



中国认可
国际互认
检测
TESTING
CNAS L4062



TEST REPORT

Reference No. : WTF23X10219604W004
Manufacturer : Mid Ocean Brands B.V.
Address : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Factory : 118641
Product Name : Wireless charging lamp speaker
Model No. : MO2124
Standards : EN 55032:2015+A1:2020; EN 55035:2017+A11:2020
EN IEC 61000-3-2:2019+A1:2021; EN 61000-3-3:2013+A2:2021
ETSI EN 301 489-1 V2.2.3 (2019-11)
ETSI EN 301 489-3 V2.1.1 (2019-03)
Draft ETSI EN 301 489-17 V3.2.5 (2022-08)
Date of Receipt sample : 2023-10-13
Date of Test : 2023-10-13 to 2023-10-31
Date of Issue : 2023-10-31
Test Report Form No. : WTX_ETSI EN 301 489_1_2019W
Test Result : Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

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Report version

Version No.	Date of issue	Description
Rev.00	2023-10-31	Original
/	/	/

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	Wireless charging lamp speaker
Trade Name:	/
Model No.:	MO2124
Adding Model(s):	/
Rated Voltage:	DC 5V
Battery Capacity:	/
Power Adapter:	/
Software Version:	YWD-L18-V1.1 C01
Hardware Version:	YWD-L18-v1.1 202310
<i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i>	

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Technical Characteristics of EUT	
Bluetooth	
Bluetooth Version:	Bluetooth V5.1(EDR Mode)
Frequency Range:	2402MHz-2480MHz
Max.RF Output Power:	0.54dBm (EIRP)
Type of Modulation:	GFSK, $\pi/4$ DQPSK, 8DPSK
Data Rate:	1Mbps, 2Mbps, 3Mbps
Quantity of Channels	79
Channel Separation:	1MHz
Type of Antenna:	PCB Antenna
Antenna Gain:	0.68dBi
WPT	
Frequency Range:	110-160kHz
Radiated H-Field:	28.68dBuA/m(@3m)
Type of Antenna:	Coil Antenna
<i>Note: The Antenna Gain is provided by the customer and can affect the validity of results.</i>	

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1.2 Test Standards

The tests were performed according to following standards:

EN 55032:2015+A1:2020: Electromagnetic compatibility of multimedia equipment - Emission requirements

EN 55035:2017+A11:2020: Electromagnetic compatibility of multimedia equipment - Immunity requirements.

EN IEC 61000-3-2:2019+A1:2021: Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase).

EN 61000-3-3:2013+A2:2021: Electromagnetic compatibility (EMC) -- Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection.

ETSI EN 301 489-1 V2.2.3 (2019-11): Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard for Electromagnetic Compatibility.

ETSI EN 301 489-3 V2.1.1 (2019-03): Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU.

Draft ETSI EN 301 489-17 V3.2.5 (2022-08): ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard for ElectroMagnetic Compatibility.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the emission/immunity should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with the standard ETSI EN 301489-1, Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements.



1.4 Test Facility

Address of the test laboratory

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

FCC – Registration No.: 125990

Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

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1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission/immunity level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	Wireless Charging and Turn on the lights and BT playback	Connect to the Adapter; AC120V 60Hz for adapter, Wireless Charging (MAX OUTPUT)
TM2	Wireless Charging	TT,CT for EMS testing
TM3	BT	TR, CR, TT, CT for EMS testing

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
Type-C Cable	1.0	Unshielded	Unshielded

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Adapter	SHENZHENTIANYIN	CHCRIO160	/



1.6 Performance Criteria for EMS

➤ EN 301 489-3, The performance criteria are:

In the table below:

- performance criterion A applies for immunity tests with phenomena of a continuous nature;
- performance criterion B applies for immunity tests with phenomena of a transient nature.

NOTE: Whether a phenomenon is considered transient, continuous or otherwise is indicated in the test procedures for the phenomenon in ETSI EN 301 489-1 [1], clause 9.

Table 2: Performance Requirements

Criterion	During test	After test
A	Operate as intended No loss of function No unintentional responses	Operate as intended No loss of function No degradation of performance No loss of stored data or user programmable functions
B	May show loss of function No unintentional responses	Operate as intended Lost function(s) shall be self-recoverable No degradation of performance No loss of stored data or user programmable functions

Where "operate as intended" or "no loss of function" is specified, the EUT shall demonstrate correct functioning as described in ETSI EN 301 489-3 [1], clause 5.

Where the EUT has more than one mode of operation (see clause 4.4.1), an unplanned transition from one mode to another is considered as an unintentional response. The EUT shall be tested in sufficient modes to confirm there are no such unintentional responses.



➤ **EN 301 489-17, The performance criteria are:**

- performance criteria A for immunity tests with phenomena of a continuous nature;
- performance criteria B for immunity tests with phenomena of a transient nature;
- performance criteria C for immunity tests with power interruptions exceeding a certain time.

The equipment shall meet the minimum performance criteria as specified in the following clauses.

Table 1: Performance criteria

Criteria	During test	After test
A	Shall operate as intended. (see note 1). Shall be no loss of function. Shall be no unintentional transmissions.	Shall operate as intended. Shall be no degradation of performance (see note 3). Shall be no loss of function. Shall be no loss of stored data or user programmable
B	May show loss of function (one or more). May show degradation of performance (see note 2). Shall be no unintentional transmissions.	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no degradation of performance (see note 3). Shall be no loss of stored data or user programmable functions.
C	May be loss of function (one or more).	Functions shall be recoverable by the operator. Shall operate as intended after recovering. Shall be no degradation of performance (see note 3).

NOTE 1: Operate as intended during the test allows a level of degradation not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

NOTE 2: Degradation of performance during the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

NOTE 3: No degradation of performance after the test is understood as no degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.



➤ **EN 55035, The performance criteria are:**

- A. The apparatus shall continue to operate as intended during and after the test. The manufacturer specifies some minimum performance level. The performance level may be specified by the manufacturer as a permissible loss of performance.
- B. The apparatus shall continue to operate as intended after the test. This indicates that the EUT does not need to function at normal performance levels during the test, but must recover. Again some minimal performance is defined by the manufacture. No change in operating state or loss or data is permitted.
- C. Temporary loss of function is allowed. Operation of the EUT may stop as long as it is either automatically reset or can be manually restored by operation of the controls.

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➤ **Monitoring EUT in Immunity Test:**

Monitoring for Continuous Phenomena Applied to EUT

Wi-Fi

The communication link should be maintained and there should be no loss of data packets during the test.

In addition to confirming the above performance during a communication, the test is also been performed in idle mode, with an interference receiver to monitor if the transmitter unintentionally operates.

For equipment that supports a PER or FER, the minimum performance level shall be a PER or FER less than or equal to 10 %.

For equipment that does not support a PER or a FER, the minimum performance level shall be no loss of the wireless transmission function needed for the intended use of the equipment.

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1.7 Measurement Uncertainty

Measurement uncertainty	
Parameter	Uncertainty
Uncertainty for Radiated Emission in 3m chamber	@30-200MHz $\pm 4.52\text{dB}$ @0.2-1GHz $\pm 5.56\text{dB}$ @1-6GHz $\pm 3.84\text{dB}$ @6-18GHz $\pm 3.92\text{dB}$
Uncertainty for Conducted Emission	@9-150kHz $\pm 3.74\text{dB}$ @0.15-30MHz $\pm 3.34\text{dB}$
Uncertainty for Harmonic test	3.26%
Uncertainty for Flicker test	4.76%
Uncertainty for RS test	21%, k=2
Uncertainty for CS test	29%, k=2
Uncertainty for ESD test	The immunity measurement system uncertainty is within standard requirement and is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.
Uncertainty for EFT test	
Uncertainty for Surges test	
Uncertainty for Voltage Dips, Voltage Variations and Short Interruptions Test	
Uncertainty for PFMF test	



1.8 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
☒ Chamber A: Below 1GHz					
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2023-02-25	2024-02-24
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2023-02-25	2024-02-24
Amplifier	HP	8447F	2805A03475	2023-02-25	2024-02-24
Loop Antenna	Schwarz beck	FMZB 1516	9773	2021-03-20	2024-03-19
Trilog Broadband Antenna	Schwarz beck	VULB9163	9163-333	2023-03-20	2026-03-19
☒ Chamber A: Above 1GHz					
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2023-02-25	2024-02-24
Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2023-02-25	2024-02-24
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2023-02-25	2024-02-24
Amplifier	C&D	PAP-1G18	14918	2023-02-25	2024-02-24
Horn Antenna	ETS	3117	00086197	2021-03-19	2024-03-18
DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2021-03-19	2024-03-18
Pre-amplifier	Schwarz beck	BBV 9721	9721-031	2023-02-25	2024-02-24
☐ Chamber B:Below 1GHz					
Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2021-04-09	2024-04-08
Amplifier	Agilent	8447D	2944A10457	2023-02-25	2024-02-24
EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2023-02-25	2024-02-24
☐ Chamber C:Below 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2023-02-25	2024-02-24
Trilog Broadband Antenna	Schwarz beck	VULB 9168	1194	2021-05-28	2024-05-27
Loop Antenna	Schwarz beck	FMZB 1516	9773	2021-03-20	2024-03-19
Amplifier	HP	8447F	2944A03869	2023-02-25	2024-02-24
☐ Chamber C: Above 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2023-02-25	2024-02-24
Horn Antenna	POAM	RTF-118A	1820	2023-03-10	2026-03-09
Amplifier	Tonscend	TAP01018050	AP22E806235	2023-02-25	2024-02-24
DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2021-03-19	2024-03-18
Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2023-02-25	2024-02-24
☐ Conducted Room 1#					
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2023-02-25	2024-02-24
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2023-02-25	2024-02-24
AC LISN	Schwarz beck	NSLK8126	8126-279	2023-02-25	2024-02-24
8-WIRE LISN	Schwarz beck	8158	CAT3-8158-0059	2023-02-25	2024-02-24
8-WIRE LISN	Schwarz beck	8158	CAT5-8158-0117	2023-02-25	2024-02-24



☒ Conducted Room 2#					
EMI Test Receiver	Rohde & Schwarz	ESPI	101259	2023-02-25	2024-02-24
LISN	Rohde & Schwarz	ENV 216	100097	2023-02-25	2024-02-24
EMF					
VDH Test Head	AFJ	VDH 30	SC022Z	2023-02-25	2024-02-24
3 Loop Antenna					
Loop Antenna	ZHINAN	ZN30401	19037	2023-02-25	2025-02-24
Clamp					
Clamp	Luthi	MDS21	3809	2023-02-27	2024-02-26
PFMF					
PMF Generator	LIONCEL	PMF-801C-C	0171101	2023-02-25	2024-02-24
PMF Antenna	LIONCEL	PMF-801C-A	0180302	2023-02-25	2024-02-24
Instantaneous PMF Generator Module	LIONCEL	PMF-801C-T	0171001	2023-02-25	2024-02-24
H/F					
Digital Power Analyzer	California Instrument	CTS	72831	2023-02-25	2024-02-24
Power Source	California Instrument	5001IX-CTS-400	60077	2023-02-25	2024-02-24
ESD					
ESD Generator	LIONCEL	ESD-203B	0170901	2023-03-14	2024-03-13
EFT/SURGE/DIPS					
Transient 2000	EMC PARTNER	TRA2000	836	2023-02-25	2024-02-24
Couple Clamp	EMC PARTNER	CN-EFT1000	513	2023-02-25	2024-02-24
CS					
CONDUCTED IMMUNITY TEST SYSTEM	FRANKONIA	CIT-10/75	126B1247/2013	2023-02-25	2024-02-24
Attenuator	EMTEST	MA-5100/6BF2	1009	2023-02-25	2024-02-24
CDN	Luthi	L-801M2/M3	2665	2023-02-25	2024-02-24
CDN	LIONCEL	CDN-T8	0210401	2023-02-25	2024-02-24
EM Clamp	TESEQ	KEMZ801A	45028	2023-02-25	2024-02-24
RS					
Signal Generator	HP	8665B	3438A00604	2023-02-25	2024-02-24
Power Sensor	Agilent	E9301A	MY52450001	2023-02-25	2024-02-24
Power Sensor	Agilent	E9304A	MY55081055	2023-02-25	2024-02-24
RF Power Amplifier	MicoTop	MPA-80-1000-250	MPA1906239	2023-02-25	2024-02-24
RF Power Amplifier	MicoTop	MPA-80-6000-100	MPA1906238	2023-02-25	2024-02-24
Antenna	SCHWARZBECK	STLP 9129	9129 114	N/A	N/A



Power Meter	Agilent	E4419B	GB42420578	2023-02-25	2024-02-24
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Software List			
Description	Manufacturer	Model	Version
EMI Test Software (Radiated Emission)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission Room 1#)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission Room 2#)*	SKET	EMC-I	V2.0

*Remark: indicates software version used in the compliance certification testing.

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2. SUMMARY OF TEST RESULTS

Standards	Reference	Description of Test Item	Result
ETSI EN 301 489-1	8.2	Radiated Emissions	Pass
	8.3	Conducted Emissions for DC Power Port	N/A
	8.4	Conducted Emissions for AC Power Port	Pass
	8.5	Harmonic Current Emissions	Pass
	8.6	Voltage Fluctuations and Flicker	Pass
	8.7	Telecommunication Ports	N/A
	9.2	Radio Frequency Electromagnetic Field	Pass
	9.3	Electrostatic Discharge	Pass
	9.4	Fast Transients, Common Mode	Pass
	9.5	Radio Frequency, Common Mode	Pass
	9.6	Transient and Surges in the Vehicular Environment	N/A
	9.7	Voltage Dips and Interruptions	Pass
	9.8	Surges	Pass
Pass: The EUT complies with the essential requirements in the standard. Fail: The EUT does not comply with the essential requirements in the standard. N/A: Not applicable.			

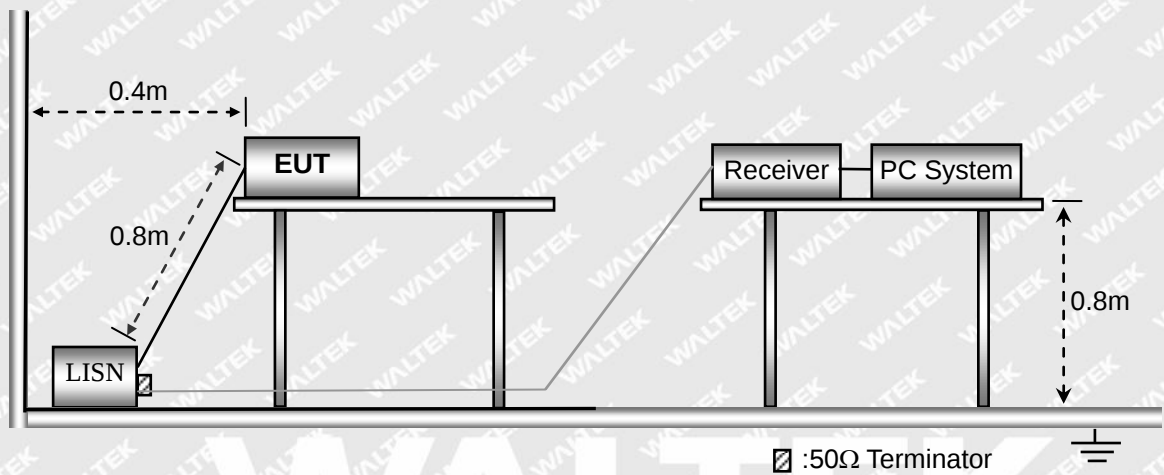


3. Conducted Emissions

3.1 Test Procedure

Test is conducting under the description of EN55032 Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement.

3.2 Test Setup Block Diagram



3.3 Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	45 %
ATM Pressure:	1015 mbar

3.4 Conducted Emissions Test Data

Note: Only show the worst case in the test report

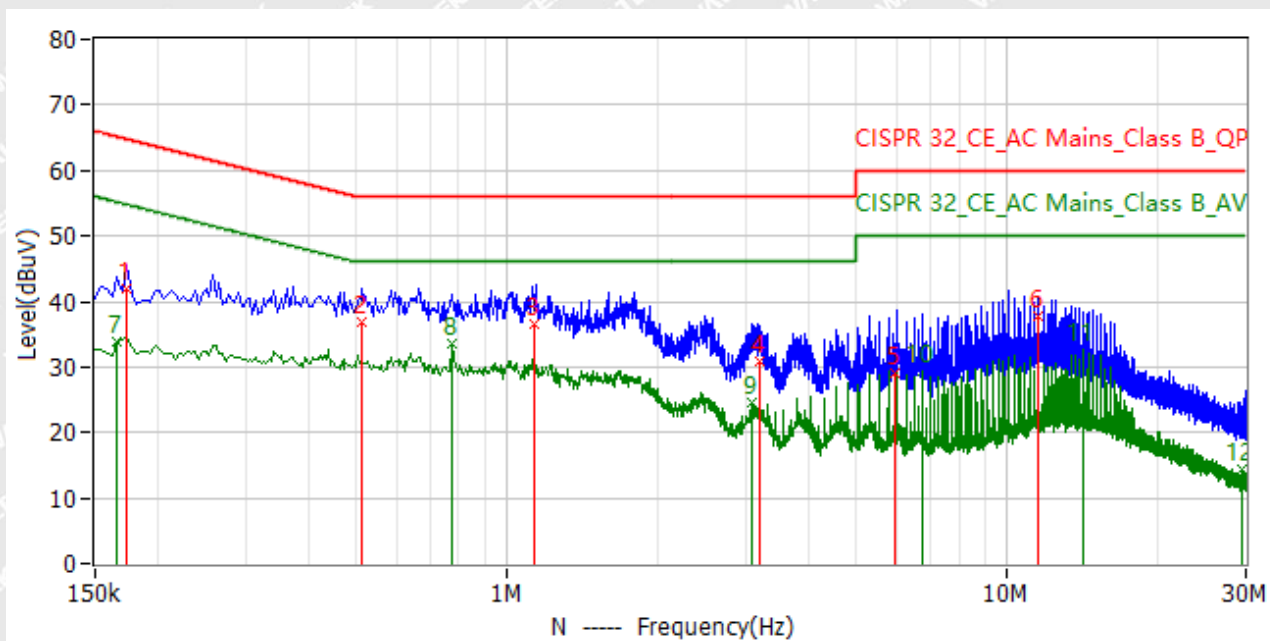


Test mode:

TM1

Polarity:

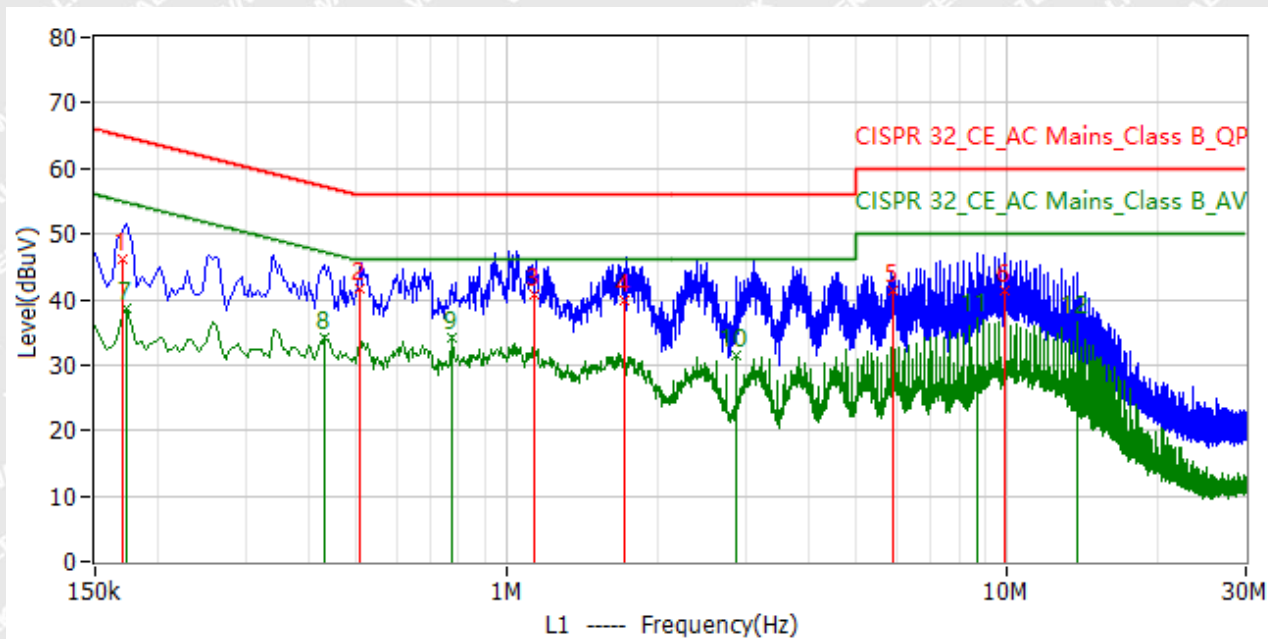
Neutral



No.	Frequency	Limit dBuV	Level dBuV	Delta dB	Reading dBuV	Factor dB	Detector
1	174.000kHz	64.8	41.8	-23.0	21.0	20.8	QP
2	510.000kHz	56.0	36.9	-19.1	16.2	20.7	QP
3	1.130MHz	56.0	36.6	-19.4	15.8	20.8	QP
4	3.206MHz	56.0	30.8	-25.2	9.9	20.9	QP
5	5.966MHz	60.0	29.0	-31.0	8.2	20.8	QP
6	11.542MHz	60.0	37.8	-22.2	17.0	20.8	QP
7*	166.000kHz	55.2	33.9	-21.2	13.1	20.8	AV
8*	778.000kHz	46.0	33.5	-12.5	12.7	20.8	AV
9*	3.074MHz	46.0	24.6	-21.4	3.7	20.9	AV
10*	6.766MHz	50.0	29.4	-20.6	8.7	20.7	AV
11*	14.146MHz	50.0	32.6	-17.4	11.9	20.7	AV
12*	29.546MHz	50.0	14.4	-35.6	-6.3	20.7	AV



