

EMC Test Report

Applicant : Acrel Co.,Ltd.

Address : No.253, Yulv Road, Jiading District, Shanghai
China

Product Name : Power Meter

Report Date : May 14, 2024

Shenzhen Anbotech Compliance Laboratory Limited



Shenzhen Anbotech Compliance Laboratory Limited

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TEST REPORT

Applicant : Acrel Co.,Ltd.
Manufacturer : Jiangsu Acrel Electric MFG. Co., Ltd.
Product Name : Power Meter
Test Model No. : DTSD1352-4S
Reference Model No. : N/A
Trade Mark : Acrel
Rating(s) : PT:3*230/400V
CT:3*50mA
Power AC/DC 85-265V
≤5W

Test Standard(s) : EN IEC 61326-1:2021

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with above listed standard(s) requirements. This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt:

Apr. 20, 2024

Date of Test:

Apr. 20, 2024 to May 10, 2024

Prepared By:

We Zeng

(We Zeng)

Approved & Authorized Signer:

KingKong Jin

(KingKong Jin)

Shenzhen Anbotek Compliance Laboratory Limited

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1. General Information

1.1. Client Information

Applicant	:	Acrel Co.,Ltd.
Address	:	No.253, Yulv Road, Jiading District, Shanghai China
Manufacturer	:	Jiangsu Acrel Electric MFG. Co., Ltd.
Address	:	No.5, Dongmeng Road, Nanzha Street, Jiangyin City Jiangsu Province, China
Factory	:	Jiangsu Acrel Electric MFG. Co., Ltd.
Address	:	No.5, Dongmeng Road, Nanzha Street, Jiangyin City Jiangsu Province, China

1.2. Description of Device (EUT)

Product Name	:	Power Meter
Test Model No.	:	DTSD1352-4S
Reference Model No.	:	N/A
Trade Mark	:	Acrel
Test Power Supply	:	AC 230V, 50Hz / DC 120V
Test Sample No.	:	1-1-1
Adapter	:	N/A

Remark:

(1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

1.3. Auxiliary Equipment Used During Test

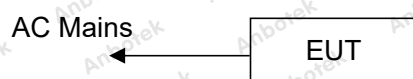
Title	Manufacturer	Model No.	Serial No.
/	/	/	/



1.4. Description of Test Modes

Pretest Modes	Descriptions
TM1	On (AC)
TM2	On (DC)

For Mode 1 Block Diagram of Test Setup



For Mode 2 Block Diagram of Test Setup



1.5. Measurement Uncertainty

Parameter	Uncertainty
Conducted emissions (AMN 150kHz~30MHz)	3.8dB
Radiated emissions (30MHz~1000MHz)	Horizontal: 3.96dB; Vertical: 4.60dB
Harmonic current emissions	4.24%
This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	



1.6. Test Summary

Test Items	Test Modes	Status
Conducted disturbances from a.c. mains power port	Mode1,2	P
Electromagnetic radiation disturbance (30MHz-1GHz)	Mode1,2	P
Harmonic Current Emission	/	N
Voltage Fluctuations and Flicker	Mode1,2	P
ESD	Mode1,2	P
Electromagnetic field	Mode1,2	P
Burst on AC power port	Mode1,2	P
Surge on AC mains	Mode1,2	P
Conducted RF on AC mains	Mode1,2	P
Power frequency magnetic field	Mode1,2	P
Voltage dip and short interruptions	Mode1,2	P
Note: P: Pass N: N/A, not applicable		



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1.7. Description of Test Facility

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

FCC-Registration No.:434132

Shenzhen Anbotech Compliance Laboratory Limited, 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. Registration No. 434132.

ISED-Registration No.: 8058A

Shenzhen Anbotech Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

Test Location

Shenzhen Anbotech Compliance Laboratory Limited.

1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.

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1.8. EMS Performance Criteria

Performance Criteria Description in EN IEC 61326-1 Performance Criteria

General

The general principles (performance criteria) for the evaluation of the immunity test results are the following. Permissible LOSSES OF PERFORMANCE are allowed only if specified in the test plan before testing, and clearly provided to the user in the product specification. If the PERFORMANCE LEVEL or the permissible LOSS OF PERFORMANCE is not specified, either of these may be derived from the product specification or user documentation and what the user may reasonably expect from the equipment if used as intended.

Performance criterion A

The equipment shall continue to operate as intended during and after the test. No DEGRADATION OF PERFORMANCE or LOSS OF FUNCTION is allowed below a PERFORMANCE LEVEL specified in the user documentation, when the equipment is used as intended. In the case of applying immunity tests with continuous electromagnetic phenomena, the PERFORMANCE LEVEL may be replaced by a permissible LOSS OF PERFORMANCE which shall recover, without user intervention. A permissible LOSS OF PERFORMANCE is allowed within the PERFORMANCE LEVEL only when this information is clearly provided to the end user via documentation, such as the product user manual. No change in the operating state is allowed nor is loss of data.

Performance criterion B

The equipment shall continue to operate as intended after the test. No DEGRADATION OF PERFORMANCE or LOSS OF FUNCTION is allowed below a PERFORMANCE LEVEL specified in the user documentation, when the equipment is used as intended. During the test, the equipment PERFORMANCE LEVEL may be replaced by a permissible LOSS OF PERFORMANCE if such LOSS OF PERFORMANCE is detailed in the EMC test plan. A permissible LOSS OF PERFORMANCE is allowed within the PERFORMANCE LEVEL only when this information is clearly provided to the end user via documentation, such as the product user manual. An unintended change of the operating state is allowed if self-recoverable. No loss of stored data is allowed.

The following are examples of performance criterion B:

- Data transfer is controlled or checked by parity check or by other means. In the case of malfunction, such as caused by a surge impulse, the data transfer will be repeated automatically. A reduced data transfer rate at this time is allowable degradation.
- During testing, an analogue function value may deviate in excess of the specified limits. After the test, the deviation vanishes.
- In the case of a monitor used only for man-machine monitoring, it is allowable that some degradation takes place, such as momentary display interference during the application of burst impulses.

Performance criterion C

LOSS OF FUNCTION is allowed, provided the function is self-recoverable or can be restored by the operation of the controls. Recovery procedure shall be included in the user documentation. No permanent damage to the equipment is allowed.

The following are examples of performance criterion C:

- In the case of an interruption in the mains longer than the specified buffer time, the power supply unit of the equipment is switched off. The switch-on may be automatic or carried out by the operator.
- After a programme interruption caused by a disturbance, the processor functions of the equipment stops at a defined position and is not left in a "crashed state". An operator's action may be necessary.
- The test results in an opening of an over-current protection equipment that can be reset by the operator.



1.9. Test Equipment List

Conducted disturbances from a.c. mains power port

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	2024-01-18	2025-01-17
2	Three Phase V-type Artificial Power Network	CYBERTEK	EM5040DT	E215040D T001	2024-01-17	2025-01-16
3	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	2024-01-17	2025-01-16
4	Software Name EZ-EMC	Farad Technology	ANB-03A	N/A	/	/

Electromagnetic radiation disturbance (30MHz-1GHz)

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	2024-01-17	2025-01-16
2	Pre-amplifier	Schwarzbeck	BBV-9745	9745-075	2024-01-17	2025-01-16
3	Bilog Broadband Antenna	SCHWARZBECK	VULB 9163	01109	2022-10-16	2025-10-15
4	Software Name EZ-EMC	Farad Technology	EMEC-3A1	N/A	/	/

Voltage Fluctuations and Flicker

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Programmable AC Power source	IVYTECH	APS-5005A	632734	2023-10-12	2024-10-11
2	Harmonic and Flicker Analyzer	EMC-PARTNER	HMONICS 1000-1P	164	2023-10-12	2024-10-11
3	Harmonics-1000	N/A	Ed.3.0+4.0	N.A	/	/

ESD

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	ESD Simulators	emtest	ESD NX30.1	11936	2024-03-11	2025-03-10



