

# TEST REPORT

**Application No.:** GZCR2104020167HS  
**Applicant:** Mateko Sp. z o.o.  
**Address of Applicant:** ul. Przylesna 17A, 05-126 Michalow-Grabina, Poland  
**Manufacturer:** Guangdong Invitop Technology Co., Ltd  
**Address of Manufacturer:** 2F-201 & 3F, Area A1, Minsen Information Technology Industrial Park, No.8, East of Jinsan Avenue, Sanjiao Town, Zhongshan City, Guangdong Province  
**Factory:** Guangdong Invitop Technology Co., Ltd  
**Address of Factory:** 2F-201 & 3F, Area A1, Minsen Information Technology Industrial Park, No.8, East of Jinsan Avenue, Sanjiao Town, Zhongshan City, Guangdong Province  
**Equipment Under Test (EUT):**  
**EUT Name:** Hybrid Air Purifier  
**Model No.:** MAP-ZK-H2025-I29W  
**Trade Mark:** MATEKO  
**Standard(s) :** EN 55014-1: 2017+A11:2020  
 EN 55014-2: 2015  
 EN IEC 61000-3-2: 2019  
 EN 61000-3-3: 2013+A1: 2019  
**Date of Receipt:** 2021-04-22  
**Date of Test:** 2021-05-08 to 2021-08-31  
**Date of Issue:** 2021-09-16

<b>Test Result:</b>	<b>Pass*</b>
---------------------	--------------

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

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.



Kobe Jian  
EMC Laboratory Manager





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SGS-CSTC Standards Technical Services Co., Ltd.  
Guangzhou Branch, EMC Laboratory

No.198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075058 www.sgsgroup.com.cn  
 中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2021-09-16		Original

Authorized for issue by:				
				
		Lily Kuang/Project Engineer		
				
		Jerry Chan/Reviewer		

## 2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at AC Mains Power Port (150kHz-30MHz)	EN 55014-1: 2017+A11:2020	CISPR 16-2-1	Clause 4.3.3 Table 5	Pass
Discontinuous Disturbance (150kHz-30MHz)		EN 55014-1:2017+A11:2020	Clause 4.4.2	Pass
Disturbance Power		CISPR 16-2-2	Clause 4.3.4 Table 7 & 8	Pass
Voltage Fluctuations and Flicker	EN 61000-3-3: 2013+A1: 2019	EN 61000-3-3: 2013+A1: 2019	Clause 5 of EN 61000-3-3	Pass
Harmonic Current Emission	EN IEC 61000-3-2: 2019	EN IEC 61000-3-2: 2019	Class A	Pass

Immunity Part				
Item	Standard	Method	Requirement	Result
Electrostatic Discharge	EN 55014-2: 2015	EN 61000-4-2:2009	4kV Contact Discharge, 8kV Air Discharge	Pass
Electrical Fast Transients Burst at AC Mains Power Port		EN 61000-4-4:2012	1kV, 5/50ns Tr/Td, 5kHz Repetition Frequency	Pass
Surge at AC Mains Power Port		EN 61000-4-5:2014+A1:2017	1.2/50µs Tr/Td, 1kV Line to Line	Pass
Conducted Immunity at AC Mains Power Port (150kHz-230MHz)		EN 61000-4-6:2014	3Vrms (emf), 80%, 1kHz Amp. Mod.	Pass
Voltage Dips and Interruptions		EN 61000-4-11:2004+A1:2017	For 50Hz: 0 % UT for 0.5cycle, 40 % UT for 10cycles, 70 % UT for 25cycles; For 60Hz: 0 % UT for 0.5cycle, 40 % UT for 12cycles, 70 % UT for 30cycles, UT is Supply Voltage	Pass

**Note:**

E.U.T./EUT means Equipment Under Test.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

### 3 Contents

	Page
1 Cover Page .....	1
2 Test Summary .....	3
3 Contents.....	4
4 General Information .....	6
4.1 Details of E.U.T. ....	6
4.2 Description of Support Units.....	6
4.3 Measurement Uncertainty .....	6
4.4 Test Location .....	6
4.5 Test Facility .....	7
4.6 Deviation from Standards.....	7
4.7 Abnormalities from Standard Conditions .....	7
4.8 EMS Monitor .....	7
5 Equipment List .....	8
6 Emission Test Results.....	11
6.1 Conducted Emissions at AC Mains Power Port (150kHz-30MHz) .....	11
6.1.1 E.U.T. Operation .....	11
6.1.2 Test Mode Description .....	11
6.1.3 Test Setup Diagram .....	11
6.1.4 Measurement Procedure and Data .....	12
6.2 Discontinuous Disturbance (150kHz-30MHz).....	16
6.2.1 E.U.T. Operation .....	16
6.2.2 Test Mode Description .....	16
6.2.3 Test Setup Diagram .....	17
6.2.4 Measurement Procedure and Data .....	17
6.3 Disturbance Power .....	18
6.3.1 E.U.T. Operation .....	18
6.3.2 Test Mode Description .....	18
6.3.3 Test Setup Diagram .....	18
6.3.4 Measurement Procedure and Data .....	19
6.4 Voltage Fluctuations and Flicker .....	25
6.4.1 E.U.T. Operation .....	25
6.4.2 Test Mode Description .....	25
6.4.3 Test Setup Diagram .....	25
6.4.4 Measurement Procedure and Data .....	26
6.5 Harmonic Current Emission.....	27
6.5.1 Conclusion .....	27
7 Immunity Test Results.....	28
7.1 Electrostatic Discharge.....	29
7.1.1 Test Setup Diagram .....	29
7.1.2 E.U.T. Operation .....	29
7.1.3 Test Mode Description .....	29
7.1.4 Test Condition and Results: .....	30



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7.2	Electrical Fast Transients Burst at AC Mains Power Port .....	31
7.2.1	Test Setup Diagram .....	31
7.2.2	E.U.T. Operation .....	31
7.2.3	Test Mode Description .....	31
7.2.4	Test Condition and Results: .....	32
7.3	Surge at AC Mains Power Port.....	33
7.3.1	Test Setup Diagram .....	33
7.3.2	E.U.T. Operation .....	33
7.3.3	Test Mode Description .....	33
7.3.4	Test Condition and Results: .....	34
7.4	Conducted Immunity at AC Mains Power Port (150kHz-230MHz).....	35
7.4.1	Test Setup Diagram .....	35
7.4.2	E.U.T. Operation .....	35
7.4.3	Test Mode Description .....	35
7.4.4	Test Condition and Results: .....	35
7.5	Voltage Dips and Interruptions .....	36
7.5.1	Test Setup Diagram .....	36
7.5.2	E.U.T. Operation .....	36
7.5.3	Test Mode Description .....	36
7.5.4	Test Condition and Results: .....	37
8	Test Setup Photo.....	38
9	EUT Constructional Details (EUT Photos) .....	47



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## 4 General Information

### 4.1 Details of E.U.T.

Power supply: The details of AC/DC adapter as below:  
model No: GQ48-240200-AG  
Input: 100-240V~50/60Hz 1.5A Max  
Output: 24.0V===2.0A 48W

### 4.2 Description of Support Units

The EUT has been tested as an independent unit.

### 4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Mains Power Port (150kHz-30MHz)	3.12dB
Disturbance Power	3.66dB
Remark: The $U_{lab}$ (lab Uncertainty) is less than $U_{cisper}$ (CISPR Uncertainty), so the test results – compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit; – non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.	

### 4.4 Test Location

All tests were performed at:  
SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,  
198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,  
Guangzhou, China 510663  
Tel: +86 20 82155555 Fax: +86 20 82075059  
No tests were sub-contracted.



## 4.5 Test Facility

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

- **NVLAP (Lab Code: 200611-0)**

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

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

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

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

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

- **CNAS (Lab Code: L0167)**

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

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

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

- **ISED (Registration No.: 4620B, CAB identifier: CN0052)**

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

- **VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)**

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

## 4.6 Deviation from Standards

None

## 4.7 Abnormalities from Standard Conditions

None

## 4.8 EMS Monitor

Visual: Monitored the LED lighting and motor running of the EUT

Audio: N/A

Other: Monitored the Spectrum Analyser for any unintentional responses



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## 5 Equipment List

Conducted Emissions at AC Mains Power Port (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	ChangZhou ZhongYu	8m x 3m x 3.8m	EMC0306	N/A	N/A
Two-Line V-Network	Rohde & Schwarz	ENV216	EMC0118	2021-01-08	2022-01-06
Two-Line V-Network-GZ	Rohde & Schwarz	ENV216	EMC2135	2020-09-25	2021-09-24
Coaxial Cable	HangTianXing	2m	EMC0107	2020-09-09	2022-09-08
Test Software E3c	Audix	Ver. 5.4.1221b	GZE100-62	N/A	N/A
EMI Test Receiver(9kHz-3.6GHz)	Rohde & Schwarz	ESR3	EMC2221	2021-06-01	2022-05-31

Discontinuous Disturbance (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Click Analyzer (PMM CA0010)	Narda Safety Test Solutions	PMM CA0010	EMC2182	2020-10-23	2021-10-22
EMI Receiver (10Hz-30MHz)	Narda Safety Test Solutions	PMM 9010F	EMC2183	2020-10-23	2021-10-22
Test Software PMM Click Analysis	Narda Safety Test Solutions	Ver 1.06	GZE100-76	N/A	N/A

Disturbance Power					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	ChangZhou ZhongYu	8m x 3m x 3.8m	EMC0306	N/A	N/A
Absorbing Clamp-Main	Rohde & Schwarz	MDS-21	EMC2184	2021-03-01	2022-02-28
Absorbing Clamp-AUX	Beijing Dazhe Co. Ltd.	ZN23201	EMC2040	2021-01-04	2022-01-03
6 dB Attenuator with 8m length cable	Rohde & Schwarz	MDS-21	EMC2185	2021-02-27	2022-02-26
EMI Test Receiver(9kHz-3.6GHz)	Rohde & Schwarz	ESR3	EMC2221	2021-06-01	2022-05-31

Voltage Fluctuations and Flicker					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
AC Power Source	California	50001iX	EMC0608	2021-03-27	2022-03-26
Power Analyzer	California	PACS	EMC0607	2021-03-27	2022-03-26
Test Software CTS4	California	Ver 4.14.0	GZE100-66	N/A	N/A





**Harmonic Current Emission**

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
AC Power Source	California	50001iX	EMC0608	2021-03-27	2022-03-26
Power Analyzer	California	PACS	EMC0607	2021-03-27	2022-03-26
Test Software CTS4	California	Ver 4.14.0	GZE100-66	N/A	N/A

**Electrostatic Discharge**

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
ESD Simulator-E	EMTEST	NX30	EMC2186	2021-02-27	2022-02-26
ESD Ground Plane	SGS-EMC	3m x 3m	EMC0804	N/A	N/A
Aneroid Barometer	Shanghai Meteorological Instrument Factory Co., Ltd.	YM3	EMC2181	2020-12-03	2021-12-02
Temperature & Humidity	Shanghai Meteorological Instrument Factory Co., Ltd.	ZJ1-2B	EMC0078	2021-07-04	2022-07-03

**Electrical Fast Transients Burst at AC Mains Power Port**

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMC Immunity Test System	TESEQ AG	NSG 3060 CDN3061 INA 6502 CIB CND3425	EMC2072	2021-01-08	2022-01-07
Oscilloscope	Tektronix	TDS3052C	EMC2055	2020-12-10	2021-12-09
Test Software WIN 3000	TESEQ AG	Ver 1.3.2	GZE100-68	N/A	N/A

**Surge at AC Mains Power Port**

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMC Immunity Test System	TESEQ AG	NSG 3060 CDN3061 INA 6502 CIB CND3425	EMC2072	2021-01-08	2022-01-07
Oscilloscope	Tektronix	TDS3052C	EMC2055	2020-12-10	2021-12-09
Test Software WIN 3000	TESEQ AG	Ver 1.3.2	GZE100-68	N/A	N/A



