



中国认可
国际互认
检测
TESTING
CNAS L4062



TEST REPORT

Reference No..... : WTF22X03050278W-3
 Manufacturer..... : Mid Ocean Brands B.V.
 Address..... : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
 Factory..... : 109979
 Product Name..... : Foldable wireless charger
 Model No..... : MO6565
 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..... : 2022-03-23
 Date of Test..... : 2022-03-23 to 2022-04-06
 Date of Issue..... : 2022-04-06
 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	2022-04-06	Original
/	/	/

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	Foldable wireless charger
Trade Name:	/
Model No.:	MO6565
Adding Model(s):	/
Rate Power:	Input: DC 9V 2A Wireless Output: 5W/7.5W/10W/15W
Software Version:	004D0D46
Hardware Version:	T6-3105B-1Coil 15W-V1.1
<i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i>	

Technical Characteristics of EUT	
EN 303417	
Frequency Range:	110-205kHz
Radiated H-Field:	35.22dBuA/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>	



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

FCC – Registration No.: 125990

Waltek Testing Group (Shenzhen) Co., Ltd. Laboratory has been recognized to perform compliance testing on equipment subject to the Commissions Declaration Of Conformity (DOC). 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	Wireless Charging	Connect to the adapter; AC230V/50Hz for adapter; Wireless charging: output 5W
TM2	Wireless Charging	Connect to the adapter; AC230V/50Hz for adapter; Wireless charging: output 10W
TM3	Wireless Charging	Connect to the adapter; AC230V/50Hz for adapter; Wireless charging: output 15W
TM4	Wireless Charging	TT,CT for EMS testing

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
USB Cable	1.01	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 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
<input checked="" type="checkbox"/> 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	2022-03-21	2023-03-20
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
<input checked="" type="checkbox"/> 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	2022-03-21	2023-03-20
Amplifier	C&D	PAP-1G18	2002	2022-03-21	2023-03-20
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	Direction Systems Inc.	PAP-2640	14145-14153	2021-04-27	2022-04-26
<input type="checkbox"/> Chamber B: Below 1GHz					
Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2021-04-09	2023-04-08
Amplifier	Agilent	8447D	2944A10179	2022-03-21	2023-03-20
EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2022-03-25	2023-03-24
<input type="checkbox"/> 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	2022-03-21	2023-03-20
<input checked="" type="checkbox"/> Conducted Room 1#					
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2022-03-21	2023-03-20
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2022-03-25	2023-03-24
AC LISN	Schwarz beck	NSLK8126	8126-224	2022-03-21	2023-03-20
8-WIRE LISN	Schwarz beck	8158	CAT3-8158-0059	2022-03-21	2023-03-20
8-WIRE LISN	Schwarz beck	8158	CAT5-8158-0117	2022-03-21	2023-03-20
<input type="checkbox"/> Conducted Room 2#					
EMI Test Receiver	Rohde & Schwarz	ESPI	10129	2022-03-21	2023-03-20
LISN	Rohde & Schwarz	ENV 216	100097	2022-03-21	2023-03-20
EMF					
VDH Test Head	AFJ	VDH 30	SC022Z	2022-03-25	2023-03-24
3 Loop Antenna					



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Loop Antenna	ZHINAN	ZN30401	19037	2021-04-26	2023-04-25
Clamp					
Clamp	Luthi	MDS21	3809	2021-04-16	2022-04-15
PFMF					
PMF Generator	LIONCEL	PMF-801C-C	0171101	2022-03-21	2023-03-20
PMF Antenna	LIONCEL	PMF-801C-A	0180302	2022-03-21	2023-03-20
Instantaneous PMF Generator Module	LIONCEL	PMF-801C-T	0171001	2022-03-21	2023-03-20
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	2021-04-16	2022-04-15
EFT/SURGE/DIPS					
Transient 2000	EMC PARTNER	TRA2000	863	2022-03-21	2023-03-20
Couple Clamp	EMC PARTNER	CN-EFT1000	513	2022-03-21	2023-03-20
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	2022-03-21	2023-03-20
EM Injection Clamp	FCC	F-2031-23mm	91536	2021-04-12	2022-04-11
RS					
Signal Generator	HP	8688B	3438A00604	2022-03-21	2023-03-20
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-80-1000-100	MPA1906238	2022-03-22	2023-03-21
Antenna	SCHWARZBECK	STLP 9129	9129 114	N/A	N/A

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.



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.

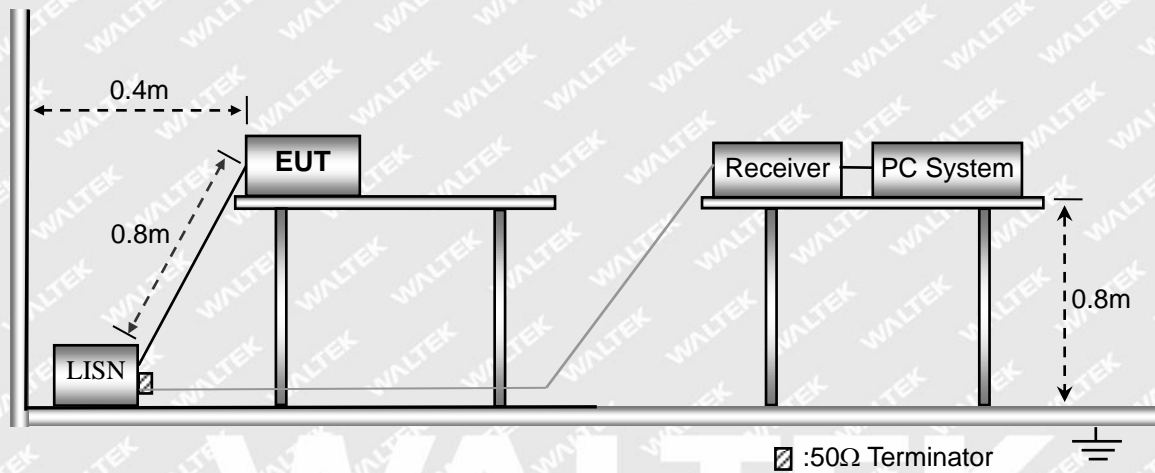
N/A: Not applicable.

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

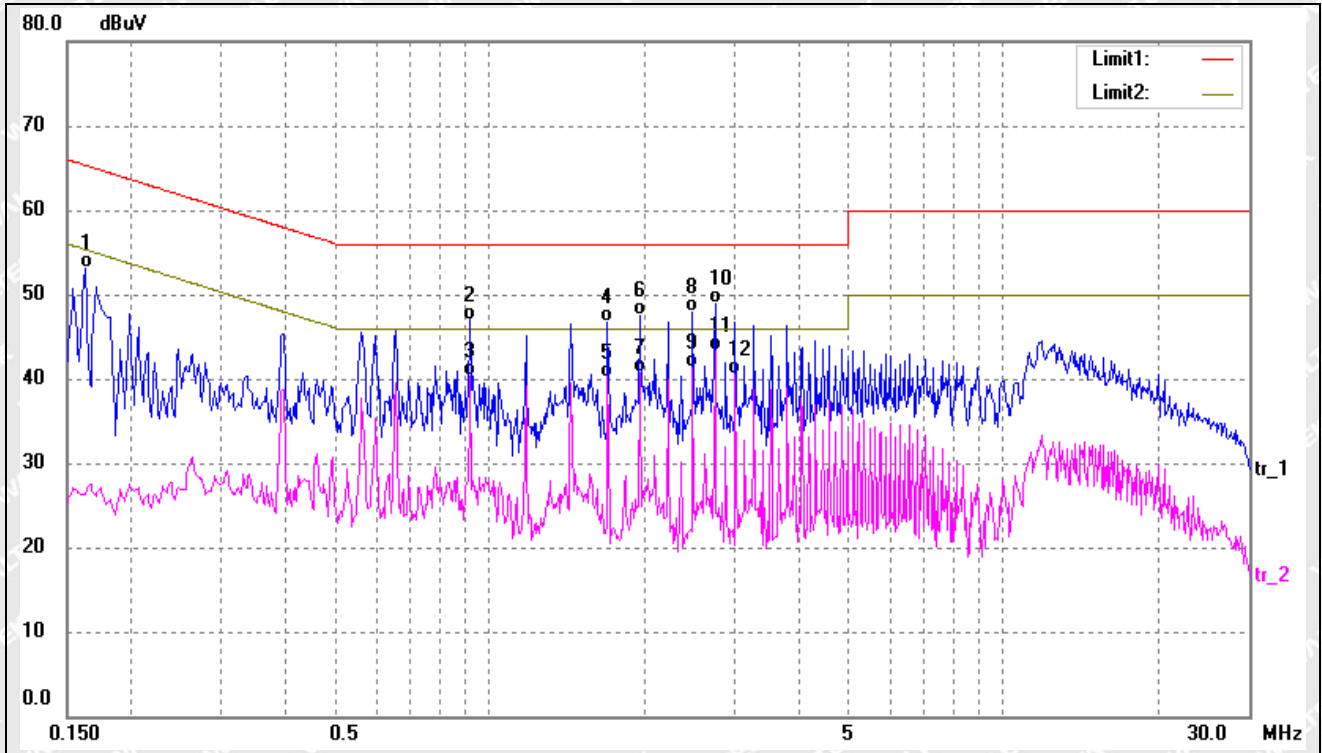
Temperature:	23.5 °C
Relative Humidity:	54 %
ATM Pressure:	1015 mbar