Electromagnetic field

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Signal Generator	Agilent	N5181A	MY501431 07	2024-01-23	2025-01-22
2	Power Meter	Agilent	E4417A	MY451013 84	2024-01-23	2025-01-22
3	Amplifier	Micotop	MPA-80- 1000-600	MPA21103 18	2024-01-17	2025-01-16
4	Amplifier	Micotop	MPA-1000- 6000-100	MPA21103 27	2024-01-17	2025-01-16
5	Log.-Per.-Antenna	Schwarzbeck	VULP 9118E	01012	/	/
6	Microwave Log.- Per. Antenna	Schwarzbeck	STLP 9149	00788	/	/
7	Power Sensor	KEYSIGHT	E9323A	US404106 47	2024-01-23	2025-01-22
8	Power Sensor	KEYSIGHT	E9323A	MY531000 07	2024-01-23	2025-01-22
9	Electric field Probe	Narda S.T.S /PMM	EP 601	811ZX103 51	2024-01-19	2025-01-18
10	Software	EMtrace	EM 3	/	/	/

Burst on AC power port

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Surge Generator	TESEQ	NSG 3060	1480	2024-01-18	2025-01-17
2	CDN	TESEQ	CDN 3061	1408	2024-01-18	2025-01-17
3	EFT-Clamp	PRIM	EFT-Clamp	/	2023-10-12	2024-10-11

Surge on AC mains

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Combined Wave Lightning Surge Simulator	3Ctest	CCS600	ES377170 2	2024-01-17	2025-01-16
2	Three Phase Power Coupling Network	3Ctest	SEPN69100 T	ES080175 7	2024-01-17	2025-01-16
3	Telecom port surge generator	PMI	TW101	190411	2024-01-18	2025-01-17



Conducted RF on AC mains						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	CDN	FRANKONIA	CDN - M2+ M3	A2210178/ 2012	2024-01-17	2025-01-16
2	6dB Attenuator	FRANKONIA	DAM 26W	1172202	2024-01-17	2025-01-16
3	EM-Clamp	FRANKONIA	EMCL-20	18101728- 0103	2024-01-17	2025-01-16
4	Signal Generator	R&S	SMC100A	104424	2024-02-04	2025-02-03
5	Software	EMtrace	EM 6	/	/	/
6	Power Meter	Agilent	E4419B	GB433127 30	2024-02-04	2025-02-03
7	Amplifier	Micotop	MPA-0.15- 230-110	MPA21103 17	2024-02-04	2025-02-03
8	Power Sensor	Agilent	E9304	/	2024-02-04	2025-02-03
9	Power Sensor	Agilent	E9304	MY414986 63	2024-02-04	2025-02-03
10	CDN	TESEQ	CDN M432- 3LN	33659	2024-01-17	2025-01-16

Power frequency magnetic field						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Power Frequency Magnetic Field Generator	EVERFINE	EMS61000- 8K	906002	2024-01-17	2025-01-16

Voltage dip and short interruptions						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	CYCLE SAG Simulator	PRIMA	DRP61011A G	PR120462 34	2024-01-17	2025-01-16



2. Harmonic Current Emission

Test Requirement:

Clause 7.2

2.1. 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.



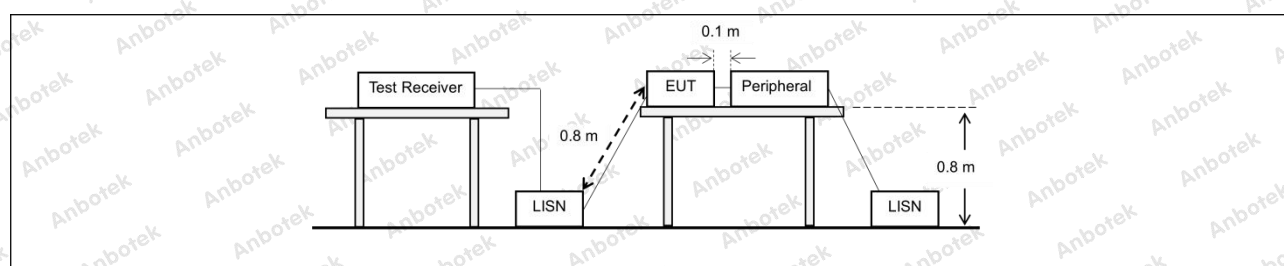
3. Conducted disturbances from a.c. mains power port

Test Requirement:	Class B Group 1		
Test Limit:	Frequency range MHz	Quasi-peak dB(μV)	Average dB(μV)
	0,15 – 0,50	66 Decreasing linearly with logarithm of frequency to 56	56 Decreasing linearly with logarithm of frequency to 46
	0,50 – 5	56	46
	5 – 30	60	50
	At the transition frequency, the more stringent limit shall apply.		
Test Method:	CISPR 11:2015/AMD1:2016/AMD2:2019		
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.		

3.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: On (AC) 2: TM2: On (DC)

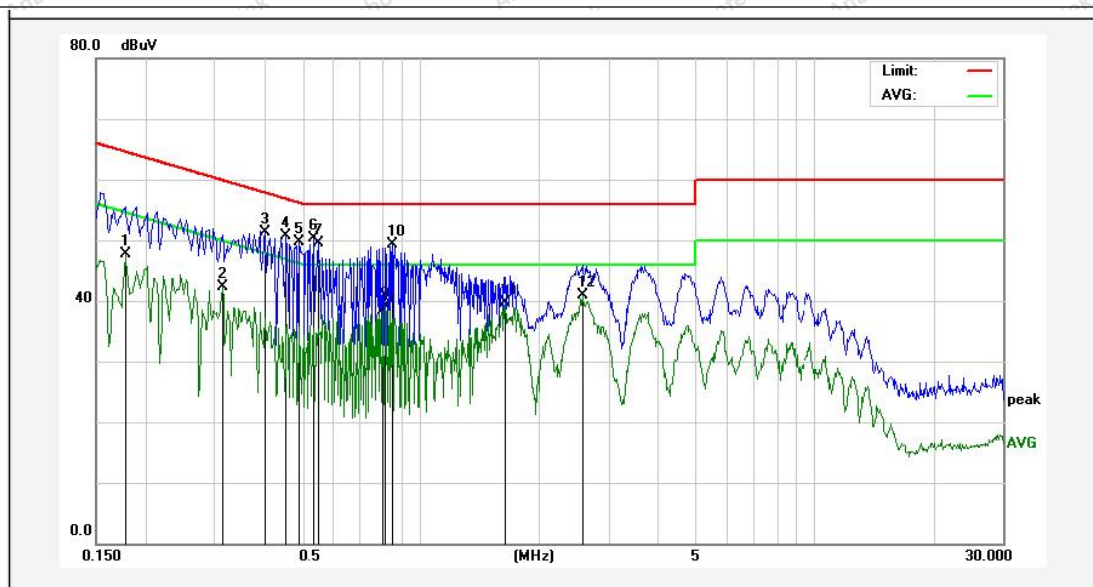
3.2. Test Setup



3.3. Test Data

Temperature:	22.8 °C	Humidity:	56.8 %	Atmospheric Pressure:	101 kPa
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TM1 / Line: Line



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1779	28.66	18.98	47.64	54.58	-6.94	AVG	
2	0.3140	23.22	19.04	42.26	49.86	-7.60	AVG	
3	0.4020	32.25	19.00	51.25	57.81	-6.56	QP	
4	0.4540	31.68	19.07	50.75	56.80	-6.05	QP	
5	0.4899	30.58	19.12	49.70	56.17	-6.47	QP	
6	0.5380	31.14	19.12	50.26	56.00	-5.74	QP	
7	0.5540	30.41	19.11	49.52	56.00	-6.48	QP	
8	0.8020	19.35	19.00	38.35	46.00	-7.65	AVG	
9	0.8138	20.09	19.00	39.09	46.00	-6.91	AVG	
10	0.8498	30.38	18.99	49.37	56.00	-6.63	QP	
11	1.6418	20.74	18.90	39.64	46.00	-6.36	AVG	
12	2.5698	22.01	18.86	40.87	46.00	-5.13	AVG	