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Conducted Immunity at AC Mains Power Port (150kHz-230MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Test System for Conducted and Radiated Immunity	TESEQ AG	NSG 4070B-80	EMC2115	2020-11-30	2021-11-29
Test Software NSG4070_Ctrl1	TESEQ AG	Ver.1.3.0.1	GZE100-72	N/A	N/A
Dual Directional coupler	Werlatone Inc.	C1795	EMC1105	2021-05-19	2022-05-18
Oscilloscope	Tektronix	TDS3052C	EMC2055	2020-12-10	2021-12-09
CDN M2/M3	Elektronik-Feinmechanik	L-801:M2/M3	EMC2048	2020-08-21	2022-08-20
CDN M2	Schaffner Chase	CDN-M2-16	EMC1107	2020-10-23	2023-10-22
Audio Analyzer	Keysight	U8903B	EMC2180	2020-09-18	2021-09-17

Voltage Dips and Interruptions					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMC Immunity Test System	TESEQ AG	NSG 3060 CDN3061 INA 6502 CIB CND3425	EMC2072	2021-01-08	2022-01-07
Oscilloscope	Tektronix	TDS3052C	EMC2055	2020-12-10	2021-12-09
Test Software WIN 3000	TESEQ AG	Ver 1.3.2	GZE100-68	N/A	N/A

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2021-07-05	2022-07-05
DMM	Fluke	73	EMC0007	2021-07-05	2022-07-05



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## 6 Emission Test Results

### 6.1 Conducted Emissions at AC Mains Power Port (150kHz-30MHz)

Test Requirement:	EN 55014-1: 2017+A11:2020
Test Method:	CISPR 16-2-1
Limit:	
0.15M-0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 59dB(μV)-46dB(μV) average
0.5M-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

#### 6.1.1 E.U.T. Operation

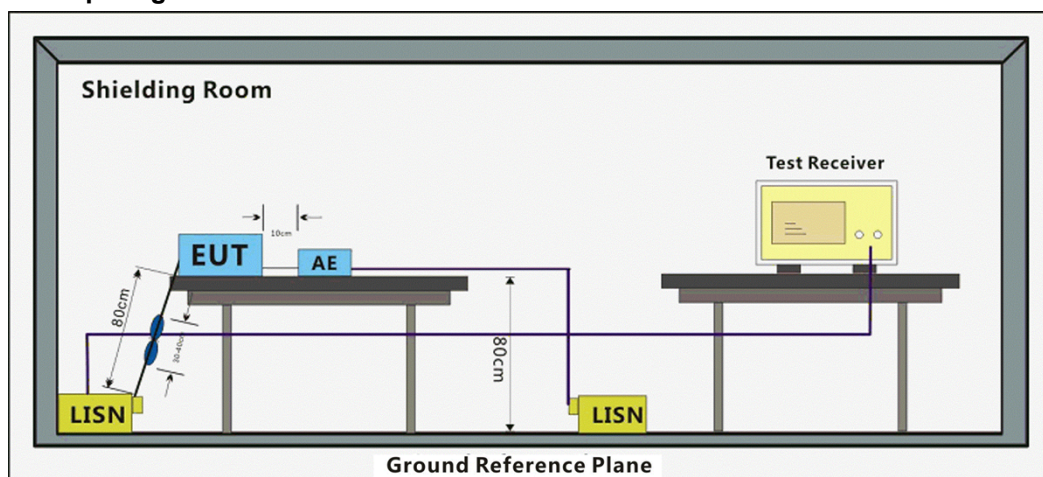
Operating Environment:

Temperature: 24.8 °C Humidity: 52 % RH Atmospheric Pressure: 995 mbar

#### 6.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	05	Normal Working_air purifying at middle speed
Final test	06	Normal Working_air purifying at max speed
Pre-scan	07	Normal Working_air purifying at sleep mode
Pre-scan	08	Normal Working_air purifying at auto mode
Pre-scan	09	Normal Working_air purifying at UV function

#### 6.1.3 Test Setup Diagram





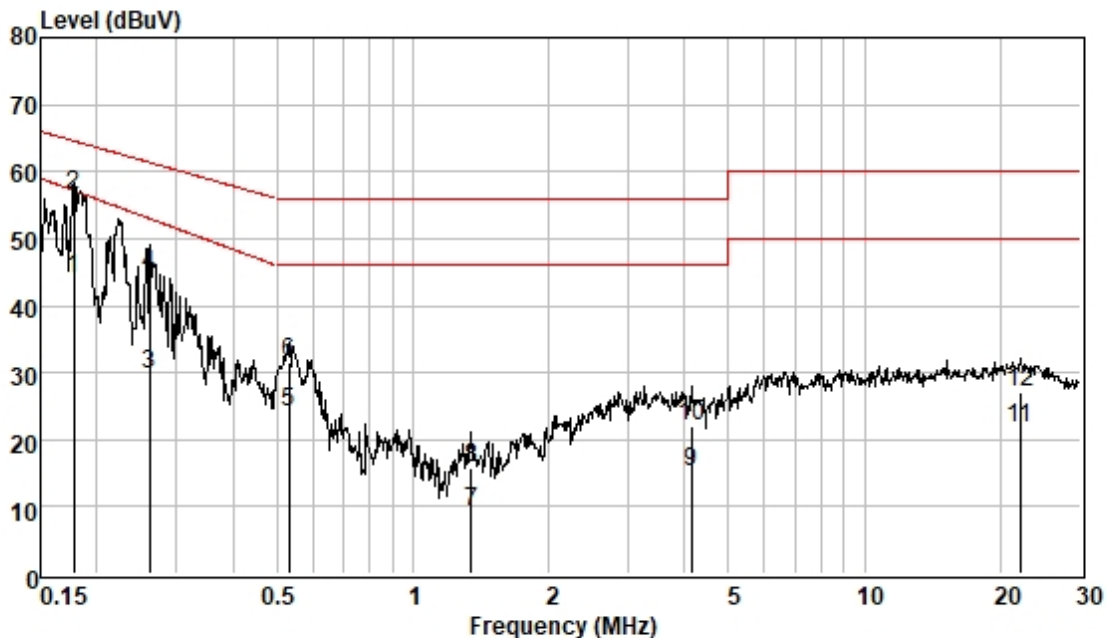
**6.1.4 Measurement Procedure and Data**

Frequency Range: 150kHz to 30MHz

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected. The red line show in graphic is the limit in standard used in this section.

Measured Level = Read level + Cable Loss + LISN Factor

Test Mode: 06; Line: Live line



Pol : LINE

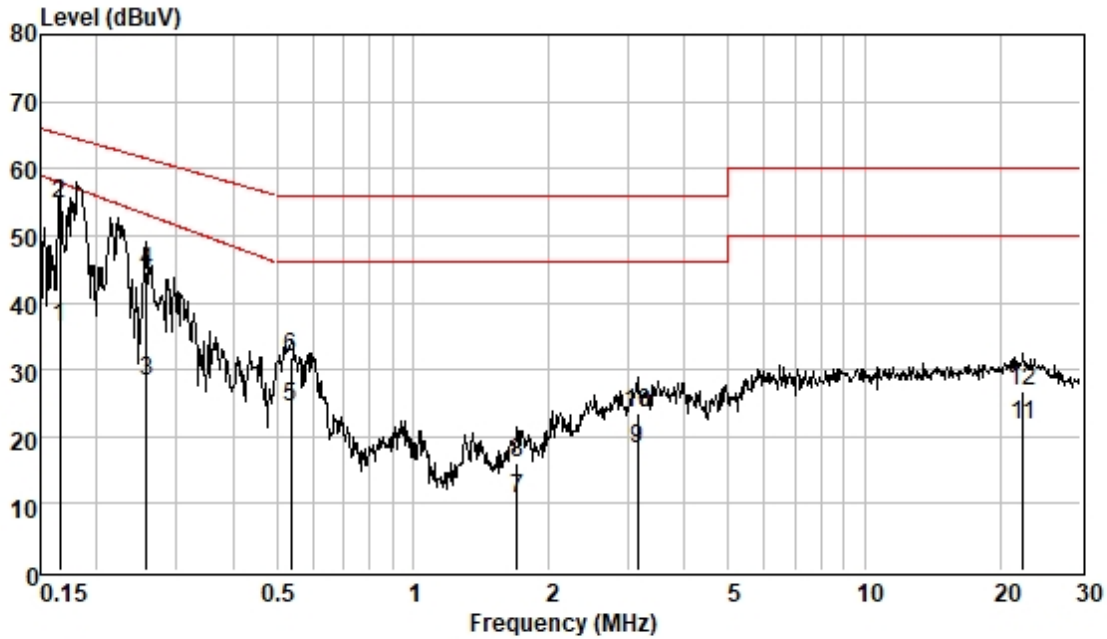
Mode : 230V

Model :

Frequency MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.18	34.29	0.06	9.62	43.97	57.17	-13.20	Average
0.18	46.78	0.06	9.62	56.46	64.59	-8.13	QP
0.26	20.06	0.06	9.62	29.74	52.99	-23.25	Average
0.26	34.94	0.06	9.62	44.62	61.38	-16.76	QP
0.53	14.34	0.07	9.63	24.04	46.00	-21.96	Average
0.53	21.87	0.07	9.63	31.57	56.00	-24.43	QP
1.34	-0.37	0.09	9.61	9.33	46.00	-36.67	Average
1.34	5.93	0.09	9.61	15.63	56.00	-40.37	QP
4.14	5.44	0.17	9.63	15.24	46.00	-30.76	Average
4.14	12.27	0.17	9.63	22.07	56.00	-33.93	QP
22.06	11.51	0.38	9.82	21.71	50.00	-28.29	Average
22.06	16.78	0.38	9.82	26.98	60.00	-33.02	QP



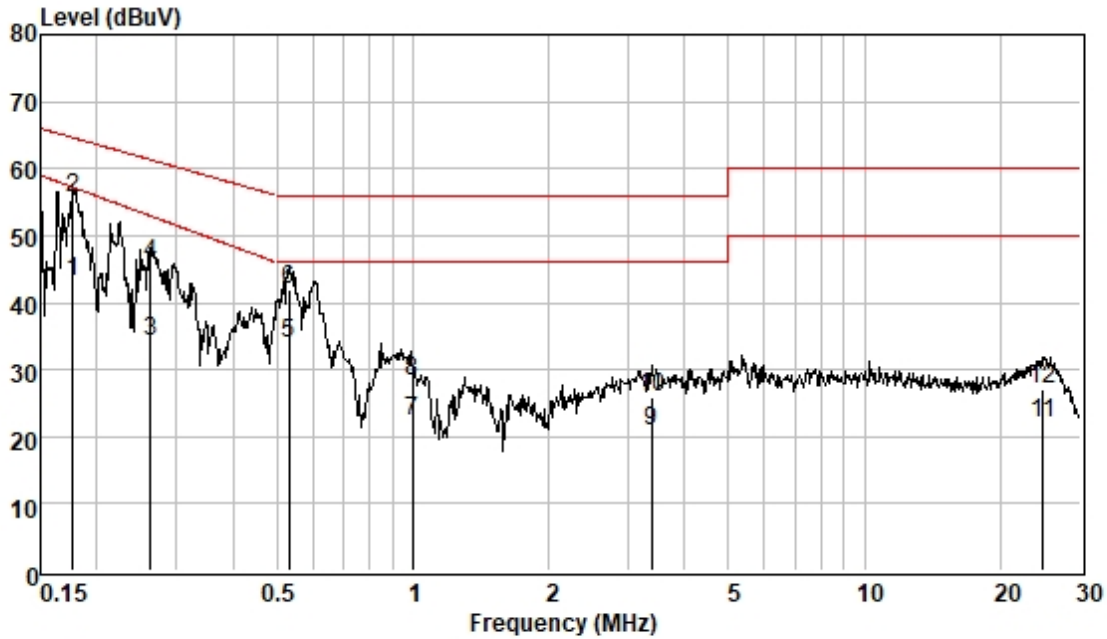
Test Mode: 06; Line: Live line



Pol : LINE  
Mode : 120V  
Model :