3.4 Conducted Emissions Test Data

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



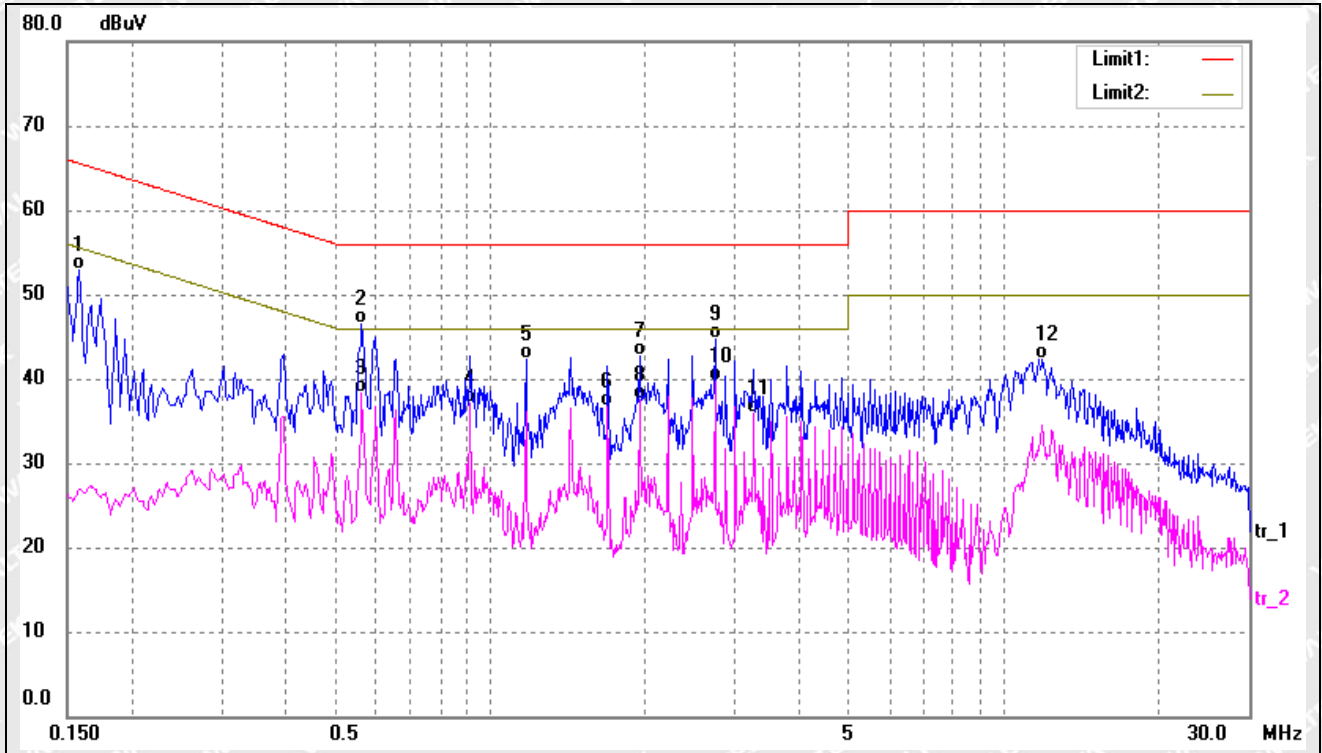
Test mode:	TM1	Polarity:	Neutral
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1620	42.64	10.37	53.01	65.36	-12.35	QP
2	0.9140	36.49	10.51	47.00	56.00	-9.00	QP
3	0.9140	29.72	10.51	40.23	46.00	-5.77	AVG
4	1.6980	36.35	10.26	46.61	56.00	-9.39	QP
5	1.6980	29.94	10.26	40.20	46.00	-5.80	AVG
6	1.9580	37.40	10.15	47.55	56.00	-8.45	QP
7	1.9580	30.51	10.15	40.66	46.00	-5.34	AVG
8	2.4820	37.78	10.11	47.89	56.00	-8.11	QP
9	2.4820	31.28	10.11	41.39	46.00	-4.61	AVG
10	2.7420	38.84	10.10	48.94	56.00	-7.06	QP
11*	2.7420	33.19	10.10	43.29	46.00	-2.71	AVG
12	3.0020	30.36	10.09	40.45	46.00	-5.55	AVG



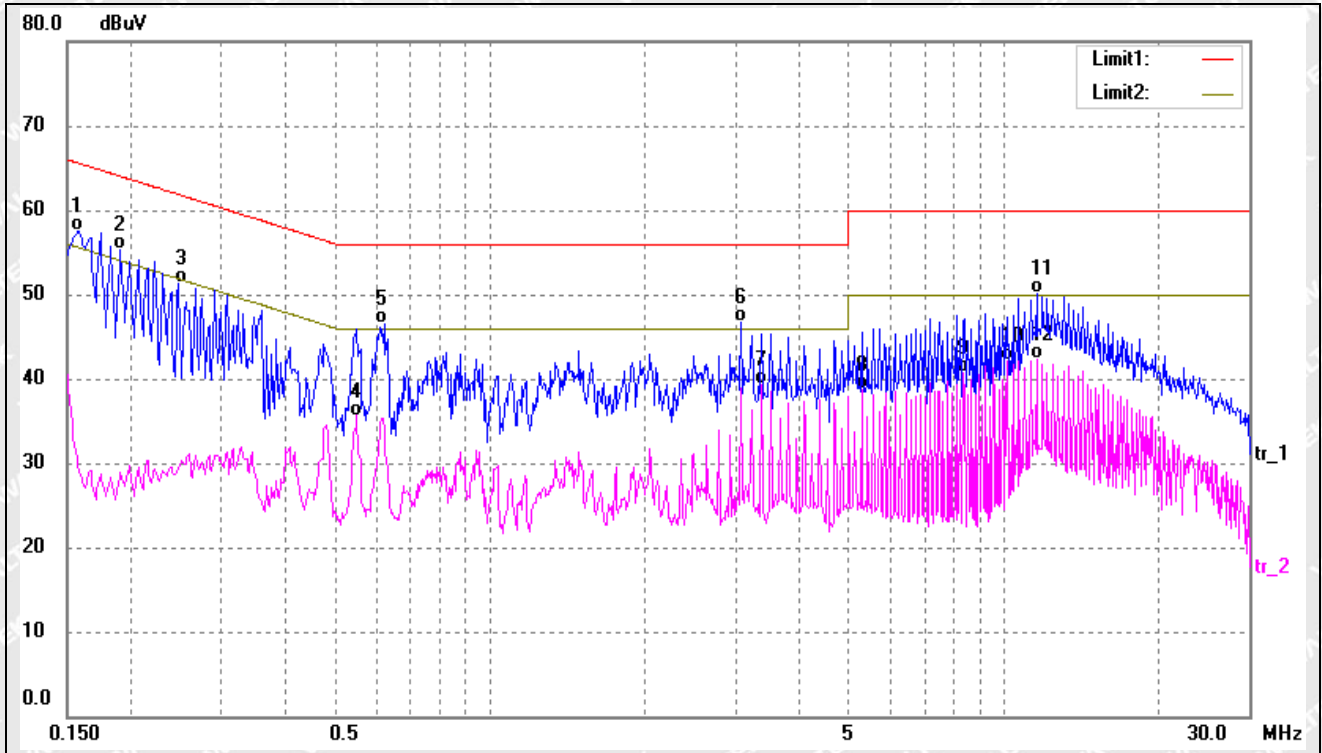
Test mode:	TM1	Polarity:	Line
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1580	42.60	10.37	52.97	65.57	-12.60	QP
2	0.5620	36.16	10.30	46.46	56.00	-9.54	QP
3	0.5620	27.96	10.30	38.26	46.00	-7.74	AVG
4	0.9140	26.53	10.51	37.04	46.00	-8.96	AVG
5	1.1740	31.79	10.48	42.27	56.00	-13.73	QP
6	1.6980	26.45	10.26	36.71	46.00	-9.29	AVG
7	1.9580	32.62	10.15	42.77	56.00	-13.23	QP
8	1.9580	27.42	10.15	37.57	46.00	-8.43	AVG
9	2.7420	34.61	10.10	44.71	56.00	-11.29	QP
10*	2.7420	29.70	10.10	39.80	46.00	-6.20	AVG
11	3.2620	25.92	10.08	36.00	46.00	-10.00	AVG
12	11.7340	32.30	9.96	42.26	60.00	-17.74	QP



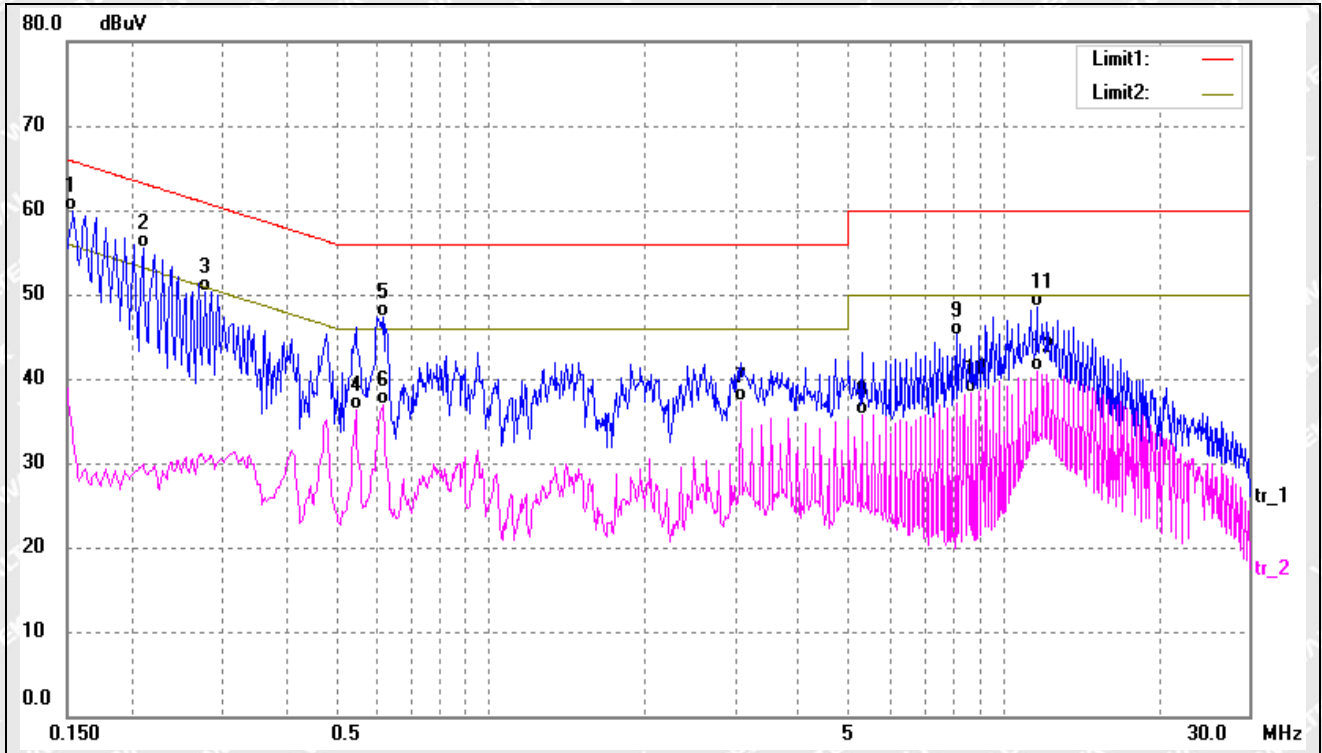
Test mode:	TM2	Polarity:	Neutral
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1580	47.16	10.37	57.53	65.57	-8.04	QP
2	0.1900	44.91	10.37	55.28	64.04	-8.76	QP
3	0.2460	40.96	10.35	51.31	61.89	-10.58	QP
4	0.5500	25.31	10.29	35.60	46.00	-10.40	AVG
5	0.6220	36.14	10.33	46.47	56.00	-9.53	QP
6	3.0820	36.55	10.08	46.63	56.00	-9.37	QP
7*	3.3740	29.16	10.07	39.23	46.00	-6.77	AVG
8	5.2820	28.64	9.99	38.63	50.00	-11.37	AVG
9	8.3660	30.73	9.91	40.64	50.00	-9.36	AVG
10	10.1260	32.16	9.87	42.03	50.00	-7.97	AVG
11	11.5940	40.21	9.96	50.17	60.00	-9.83	QP
12	11.5940	32.27	9.96	42.23	50.00	-7.77	AVG



