



中国认可
国际互认
检测
TESTING
CNAS L4062



TEST REPORT

Reference No. : WTF22X10200340W003
Manufacturer : Mid Ocean Brands B.V.
Address : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Factory : 114889
Product Name : Wireless PD 10000mAh PowerBank
Model No. : MO6844
Standards : ETSI EN 301 489-1 V2.2.3 (2019-11)
ETSI EN 301 489-3 V2.1.1 (2019-03)
Date of Receipt sample : 2022-10-09
Date of Test : 2022-10-09 to 2022-11-10
Date of Issue : 2022-11-10
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	2022-11-10	Original
/	/	/

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	Wireless PD 10000mAh PowerBank
Trade Name:	/
Model No.:	MO6844
Adding Model(s):	/
Rate Power:	Wireless Output: 10W Max
Battery capacity:	10000mAh
Software Version:	/
Hardware Version:	/
Note: The test data is gathered from a production sample, provided by the manufacturer.	

Technical Characteristics of EUT	
EN 303417	
Frequency Range:	105-205kHz
Radiated H-Field:	36.57dBuA/m(@3m)
Type of Antenna:	Coil Antenna
Note: The Antenna Gain is provided by the customer and can affect the validity of results.	



1.2 Test Standards

The tests were performed according to following standards:

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.

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.



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	Charging	Connect to the adapter; AC230V/50Hz for adapter
TM2	Wireless Charging& USB full load	Connect to the adapter; AC230V/50Hz for adapter; Wireless charging: output 5W& USB full load 5W
TM3	Wireless Charging& USB full load	Connect to the adapter; AC230V/50Hz for adapter; Wireless charging: output 10W& USB full load 10W
TM4	Wireless Charging	TT,CT for EMS testing

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
USB Cable	0.3	Unshielded	Without Ferrite

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

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
wireless charging tester	YBZ	YBZ wireless charging tester	/
Adapter	Xiaomi	MDY-08-ES	/



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 4.5.2), 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.



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	2022-03-22	2023-03-21
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2022-03-22	2023-03-21
Amplifier	Agilent	8447F	3113A06717	2022-01-07	2023-01-06
Loop Antenna	Schwarz beck	FMZB 1516	9773	2021-03-20	2023-03-19
Trilog Broadband Antenna	Schwarz beck	VULB9163	9163-333	2021-03-20	2023-03-19
☒ Chamber A: Above 1GHz					
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2022-03-22	2023-03-21
Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2022-03-22	2023-03-21
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2022-03-22	2023-03-21
Amplifier	C&D	PAP-1G18	2002	2022-03-22	2023-03-21
Horn Antenna	ETS	3117	00086197	2021-03-19	2023-03-18
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170582	2021-04-27	2023-04-26
Pre-amplifier	Schwarz beck	BBV 9721	9721-031	2022-03-25	2023-03-24
☐ Chamber B:Below 1GHz					
Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2021-04-09	2023-04-08
Amplifier	Agilent	8447D	2944A10179	2022-03-22	2023-03-21
EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2022-03-25	2023-03-24
☐ Chamber C:Below 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2022-01-07	2023-01-06
Trilog Broadband Antenna	Schwarz beck	VULB 9168	1194	2021-05-28	2023-05-27
Amplifier	HP	8447F	2944A03869	2022-03-22	2023-03-21
☒ Conducted Room 1#					
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2022-03-22	2023-03-21
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2022-03-25	2023-03-24
AC LISN	Schwarz beck	NSLK8126	8126-224	2022-03-22	2023-03-21
8-WIRE LISN	Schwarz beck	8158	CAT3-8158-0059	2022-03-22	2023-03-21
8-WIRE LISN	Schwarz beck	8158	CAT5-8158-0117	2022-03-22	2023-03-21
☐ Conducted Room 2#					
EMI Test Receiver	Rohde & Schwarz	ESPI	10129	2022-03-22	2023-03-21
LISN	Rohde & Schwarz	ENV 216	100097	2022-03-22	2023-03-21
EMF					
VDH Test Head	AFJ	VDH 30	SC022Z	2022-03-25	2023-03-24
3 Loop Antenna					
Loop Antenna	ZHINAN	ZN30401	19037	2021-04-26	2023-04-25



Clamp					
Clamp	Luthi	MDS21	3809	2022-03-28	2023-03-27
PFMF					
PMF Generator	LIONCEL	PMF-801C-C	0171101	2022-03-22	2023-03-21
PMF Antenna	LIONCEL	PMF-801C-A	0180302	2022-03-22	2023-03-21
Instantaneous PMF Generator Module	LIONCEL	PMF-801C-T	0171001	2022-03-22	2023-03-21
H/F					
Digital Power Analyzer	California Instrument	CTS	72831	2022-03-22	2023-03-21
Power Source	California Instrument	5001IX-CTS-400	25965	2022-03-22	2023-03-21
ESD					
ESD Generator	LIONCEL	ESD-203B	0170901	2022-03-28	2023-03-27
EFT/SURGE/DIPS					
Transient 2000	EMC PARTNER	TRA2000	863	2022-03-22	2023-03-21
Couple Clamp	EMC PARTNER	CN-EFT1000	513	2022-03-22	2023-03-21
CS					
CONDUCTED IMMUNITY TEST SYSTEM	FRANKONIA	CIT-10/75	126B1247/2013	2022-01-07	2023-01-06
Attenuator	EMTEST	MA-5100/6BF2	1009	2022-03-22	2023-03-21
CDN	Luthi	L-801M2/M3	2665	2022-03-22	2023-03-21
CDN	LIONCEL	CDN-T8	0210401	2022-03-25	2023-03-24
EM Clamp	TESEQ	KEMZ801A	45028	2022-03-25	2023-03-24
RS					
Signal Generator	HP	8688B	3438A00604	2022-03-22	2023-03-21
Power Meter	KEITHLEY	3500	1162591	2022-03-22	2023-03-21
Power Meter	KEITHLEY	3500	1121428	2022-03-22	2023-03-21
RF Power Amplifier	MicoTop	MPA-80-1000-250	MPA1906239	2022-03-22	2023-03-21
RF Power Amplifier	MicoTop	MPA-80-6000-100	MPA1906238	2022-03-22	2023-03-21
Antenna	SCHWARZBECK	STLP 9129	9129 114	N/A	N/A
Power Meter	Agilent	E4419B	GB42420578	2022-03-22	2023-03-21



Software List			
Description	Manufacturer	Model	Version
EMI Test Software (Radiated Emission)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission)*	Farad	EZ-EMC	RA-03A1

*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.			

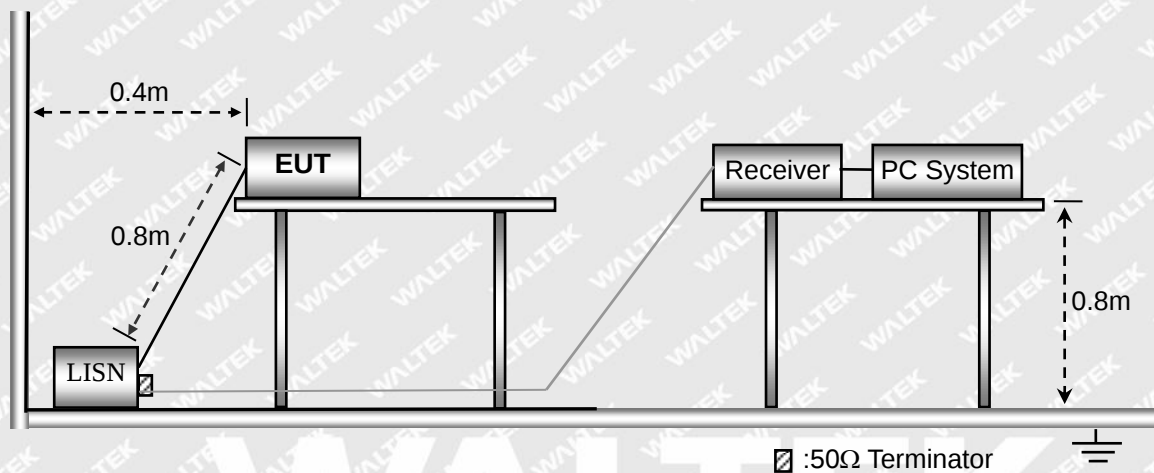


3. Conducted Emissions

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 Basic Test Setup Block Diagram



3.3 Environmental Conditions

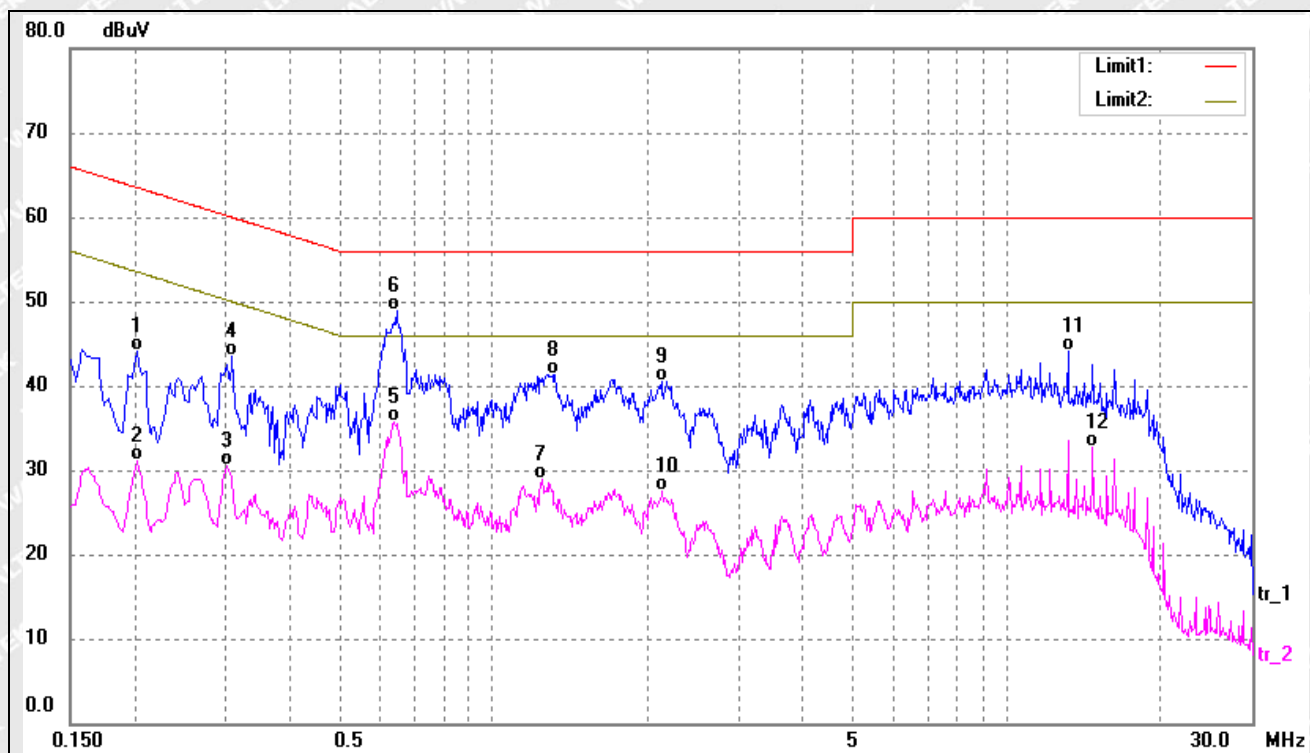
Temperature:	23.5 ° C
Relative Humidity:	54 %
ATM Pressure:	1015 mbar

3.4 Conducted Emissions Test Data

Note: Only show the worst case in the test report.