Frequency MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.17	26.61	0.06	9.62	36.29	57.91	-21.62	Average
0.17	44.93	0.06	9.62	54.61	65.16	-10.55	QP
0.26	18.56	0.06	9.62	28.24	53.16	-24.92	Average
0.26	34.87	0.06	9.62	44.55	61.51	-16.96	QP
0.54	14.82	0.07	9.63	24.52	46.00	-21.48	Average
0.54	22.17	0.07	9.63	31.87	56.00	-24.13	QP
1.70	1.11	0.11	9.61	10.83	46.00	-35.17	Average
1.70	6.32	0.11	9.61	16.04	56.00	-39.96	QP
3.14	8.34	0.15	9.62	18.11	46.00	-27.89	Average
3.14	13.68	0.15	9.62	23.45	56.00	-32.55	QP
22.42	11.57	0.39	9.82	21.78	50.00	-28.22	Average
22.42	16.57	0.39	9.82	26.78	60.00	-33.22	QP

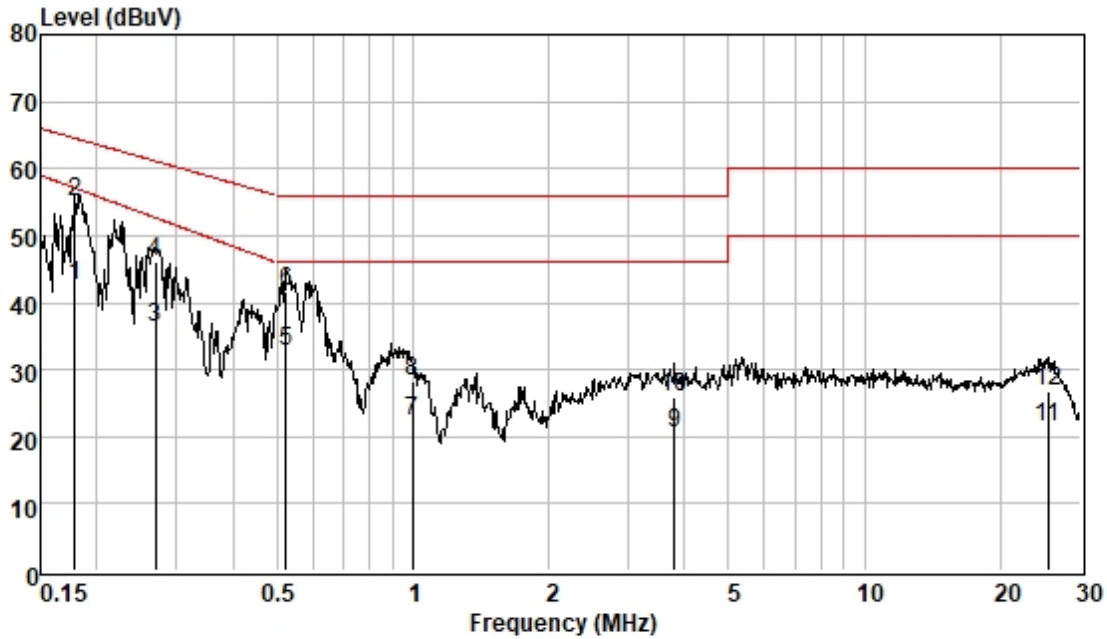
Test Mode: 06; Line: Neutral Line



Pol : NEUTRAL  
Mode : 230V  
Model :

Frequency MHz	Read Level dBUV	Cable Loss dB	LISN Factor dB	Measured Level dBUV	Limit Line dBUV	Over Limit dB	Remark
0.18	33.61	0.06	9.55	43.22	57.23	-14.01	Average
0.18	45.86	0.06	9.55	55.47	64.64	-9.17	QP
0.26	24.71	0.06	9.55	34.32	52.94	-18.62	Average
0.26	36.06	0.06	9.55	45.67	61.34	-15.67	QP
0.53	24.21	0.07	9.55	33.83	46.00	-12.17	Average
0.53	32.23	0.07	9.55	41.85	56.00	-14.15	QP
1.00	12.74	0.07	9.55	22.36	46.00	-23.64	Average
1.00	18.60	0.07	9.55	28.22	56.00	-27.78	QP
3.38	11.18	0.15	9.56	20.89	46.00	-25.11	Average
3.38	16.28	0.15	9.56	25.99	56.00	-30.01	QP
24.79	11.76	0.41	9.80	21.97	50.00	-28.03	Average
24.79	16.73	0.41	9.80	26.94	60.00	-33.06	QP

Test Mode: 06; Line: Neutral Line



Pol : NEUTRAL  
Mode : 120V  
Model :

Frequency MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.18	33.04	0.06	9.55	42.65	57.11	-14.46	Average
0.18	45.43	0.06	9.55	55.04	64.55	-9.51	QP
0.27	26.76	0.06	9.55	36.37	52.65	-16.28	Average
0.27	36.40	0.06	9.55	46.01	61.12	-15.11	QP
0.52	23.23	0.07	9.55	32.85	46.00	-13.15	Average
0.52	32.02	0.07	9.55	41.64	56.00	-14.36	QP
1.00	12.82	0.07	9.55	22.44	46.00	-23.56	Average
1.00	18.57	0.07	9.55	28.19	56.00	-27.81	QP
3.80	10.82	0.16	9.56	20.54	46.00	-25.46	Average
3.80	16.19	0.16	9.56	25.91	56.00	-30.09	QP
25.46	11.18	0.41	9.82	21.41	50.00	-28.59	Average
25.46	16.53	0.41	9.82	26.76	60.00	-33.24	QP

**6.2 Discontinuous Disturbance (150kHz-30MHz)**

Test Requirement: EN 55014-1: 2017+A11:2020

Test Method: EN 55014-1:2017+A11:2020

Limit:

Provision	Click Rate (N)		
1	All clicks < 20 ms	90 % click < 10 ms	$N \leq 5$
2	$N \leq 0,2$	$L_q^b = L^a + 44$	Clicks $^c \leq 25\%$ exceed $L_q^b$
3	$30 \geq N > 0,2$	$L_q^b = L^a + 20 \lg(30/N)$	Clicks $^c \leq 25\%$ exceed $L_q^b$

<sup>a</sup> The limits L of Conducted Emissions apply also to discontinuous disturbances from all equipment which produce:

- 1) disturbances other than clicks, or
- 2) clicks with a click rate N equal to or greater than 30

<sup>b</sup> The click limit  $L_q$  is calculated by increasing the relevant quasi-peak limit L for continuous disturbances by certain value.

The click limit applies to the disturbance assessed according to the upper quartile method

<sup>c</sup> a quarter of the number of the clicks registered during the observation time T is allowed to exceed the click limit  $L_q$

**6.2.1 E.U.T. Operation**

Operating Environment:

Temperature: 25.4 °C Humidity: 58.7 % RH Atmospheric Pressure: 995 mbar

**6.2.2 Test Mode Description**

Pre-scan / Final test	Mode Code	Description
Pre-scan	05	Normal Working_air purifying at middle speed
Final test	06	Normal Working_air purifying at max speed
Pre-scan	07	Normal Working_air purifying at sleep mode
Pre-scan	08	Normal Working_air purifying at auto mode
Pre-scan	09	Normal Working_air purifying at UV function

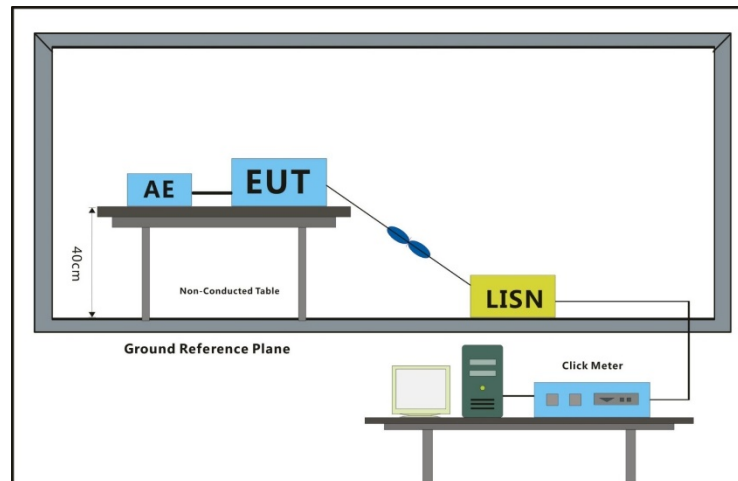


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## 6.2.3 Test Setup Diagram



## 6.2.4 Measurement Procedure and Data

Frequency Range: 150kHz to 30MHz

Test Mode: 06

Lq Calculation										
Frequency MHz	Limit dBuV	<=10ms	<=20ms	<=0.2s	From Exception E4	Other than click ms	Total Clicks	Time min.	N rate	+Lq dB
0.15	66.0	0	0	0	0	0	0	120.0	0.0	PASS
0.50	56.0	0	0	0	0	0	0	120.0	0.0	PASS

### 6.3 Disturbance Power

Test Requirement: EN 55014-1: 2017+A11:2020  
 Test Method: CISPR 16-2-2  
 Limit:  
 30MHz- 300MHz: 45dB(pW)-55dB(pW) quasi-peak, 35dB(pW)-45dB(pW) average  
 200MHz- 300MHz: 0dB(pW)-10dB(pW) quasi-peak (reduction limit)  
 Detector: Peak for pre-scan (120kHz resolution bandwidth) 30MHz to 300MHz

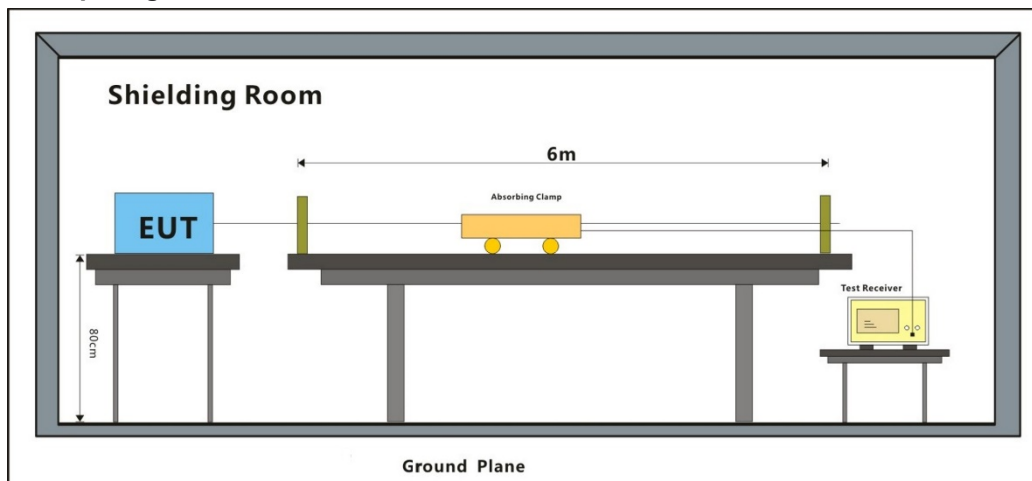
#### 6.3.1 E.U.T. Operation

Operating Environment:  
 Temperature: 24.7 °C Humidity: 52 % RH Atmospheric Pressure: 995 mbar

