonic voltage results

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	231.39	100.603		
2	40.35E-3	0.018	0.2	PASS
3	134.24E-3	0.058	0.9	PASS
4	16.76E-3	0.007	0.2	PASS
5	38.12E-3	0.017	0.4	PASS
6	11.34E-3	0.005	0.2	PASS
7	59.91E-3	0.026	0.3	PASS
8	15.26E-3	0.007	0.2	PASS
9	59.27E-3	0.026	0.2	PASS
10	10.64E-3	0.005	0.2	PASS
11	67.55E-3	0.029	0.1	PASS
12	14.73E-3	0.006	0.1	PASS
13	21.94E-3	0.010	0.1	PASS
14	13.07E-3	0.006	0.1	PASS
15	60.44E-3	0.026	0.1	PASS
16	11.14E-3	0.005	0.1	PASS
17	35.56E-3	0.015	0.1	PASS
18	10.68E-3	0.005	0.1	PASS
19	43.95E-3	0.019	0.1	PASS
20	14.74E-3	0.006	0.1	PASS
21	31.15E-3	0.014	0.1	PASS
22	10.23E-3	0.004	0.1	PASS
23	49.33E-3	0.021	0.1	PASS
24	11.49E-3	0.005	0.1	PASS
25	14.75E-3	0.006	0.1	PASS
26	14.06E-3	0.006	0.1	PASS
27	31.58E-3	0.014	0.1	PASS
28	13.46E-3	0.006	0.1	PASS
29	36.79E-3	0.016	0.1	PASS
30	11.34E-3	0.005	0.1	PASS
31	40.32E-3	0.018	0.1	PASS
32	10.32E-3	0.004	0.1	PASS
33	15.37E-3	0.007	0.1	PASS
34	11.82E-3	0.005	0.1	PASS
35	15.72E-3	0.007	0.1	PASS
36	10.97E-3	0.005	0.1	PASS
37	33.11E-3	0.014	0.1	PASS
38	10.30E-3	0.004	0.1	PASS
39	31.07E-3	0.014	0.1	PASS
40	13.55E-3	0.006	0.1	PASS

VOLTAGE FLUCTUATION AND FLICKERS

LIMITS OF VOLTAGE FLUCTUATION AND FLICKERS

Tests	Limits		Descriptions
	IEC555-3	IEC/EN 61000-3-3	
Pst	≤ 1.0, Tp= 10 min.	≤ 1.0, Tp= 10 min.	Short Term Flicker Indicator
Plt	N/A	≤ 0.65, Tp=2 hr.	Long Term Flicker Indicator
dc	≤ 3%	≤ 3.3%	Relative Steady-State V-Chang
dmax	≤ 4%	≤ 4%	Maximum Relative V-change
d (t)	N/A	≤ 3.3% for > 500 ms	Relative V-change characteristic

TEST PROCEDURE

a. Harmonic Current Test:

Test was performed according to the procedures specified in Clause 5.0 of IEC555-2 and/or Sub-clause 6.2 of IEC/EN 61000-3-2 depend on which standard adopted for compliance measurement.

b. Fluctuation and Flickers Test:

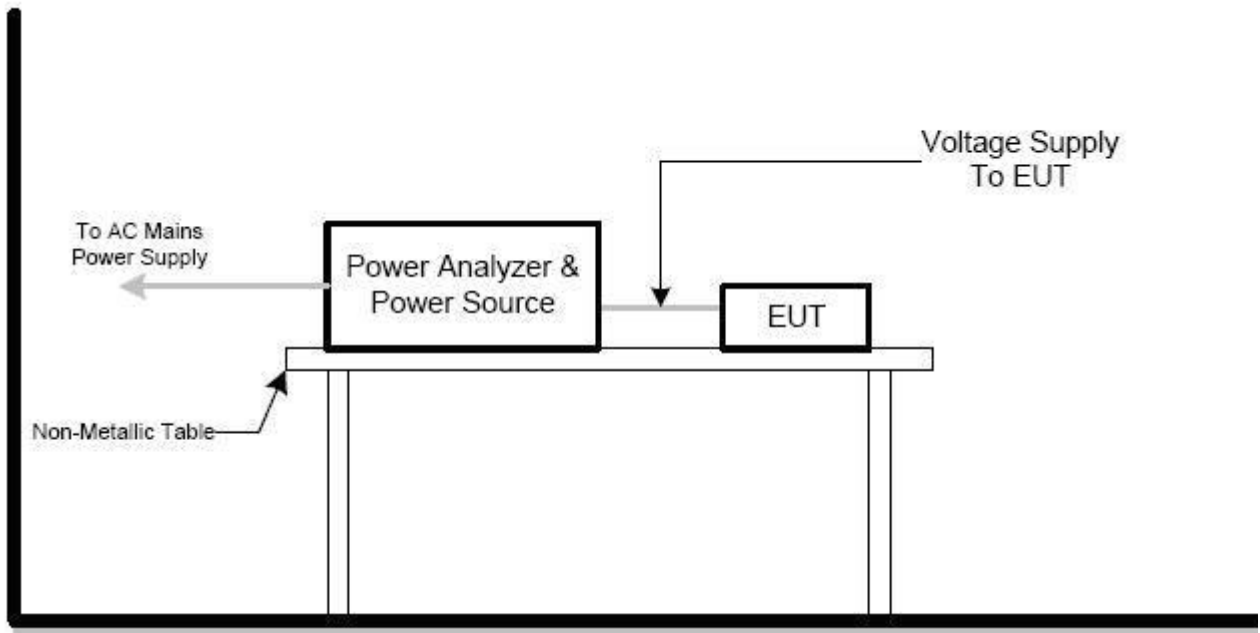
Tests was performed according to the Test Conditions/Assessment of Voltage Fluctuations specified in Clause 5.0/6.0 of IEC555-3 and/or Clause 6.0/4.0 of IEC/EN 61000-3-3 depend on which standard adopted for compliance measurement.

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

EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

TEST SETUP



TEST RESULTS

EUT :	Hydrogen-rich water cup	Model Name. :	HE-X5
Temperature :	25 °C	Relative Humidity :	45%
Pressure :	1010 hPa	Test Date :	2024-10-23
Test Mode :	Running		
Test Power :	DC5V		

Test Parameter	Measurement Value	Limit	Remarks
P_{st}	0.023	1.0	Pass
P_{it}	0.005	0.65	Pass
$T_{dt(s)}$	0.003	0.2	Pass
$d_{max}(\%)$	0.00%	4%	Pass
$d_c(\%)$	0.00%	3%	Pass