Test mode:	TM1	Polarity:	Line
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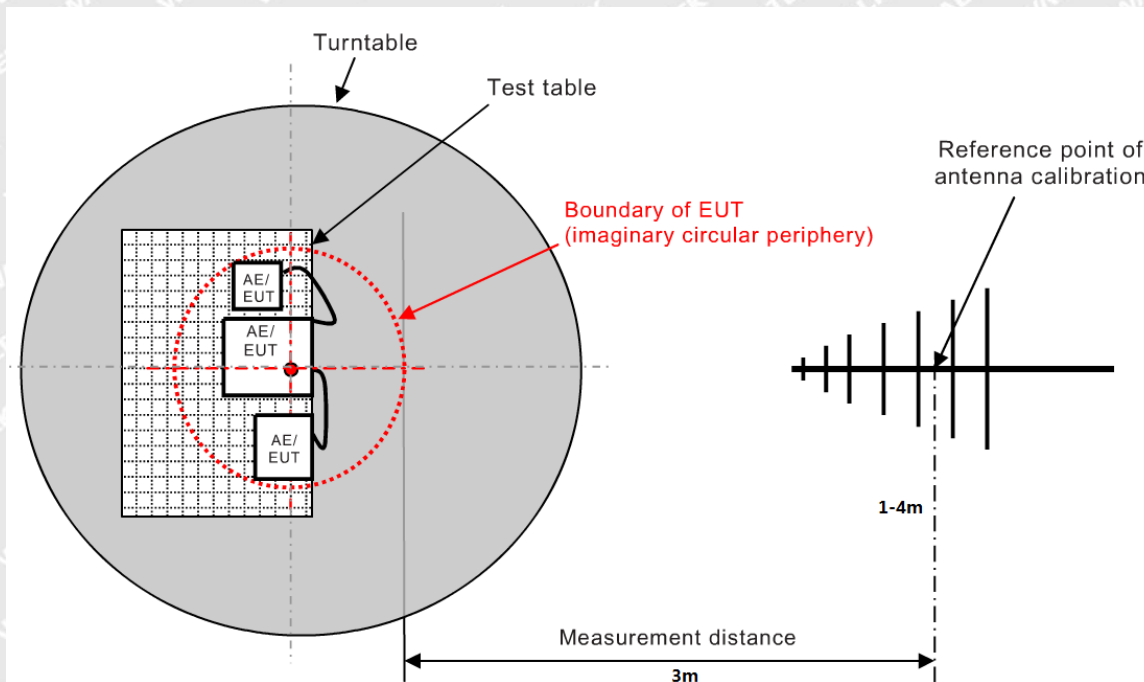
No.	Frequency	Limit dBuV	Level dBuV	Delta dB	Reading dBuV	Factor dB	Detector
1	170.000kHz	65.0	46.0	-19.0	25.2	20.8	QP
2	506.000kHz	56.0	41.5	-14.5	20.8	20.7	QP
3	1.134MHz	56.0	40.7	-15.3	19.9	20.8	QP
4	1.718MHz	56.0	39.9	-16.1	19.1	20.8	QP
5	5.902MHz	60.0	41.4	-18.6	20.6	20.8	QP
6	9.886MHz	60.0	41.3	-18.7	20.5	20.8	QP
7*	174.000kHz	54.8	38.6	-16.2	17.8	20.8	AV
8*	430.000kHz	47.3	34.3	-12.9	13.5	20.8	AV
9*	778.000kHz	46.0	34.3	-11.7	13.5	20.8	AV
10*	2.866MHz	46.0	31.4	-14.6	10.5	20.9	AV
11*	8.682MHz	50.0	37.0	-13.0	16.2	20.8	AV
12*	13.810MHz	50.0	36.7	-13.3	15.9	20.8	AV



4. Radiated Emissions

4.1 Test Procedure

Test is conducting under the description of EN55032 Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement.



4.2 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{EN 301489 Class B Limit}$$

4.3 Environmental Conditions

Temperature:	22.5° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

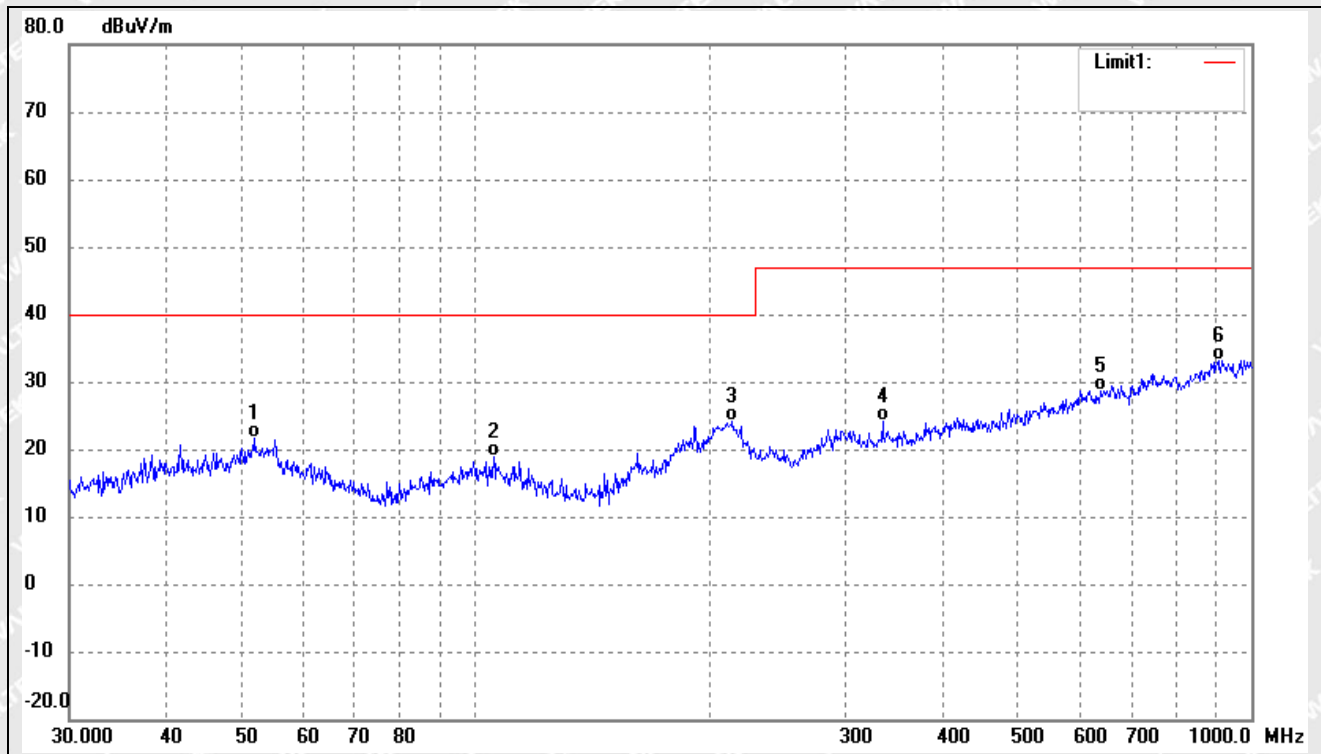


4.4 Summary of Test Results/Plots

Note: Only show the worst case in the test report

➤ 30MHz to 1GHz

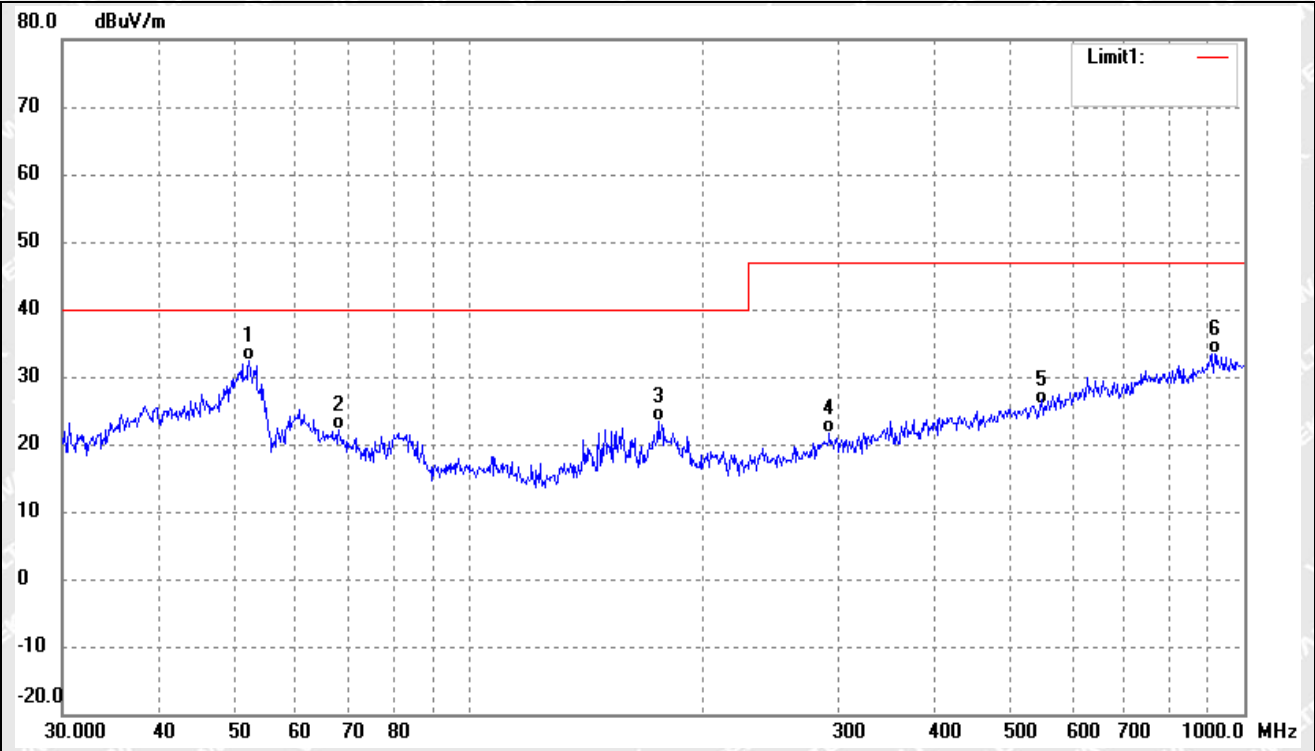
Test mode:	TM1	Polarity:	Horizontal
------------	-----	-----------	------------



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	52.0251	28.91	-7.39	21.52	40.00	-18.48	-	-	QP
2	105.6415	27.23	-8.45	18.78	40.00	-21.22	-	-	QP
3	214.5143	32.15	-7.93	24.22	40.00	-15.78	-	-	QP
4	334.8589	27.88	-3.63	24.25	47.00	-22.75	-	-	QP
5	638.3686	26.88	1.73	28.61	47.00	-18.39	-	-	QP
6	906.4824	27.11	6.14	33.25	47.00	-13.75	-	-	QP



Test mode:	TM1	Polarity:	Vertical
------------	-----	-----------	----------

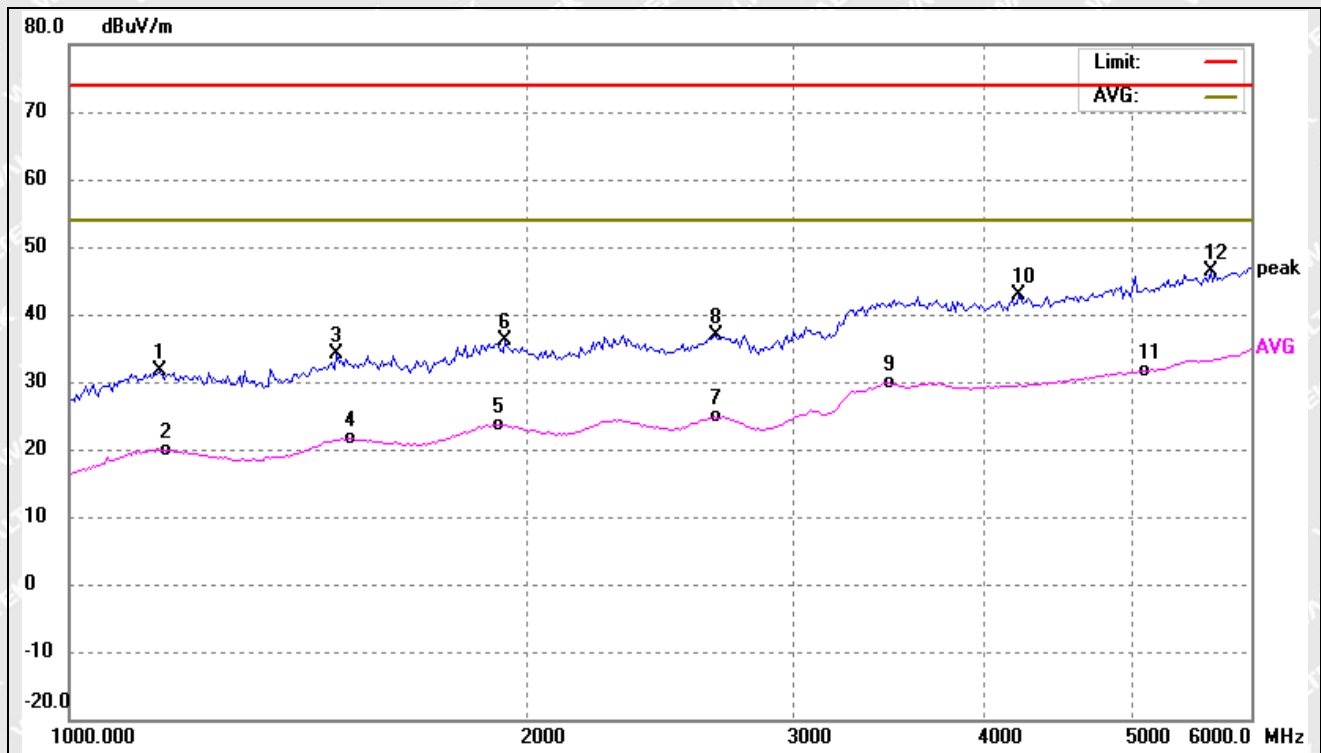


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	52.2079	39.81	-7.40	32.41	40.00	-7.59	-	-	QP
2	68.1514	33.07	-10.84	22.23	40.00	-17.77	-	-	QP
3	175.6516	33.57	-10.29	23.28	40.00	-16.72	-	-	QP
4	292.0583	26.47	-4.89	21.58	47.00	-25.42	-	-	QP
5	545.1826	26.06	-0.26	25.80	47.00	-21.20	-	-	QP
6	916.0687	27.06	6.24	33.30	47.00	-13.70	-	-	QP



➤ Above 1GHz

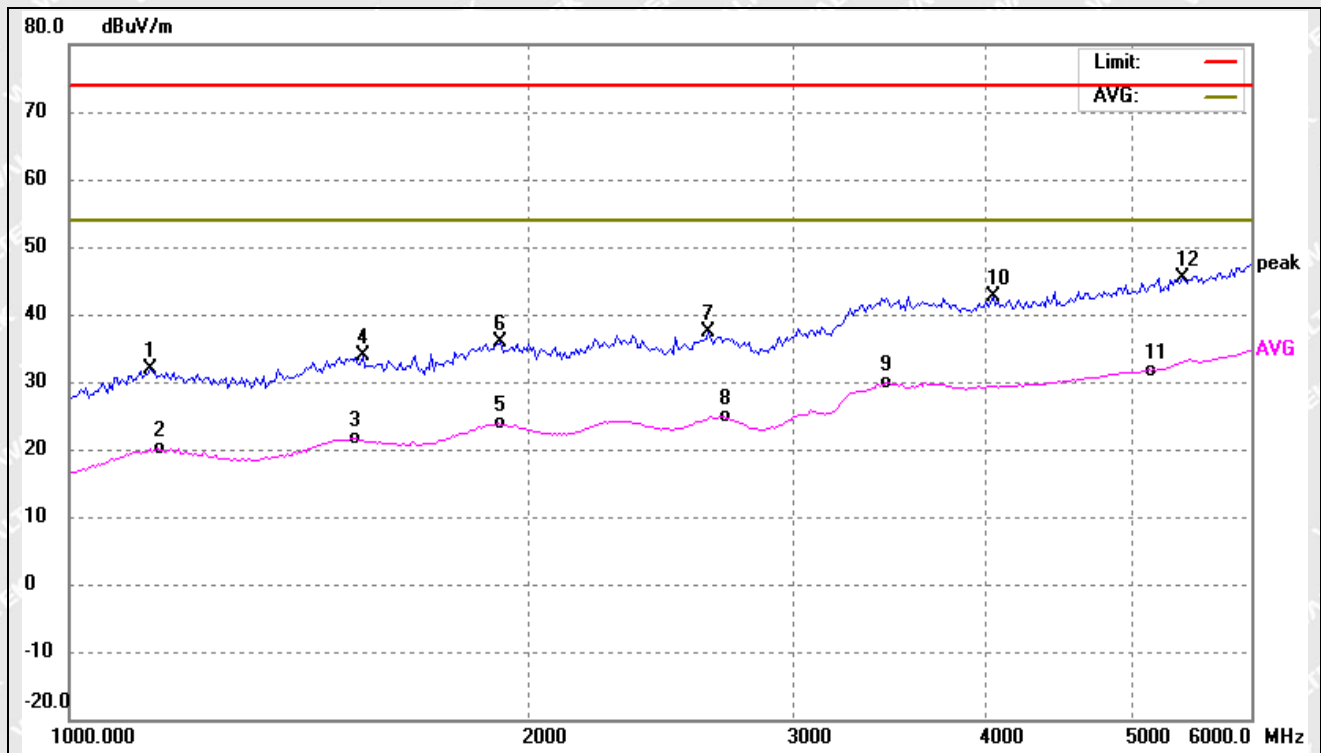
Test mode:	TM1	Polarity:	Horizontal
------------	-----	-----------	------------



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Deg. ()	Height (cm)	Remark
1	1146.194	55.80	-24.17	31.63	74.00	-42.37	-	-	peak
2	1154.455	44.08	-24.10	19.98	54.00	-34.02	-	-	AVG
3	1500.426	56.72	-22.62	34.10	74.00	-39.90	-	-	peak
4	1533.102	44.11	-22.40	21.71	54.00	-32.29	-	-	AVG
5	1915.381	43.81	-20.13	23.68	54.00	-30.32	-	-	AVG
6	1936.126	56.13	-20.01	36.12	74.00	-37.88	-	-	peak
7	2655.600	43.15	-18.34	24.81	54.00	-29.19	-	-	AVG
8	2665.152	55.24	-18.32	36.92	74.00	-37.08	-	-	peak
9	3463.856	44.23	-14.44	29.79	54.00	-24.21	-	-	AVG
10	4220.151	56.99	-14.04	42.95	74.00	-31.05	-	-	peak
11	5086.486	43.55	-11.96	31.59	54.00	-22.41	-	-	AVG
12	5644.703	56.07	-9.60	46.47	74.00	-27.53	-	-	peak



Test mode:	TM1	Polarity:	Vertical
------------	-----	-----------	----------



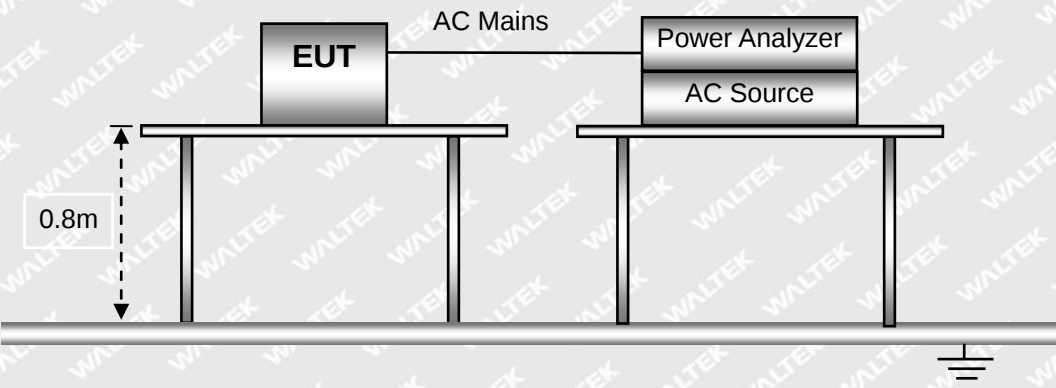
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	1129.849	56.14	-24.29	31.85	74.00	-42.15	-	-	peak
2	1142.085	44.37	-24.20	20.17	54.00	-33.83	-	-	AVG
3	1544.152	44.04	-22.33	21.71	54.00	-32.29	-	-	AVG
4	1560.875	56.00	-22.23	33.77	74.00	-40.23	-	-	peak
5	1915.381	43.90	-20.13	23.77	54.00	-30.23	-	-	AVG
6	1922.271	56.07	-20.09	35.98	74.00	-38.02	-	-	peak
7	2636.597	55.63	-18.37	37.26	74.00	-36.74	-	-	peak
8	2684.361	43.14	-18.27	24.87	54.00	-29.13	-	-	AVG
9	3451.440	44.42	-14.52	29.90	54.00	-24.10	-	-	AVG
10	4056.713	57.27	-14.59	42.68	74.00	-31.32	-	-	peak
11	5104.783	43.52	-11.88	31.64	54.00	-22.36	-	-	AVG
12	5406.647	55.76	-10.38	45.38	74.00	-28.62	-	-	peak

Remark: '-Means' the test Degree and Height are not recorded by the test software and only show the worst case in the test report.