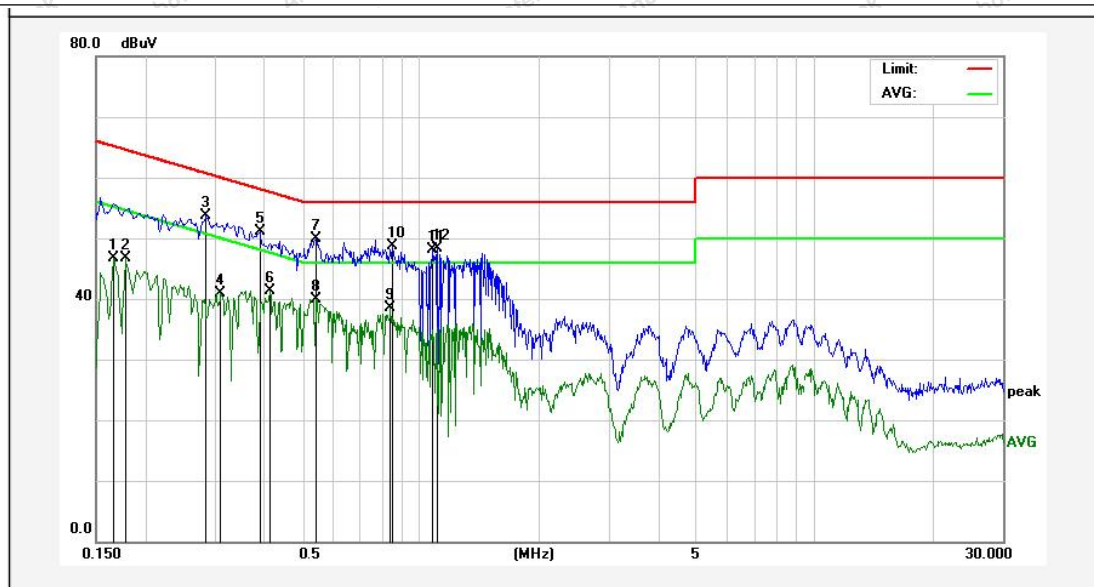


Temperature: 22.8 °C

Humidity: 56.8 %

Atmospheric Pressure: 101 kPa

TM1 / Line: Neutral



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1660	27.68	18.98	46.66	55.15	-8.49	AVG	
2	0.1779	27.63	18.98	46.61	54.58	-7.97	AVG	
3	0.2859	34.67	19.03	53.70	60.64	-6.94	QP	
4	0.3099	21.87	19.04	40.91	49.97	-9.06	AVG	
5	0.3899	32.03	19.00	51.03	58.06	-7.03	QP	
6	0.4139	22.23	19.02	41.25	47.57	-6.32	AVG	
7	0.5460	30.88	19.12	50.00	56.00	-6.00	QP	
8	0.5460	20.82	19.12	39.94	46.00	-6.06	AVG	
9	0.8419	19.47	18.99	38.46	46.00	-7.54	AVG	
10	0.8499	29.64	18.99	48.63	56.00	-7.37	QP	
11	1.0740	29.16	18.95	48.11	56.00	-7.89	QP	
12	1.1060	29.36	18.95	48.31	56.00	-7.69	QP	



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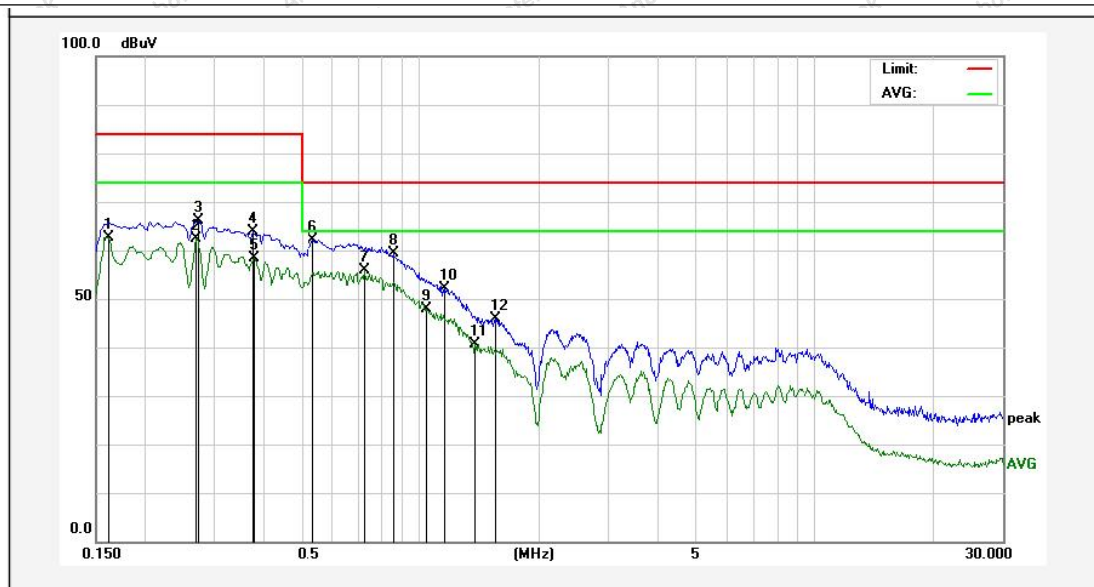
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Temperature: 22.8 °C

Humidity: 56.8 %

Atmospheric Pressure: 101 kPa

TM2 / Line: Line



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1620	43.62	18.98	62.60	74.00	-11.40	AVG	
2	0.2700	43.34	19.05	62.39	74.00	-11.61	AVG	
3	0.2740	47.12	19.05	66.17	84.00	-17.83	QP	
4	0.3740	44.84	19.07	63.91	84.00	-20.09	QP	
5	0.3780	39.24	19.06	58.30	74.00	-15.70	AVG	
6	0.5340	43.15	19.07	62.22	74.00	-11.78	QP	
7	0.7220	36.93	19.02	55.95	64.00	-8.05	AVG	
8	0.8540	40.45	19.01	59.46	74.00	-14.54	QP	
9	1.0339	28.84	18.98	47.82	64.00	-16.18	AVG	
10	1.1539	33.19	18.98	52.17	74.00	-21.83	QP	
11	1.3740	21.76	18.98	40.74	64.00	-23.26	AVG	
12	1.5460	26.94	18.96	45.90	74.00	-28.10	QP	

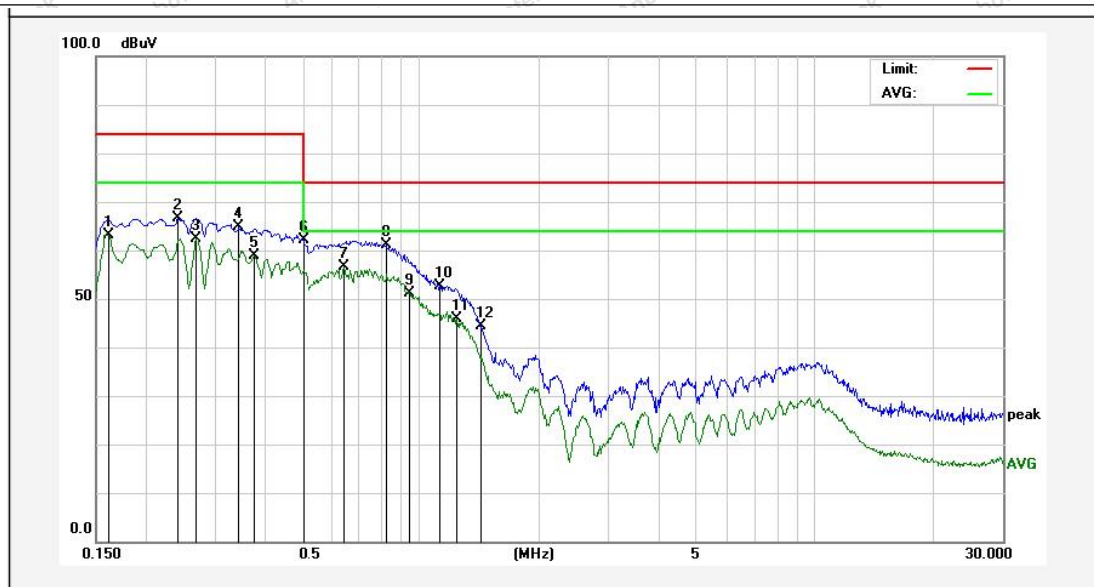


Temperature: 22.8 °C

Humidity: 56.8 %

Atmospheric Pressure: 101 kPa

TM2 / Line: Neutral



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1620	44.25	18.98	63.23	74.00	-10.77	AVG	
2	0.2420	47.54	19.00	66.54	84.00	-17.46	QP	
3	0.2700	43.36	19.05	62.41	74.00	-11.59	AVG	
4	0.3460	45.74	19.07	64.81	84.00	-19.19	QP	
5	0.3780	39.72	19.06	58.78	74.00	-15.22	AVG	
6	0.5020	43.09	19.08	62.17	74.00	-11.83	QP	
7	0.6419	37.53	19.05	56.58	64.00	-7.42	AVG	
8	0.8180	42.10	19.01	61.11	74.00	-12.89	QP	
9	0.9420	32.10	18.98	51.08	64.00	-12.92	AVG	
10	1.1220	33.72	18.98	52.70	74.00	-21.30	QP	
11	1.2420	26.79	18.97	45.76	64.00	-18.24	AVG	
12	1.4260	25.29	18.98	44.27	74.00	-29.73	QP	