EMC IMMUNITY TEST

STANDARD COMPLIANCE/ SERVIRITY LEVEL/ CRITERIA

Tests Standard No.	TEST SPECIFICATION	Test Mode Test Ports	Perform. Criteria
1. ESD IEC/EN 61000-4-2	8KV air discharge 4KV contact discharge	Direct Mode	B
	4KV HCP discharge 4KV VCP discharge	Indirect Mode	B
2. RS IEC/EN 61000-4-3	80 MHz to 1000 MHz, 1000Hz, 80%, AM modulated	Enclosure	A
3. EFT/Burst IEC/EN 61000-4-4	5/50ns Tr/Th 5KHz Repetition Freq.	Power Supply Port	B
	5/50ns Tr/Th 5KHz Repetition Freq.	CTL/Signal Data Line Port	B
4. Surges IEC/EN 61000-4-5	1.2/50(8/20) Tr/Th us	L-N	B
	1.2/50(8/20) Tr/Th us	L-PE N-PE	B
5 Injected Current IEC/EN 61000-4-6	0.15 MHz to 80 MHz, 1000Hz 80 % , AM Modulated 150Ω source impedance	CTL/Signal Port	A
	0.15 MHz to 80 MHz, 1000Hz 80 % , AM Modulated 150Ω source impedance	AC Power Port	A
	0.15 MHz to 80 MHz, 1000Hz 80 % , AM Modulated 150Ω source impedance	DC Power Port	A
6. Power Frequency Magnetic Field IEC/EN 61000-4-8	50 Hz,	Enclosure	A
7. Volt. Interruptions Volt. Dips IEC/EN 61000-4-11	Voltage dip 0%	AC Power Port	C
	Voltage dip 30%		C
	Voltage dip 60%		C

GENERAL PERFORMANCE CRITERIA

According to **EN 55014-2** standard, the general performance criteria as following:

<p>Criterion A</p>	<p>The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended.</p> <p>The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.</p>
<p>Criterion B</p>	<p>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.</p> <p>The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test.</p>
<p>Criterion C</p>	<p>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.</p> <p>Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.</p>

GENERAL PERFORMANCE CRITERIA TEST SETUP

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

ESD TESTING

TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-2
Discharge Impedance:	330 ohm / 150 pF
Required Performance	B
Discharge Voltage:	Air Discharge : 2kV/4kV/8kV (Direct) Contact Discharge : 2kV/4kV (Direct/Indirect)
Polarity:	Positive & Negative
Number of Discharge:	Air Discharge: min. 20 times at each test point Contact Discharge: min. 20 at each test point
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum

TEST PROCEDURE

The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manner:

- a. Contact discharge was applied to conductive surfaces and coupling planes of the EUT.

During the test, it was performed with single discharges. For the single discharge time between successive single discharges was at least 1 second. The EUT shall be exposed to at least 200 discharges, 100 each at negative and positive polarity, at a minimum of four test points. One of the test points shall be subjected to at least 50 indirect discharges to the center of the front edge of the horizontal coupling plane. The remaining three test points shall each receive at least 50 direct contact discharges.

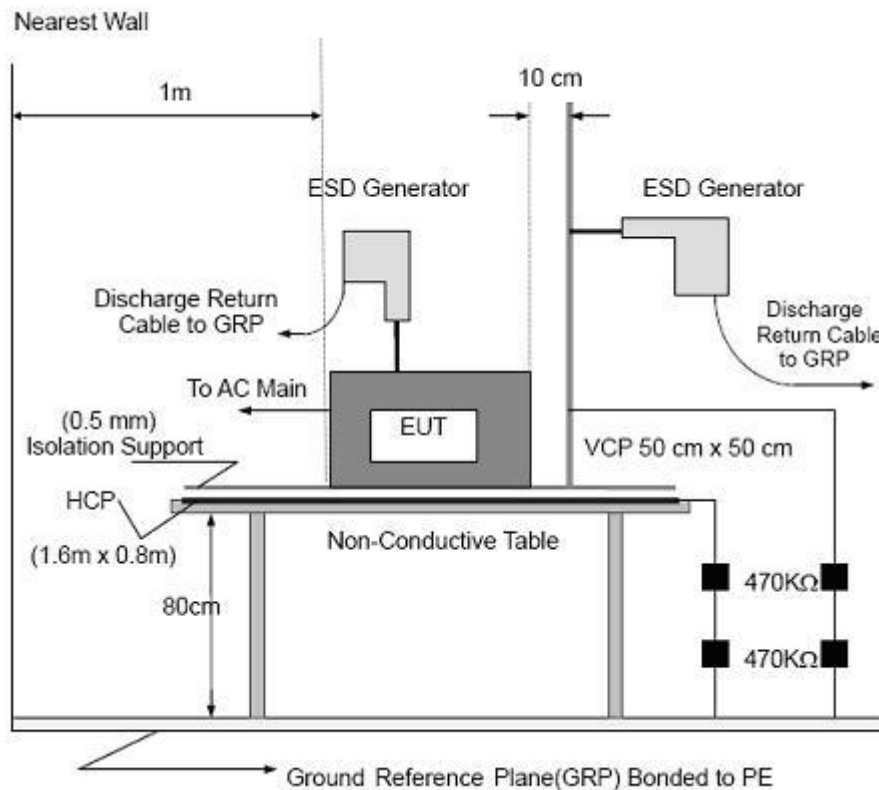
If no direct contact test points are available, then at least 200 indirect discharges shall be applied in the indirect mode. Test shall be performed at a maximum repetition rate of one discharge per second.

Vertical Coupling Plane (VCP):
The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane. The four faces of the EUT will be performed with electrostatic discharge.

Horizontal Coupling Plane (HCP):
The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane. The four faces of the EUT will be performed with electrostatic discharge.
- b. Air discharges at insulation surfaces of the EUT.

It was at least ten single discharges with positive and negative at the same selected point.

TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table 0.8 meters high standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system. A Horizontal Coupling Plane (1.6m x 0.8m) was placed on the table and attached to the GRP by means of a cable with 940k total impedance. The equipment under test, was installed in a representative system as described in section 7 of IEC /EN 61000-4-2, and its cables were placed on the HCP and isolated by an insulating support of 0.5mm thickness. A distance of 1-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

FLOOR-STANDING EQUIPMENT

The equipment under test was installed in a representative system as described in section 7 of IEC/EN 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of 0.1-meter thickness. The GRP consisted of a sheet of aluminum that is at least 0.25mm thick, and 2.5meters square connected to the protective grounding system and extended at least 0.5 meters from the EUT on all sides.

TEST RESULTS

EUT :	Hydrogen-rich water cup	Model Name. :	HE-X5
Temperature :	25 °C	Relative Humidity :	45%
Pressure :	1010 hPa	Test Date :	2024-10-23
Test Mode :	Running		
Test Power :	DC5V		

Mode	Air Discharge								Contact Discharge								Criterion	Result
	2		4		8		15		2		4		6		8			
Test level (kV)																		
Test Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-		
HCP									A	A	A	A					B	PASS
VCP									A	A	A	A						PASS
shell	A	A	A	A	A	A												PASS

Note:

- 1) +/- denotes the Positive/Negative polarity of the output voltage.
- 2) Test condition:
Direct / Indirect (HCP/VCP) discharges: Minimum 50 times (Positive/Negative) at each point. Air discharges: Minimum 10 times (Positive/Negative) at each point.
- 3) Test location(s) in which discharge (Air and contact discharge) to be applied illustrated by photos shown in next page(s)
- 4) The Indirect (HCP/VCP) discharges description of test point as following:
1. left side 2.right side 3.front side 4.rear side.
- 5) N/A - denotes test is not applicable in this test report.