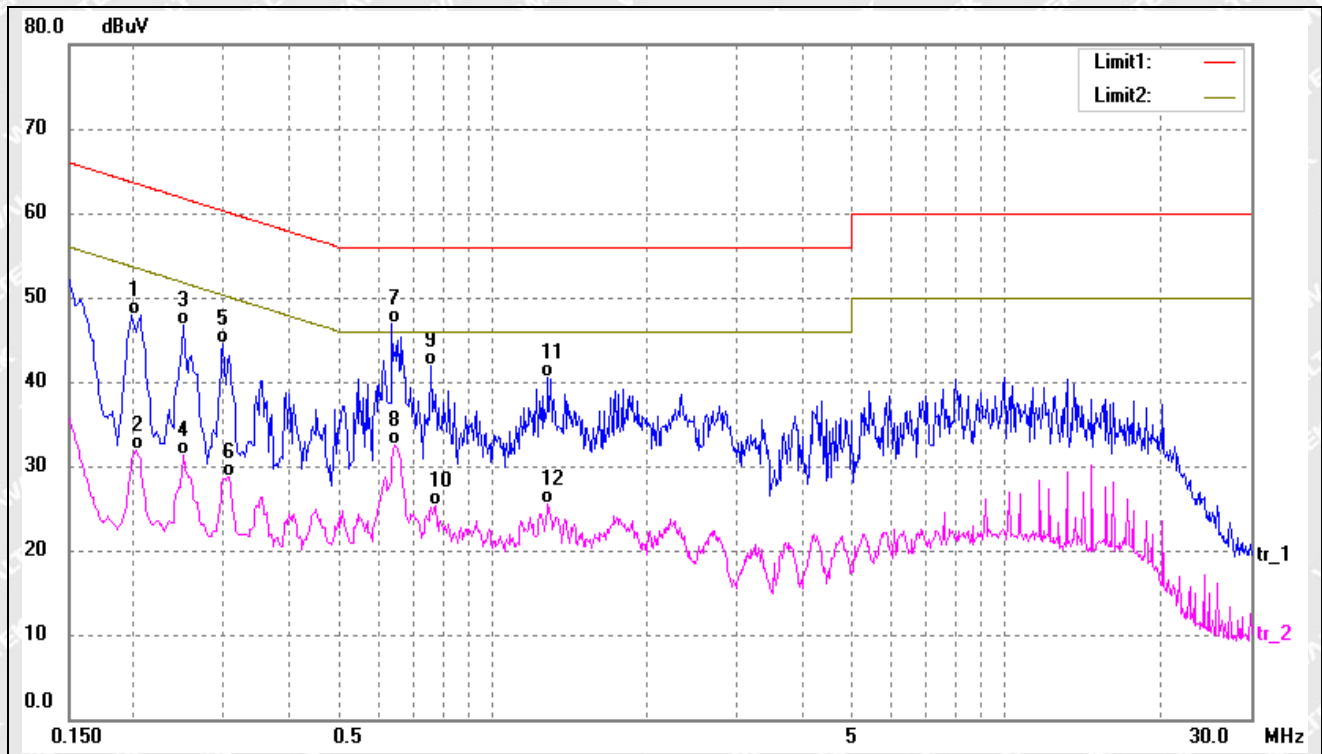
Test mode:	TM1	Polarity:	Neutral
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2020	33.77	10.30	44.07	63.53	-19.46	QP
2	0.2020	20.79	10.30	31.09	53.53	-22.44	AVG
3	0.3020	20.31	10.24	30.55	50.19	-19.64	AVG
4	0.3100	33.35	10.24	43.59	59.97	-16.38	QP
5	0.6420	25.50	10.20	35.70	46.00	-10.30	AVG
6*	0.6500	38.75	10.20	48.95	56.00	-7.05	QP
7	1.2460	18.70	10.16	28.86	46.00	-17.14	AVG
8	1.3220	31.21	10.17	41.38	56.00	-14.62	QP
9	2.1300	30.32	10.25	40.57	56.00	-15.43	QP
10	2.1380	17.33	10.25	27.58	46.00	-18.42	AVG
11	13.1540	33.75	10.28	44.03	60.00	-15.97	QP
12	14.6780	22.44	10.25	32.69	50.00	-17.31	AVG



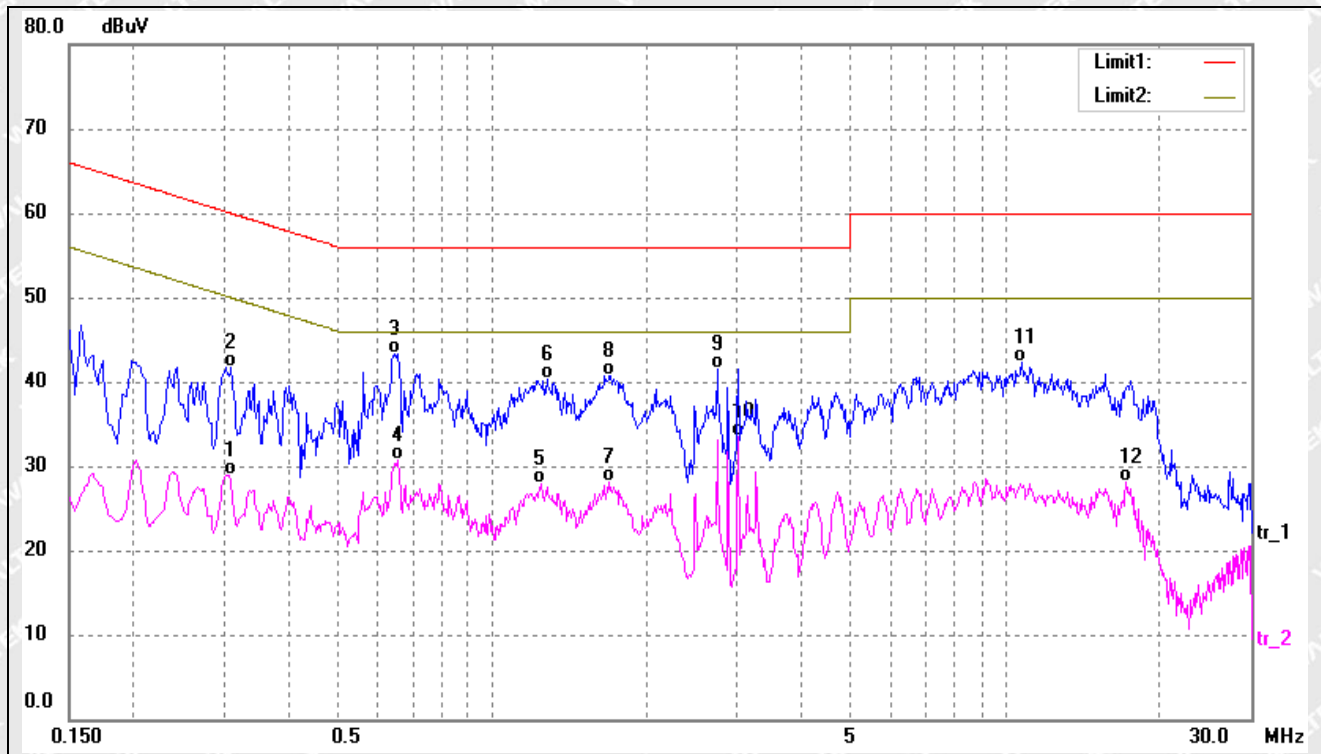
Test mode:	TM1	Polarity:	Line
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1980	37.65	10.30	47.95	63.69	-15.74	QP
2	0.2020	21.63	10.30	31.93	53.53	-21.60	AVG
3	0.2500	36.47	10.26	46.73	61.76	-15.03	QP
4	0.2500	21.02	10.26	31.28	51.76	-20.48	AVG
5	0.2980	34.21	10.24	44.45	60.30	-15.85	QP
6	0.3060	18.47	10.24	28.71	50.08	-21.37	AVG
7*	0.6380	36.68	10.20	46.88	56.00	-9.12	QP
8	0.6460	22.36	10.20	32.56	46.00	-13.44	AVG
9	0.7620	31.73	10.17	41.90	56.00	-14.10	QP
10	0.7780	15.07	10.17	25.24	46.00	-20.76	AVG
11	1.2860	30.25	10.17	40.42	56.00	-15.58	QP
12	1.2860	15.28	10.17	25.45	46.00	-20.55	AVG



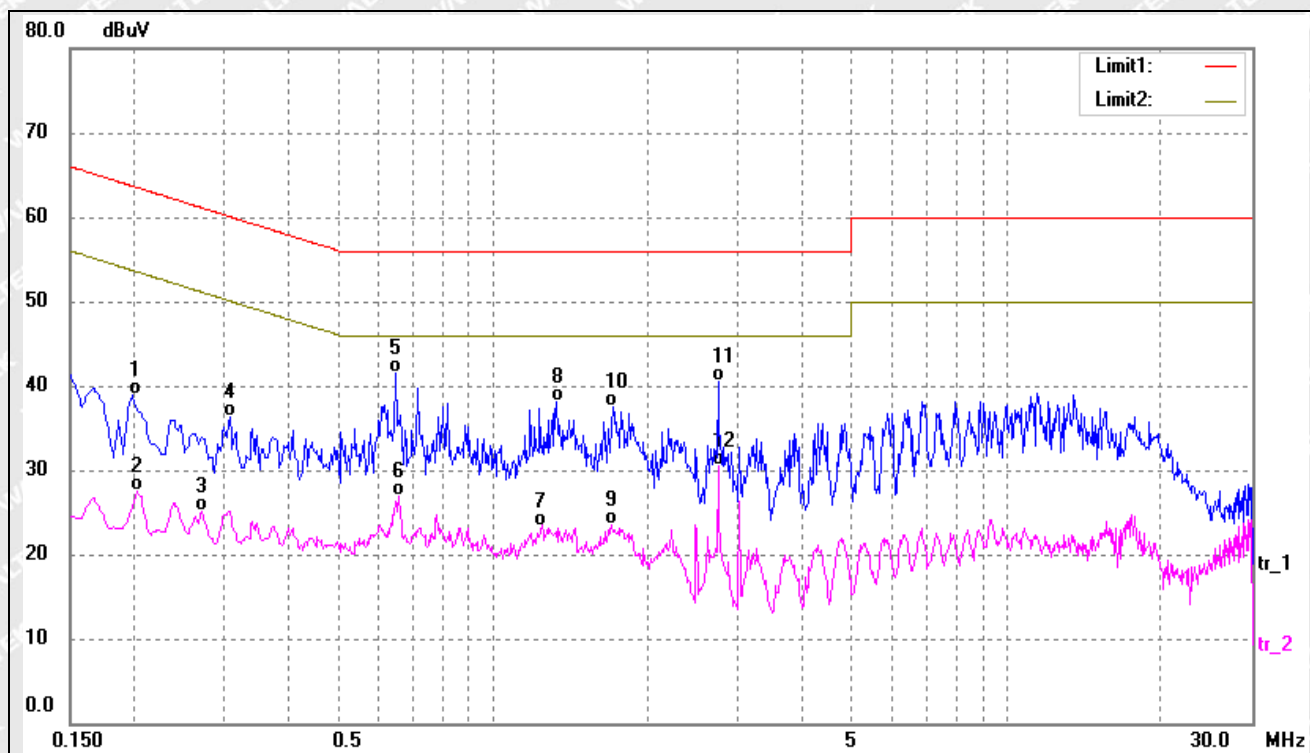
Test mode:	TM2	Polarity:	Neutral
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.3060	18.67	10.24	28.91	50.08	-21.17	AVG
2	0.3100	31.40	10.24	41.64	59.97	-18.33	QP
3	0.6460	33.05	10.20	43.25	56.00	-12.75	QP
4	0.6540	20.56	10.20	30.76	46.00	-15.24	AVG
5	1.2460	17.66	10.16	27.82	46.00	-18.18	AVG
6	1.2780	30.19	10.17	40.36	56.00	-15.64	QP
7	1.6900	17.89	10.22	28.11	46.00	-17.89	AVG
8	1.7020	30.47	10.22	40.69	56.00	-15.31	QP
9	2.7500	31.26	10.27	41.53	56.00	-14.47	QP
10*	3.0100	23.20	10.28	33.48	46.00	-12.52	AVG
11	10.7700	31.98	10.33	42.31	60.00	-17.69	QP
12	17.1540	17.74	10.29	28.03	50.00	-21.97	AVG