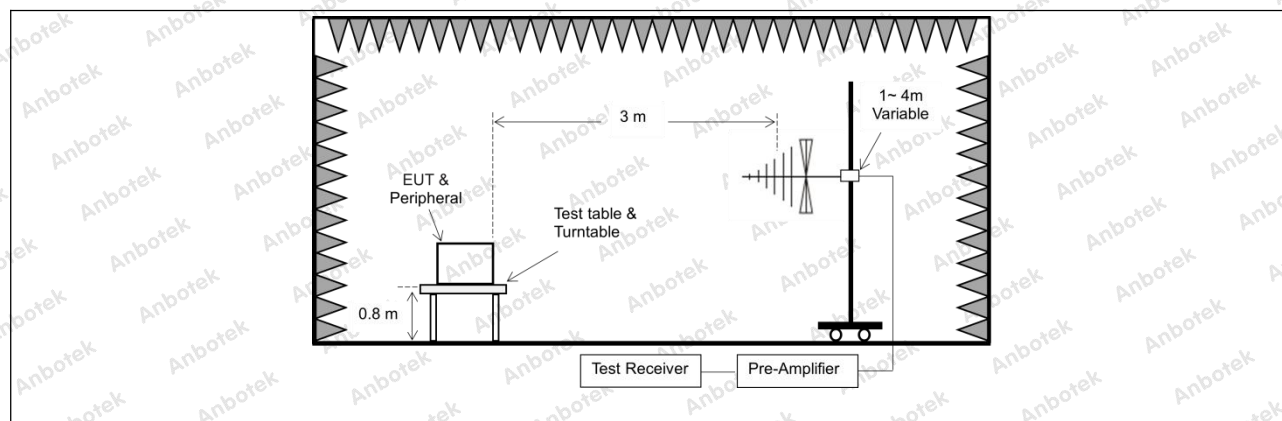
4. Electromagnetic radiation disturbance (30MHz-1GHz)

Test Requirement:	Class B Group 1			
Test Limit:	OATS or SAC		FAR	
	Frequency range MHz	10 m measuring distance	3 m measuring distance ^a	3 m measuring distance ^{a,b}
		Quasi-peak dB(μV/m)	Quasi-peak dB(μV/m)	Quasi-peak dB(μV/m)
	30 – 230	30	40	42 Decreasing linearly with logarithm of frequency to 35
	230 – 1 000	37	47	42
Test Method:	CISPR 11:2015/AMD1:2016/AMD2:2019			
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.			

4.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: On (AC) 2: TM2: On (DC)

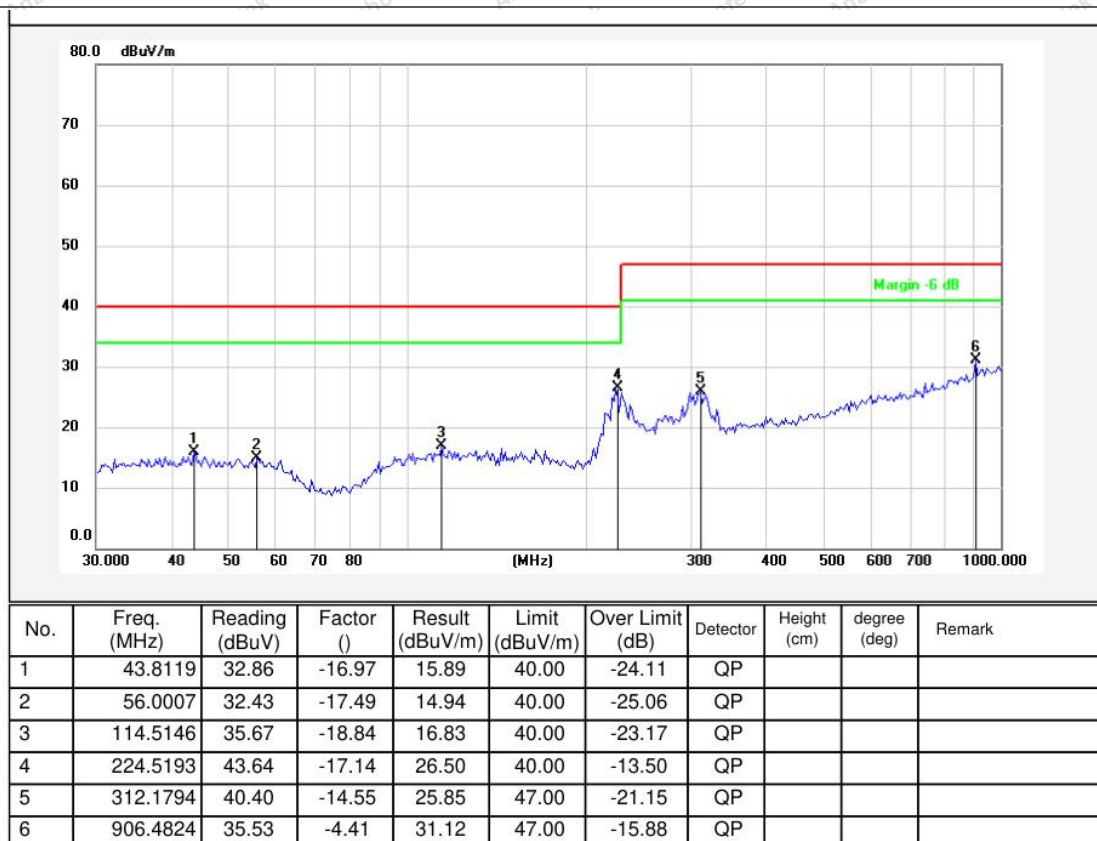
4.2. Test Setup



4.3. Test Data

Temperature:	23.5 °C	Humidity:	49 %	Atmospheric Pressure:	101 kPa
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TM1 / Polarization: Horizontal



