

Test Report

Report No. : MTi250107021-0202E1
Date of issue : 2025-05-21
Applicant : Heltec Automation Technology Co., Ltd
Product : MeshPocket
Model(s) : HT298A, HT-298B, HT-298C, HT-298D, HT-298G,
HT-298P, HT-298S, HT-298T, HT-298Z

Shenzhen Microtest Co., Ltd.



TEST REPORT

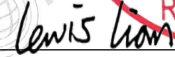
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Test Result Certification		
Applicant	Heltec Automation Technology Co., Ltd	
Applicant Address	1f, No.54, 56, 58, Zirui North Street, Gaoxin District, Chengdu	
Manufacturer	Heltec Automation Technology Co., Ltd	
Manufacturer Address	1f, No.54, 56, 58, Zirui North Street, Gaoxin District, Chengdu	
Product description		
Product name	MeshPocket	
Trademark		
Model name	HT298A	
Series Model(s)	HT-298B, HT-298C, HT-298D, HT-298G, HT-298P, HT-298S, HT-298T, HT-298Z	
Standards	EN 55032:2015+A1:2020 EN IEC 61000-3-2:2019+ A1:2021 EN 61000-3-3:2013+A2: 2021 EN 55035:2017+A11:2020	
Testing Information		
Date of test	2025-04-25 to 2025-05-21	
Test result	Pass	
Prepared by:	Lyla Cao	
Reviewed by:	David Lee	
Approved by:	Lewis Lian	



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1 General Description

1.1 Description of the EUT

Product name:	MeshPocket
Model name:	HT298A
Series Model(s):	HT-298B, HT-298C, HT-298D, HT-298G, HT-298P, HT-298S, HT-298T, HT-298Z
Model difference:	All the models are the same circuit and module, except the model name.
Electrical rating:	Type-C Input: DC 5V/3A, 9V/2.22A Type-C Output: DC 5V/3A, 9V/2.22A Battery: DC 3.87V 5000mAh 19.35Wh Wireless Output: 5W/7.5W/10W/15W
Accessories:	Cable: 1. USB-A Magnetic charging cable(60cm)*1 2. Type-C to Type-C cable(25cm) *1
Test sample(s) number:	MTi250107021-02-E001

1.2 Description of test modes

For test, the EUT has been pre-tested under the following test modes, Only the worst case data will be shown in the report.

No.	Emission test modes
Mode1	Charging(Type-C)+Wireless output: 5W
Mode2	Charging(Type-C)+Wireless output: 7.5W
Mode3	Wireless output: 5W+Type-C Output: 10W
Mode4	Type-C Output: DC 5V/3A
Mode5	Type-C Output: DC 9V/2.22A

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1.3 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15°C ~ 35°C
Humidity:	20% RH ~ 75% RH (30% RH ~ 60% RH for ESD test)
Atmospheric pressure:	98 kPa ~ 101 kPa

1.4 Description of support units

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

Support equipment list

Description	Model	Serial No.	Manufacturer
Load	/	/	/
wireless charging load	YBZ1.1	/	YBZ
USB-C AC adapter(65W)	EP-TA865	/	SAMSUNG

Support cable list

Description	Length (m)	From	To
/	/	/	/

1.5 Measurement uncertainty

Measurement	Uncertainty
Conducted emissions (AMN 150kHz~30MHz)	±3.1dB
Radiated emissions (30MHz~1GHz)	±4.7dB
Radiated emissions (above 1GHz)	±5.1dB
Temperature	±1 °C
Humidity	± 5 %

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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2 Summary of Test Result

No.	Item	Standard	Requirement	Result
1	Conducted emissions from AC mains power ports (150kHz-30MHz)	EN 55032:2015+A1:2020	Class B	Pass
2	Radiated emissions (30MHz-1GHz)	EN 55032:2015+A1:2020	Class B	Pass
3	Radiated emissions (above 1GHz)	EN 55032:2015+A1:2020	Class B	Pass
4	Harmonic current emission	EN IEC 61000-3-2:2019+A1:2021	Class A	N/A
5	Voltage fluctuations and flicker	EN 61000-3-3:2013+A2:2021	Clause 4	Pass
6	Electrostatic discharges	EN 55035:2017+A11:2020	Contact Discharge: +/- 4kV Air Discharge: +/- 8kV	Pass
7	RF electromagnetic field disturbances	EN 55035:2017+A11:2020	3V/m, 80%, 1kHz Amp. Mod.	Pass
8	Electrical fast transients / burst for AC mains power ports	EN 55035:2017+A11:2020	1kV; 5/50ns Tr/Th; 5kHz Repetition Frequency	Pass
9	Surges for AC mains power ports	EN 55035:2017+A11:2020	1.2/50 μ s Tr/Td; 1kV Line to Line	Pass
10	Continuous induced RF disturbances for AC mains power ports (150kHz-80MHz)	EN 55035:2017+A11:2020	0,15 to 10MHz 3Vrms (emf), 10 to 30MHz 3V to 1Vrms(emf), 30 to 80MHz 1Vrms(emf), 80%, 1kHz Amp. Mod.	Pass
11	Voltage dips and interruptions	EN 55035:2017+A11:2020	<5% residual voltage for 0.5 periods: B, 70% residual voltage: 25 periods for 50Hz, 30 periods for 60Hz: C, <5% residual voltage: 250 periods for 50Hz, 300 periods for 60Hz: C	Pass

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3 Test Facilities and accreditations

3.1 Test laboratory

Test laboratory:	Shenzhen Microtest Co., Ltd.
Test site location:	101, No.7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	(86-755)88850135
Fax:	(86-755)88850136
CNAS Registration No.:	CNAS L5868
FCC Registration No.:	448573
IC Registration No.:	21760
CABID:	CN0093

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4 List of test equipment

No.	Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due
Conducted emissions from AC mains power ports (150kHz-30MHz)						
1	EMI Test Receiver	Rohde&schwarz	ESCI3	101368	2025-03-14	2026-03-13
2	Artificial mains network	Schwarzbeck	NSLK 8127	183	2025-03-18	2026-03-17
3	Artificial Mains Network	Rohde & Schwarz	ESH2-Z5	100263	2025-03-18	2026-03-17
Radiated emissions (30MHz-1GHz)						
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2025-03-14	2026-03-13
2	TRILOG Broadband Antenna	schwarabeck	VULB 9163	9163-1338	2023-06-11	2025-06-10
3	Amplifier	Hewlett-Packard	8447F	3113A06184	2025-03-18	2026-03-17
Radiated emissions (above 1GHz)						
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2025-03-14	2026-03-13
2	Double Ridged Broadband Horn Antenna	schwarabeck	BBHA 9120 D	2278	2023-06-17	2025-06-16
3	Amplifier	Agilent	8449B	3008A01120	2025-03-18	2026-03-17
Voltage fluctuations and flicker						
1	Harmonics & Flicker Analyser	Laplace Instruments LTD	AC 2000A	311216	2025-03-14	2026-03-13
Electrostatic discharges						
1	Electrical Discharge Simulator	3CTEST	EDS 30V	ES031000420021	2025-05-06	2026-05-05
RF electromagnetic field disturbances						
1	Power Amplifier	micotop	MPA-80-1000-250	MPA1903081	2025-03-18	2026-03-17
2	Matrix Switch	micotop	MSW-80-6000-RS	MPA1903083	2025-03-19	2026-03-18
3	Power Amplifier	micotop	MPA-1000-6000-75	MPA1903082	2025-03-18	2026-03-17
4	Audio Analyzer	Agilent	U8903A	MY52140004	2025-03-18	2026-03-17
5	Stacked Log. Per. Broadband Antenna	Schwarzbeck	STLP 9129	00113	2023-04-26	2026-04-25
6	MXG RF Signal Generator	Agilent	N5181A	MY47420567	2025-03-18	2026-03-17
7	Power Sensor	Agilent	E9304A H18	MY41497225	2025-03-17	2026-03-16
8	Power Sensor	Agilent	E9304A H18	MY41499117	2025-03-17	2026-03-16
9	EPM Series Power Meter	Agilent	E4419B	MY45102877	2025-03-18	2026-03-17
Electrical fast transients / burst for AC mains power ports						

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No.	Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due
1	Electrical Fast Transient Generator	HTEC Instrument Ltd.	HEFT 51	153701	2025-03-13	2026-03-12
Surges for AC mains power ports						
1	Surge Generator	HTEC Instrument Ltd.	HCWG 51	153702	2025-03-13	2026-03-12
Continuous induced RF disturbances for AC mains power ports (150kHz-80MHz)						
1	Coupled Decoupling Network	Schloder	M2+M3-16A	A2210332/2015	2025-03-18	2026-03-17
Voltage dips and interruptions						
1	Cycle Sag Simulator	Prima	DRP61011AG	PR15056303	2025-03-13	2026-03-12

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5 Evaluation Results (Evaluation)

5.1 Harmonic current emission

Test Requirement:	Class A
Test Limit:	Not specified
Test Method:	EN IEC 61000-3-2:2019+A1:2021

5.1.1 Conclusion:

Refer to EN IEC 61000-3-2 clause 7.1:

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

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

Since the rated power of the EUT is less than above described, it is deemed to comply with the requirement.