RS TESTING

TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-3
Required Performance	A
Frequency Range:	80 MHz - 1000 MHz
Field Strength:	3 V/m
Modulation:	1kHz Sine Wave, 80%, AM Modulation
Frequency Step:	1 % of fundamental
Polarity of Antenna:	Horizontal and Vertical
Test Distance:	3 m
Antenna Height:	1.5 m
Dwell Time:	at least 3 seconds

TEST PROCEDURE

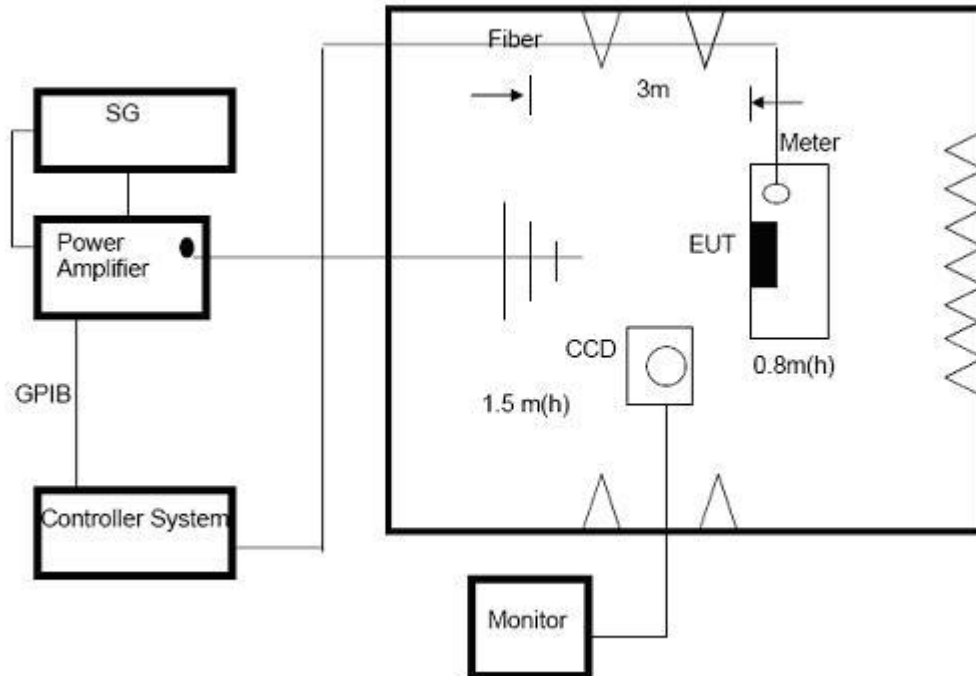
The EUT and support equipment, which are placed on a table that is 0.8 meter above ground and the testing was performed in a fully-anechoic chamber.

The testing distance from antenna to the EUT was 3 meters.

The other condition as following manner:

- a. The frequency range is swept from 80 MHz to 1000 MHz, & 1400MHz - 2700MHz with the signal 80%amplitude modulated with a 1kHz sine wave. The rate of sweep did not exceed 1.5x 10⁻³ decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- b. Sweep Frequency 900 MHz, with the Duty Cycle: 1/8 and Modulation: Pulse 217 Hz(if applicable)
- c. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- d. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive table 0.8 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive wood support 0.1 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

TEST RESULTS

EUT :	Hydrogen-rich water cup	Model Name. :	HE-X5
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1010 hPa	Test Date :	2024-10-23
Test Mode :	Running		
Test Power :	DC5V		

Frequency Range (MHz)	RF Field Position	R.F. Field Strength	Azimuth	Perform. Criteria	Results	Judgment
80MHz - 1000MHz	H / V	3 V/m (rms) AM Modulated 1000Hz, 80%	Front	A	A	PASS
			Rear			
			Left			
			Right			

Note:

- 1) N/A - denotes test is not applicable in this test report.
- 2) Criteria A: There was no change operated with initial operating during the test.
- 3) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 4) Criteria C: The system shut down during the test.

EFT/BURST TESTING

TEST SPECIFICATION

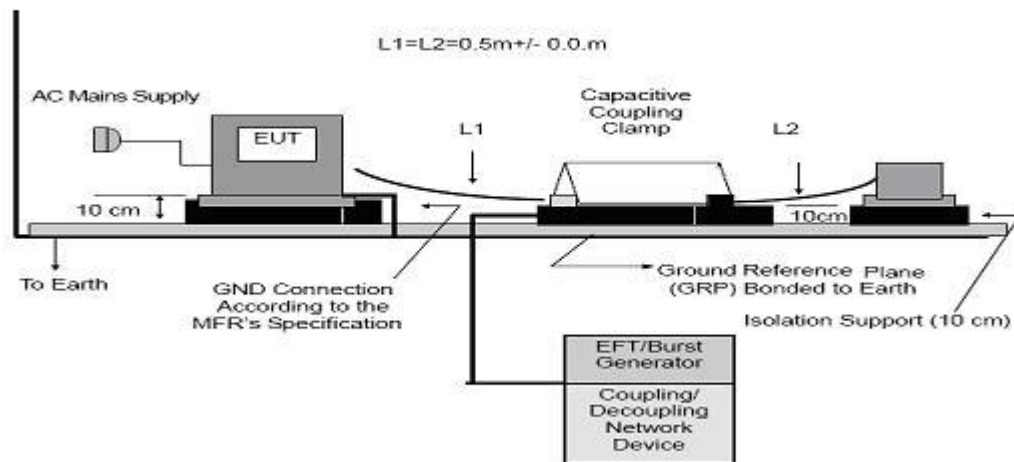
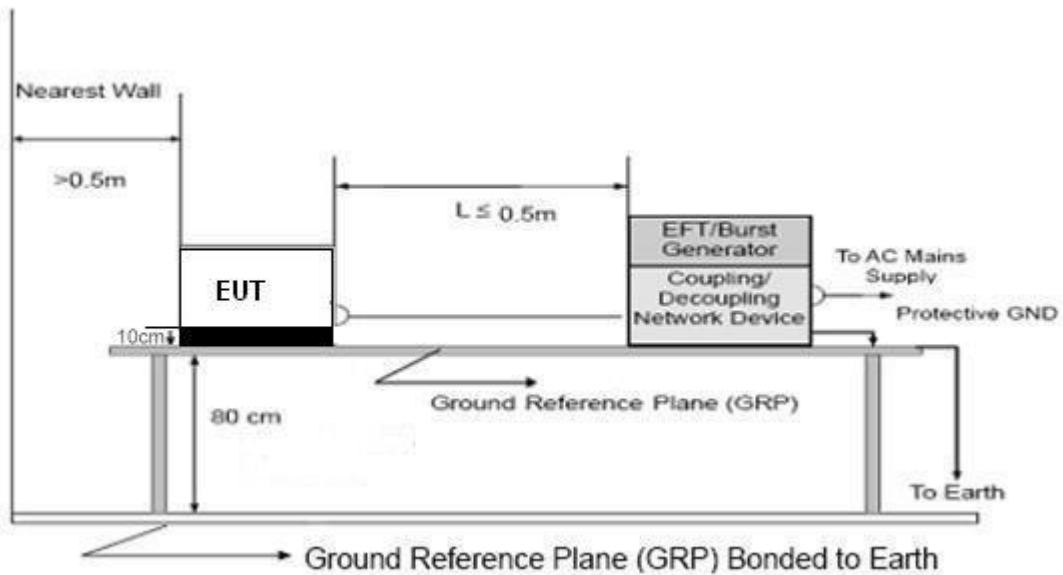
Basic Standard:	IEC/EN 61000-4-4
Required Performance	B
Test Voltage:	Power Line : 1 kV Signal/Control Line : 0.5 KV
Polarity:	Positive & Negative
Impulse Frequency:	5 kHz
Impulse Wave shape :	5/50 ns
Burst Duration:	15 ms
Burst Period:	300 ms
Test Duration:	Not less than 1 min.