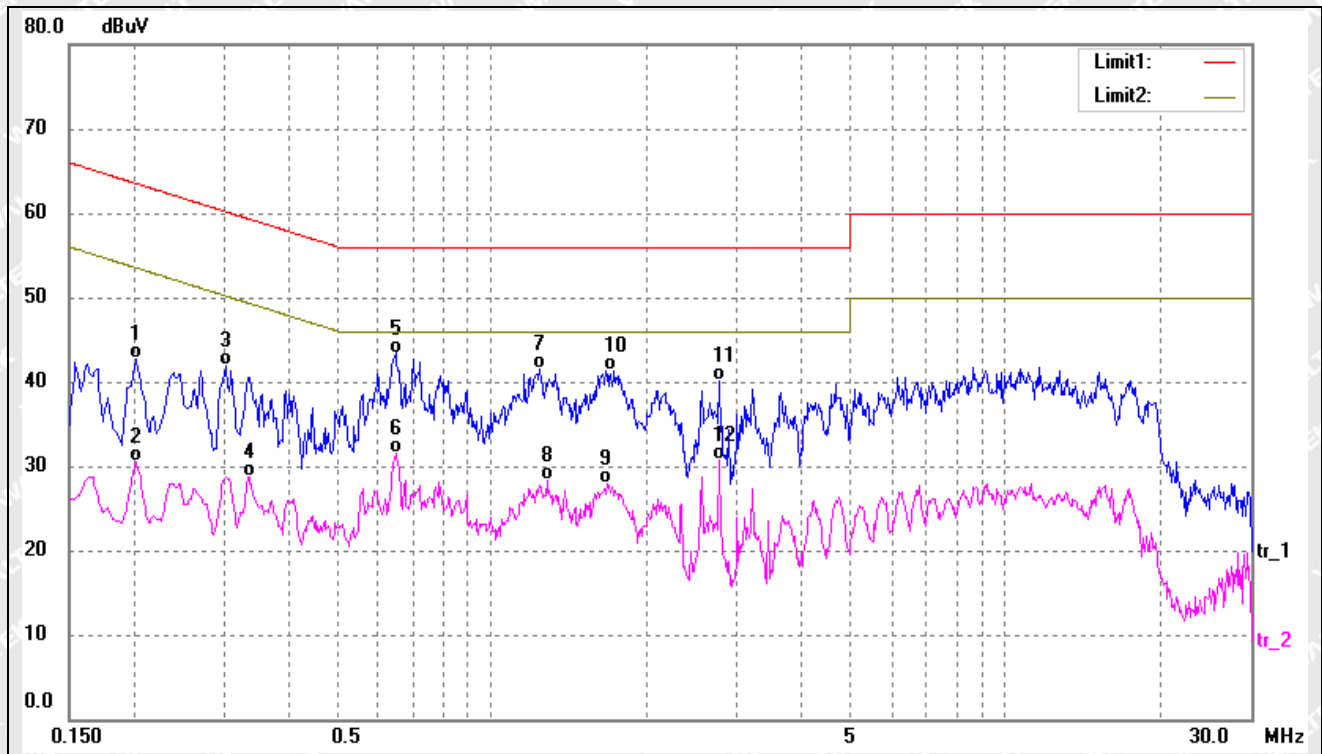
Test mode:	TM2	Polarity:	Line
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1980	28.51	10.30	38.81	63.69	-24.88	QP
2	0.2020	17.13	10.30	27.43	53.53	-26.10	AVG
3	0.2700	14.94	10.25	25.19	51.12	-25.93	AVG
4	0.3060	26.12	10.24	36.36	60.08	-23.72	QP
5*	0.6460	31.32	10.20	41.52	56.00	-14.48	QP
6	0.6540	16.63	10.20	26.83	46.00	-19.17	AVG
7	1.2460	13.24	10.16	23.40	46.00	-22.60	AVG
8	1.3300	27.89	10.17	38.06	56.00	-17.94	QP
9	1.7020	13.27	10.22	23.49	46.00	-22.51	AVG
10	1.7100	27.30	10.22	37.52	56.00	-18.48	QP
11	2.7500	30.32	10.27	40.59	56.00	-15.41	QP
12	2.7500	20.26	10.27	30.53	46.00	-15.47	AVG



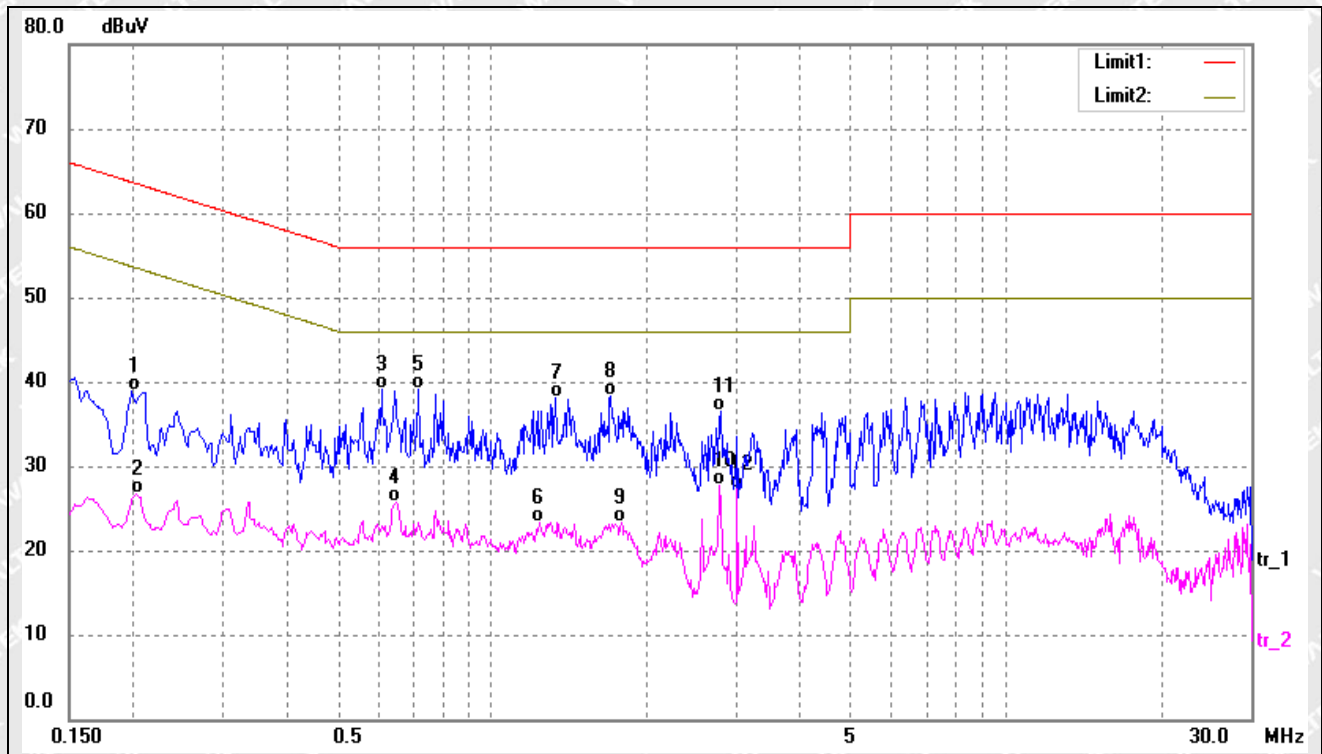
Test mode:	TM3	Polarity:	Neutral
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2020	32.50	10.30	42.80	63.53	-20.73	QP
2	0.2020	20.22	10.30	30.52	53.53	-23.01	AVG
3	0.3020	31.59	10.24	41.83	60.19	-18.36	QP
4	0.3340	18.51	10.24	28.75	49.35	-20.60	AVG
5*	0.6500	33.20	10.20	43.40	56.00	-12.60	QP
6	0.6500	21.34	10.20	31.54	46.00	-14.46	AVG
7	1.2420	31.42	10.16	41.58	56.00	-14.42	QP
8	1.2820	18.05	10.17	28.22	46.00	-17.78	AVG
9	1.6780	17.60	10.22	27.82	46.00	-18.18	AVG
10	1.7300	31.02	10.22	41.24	56.00	-14.76	QP
11	2.7780	29.77	10.27	40.04	56.00	-15.96	QP
12	2.7780	20.42	10.27	30.69	46.00	-15.31	AVG



Test mode:	TM3	Polarity:	Line
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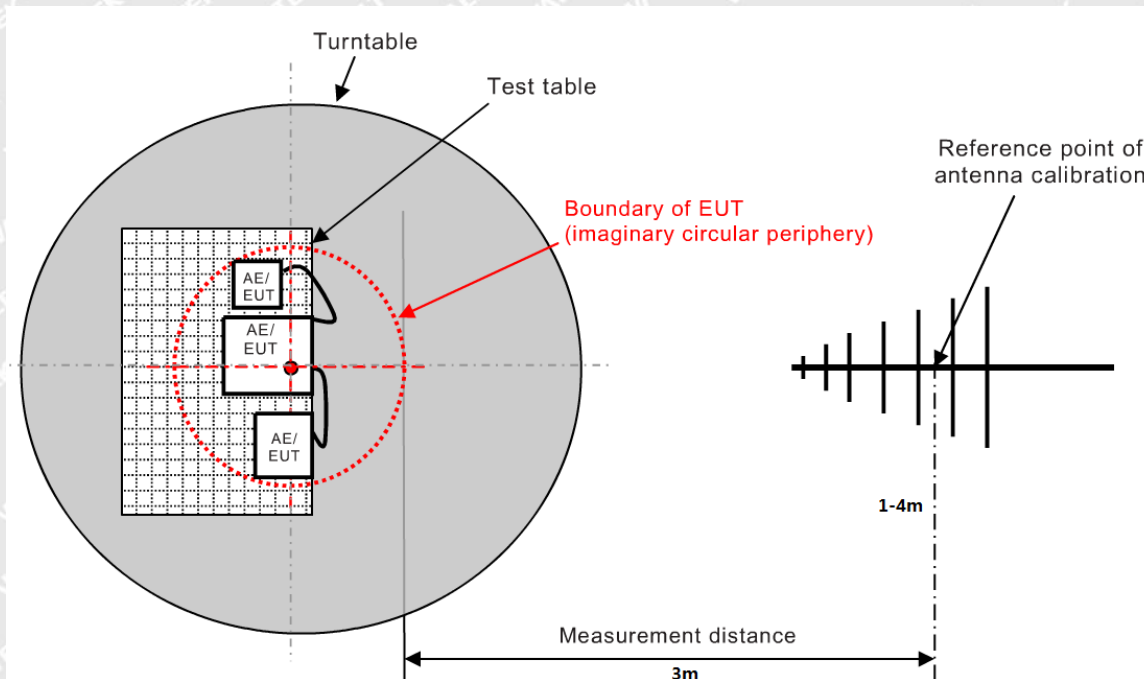
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1980	28.64	10.30	38.94	63.69	-24.75	QP
2	0.2020	16.41	10.30	26.71	53.53	-26.82	AVG
3	0.6100	28.84	10.21	39.05	56.00	-16.95	QP
4	0.6500	15.55	10.20	25.75	46.00	-20.25	AVG
5*	0.7180	28.95	10.19	39.14	56.00	-16.86	QP
6	1.2420	13.18	10.16	23.34	46.00	-22.66	AVG
7	1.3260	27.85	10.17	38.02	56.00	-17.98	QP
8	1.7060	28.03	10.22	38.25	56.00	-17.75	QP
9	1.7860	13.06	10.23	23.29	46.00	-22.71	AVG
10	2.7780	17.35	10.27	27.62	46.00	-18.38	AVG
11	2.7820	26.22	10.27	36.49	56.00	-19.51	QP
12	3.0020	16.96	10.28	27.24	46.00	-18.76	AVG