Report No.: 18250EC40044401

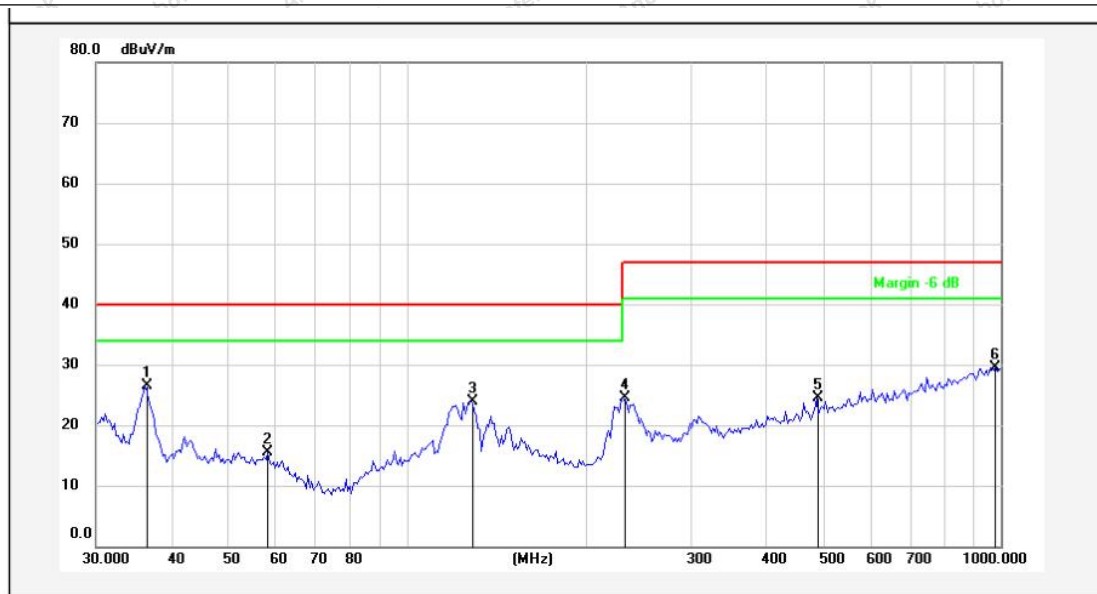
Page 21 of 49

Temperature: 23.5 °C

Humidity: 49 %

Atmospheric Pressure: 101 kPa

TM1 / Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	36.2541	44.26	-17.74	26.52	40.00	-13.48	QP			
2	58.4074	33.08	-17.61	15.47	40.00	-24.53	QP			
3	128.1130	44.46	-20.57	23.89	40.00	-16.11	QP			
4	230.9068	41.33	-16.87	24.46	47.00	-22.54	QP			
5	489.0269	35.24	-10.77	24.47	47.00	-22.53	QP			
6	979.1804	33.24	-3.69	29.55	47.00	-17.45	QP			



Report No.: 18250EC40044401

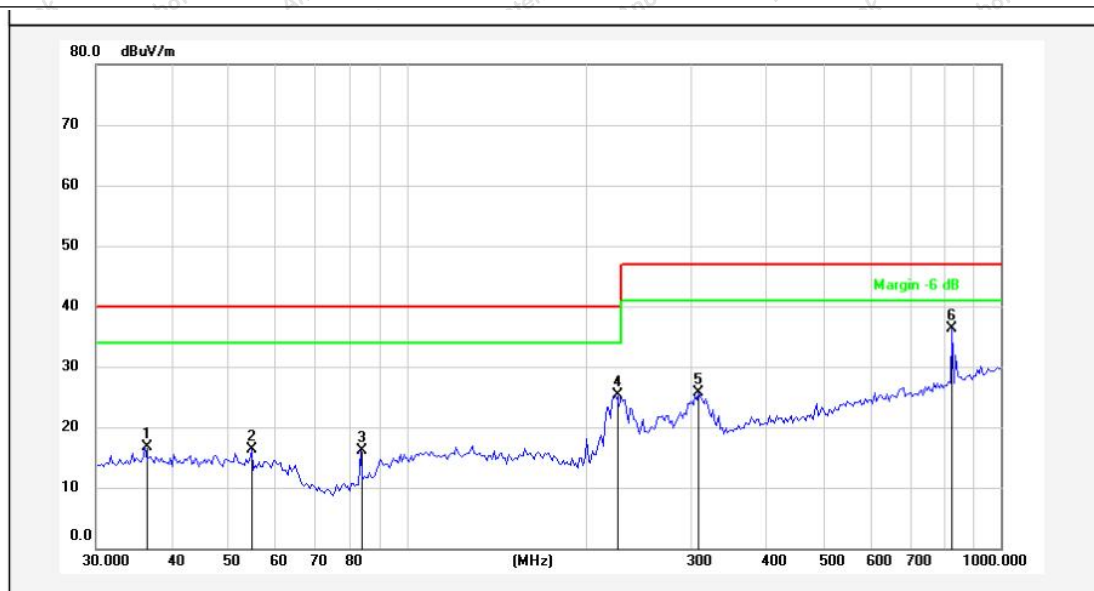
Page 22 of 49

Temperature: 23.5 °C

Humidity: 49 %

Atmospheric Pressure: 101 kPa

TM2 / Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	36.2541	34.51	-17.74	16.77	40.00	-23.23	QP			
2	54.8348	33.72	-17.43	16.29	40.00	-23.71	QP			
3	83.5222	36.53	-20.51	16.02	40.00	-23.98	QP			
4	224.5193	42.51	-17.14	25.37	40.00	-14.63	QP			
5	309.9977	40.37	-14.60	25.77	47.00	-21.23	QP			
6	827.4934	41.82	-5.51	36.31	47.00	-10.69	QP			



Report No.: 18250EC40044401

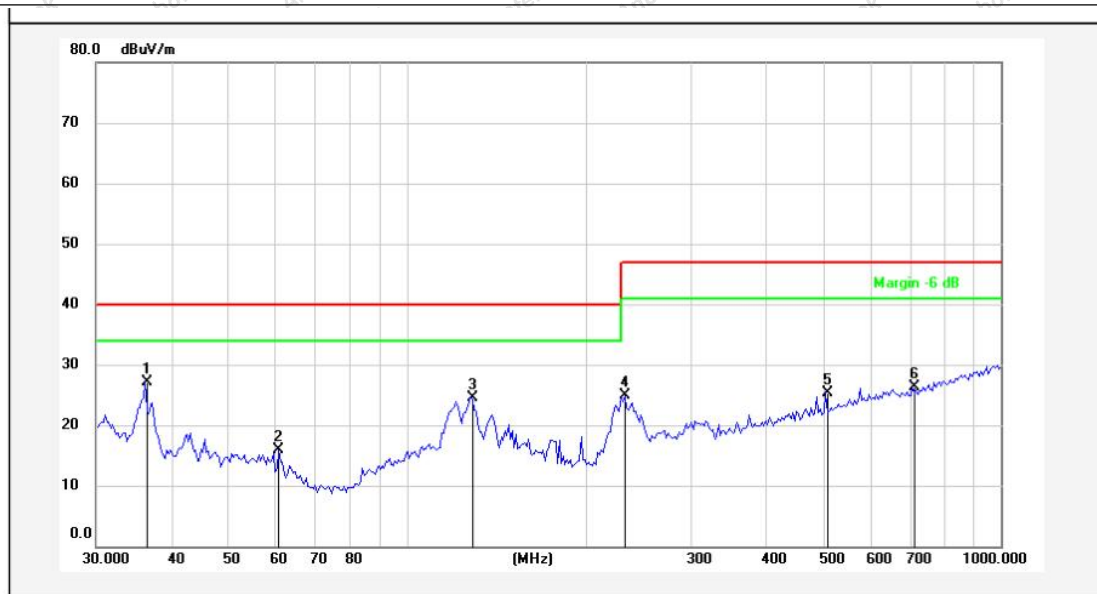
Page 23 of 49

Temperature: 23.5 °C

Humidity: 49 %

Atmospheric Pressure: 101 kPa

TM2 / Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	36.2541	44.86	-17.74	27.12	40.00	-12.88	QP			
2	60.9176	33.93	-18.07	15.86	40.00	-24.14	QP			
3	128.1130	45.17	-20.57	24.60	40.00	-15.40	QP			
4	232.5318	41.71	-16.80	24.91	47.00	-22.09	QP			
5	506.4791	35.66	-10.41	25.25	47.00	-21.75	QP			
6	709.1823	33.58	-7.26	26.32	47.00	-20.68	QP			



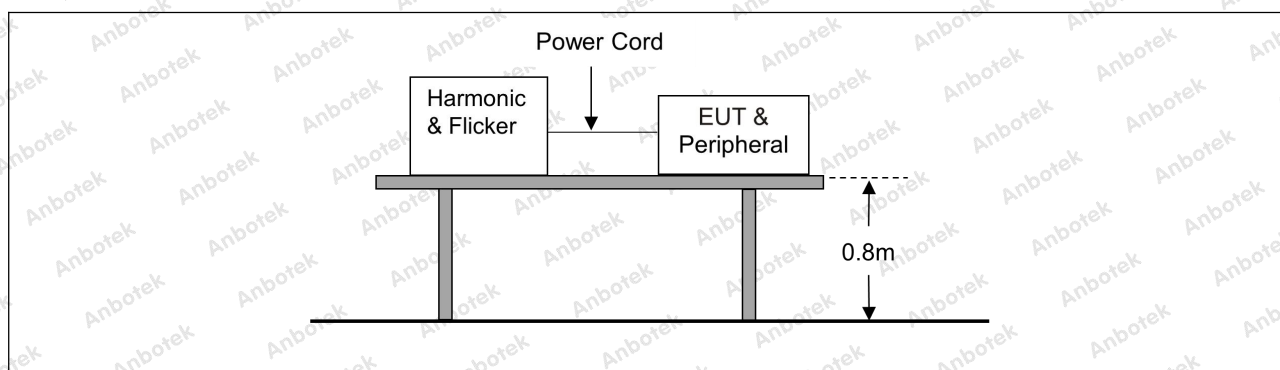
5. Voltage Fluctuations and Flicker

Test Requirement:	Clause 7.2
Test Limit:	Clause 5 of EN 61000-3-3: 2013+A2:2021
Test Method:	EN 61000-3-3: 2013+A2:2021