TEST PROCEDURE

The EUT and its simulators were placed on a ground reference plane and were insulated from it by a wood support 0.1m + 0.01m thick. The ground reference plane was 1m*1m metallic sheet with 0.65mm minimum thickness. The other condition as following manner:

- a. The length of power cord between the coupling device and the EUT should not exceed 1 meter.
- b. Both positive and negative polarity discharges were applied.
- c. The duration time of each test sequential was 1 minute.

TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table (0.8m high) standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system. A minimum distance of 0.5m was provided between the EUT and the walls of the laboratory or any other metallic structure.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-4 and its cables, were isolated from the Ground Reference Plane by an insulating support that is 0.1-meter thick. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system.

TEST RESULTS

EUT :	Hydrogen-rich water cup	Model Name. :	HE-X5
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1010 hPa	Test Date :	2024-10-23
Test Mode :	Running		
Test Power :	DC5V		

Coupling Line	Test level (kV)								Criterion	Result
	0.5		1		2		4			
	+	-	+	-	+	-	+	-		
AC line	L									N/A
	N									N/A
	PE									N/A
	L+N									N/A
	L+PE									N/A
	N+PE									N/A
	L+N+PE									N/A
DC Line										N/A
Signal Line										N/A

Note:

- 1) +/- denotes the Positive/Negative polarity of the output voltage.
- 2) N/A - denotes test is not applicable in this test report.
- 3) Criteria A: There was no change operated with initial operating during the test.
- 4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 5) Criteria C: The system shut down during the test.

SURGE TESTING

TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-5
Required Performance	B
Wave-Shape:	Combination Wave 1.2/50 us Open Circuit Voltage 8 /20 us Short Circuit Current
Test Voltage:	Power Line : 0.5 kV, 1 kV, 2 kV
Surge Input/Output:	L-N, L-PE, N-PE
Generator Source:	2 ohm between networks
Impedance:	12 ohm between network and ground
Polarity:	Positive/Negative
Phase Angle:	0 /90/180/270°
Pulse Repetition Rate:	1 time / min. (maximum)
Number of Tests:	5 positive and 5 negative at selected points

TEST PROCEDURE

a. For EUT power supply:

The surge is to be applied to the EUT power supply terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave. The power cord between the EUT and the coupling/decoupling networks shall be 2meters in length (or shorter).

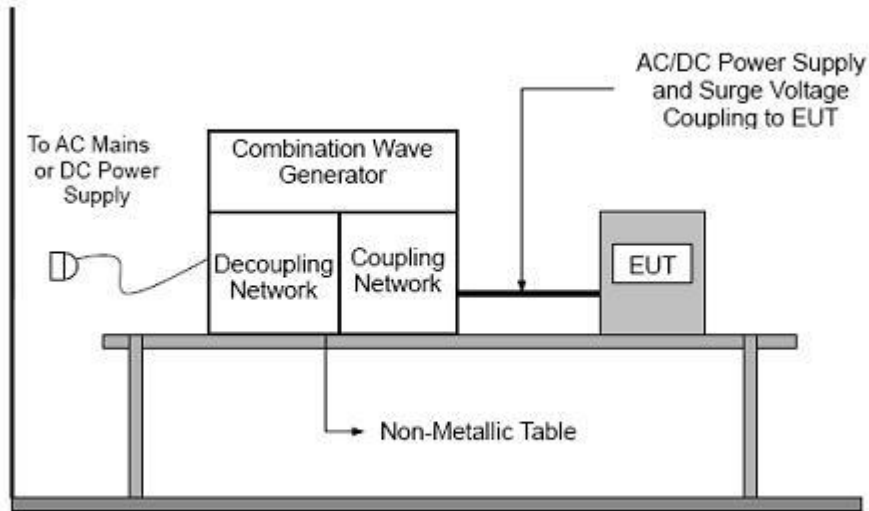
b. For test applied to unshielded unsymmetrically operated interconnection lines of EUT:

The surge is applied to the lines via the capacitive coupling. The coupling /decoupling networks shall not influence the specified functional conditions of the EUT. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

c. For test applied to unshielded symmetrically operated interconnection /telecommunication lines of EUT:

d. The surge is applied to the lines via gas arrestors coupling. Test levels below the ignition point of the coupling arrestor cannot be specified. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

TEST SETUP



TEST RESULTS

EUT :	Hydrogen-rich water cup	Model Name. :	HE-X5
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1010 hPa	Test Date :	2024-10-23
Test Mode :	Running		
Test Power :	DC5V		

Coupling Line			Test level								Criterion	Result
			0.5 kV		1 kV		2 kV		4 kV			
			+	-	+	-	+	-	+	-		
AC line	L-N	0°									N/A	
		90°										
		180°										
		270°										
	L-PE	0°									N/A	
		90°										
		180°										
		270°										
	N-PE	0°									N/A	
		90°										
		180°										
		270°										
DC Line												
Signal Line												

Note:

- 1) Polarity and Numbers of Impulses : 5 Pst / Ngst at each tested mode.
- 2) N/A - denotes test is not applicable in this Test Report.
- 3) Criteria A: There was no change operated with initial operating during the test.
- 4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 5) Criteria C: The system shut down during the test.

INJECTION CURRENT TESTING

TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-6
Required Performance	A
Frequency Range:	0.15 MHz - 80 MHz
Field Strength:	3 Vr.m.s.
Modulation:	1kHz Sine Wave, 80%, AM Modulation
Frequency Step:	1 % of fundamental
Dwell Time:	at least 3 seconds

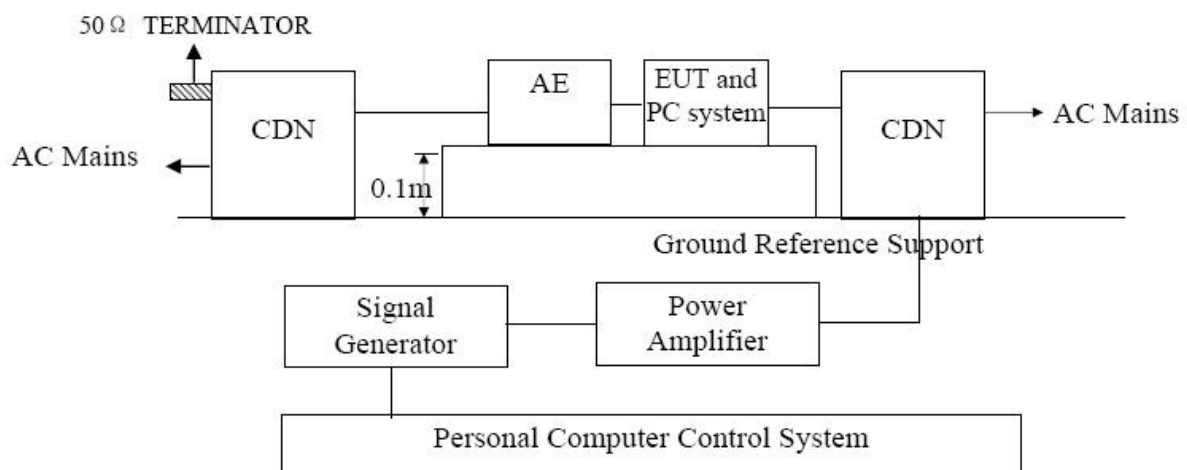
TEST PROCEDURE

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 50mm (where possible). The disturbance signal described below is injected to EUT through CDN.