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6 Emission Test Results (EMI)

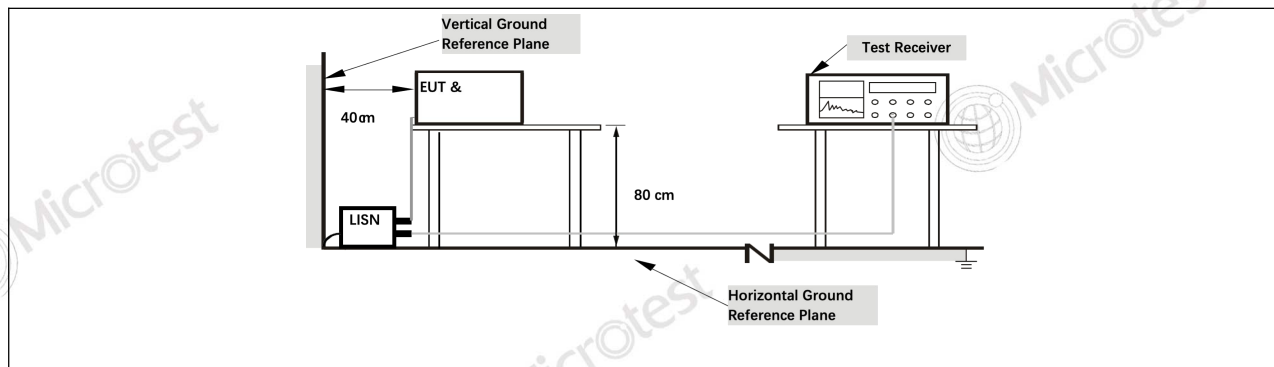
6.1 Conducted emissions from AC mains power ports (150kHz-30MHz)

Test Requirement:	Class B		
Test Limit:	Frequency Range	Limit (Quasi-Peak)	Limit (Average)
	0.15MHz to 0.5MHz	66dB(μV) to 56dB(μV)	56dB(μV) to 46dB(μV)
	0.5MHz to 5MHz	56dB(μV)	46dB(μV)
	5MHz to 30MHz	60dB(μV)	50dB(μV)
	Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz	
Test Method:	Clause 7 of CISPR 16-2-1:2014/AMD1:2017		
Procedure:	An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected. Remark: Level= Read Level+ Cable Loss+ LISN Factor		

6.1.1 E.U.T. Operation:

Operating Environment:			
Temperature:	25.9 °C	Humidity:	69 %
Pre test mode:	Mode1, Mode2		
Final test mode:	All of the listed pre-test mode were tested, only the data of the worst mode (Mode2) is recorded in the report		

6.1.2 Test Setup Diagram:

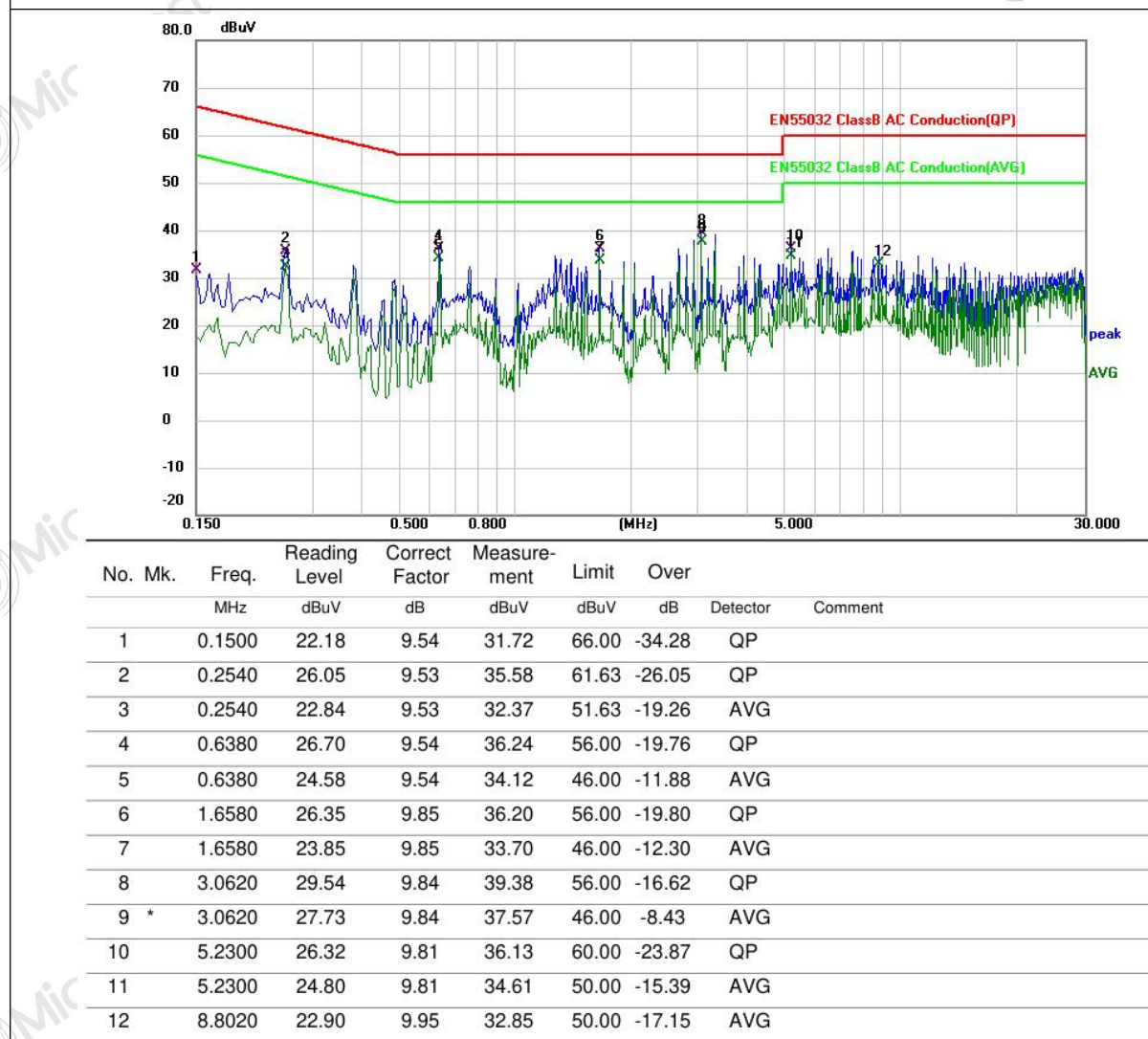


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6.1.3 Test Data:

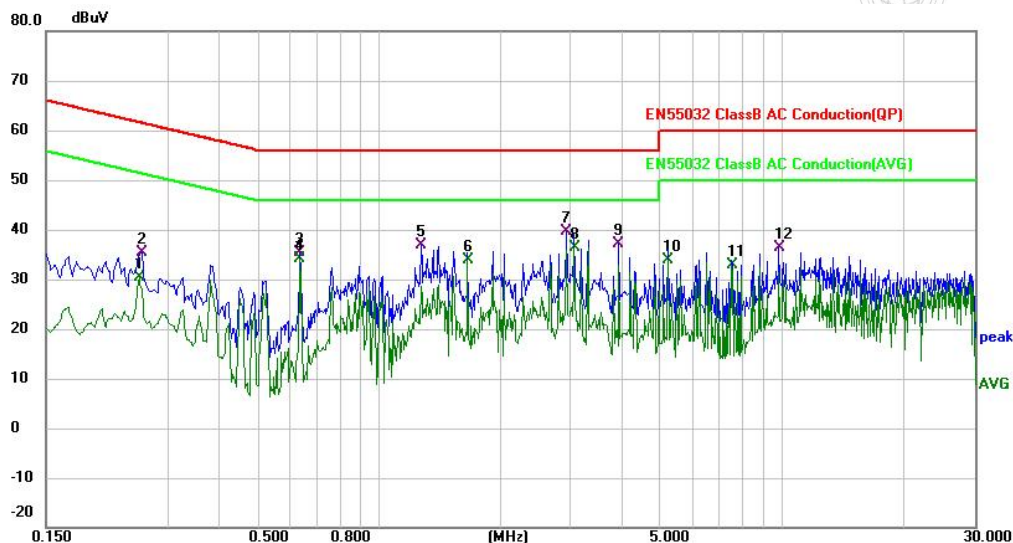
Mode2 / Line: Line



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Mode2 / Line: Neutral



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2540	20.51	9.80	30.31	51.63	-21.32	AVG	
2		0.2580	25.68	9.79	35.47	61.50	-26.03	QP	
3		0.6380	25.63	9.81	35.44	56.00	-20.56	QP	
4		0.6380	24.42	9.81	34.23	46.00	-11.77	AVG	
5		1.2740	27.02	9.89	36.91	56.00	-19.09	QP	
6		1.6580	23.96	9.84	33.80	46.00	-12.20	AVG	
7		2.9340	29.72	9.81	39.53	56.00	-16.47	QP	
8	*	3.0620	26.62	9.82	36.44	46.00	-9.56	AVG	
9		3.9540	27.06	10.03	37.09	56.00	-18.91	QP	
10		5.2300	23.87	9.92	33.79	50.00	-16.21	AVG	
11		7.5220	22.86	9.92	32.78	50.00	-17.22	AVG	
12		9.8180	26.49	9.89	36.38	60.00	-23.62	QP	