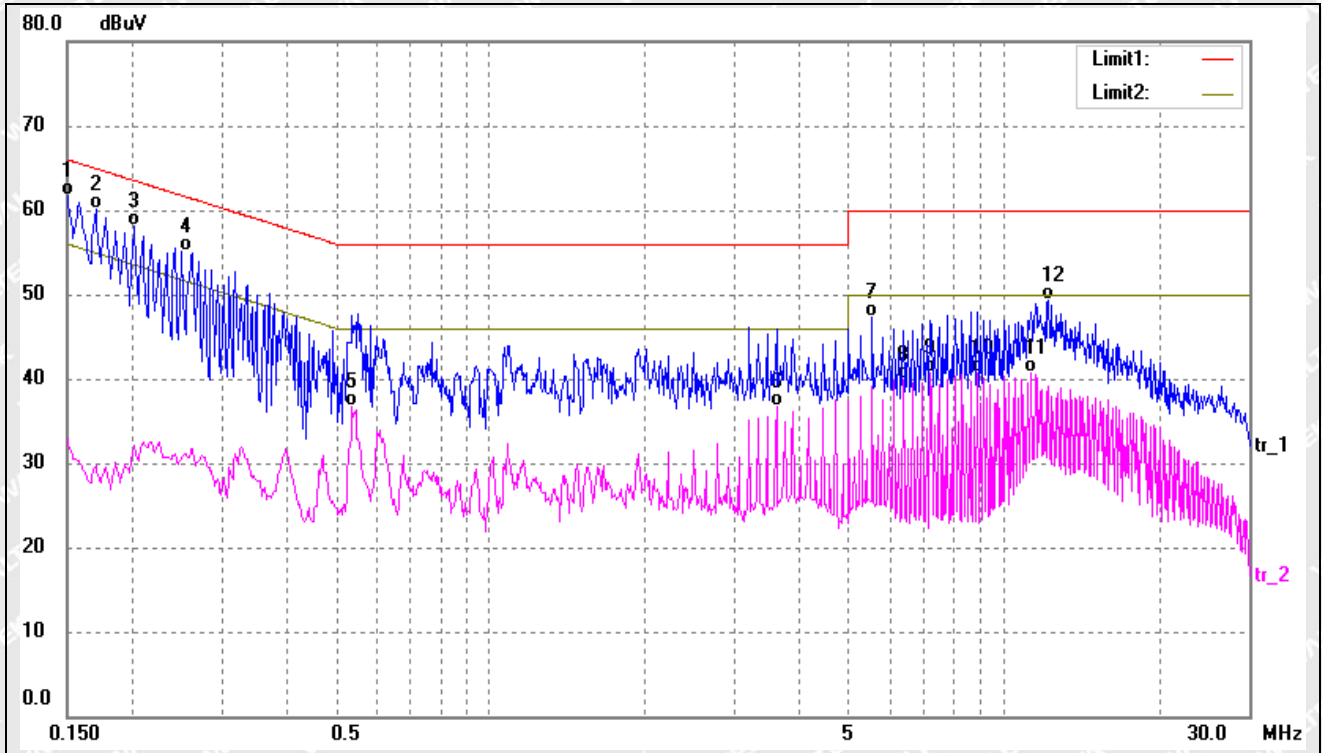
Test mode:	TM2	Polarity:	Line
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1540	49.49	10.37	59.86	65.78	-5.92	QP
2	0.2100	45.15	10.37	55.52	63.21	-7.69	QP
3	0.2780	40.04	10.34	50.38	60.88	-10.50	QP
4	0.5460	25.92	10.29	36.21	46.00	-9.79	AVG
5	0.6180	36.98	10.33	47.31	56.00	-8.69	QP
6	0.6180	26.62	10.33	36.95	46.00	-9.05	AVG
7	3.0820	27.28	10.08	37.36	46.00	-8.64	AVG
8	5.2860	25.73	9.99	35.72	50.00	-14.28	AVG
9	8.0780	35.28	9.92	45.20	60.00	-14.80	QP
10	8.6620	28.43	9.91	38.34	50.00	-11.66	AVG
11	11.5980	38.61	9.96	48.57	60.00	-11.43	QP
12	11.5980	30.85	9.96	40.81	50.00	-9.19	AVG



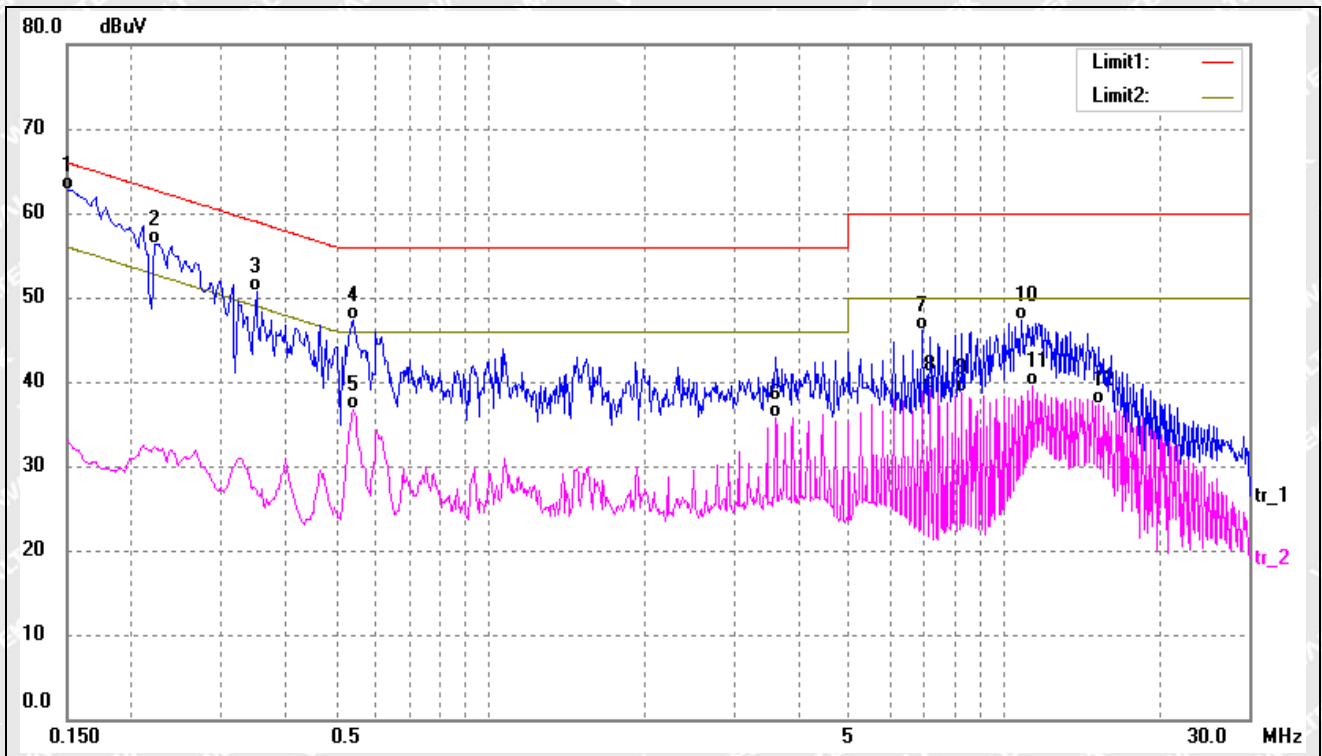
Test mode:	TM3	Polarity:	Neutral
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1500	51.38	10.38	61.76	66.00	-4.24	QP
2	0.1700	49.79	10.37	60.16	64.96	-4.80	QP
3	0.2020	47.82	10.37	58.19	63.53	-5.34	QP
4	0.2500	44.67	10.35	55.02	61.76	-6.74	QP
5	0.5380	26.38	10.28	36.66	46.00	-9.34	AVG
6	3.6060	26.71	10.06	36.77	46.00	-9.23	AVG
7	5.5460	37.22	9.99	47.21	60.00	-12.79	QP
8	6.3780	29.96	9.96	39.92	50.00	-10.08	AVG
9	7.2100	30.84	9.95	40.79	50.00	-9.21	AVG
10	8.8740	30.86	9.90	40.76	50.00	-9.24	AVG
11	11.2780	30.66	9.95	40.61	50.00	-9.39	AVG
12	12.2020	39.27	9.99	49.26	60.00	-10.74	QP



Test mode:	TM3	Polarity:	Line
------------	-----	-----------	------



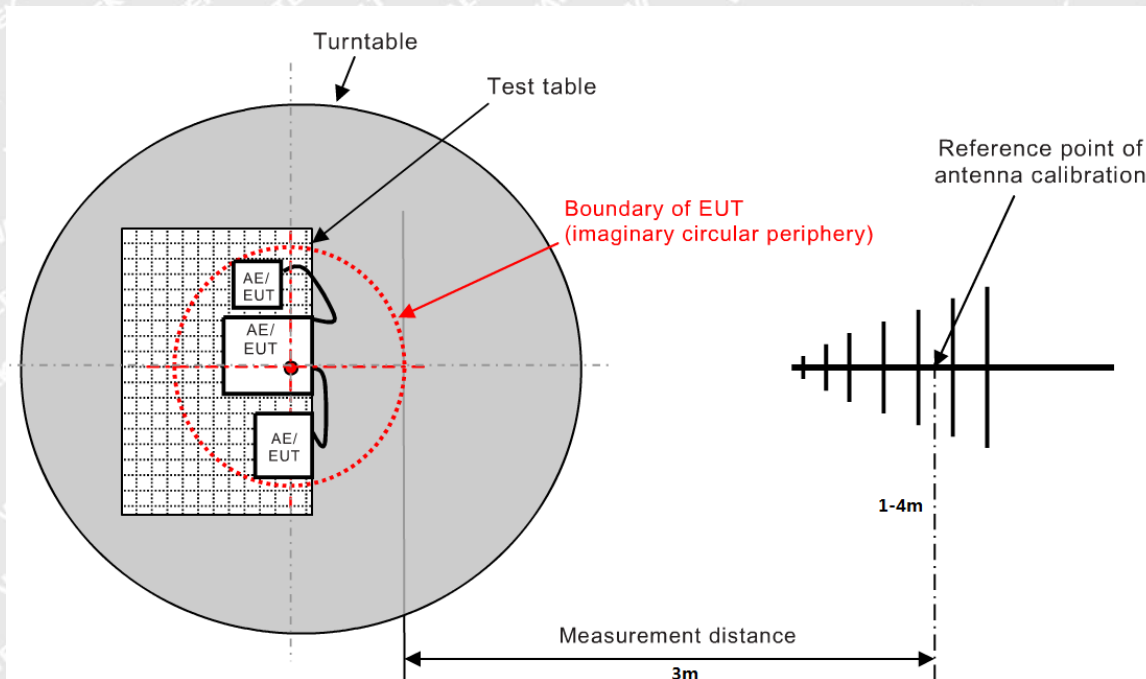
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1499	52.32	10.38	62.70	66.00	-3.30	QP
2	0.2220	45.98	10.36	56.34	62.74	-6.40	QP
3	0.3499	40.40	10.32	50.72	58.96	-8.24	QP
4	0.5420	37.08	10.29	47.37	56.00	-8.63	QP
5	0.5420	26.35	10.29	36.64	46.00	-9.36	AVG
6	3.6019	25.67	10.06	35.73	46.00	-10.27	AVG
7	6.9299	36.22	9.95	46.17	60.00	-13.83	QP
8	7.2060	29.07	9.95	39.02	50.00	-10.98	AVG
9	8.3140	28.73	9.91	38.64	50.00	-11.36	AVG
10	10.8100	37.32	9.92	47.24	60.00	-12.76	QP
11	11.3659	29.54	9.95	39.49	50.00	-10.51	AVG
12	15.3819	27.10	10.16	37.26	50.00	-12.74	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