The other condition as following manner:

- The frequency range is swept from 150 KHz to 80 MHz, with the signal 80%amplitude modulated with a 1kHz sine wave. The rate of sweep did not exceed 1.5×10^{-3} decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.

TEST SETUP



NOTE:

FLOOR-STANDING EQUIPMENT

The equipment to be tested is placed on an insulating support of 0.1 meters height above a ground reference plane. All relevant cables shall be provided with the appropriate coupling and decoupling devices at a distance between 0.1 meters and 0.3 meters from the projected geometry of the EUT on the ground reference plane.

TEST RESULTS

EUT :	Hydrogen-rich water cup	Model Name. :	HE-X5
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1010 hPa	Test Date :	2024-10-23
Test Mode :	Running		
Test Power :	DC5V		

Test Ports (Mode)	Freq. Range MHz)	Field Strength	Perform. Criteria	Results	Judgment
Input/ Output AC. Power Port	0.15 ---80	3V(rms) AM Modulated 1000Hz, 80%	A	A	PASS
Input/ Output DC. Power Port	0.15 --- 80		A	N/A	N/A
Signal Line	0.15 --- 80		A	N/A	N/A

Note:

- 1) N/A - denotes test is not applicable in this Test Report.
- 2) Criteria A: There was no change operated with initial operating during the test.
- 3) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 4) Criteria C: The system shut down during the test.

VOLTAGE INTERRUPTION/DIPS TESTING

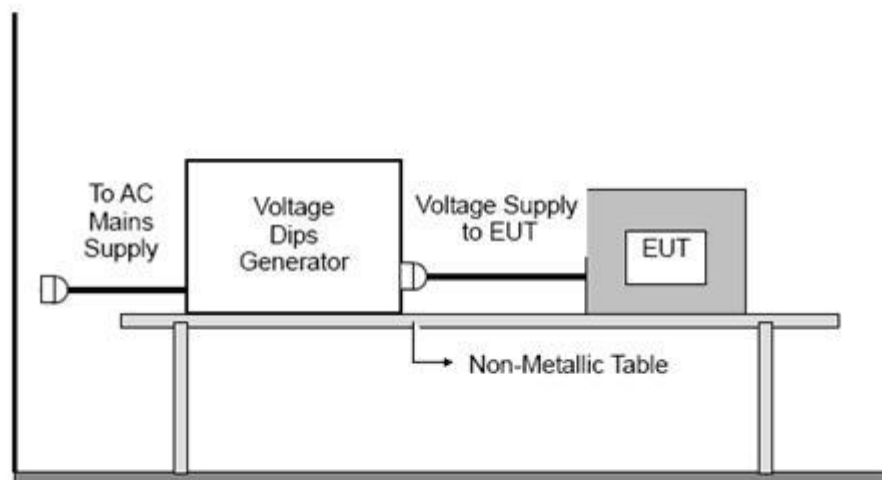
TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-11
Required Performance:	C (For 0% Voltage Dips) C (For 30% Voltage Dips) C (For 60% Voltage Dips)
Test Duration Time:	Minimum three test events in sequence
Interval between Event:	Minimum ten seconds
Phase Angle:	0°/45°/90°/135°/180°/225°/270°/315°/360°
Test Cycle:	3 times

TEST PROCEDURE

The EUT shall be tested for each selected combination of test levels and duration with a sequence of three dips/interruptions with intervals of 10 s minimum (between each test event). Each representative mode of operation shall be tested. Abrupt changes in supply voltage shall occur at zero crossings of the voltage waveform.

TEST SETUP



TEST RESULTS

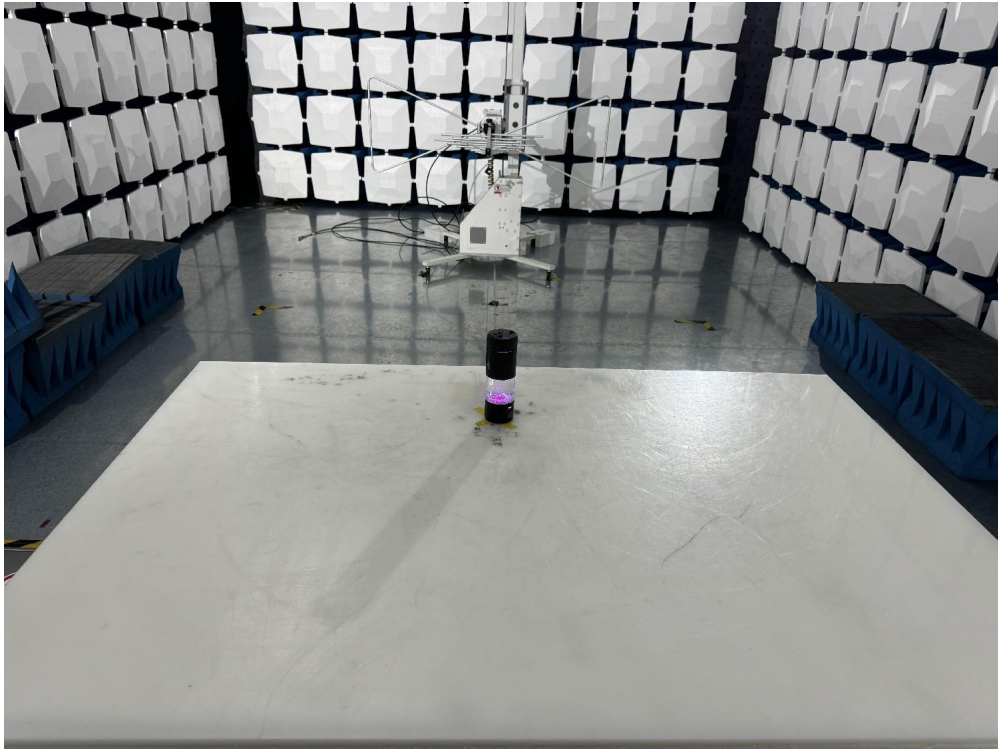
EUT :	Hydrogen-rich water cup	Model Name. :	HE-X5
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1010 hPa	Test Date :	2024-10-23
Test Mode :	Running		
Test Power :	DC5V		

Interruption & Dips	Duration (T)	Perform Criteria	Results	Judgment
Voltage dip 0%	0.5	C	B	PASS
Voltage dip 60%	10	C	B	PASS
Voltage dip 30%	50	C	B	PASS

Note:

- 1). N/A - denotes test is not applicable in this test report.
- 2) Criteria A: There was no change operated with initial operating during the test.
- 3) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 4) Criteria C: The system shut down during the test.