5. Harmonic Current Emissions

5.1 Test Setup Block Diagram



5.2 Test Standards

EN IEC 61000-3-2, Clause 7.2 Limits for Class A equipment.

5.3 Environmental Conditions

Temperature:	26 °C
Relative Humidity:	55%
ATM Pressure:	1015 mbar

5.4 Harmonic Current Emissions Test Data



Harmonics – Class-A

Test category: All parameters (European limits)

Test Margin: 100

Test date: 2023/10/22

Start time: 16:37:02

End time: 16:39:43

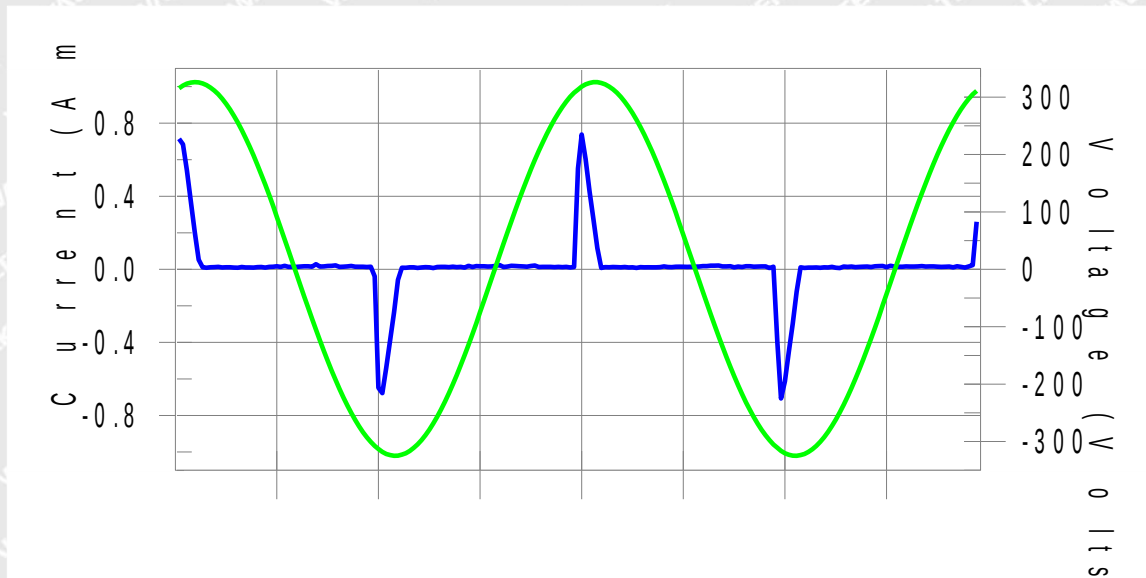
Test duration (min): 2.5

Data file name: H-000625.cts_data

Comment: TM1

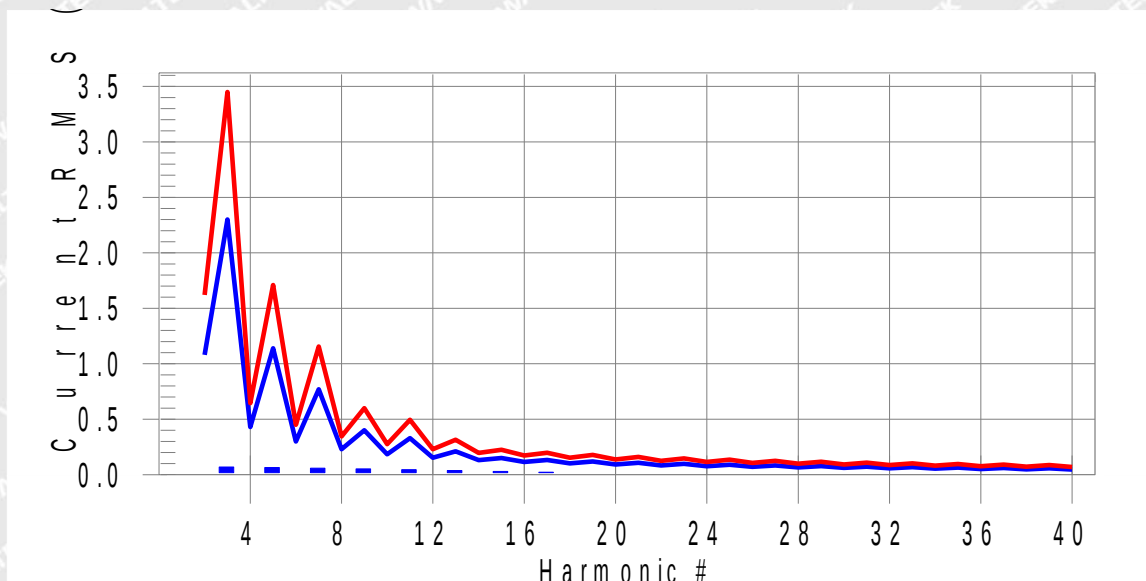
Test Result: Pass

Source qualification: Normal

Current & voltage waveforms

Harmonics and Class A limit line

European Limits

**Test result: Pass** **Worst harmonics H15-13.2% of 150% limit, H15-19.7% of 100% limit**



Current Test Result Summary (Run time)

Test category: All parameters (European limits) Test Margin: 100
 Test date: 2023/10/22 Start time: 16:37:02 End time: 16:39:43
 Test duration (min): 2.5 Data file name: H-000625.cts_data
 Comment: TM1

Test Result: Pass Source qualification: Normal
 THC(A): 0.146 I-THD(%): 200.1 POHC(A): 0.032 POHC Limit(A): 0.251

Highest parameter values during test:

V_RMS (Volts): 230.11	Frequency(Hz): 50.00
I_Peak (Amps): 0.773	I_RMS (Amps): 0.168
I_Fund (Amps): 0.073	Crest Factor: 4.689
Power (Watts): 16.5	Power Factor: 0.432

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.080	N/A	0.001	1.620	N/A	Pass
3	0.069	2.300	3.0	0.072	3.450	2.1	Pass
4	0.001	0.430	N/A	0.001	0.645	N/A	Pass
5	0.065	1.140	5.7	0.067	1.710	3.9	Pass
6	0.000	0.300	N/A	0.001	0.450	N/A	Pass
7	0.059	0.770	7.7	0.061	1.155	5.3	Pass
8	0.000	0.230	N/A	0.001	0.345	N/A	Pass
9	0.052	0.400	13.1	0.054	0.600	9.0	Pass
10	0.000	0.184	N/A	0.001	0.276	N/A	Pass
11	0.045	0.330	13.6	0.046	0.495	9.3	Pass
12	0.000	0.153	N/A	0.001	0.230	N/A	Pass
13	0.037	0.210	17.6	0.038	0.315	12.0	Pass
14	0.000	0.131	N/A	0.001	0.197	N/A	Pass
15	0.030	0.150	19.7	0.030	0.225	13.2	Pass
16	0.000	0.115	N/A	0.001	0.173	N/A	Pass
17	0.023	0.132	17.3	0.023	0.198	11.6	Pass
18	0.000	0.102	N/A	0.001	0.153	N/A	Pass
19	0.017	0.118	14.7	0.018	0.178	9.9	Pass
20	0.000	0.092	N/A	0.001	0.138	N/A	Pass
21	0.014	0.107	13.0	0.014	0.161	8.8	Pass
22	0.000	0.084	N/A	0.001	0.125	N/A	Pass
23	0.012	0.098	12.5	0.013	0.147	8.7	Pass
24	0.000	0.077	N/A	0.001	0.115	N/A	Pass
25	0.012	0.090	13.0	0.012	0.135	9.2	Pass
26	0.000	0.071	N/A	0.001	0.107	N/A	Pass



Reference No.: WTF23X10219604W004

27	0.012	0.083	13.9	0.012	0.125	9.7	Pass
28	0.000	0.066	N/A	0.001	0.099	N/A	Pass
29	0.011	0.078	14.4	0.012	0.116	9.9	Pass
30	0.000	0.061	N/A	0.001	0.092	N/A	Pass
31	0.010	0.073	14.2	0.011	0.109	9.8	Pass
32	0.000	0.058	N/A	0.000	0.086	N/A	Pass
33	0.009	0.068	13.3	0.009	0.102	9.0	Pass
34	0.000	0.054	N/A	0.000	0.081	N/A	Pass
35	0.008	0.064	11.9	0.008	0.096	8.0	Pass
36	0.000	0.051	N/A	0.000	0.077	N/A	Pass
37	0.006	0.061	10.3	0.006	0.091	7.1	Pass
38	0.000	0.048	N/A	0.000	0.073	N/A	Pass
39	0.005	0.058	9.1	0.005	0.087	6.2	Pass
40	0.000	0.046	N/A	0.000	0.069	N/A	Pass

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Voltage Source Verification Data (Run time)

Test category: Class-A (European limits)

Test Margin: 100

Test date: 2023/06/28

Start time: 16:37:02

End time: 16:39:43

Test duration (min): 2.5

Data file name: H-000625.cts_data

Comment: TM1

Test Result: Pass

Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms): 230.11

Frequency(Hz): 50.00

I_Peak (Amps): 0.773

I_RMS (Amps): 0.168

I_Fund (Amps): 0.073

Crest Factor: 4.689

Power (Watts): 16.5

Power Factor: 0.432

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.058	0.460	12.56	OK
3	0.518	2.071	25.01	OK
4	0.079	0.460	17.17	OK
5	0.057	0.920	6.19	OK
6	0.028	0.460	6.15	OK
7	0.033	0.690	4.84	OK
8	0.013	0.460	2.80	OK
9	0.032	0.460	6.96	OK
10	0.012	0.460	2.69	OK
11	0.039	0.230	16.80	OK
12	0.010	0.230	4.56	OK
13	0.029	0.230	12.50	OK
14	0.005	0.230	2.28	OK
15	0.034	0.230	14.92	OK
16	0.008	0.230	3.36	OK
17	0.019	0.230	8.07	OK
18	0.011	0.230	4.83	OK
19	0.022	0.230	9.49	OK
20	0.014	0.230	6.25	OK
21	0.016	0.230	7.12	OK
22	0.003	0.230	1.38	OK
23	0.015	0.230	6.73	OK
24	0.003	0.230	1.10	OK
25	0.018	0.230	7.76	OK
26	0.004	0.230	1.65	OK
27	0.019	0.230	8.27	OK



Reference No.: WTF23X10219604W004

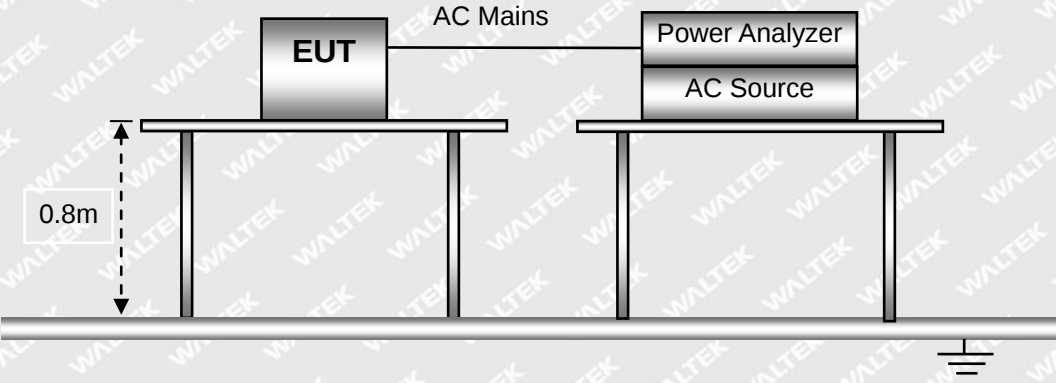
28	0.004	0.230	1.68	OK
29	0.019	0.230	8.08	OK
30	0.004	0.230	1.64	OK
31	0.017	0.230	7.34	OK
32	0.003	0.230	1.34	OK
33	0.016	0.230	7.10	OK
34	0.002	0.230	1.07	OK
35	0.014	0.230	6.22	OK
36	0.003	0.230	1.21	OK
37	0.014	0.230	6.19	OK
38	0.002	0.230	1.06	OK
39	0.013	0.230	5.52	OK
40	0.008	0.230	3.27	OK

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6. Voltage Fluctuation and Flicker

6.1 Test Setup Block Diagram



6.2 Test Standards

EN 61000-3-3, Limit: Clause 5.

6.3 Environmental Conditions

Temperature:	26 °C
Relative Humidity:	55%
ATM Pressure:	1015 mbar

6.4 Voltage Fluctuation and Flicker Test Data



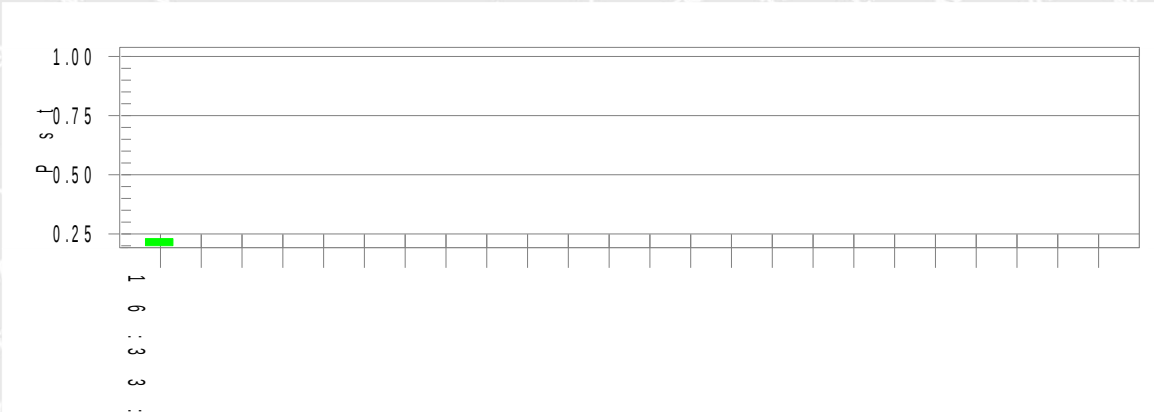
Test mode:	TM2(worst case)
------------	-----------------

Test Result: Pass

Status: Test Completed

Pst_i and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt): 231.43

Highest dt (%):

T-max (mS): 0

Highest dc (%): 0.00

Highest dmax (%): 0.00

Highest Pst (10 min. period): 0.230

Highest Plt (2 hr. period): 0.101

Test limit (%):

Test limit (mS): 500.0 Pass

Test limit (%): 3.30 Pass

Test limit (%): 4.00 Pass

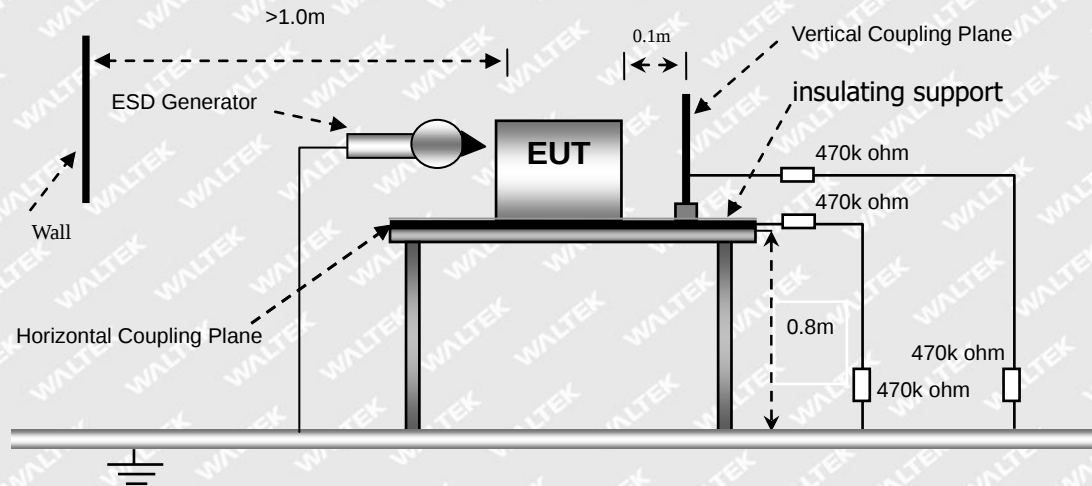
Test limit: 1.000 Pass

Test limit: 0.650 Pass



7. Electrostatic Discharge (ESD)

7.1 Test Setup Block Diagram



7.2 Test Performance

Required Performance Criterion:	B
Mode:	TM1-TM3
Note:TM2-TM3 for TT,TR	

7.3 Environmental Conditions

Temperature:	26 °C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

7.4 Electrostatic Discharge Immunity Test Data



Test mode	TM1-TM3							
Test Points	Test Levels (kV)							
	-2	+2	-4	+4	-6	+6	-8	+8
Air Discharge								
Type-C Port	A	A	A	A	A	A	B	B
Enclosure	A	A	A	A	A	A	A	A
Direct Contact Discharge								
Enclosure	A	A	B	B	/	/	/	/
Indirect Contact Discharge								
HCP (6 Sides)	A	A	A	A	/	/	/	/
VCP (4 Sides)	A	A	A	A	/	/	/	/

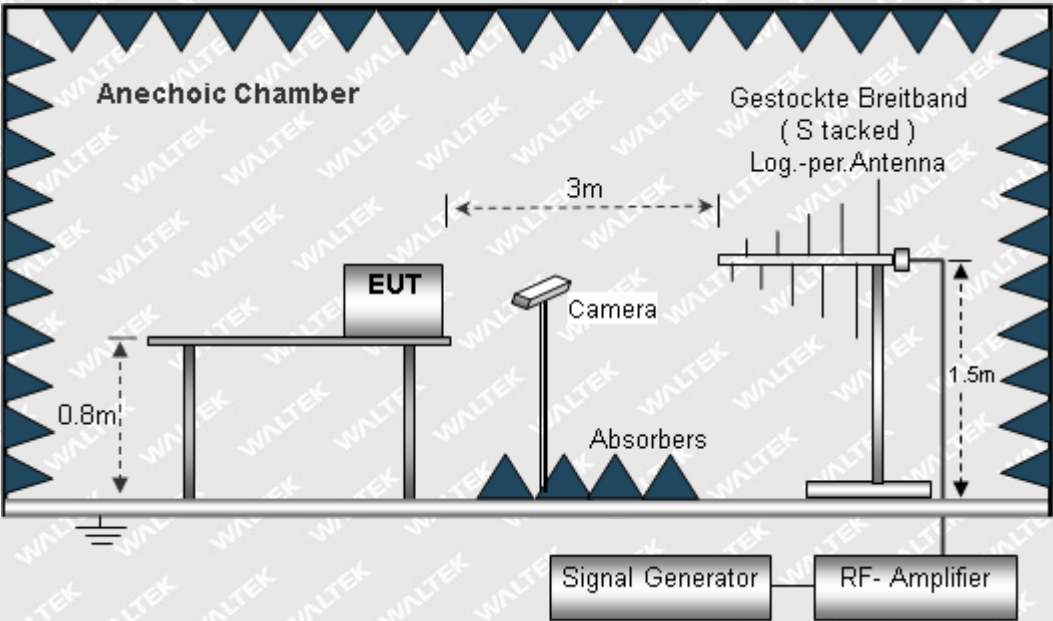
Test Result: Pass

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8. Radio Frequency Electromagnetic Field (R/S)

8.1 Test Setup Block Diagram



8.2 Test Performance

Required Performance Criterion:	A
Mode:	TM1-TM3
Note: TM2-TM3 for CT,CR	

8.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1010 mbar

8.4 Continuous Radiated Disturbances Test Data

Frequency step: 1% of fundamental
Dwell time: 1 second
Modulation: AM by 1kHz sine wave with 80% modulation depth



Test mode		TM1-TM3							
Frequency Range(MHz)	Field (V/m)	Front		Rear		Left Side		Right Side	
		VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	3	A	A	A	A	A	A	A	A
1000-3000	3	A	A	A	A	A	A	A	A
3000-6000	3	A	A	A	A	A	A	A	A