#### 6.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	05	Normal Working_air purifying at middle speed
Final test	06	Normal Working_air purifying at max speed
Pre-scan	07	Normal Working_air purifying at sleep mode
Pre-scan	08	Normal Working_air purifying at auto mode
Pre-scan	09	Normal Working_air purifying at UV function

#### 6.3.3 Test Setup Diagram



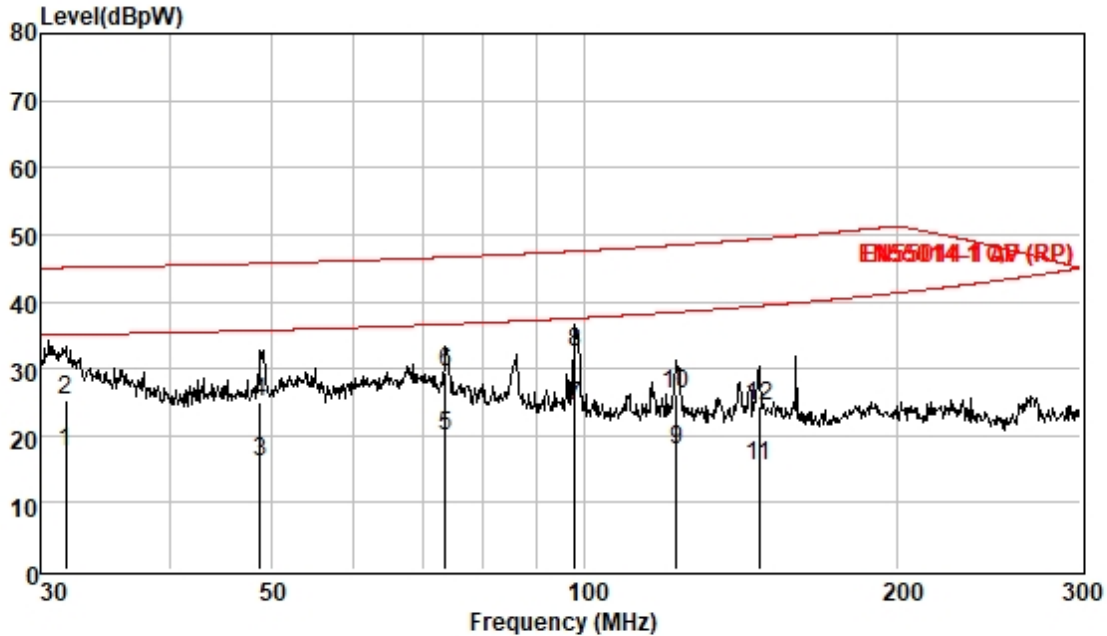
**6.3.4 Measurement Procedure and Data**

Frequency Range: 30MHz to 300MHz

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected. The red line show in graphic is the limit in standard used in this section.

Measured Level = Read level + Cable Loss + Clamp Factor

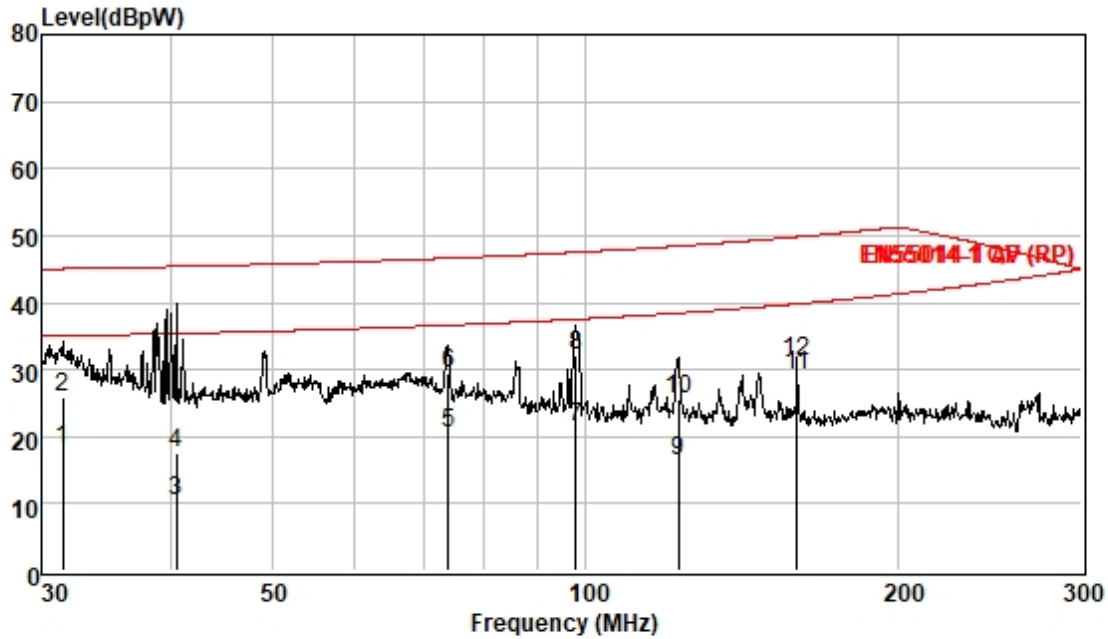
Test Mode: 06



No : DC OUT  
Mode : 230V

Frequency MHz	Read level dBuV	Cable Loss dB	Clamp Factor dB	Measured level dBpW	Limit Line dBpW	Over limit dB	Remark
31.70	8.96	6.54	1.92	17.42	35.06	-17.64	Average
31.70	16.74	6.54	1.92	25.20	45.06	-19.86	QP
48.77	8.66	6.70	0.80	16.16	35.70	-19.54	Average
48.77	17.59	6.70	0.80	25.09	45.70	-20.61	QP
73.47	13.79	6.90	-0.67	20.02	36.61	-16.59	Average
73.47	23.07	6.90	-0.67	29.30	46.61	-17.31	QP
97.98	19.47	7.10	-2.19	24.38	37.52	-13.14	Average
97.98	27.57	7.10	-2.19	32.48	47.52	-15.04	QP
122.78	13.43	7.26	-2.93	17.76	38.44	-20.68	Average
122.78	21.74	7.26	-2.93	26.07	48.44	-22.37	QP
147.27	11.39	7.40	-3.40	15.39	39.34	-23.95	Average
147.27	20.32	7.40	-3.40	24.32	49.35	-25.03	QP

Test Mode: 06

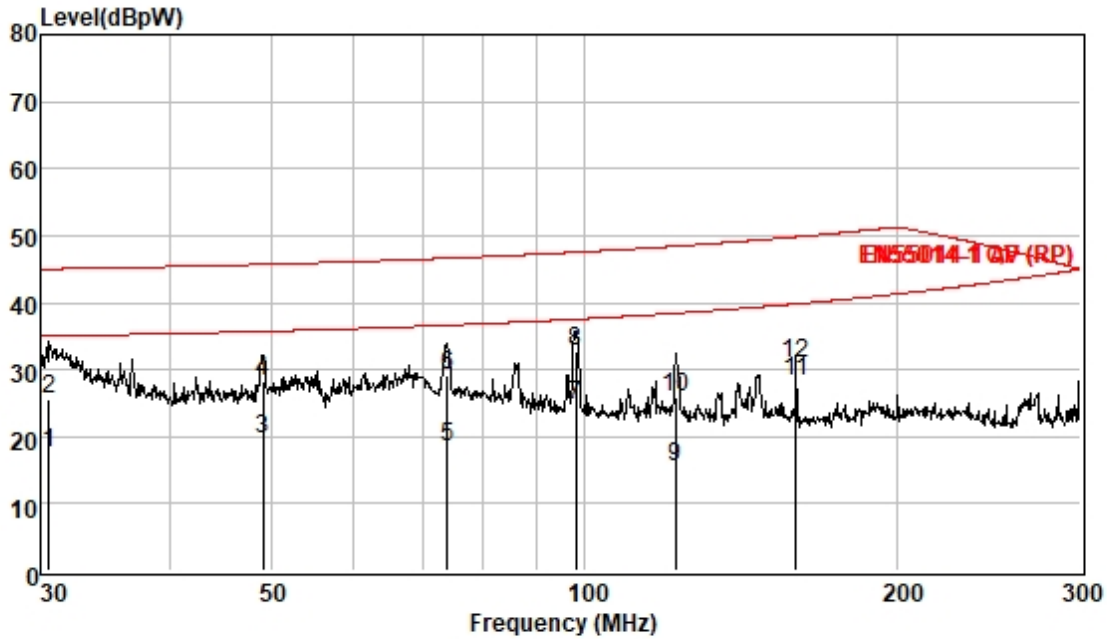


No : DC IN  
Mode : 230V

Frequency MHz	Read level dBuV	Cable Loss dB	Clamp Factor dB	Measured level dBpW	Limit Line dBpW	Over limit dB	Remark
31.49	9.63	6.53	1.89	18.05	35.06	-17.01	Average
31.49	17.31	6.53	1.89	25.73	45.06	-19.33	QP
40.47	3.26	6.61	0.62	10.49	35.39	-24.90	Average
40.47	10.22	6.61	0.62	17.45	45.39	-27.94	QP
73.81	14.27	6.90	-0.66	20.51	36.62	-16.11	Average
73.81	23.17	6.90	-0.66	29.41	46.62	-17.21	QP
97.98	16.45	7.10	-2.19	21.36	37.52	-16.16	Average
97.98	27.13	7.10	-2.19	32.04	47.52	-15.48	QP
123.06	12.13	7.27	-2.97	16.43	38.45	-22.02	Average
123.06	21.23	7.27	-2.97	25.53	48.45	-22.92	QP
160.00	25.41	7.40	-3.70	29.11	39.81	-10.70	Average
160.00	27.41	7.40	-3.70	31.11	49.82	-18.71	QP



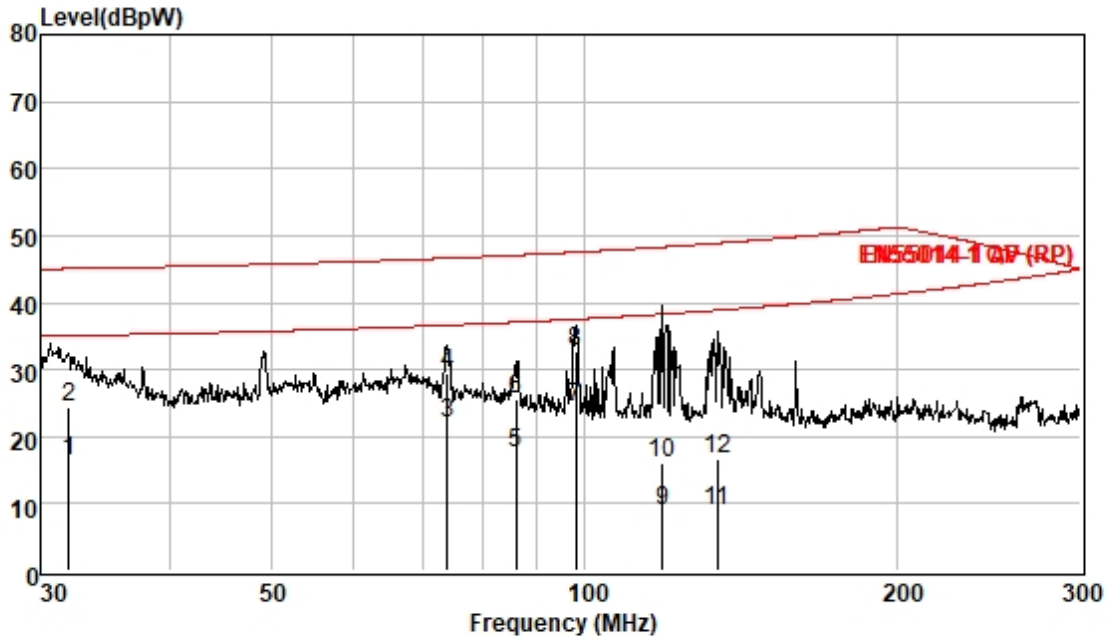
Test Mode: 06



No : DC OUT  
Mode : 120V

Frequency MHz	Read level dBuV	Cable Loss dB	Clamp Factor dB	Measured level dBpW	Limit Line dBpW	Over limit dB	Remark
30.56	9.14	6.51	1.77	17.42	35.02	-17.60	Average
30.56	17.26	6.51	1.77	25.54	45.02	-19.48	QP
49.10	12.15	6.70	0.80	19.65	35.71	-16.06	Average
49.10	20.77	6.70	0.80	28.27	45.71	-17.44	QP
73.81	12.26	6.90	-0.66	18.50	36.62	-18.12	Average
73.81	22.77	6.90	-0.66	29.01	46.62	-17.61	QP
98.20	19.79	7.10	-2.19	24.70	37.53	-12.83	Average
98.20	27.75	7.10	-2.19	32.66	47.53	-14.87	QP
122.50	11.05	7.25	-2.90	15.40	38.43	-23.03	Average
122.50	21.50	7.25	-2.90	25.85	48.43	-22.58	QP
160.00	24.62	7.40	-3.70	28.32	39.81	-11.49	Average
160.00	27.18	7.40	-3.70	30.88	49.82	-18.94	QP