4. Radiated Emissions

4.2 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 $-6\text{dB}\mu\text{V}$ means the emission is $6\text{dB}\mu\text{V}$ 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

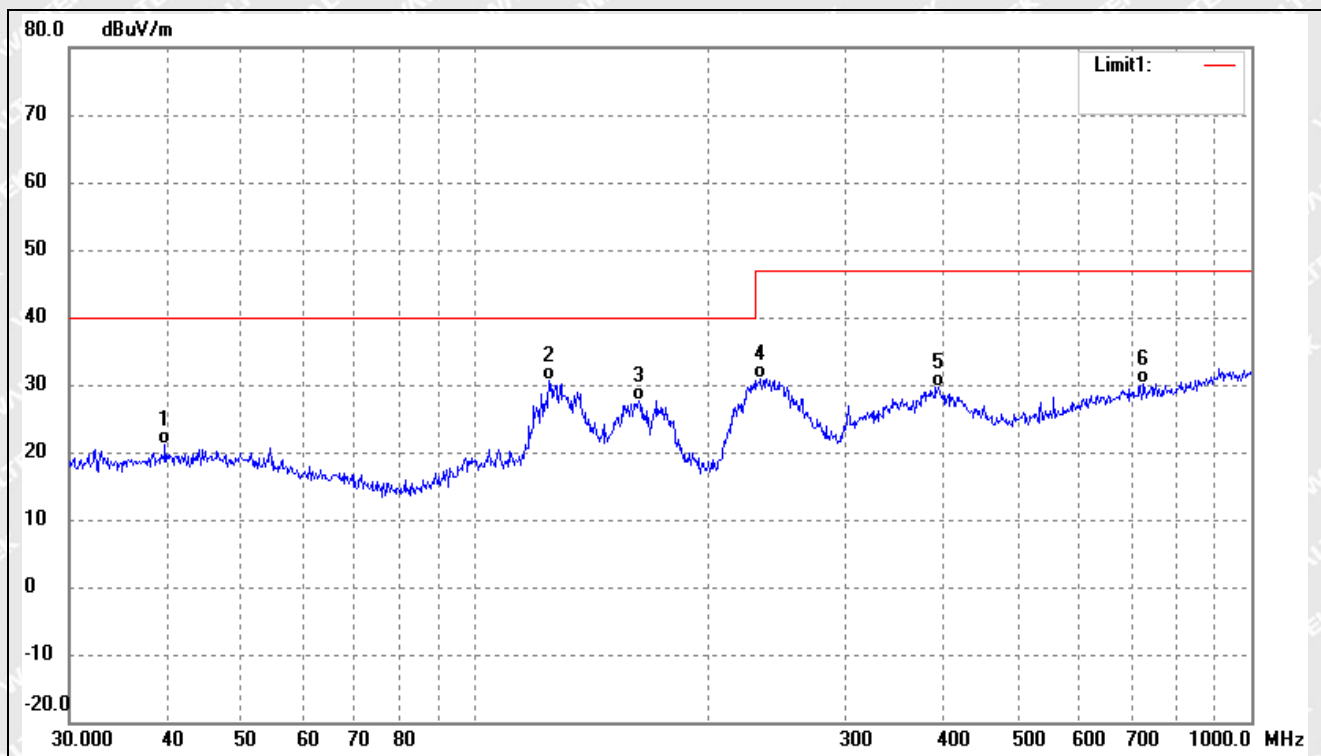
Temperature:	22.5° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

4.4 Summary of Test Results/Plots

Note: Only show the worst case in the test report

➤ 30MHz to 1GHz

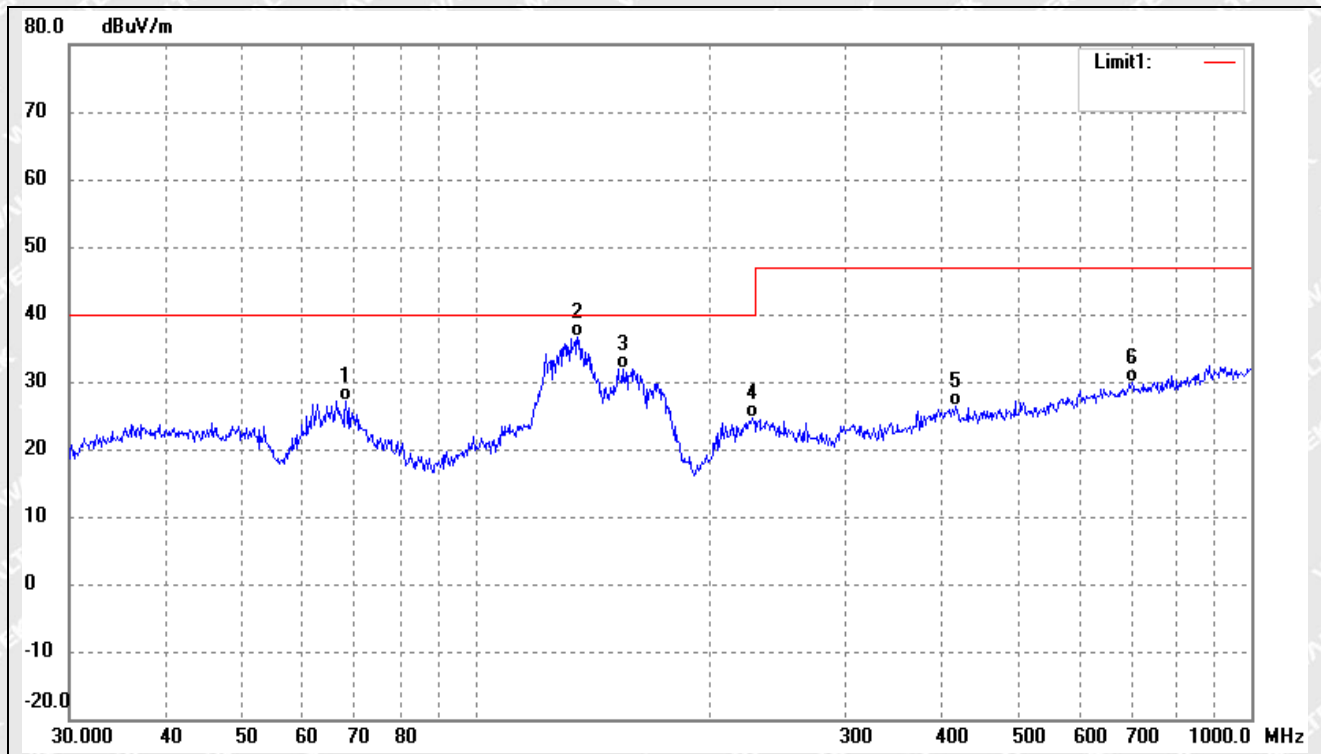
Test mode:	TM1	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	39.8542	28.32	-7.14	21.18	40.00	-18.82	-	-	QP
2	124.5690	40.16	-9.64	30.52	40.00	-9.48	-	-	QP
3	162.6106	38.76	-11.03	27.73	40.00	-12.27	-	-	QP
4	233.3487	38.21	-7.27	30.94	47.00	-16.06	-	-	QP
5	394.8545	33.07	-3.39	29.68	47.00	-17.32	-	-	QP
6	726.8052	28.55	1.61	30.16	47.00	-16.84	-	-	QP



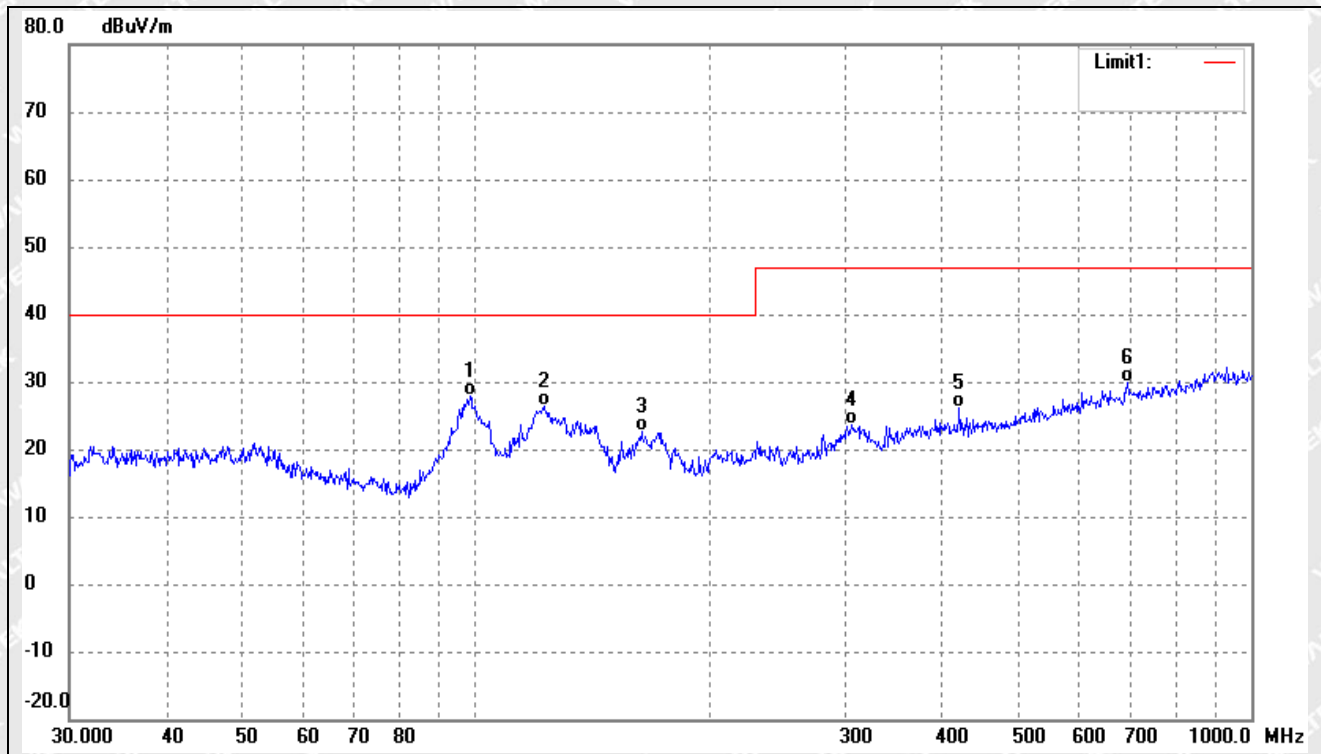
Test mode:	TM1	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	68.1514	37.87	-10.70	27.17	40.00	-12.83	-	-	QP
2	135.5062	47.71	-11.04	36.67	40.00	-3.33	-	-	QP
3	154.8205	43.42	-11.43	31.99	40.00	-8.01	-	-	QP
4	227.6906	32.15	-7.47	24.68	40.00	-15.32	-	-	QP
5	416.1791	29.51	-3.14	26.37	47.00	-20.63	-	-	QP
6	701.7610	28.57	1.38	29.95	47.00	-17.05	-	-	QP