Test Result: Pass

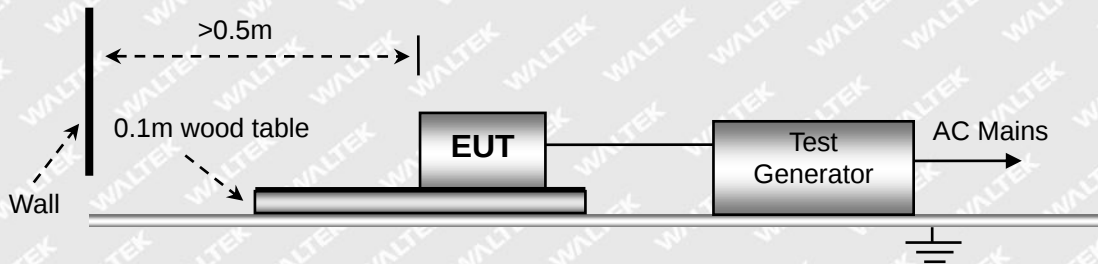
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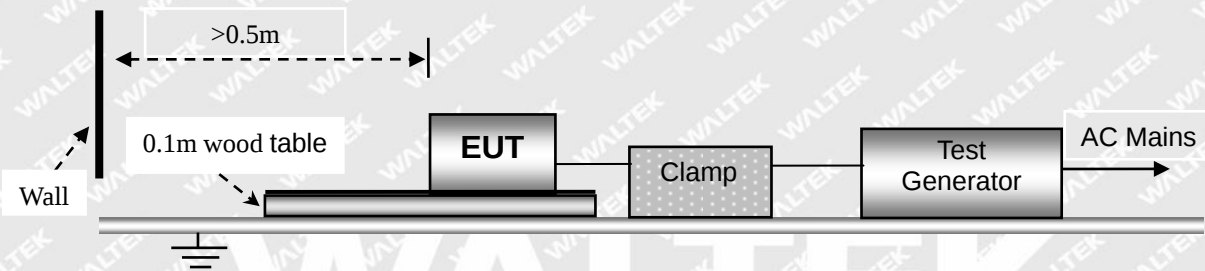
9. Fast Transients, Common Mode (EFT)

9.1 Test Setup Block Diagram

For AC Mains or DC Ports:



For Signal or Telecommunication Ports:



9.2 Test Performance

Required Performance Criterion:	B
Mode:	TM1-TM3
Note:TM2-TM3 for TT,TR	

9.3 Environmental Conditions

Temperature:	22 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

9.4 Electrical Fast Transients Test Data



Test Mode		TM1-TM3							
Test Line		Test Levels (kV)							
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
AC Main Power port	L	A	A	A	A	/	/	/	/
	N	A	A	A	A	/	/	/	/
	PE	/	/	/	/	/	/	/	/
	L-N	A	A	A	A	/	/	/	/
	L-PE	/	/	/	/	/	/	/	/
	N-PE	/	/	/	/	/	/	/	/
	L-N-PE	/	/	/	/	/	/	/	/
Signal ports	/	/	/	/	/	/	/	/	/

Test Result: Pass

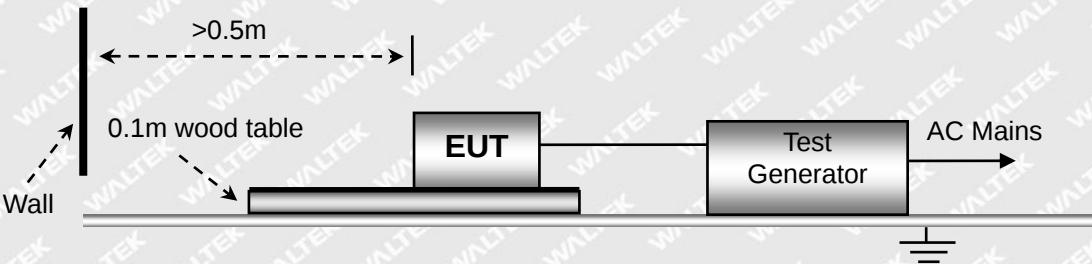
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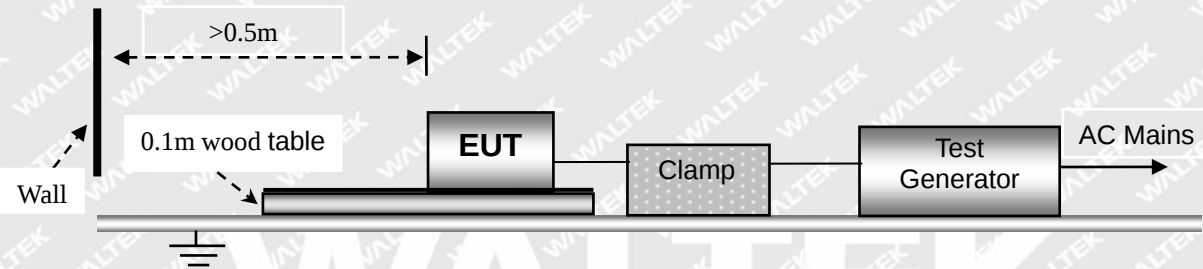
10. Surges

10.1 Test Setup Block Diagram

For AC Mains or DC Ports:



For Signal or Telecommunication Ports:



10.2 Test Performance

Required Performance Criterion:	B
Mode:	TM1-TM3
Note:TM2-TM3 for TT,TR	

10.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

10.4 Surge Test Data



Test Mode	TM1-TM3			
Voltage	Poll	Path	Pass	Fail
0.5kV	±	L-N	/	/
1kV	±	L-N	A	/
2kV	±	L-N, L-PE, N-PE	/	/
4kV	±	L-N, L-PE, N-PE	/	/

Test Result: Pass

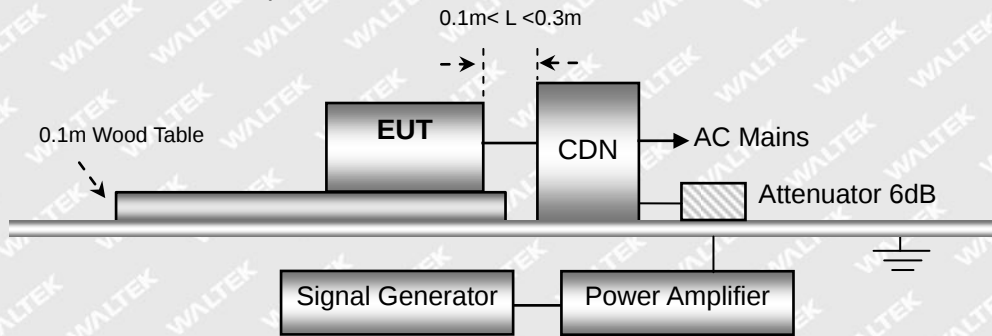
WALTEK



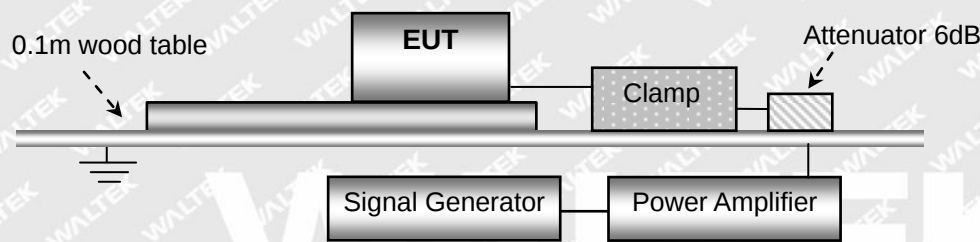
11. Radio Frequency, Common Mode (C/S)

11.1 Test Setup Block Diagram

For AC Mains or DC Input:



For Signal or Telecommunication Ports:



11.2 Test Performance

Required Performance Criterion:	A
Mode:	TM1-TM3
Note: TM2-TM3 for CT,CR	

11.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

11.4 Continuous Conducted Disturbances Test Data

Sweep frequency range: 150kHz~80MHz
Frequency step: 1% of fundamental
Dwell time: 1 second



Test Mode		TM1-TM3		
Level	Voltage (V) (rms, unmodulated)	Modulation:	Pass	Fail
1	1	AM 80%, 1kHz sinewave	/	/
2	3	AM 80%, 1kHz sinewave	A	/
3	10	AM 80%, 1kHz sinewave	/	/
X	Special	/	/	/

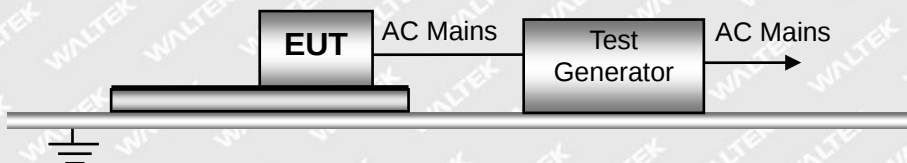
Test Result: Pass

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12. Voltage Dips and Interruptions

12.1 Test Setup Block Diagram



12.2 Test Performance

Required Performance Criterion:	B for voltage dip/ C for voltage interruption
Mode:	TM1-TM3
Note: TM2-TM3 for TT, TR	

12.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50%
ATM Pressure:	1011 mbar

12.4 Voltage Dips And Interruptions Test Data

U: Voltage dips in % U_T (U_T is rated voltage for the EUT)

T: Test duration

Level	U	T	Phase Angle	N	Pass	Fail
1	100%	10ms	0/90/180/270	3	A	/
2	100%	20ms	0/90/180/270	3	B	/
3	30%	500ms	0/90/180/270	3	B	/
4	100%	5000ms	0/90/180/270	3	C	/

Test Result: Pass



EXHIBIT 1 - EUT PHOTOGRAPHS

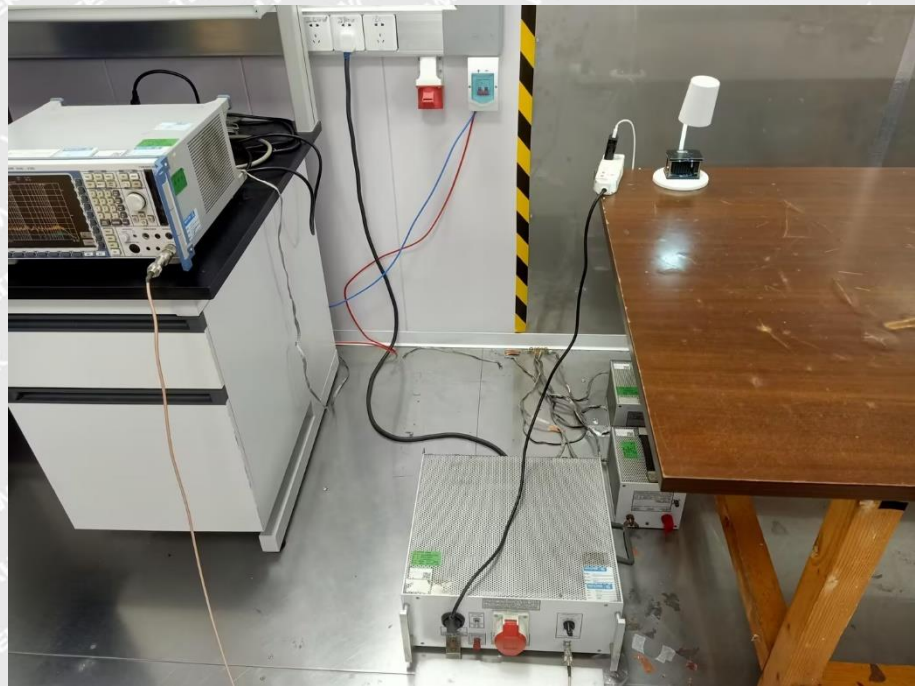
Please refer to “ANNEX”.

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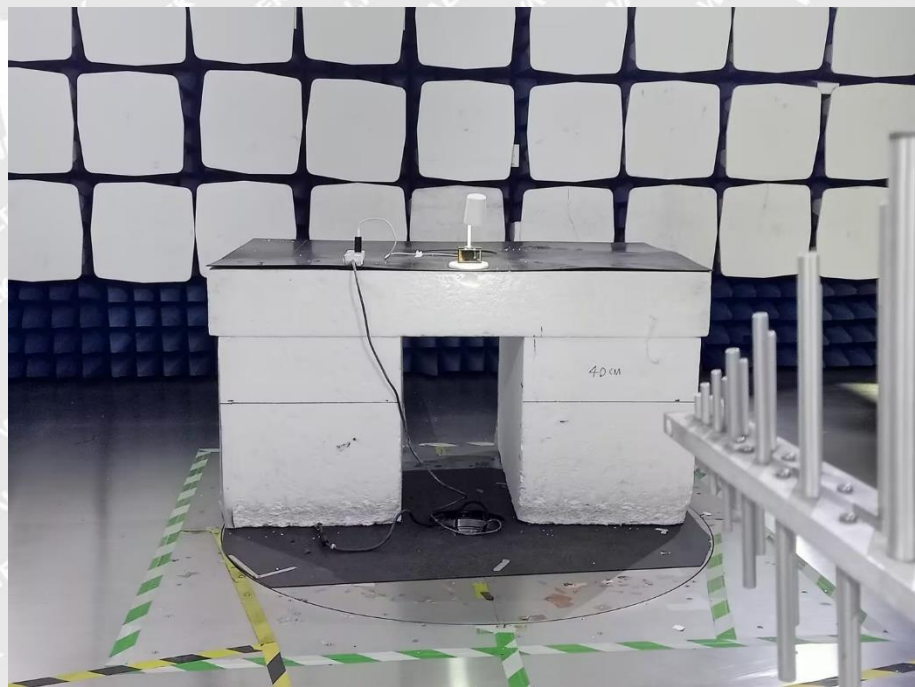


EXHIBIT 2 - TEST SETUP PHOTOGRAPHS

**Conducted Emission
Test Setup**

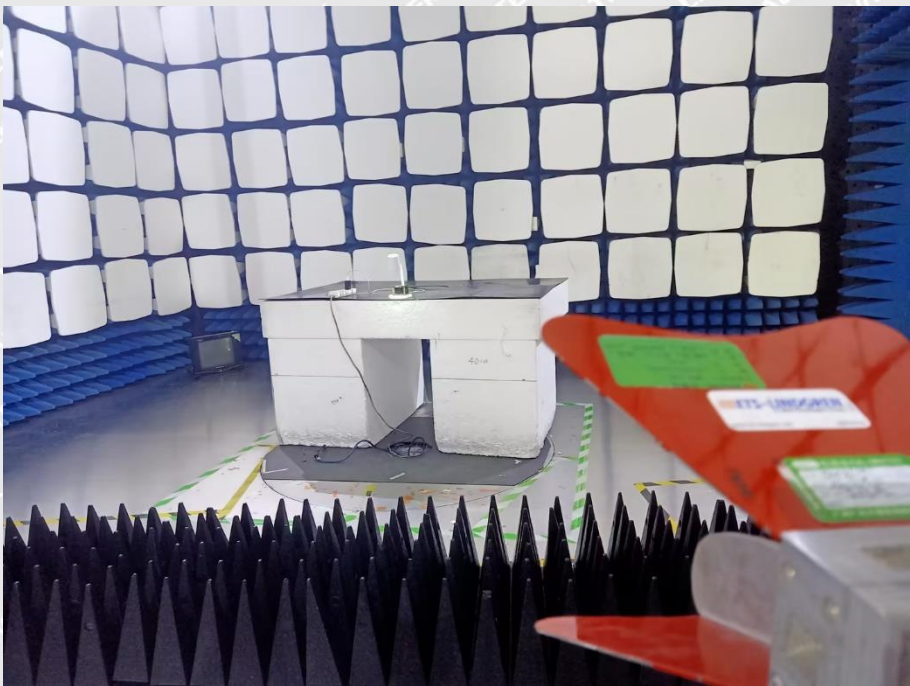


**Radiation Emission
Test View(30MHz to
1GHz)**





**Radiation Emission
Test Setup (Above
1GHz)**



**Harmonic/Flicker Test
View**

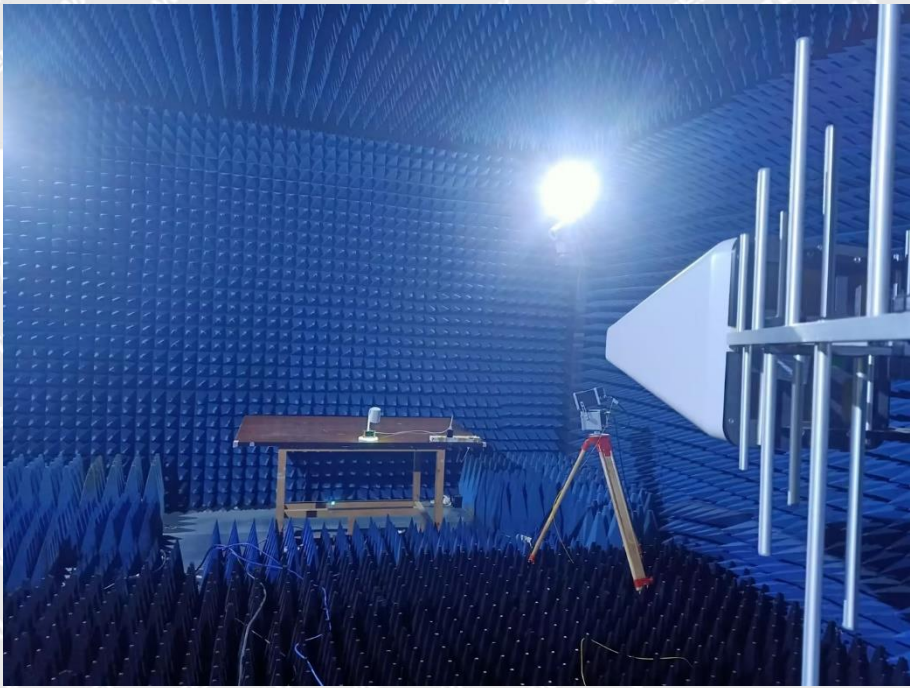




ESD Test View

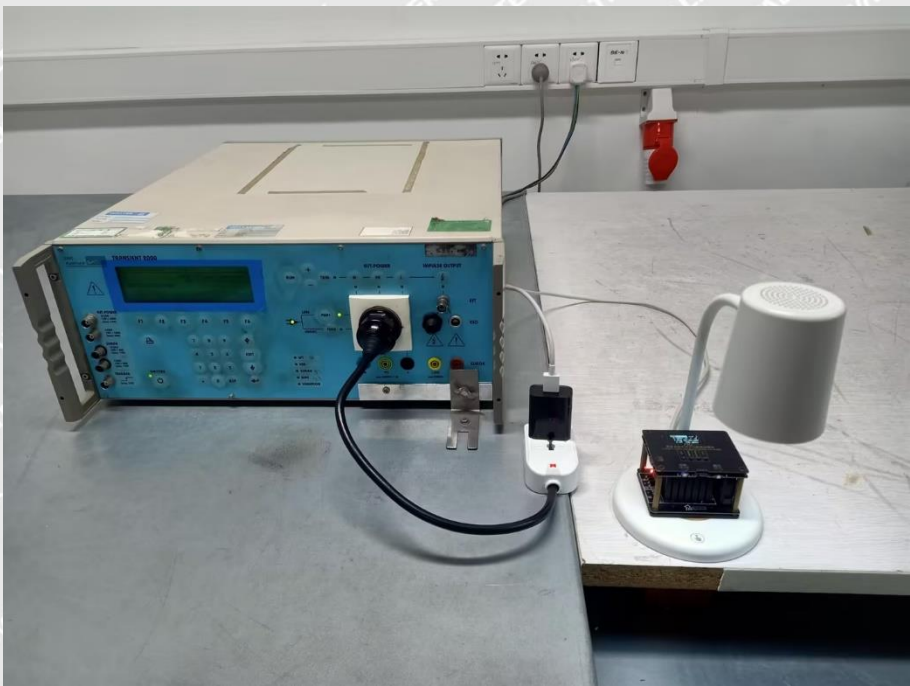


R/S Test View





EFT/ Surges/ Dips and Interruptions Test View



CS Test View



***** END OF REPORT *****



中国认可
国际互认
检测
TESTING
CNAS L4062



TEST REPORT

Reference No..... : WTF23X10219604W005
Manufacturer..... : Mid Ocean Brands B.V.
Address..... : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Factory..... : 118641
Product Name..... : Wireless charging lamp speaker
Model No..... : MO2124
Standards..... : EN IEC 55015:2019+A11:2020
EN 61547:2009
EN IEC 61000-3-2:2019+A1:2021
EN 61000-3-3:2013+A2:2021
Date of Receipt sample.... : 2023-10-13
Date of Test..... : 2023-10-13 to 2023-10-31
Date of Issue..... : 2023-10-31
Test Report Form No. : WTX_EN IEC 55015_2019_B
Test Result..... : Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

Prepared By:

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Gala Wang

Approved by:

Silin Chen



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Reference No.: WTF23X10219604W005

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Report version

Version No.	Date of issue	Description
Rev.00	2023-10-31	Original
/	/	/

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	Wireless charging lamp speaker
Trade Name:	/
Model No.:	MO2124
Adding Model(s):	/
<i>Note: The test data is gathered from a production sample, provided by the manufacturer. 813, but the circuit and the electronic construction do not change, declared by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	AC 230V 50Hz
Rated Current:	/
Rated Power:	/
Power Adaptor Model:	/
Highest Internal Frequency:	2480MHz



1.2 Test Standards

The tests were performed according to following standards:

EN IEC 55015:2019+A11:2020:Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment.