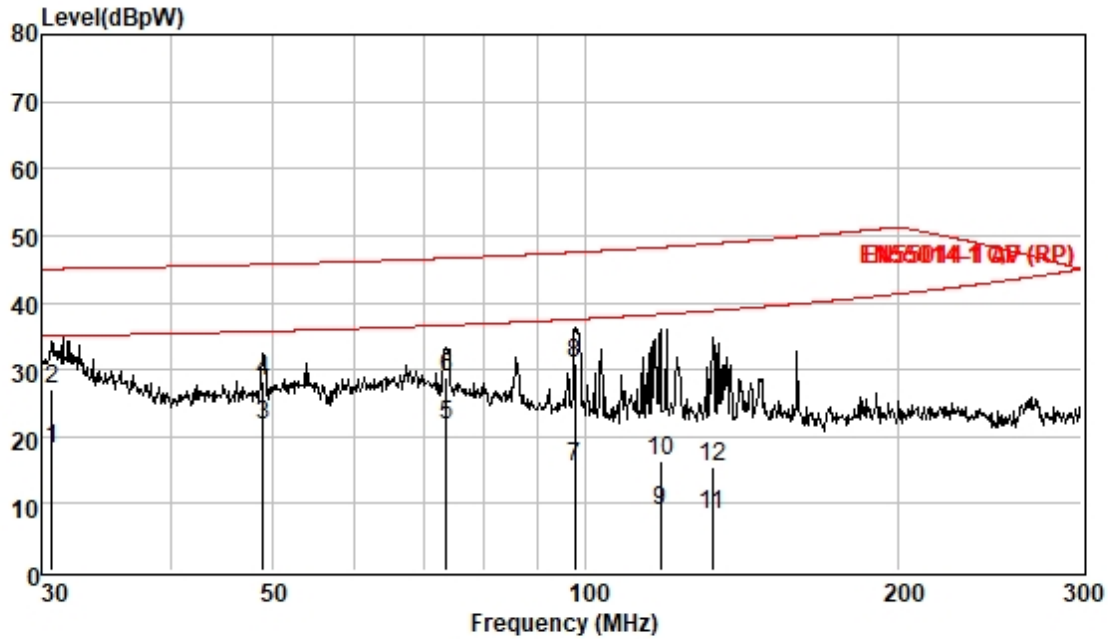
Test Mode: 06



No : DC IN  
Mode : 120V

Frequency MHz	Read level dBuV	Cable Loss dB	Clamp Factor dB	Measured level dBpW	Limit Line dBpW	Over limit dB	Remark
31.92	7.93	6.54	1.95	16.42	35.07	-18.65	Average
31.92	16.04	6.54	1.95	24.53	45.07	-20.54	QP
73.81	15.86	6.90	-0.66	22.10	36.62	-14.52	Average
73.81	23.07	6.90	-0.66	29.31	46.62	-17.31	QP
85.93	11.32	7.00	-0.87	17.45	37.07	-19.62	Average
85.93	19.49	7.00	-0.87	25.62	47.07	-21.45	QP
98.20	19.57	7.10	-2.19	24.48	37.53	-13.05	Average
98.20	27.70	7.10	-2.19	32.61	47.53	-14.92	QP
118.88	4.19	7.20	-2.58	8.81	38.29	-29.48	Average
118.88	11.55	7.20	-2.58	16.17	48.29	-32.12	QP
134.31	5.02	7.30	-3.53	8.79	38.86	-30.07	Average
134.31	12.81	7.30	-3.53	16.58	48.87	-32.29	QP

Test Mode: 06

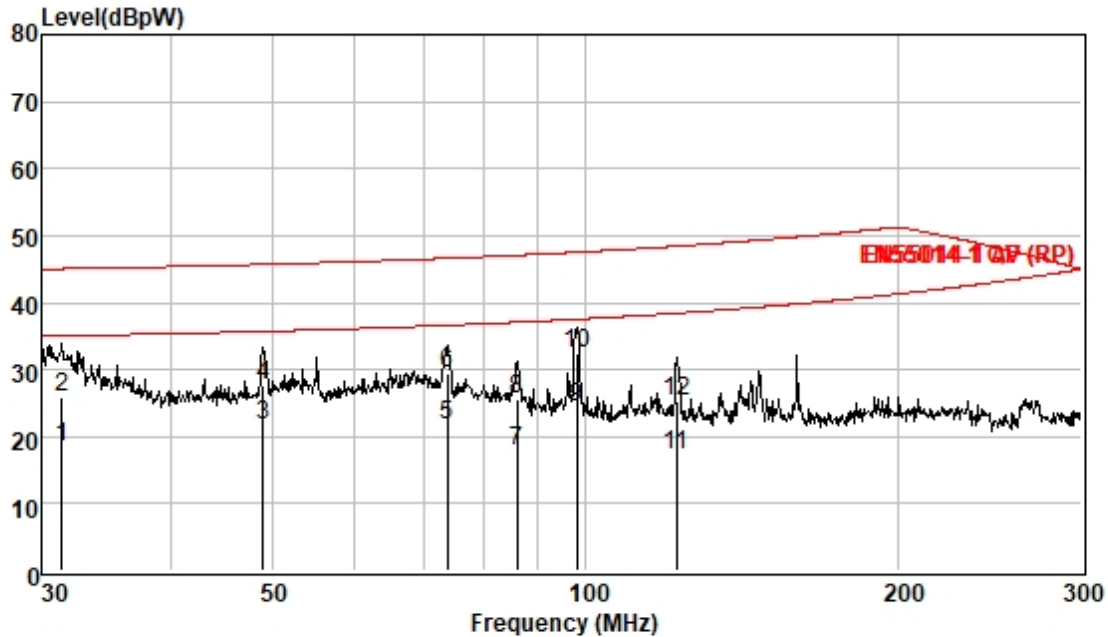


No : AC  
Mode : 120V

Frequency MHz	Read level dBuV	Cable Loss dB	Clamp Factor dB	Measured level dBpW	Limit Line dBpW	Over limit dB	Remark
30.70	9.83	6.52	1.80	18.15	35.03	-16.88	Average
30.70	18.67	6.52	1.80	26.99	45.03	-18.04	QP
48.99	14.32	6.70	0.80	21.82	35.70	-13.88	Average
48.99	20.69	6.70	0.80	28.19	45.70	-17.51	QP
73.47	15.51	6.90	-0.67	21.74	36.61	-14.87	Average
73.47	22.61	6.90	-0.67	28.84	46.61	-17.77	QP
97.75	10.68	7.10	-2.17	15.61	37.51	-21.90	Average
97.75	26.00	7.10	-2.17	30.93	47.51	-16.58	QP
118.07	4.25	7.20	-2.47	8.98	38.26	-29.28	Average
118.07	11.68	7.20	-2.47	16.41	48.26	-31.85	QP
132.47	4.41	7.30	-3.42	8.29	38.80	-30.51	Average
132.47	11.73	7.30	-3.42	15.61	48.80	-33.19	QP



Test Mode: 06



No : AC  
Mode : 230V

Frequency MHz	Read level dBuV	Cable Loss dB	Clamp Factor dB	Measured level dBpW	Limit Line dBpW	Over limit dB	Remark
31.41	10.06	6.53	1.88	18.47	35.05	-16.58	Average
31.41	17.57	6.53	1.88	25.98	45.05	-19.07	QP
48.99	14.15	6.70	0.80	21.65	35.70	-14.05	Average
48.99	20.09	6.70	0.80	27.59	45.70	-18.11	QP
73.64	15.58	6.90	-0.66	21.82	36.62	-14.80	Average
73.64	23.26	6.90	-0.66	29.50	46.62	-17.12	QP
85.93	11.69	7.00	-0.87	17.82	37.07	-19.25	Average
85.93	19.38	7.00	-0.87	25.51	47.07	-21.56	QP
98.20	19.60	7.10	-2.19	24.51	37.53	-13.02	Average
98.20	27.53	7.10	-2.19	32.44	47.53	-15.09	QP
122.50	12.84	7.25	-2.90	17.19	38.43	-21.24	Average
122.50	21.06	7.25	-2.90	25.41	48.43	-23.02	QP



### 6.4 Voltage Fluctuations and Flicker

Test Requirement: EN 61000-3-3: 2013+A1: 2019

Test Method: EN 61000-3-3: 2013+A1: 2019

#### 6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 25.4 °C

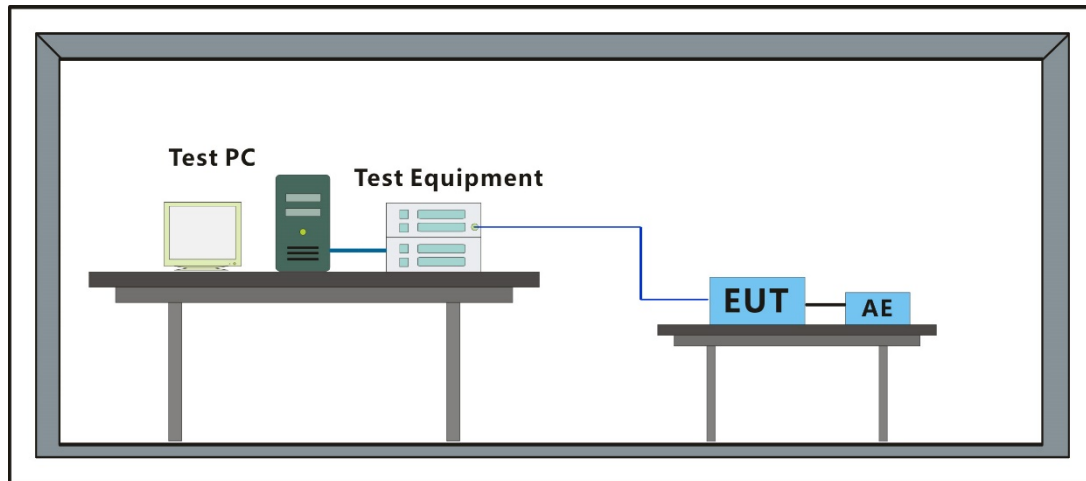
Humidity: 59.0 % RH

Atmospheric Pressure: 995 mbar

#### 6.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	05	Normal Working_air purifying at middle speed
Final test	06	Normal Working_air purifying at max speed
Pre-scan	07	Normal Working_air purifying at sleep mode
Pre-scan	08	Normal Working_air purifying at auto mode
Pre-scan	09	Normal Working_air purifying at UV function