5.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: On (AC) 2: TM2: On (DC)

5.2. Test Setup

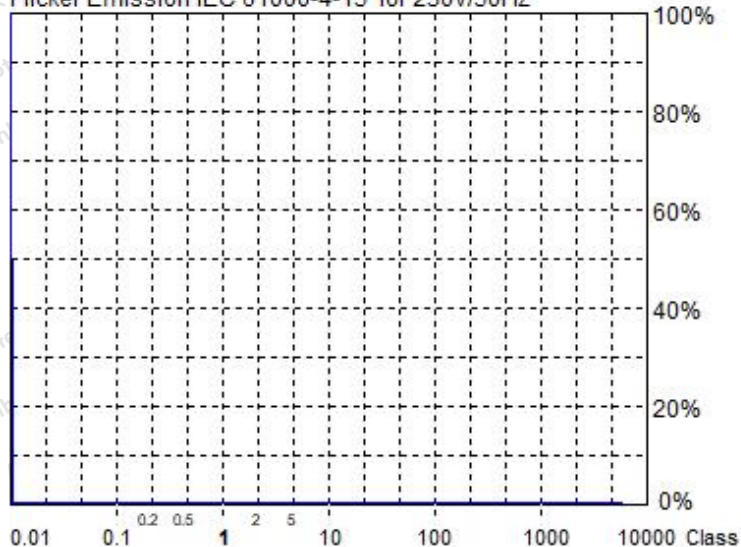


5.3. Test Data

Temperature:	23.5 °C	Humidity:	46 %	Atmospheric Pressure:	101 kPa
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Flicker Emission - IEC 61000-3-3, EN 61000-3-3

Flicker Emission IEC 61000-4-15 for 230V/50Hz



Actual Flicker (Fli):	0.00
Short-term Flicker (Pst):	0.07
Limit (Pst):	1.00
Long-term Flicker (Plt):	0.00
Limit (Plt):	0.65
Maximum Relative Volt. Change (dmax):	0.00%
Limit (dmax):	4.00%
Relative Steady-state Voltage Change (dc):	0.00%
Limit (dc):	3.30%
Tmax 3.30% (dt):	0.00ms
Limit (dt>Lim):	500ms

Flicker Emission - IEC 61000-3-3, EN 61000-3-3

Urms =	229.5 V	P =	1.301 W
Irms =	0.011 A	pf =	0.505

Range:	0.25 A
V-nom:	230 V

Test aborted, Result: PASSED

HAR-1000 EMC-Partner

Full Bar : Actual Values

Empty Bar : Maximum Values

Circles : Average Values

Blue : Current, Green : Voltage, Red : Failed

Urms =	229.5V	Freq =	50.013	Range:	0.25 A
Irms =	0.011A	Ipk =	0.045A	cf =	3.978
P =	1.301W	S =	2.578VA	pf =	0.505

Test - Time : 10 x 1min = 10min (100 %)

LIN (Line Impedance Network) : L: 0.24ohm +j0.15ohm N: 0.16ohm +j0.10ohm

Limits :	Plt :	0.65	Pst :	1.00
	dmax :	4.00 %	dc :	3.30 %
	dtLim :	3.30 %	dt>Lim :	500ms

Test aborted, Result: PASSED

	P3s dmax	dc	dt>Lim
	[%]	[%]	[ms]
1	0.000	0.000	0.000

Shenzhen Anbotek Compliance Laboratory Limited

Address: 1/F., Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.
 Tel: (86)0755-26066440 Fax: (86)0755-26014772 Email: service@anbotek.com



Hotline
400-003-0500
www.anbotek.com.cn



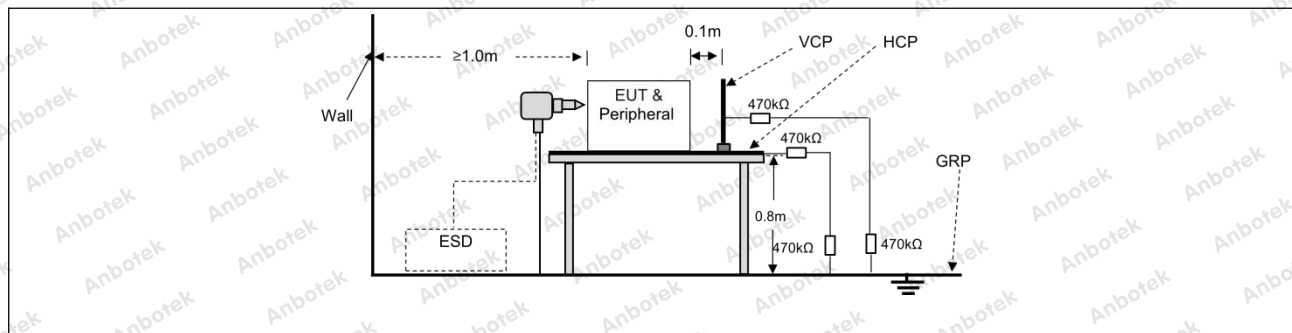
6. ESD

Test Requirement:	+/-4kV contact discharge +/-8kV air discharge
Test Method:	IEC 61000-4-2
Performance Criteria:	B

6.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: On (AC) 2: TM2: On (DC)

6.2. Test Setup



6.3. Test Data

Temperature:	24.4 °C	Humidity:	49 %	Atmospheric Pressure:	101 kPa
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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.



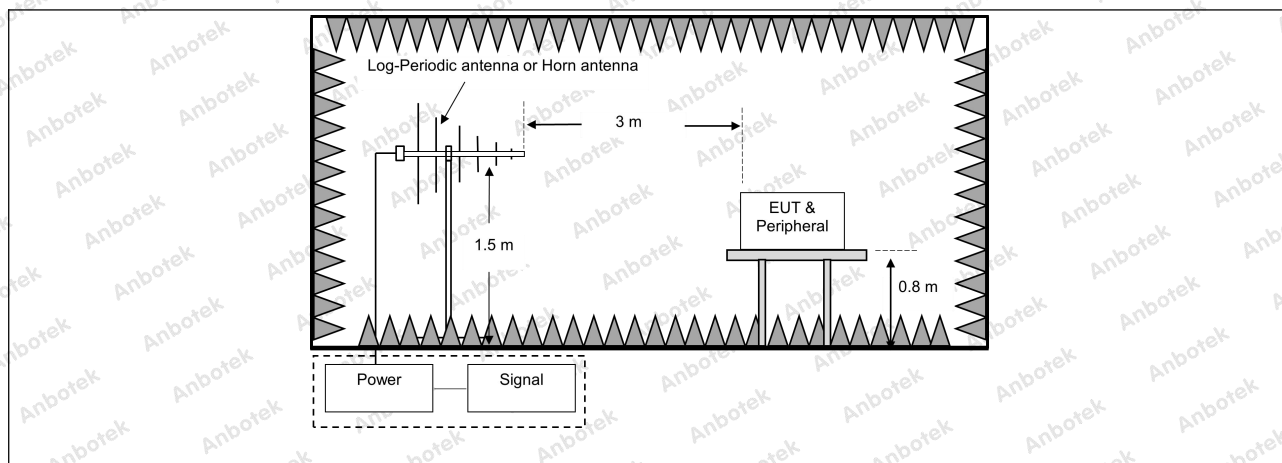
7. Electromagnetic field

Test Requirement:	3V/m (80 MHz to 1 GHz; 1.4 GHz to 6 GHz)
Test Method:	IEC 61000-4-3
Procedure:	Antenna Polarisation: Vertical and Horizontal Modulation: 1kHz,80% Amp. Mod,1% increment
Performance Criteria:	A