RE



CE



EUT



Fig.1

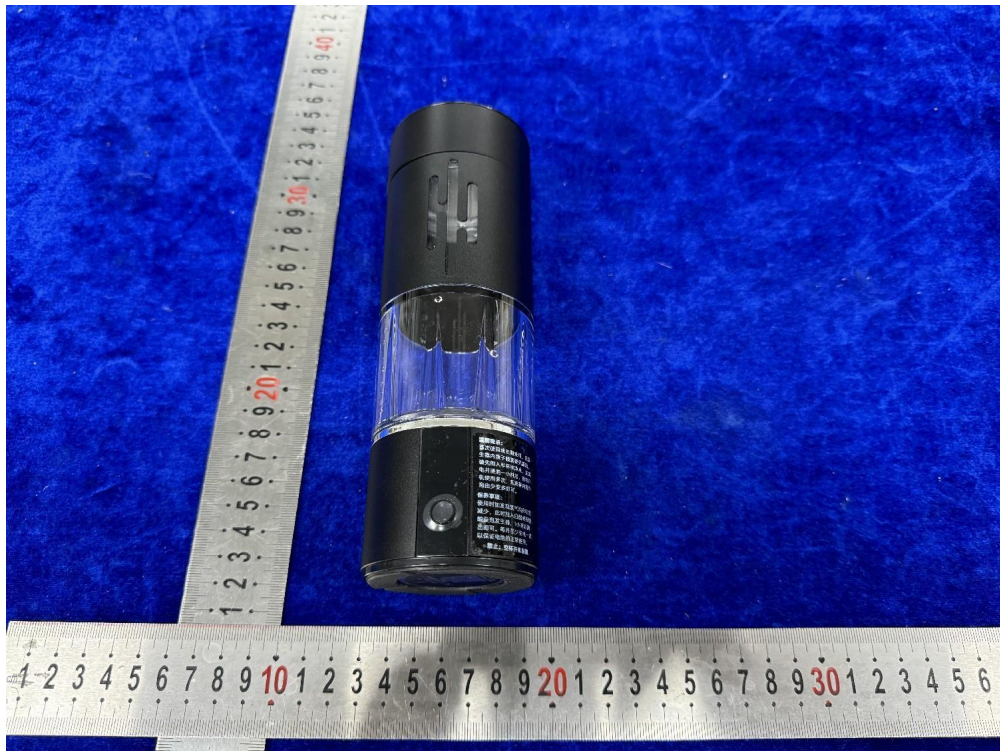


Fig.2

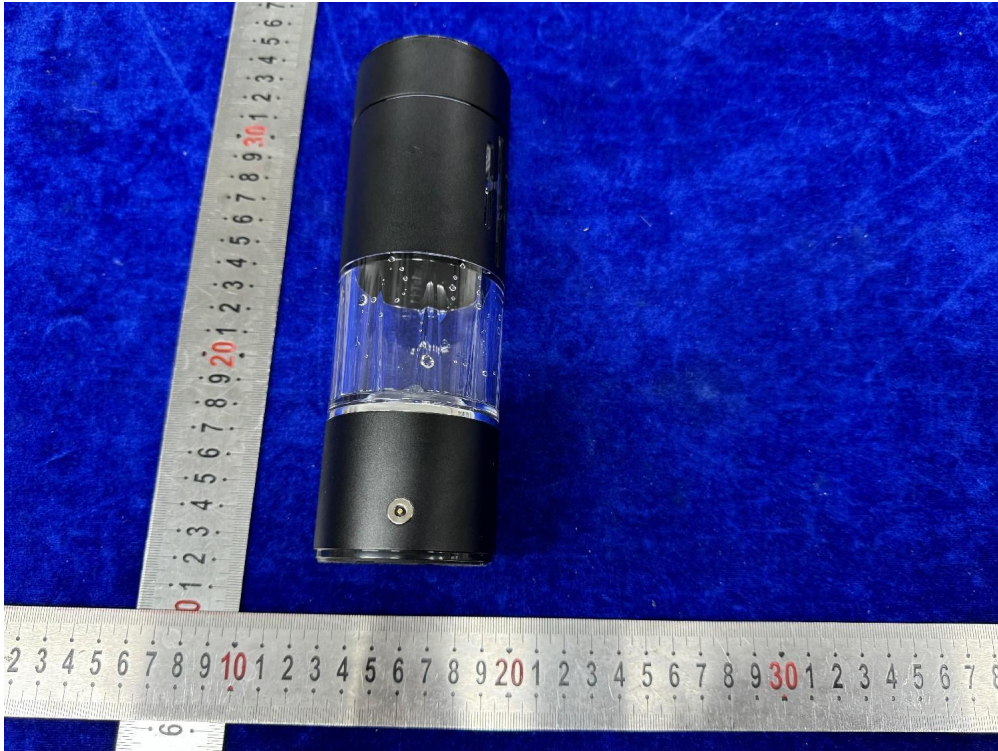


Fig.3

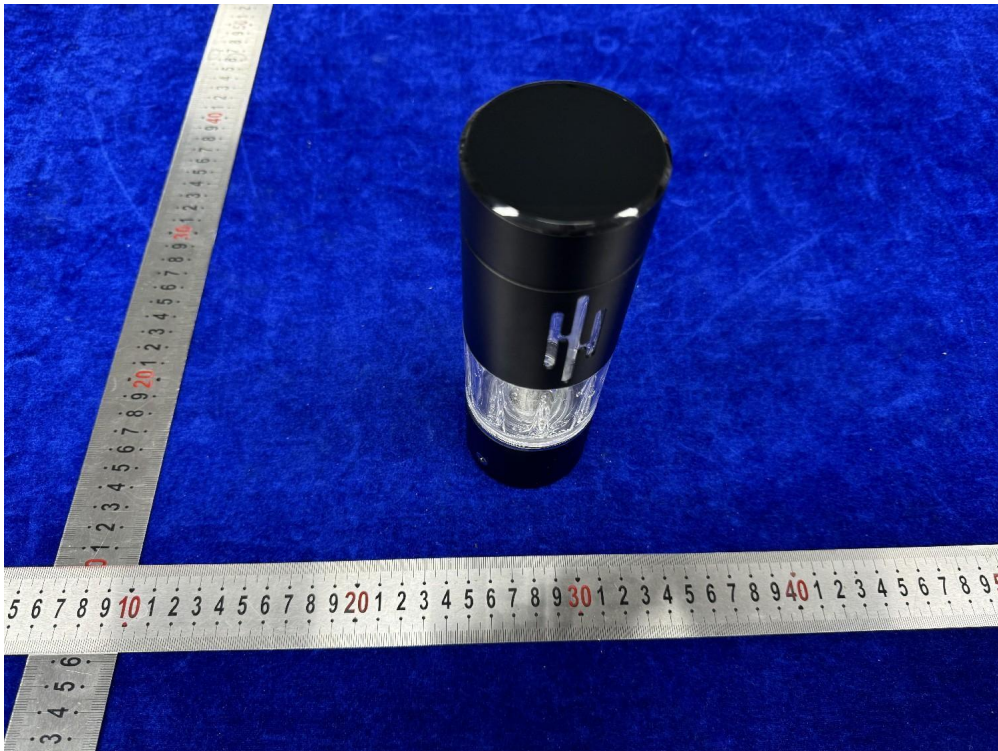