EN 61547:2009:Electromagnetic for general lighting purposes - EMC immunity requirements.

EN IEC 61000-3-2:2019+A1:2021:Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase).

EN 61000-3-3:2013+A2:2021:Electromagnetic compatibility (EMC) -- Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the emission/immunity should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with the standards EN IEC 55015 , EN IEC 61000-3-2, EN 61000-3-3 and EN 61547 for general lighting purposes equipment, and all related testing and measurement techniques intentional standards.



1.4 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission/immunity level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List			
Test Mode	Description	Remark	Power Supply Mode
TM1	Turn on the lights	Connect to the adapter	AC230V/50Hz for adapter

EUT Cable List and Details				
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite	With / Without Chip
Type-C Cable	1.0	Unshielded	Unshielded	Without Chip

Special Cable List and Details				
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite	With / Without Chip
/	/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Adapter	SHENZHENTIANYIN	CHCRIO160	/



1.5 Performance Criteria for EMS

All the test data has been collected, reduced, and analyzed within this report in accordance with Immunity requires the following as specific performance criteria:

- A. The apparatus shall continue to operate as intended during and after the test. The manufacturer specifies some minimum performance level. The performance level may be specified by the manufacturer as a permissible loss of performance.
- B. The apparatus shall continue to operate as intended after the test. This indicates that the EUT does not need to function at normal performance levels during the test, but must recover. Again some minimal performance is defined by the manufacturer. No change in operating state or loss of data is permitted.
- C. Temporary loss of function is allowed. Operation of the EUT may stop as long as it is either automatically reset or can be manually restored by operation of the controls.

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1.6 Test Equipment List and Details

Description	Manufacturer	Model	Serial No.	Cal. Date	Due. Date
☐ Chamber A: Below 1GHz					
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2023-02-25	2024-02-24
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2023-02-25	2024-02-24
Trilog Broadband Antenna	Schwarz beck	VULB9163	9163-333	2023-03-20	2026-03-19
Loop Antenna	Schwarz beck	FMZB 1516	9773	2021-03-20	2024-03-19
Amplifier	HP	8447F	2805A03475	2023-02-25	2024-02-24
☐ Chamber A: Above 1GHz					
Amplifier	C&D	PAP-1G18	2002	2023-02-25	2024-02-24
Horn Antenna	ETS	3117	00086197	2021-03-19	2024-03-18
☒ Chamber B: Below 1GHz					
Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2021-04-09	2024-04-08
Amplifier	Agilent	8447D	2944A10457	2023-02-25	2024-02-24
EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2023-02-25	2024-02-24
☐ Chamber C: Below 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2023-02-25	2024-02-24
Trilog Broadband Antenna	Schwarz beck	VULB 9168	1194	2021-05-28	2024-05-27
Amplifier	HP	8447F	2944A03869	2023-02-25	2024-02-24
☐ Chamber C: Above 1GHz					
Horn Antenna	POAM	RTF-118A	1820	2023-03-10	2026-03-09
Amplifier	Tonscend	TAP01018050	AP22E806235	2023-02-25	2024-02-24
☐ Conducted Room 1#					
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2023-02-25	2024-02-24
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2023-02-25	2024-02-24
AC LISN	Schwarz beck	NSLK8126	8126-279	2023-02-25	2024-02-24
8-WIRE LISN	Schwarz beck	8158	CAT3-8158-0059	2023-02-25	2024-02-24
8-WIRE LISN	Schwarz beck	8158	CAT5-8158-0117	2023-02-25	2024-02-24
☒ Conducted Room 2#					
EMI Test Receiver	Rohde & Schwarz	ESPI	101259	2023-02-25	2024-02-24
LISN	Rohde & Schwarz	ENV 216	100097	2023-02-25	2024-02-24
☒ Radiated Electromagnetic Disturbances (9KHz-30MHz)					
Loop Antenna	ZHINAN	ZN30401	19037	2023-02-25	2025-02-24
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2023-02-25	2024-02-24
☒ Harmonics & Flicker					
Digital Power Analyzer	California Instrument	CTS	72831	2023-02-25	2024-02-24
Power Source	California	5001IX-CTS-400	60077	2023-02-25	2024-02-24



	Instrument				
☒ Electrostatic discharges					
ESD Generator	LIONCEL	ESD-203B	0170901	2023-03-14	2024-03-13
☒ Power-frequency magnetic field (PFMF)					
PMF Generator	LIONCEL	PMF-801C-C	0171101	2023-02-25	2024-02-24
PMF Antenna	LIONCEL	PMF-801C-A	0180302	2023-02-25	2024-02-24
Instantaneous PMF Generator Module	LIONCEL	PMF-801C-T	0171001	2023-02-25	2024-02-24
☒ Electronic fast transient(EFT)/Surges/Dips					
Transient 2000	EMC PARTNER	TRA2000	836	2023-02-25	2024-02-24
Couple Clamp	EMC PARTNER	CN-EFT1000	513	2023-02-25	2024-02-24
☒ Radio frequency, continuous conducted (C/S)					
CONDUCTED IMMUNITY TEST SYSTEM	FRANKONIA	CIT-10/75	126B1247/2013	2023-02-25	2024-02-24
Attenuator	EMTEST	MA-5100/6BF2	1009	2023-02-25	2024-02-24
CDN	Luthi	L-801M2/M3	2665	2023-02-25	2024-02-24
CDN	LIONCEL	CDN-T8	0210401	2023-02-25	2024-02-24
EM Clamp	TESEQ	KEMZ801A	45028	2023-02-25	2024-02-24
☒ Radio frequency electromagnetic Field (R/S)					
Signal Generator	HP	8665B	3438A00604	2023-02-25	2024-02-24
Power Sensor	Agilent	E9301A	MY52450001	2023-02-25	2024-02-24
Power Sensor	Agilent	E9304A	MY55081055	2023-02-25	2024-02-24
RF Power Amplifier	MicoTop	MPA-80-1000-250	MPA1906239	2023-02-25	2024-02-24
RF Power Amplifier	MicoTop	MPA-1000-6000-1 00	MPA1906238	2023-02-25	2024-02-24
Power Meter	Agilent	E4419B	GB42420578	2023-02-25	2024-02-24



2. SUMMARY OF TEST RESULTS

Standards	Description of Test Item	Result
EN IEC55015	Disturbance Voltages	Compliant
	Radiated Electromagnetic Disturbances (Frequency range 9kHz to 30MHz)	Compliant
	Radiated Electromagnetic Disturbances (Frequency range 30MHz to 1000MHz)	Compliant
EN IEC 61000-3-2	Harmonic Current Emission	Compliant
EN 61000-3-3	Voltage Fluctuation And Flicker	Compliant
EN 61547	Electrostatic Discharge Immunity	Compliant
	Radio-Frequency Electromagnetic Field Immunity	Compliant
	Electrical Fast Transient/Burst Immunity	Compliant
	Surges Immunity	Compliant
	Injected Currents Immunity	Compliant
	Power-frequency Magnetic Field Immunity	Compliant
	Voltage Dips/Interruptions Immunity	Compliant

N/A: not applicable



3. Conducted Emission

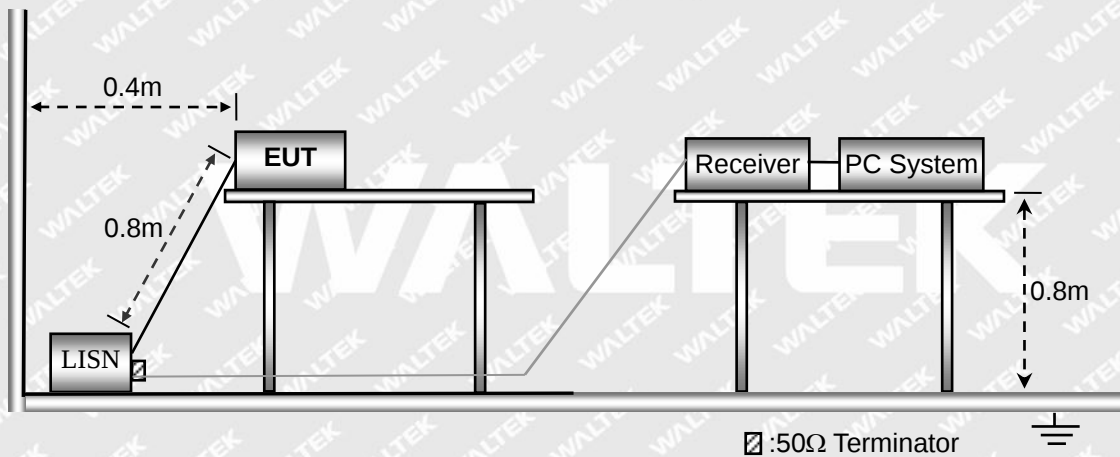
3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement:

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Conducted Emissions	Conducted	9-150kHz ±3.74dB
		0.15-30MHz ±3.34dB

3.2 Basic Test Setup Block Diagram

AC port



3.3 Environmental Conditions

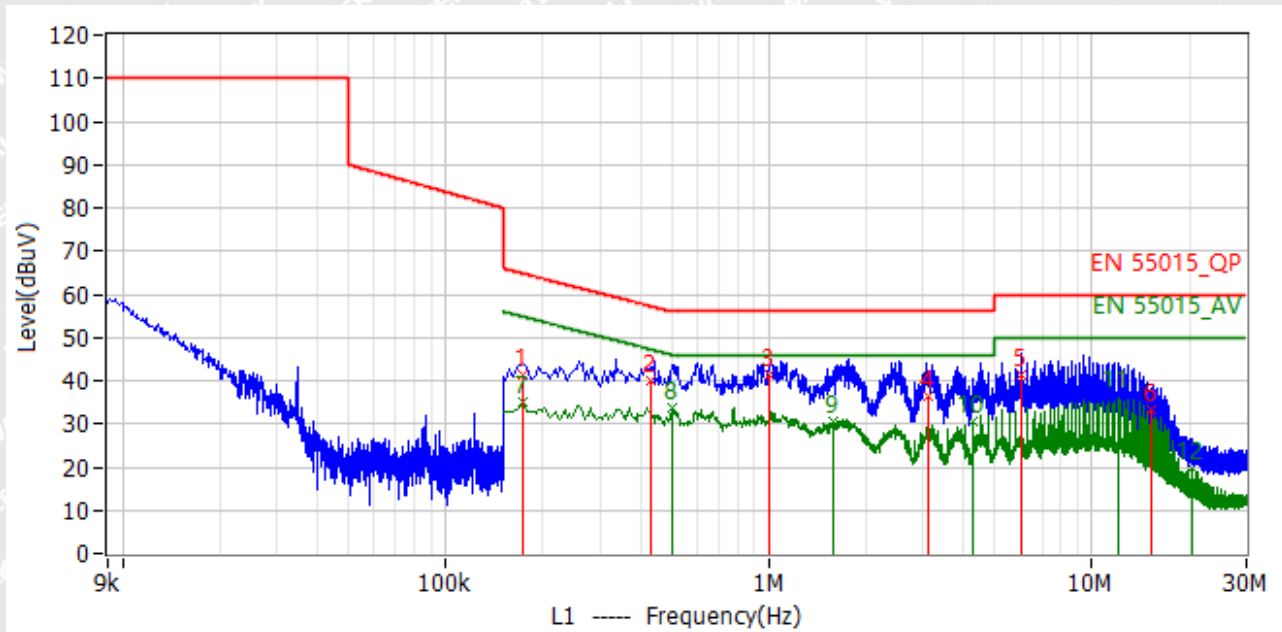
Temperature:	25 ° C
Relative Humidity:	45%
ATM Pressure:	1015 mbar

3.4 Summary of Test Results

Please find the results below:



Test mode:	TM1	Polarity:	Line
------------	-----	-----------	------



No.	Frequency	Limit dBuV	Level dBuV	Delta dB	Reading dBuV	Factor dB	Detector
1	174.000kHz	64.8	41.5	-23.3	20.7	20.8	QP
2	434.000kHz	57.2	39.9	-17.3	19.1	20.8	QP
3	1.002MHz	56.0	41.5	-14.5	20.7	20.8	QP
4	3.114MHz	56.0	36.5	-19.5	15.6	20.9	QP
5	6.018MHz	60.0	41.5	-18.5	20.7	20.8	QP
6	15.346MHz	60.0	33.4	-26.6	12.7	20.7	QP
7*	174.000kHz	54.8	34.9	-19.9	14.1	20.8	AV
8*	502.000kHz	46.0	33.8	-12.2	13.1	20.7	AV
9*	1.582MHz	46.0	30.6	-15.4	9.8	20.8	AV
10*	4.298MHz	46.0	30.4	-15.6	9.5	20.9	AV
11*	12.014MHz	50.0	36.2	-13.8	15.4	20.8	AV
12*	20.378MHz	50.0	19.6	-30.4	-0.4	20.0	AV

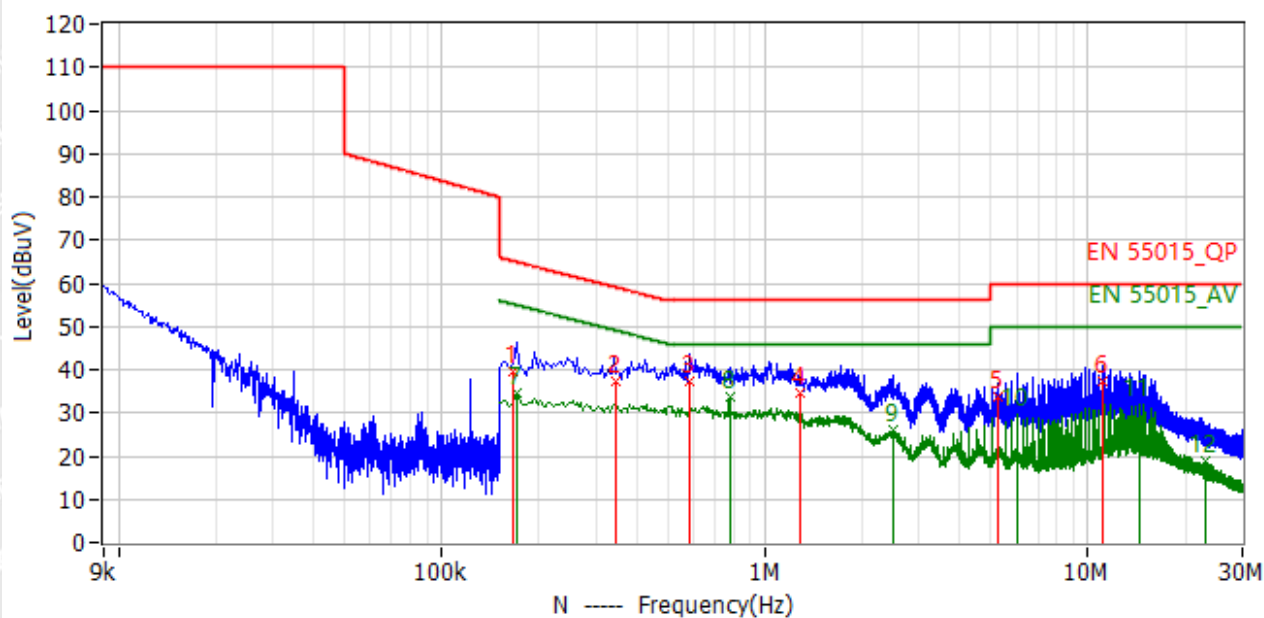


Test mode:

TM1

Polarity:

Neutral



No.	Frequency	Limit dBuV	Level dBuV	Delta dB	Reading dBuV	Factor dB	Detector
1	166.000kHz	65.2	39.4	-25.8	18.6	20.8	QP
2	346.000kHz	59.1	37.2	-21.9	16.7	20.5	QP
3	586.000kHz	56.0	37.2	-18.8	16.5	20.7	QP
4	1.286MHz	56.0	34.4	-21.6	13.6	20.8	QP
5	5.282MHz	60.0	33.8	-26.2	12.9	20.9	QP
6	11.054MHz	60.0	37.1	-22.9	16.3	20.8	QP
7*	170.000kHz	55.0	34.6	-20.3	13.8	20.8	AV
8*	778.000kHz	46.0	33.9	-12.1	13.1	20.8	AV
9*	2.510MHz	46.0	26.1	-19.9	5.2	20.9	AV
10*	6.018MHz	50.0	29.5	-20.5	8.7	20.8	AV
11*	14.370MHz	50.0	32.0	-18.0	11.3	20.7	AV
12*	23.174MHz	50.0	19.0	-31.0	-1.1	20.1	AV

4. Radiated Electromagnetic Disturbances (9kHz to 30MHz)

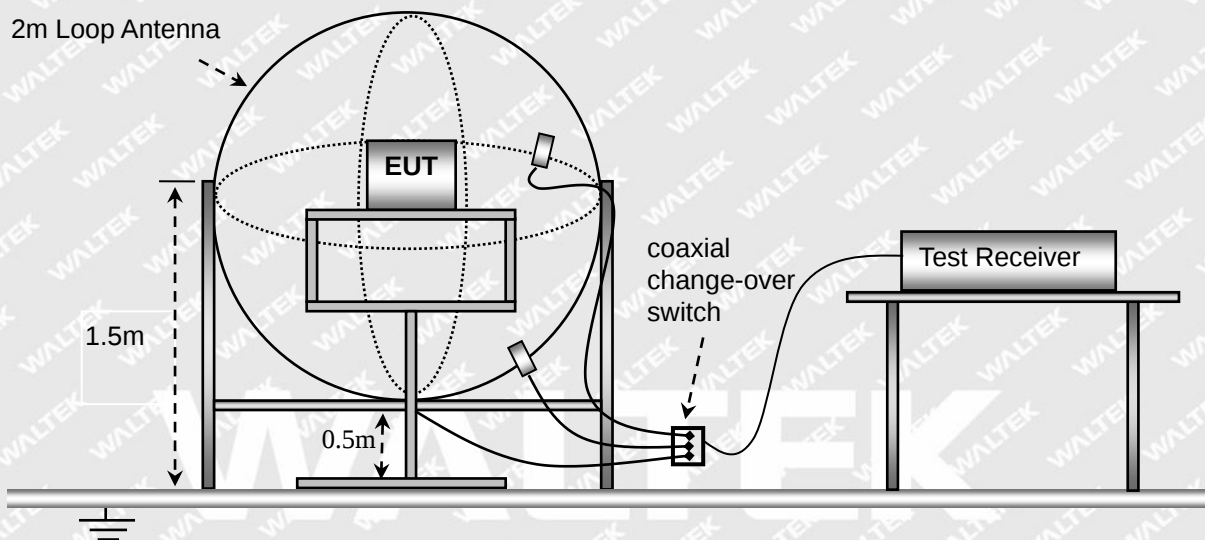
4.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 3.6 dB.