#### 6.4.3 Test Setup Diagram



## 6.4.4 Measurement Procedure and Data

Test Mode: 06

## Flicker Test Summary per EN/IEC61000-3-3 (Run time)

Test category: dt,dmax,dc and Pst (European limits)

Test Margin: 100

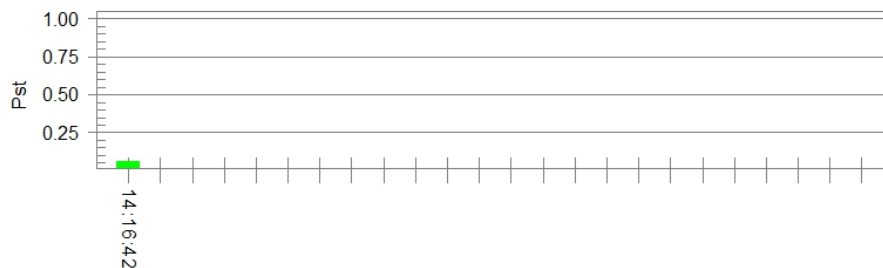
Test duration (min): 10

Test Result: Pass

Status: Test Completed

Pst and limit line

European Limits



## Parameter values recorded during the test:

Vrms at the end of test (Volt): 229.86

T-max (mS): 0

Highest dc (%): 0.00

Highest dmax (%): 0.00

Highest Pst (10 min. period): 0.064

Test limit (mS): 500.0 Pass

Test limit (%): 3.30 Pass

Test limit (%): 4.00 Pass

Test limit: 1.000 Pass

## 6.5 Harmonic Current Emission

Test Requirement: EN IEC 61000-3-2: 2019

Test Method: EN IEC 61000-3-2: 2019

### 6.5.1 Conclusion

Remark:

Since the EUT was belong to exception of clause 7 and Annex B, according to EN IEC 61000-3-2 figure 1, it was deemed to conform to the requirements of this standard without further testing.

#### 7 Harmonic current limits

The procedure for applying the limits and assessing the results is shown in Figure 1.

For the following categories of equipment, limits are not specified in this standard:

NOTE 1 Limits may be defined in a future amendment or revision of the standard.

- lighting equipment with a rated power less than but not equal to 5 W;
- equipment with a rated power of 75 W or less, other than lighting equipment;

NOTE 2 This value may be reduced from 75 W to 50 W in the future, subject to approval by National Committees at that time.

- professional equipment with a total rated power greater than 1 kW;
- symmetrically controlled heating elements with a rated power less than or equal to 200 W;
- independent phase control dimmers
- with a rated power less than or equal to 1 kW when operating incandescent lamps;
- with a rated power less than or equal to 200 W for trailing edge dimmers, and universal phase control dimmers with the default mode set to trailing edge, when operating lighting equipment other than incandescent lamps;
- with a rated power less than or equal to 100 W for leading edge dimmers, and universal phase control dimmers without default mode set to trailing edge, when operating lighting equipment other than incandescent lamps.

and

Kitchen machines as listed in the scope of IEC 60335-2-14 are deemed to conform to the harmonic current limits of this standard without further testing.

Please read clause 7 & Annex B of this standard for reference.



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## 7 Immunity Test Results

### Performance Criteria Description

- Criterion A:** The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. 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 from what the user may reasonably expect from the apparatus if used as intended.
- Criterion B:** The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however. No change of actual operating state or stored data is allowed. 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 from what the user may reasonably expect from the apparatus if used as intended.
- Criterion C:** Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.



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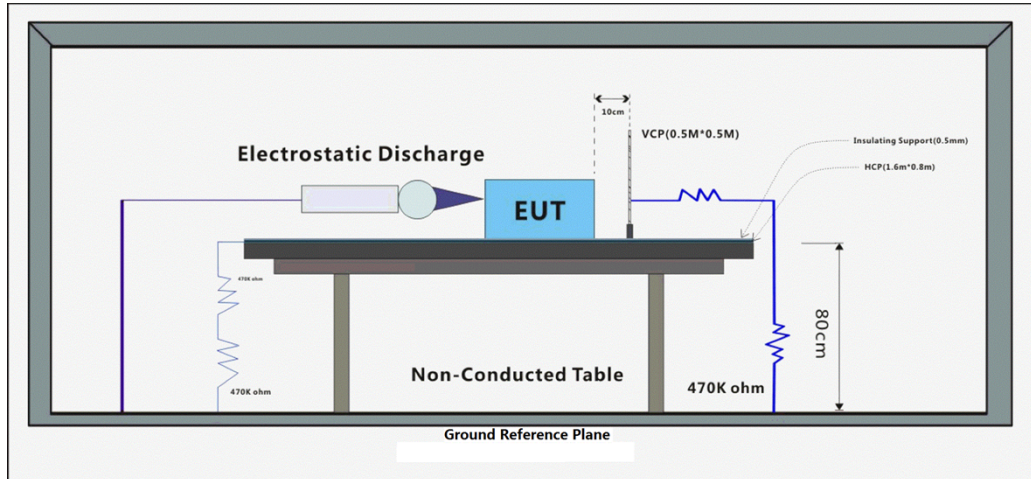
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## 7.1 Electrostatic Discharge

Test Requirement: EN 55014-2: 2015  
Test Method: EN 61000-4-2:2009

### 7.1.1 Test Setup Diagram



### 7.1.2 E.U.T. Operation

Operating Environment:

Temperature: 25.3 °C Humidity: 58.5 % RH Atmospheric Pressure: 995 mbar

### 7.1.3 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 04	Normal Working_air purifying at low speed
Final test 05	Normal Working_air purifying at middle speed
Final test 06	Normal Working_air purifying at max speed
Final test 07	Normal Working_air purifying at sleep mode
Final test 08	Normal Working_air purifying at auto mode
Final test 09	Normal Working_air purifying at UV function

**7.1.4 Test Condition and Results:**

Performance Criterion: B

Discharge Impedance: 330  $\Omega$  / 150 pF

Discharge Voltage: Air Discharge: 8 kV; Contact Discharge: 4 kV; VCP/HCP: 4 kV.

Polarity: Positive &amp; Negative

Number of Discharge: Minimum 10 times at each test point

Discharge Mode: Single Discharge

Discharge Period: 1 second minimum

Test Point 1: All insulated enclosure &amp; seams.

Test Point 2: All accessible metal parts of the enclosure.

Test Point 3: All sides.

Discharge type	Level (kV)	Polarity	Test Point	Result / Observations
Air Discharge	8	+	1	A
Air Discharge	8	-	1	A
Contact Discharge	4	+	2	A
Contact Discharge	4	-	2	A
Horizontal Coupling	4	+	3	N/A
Horizontal Coupling	4	-	3	N/A
Vertical Coupling	4	+	3	A
Vertical Coupling	4	-	3	A

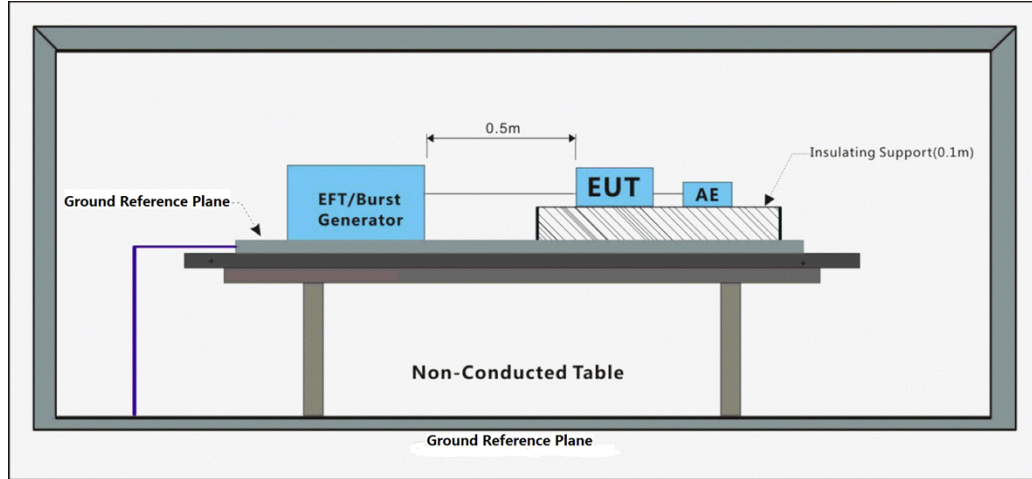
A: No degradation in the performance of the EUT was observed



### 7.2 Electrical Fast Transients Burst at AC Mains Power Port

Test Requirement: EN 55014-2: 2015  
Test Method: EN 61000-4-4:2012

#### 7.2.1 Test Setup Diagram



#### 7.2.2 E.U.T. Operation

Operating Environment:

Temperature: 24.9 °C Humidity: 65.6 % RH Atmospheric Pressure: 1010 mbar

#### 7.2.3 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 04	Normal Working_air purifying at low speed
Final test 05	Normal Working_air purifying at middle speed
Final test 06	Normal Working_air purifying at max speed
Final test 07	Normal Working_air purifying at sleep mode
Final test 08	Normal Working_air purifying at auto mode
Final test 09	Normal Working_air purifying at UV function



**7.2.4 Test Condition and Results:**

Performance Criterion: B

Repetition Frequency: 5kHz

Burst Period: 300ms

Test Duration: 2 minute per level &amp; polarity

Test Level: 1.0kV

Polarity: Positive &amp; Negative

Test Line	Level (kV)	Polarity	CDN/Clamp	Result / Observations
AC power port	1	+	CDN	A
AC power port	1	-	CDN	A

A: No degradation in the performance of the EUT was observed



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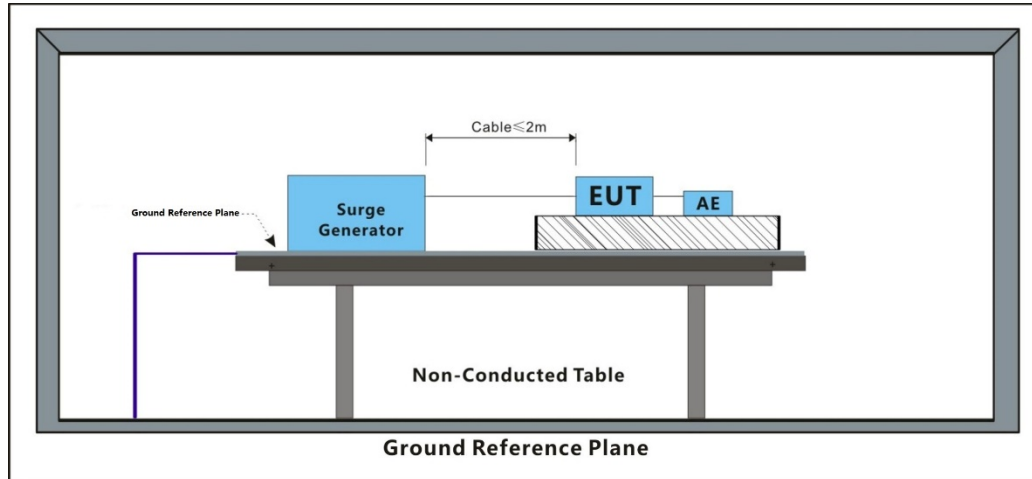


### 7.3 Surge at AC Mains Power Port

Test Requirement: EN 55014-2: 2015

Test Method: EN 61000-4-5:2014+A1:2017

#### 7.3.1 Test Setup Diagram



#### 7.3.2 E.U.T. Operation

Operating Environment:

Temperature: 24.9 °C

Humidity: 65.7 % RH

Atmospheric Pressure: 1010 mbar

#### 7.3.3 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 04	Normal Working_air purifying at low speed
Final test 05	Normal Working_air purifying at middle speed
Final test 06	Normal Working_air purifying at max speed
Final test 07	Normal Working_air purifying at sleep mode
Final test 08	Normal Working_air purifying at auto mode
Final test 09	Normal Working_air purifying at UV function

**7.3.4 Test Condition and Results:**

Performance Criterion: B

Interval: 60s between each surge

Test Level:  $\pm 1\text{kV}$  Live to Neutral;  $\pm 2\text{kV}$  Live, Neutral to Earth

Polarity: Positive &amp; Negative

Generator source impedance:  $2\Omega$ 

Trigger Mode: Internal

No. of surges: 5 positive at  $90^\circ$ , 5 negative at  $270^\circ$ .