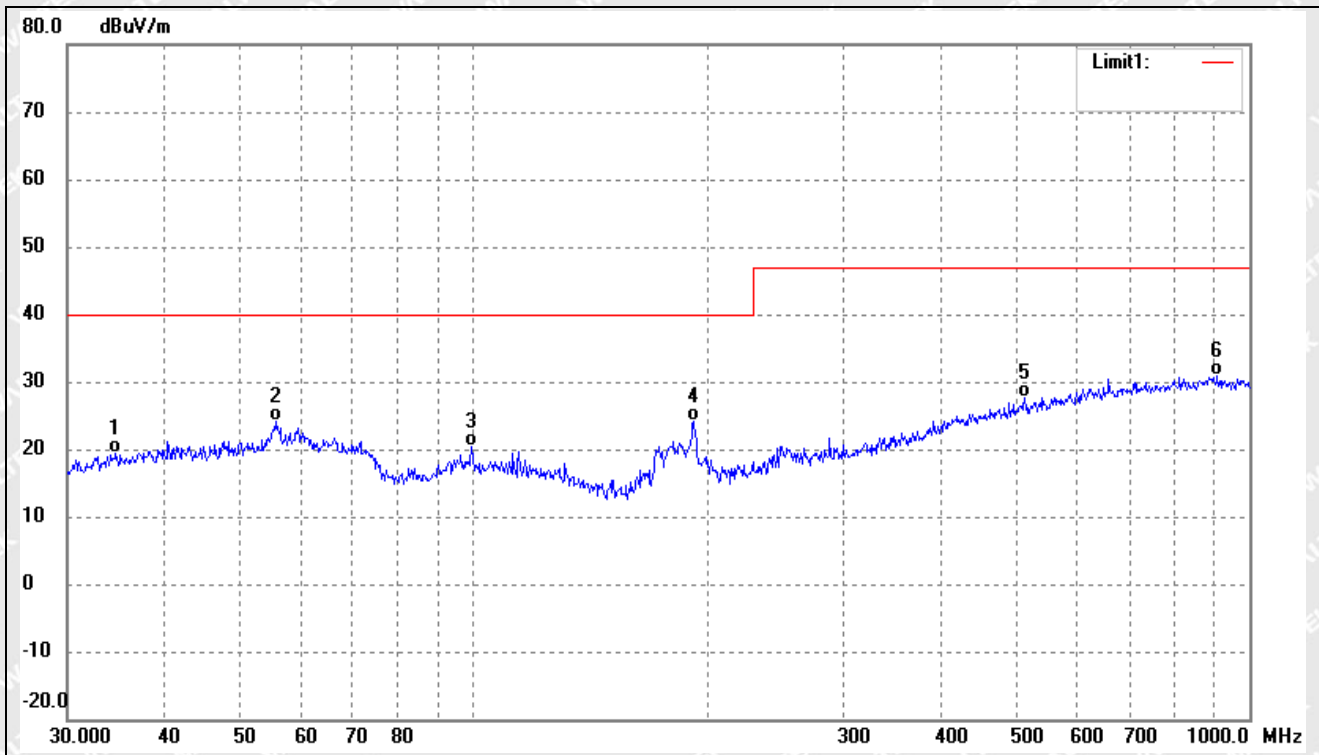
Temperature:	22.5° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

4.4 Summary of Test Results/Plots

Note: Only show the worst case in the test report

➤ 30MHz to 1GHz

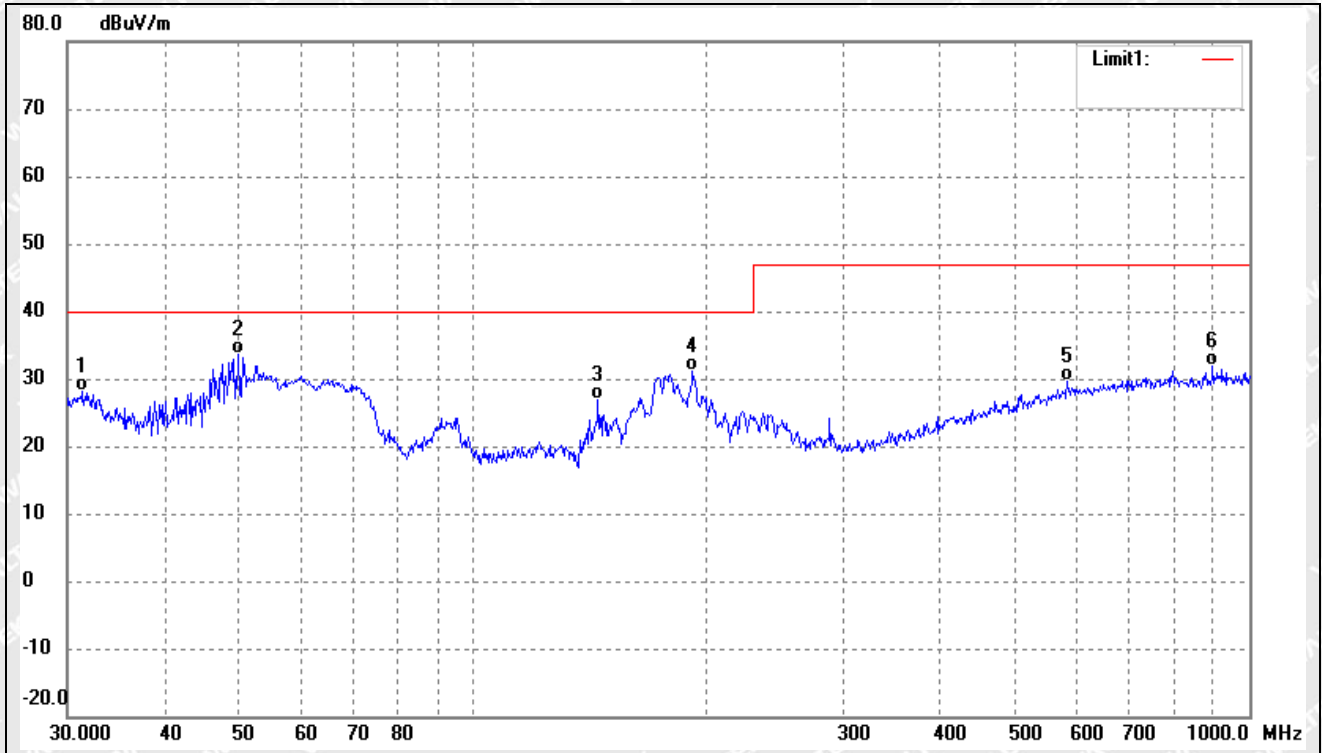
Test mode:	TM1	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	34.6385	27.75	-8.32	19.43	40.00	-20.57	-	-	QP
2	55.6094	31.80	-7.78	24.02	40.00	-15.98	-	-	QP
3	99.5281	29.08	-8.81	20.27	40.00	-19.73	-	-	QP
4	192.4186	33.98	-9.96	24.02	40.00	-15.98	-	-	QP
5	513.6331	28.61	-1.07	27.54	47.00	-19.46	-	-	QP
6	909.6667	28.26	2.72	30.98	47.00	-16.02	-	-	QP



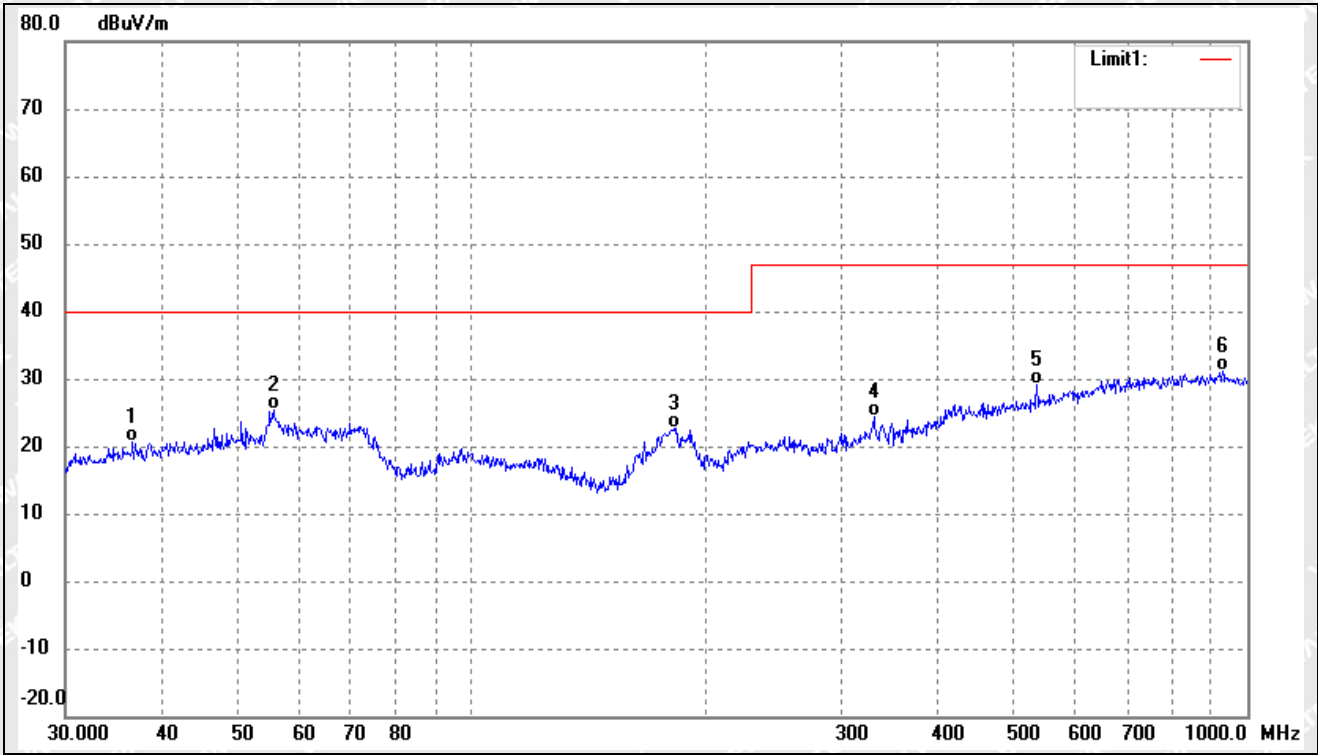
Test mode:	TM1	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	31.3992	37.16	-9.11	28.05	40.00	-11.95	-	-	QP
2	49.8814	40.51	-6.96	33.55	40.00	-6.45	-	-	QP
3	144.8418	39.27	-12.43	26.84	40.00	-13.16	-	-	QP
4	191.7450	41.15	-9.98	31.17	40.00	-8.83	-	-	QP
5	582.7425	29.46	0.08	29.54	47.00	-17.46	-	-	QP
6	896.9965	29.12	2.73	31.85	47.00	-15.15	-	-	QP