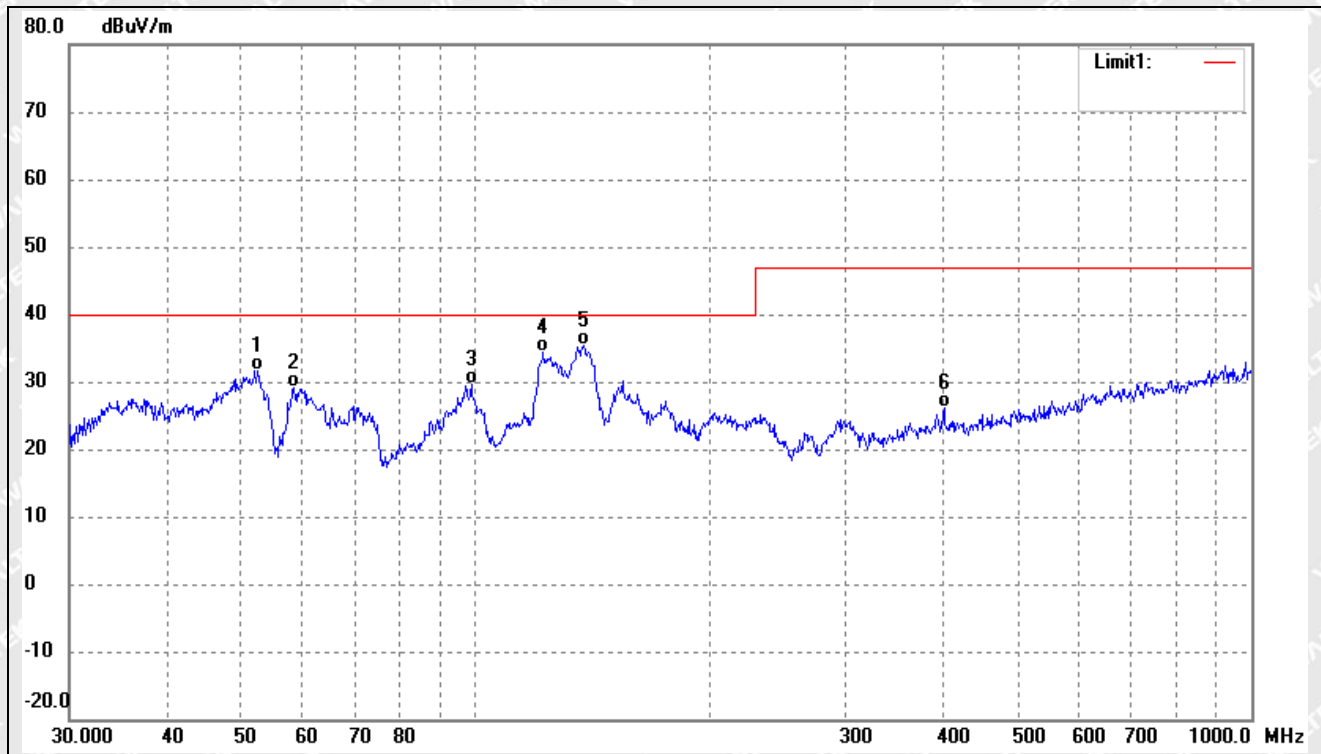
Test mode:	TM2	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	98.4866	36.35	-8.48	27.87	40.00	-12.13	-	-	QP
2	122.8340	35.76	-9.33	26.43	40.00	-13.57	-	-	QP
3	163.7550	33.55	-10.97	22.58	40.00	-17.42	-	-	QP
4	305.6800	28.48	-4.92	23.56	47.00	-23.44	-	-	QP
5	420.5803	29.15	-3.08	26.07	47.00	-20.93	-	-	QP
6	691.9867	28.55	1.24	29.79	47.00	-17.21	-	-	QP



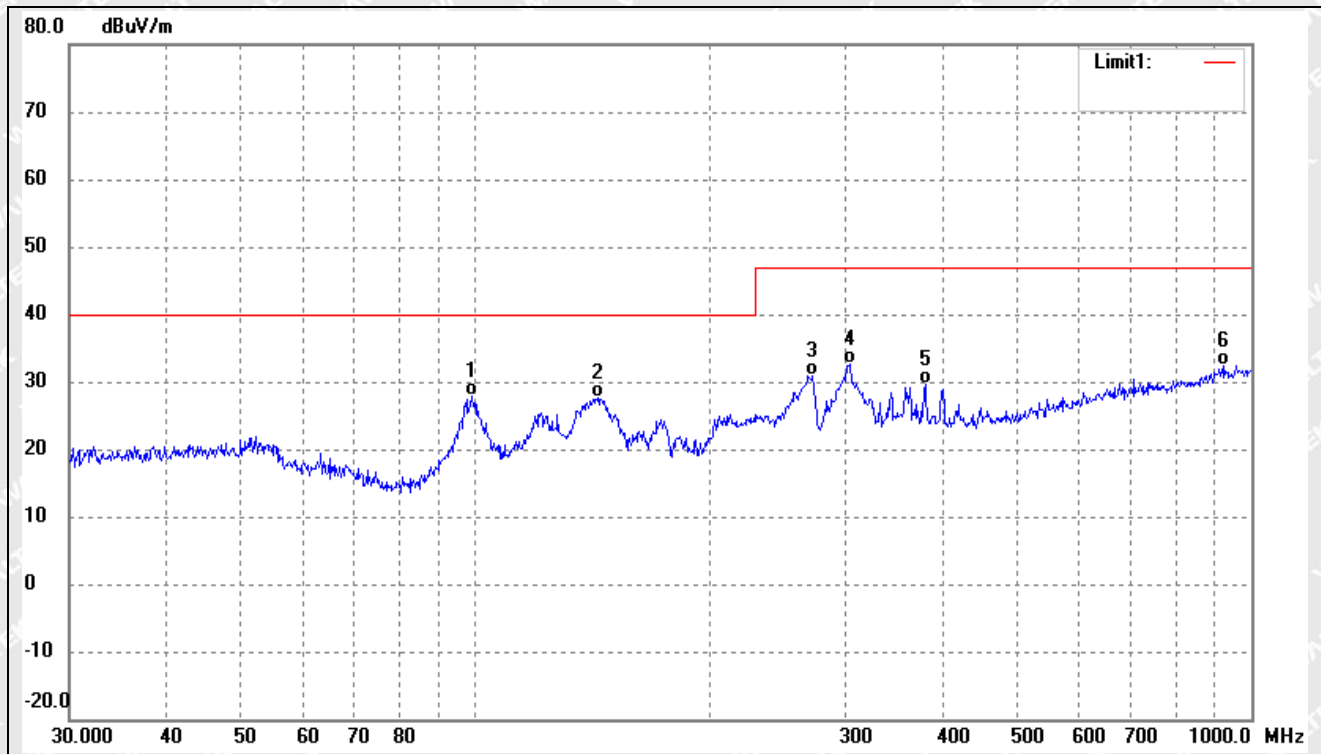
Test mode:	TM2	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	52.3913	39.47	-7.74	31.73	40.00	-8.27	-	-	QP
2	58.4074	37.95	-8.78	29.17	40.00	-10.83	-	-	QP
3	98.8326	38.03	-8.38	29.65	40.00	-10.35	-	-	QP
4	122.4040	43.64	-9.25	34.39	40.00	-5.61	-	-	QP
5	137.9029	46.59	-11.22	35.37	40.00	-4.63	-	-	QP
6	401.8385	29.41	-3.28	26.13	47.00	-20.87	-	-	QP



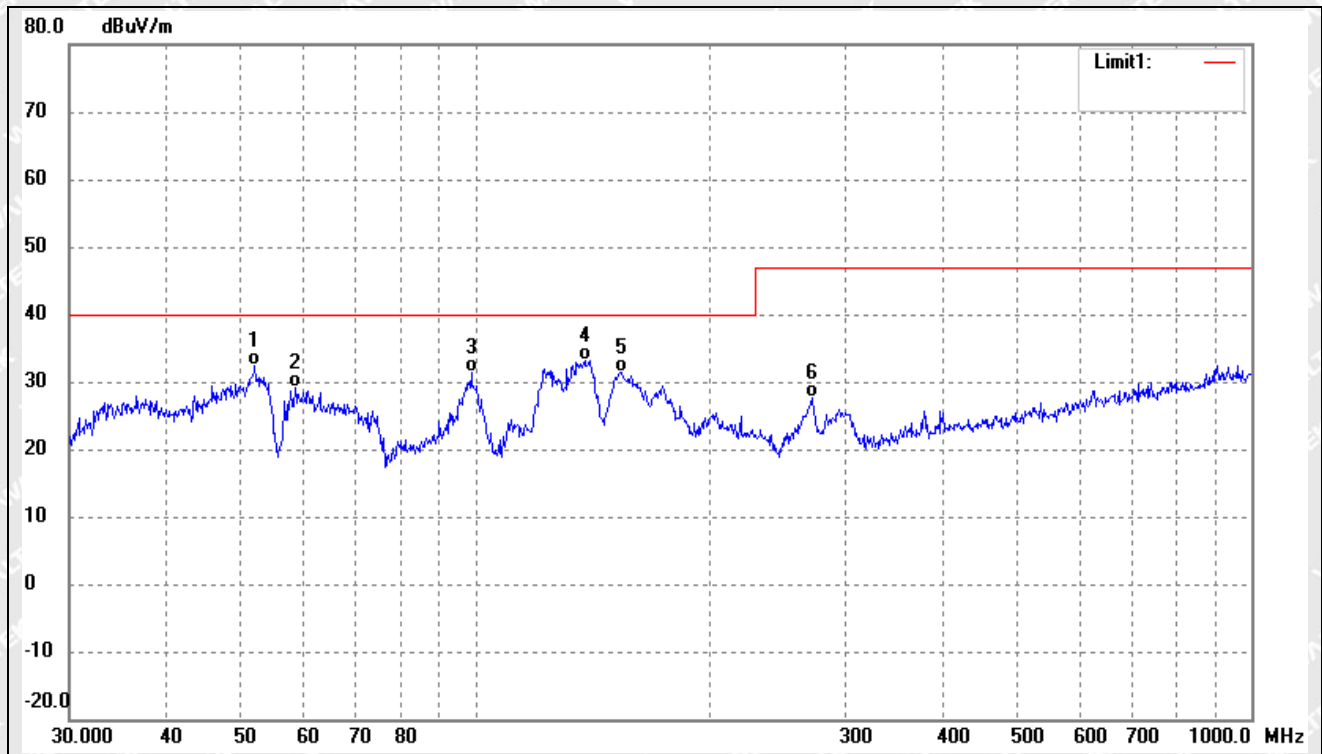
Test mode:	TM3	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	99.1797	36.15	-8.29	27.86	40.00	-12.14	-	-	QP
2	143.8295	39.24	-11.49	27.75	40.00	-12.25	-	-	QP
3	272.2776	36.87	-5.95	30.92	47.00	-16.08	-	-	QP
4	304.6100	37.61	-4.94	32.67	47.00	-14.33	-	-	QP
5	379.9141	33.32	-3.64	29.68	47.00	-17.32	-	-	QP
6	922.5157	28.40	4.06	32.46	47.00	-14.54	-	-	QP



Test mode:	TM3	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	52.0251	40.13	-7.67	32.46	40.00	-7.54	-	-	QP
2	58.6126	38.01	-8.81	29.20	40.00	-10.80	-	-	QP
3	98.8326	39.67	-8.38	31.29	40.00	-8.71	-	-	QP
4	138.3873	44.48	-11.26	33.22	40.00	-6.78	-	-	QP
5	154.2786	42.88	-11.45	31.43	40.00	-8.57	-	-	QP
6	271.3246	33.60	-5.98	27.62	47.00	-19.38	-	-	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.