7.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: On (AC) 2: TM2: On (DC)

7.2. Test Setup



7.3. Test Data

Temperature:	24.7 °C	Humidity:	56 %	Atmospheric Pressure:	101 kPa
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Frequency	Field Strength (V/m)	EUT face	Dwell time	Result/ Observations
80MHz-1GHz	3	Front	2s	A
80MHz-1GHz	3	Back	2s	A
80MHz-1GHz	3	Left	2s	A
80MHz-1GHz	3	Right	2s	A
80MHz-1GHz	3	Top	2s	A
80MHz-1GHz	3	Bottom	2s	A
1.4GHz-6GHz	3	Front	2s	A
1.4GHz-6GHz	3	Back	2s	A
1.4GHz-6GHz	3	Left	2s	A
1.4GHz-6GHz	3	Right	2s	A
1.4GHz-6GHz	3	Top	2s	A
1.4GHz-6GHz	3	Bottom	2s	A

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



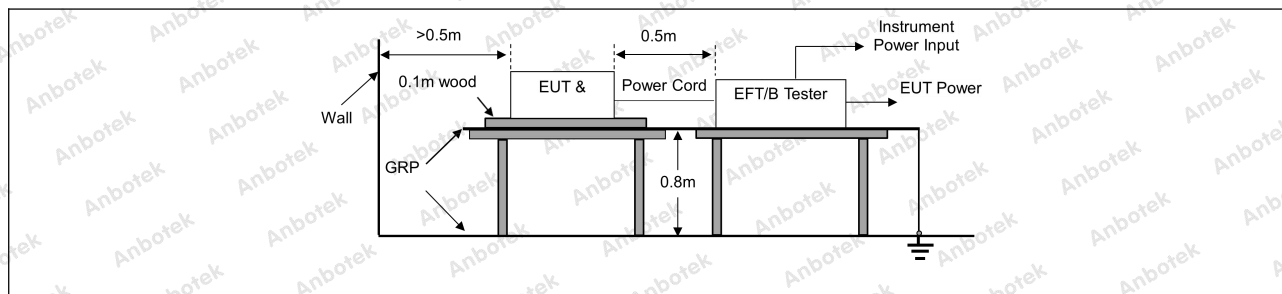
8. Burst on AC power port

Test Requirement:	+/-1kV (5 kHz or 100 kHz)
Test Method:	IEC 61000-4-4
Procedure:	Repetition Frequency: 5kHz or 100kHz Burst Period: 300ms Test Duration: 2 minute per level & polarity
Performance Criteria:	B

8.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: On (AC) 2: TM2: On (DC)

8.2. Test Setup



8.3. Test Data

Temperature:	23.5 °C	Humidity:	46 %	Atmospheric Pressure:	101 kPa
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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.



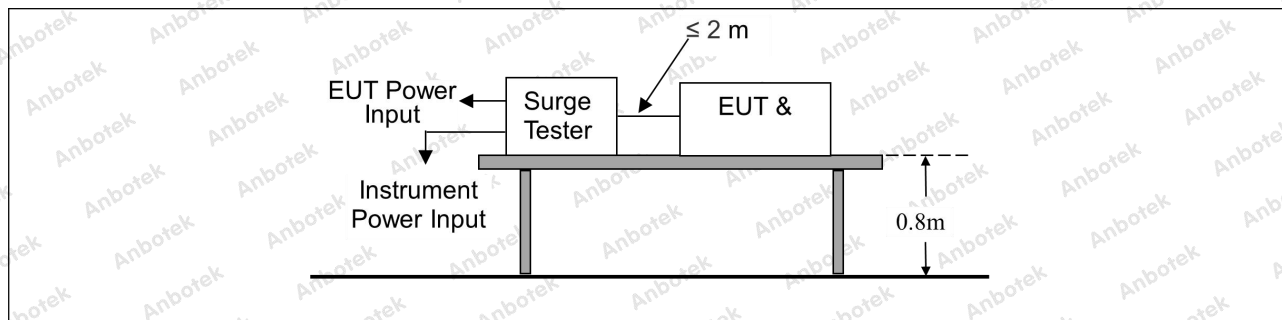
9. Surge on AC mains

Test Requirement:	+/- 0.5 kV line-to-line +/- 1 kV line-to-ground
Test Method:	IEC 61000-4-5
Procedure:	Interval: 60s between each surge No. of surges: 5 positive, 5 negative at 0°, 90°, 180°, 270°.
Performance Criteria:	B

9.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: On (AC) 2: TM2: On (DC)

9.2. Test Setup



9.3. Test Data

Temperature:	23.5 °C	Humidity:	46 %	Atmospheric Pressure:	101 kPa
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Port	Volt (kV)	Polarity	Phase(degree)	Result/ Observations
L-N	0.5	+	0°	A
L-N	0.5	-	0°	A
L-N	0.5	+	90°	A
L-N	0.5	-	90°	A
L-N	0.5	+	180°	A
L-N	0.5	-	180°	A
L-N	0.5	+	270°	A
L-N	0.5	-	270°	A
L-N	1	+	0°	A
L-N	1	-	0°	A
L-N	1	+	90°	A
L-N	1	-	90°	A
L-N	1	+	180°	A
L-N	1	-	180°	A
L-N	1	+	270°	A
L-N	1	-	270°	A

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



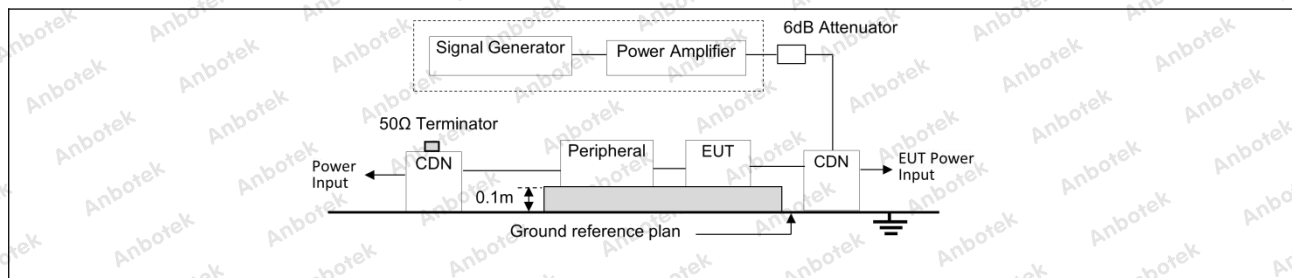
10. Conducted RF on AC mains

Test Requirement:	3 V (150 kHz to 80 MHz)
Test Method:	IEC 61000-4-6
Procedure:	Frequency Range: 0.15MHz to 80MHz Modulation: 80%, 1kHz Amplitude Modulation Step Size 1%
Performance Criteria:	A

10.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: On (AC) 2: TM2: On (DC)

10.2. Test Setup



10.3. Test Data

Temperature:	23.5 °C	Humidity:	46 %	Atmospheric Pressure:	101 kPa
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Port	Strength (Vrms)	CDN/Clamp	Dwell Time	Result /Observation
AC power port	3	CDN	3s	A

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



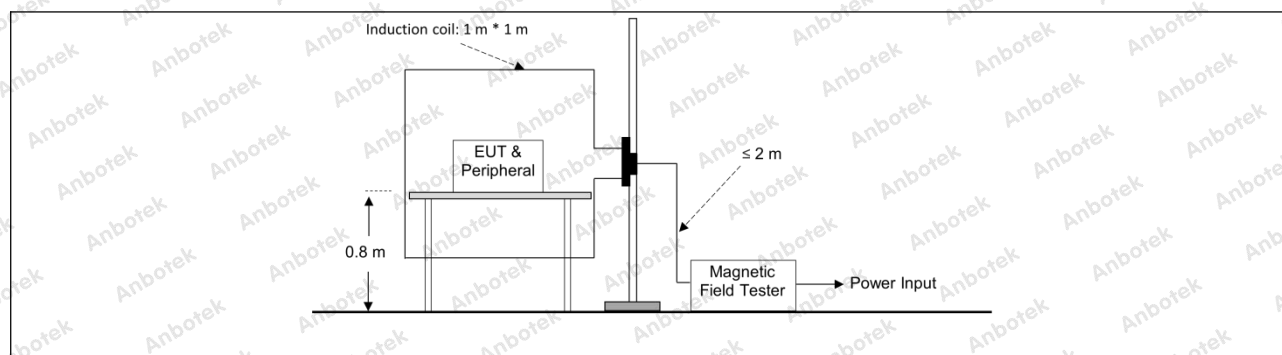
11. Power frequency magnetic field

Test Requirement:	3 A/m (50 Hz, 60 Hz)
Test Method:	IEC 61000-4-8
Procedure:	Test Frequency: 50Hz & 60Hz Test Level: 3A/m
Performance Criteria:	A