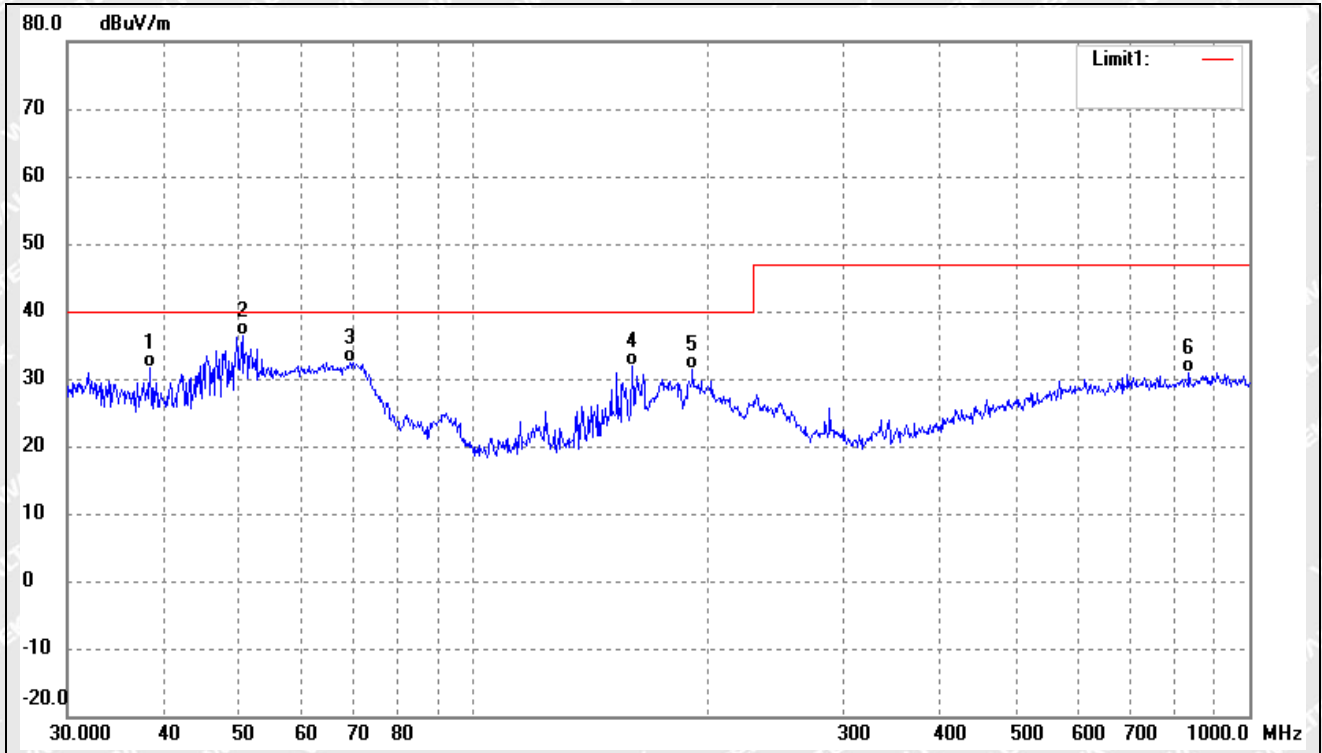
Test mode:	TM2	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	36.6375	28.35	-7.83	20.52	40.00	-19.48	-	-	QP
2	55.6094	33.11	-7.78	25.33	40.00	-14.67	-	-	QP
3	182.5592	33.66	-10.96	22.70	40.00	-17.30	-	-	QP
4	330.1949	30.51	-6.02	24.49	47.00	-22.51	-	-	QP
5	535.7073	29.84	-0.70	29.14	47.00	-17.86	-	-	QP
6	929.0082	28.46	2.66	31.12	47.00	-15.88	-	-	QP



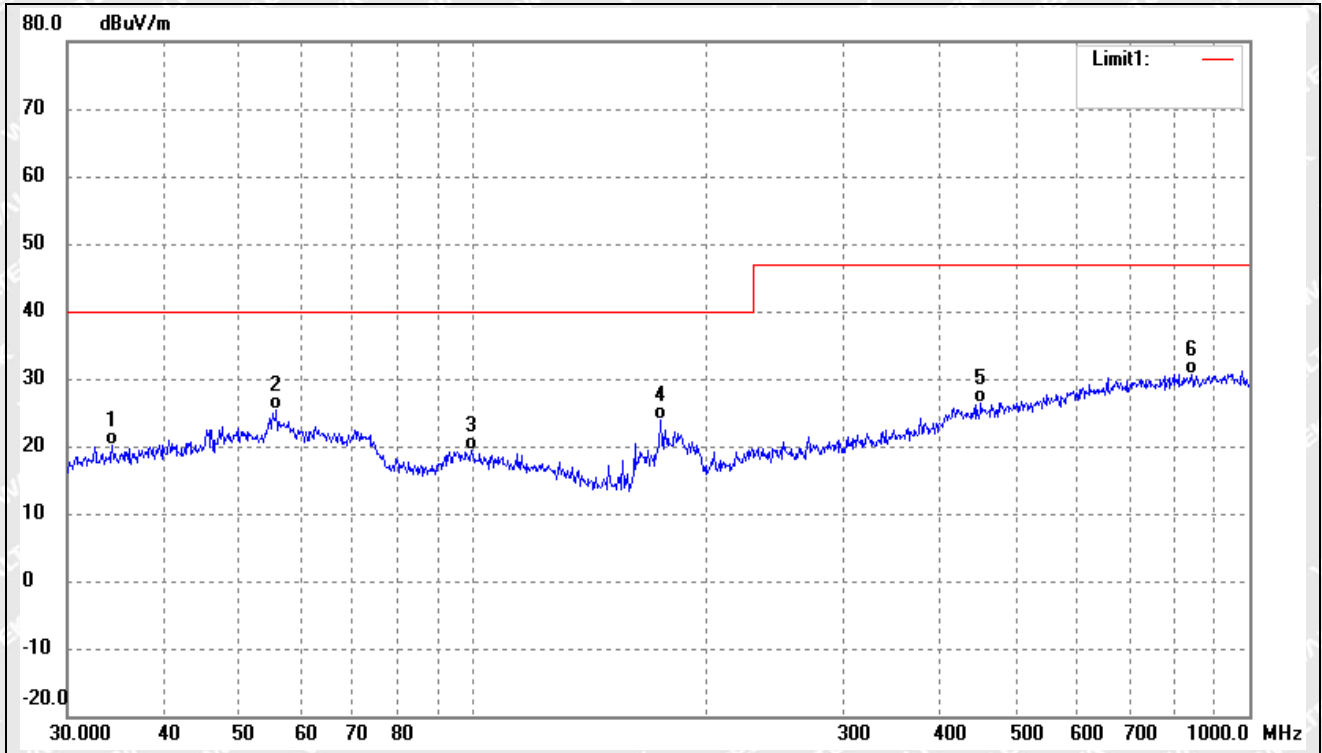
Test mode:	TM2	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	38.3462	39.03	-7.40	31.63	40.00	-8.37	-	-	QP
2	50.4089	43.30	-7.02	36.28	40.00	-3.72	-	-	QP
3	69.3568	42.44	-10.07	32.37	40.00	-7.63	-	-	QP
4	160.3456	44.13	-12.15	31.98	40.00	-8.02	-	-	QP
5	191.7450	41.33	-9.98	31.35	40.00	-8.65	-	-	QP
6	836.2443	28.66	2.30	30.96	47.00	-16.04	-	-	QP



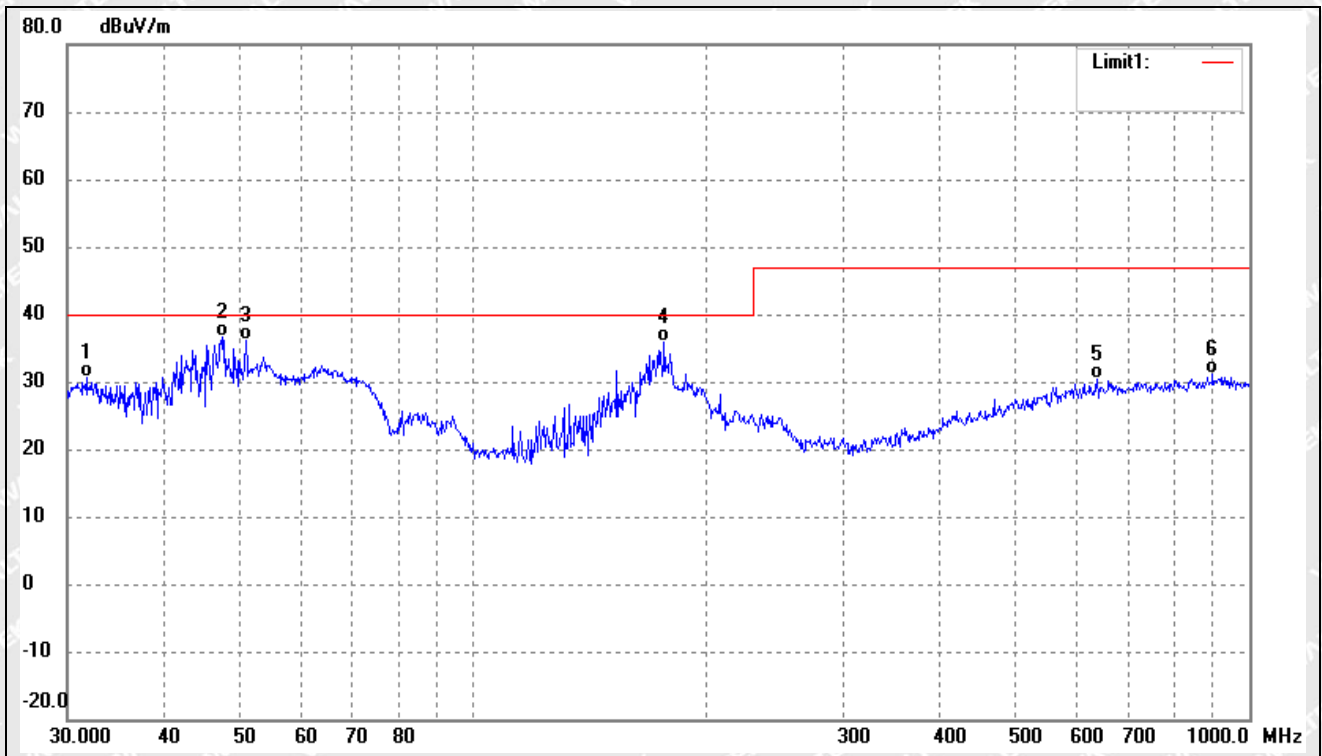
Test mode:	TM3	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	34.2760	28.58	-8.40	20.18	40.00	-19.82	-	-	QP
2	55.8047	33.17	-7.80	25.37	40.00	-14.63	-	-	QP
3	99.5281	28.23	-8.81	19.42	40.00	-20.58	-	-	QP
4	174.4241	35.39	-11.53	23.86	40.00	-16.14	-	-	QP
5	451.1350	28.84	-2.53	26.31	47.00	-20.69	-	-	QP
6	842.1296	28.21	2.34	30.55	47.00	-16.45	-	-	QP



Test mode:	TM3	Polarity:	Vertical
------------	-----	-----------	----------



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	31.7313	39.55	-9.03	30.52	40.00	-9.48	-	-	QP
2	47.4918	43.48	-6.97	36.51	40.00	-3.49	-	-	QP
3	50.9420	43.33	-7.10	36.23	40.00	-3.77	-	-	QP
4	176.2686	47.35	-11.44	35.91	40.00	-4.09	-	-	QP
5	636.1340	29.64	0.77	30.41	47.00	-16.59	-	-	QP
6	896.9965	28.30	2.73	31.03	47.00	-15.97	-	-	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.