4.2 Basic Test Setup Block Diagram

The Radiation Electromagnetic Disturbance (9kHz to 30MHz) test was performed in accordance with the EN IEC 55015

2m Loop Antenna



4.3 Environmental Conditions

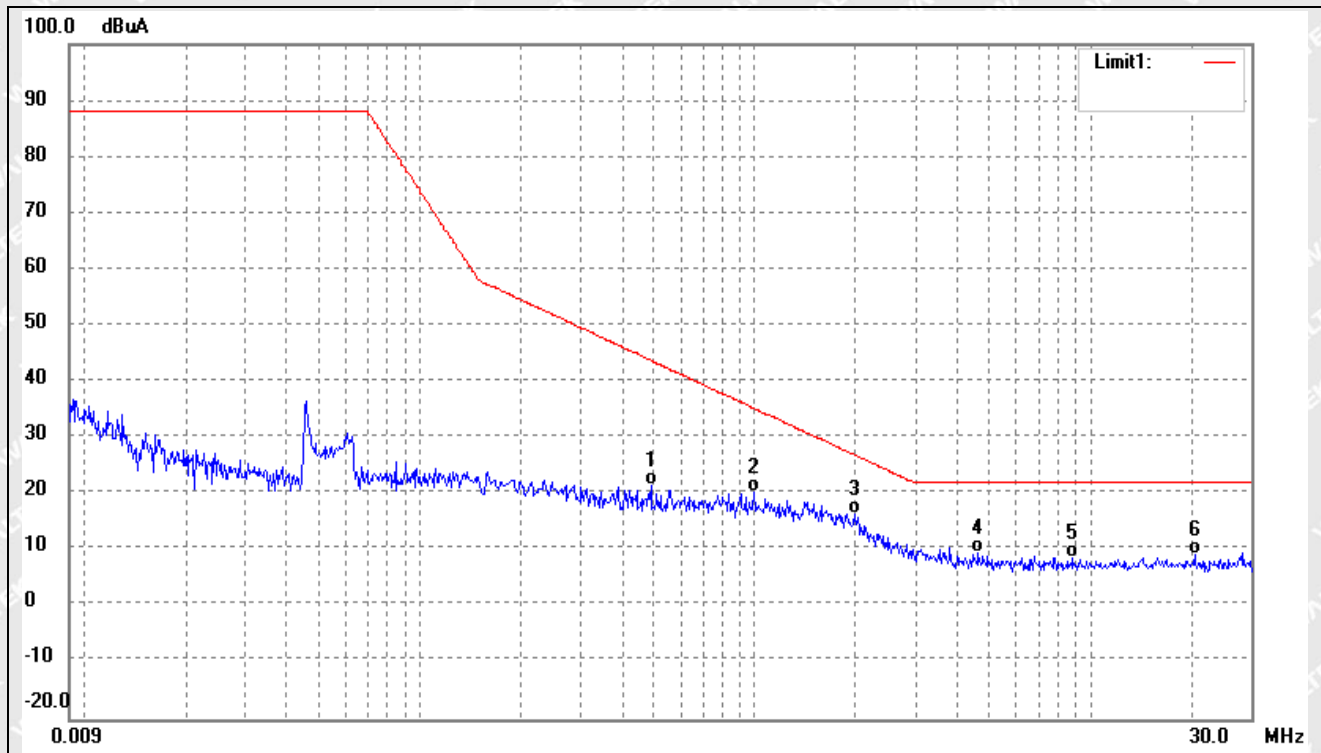
Temperature:	23.5 °C
Relative Humidity:	54 %
ATM Pressure:	1015 mbar

4.4 Summary of Test Results

Please find the results below:



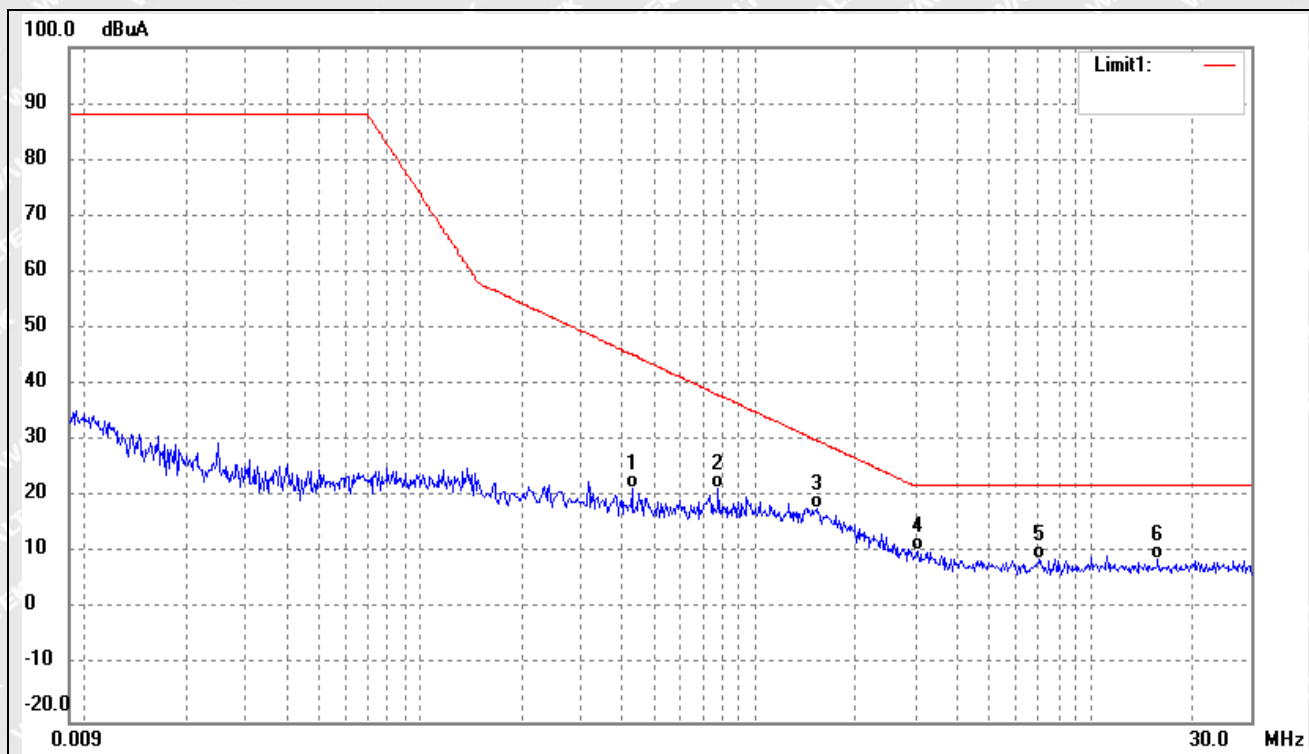
Test mode:	TM1	Polarity:	X
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No.	Frequency (MHz)	Reading (dBuA)	Correct (dB)	Result (dBuA)	Limit (dBuA)	Margin (dB)	Detector
1	0.4900	21.66	0.00	21.66	43.77	-22.11	QP
2	0.9900	20.21	0.00	20.21	35.32	-15.11	QP
3*	1.9660	16.52	0.00	16.52	27.08	-10.56	QP
4	4.6260	9.62	0.00	9.62	22.00	-12.38	QP
5	8.8380	8.79	0.00	8.79	22.00	-13.21	QP
6	20.4460	9.11	0.00	9.11	22.00	-12.89	QP



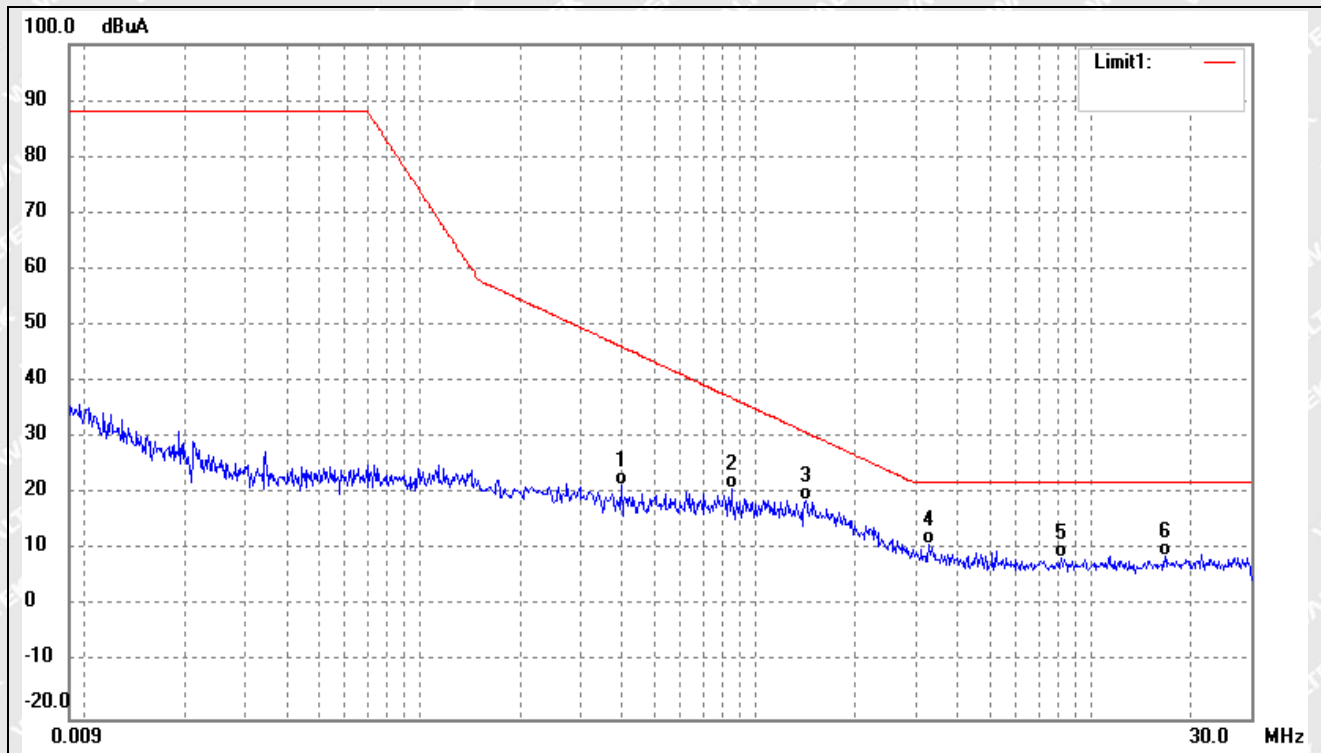
Test mode:	TM1	Polarity:	Y
------------	-----	-----------	---



No.	Frequency (MHz)	Reading (dBuA)	Correct (dB)	Result (dBuA)	Limit (dBuA)	Margin (dB)	Detector
1	0.4300	21.41	0.00	21.41	45.34	-23.93	QP
2	0.7780	21.46	0.00	21.46	38.22	-16.76	QP
3	1.5300	17.93	0.00	17.93	30.09	-12.16	QP
4*	3.0700	10.35	0.00	10.35	22.00	-11.65	QP
5	7.0580	8.88	0.00	8.88	22.00	-13.12	QP
6	15.8260	9.03	0.00	9.03	22.00	-12.97	QP



Test mode:	TM1	Polarity:	Z
------------	-----	-----------	---



No.	Frequency (MHz)	Reading (dBuA)	Correct (dB)	Result (dBuA)	Limit (dBuA)	Margin (dB)	Detector
1	0.3980	21.45	0.00	21.45	46.27	-24.82	QP
2	0.8460	21.05	0.00	21.05	37.21	-16.16	QP
3	1.4140	18.79	0.00	18.79	31.04	-12.25	QP
4*	3.2780	10.91	0.00	10.91	22.00	-11.09	QP
5	8.1620	8.55	0.00	8.55	22.00	-13.45	QP
6	16.7139	8.91	0.00	8.91	22.00	-13.09	QP



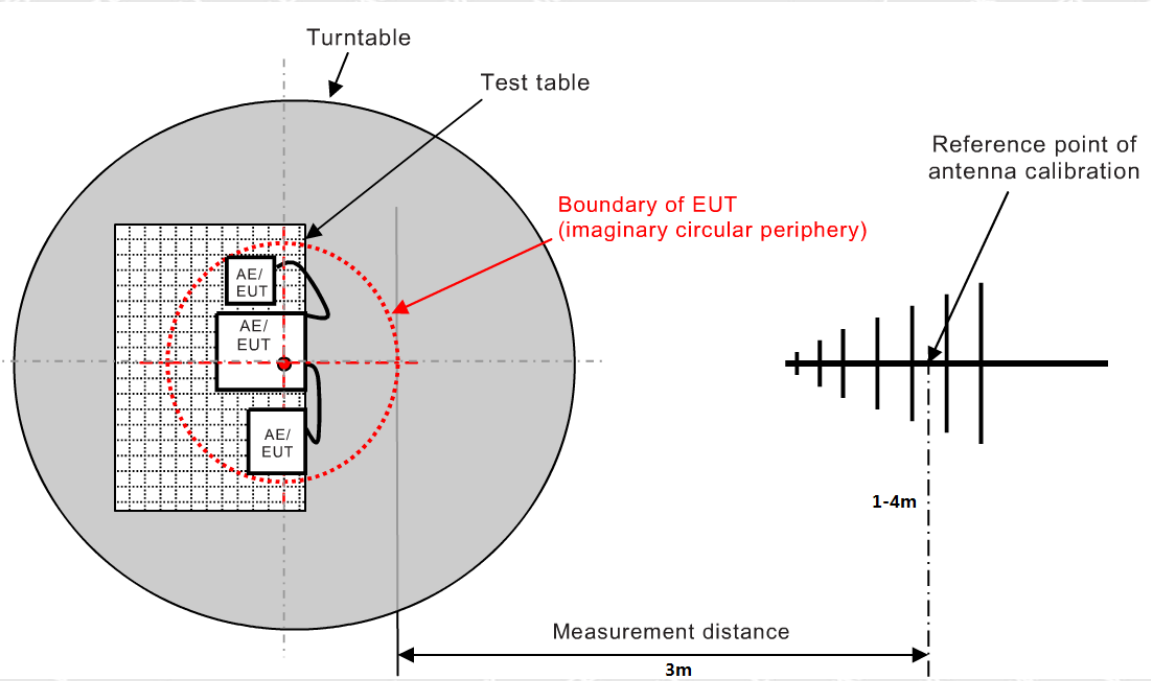
5. Radiated Electromagnetic Disturbances (30MHz to 1000MHz)

5.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement:

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Radiated Emissions	Radiated	30-200MHz ±4.52dB
		0.2-1GHz ±5.56dB
		1-6GHz ±3.84dB
		6-18GHz ±3.92dB

5.2 Basic Test Setup Block Diagram





5.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Correct} \\ \text{Correct} = \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for a lighting device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{EN IEC 55015 Limit}$$

5.4 Environmental Conditions

Temperature:	23.5 ° C
Relative Humidity:	54 %
ATM Pressure:	1011 mbar

5.5 Summary of Test Results

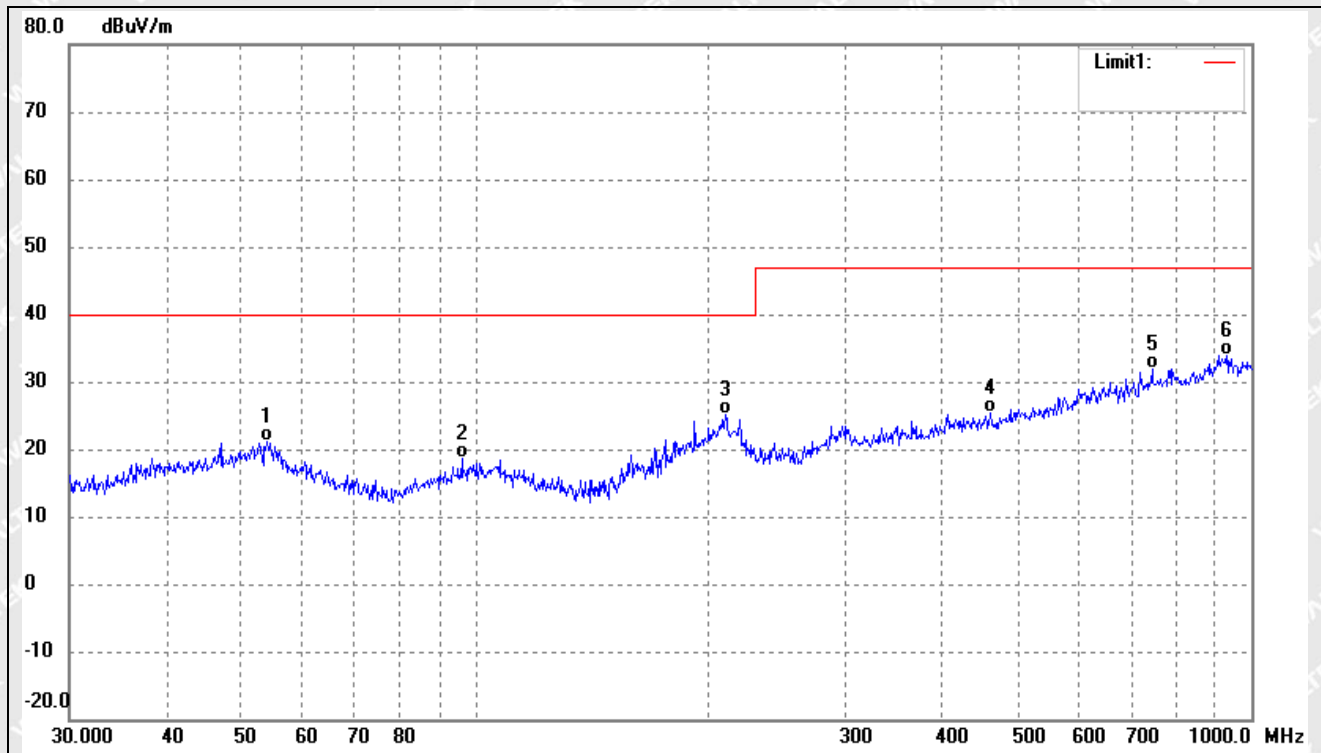
Please find the results below:

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Below 1GHz

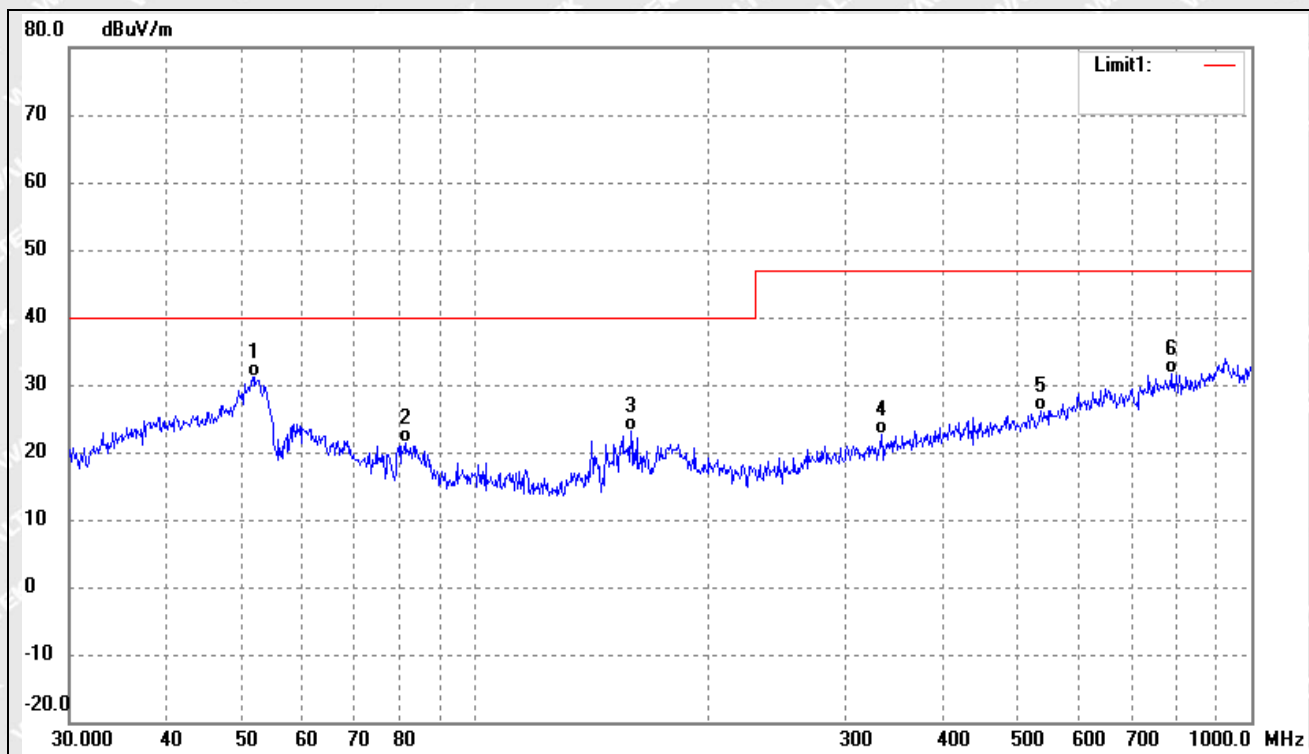
Test mode:	TM1	Polarity:	Horizontal
------------	-----	-----------	------------



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	53.8818	28.58	-7.50	21.08	40.00	-18.92	-	-	QP
2	96.0986	27.73	-9.21	18.52	40.00	-21.48	-	-	QP
3	210.0482	33.23	-8.13	25.10	40.00	-14.90	-	-	QP
4	460.7271	27.32	-2.05	25.27	47.00	-21.73	-	-	QP
5	744.8661	28.13	3.81	31.94	47.00	-15.06	-	-	QP
6	929.0082	27.58	6.21	33.79	47.00	-13.21	-	-	QP



Test mode:	TM1	Polarity:	Vertical
------------	-----	-----------	----------



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	52.0251	38.60	-7.39	31.21	40.00	-8.79	-	-	QP
2	81.2117	34.15	-12.69	21.46	40.00	-18.54	-	-	QP
3	158.6677	34.33	-11.29	23.04	40.00	-16.96	-	-	QP
4	333.6867	26.33	-3.68	22.65	47.00	-24.35	-	-	QP
5	535.7073	26.53	-0.51	26.02	47.00	-20.98	-	-	QP
6	787.8513	27.43	4.14	31.57	47.00	-15.43	-	-	QP

Remark: '-Means' the test Degree and Height are not recorded by the test software and only show the worst case in the test report.



6. Harmonic Current Emissions

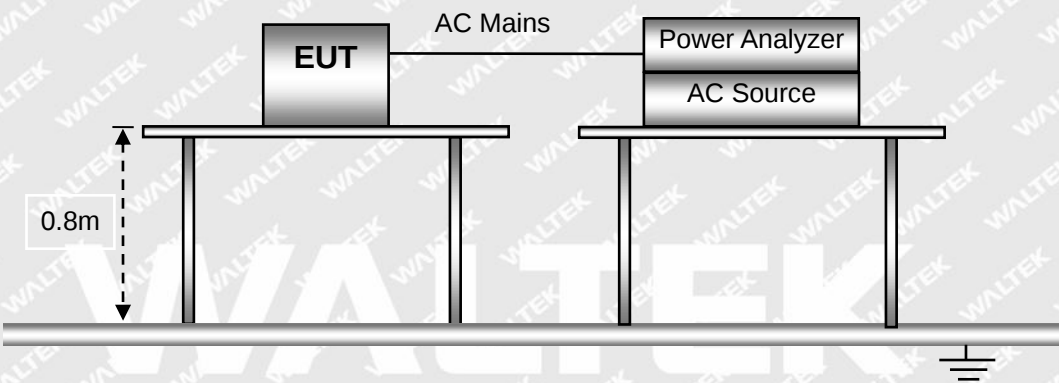
6.1 Test Standards

EN IEC 61000-3-2, Clause 7.4 Limits for Class C equipment.