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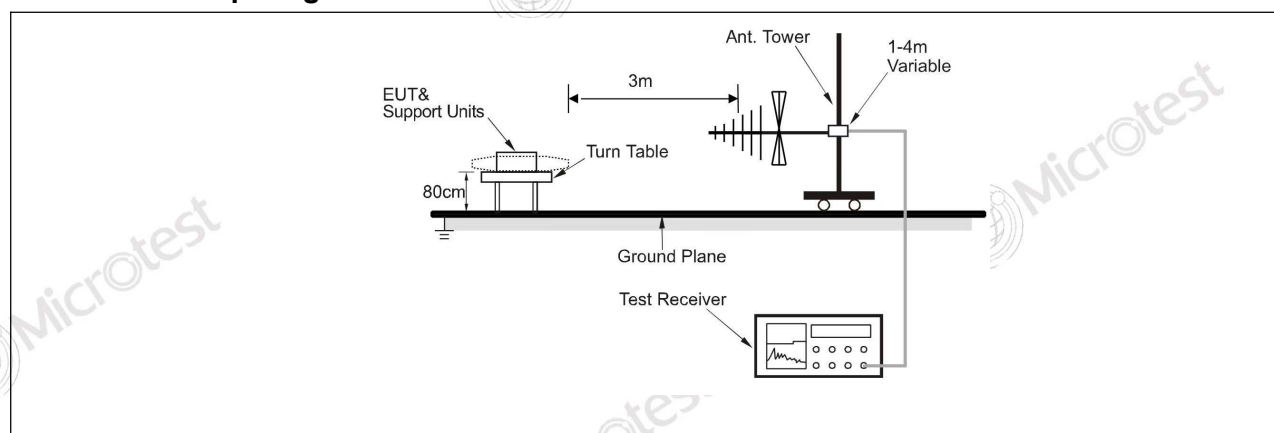
6.2 Radiated emissions (30MHz-1GHz)

Test Requirement:	Class B			
Test Limit:	Frequency (MHz)	Limit [dB(uV/m) at 10m]	Limit [dB(uV/m) at 3m]	
	30 to 230	30	40	
	230 to 1000	37	47	
	Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz		
Test Method:	Clause 7.3 of CISPR 16-2-3:2016			
Procedure:	An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities. Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor			

6.2.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.5 °C	Humidity:	43 %	Atmospheric Pressure:	101 kPa
Pre test mode:	Mode1, Mode2, Mode3, Mode4, Mode5				
Final test mode:	All of the listed pre-test mode were tested, only the data of the worst mode (Mode4) is recorded in the report				

6.2.2 Test Setup Diagram:

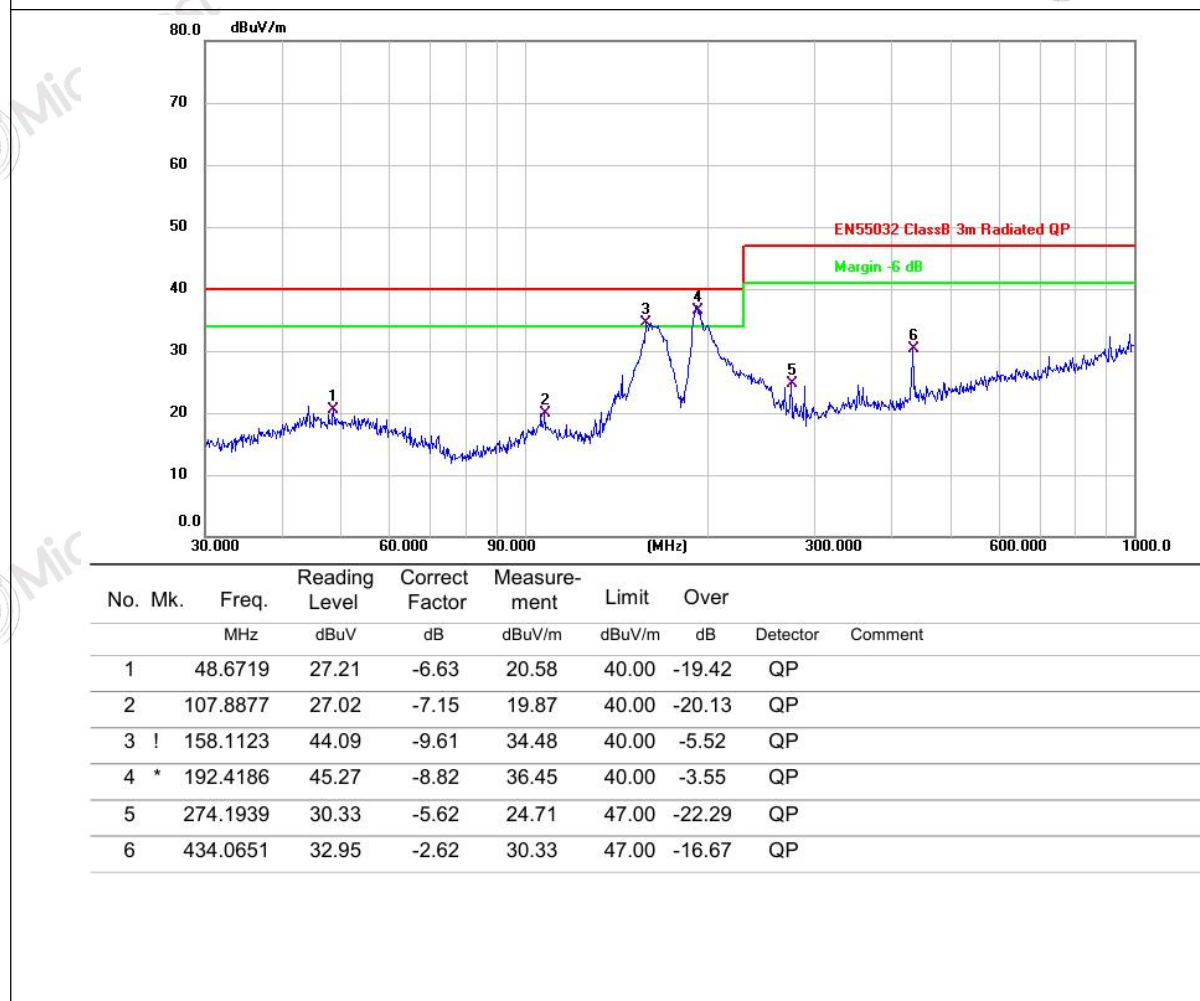


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6.2.3 Test Data:

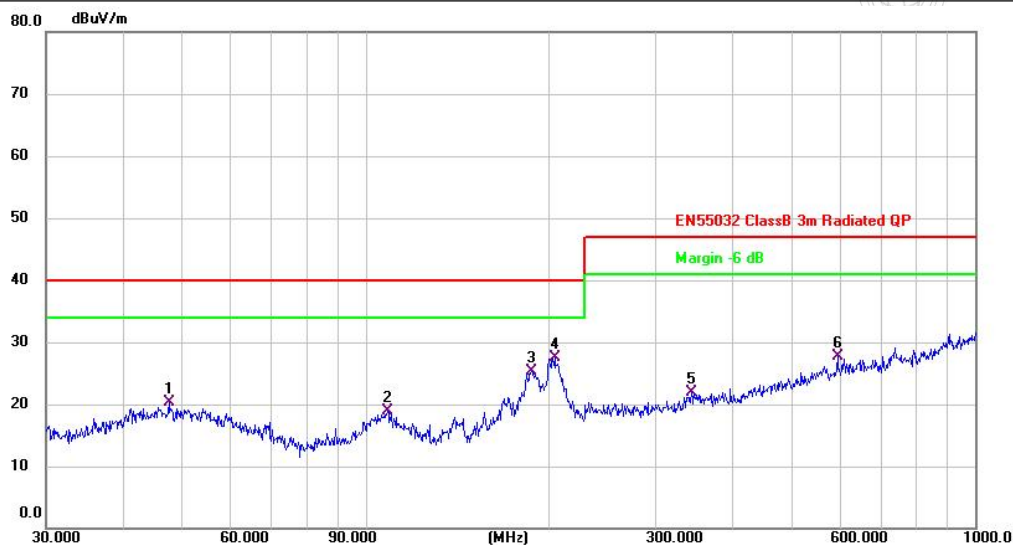
Mode4 / Polarization: Horizontal



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Mode4 / Polarization: Vertical



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	47.6584	27.21	-6.81	20.40	40.00	-19.60	QP	
2	108.6470	26.18	-7.18	19.00	40.00	-21.00	QP	
3	187.7529	34.55	-9.15	25.40	40.00	-14.60	QP	
4 *	204.9550	34.28	-6.81	27.47	40.00	-12.53	QP	
5	343.1800	25.53	-3.63	21.90	47.00	-25.10	QP	
6	595.1327	27.51	0.21	27.72	47.00	-19.28	QP	