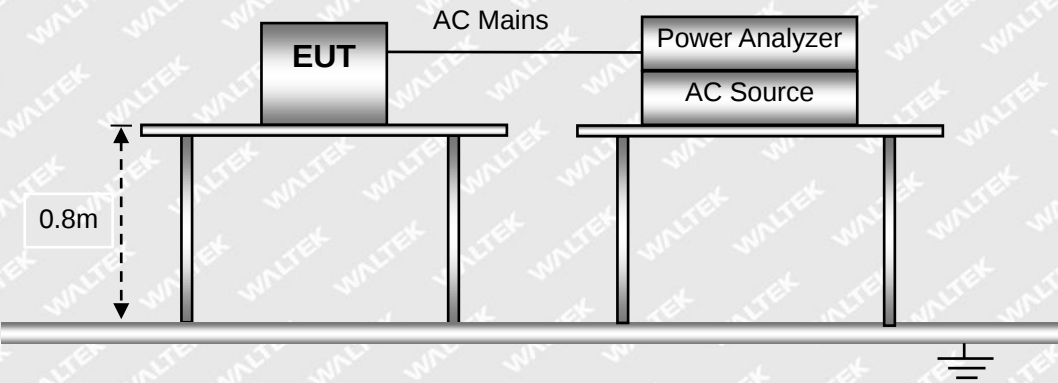


5. Harmonic Current Emissions

5.1 Test Procedure

Test is conducting under the description of EN 61000-3-2.

5.2 Test Setup Block Diagram



5.3 Test Standards

EN61000-3-2, Clause 7.1 Limits for Class A equipment.

5.4 Environmental Conditions

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

5.5 Harmonic Current Emissions Test Data



Harmonics – Class-A

Test category: Class-A (European limits)

Test Margin: 100

Test date: 2022/11/3

Start time: 16:37:02

End time: 16:39:43

Test duration (min): 2.5

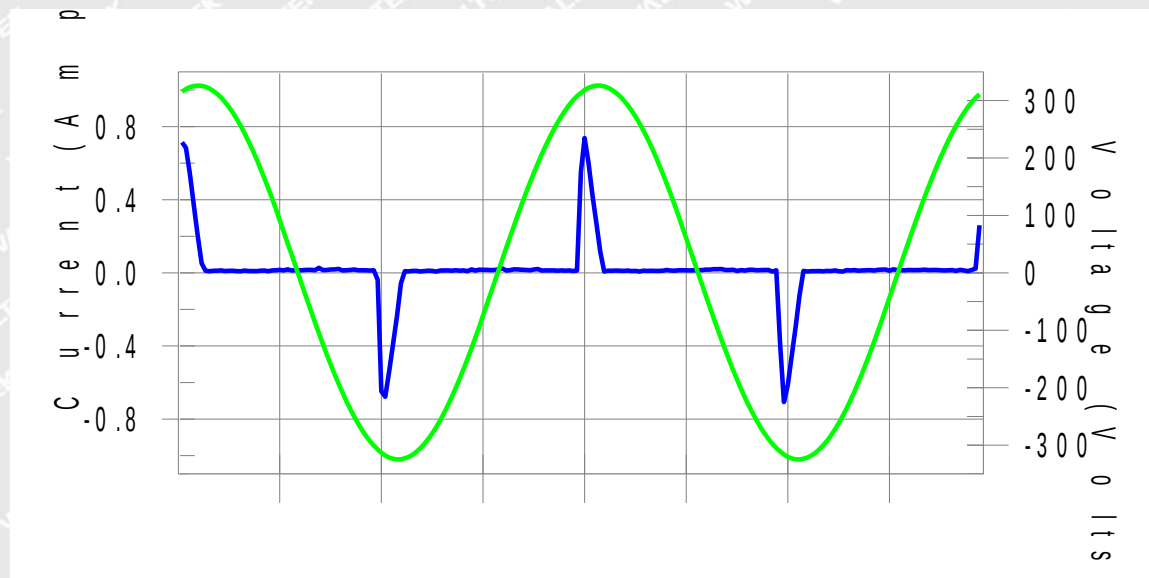
Data file name: H-000625.cts_data

Comment: TM1

Test Result: Pass

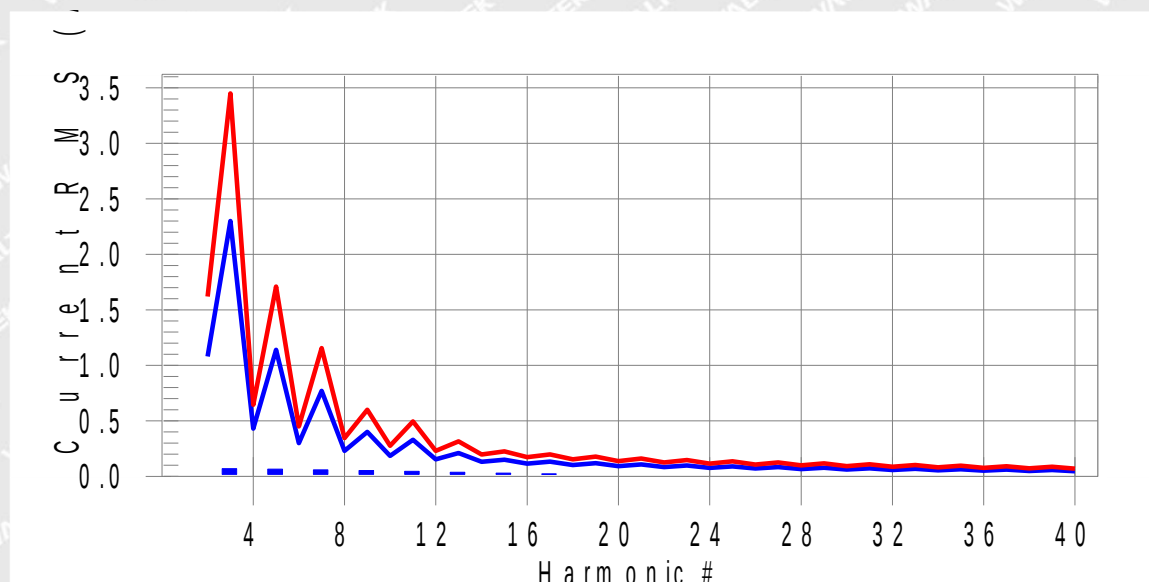
Source qualification: Normal

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: Class-A (European limits)

Test Margin: 100

Test date: 2022/11/3

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.: WTF22X10200340W003

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: 2022/11/3

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.: WTF22X10200340W003

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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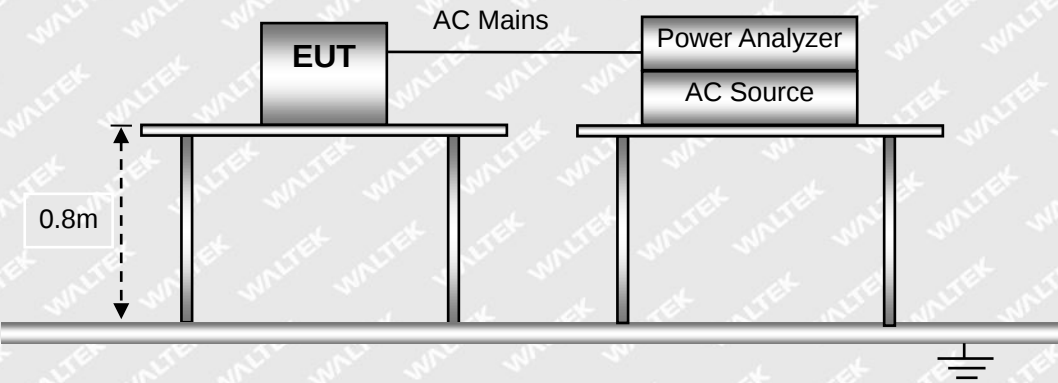


6. Voltage Fluctuation and Flicker

6.1 Test Procedure

Test is conducting under the description of EN 61000-3-3.

6.2 Test Setup Block Diagram



6.3 Test Standards

EN61000-3-3, Limit: Clause 5.

6.4 Environmental Conditions

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

6.5 Voltage Fluctuation and Flicker Test Data

Result: The EUT is compliance with the requirements of this section.



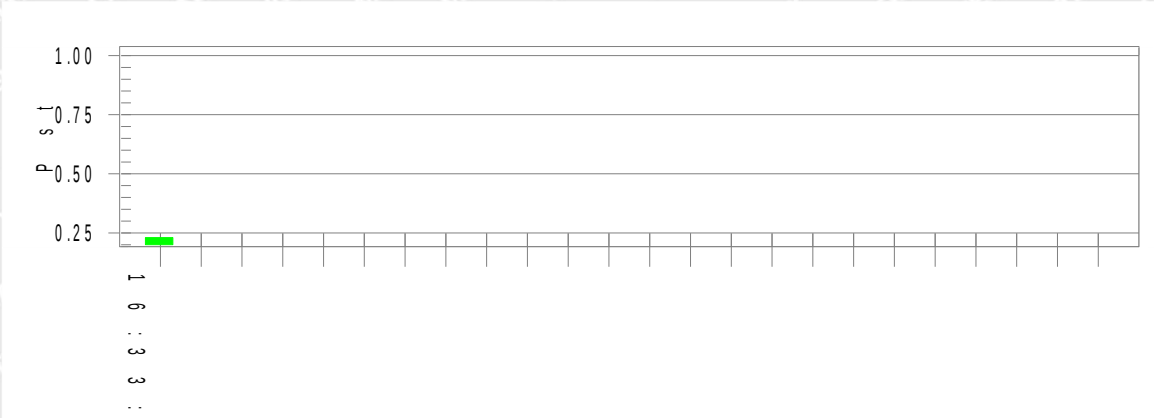
Test mode:	TM1
------------	-----

Test Result: Pass

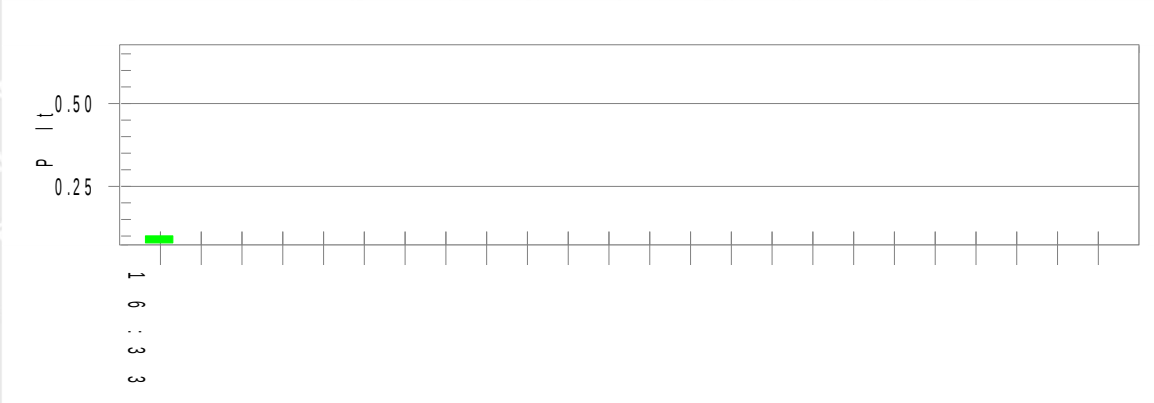
Status: Test Completed

Pst and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	231.43		
Highest dt (%):		Test limit (%):	
T-max (mS):	0	Test limit (mS):	500.0 Pass
Highest dc (%):	0.00	Test limit (%):	3.30 Pass
Highest dmax (%):	0.00	Test limit (%):	4.00 Pass
Highest Pst (10 min. period):	0.230	Test limit:	1.000 Pass
Highest Plt (2 hr. period):	0.101	Test limit:	0.650 Pass