6.2 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	51 %
ATM Pressure:	1022 mbar

6.3 Basic Test Setup Block Diagram



6.4 Harmonic Current Emissions Test Data

Reference No.: WTF23X10219604W005



Harmonics – Class-C ($\geq 5W$ and $\leq 25W$)

Test category: Class-C (European limits)

Test Margin: 100

Test date: 2023/10/21

Start time: 15:17:02

End time: 15:19:43

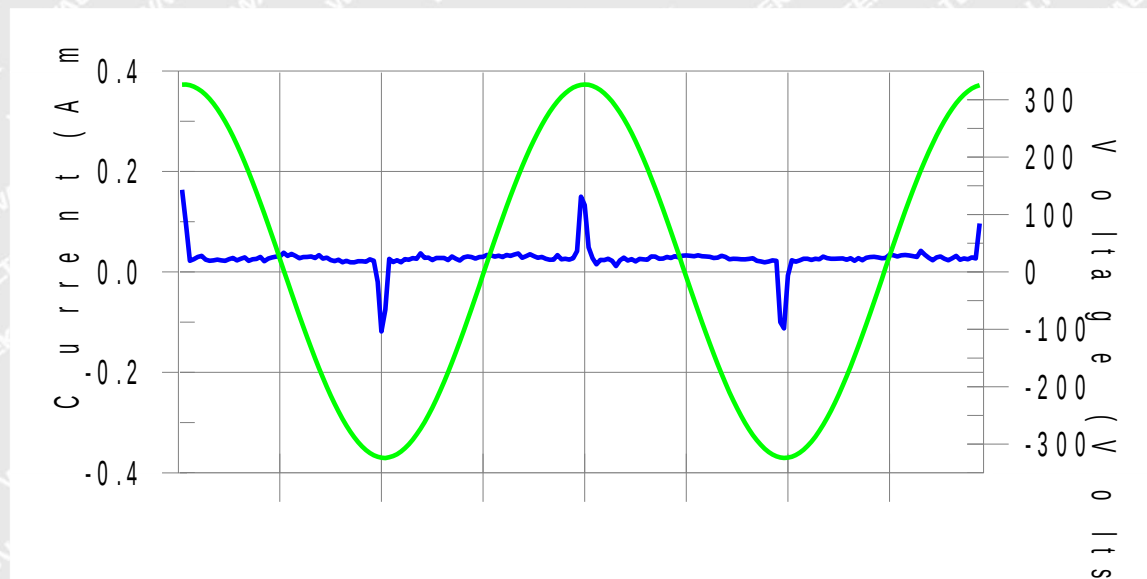
Test duration (min): 2.5

Data file name: H-000735.cts_data

Test Result: N/L (Power less than 5W)

Source qualification: Normal

Current & voltage waveforms



Harmonics and Class C limit line (Table 3, column 2 limits)

European Limits

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



Current Test Result Summary (Run time)

Test category: Class-C (European limits)

Test Margin: 100

Test date: 2023/10/21

Start time: 15:17:02

End time: 15:19:43

Test duration (min): 2.5

Data file name: H-000735.cts_data

Test Result: N/L (Power less than 5W)

Source qualification: Normal

THC(A): 0.016

I-THD(%): 242.4

POHC(A): 0.008

POHC Limit(A): 0.001

Highest parameter values during test:

V_RMS (Volts): 230.07

Frequency(Hz):

I_Peak (Amps): 0.181

I_RMS (Amps): 0.035

I_Fund (Amps): 0.006

Crest Factor: 5.580

Power (Watts): 1.5

Power Factor: 0.236

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	0.000	N/A	0.001	0.000	N/A	Pass
3	0.005	0.005	N/A	0.006	0.008	N/A	Pass
4	0.001	0.000	N/A	0.001	0.000	N/A	Pass
5	0.005	0.003	N/A	0.005	0.004	N/A	Pass
6	0.000	0.000	N/A	0.000	0.000	N/A	Pass
7	0.005	0.002	N/A	0.005	0.002	N/A	Pass
8	0.000	0.000	N/A	0.001	0.000	N/A	Pass
9	0.005	0.001	N/A	0.005	0.001	N/A	Pass
10	0.000	0.000	N/A	0.000	0.000	N/A	Pass
11	0.005	0.001	N/A	0.005	0.001	N/A	Pass
12	0.000	0.000	N/A	0.001	0.000	N/A	Pass
13	0.004	0.000	N/A	0.005	0.001	N/A	Pass
14	0.000	0.000	N/A	0.000	0.000	N/A	Pass
15	0.004	0.000	N/A	0.004	0.001	N/A	Pass
16	0.000	0.000	N/A	0.000	0.000	N/A	Pass
17	0.004	0.000	N/A	0.004	0.001	N/A	Pass
18	0.000	0.000	N/A	0.000	0.000	N/A	Pass
19	0.004	0.000	N/A	0.004	0.000	N/A	Pass
20	0.000	0.000	N/A	0.000	0.000	N/A	Pass
21	0.004	0.000	N/A	0.004	0.000	N/A	Pass
22	0.000	0.000	N/A	0.000	0.000	N/A	Pass
23	0.003	0.000	N/A	0.003	0.000	N/A	Pass
24	0.000	0.000	N/A	0.000	0.000	N/A	Pass
25	0.003	0.000	N/A	0.003	0.000	N/A	Pass
26	0.000	0.000	N/A	0.000	0.000	N/A	Pass



Reference No.: WTF23X10219604W005

27	0.003	0.000	N/A	0.003	0.000	N/A	Pass
28	0.000	0.000	N/A	0.000	0.000	N/A	Pass
29	0.003	0.000	N/A	0.003	0.000	N/A	Pass
30	0.000	0.000	N/A	0.000	0.000	N/A	Pass
31	0.002	0.000	N/A	0.002	0.000	N/A	Pass
32	0.000	0.000	N/A	0.000	0.000	N/A	Pass
33	0.002	0.000	N/A	0.002	0.000	N/A	Pass
34	0.000	0.000	N/A	0.000	0.000	N/A	Pass
35	0.002	0.000	N/A	0.002	0.000	N/A	Pass
36	0.000	0.000	N/A	0.000	0.000	N/A	Pass
37	0.002	0.000	N/A	0.002	0.000	N/A	Pass
38	0.000	0.000	N/A	0.000	0.000	N/A	Pass
39	0.001	0.000	N/A	0.001	0.000	N/A	Pass
40	0.000	0.000	N/A	0.000	0.000	N/A	Pass

Note: All harmonics are below minimum limit and are ignored.

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Voltage Source Verification Data (Run time)

Test category: Class-C (European limits)

Test Margin: 100

Test date: 2023/10/21

Start time: 15:17:02

End time: 15:19:43

Test duration (min): 2.5

Data file name: H-000735.cts_data

Test Result: N/L (Power less than 5W)

Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms): 230.07

Frequency(Hz):

I_Peak (Amps): 0.181

I_RMS (Amps): 0.035

I_Fund (Amps): 0.006

Crest Factor: 5.580

Power (Watts): 1.5

Power Factor: 0.236

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.066	0.460	14.29	OK
3	0.497	2.070	24.01	OK
4	0.078	0.460	16.97	OK
5	0.064	0.920	6.93	OK
6	0.031	0.460	6.78	OK
7	0.024	0.690	3.52	OK
8	0.016	0.460	3.54	OK
9	0.012	0.460	2.64	OK
10	0.011	0.460	2.36	OK
11	0.009	0.230	4.01	OK
12	0.012	0.230	5.25	OK
13	0.015	0.230	6.70	OK
14	0.005	0.230	2.12	OK
15	0.010	0.230	4.23	OK
16	0.007	0.230	3.25	OK
17	0.015	0.230	6.37	OK
18	0.011	0.230	4.58	OK
19	0.009	0.230	4.07	OK
20	0.015	0.230	6.58	OK
21	0.009	0.230	3.91	OK
22	0.004	0.230	1.88	OK
23	0.007	0.230	2.85	OK
24	0.003	0.230	1.32	OK
25	0.007	0.230	3.04	OK
26	0.003	0.230	1.14	OK
27	0.006	0.230	2.80	OK



Reference No.: WTF23X10219604W005

28	0.004	0.230	1.58	OK
29	0.008	0.230	3.30	OK
30	0.004	0.230	1.67	OK
31	0.005	0.230	2.34	OK
32	0.003	0.230	1.18	OK
33	0.006	0.230	2.58	OK
34	0.002	0.230	1.05	OK
35	0.004	0.230	1.90	OK
36	0.003	0.230	1.09	OK
37	0.005	0.230	2.24	OK
38	0.002	0.230	1.07	OK
39	0.006	0.230	2.75	OK
40	0.008	0.230	3.32	OK

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7. Voltage Fluctuation Flicker

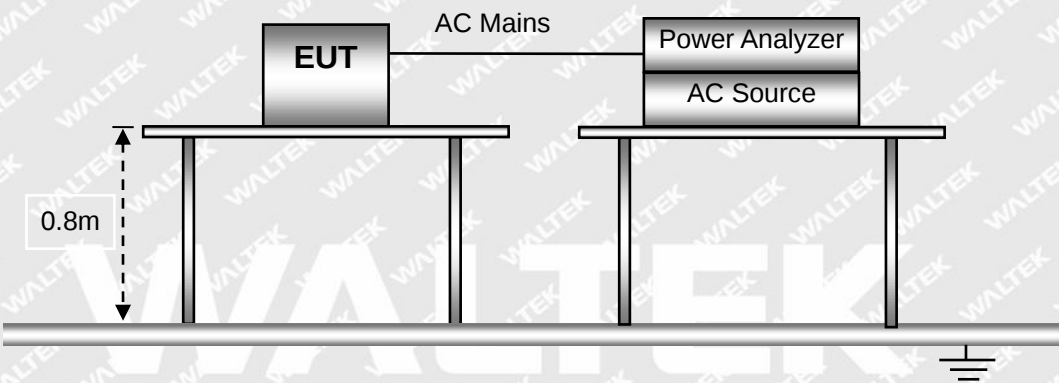
7.1 Test Standards

EN 61000-3-3, Limit: Clause 5.

7.2 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	51 %
ATM Pressure:	1022 mbar

7.3 Basic Test Setup Block Diagram



7.4 Voltage Fluctuation and Flicker Test Data



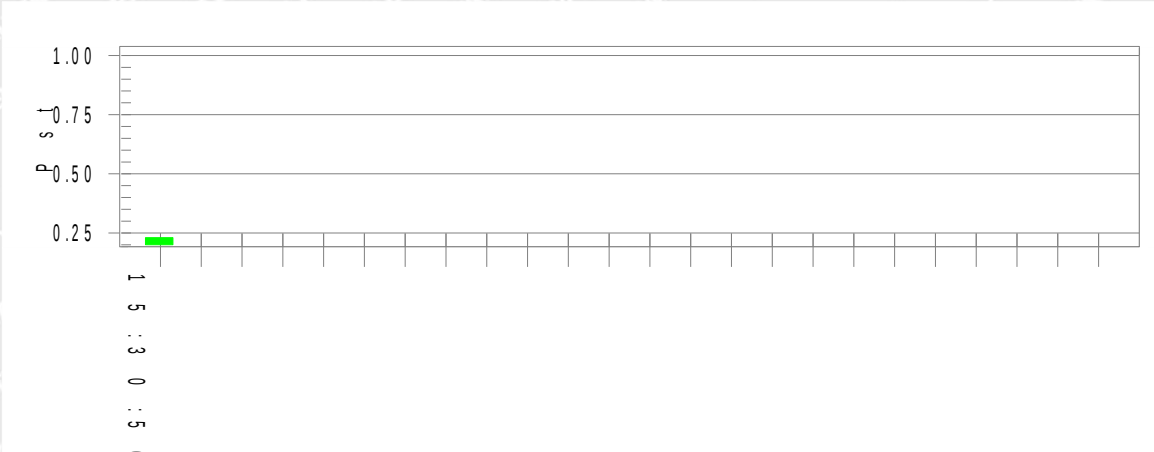
Test mode:	TM1
------------	-----

Test Result: Pass

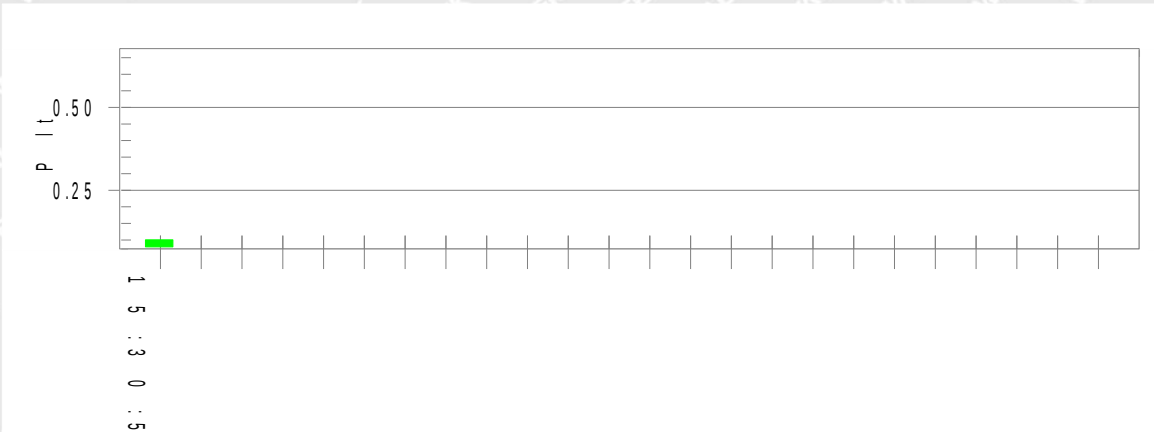
Status: Test Completed

Pst and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt): 230.06

Highest dt (%):

T-max (mS): 0

Highest dc (%): 0.00

Highest dmax (%): 0.00

Highest Pst (10 min. period): 0.230

Highest Plt (2 hr. period): 0.101

Test limit (%):

Test limit (mS): 500.0 Pass

Test limit (%): 3.30 Pass

Test limit (%): 4.00 Pass

Test limit: 1.000 Pass

Test limit: 0.650 Pass



8. Electrostatic Discharges (ESD)

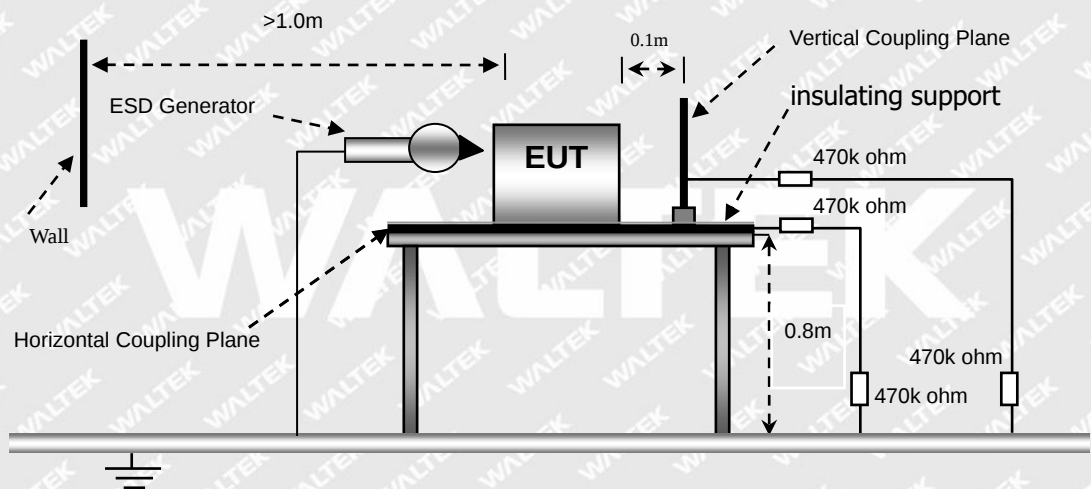
8.1 Test Performance

Performance Criterion: B

8.3 Environmental Conditions

Temperature:	25°C
Relative Humidity:	51 %
ATM Pressure:	1011 mbar

8.3 Basic Test Setup Block Diagram





8.4 Electrostatic Discharge Immunity Test Data

Test Mode: TM1

Table 1: Electrostatic Discharge Immunity (Air Discharge)

Test Points	Test Voltage (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Enclosure	A	A	A	A	A	A	A	A	/	/

Table 2: Electrostatic Discharge Immunity (Direct Contact)

Test Points	Test Voltage (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
USB Port	A	A	A	A	/	/	/	/	/	/
Metal Screw	A	A	A	A	/	/	/	/	/	/
Enclosure	A	A	A	A	/	/	/	/	/	/

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP & VCP)

Test Points	Test Voltage (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
HCP (6 Sides)	A	A	A	A	/	/	/	/	/	/
VCP (4 Sides)	A	A	A	A	/	/	/	/	/	/

Test Result: Pass



9. Continuous RF electromagnetic field Disturbances (RS)

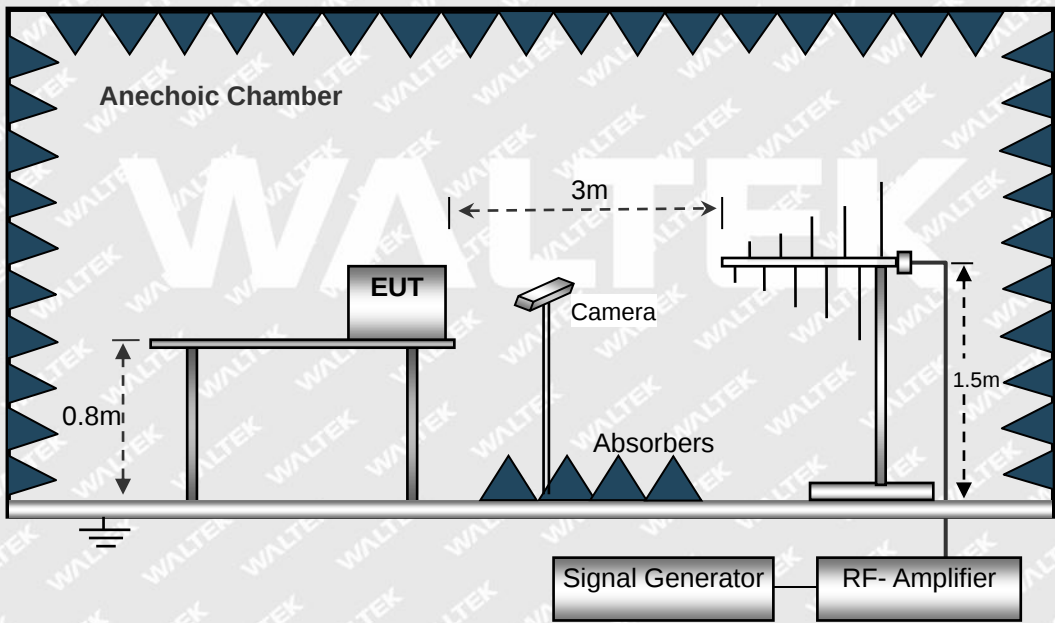
9.1 Test Performance

Performance Criterion: A

9.2 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	51 %
ATM Pressure:	1010 mbar

9.3 Basic Test Setup Block Diagram





9.4 Continuous Radiated Disturbances Test Data

Frequency step: 1% of fundamental
Dwell time: 1 second
Modulation: AM by 1kHz sine wave with 80% modulation depth
Test Mode: TM1

Frequency Range(MHz)	Field (V/m)	Front		Rear		Left Side		Right Side	
		VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	3	A	A	A	A	A	A	A	A

Test Result: Pass

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10. Electrical Fast Transients (EFT)

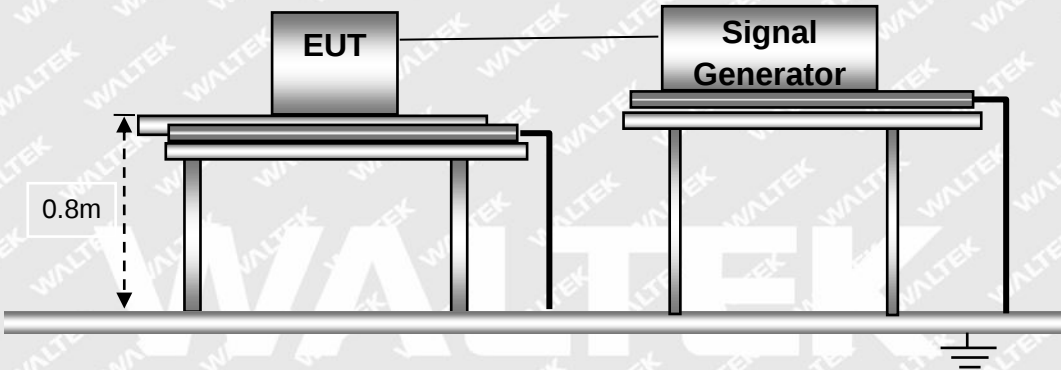
10.1 Test Performance

Performance Criterion: B

10.2 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	51 %
ATM Pressure:	1011 mbar