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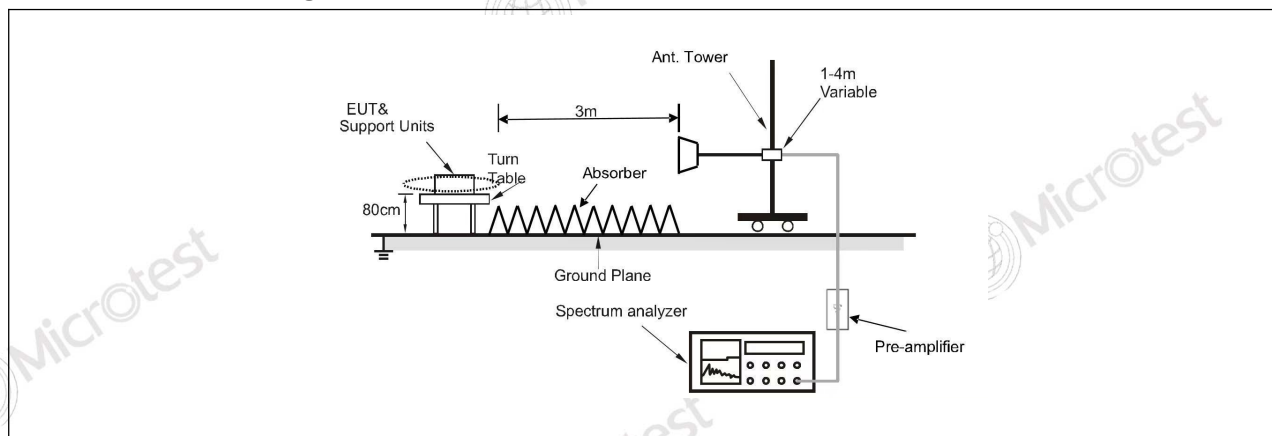
6.3 Radiated emissions (above 1GHz)

Test Requirement:	Class B		
Test Limit:	Frequency (MHz)	Limit (dBuV/m)	
		Peak	Average
	1000 to 6000	74	54
	Detector: Peak for pre-scan (1000kHz resolution bandwidth) 1000MHz to 6000MHz		
Test Method:	Clause 7.6 of CISPR 16-2-3:2016		
Procedure:	An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities. Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamplifier Factor		

6.3.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.8 °C	Humidity:	75 %	Atmospheric Pressure:	99.8 kPa
Pre test mode:	Mode1, Mode2				
Final test mode:	All of the listed pre-test mode were tested, only the data of the worst mode (Mode1) is recorded in the report				

6.3.2 Test Setup Diagram:

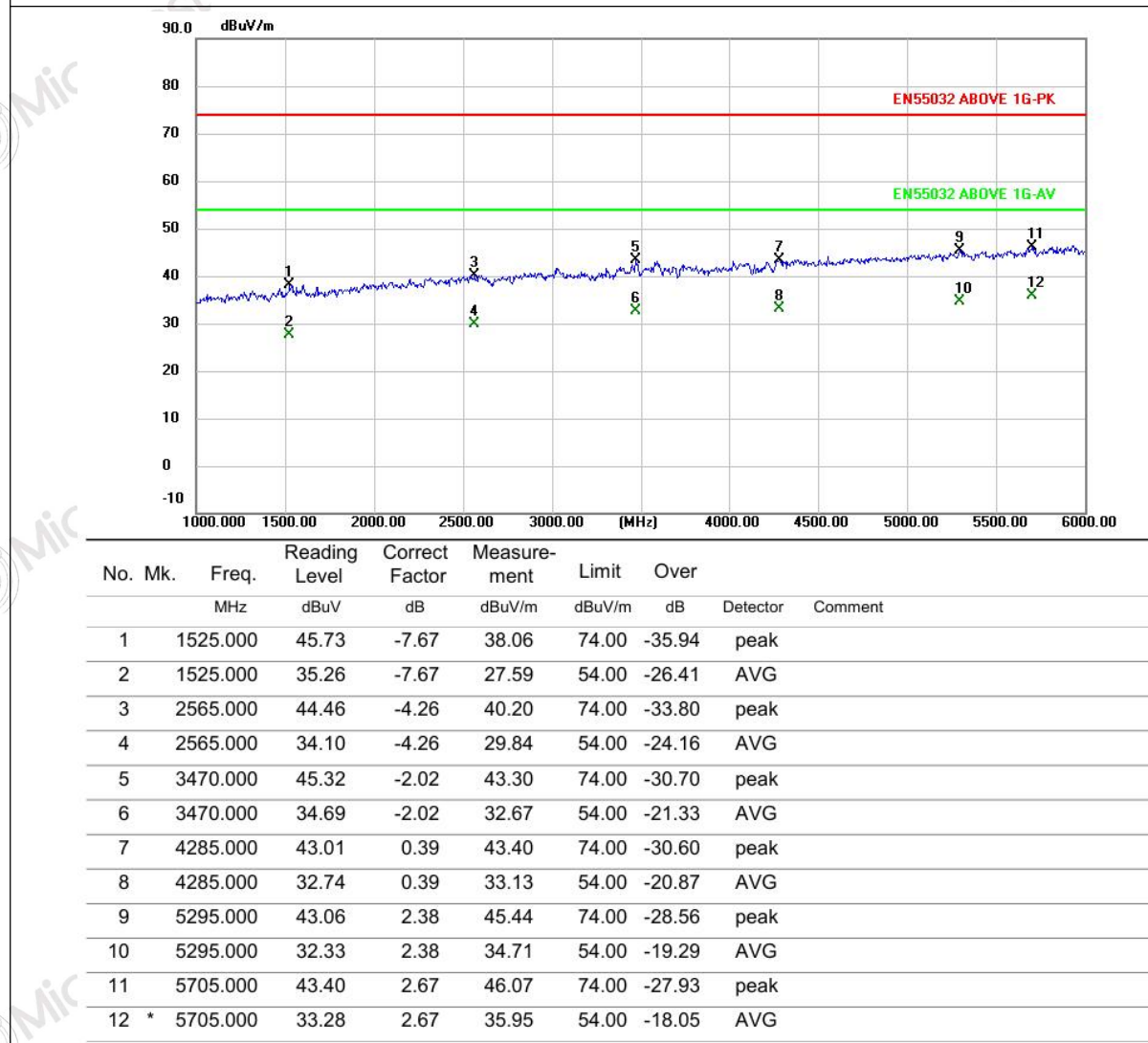


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6.3.3 Test Data:

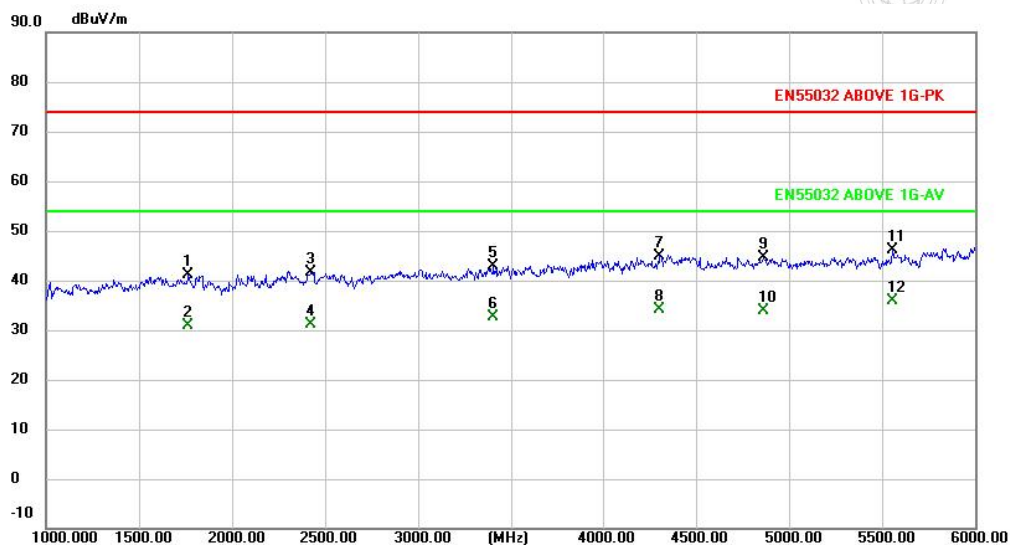
Mode1 / Polarization: Horizontal



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Mode1 / Polarization: Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		1765.000	48.03	-6.80	41.23	74.00	-32.77	peak	
2		1765.000	37.66	-6.80	30.86	54.00	-23.14	AVG	
3		2425.000	46.31	-4.62	41.69	74.00	-32.31	peak	
4		2425.000	35.66	-4.62	31.04	54.00	-22.96	AVG	
5		3405.000	45.04	-2.07	42.97	74.00	-31.03	peak	
6		3405.000	34.65	-2.07	32.58	54.00	-21.42	AVG	
7		4305.000	44.32	0.45	44.77	74.00	-29.23	peak	
8		4305.000	33.80	0.45	34.25	54.00	-19.75	AVG	
9		4865.000	42.78	1.84	44.62	74.00	-29.38	peak	
10		4865.000	32.09	1.84	33.93	54.00	-20.07	AVG	
11		5555.000	43.60	2.52	46.12	74.00	-27.88	peak	
12	*	5555.000	33.29	2.52	35.81	54.00	-18.19	AVG	