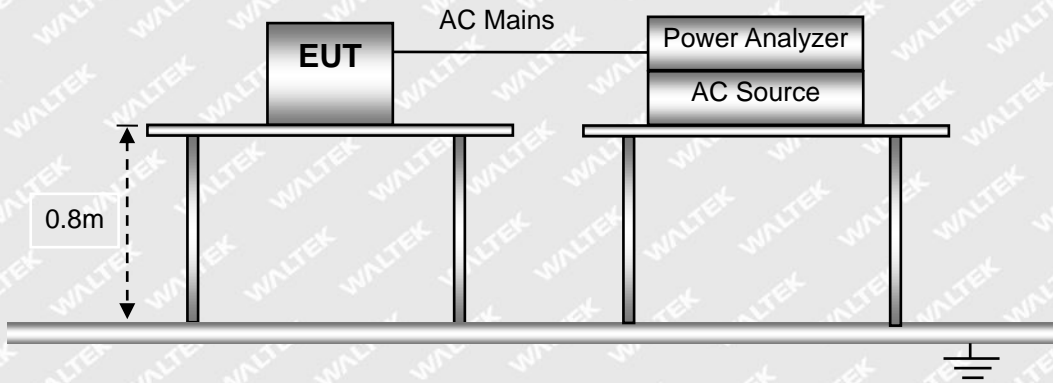


5. Harmonic Current Emissions

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

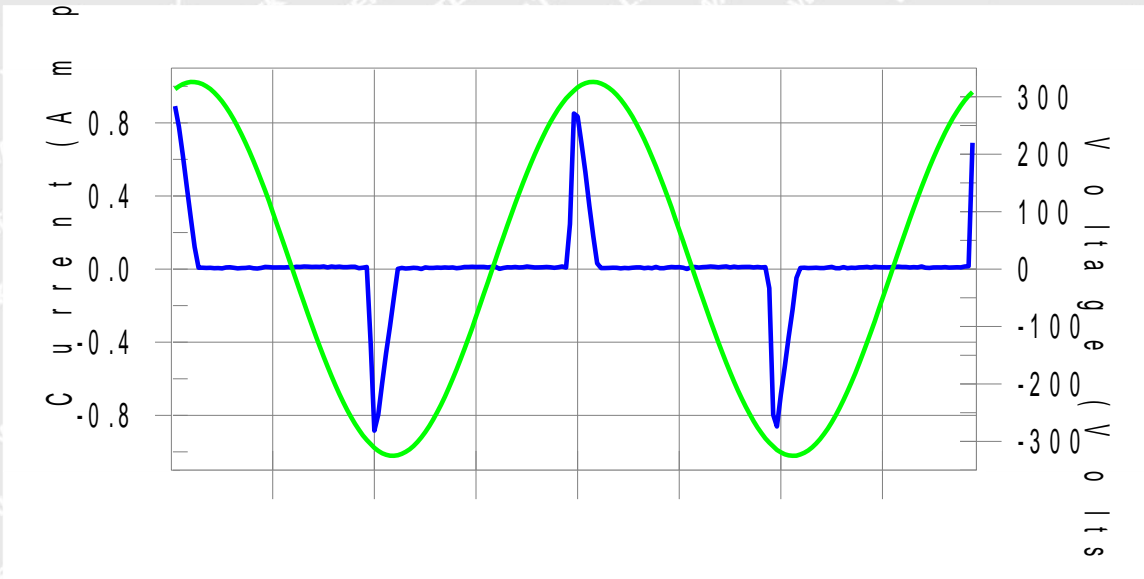
Temperature:	25 °C
Relative Humidity:	50%
ATM Pressure:	1011 mbar

5.5 Harmonic Current Emissions Test Data

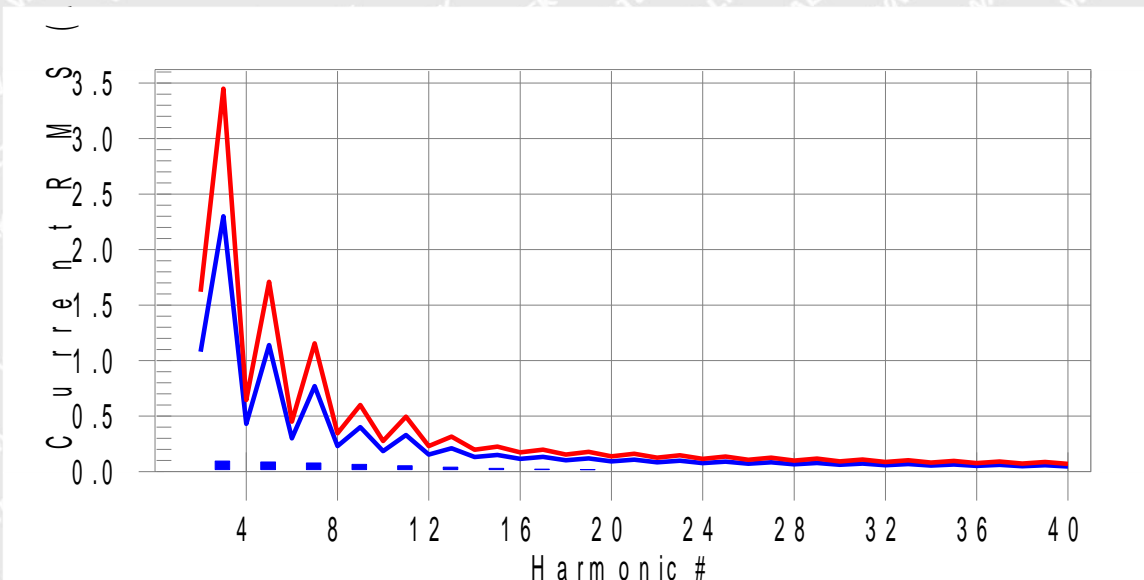


Harmonics – Class-A per IEC 61000-3-2:2018/AMD1:2020(Run time)

Test category: Class-A (European limits) **Test Margin:** 100
Test date: 2022-4-1 **Start time:** AM 10:15:01 **End time:** AM 10:17:42
Test duration (min): 2.5 **Data file name:** H-000135.cts_data
Comment: Comment
Customer: Customer information
Test Result: Pass **Source qualification:** Normal
Current & voltage waveforms —



Harmonics and Class A limit line European Limits



Test result: Pass **Worst harmonics H15-13.6% of 150% limit, H15-20% of 100% limit**



Current Test Result Summary (Run time)

Test category: Class-A (European limits) **Test Margin:** 100
Test date: 2022-4-1 **Start time:** AM 10:15:01 **End time:** AM 10:17:42
Test duration (min): 2.5 **Data file name:** H-000135.cts_data
Comment: Comment
Customer: Customer information

Test Result: Pass **Source qualification:** Normal
THC(A): 0.185 **I-THD(%):** 183.9 **POHC(A):** 0.039 **POHC Limit(A):** 0.251

Highest parameter values during test:

V_RMS (Volts): 230.13 **Frequency(Hz):** 50.00
I_Peak (Amps): 0.914 **I_RMS (Amps):** 0.215
I_Fund (Amps): 0.101 **Crest Factor:** 4.367
Power (Watts): 22.7 **Power Factor:** 0.463

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	0.094	2.300	4.1	0.097	3.450	2.8	Pass
4	0.001	0.430	N/A	0.001	0.645	N/A	Pass
5	0.087	1.140	7.6	0.089	1.710	5.2	Pass
6	0.000	0.300	N/A	0.001	0.450	N/A	Pass
7	0.077	0.770	10.0	0.078	1.155	6.8	Pass
8	0.000	0.230	N/A	0.001	0.345	N/A	Pass
9	0.065	0.400	16.3	0.066	0.600	11.0	Pass
10	0.000	0.184	N/A	0.001	0.276	N/A	Pass
11	0.053	0.330	15.9	0.053	0.495	10.7	Pass
12	0.000	0.153	N/A	0.001	0.230	N/A	Pass
13	0.040	0.210	19.3	0.041	0.315	13.0	Pass
14	0.000	0.131	N/A	0.001	0.197	N/A	Pass
15	0.030	0.150	20.0	0.031	0.225	13.6	Pass
16	0.000	0.115	N/A	0.001	0.173	N/A	Pass
17	0.022	0.132	17.0	0.023	0.198	11.6	Pass
18	0.000	0.102	N/A	0.001	0.153	N/A	Pass
19	0.018	0.118	15.6	0.019	0.178	10.7	Pass
20	0.000	0.092	N/A	0.001	0.138	N/A	Pass
21	0.017	0.107	16.1	0.018	0.161	11.0	Pass
22	0.000	0.084	N/A	0.001	0.125	N/A	Pass
23	0.017	0.098	17.2	0.017	0.147	11.8	Pass
24	0.000	0.077	N/A	0.001	0.115	N/A	Pass
25	0.016	0.090	17.8	0.016	0.135	12.1	Pass



Reference No.: WTF22X03050278W-3

26	0.000	0.071	N/A	0.001	0.107	N/A	Pass
27	0.014	0.083	17.3	0.015	0.125	11.8	Pass
28	0.000	0.066	N/A	0.001	0.099	N/A	Pass
29	0.012	0.078	15.6	0.013	0.116	10.7	Pass
30	0.000	0.061	N/A	0.000	0.092	N/A	Pass
31	0.010	0.073	13.5	0.010	0.109	9.4	Pass
32	0.000	0.058	N/A	0.000	0.086	N/A	Pass
33	0.008	0.068	11.8	0.008	0.102	8.2	Pass
34	0.000	0.054	N/A	0.000	0.081	N/A	Pass
35	0.007	0.064	11.1	0.007	0.096	7.7	Pass
36	0.000	0.051	N/A	0.000	0.077	N/A	Pass
37	0.007	0.061	11.4	0.007	0.091	7.8	Pass
38	0.000	0.048	N/A	0.000	0.073	N/A	Pass
39	0.007	0.058	11.8	0.007	0.087	8.1	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: 2022-4-1 **Start time: AM 10:15:01** **End time: AM 10:17:42**
Test duration (min): 2.5 **Data file name: H-000135.cts_data**
Comment: Comment
Customer: Customer information

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

Highest parameter values during test:

Voltage (Vrms): 230.13	Frequency(Hz): 50.00
I_Peak (Amps): 0.914	I_RMS (Amps): 0.215
I_Fund (Amps): 0.101	Crest Factor: 4.367
Power (Watts): 22.7	Power Factor: 0.463

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.058	0.460	12.63	OK
3	0.523	2.071	25.23	OK
4	0.079	0.460	17.18	OK
5	0.059	0.920	6.45	OK
6	0.028	0.460	6.12	OK
7	0.042	0.690	6.04	OK
8	0.014	0.460	3.13	OK
9	0.041	0.460	8.86	OK
10	0.011	0.460	2.46	OK
11	0.044	0.230	18.98	OK
12	0.011	0.230	4.87	OK
13	0.032	0.230	14.08	OK
14	0.006	0.230	2.42	OK
15	0.035	0.230	15.41	OK
16	0.009	0.230	3.77	OK
17	0.025	0.230	11.08	OK
18	0.011	0.230	4.84	OK
19	0.019	0.230	8.09	OK
20	0.015	0.230	6.38	OK
21	0.021	0.230	9.20	OK
22	0.005	0.230	2.09	OK
23	0.020	0.230	8.64	OK
24	0.004	0.230	1.75	OK
25	0.022	0.230	9.60	OK
26	0.003	0.230	1.37	OK



Reference No.: WTF22X03050278W-3

27	0.018	0.230	7.99	OK
28	0.004	0.230	1.85	OK
29	0.022	0.230	9.67	OK
30	0.004	0.230	1.54	OK
31	0.017	0.230	7.32	OK
32	0.003	0.230	1.33	OK
33	0.015	0.230	6.59	OK
34	0.003	0.230	1.29	OK
35	0.013	0.230	5.85	OK
36	0.003	0.230	1.32	OK
37	0.012	0.230	5.26	OK
38	0.003	0.230	1.33	OK
39	0.013	0.230	5.75	OK
40	0.009	0.230	3.70	OK

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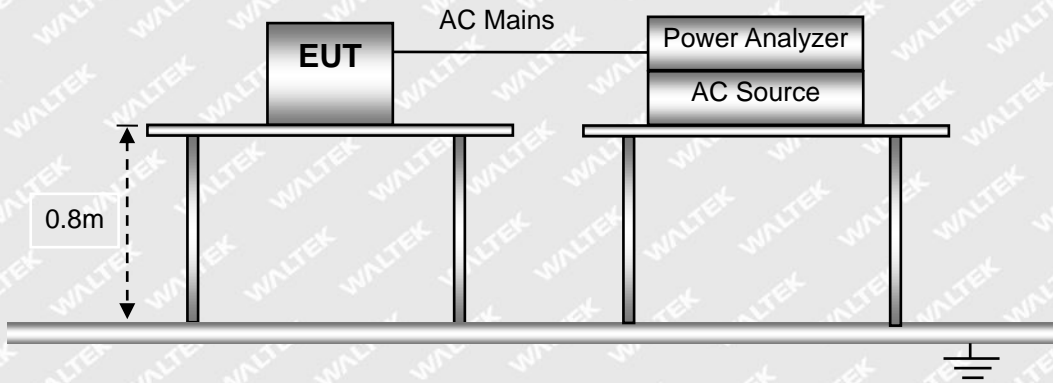


6. Voltage Fluctuation and Flicker

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.