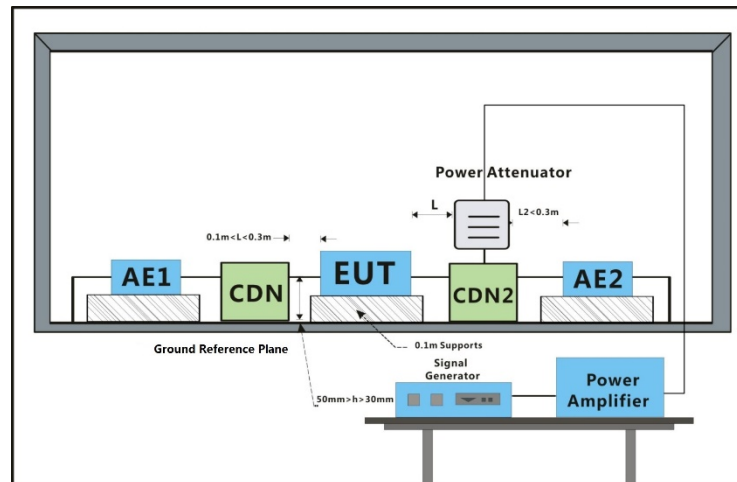
Test Line	Level (kV)	Polarity	Phase (deg)	Result / Observations
L-N	1	+	$90^\circ$	A
L-N	1	-	$270^\circ$	A

A: No degradation in the performance of the EUT was observed

## 7.4 Conducted Immunity at AC Mains Power Port (150kHz-230MHz)

Test Requirement: EN 55014-2: 2015  
Test Method: EN 61000-4-6:2014

### 7.4.1 Test Setup Diagram



### 7.4.2 E.U.T. Operation

Operating Environment:

Temperature: 24.9 °C Humidity: 65.8 % RH Atmospheric Pressure: 1010 mbar

### 7.4.3 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 04	Normal Working_air purifying at low speed
Final test 05	Normal Working_air purifying at middle speed
Final test 06	Normal Working_air purifying at max speed
Final test 07	Normal Working_air purifying at sleep mode
Final test 08	Normal Working_air purifying at auto mode
Final test 09	Normal Working_air purifying at UV function

### 7.4.4 Test Condition and Results:

Performance Criterion: A

Step Size: 1%

Frequency Range: 0.15MHz to 230MHz

Modulation: 80%, 1kHz Amplitude Modulation

Cable Port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
AC power port	3	CDN	2s	A

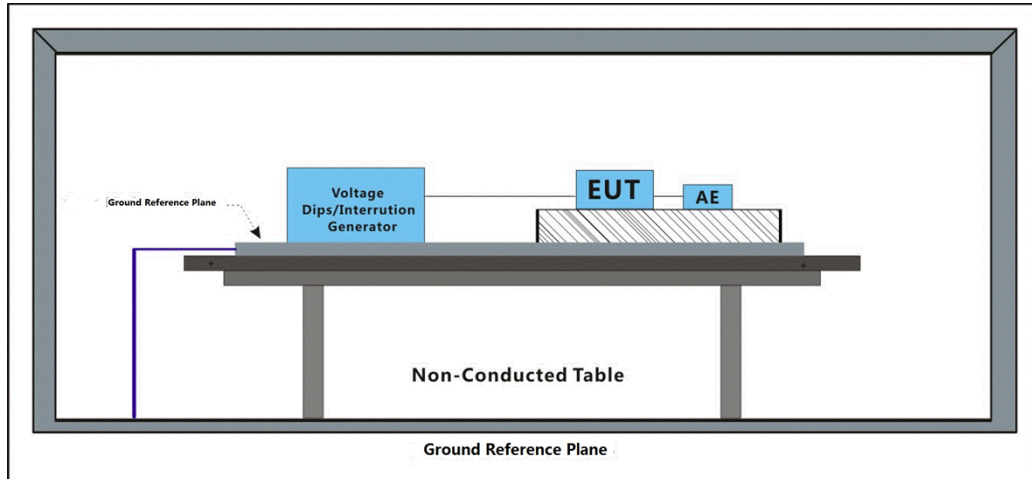
A: No degradation in the performance of the EUT was observed

## 7.5 Voltage Dips and Interruptions

Test Requirement: EN 55014-2: 2015

Test Method: EN 61000-4-11:2004+A1:2017

### 7.5.1 Test Setup Diagram



### 7.5.2 E.U.T. Operation

Operating Environment:

Temperature: 24.9 °C

Humidity: 65.8 % RH

Atmospheric Pressure: 1010 mbar

### 7.5.3 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 04	Normal Working_air purifying at low speed
Final test 05	Normal Working_air purifying at middle speed
Final test 06	Normal Working_air purifying at max speed
Final test 07	Normal Working_air purifying at sleep mode
Final test 08	Normal Working_air purifying at auto mode
Final test 09	Normal Working_air purifying at UV function



**7.5.4 Test Condition and Results:**

Performance Criterion:

For 50Hz: 0% of UT (Rated Voltage) for 0.5 Cycle: C; 40% of UT for 10 Cycles: C; 70% of UT for 25 Cycles: C.

For 60Hz: 0% of UT (Rated Voltage) for 0.5 Cycle: C; 40% of UT for 12 Cycles: C; 70% of UT for 30 Cycles: C.

No. of Dips / Interruptions: 3 per Level

Time between dropout: 10s

Level % UT	Phase (deg)	Duration	No. of Dips / Interruptions	Result / Observations
0	0°	0.5 Cycle for 50Hz	3	A
0	180°	0.5 Cycle for 50Hz	3	A
40	0°	10 Cycles for 50Hz	3	A
40	180°	10 Cycles for 50Hz	3	A
70	0°	25 Cycles for 50Hz	3	A
70	180°	25 Cycles for 50Hz	3	A
0	0°	0.5 Cycle for 60Hz	3	A
0	180°	0.5 Cycle for 60Hz	3	A
40	0°	12 Cycles for 60Hz	3	A
40	180°	12 Cycles for 60Hz	3	A
70	0°	30 Cycles for 60Hz	3	A
70	180°	30 Cycles for 60Hz	3	A

A: No degradation in the performance of the EUT was observed

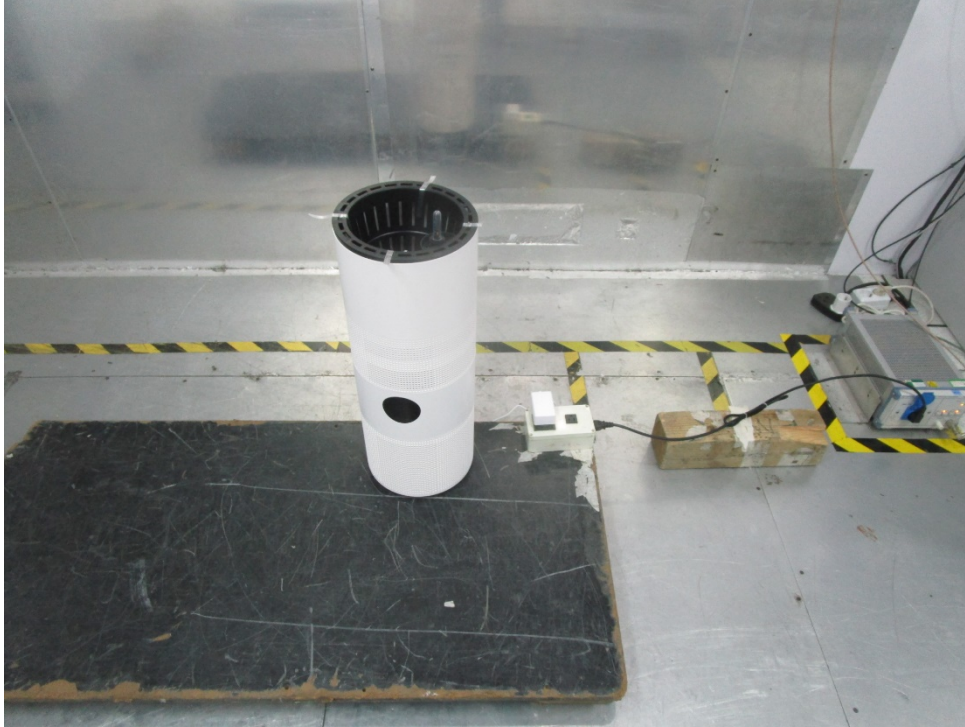


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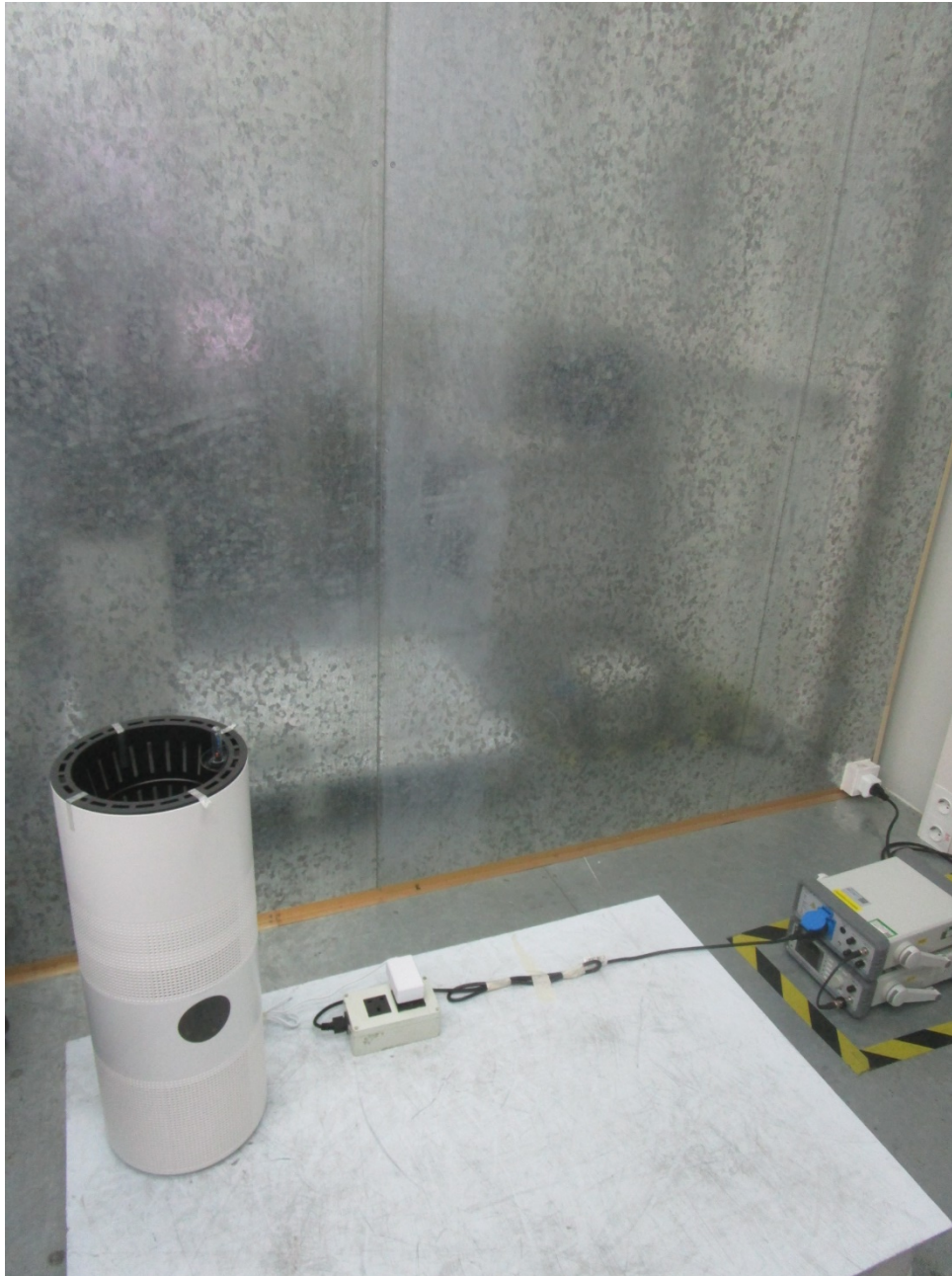
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## 8 Test Setup Photo