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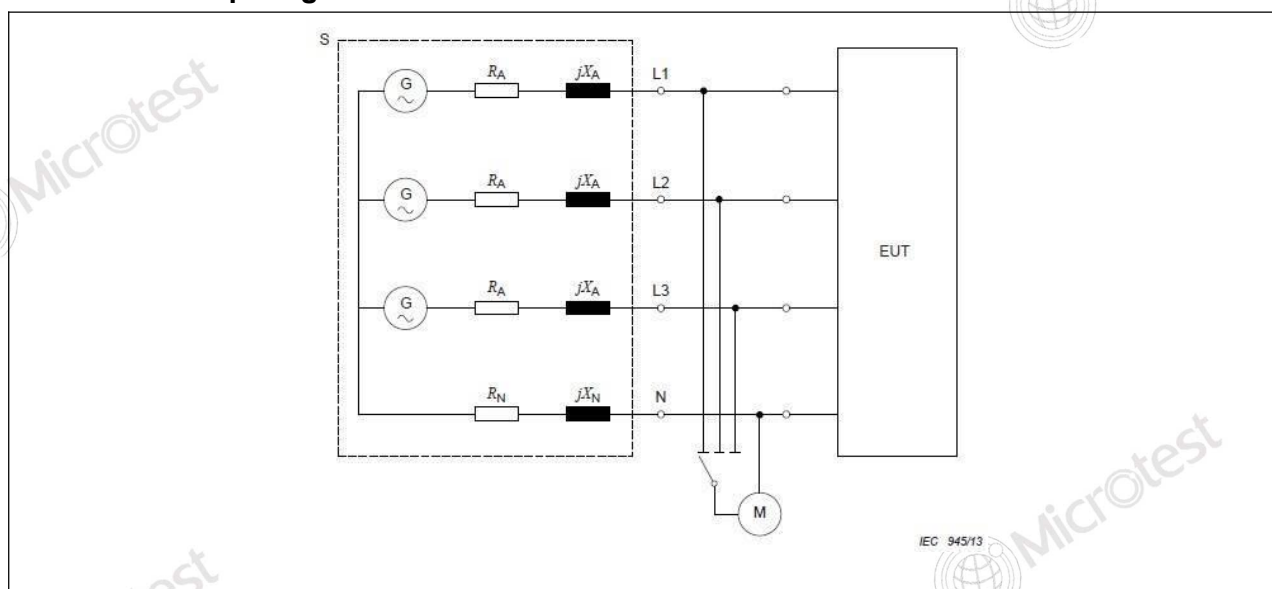
6.4 Voltage fluctuations and flicker

Test Requirement:	Clause 4
Test Limit:	EN 61000-3-3, Clause 5
Test Method:	EN 61000-3-3:2013+A2:2021

6.4.1 E.U.T. Operation:

Operating Environment:					
Temperature:	24.3 °C	Humidity:	63 %	Atmospheric Pressure:	101 kPa
Pre test mode:	Mode1, Mode2				
Final test mode:	All of the listed pre-test mode were tested, only the data of the worst mode (Mode2) is recorded in the report				

6.4.2 Test Setup Diagram:



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6.4.3 Test Data:

HA-PC Link Plus. Software v4.00. Firmware v4.02
Report Number :282
Tested On : 25 April 2025 10:49 for 600 Seconds.
Serial Number : MTi250107021-0202
Tested by : Ryan

Load Power : 12.6 W 31.8 VA Power Factor 0.396
Load Current : 0.1 Arms 0.7 Apk Crest Factor 4.741

EN 61000-3-3:2013 - Voltage reduction is positive

Voltage Variations

Nominal Voltage: 230 Vrms
Highest Half-cycle level: -0.11%
Lowest Half-cycle level: +0.77%

d(max): -0.21% Limit: 4% PASS
t(max): 0.00seconds Limit: 500ms PASS

Steady State definition: >1000ms within +/- 0.2%
Largest d(c) change down: +0.02%
Largest d(c) change up: -0.00%
Largest d(c) change: +0.02% Limit: 3.3% PASS

Flicker

Short Term Flicker Pst: 0.00 Limit: 1.00 PASS

Pst Classifier Plt Calculation

Duration Flicker Interval Pst

0.1% 0.00
0.7% 0.00
1.0% 0.00
1.5% 0.00
2.2% 0.00
3% 0.00
4% 0.00
6% 0.00
8% 0.00
10% 0.00
13% 0.00
17% 0.00
30% 0.00
50% 0.00
80% 0.00

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7 Immunity Test Results (EMS)

General Performance Criteria

Performance Criteria A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended.

The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Performance Criteria B

During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test. After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended.

The performance level may be replaced by a permissible loss of performance.

If the minimum performance level (or the permissible performance loss), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Performance Criteria C

Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed.

Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

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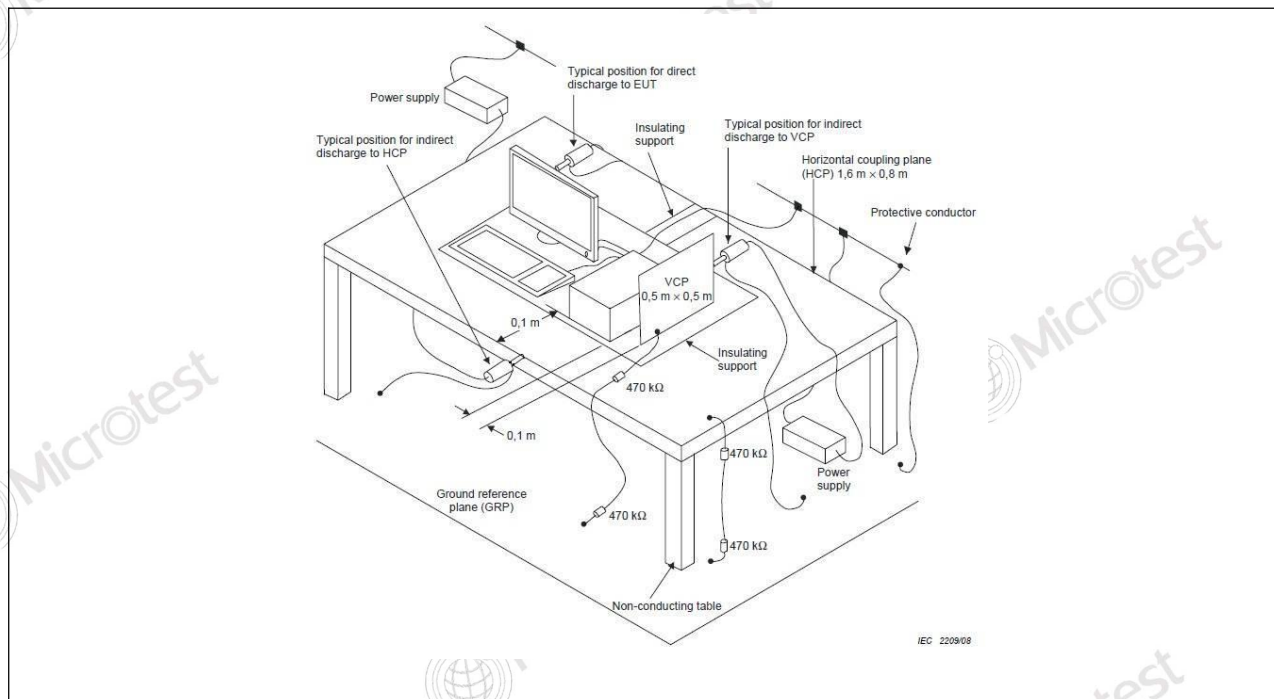
7.1 Electrostatic discharges

Test Requirement:	Contact Discharge: +/- 4kV Air Discharge: +/- 8kV
Test Method:	EN 61000-4-2: 2009
Procedure:	Discharge Impedance: 330Ω/150pF Number of Discharge: Minimum 10 times at each test point Discharge Mode: Single Discharge Discharge Period: 1 second minimum
Performance Criteria:	B

7.1.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.1 °C	Humidity:	43 %	Atmospheric Pressure:	101.3 kPa
Pre test mode:	Mode1, Mode2, Mode3, Mode4, Mode5				
Final test mode:	All of the listed pre-test mode were tested, only the data of the worst mode (Mode2) is recorded in the report				

7.1.2 Test Setup Diagram:



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7.1.3 Test Data:

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

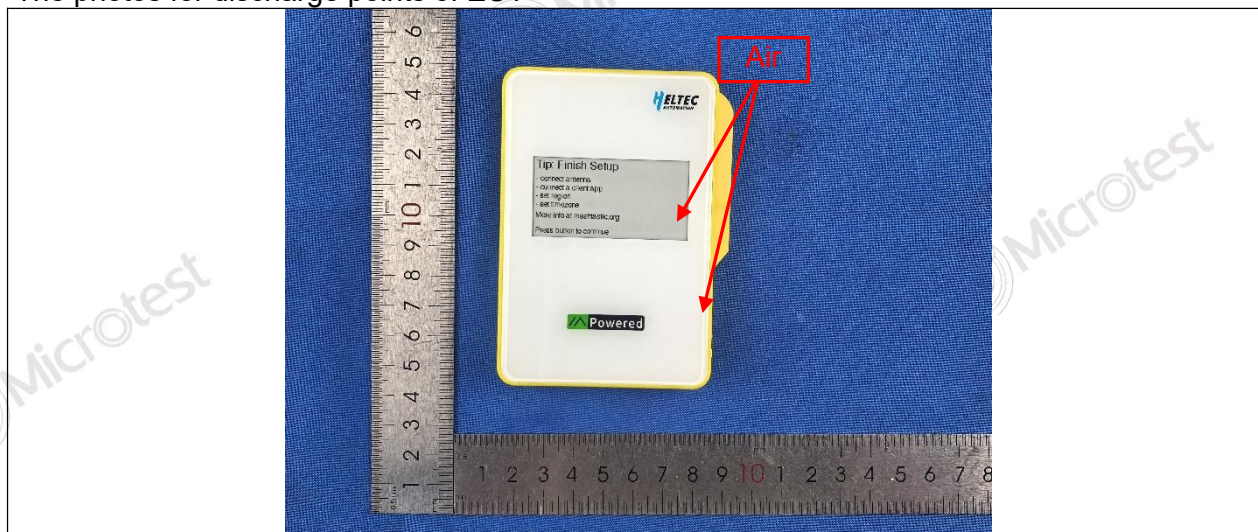
Test Point: 1. All insulated enclosure and seams.