Fig.4

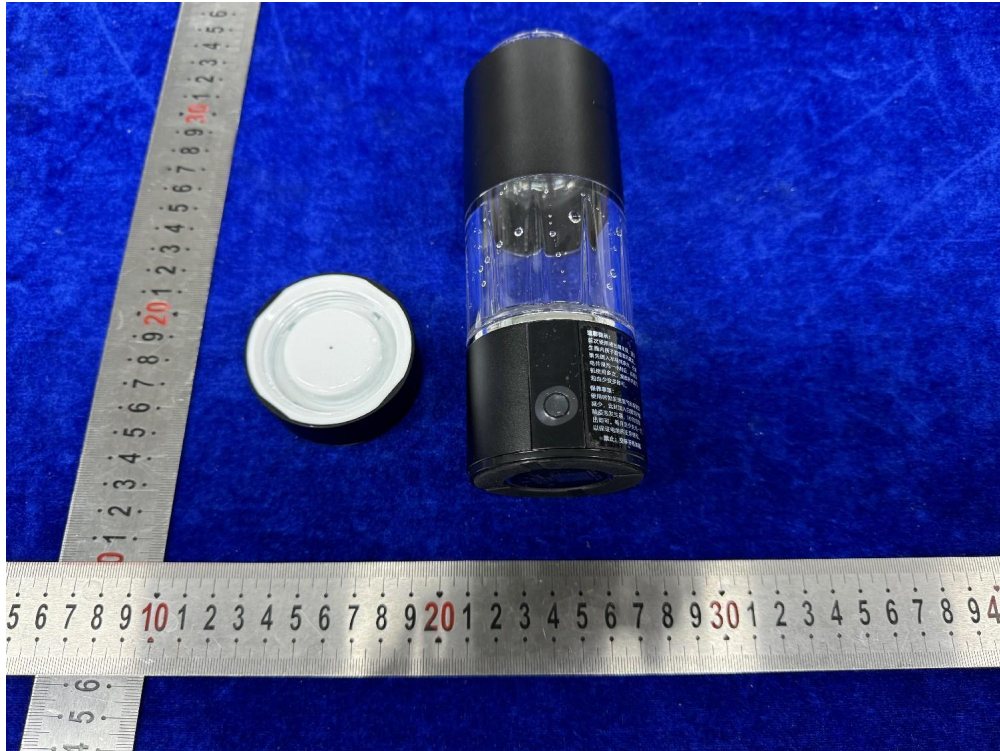


Fig.5

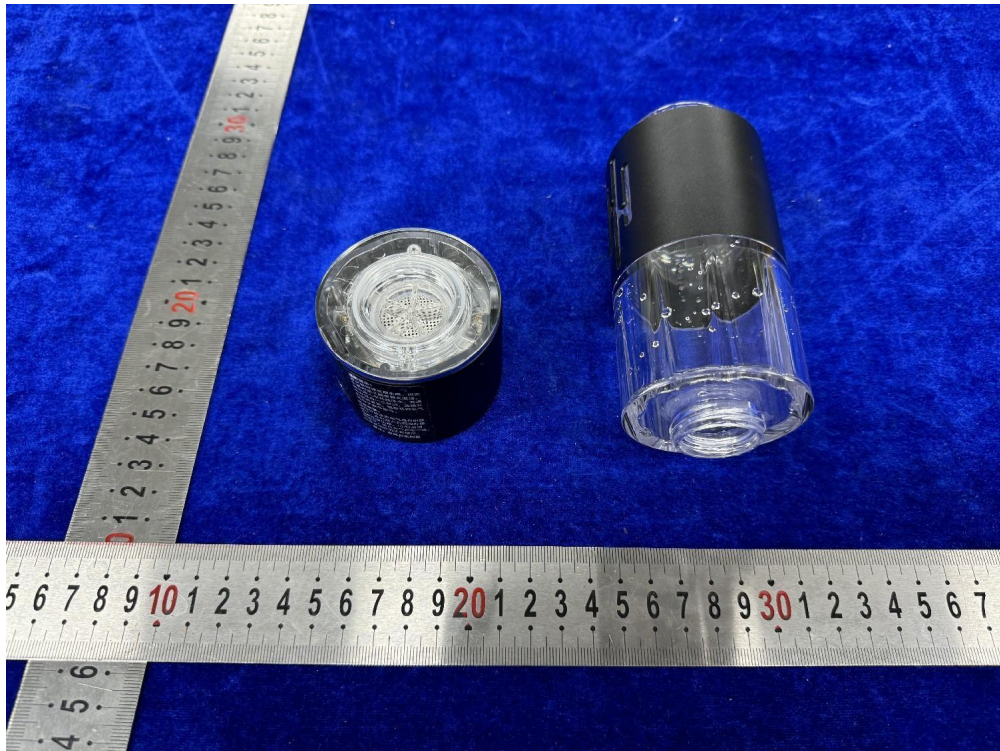


Fig.6

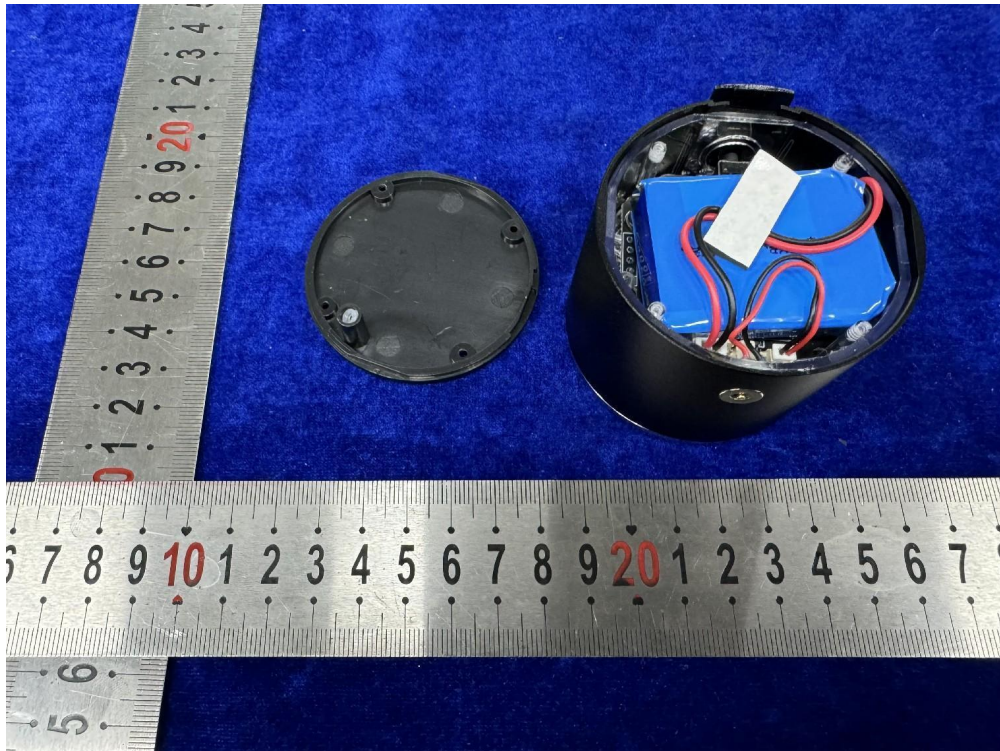


Fig.7