### Conducted Emissions at AC Mains Power Port (150kHz-30MHz)

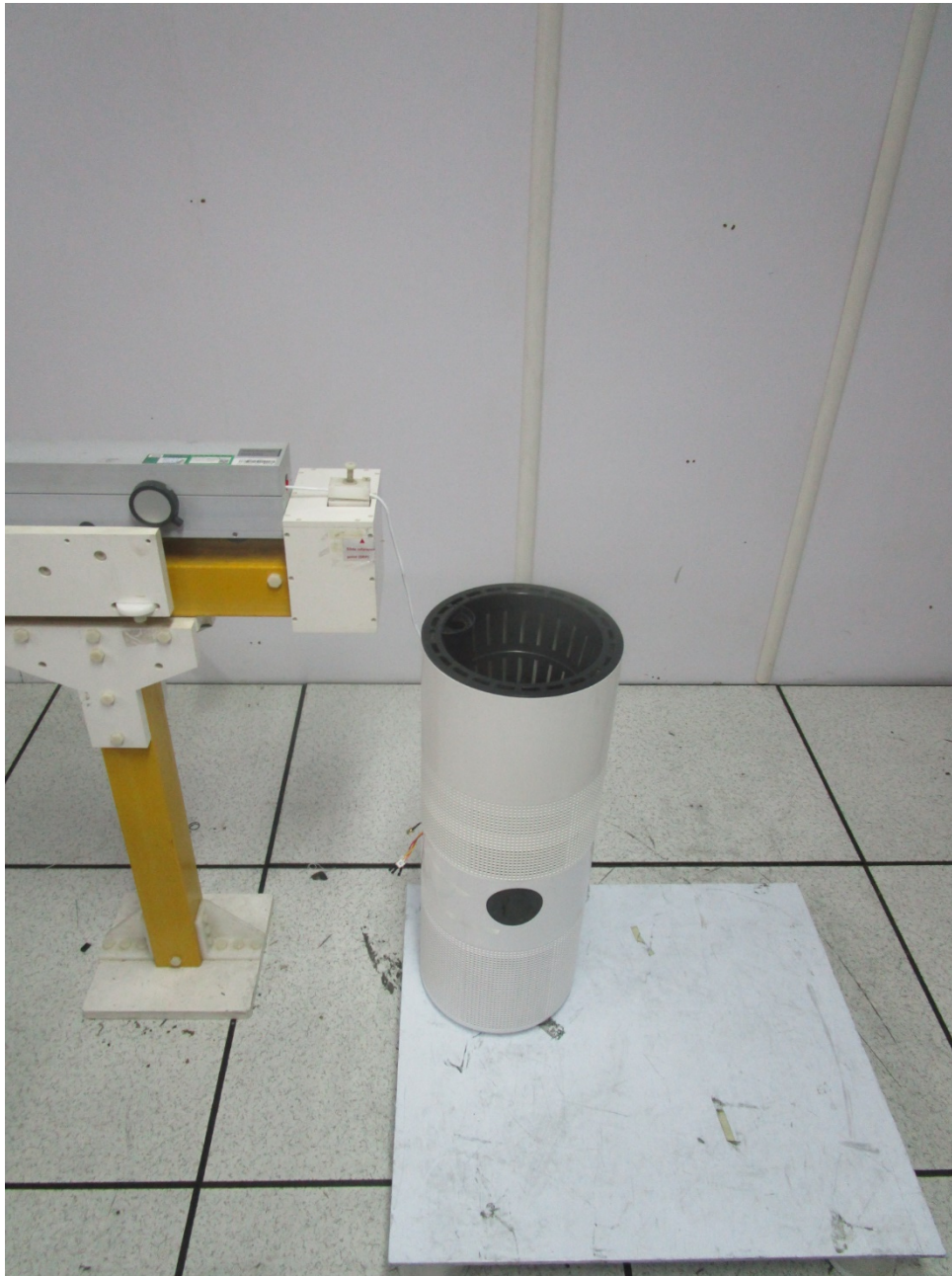


### Discontinuous Disturbance (150kHz-30MHz)





## Disturbance Power



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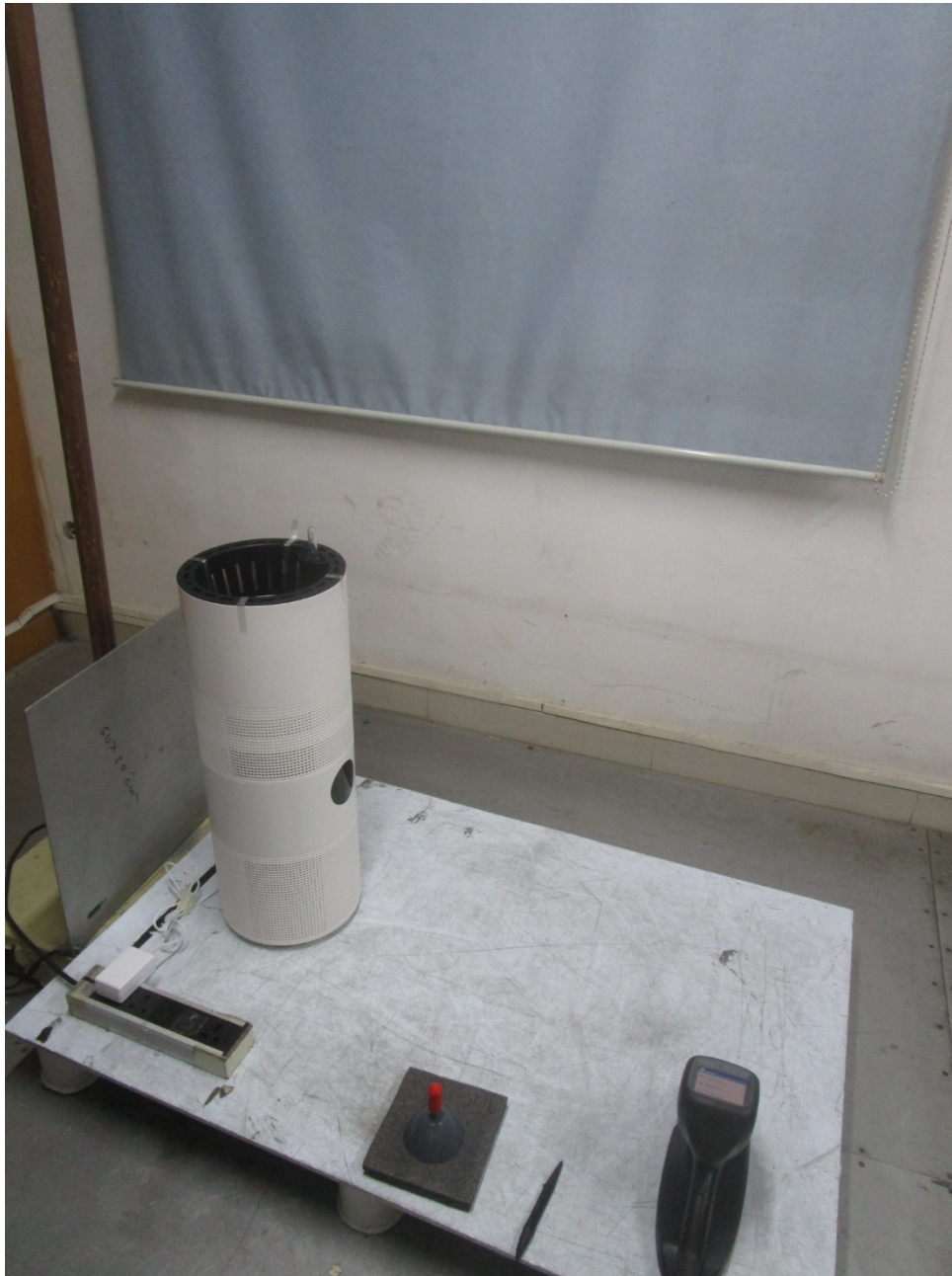
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### Voltage Fluctuations and Flicker



### Electrostatic Discharge





### Electrical Fast Transients Burst at AC Mains Power Port

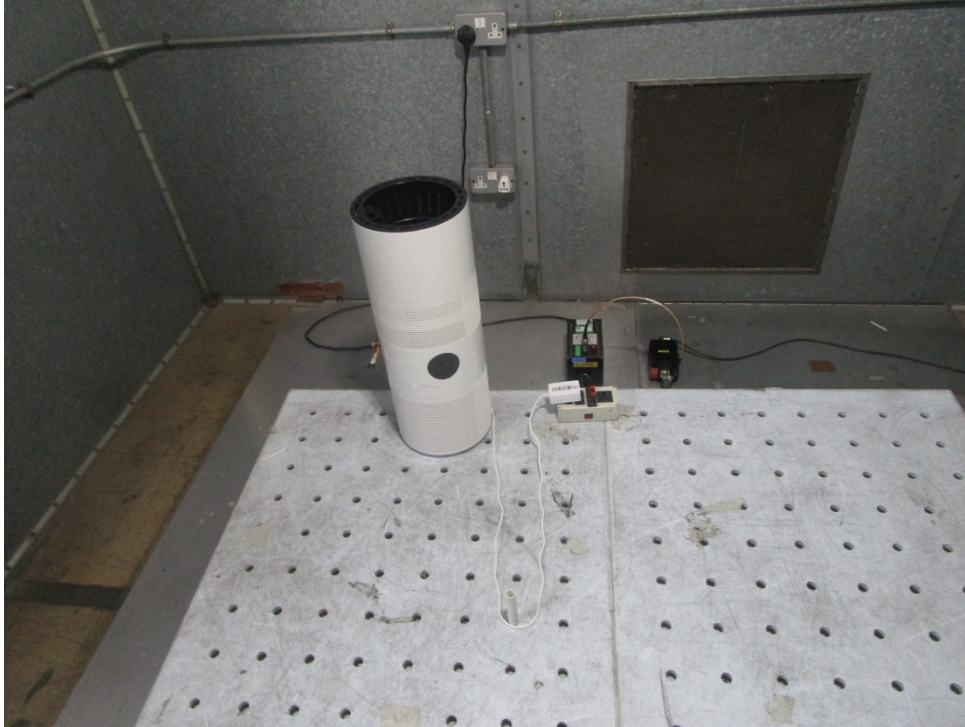


### Surge at AC Mains Power Port





### Conducted Immunity at AC Mains Power Port (150kHz-230MHz)



### Voltage Dips and Interruptions



## 9 EUT Constructional Details (EUT Photos)

Refer to Appendix\_Photos of EUT Constructional Details for GZCR2104020167HS

- End of the Report -