2. All accessible metal parts of the enclosure.

3. All side.

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

The photos for discharge points of EUT



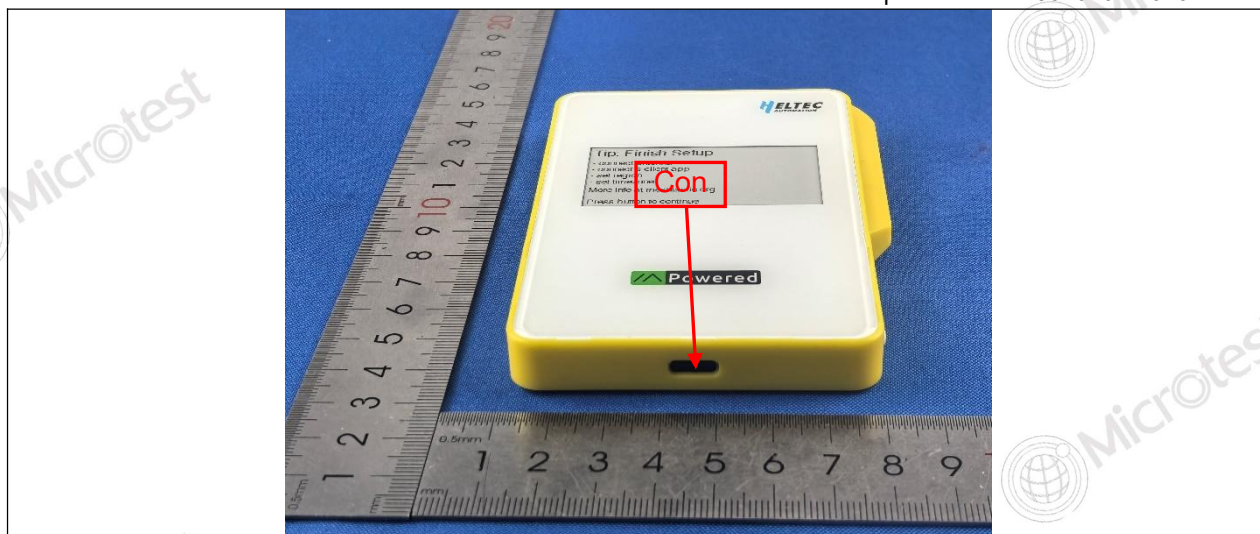
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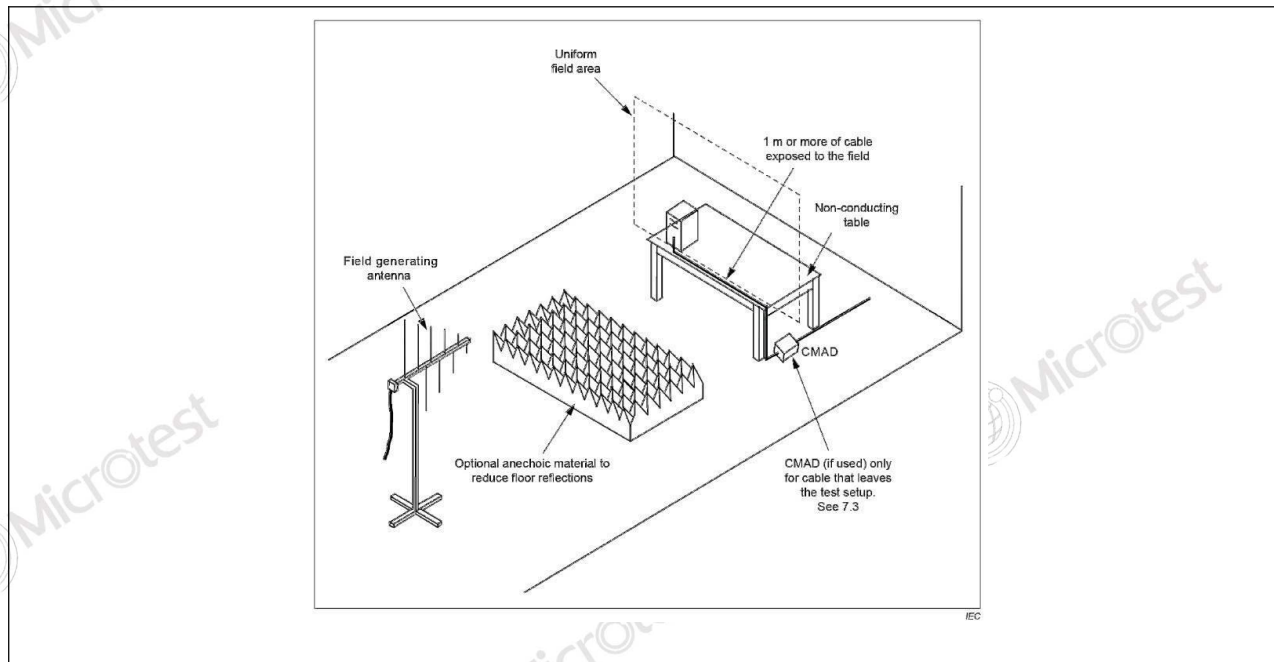
7.2 RF electromagnetic field disturbances

Test Requirement:	3V/m, 80%, 1kHz Amp. Mod.
Test Method:	EN IEC 61000-4-3: 2020
Procedure:	Frequency Range: 80MHz to 1GHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz Antenna Polarisation: Vertical and Horizontal Modulation: 1kHz,80% Amp. Mod,1% increment
Performance Criteria:	A

7.2.1 E.U.T. Operation:

Operating Environment:					
Temperature:	26.4 °C	Humidity:	55 %	Atmospheric Pressure:	101 kPa
Pre test mode:	Mode1, Mode2, Mode3, Mode4, Mode5				
Final test mode:	All of the listed pre-test mode were tested, only the data of the worst mode (Mode2) is recorded in the report				

7.2.2 Test Setup Diagram:



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7.2.3 Test Data:

Frequency	Field Strength (V/m)	EUT face	Dwell time	Result/ Observations
80MHz-1GHz	3	Front	3s	A
80MHz-1GHz	3	Back	3s	A
80MHz-1GHz	3	Left	3s	A
80MHz-1GHz	3	Right	3s	A
80MHz-1GHz	3	Top	3s	A
80MHz-1GHz	3	Bottom	3s	A
1800MHz	3	Front	3s	A
1800MHz	3	Back	3s	A
1800MHz	3	Left	3s	A
1800MHz	3	Right	3s	A
1800MHz	3	Top	3s	A
1800MHz	3	Bottom	3s	A
2600MHz	3	Front	3s	A
2600MHz	3	Back	3s	A
2600MHz	3	Left	3s	A
2600MHz	3	Right	3s	A
2600MHz	3	Top	3s	A
2600MHz	3	Bottom	3s	A
3500MHz	3	Front	3s	A
3500MHz	3	Back	3s	A
3500MHz	3	Left	3s	A
3500MHz	3	Right	3s	A
3500MHz	3	Top	3s	A
3500MHz	3	Bottom	3s	A
5000MHz	3	Front	3s	A
5000MHz	3	Back	3s	A
5000MHz	3	Left	3s	A
5000MHz	3	Right	3s	A
5000MHz	3	Top	3s	A
5000MHz	3	Bottom	3s	A

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

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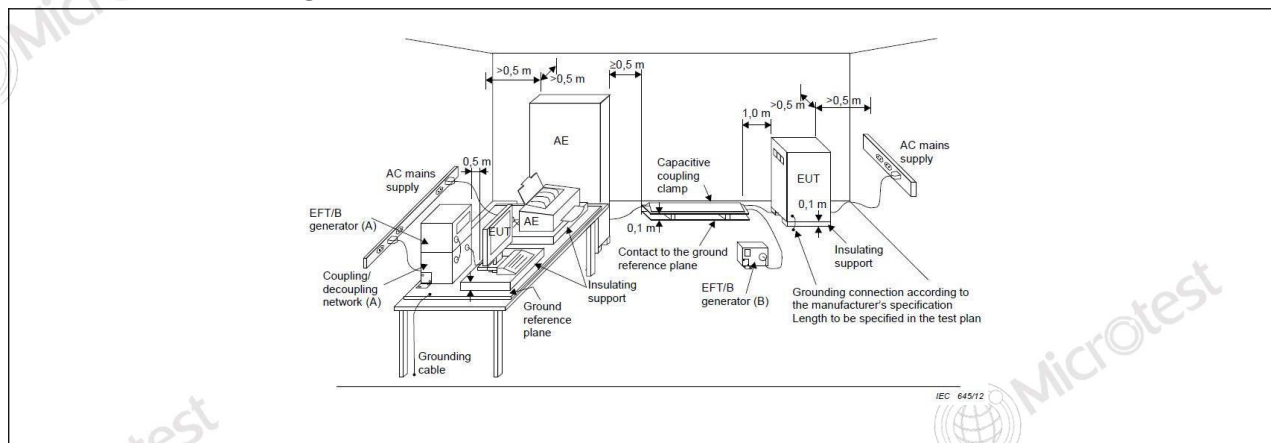
7.3 Electrical fast transients / burst for AC mains power ports