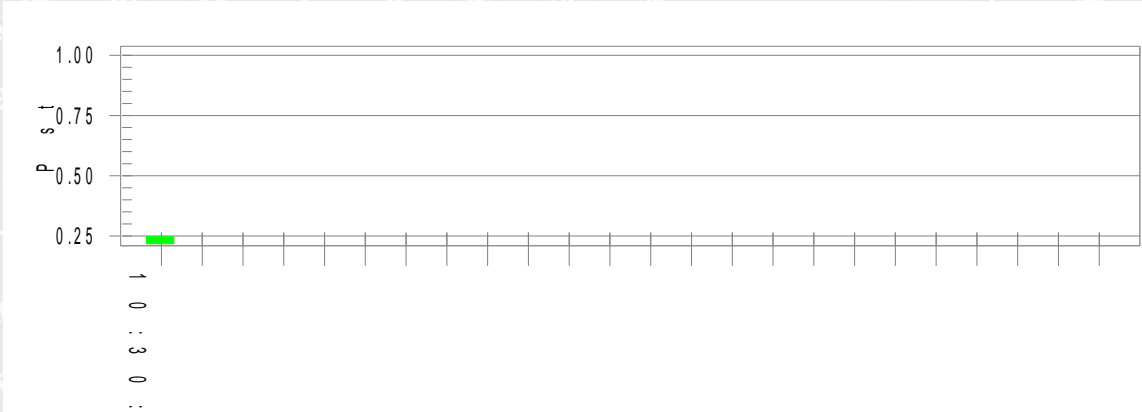
Test mode:	TM1
------------	-----

Test Result: Pass

Status: Test Completed

Pst_i 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 (%):

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): 0.247

Test limit: 1.000 Pass

Highest Plt (2 hr. period): 0.108

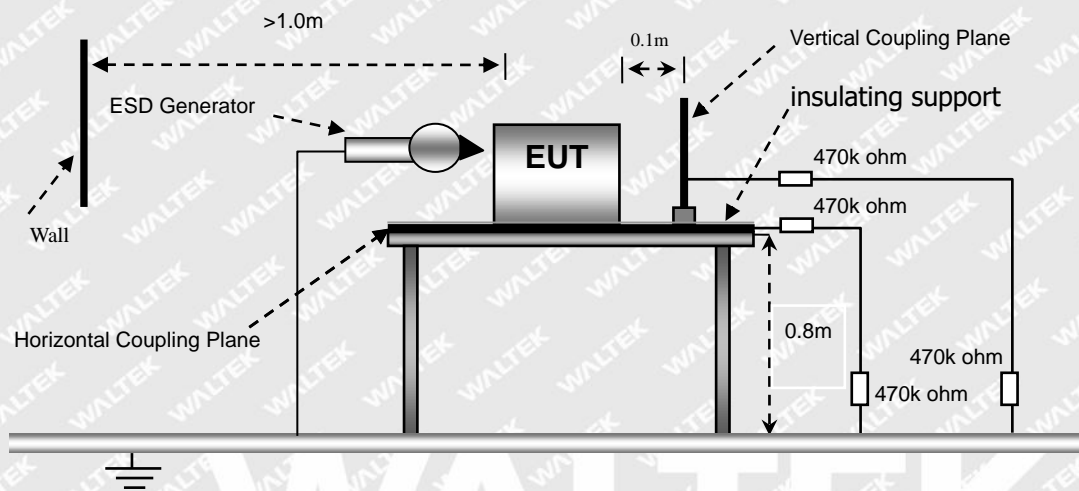
Test limit: 0.650 Pass

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-TM3

Note: TM3 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-TM3							
EN 61000-4-2 Test Points	Test Levels (kV)							
	-2	+2	-4	+4	-6	+6	-8	+8
Air Discharge								
Gap	B	B	B	B	B	B	B	B
USB Port	B	B	B	B	B	B	B	B
Surface	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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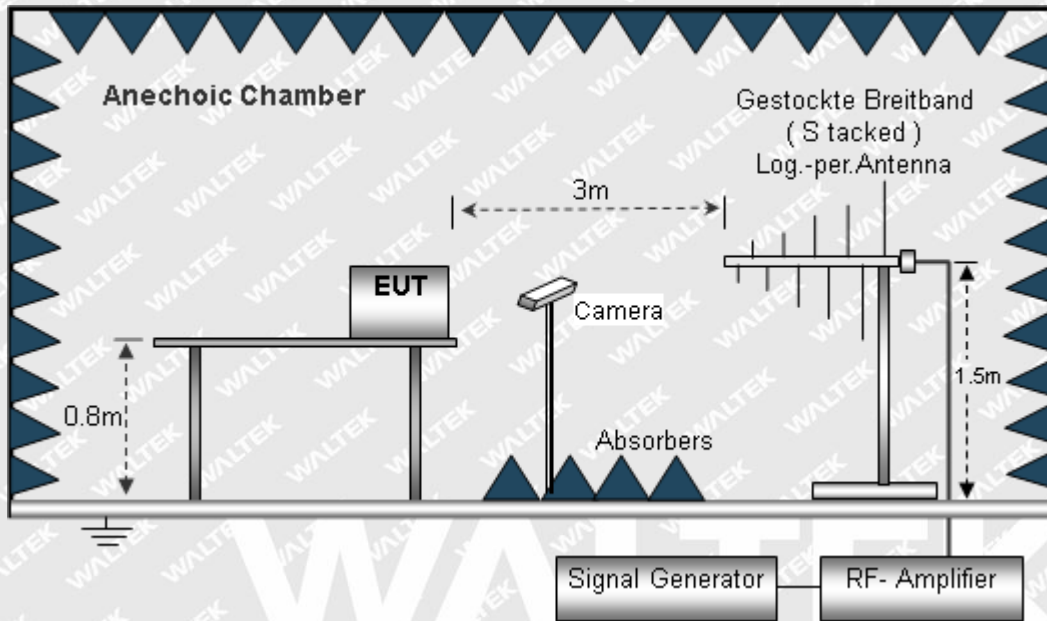


8. Radio Frequency Electromagnetic Field (R/S)

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-TM3

Note: TM3 for CT,CR

8.4 Environmental Conditions

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

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-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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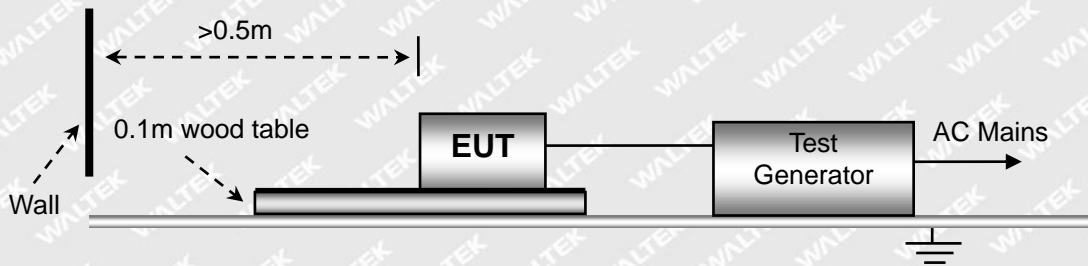
9. Fast Transients, Common Mode (EFT)

9.1 Test Procedure

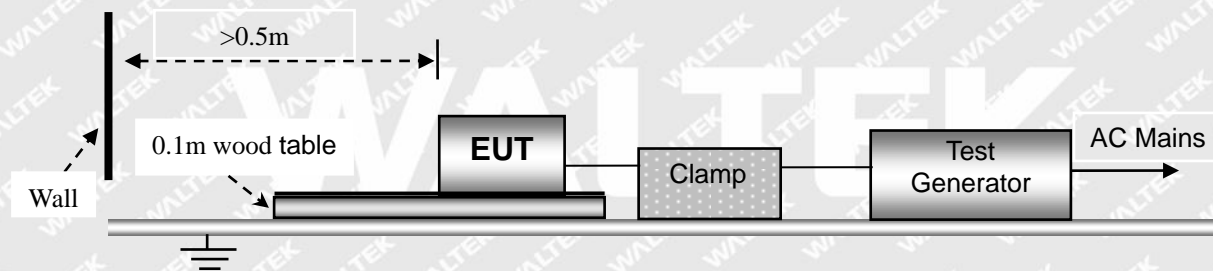
Test is conducting under the description of EN 61000-4-4.

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-TM3

Note: TM3 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-TM3							
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





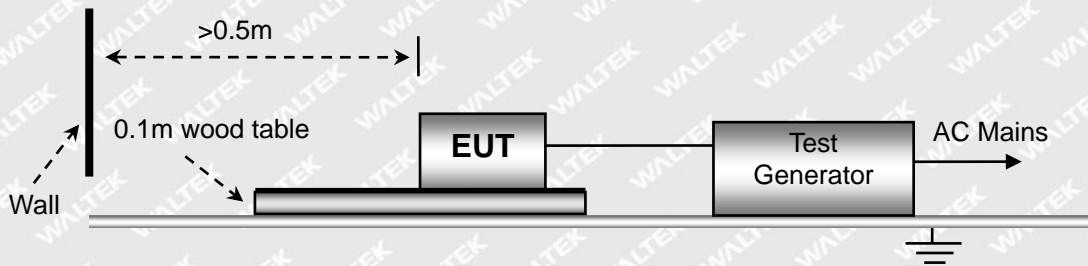
10. Surges

10.1 Test Procedure

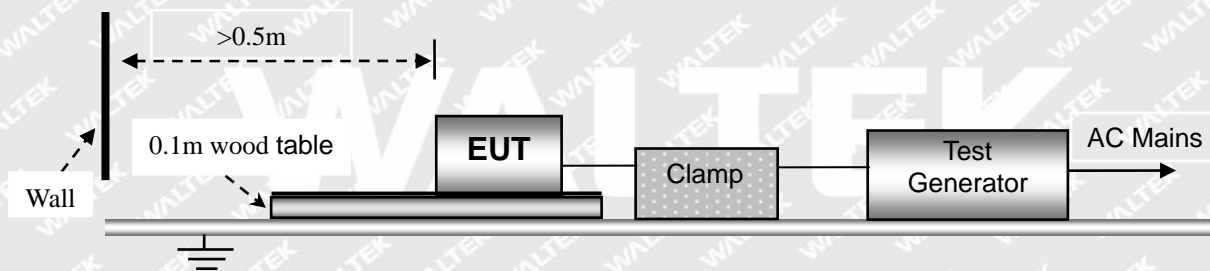
Test is conducting under the description of EN 61000-4-5.