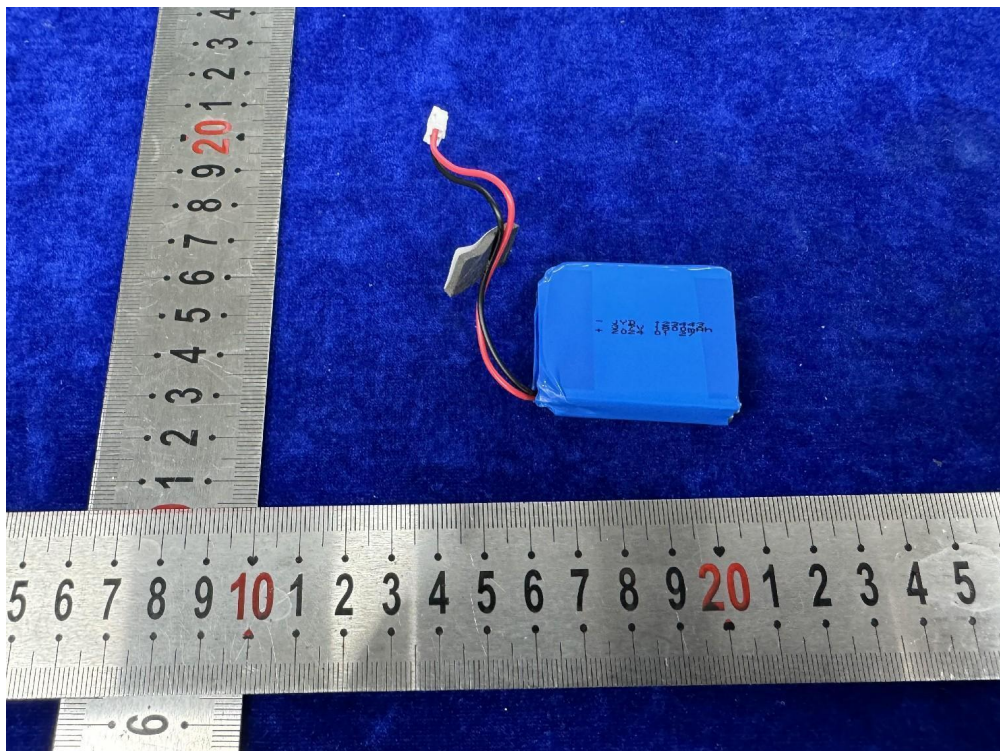


Fig.8

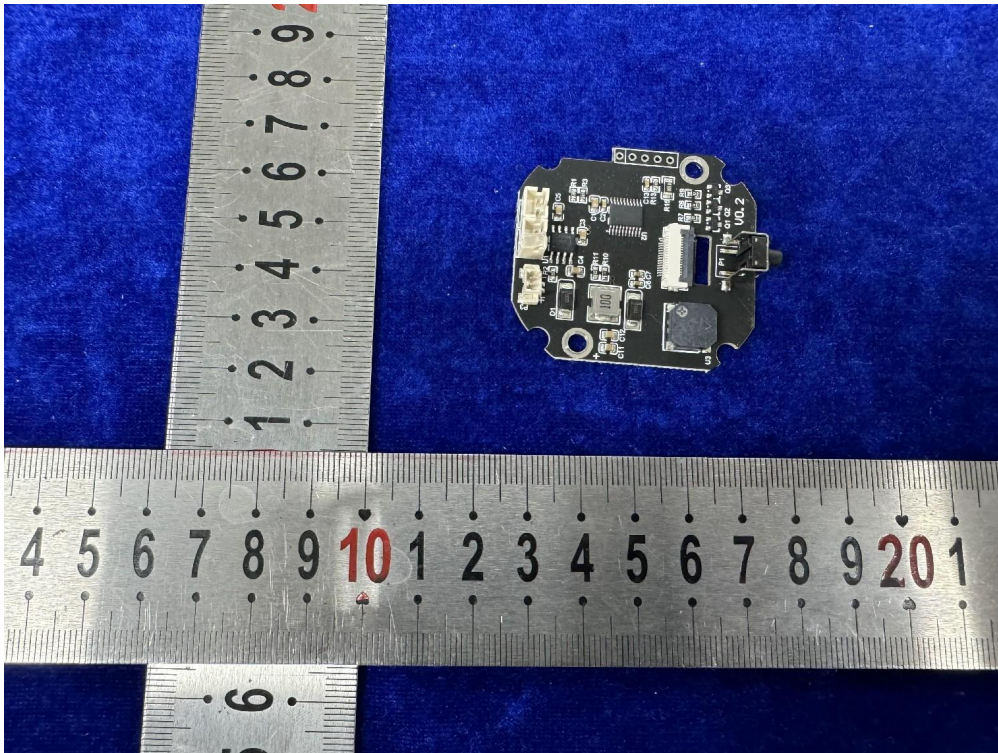


Fig.9

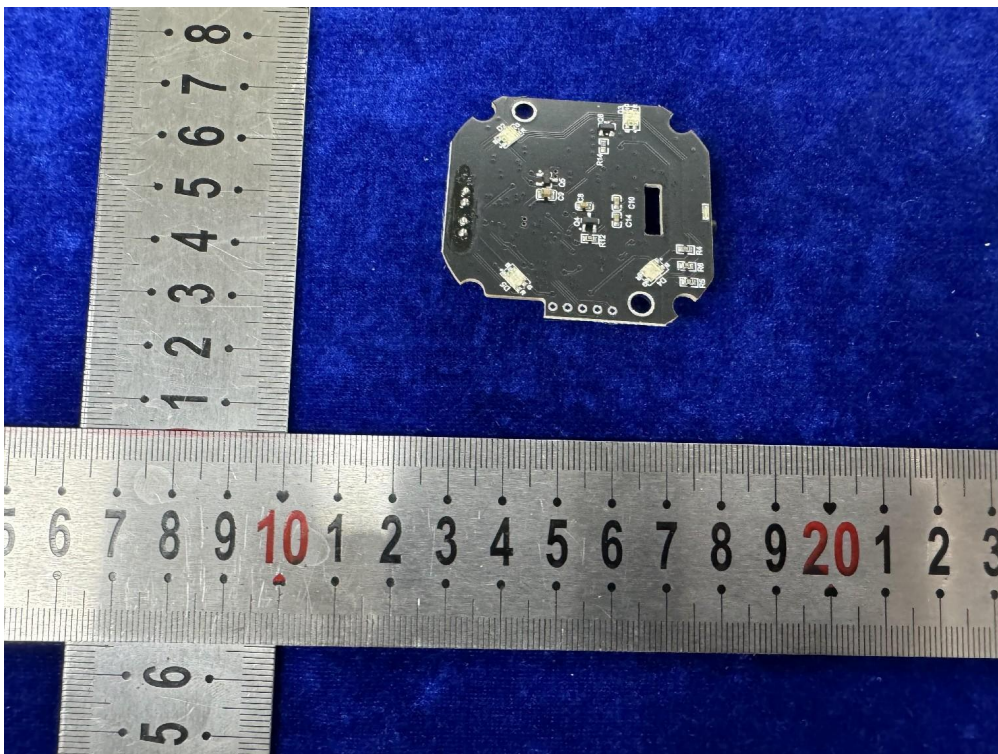


Fig.10

※※※※※END OF REPORT※※※※※