Test Requirement:	1kV; 5/50ns Tr/Th; 5kHz Repetition Frequency
Test Method:	EN 61000-4-4: 2012
Procedure:	Repetition Frequency: 5kHz Burst Period: 300ms Test Duration: 2 minute per level & polarity
Performance Criteria:	B

7.3.1 E.U.T. Operation:

Operating Environment:					
Temperature:	24.3 °C	Humidity:	63 %	Atmospheric Pressure:	101 kPa
Pre test mode:	Mode1, Mode2				
Final test mode:	All of the listed pre-test mode were tested, only the data of the worst mode (Mode2) is recorded in the report				

7.3.2 Test Setup Diagram:



7.3.3 Test Data:

Port	Volt (kV)	Polarity	CDN/ Clamp	Result/ Observations
AC power port	1	+	CDN	A
AC power port	1	-	CDN	A

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

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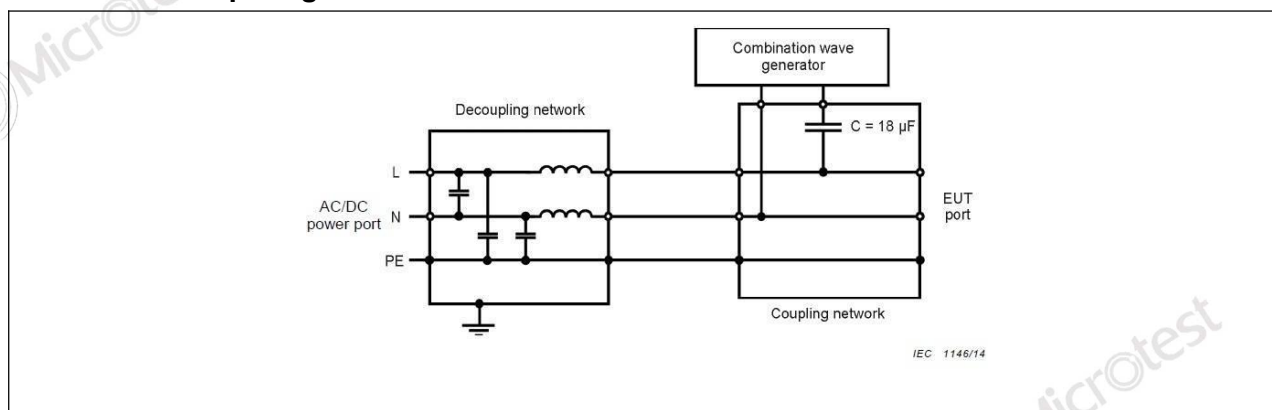
7.4 Surges for AC mains power ports

Test Requirement:	1.2/50 μ s Tr/Td; 1kV Line to Line
Test Method:	EN 61000-4-5: 2014 +A1: 2017
Procedure:	Interval: 60s between each surge No. of surges: 5 positive, 5 negative at 90°, 270°
Performance Criteria:	B

7.4.1 E.U.T. Operation:

Operating Environment:					
Temperature:	24.3 °C	Humidity:	63 %	Atmospheric Pressure:	101 kPa
Pre test mode:	Mode1, Mode2				
Final test mode:	All of the listed pre-test mode were tested, only the data of the worst mode (Mode2) is recorded in the report				

7.4.2 Test Setup Diagram:



7.4.3 Test Data:

Port	Volt (kV)	Polarity	Phase(degree)	Result/ Observations
L-N	1	+	90°	A
L-N	1	-	270°	A

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

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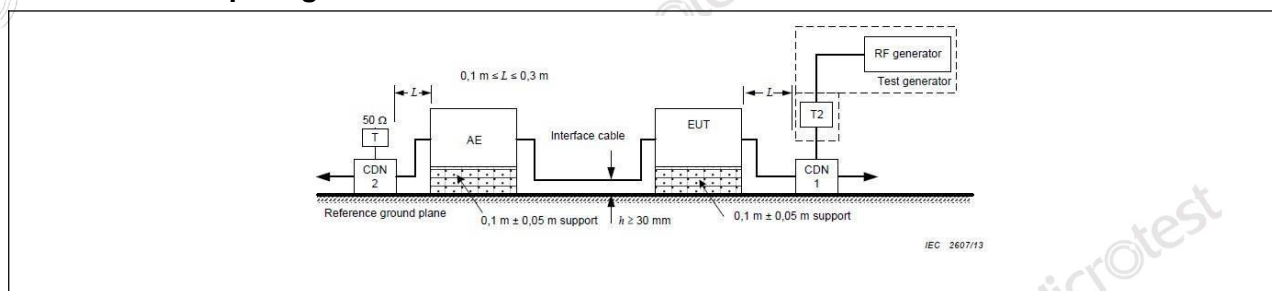
7.5 Continuous induced RF disturbances for AC mains power ports (150kHz-80MHz)

Test Requirement:	0,15 to 10MHz 3Vrms (emf), 10 to 30MHz 3V to 1Vrms(emf), 30 to 80MHz 1Vrms(emf), 80%,1kHz Amp. Mod.
Test Method:	EN 61000-4-6: 2014
Procedure:	Frequency Range: 0.15MHz to 80MHz Modulation: 80%, 1kHz Amplitude Modulation Step Size: 1%
Performance Criteria:	A

7.5.1 E.U.T. Operation:

Operating Environment:					
Temperature:	25.3 °C	Humidity:	62 %	Atmospheric Pressure:	101 kPa
Pre test mode:	Mode1, Mode2				
Final test mode:	All of the listed pre-test mode were tested, only the data of the worst mode (Mode2) is recorded in the report				

7.5.2 Test Setup Diagram:



7.5.3 Test Data:

Port	Strength (Vrms)	CDN/Clamp	Dwell time	Result/ Observations
AC power port	3(0.15MHz-10MHz)	CDN	3s	A
AC power port	3 to 1(10MHz-30MHz, Lines)	CDN	3s	A
AC power port	1(30MHz-80MHz)	CDN	3s	A

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

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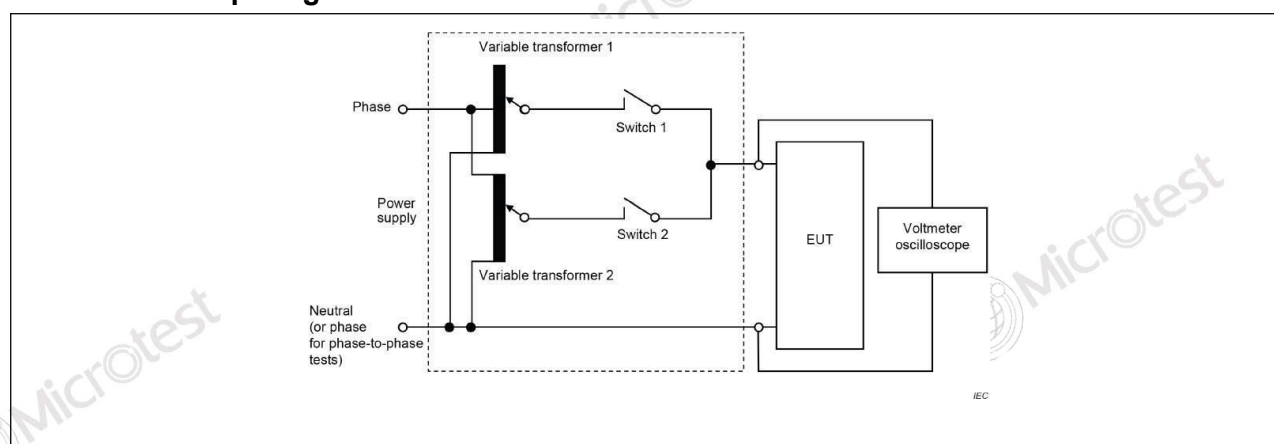
7.6 Voltage dips and interruptions

Test Requirement:	<5% residual voltage for 0.5 periods 70% residual voltage: 25 periods for 50Hz, 30 periods for 60Hz <5% residual voltage: 250 periods for 50Hz, 300 periods for 60Hz
Test Method:	EN IEC 61000-4-11:2020
Procedure:	<5% residual voltage for 0.5 period 70% residual voltage: 25 periods for 50Hz, 30 periods for 60Hz <5% residual voltage: 250 periods for 50Hz, 300 periods for 60Hz No. of Dips / Interruptions: 3 per Level Time between dropout: 10s
Performance Criteria:	B, C, C

7.6.1 E.U.T. Operation:

Operating Environment:					
Temperature:	24.3 °C	Humidity:	64 %	Atmospheric Pressure:	101 kPa
Pre test mode:	Mode1, Mode2				
Final test mode:	All of the listed pre-test mode were tested, only the data of the worst mode (Mode2) is recorded in the report				

7.6.2 Test Setup Diagram:



7.6.3 Test Data:

Level %UT	Phase (degree)	Duration	No. of Dips/ Interruptions	Result/ Observations
0	0°	0.5 Cycles	3	A
0	0°	250 Cycles	3	B
70	0°	25 Cycles	3	A