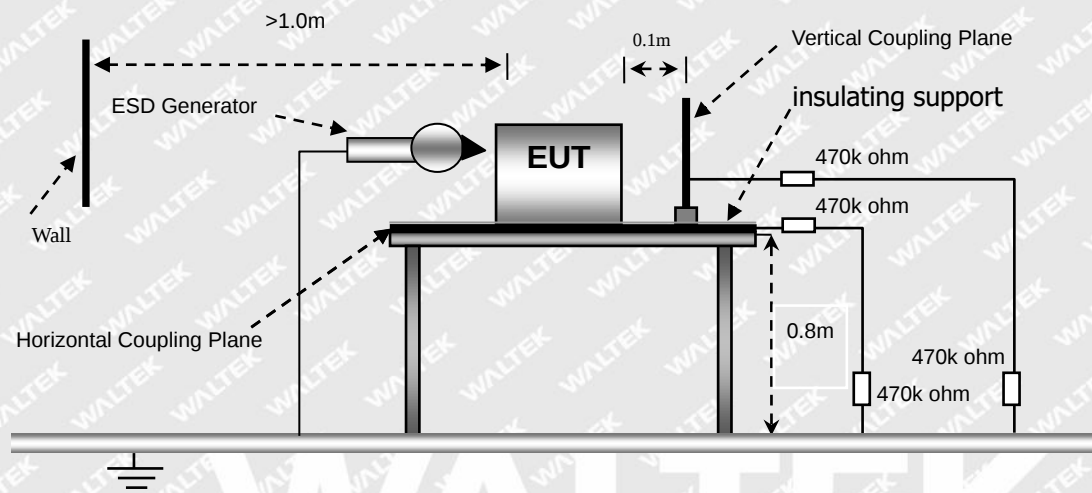


7. Electrostatic Discharge (ESD)

7.1 Test Procedure

Test is conducting under the description of EN 61000-4-2.

7.2 Test Setup Block Diagram



7.3 Test Performance

Performance Criterion:	Mode	Verdict
	TM1-TM4	B
Note: TM4 for TT,TR		

7.4 Environmental Conditions

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

7.5 Electrostatic Discharge Immunity Test Data



Test mode	TM1-TM4							
EN 61000-4-2 Test Points	Test Levels (kV)							
	-2	+2	-4	+4	-6	+6	-8	+8
Air Discharge								
USB Port	B	B	B	B	B	B	B	B
Gap	B	B	B	B	B	B	B	B
Enclosure	B	B	B	B	B	B	B	B
Direct Contact Discharge								
USB Port	B	B	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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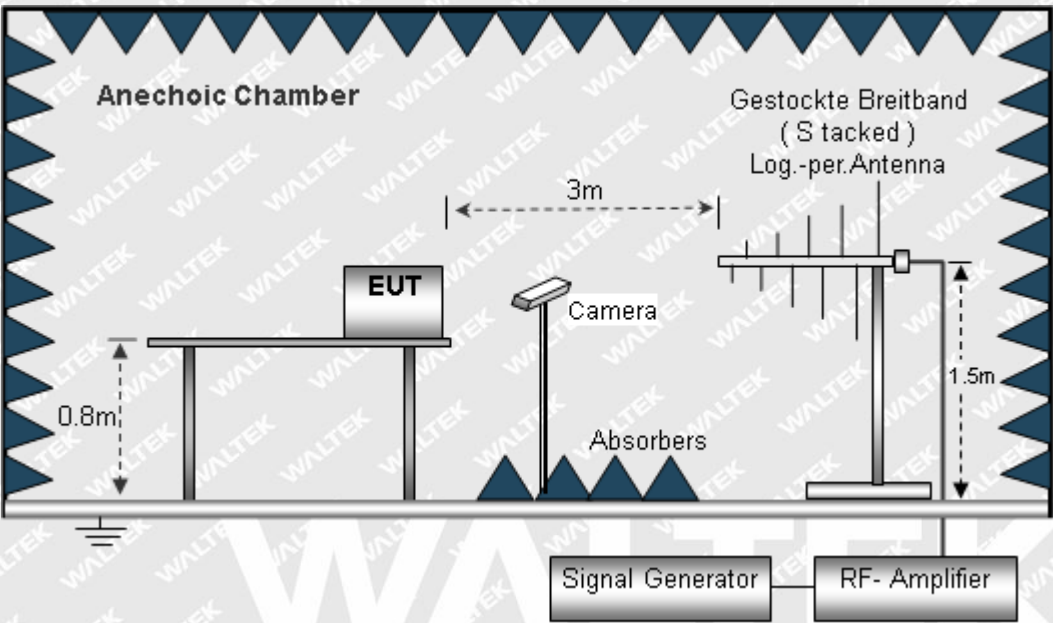


8. Radio Frequency Electromagnetic Field (R/S)

8.1 Test Procedure

Test is conducting under the description of EN 61000-4-3.

8.2 Test Setup Block Diagram



8.3 Test Performance

Performance Criterion:	Mode	Verdict
	TM1-TM4	A
Note: TM4 for CT,CR		

8.4 Environmental Conditions

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

8.5 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-TM4							
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

WALTEK



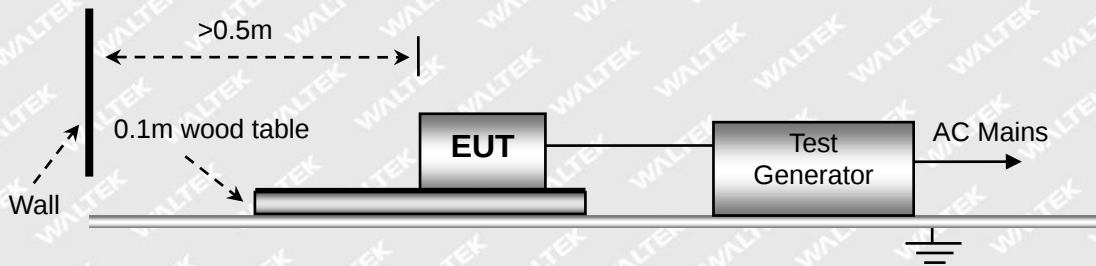
9. Fast Transients, Common Mode (EFT)

9.1 Test Procedure

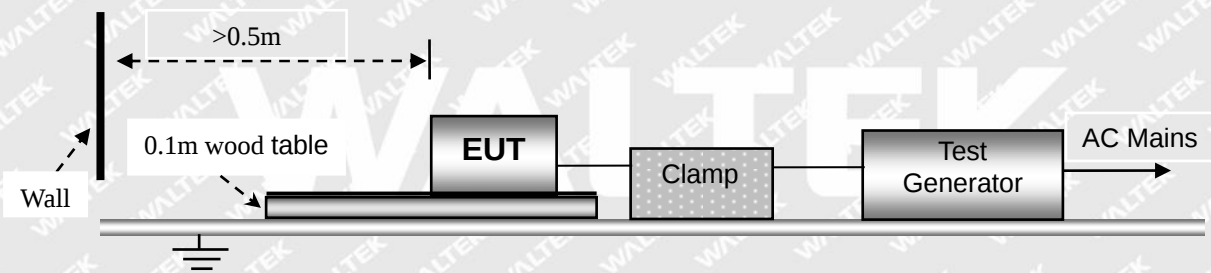
Test is conducting under the description of EN 61000-4-4.

9.2 Test Setup Block Diagram

For AC Mains or DC Ports:



For Signal or Telecommunication Ports:



9.3 Test Performance

Performance Criterion:	Mode	Verdict
	TM1-TM4	
Note: TM4 for TT,TR		

9.4 Environmental Conditions

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

9.5 Electrical Fast Transients Test Data



Test Mode		TM1-TM4							
EN 61000-4-4 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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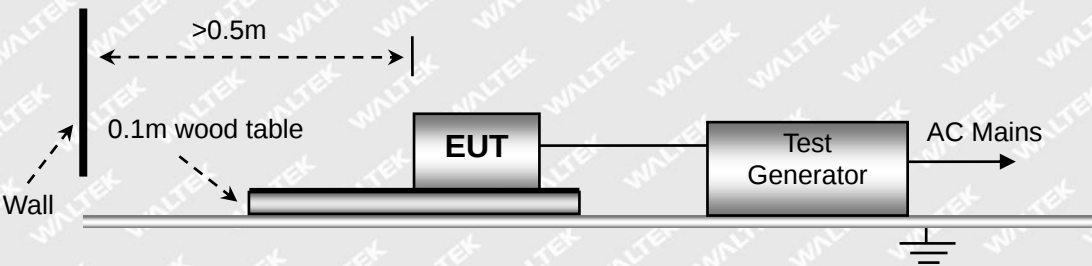
10. Surges

10.1 Test Procedure

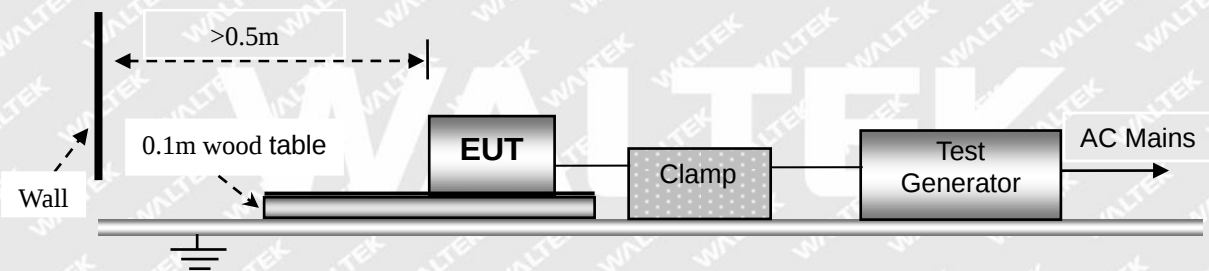
Test is conducting under the description of EN 61000-4-5.