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-TM3

Note: TM3 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-TM3			
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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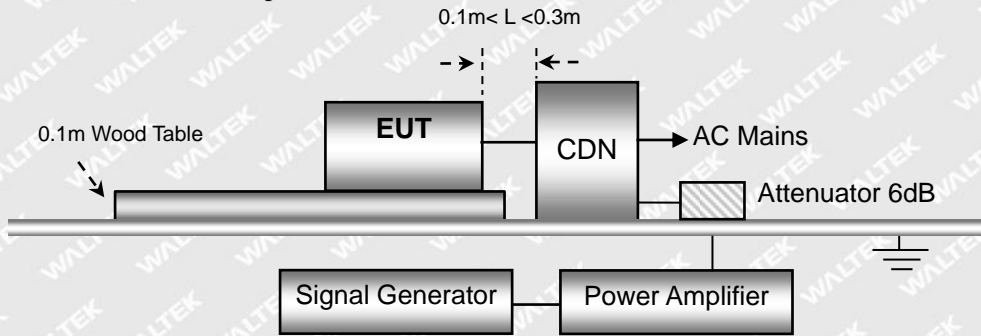
11. Radio Frequency, Common Mode (C/S)

11.1 Test Procedure

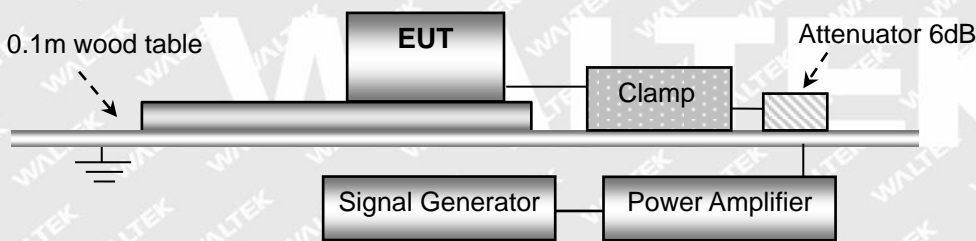
Test is conducting under the description of EN 61000-4-6.

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-TM3	A
Note: TM3 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-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

WALTEK

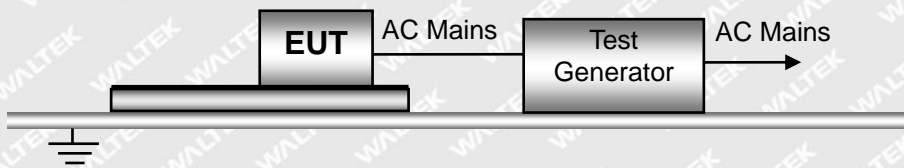


12. Voltage Dips and Interruptions

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-TM3	B for voltage dip/ C for voltage interruption
Note: TM3 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

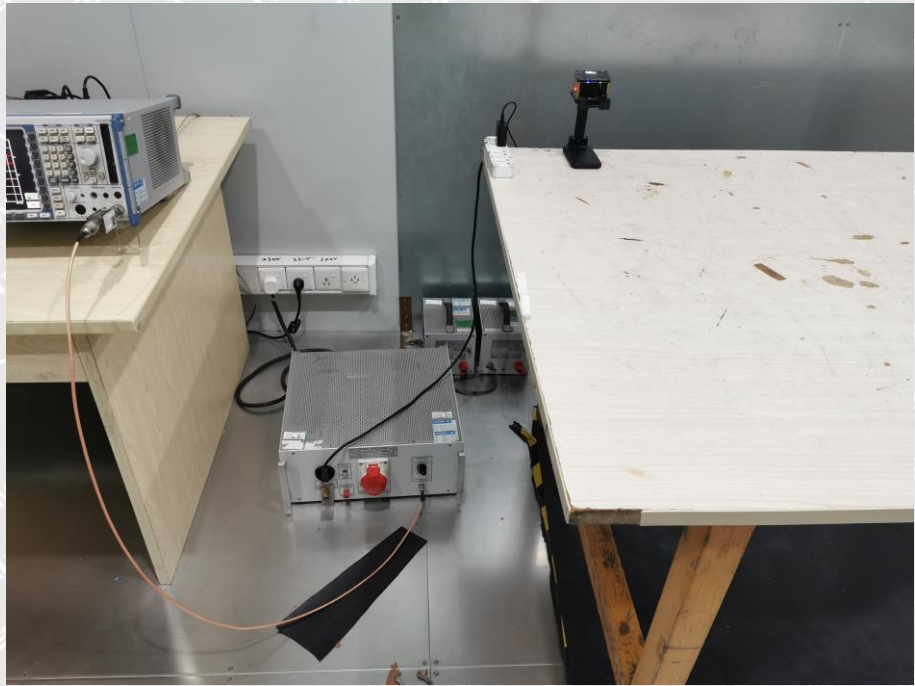
Please refer to "ANNEX".

WALTEK

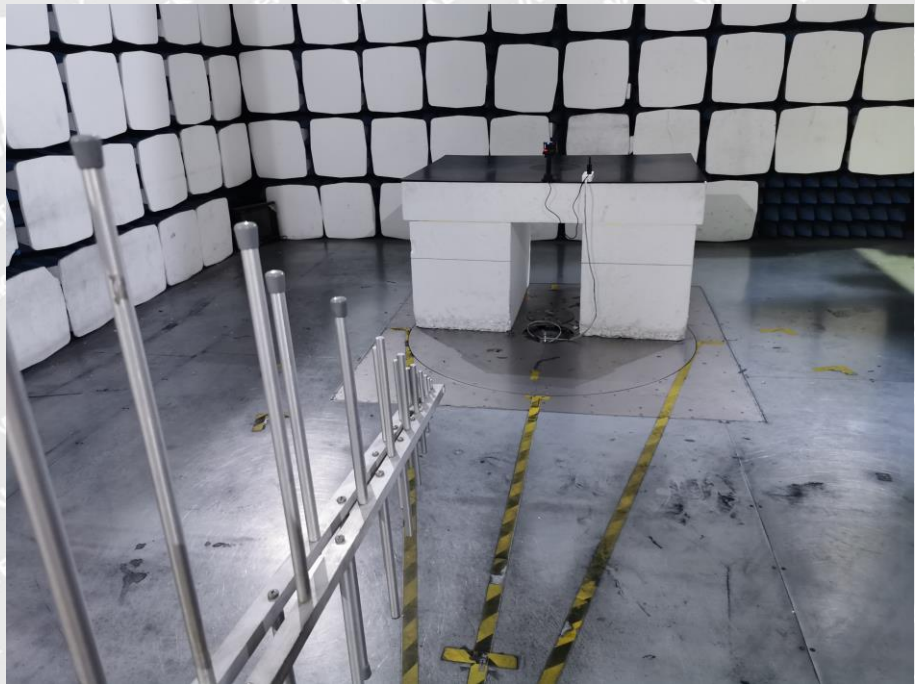


EXHIBIT 2 - TEST SETUP PHOTOGRAPHS

**Conducted Emission
Test Setup**



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

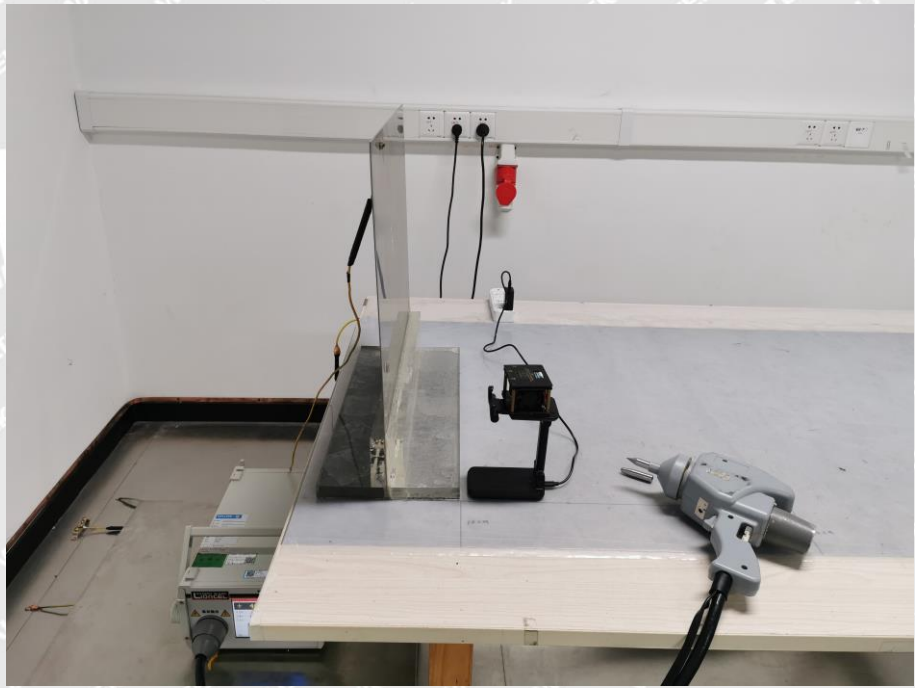




Harmonic/Flicker Test View

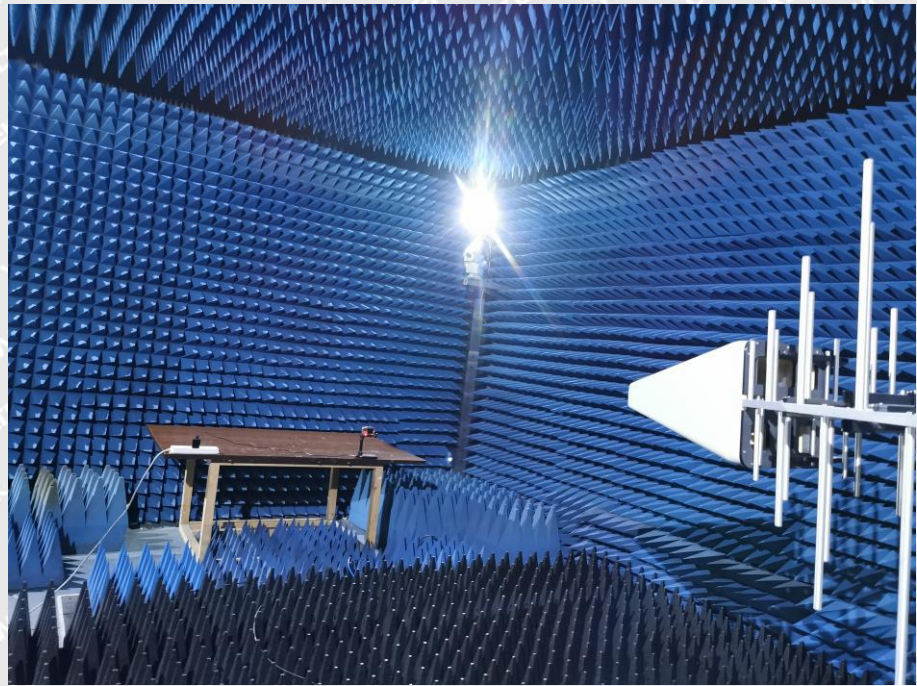


EN 61000-4-2 Test View





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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