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

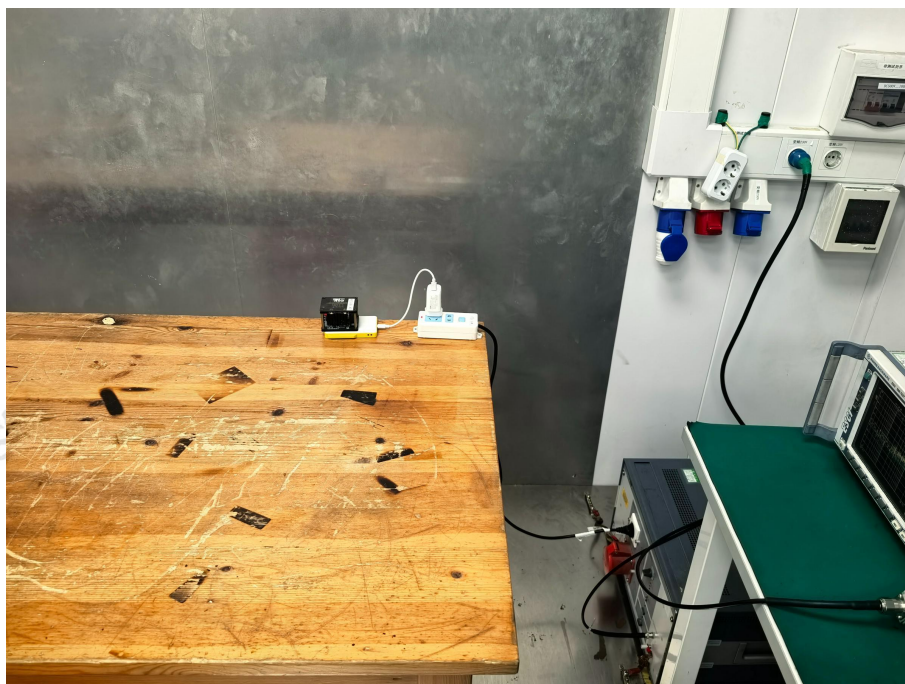
B: The EUT stopped operation during the test, but it can be recovered automatically after test.

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Photographs of the test setup

Conducted emissions from AC mains power ports (150kHz-30MHz)



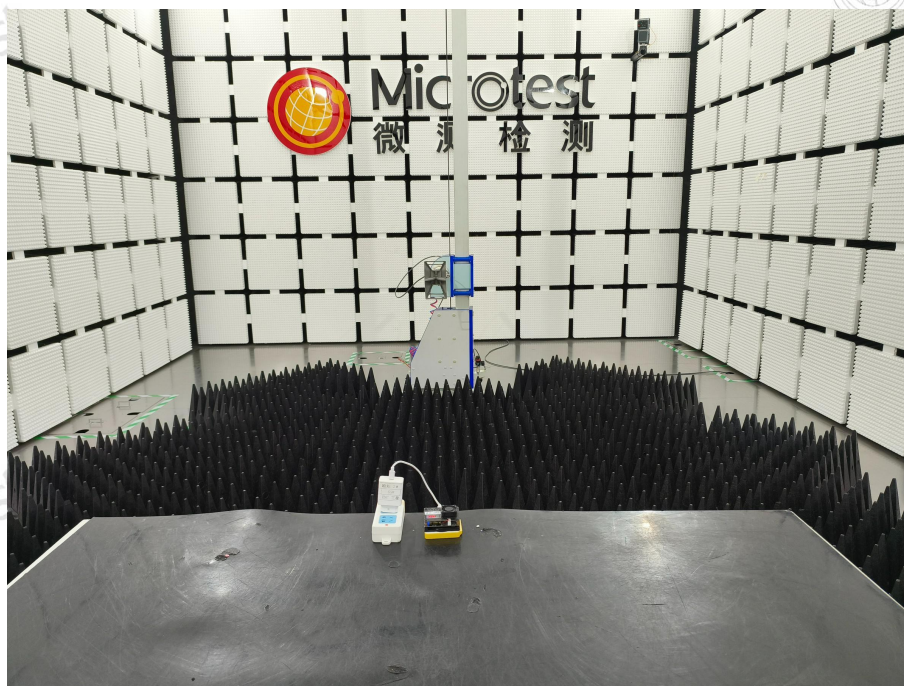
Radiated emissions (30MHz-1GHz)



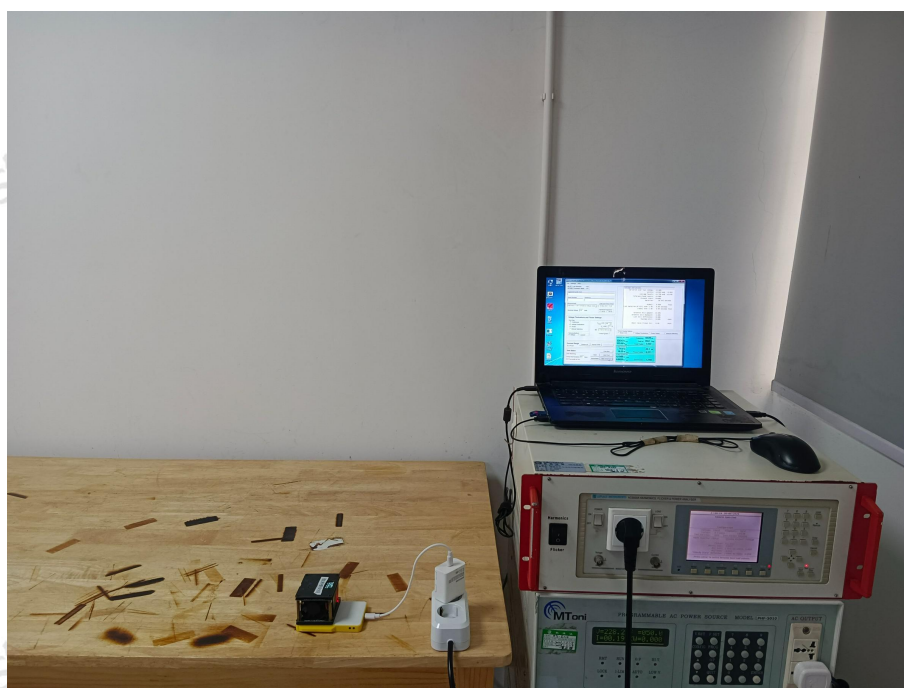
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Radiated emissions (above 1GHz)



Voltage fluctuations and flicker



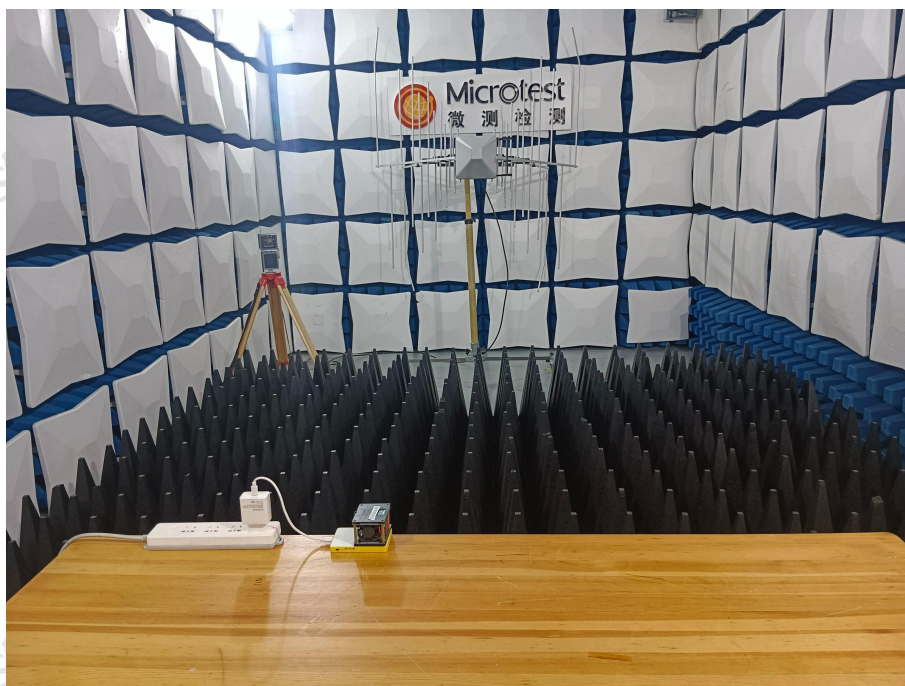
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Electrostatic discharges



RF electromagnetic field disturbances



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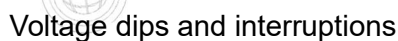
Electrical fast transients / burst for AC mains power ports



Surges for AC mains power ports



Continuous induced RF disturbances for AC mains power ports (150kHz-80MHz)



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Photographs of the EUT

Refer to Appendix - EUT Photos

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Statement

1. This report is invalid without the seal and signature of the laboratory.
2. The test results of this report are only responsible for the samples submitted. Client shall be responsible for representativeness of the sample and authenticity of the material.
3. The report shall not be partially reproduced without the written consent of the Laboratory.
4. This report is invalid if transferred, altered or tampered with in any form without authorization.
5. The observations or tests with special mark fall outside the scope of accreditation, and are only used for purpose of commission, research, training, internal quality control etc.
6. Any objection to this report shall be submitted to the laboratory within 15 days from the date of receipt of the report.

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