10.2 Test Setup Block Diagram

For AC Mains or DC Ports:



For Signal or Telecommunication Ports:



10.3 Test Performance

Performance Criterion:	Mode	Verdict
	TM1-TM4	
Note: TM4 for TT,TR		

10.4 Environmental Conditions

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

10.5 Surge Test Data



Test Mode	TM1-TM4			
Voltage	Poll	Path	Pass	Fail
0.5kV	±	L-N	A	/
1kV	±	L-N	A	/
2kV	±	L-N, L-PE, N-PE	/	/
4kV	±	L-N, L-PE, N-PE	/	/

Test Result: Pass

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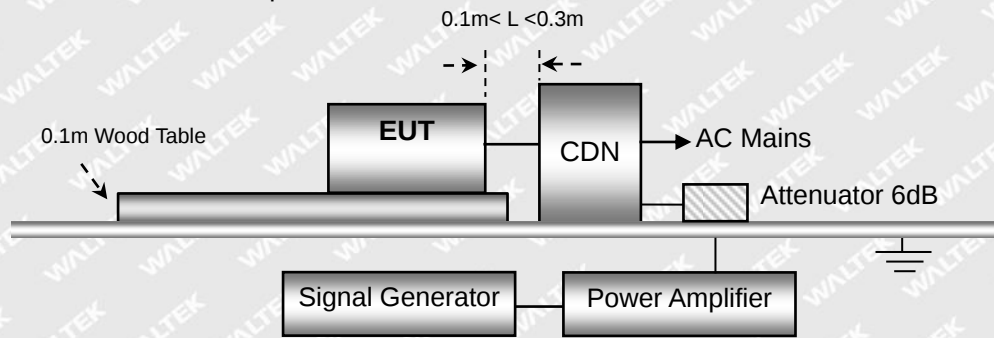
11. Radio Frequency, Common Mode (C/S)

11.1 Test Procedure

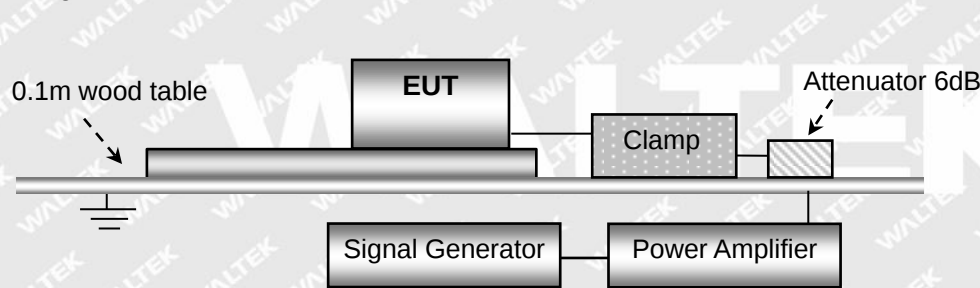
Test is conducting under the description of EN 61000-4-6.

11.2 Test Setup Block Diagram

For AC Mains or DC Input:



For Signal or Telecommunication Ports:



11.3 Test Performance

Performance Criterion:	Mode	Verdict
	TM1-TM4	A
Note: TM4 for CT,CR		

11.4 Environmental Conditions

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

11.5 Continuous Conducted Disturbances Test Data

Sweep frequency range: 150kHz~80MHz

Frequency step: 1% of fundamental

Dwell time: 1 second



Test Mode		TM1-TM4		
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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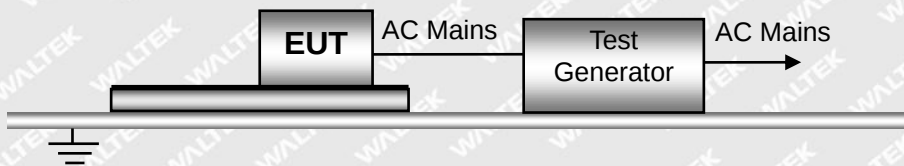


12. Voltage Dips and Interruptions

12.1 Test Procedure

Test is conducting under the description of EN 61000-4-11.

12.2 Test Setup Block Diagram



12.3 Test Performance

Performance Criterion:	Mode	Verdict
	TM1-TM4	B for voltage dip/ C for voltage interruption
Note: TM4 for TT,TR		

12.4 Environmental Conditions

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

12.5 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	B	/

Test Result: Pass



EXHIBIT 1 - EUT PHOTOGRAPHS

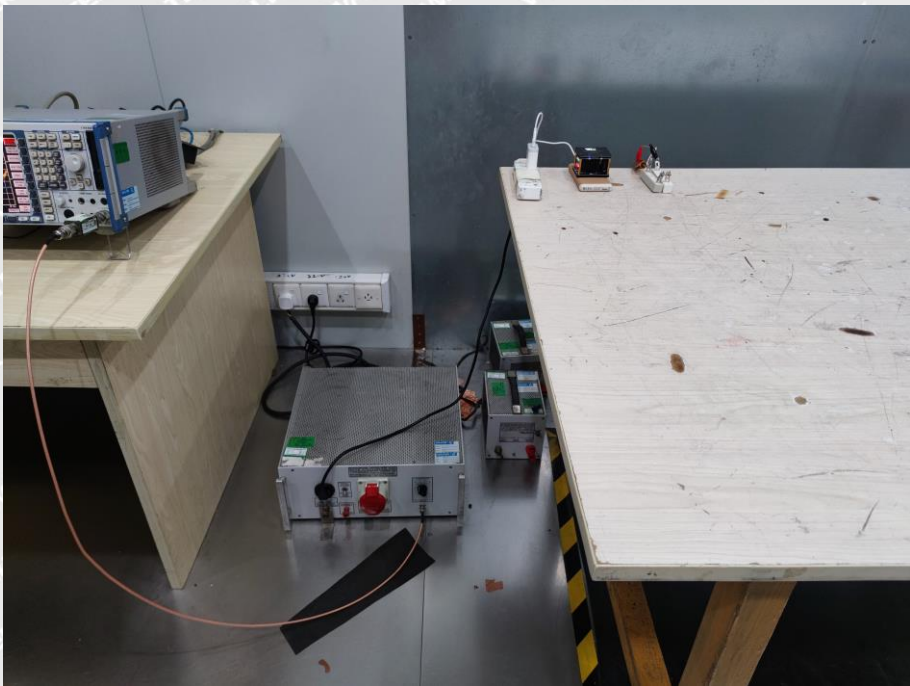
Please refer to “ANNEX”.

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EXHIBIT 2 - TEST SETUP PHOTOGRAPHS

**Conducted Emission
Test Setup**



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

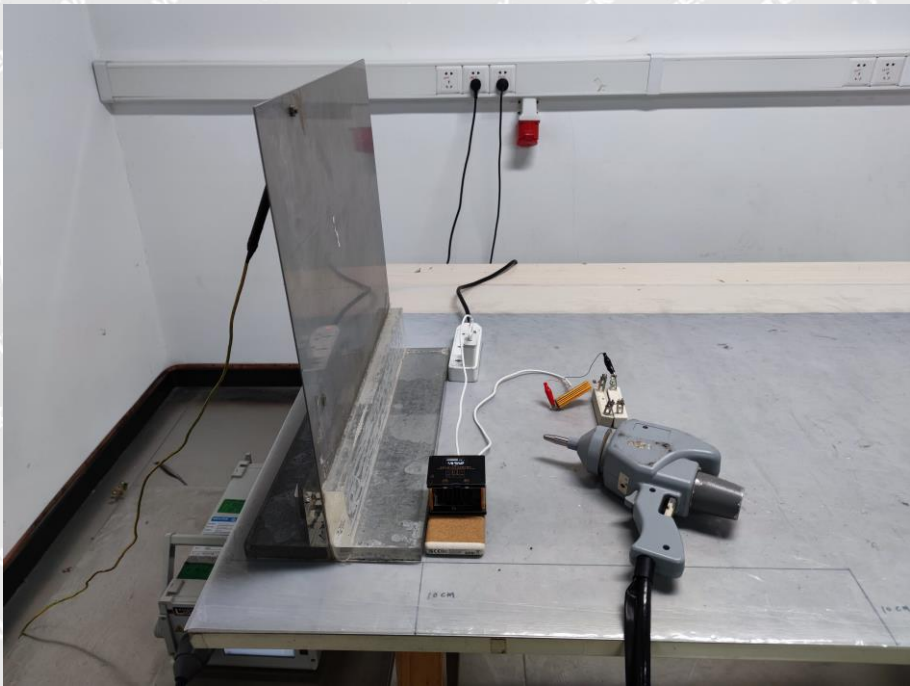




Harmonic/Flicker Test
View

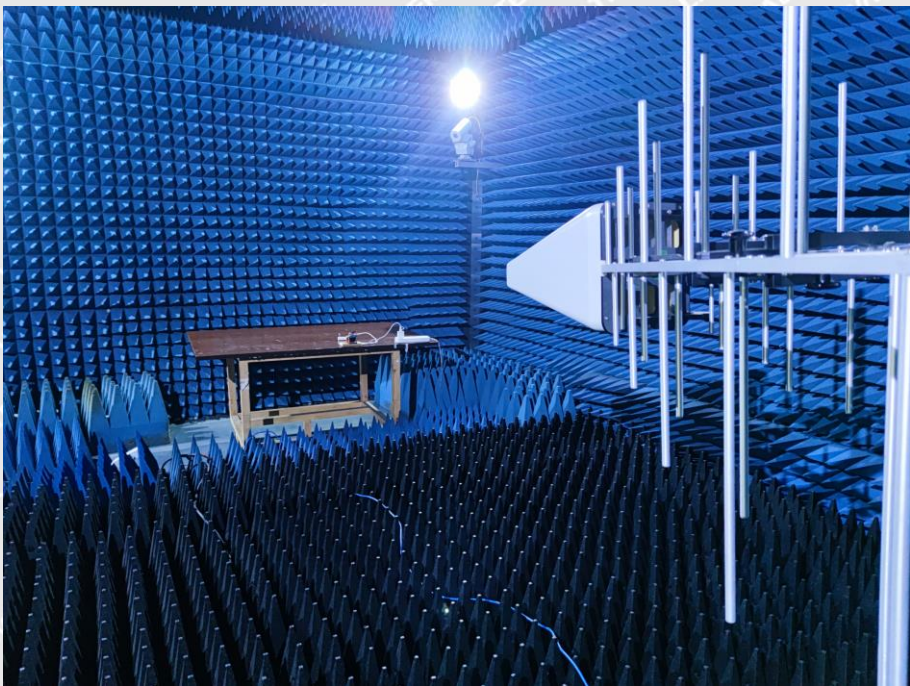


EN 61000-4-2 Test View





EN 61000-4-3 Test View

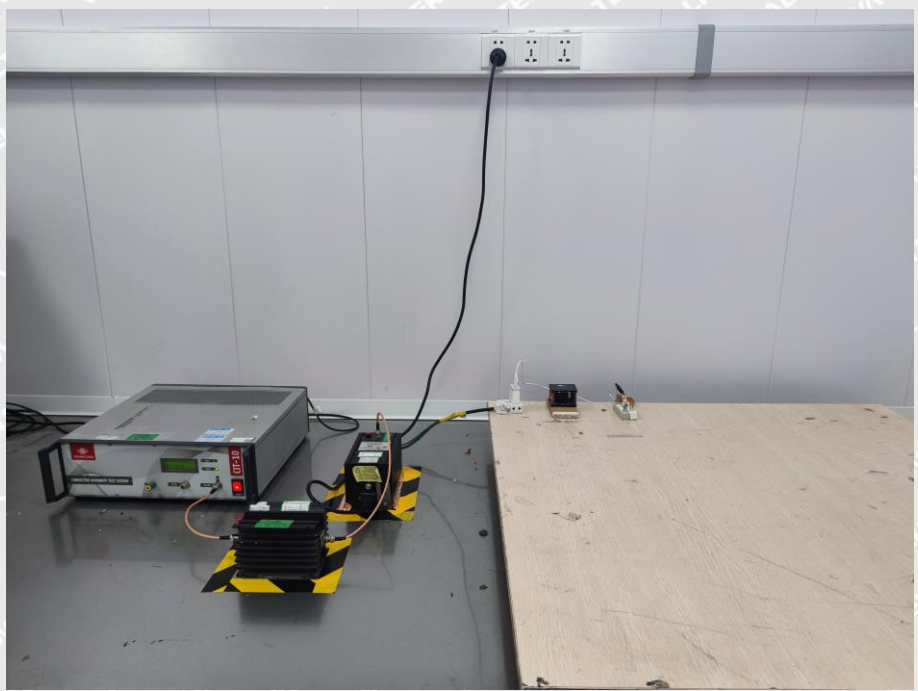


EN 61000-4-4/5/11 Test View





EN 61000-4-6 Test View



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

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