10.3 Basic Test Setup Block Diagram





10.4 Electrical Fast Transients Test Data

Test Mode: TM1

Test Points		Test Voltage (kV)							
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
Power Supply Power Port of EUT	L	A	A	A	A	/	/	/	/
	N	A	A	A	A	/	/	/	/
	PE	/	/	/	/	/	/	/	/
	L+N	A	A	A	A	/	/	/	/
	L+PE	/	/	/	/	/	/	/	/
	N+PE	/	/	/	/	/	/	/	/
	L+N+PE	/	/	/	/	/	/	/	/
Signal ports	RJ45	/	/	/	/	/	/	/	/

Test Result: Pass

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11. Surges

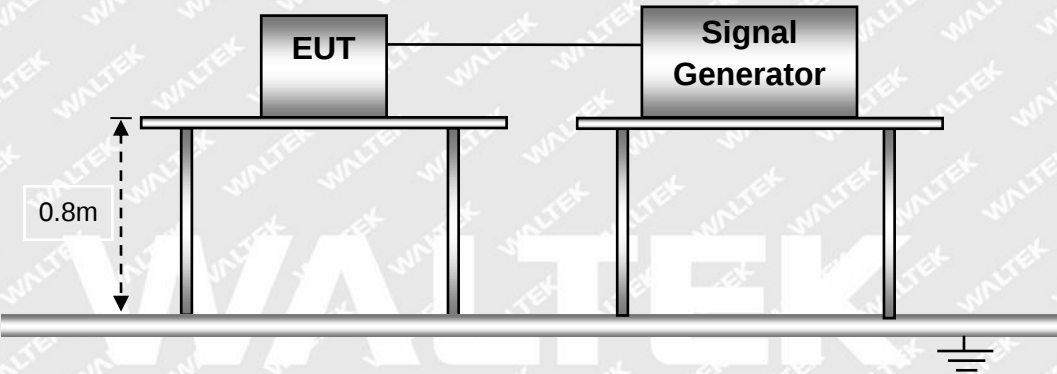
11.1 Test Performance

Performance Criterion: C

11.2 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	51 %
ATM Pressure:	1011 mbar

11.3 Basic Test Setup Block Diagram



11.4 Surge Test Data

Test Mode: TM1

Test Voltage	Poll	Path	Pass	Fail
0.5kV	±	L-N	A	/
1kV	±	L-N	/	/
2kV	±	L-PE, N-PE	/	/
4kV	±	L-N, L-PE, N-PE	/	/

Test Result: Pass



12. Continuous Induced RF Disturbances (C/S)

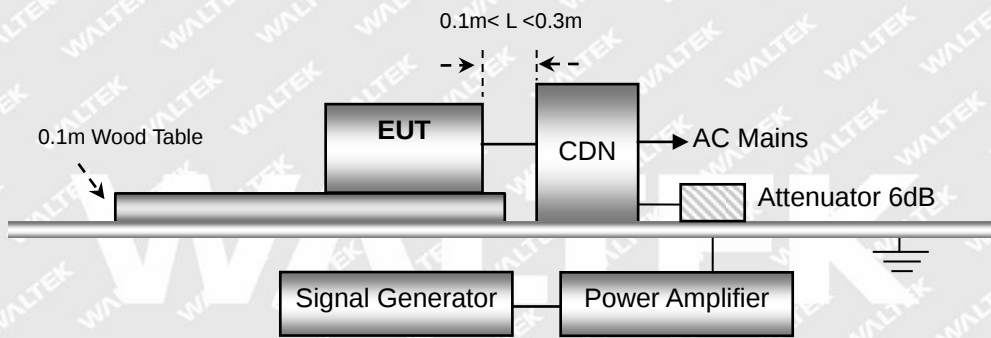
12.1 Test Performance

Performance Criterion: A

12.2 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	51 %
ATM Pressure:	1011 mbar

12.3 Basic Test Setup Block Diagram





12.4 Continuous Conducted Disturbances Test Data

Sweep frequency range: 0.15 MHz to 80 MHz
Frequency step: 1% of fundamental
Dwell time: 1 second
Test Mode: TM1
AC Port

Frequency MHz	Injected Position	Voltage level (e.m.f.)	Observations (Performance Criterion)	Result
0.15-80	AC Mains	1V	/	/
0.15-80	AC Mains	3V	A	Pass
0.15-80	AC Mains	10V	/	/

Test Result: Pass

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13. Power-Frequency Magnetic Fields (PFMF)

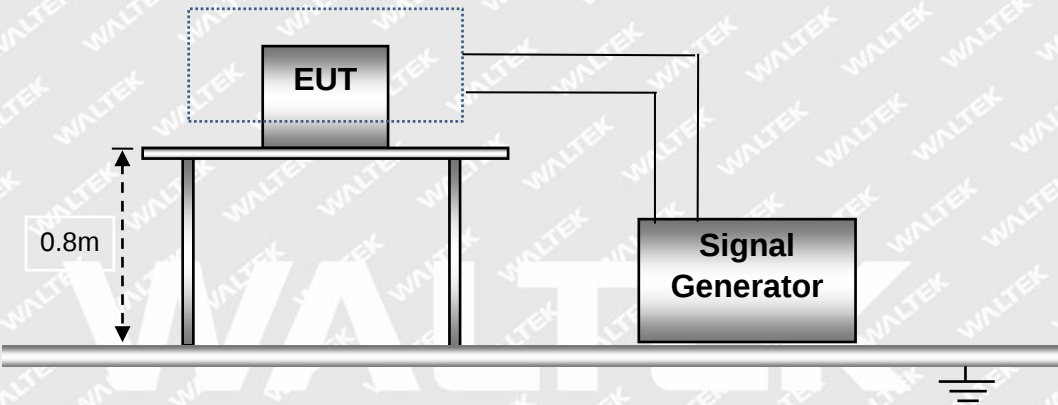
13.1 Test Performance

Performance Criterion: A

13.2 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	51%
ATM Pressure:	1011 mbar

13.3 Basic Test Setup Block Diagram



13.4 Power-Frequency Magnetic Field Test Data

Test Mode: TM1

Level	Magnetic Field Strength (r.m.s) A/m	Frequency Hz	Induction Coil Postion	Pass	Fail
1	1	50/60	X, Y, Z	/	/
2	3	50/60	X, Y, Z	A	/
3	10	50/60	X, Y, Z	/	/
X	Special	/	/	/	/

Test Result: Pass



14. Voltage Dips and Interruptions

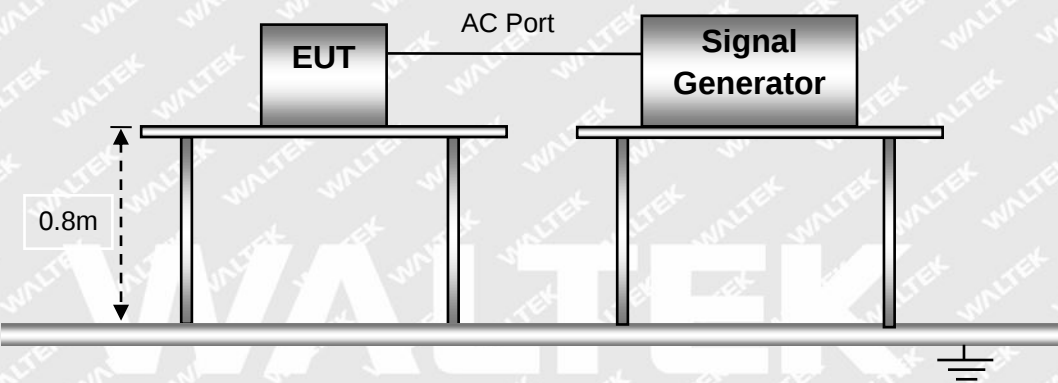
14.1 Test Performance

Performance Criterion: B/C

14.2 Environmental Conditions

Temperature:	23.5 °C
Relative Humidity:	54 %
ATM Pressure:	1011 mbar

14.3 Basic Test Setup Block Diagram



14.4 Voltage Dips And Interruptions Test Data

Test Mode: TM1

U: Voltage dips in % U_T (U_T is rated voltage for the EUT)

T: Test duration

Level	U	T	Phase Angle	N	Pass	Fail
1	30%	200ms	0/90/180/270	3	B	/
2	100%	10ms	0/90/180/270	3	B	/

Test Result: Pass



EXHIBIT 1 - EUT PHOTOGRAPHS

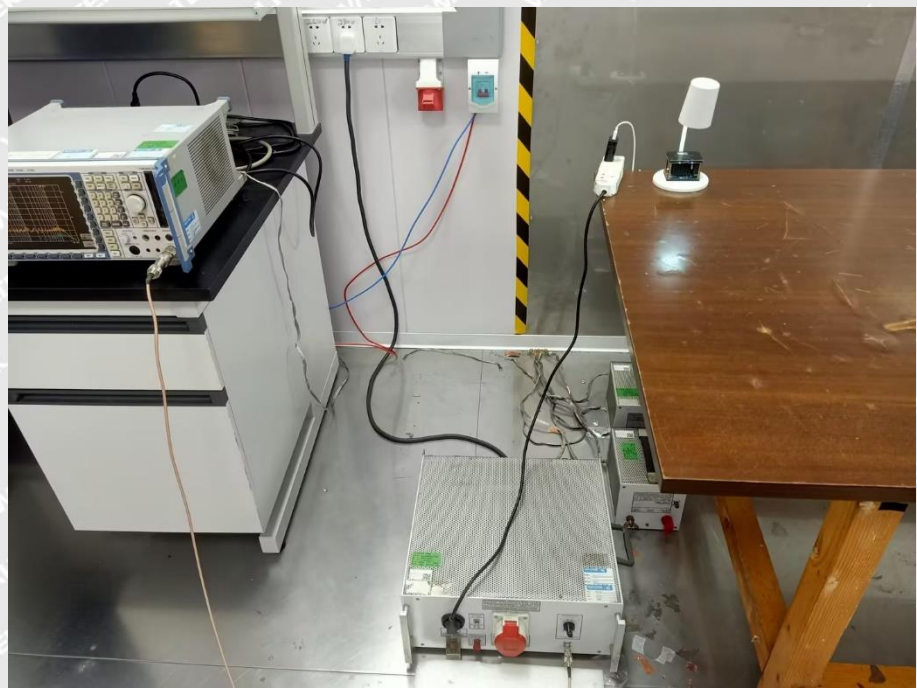
Please refer to "ANNEX".

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EXHIBIT 2 - TEST SETUP PHOTOGRAPHS

**Conducted Emission
Test Setup**

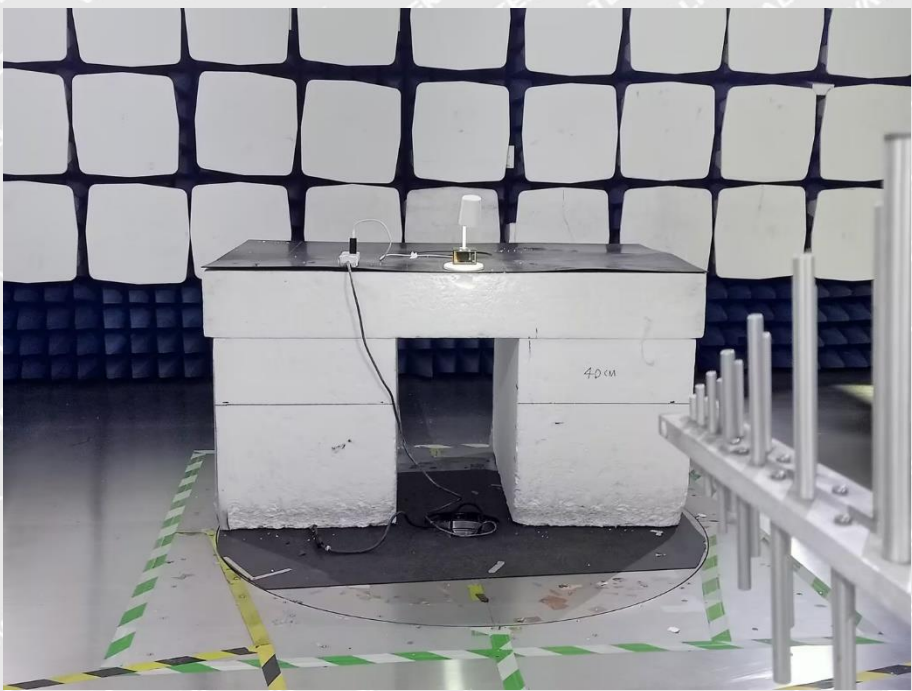


**Radiation Emission
Test View
(9kHz~30MHz)**

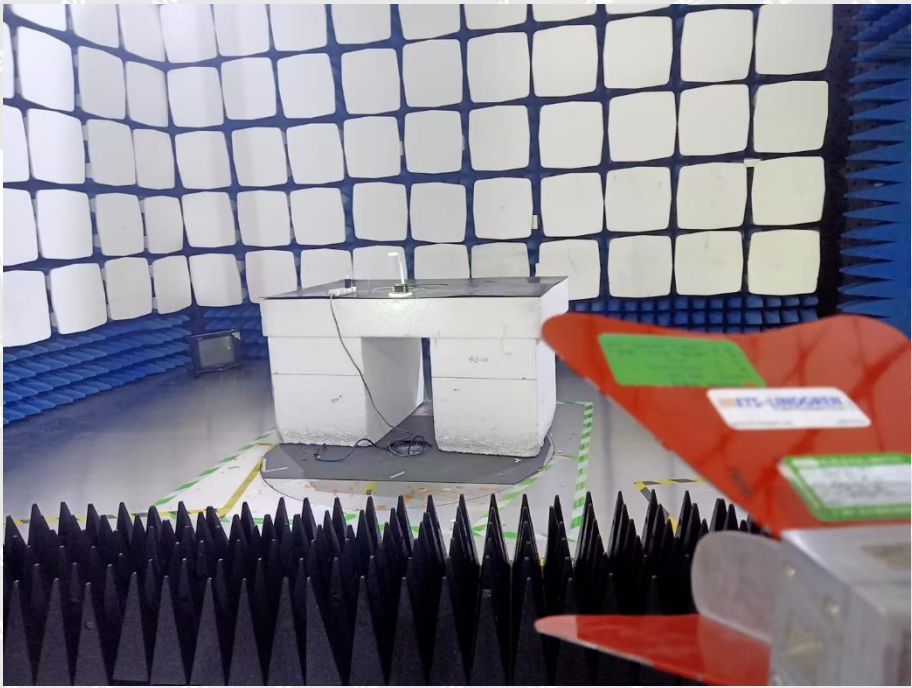




**Radiation Emission
Test View(30MHz to
1GHz)**



**Radiation Emission
Test Setup (Above
1GHz)**





Harmonic/Flicker Test
View

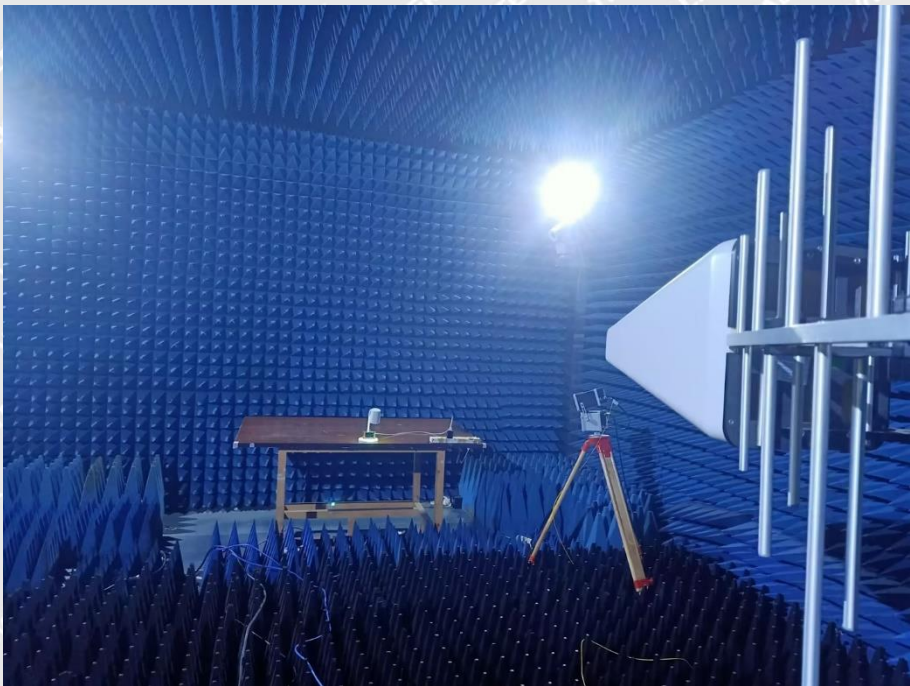


ESD Test View

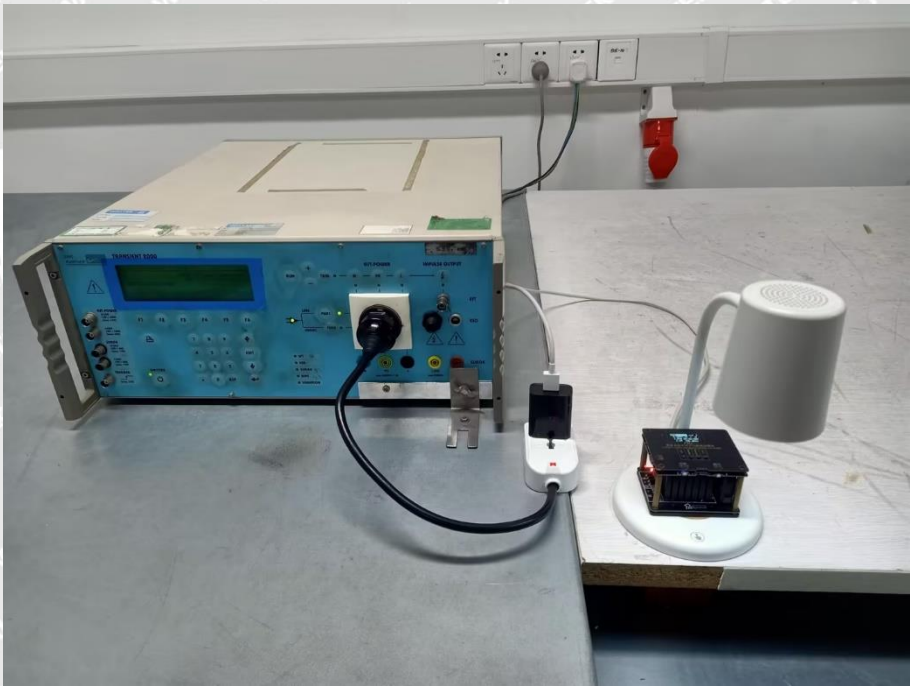




R/S Test View



EFT/ Surges/ Dips and Interruptions Test View

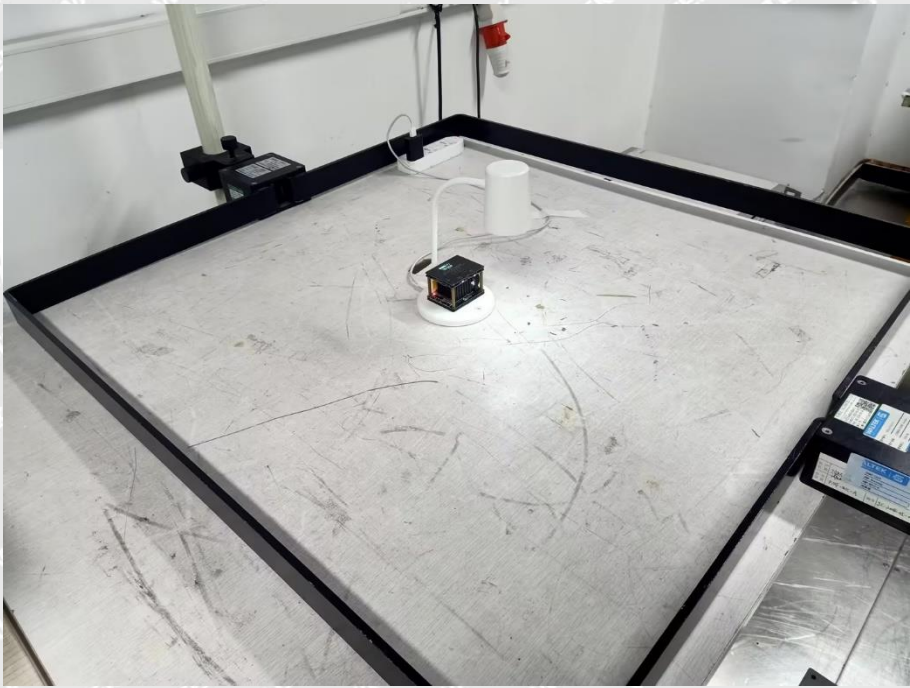




CS Test View



PFMF Test View



***** END OF REPORT *****