11.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: On (AC) 2: TM2: On (DC)

11.2. Test Setup



11.3. Test Data

Temperature:	23.5 °C	Humidity:	46 %	Atmospheric Pressure:	101 kPa
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Frequency	Strength (A/m)	Axial	Magnetic Field Type	Result/ Observations
50Hz	3	X	Continuous filed	A
50Hz	3	Y	Continuous filed	A
50Hz	3	Z	Continuous filed	A
60Hz	3	X	Continuous filed	A
60Hz	3	Y	Continuous filed	A
60Hz	3	Z	Continuous filed	A

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



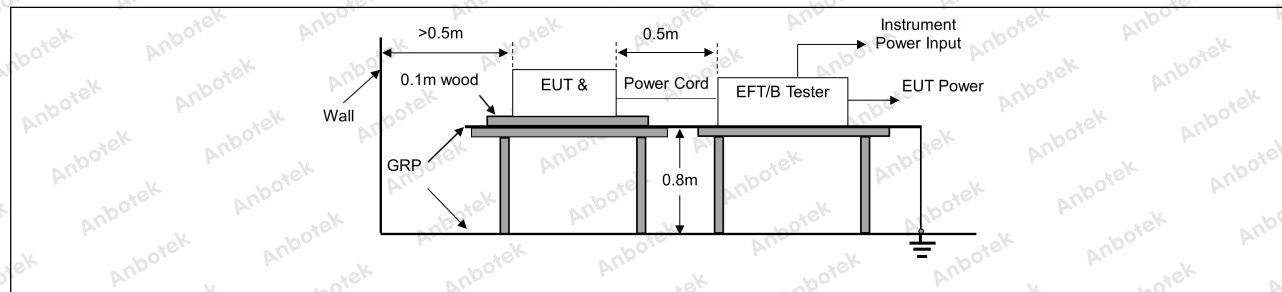
12. Voltage dip and short interruptions

Test Requirement:	Voltage dip 0% during half cycle 0% during 1 cycle 70% during 25/30 cycles Short interruptions 0% during 250/300 cycles
Test Method:	IEC 61000-4-11
Procedure:	0% of UT (Supply Voltage) for 0.5 Cycle:B; 0% of UT for 1 Cycle:B; 70% of UT for 25/30 Cycles:C; 0% of UT for 250/300 Cycles:C; No. of Dips / Interruptions: 3 per Level Time between dropout 10s
Performance Criteria:	B,C

12.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: On (AC) 2: TM2: On (DC)

12.2. Test Setup



12.3. Test Data

Temperature:	23.5 °C	Humidity:	46 %	Atmospheric Pressure:	101 kPa
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Level %UT	Phase (degree)	Duration	No. of Dips/ Interruptions	Result/ Observations
0	0°	0.5 Cycles	3	A
0	180°	0.5 Cycles	3	A
0	0°	1 Cycles	3	A
0	180°	1 Cycles	3	A
70	0°	25 Cycles	3	A
70	180°	25 Cycles	3	A
0	0°	250 Cycles	3	A
0	180°	250 Cycles	3	A

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

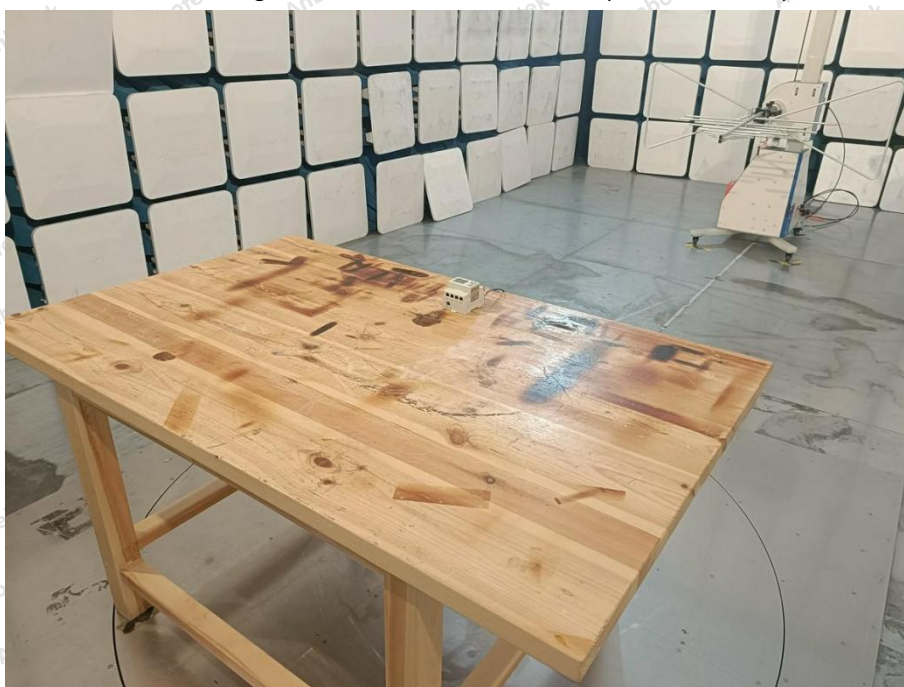


APPENDIX I -- TEST SETUP PHOTOGRAPH

Conducted disturbances from a.c. mains power port



Electromagnetic radiation disturbance (30MHz-1GHz)



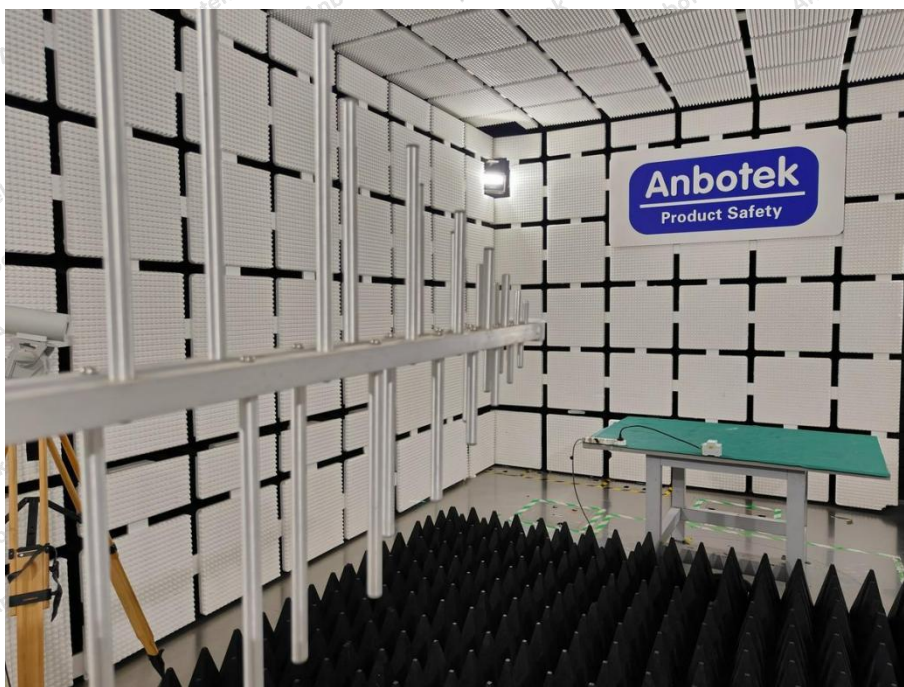
Voltage Fluctuations and Flicker



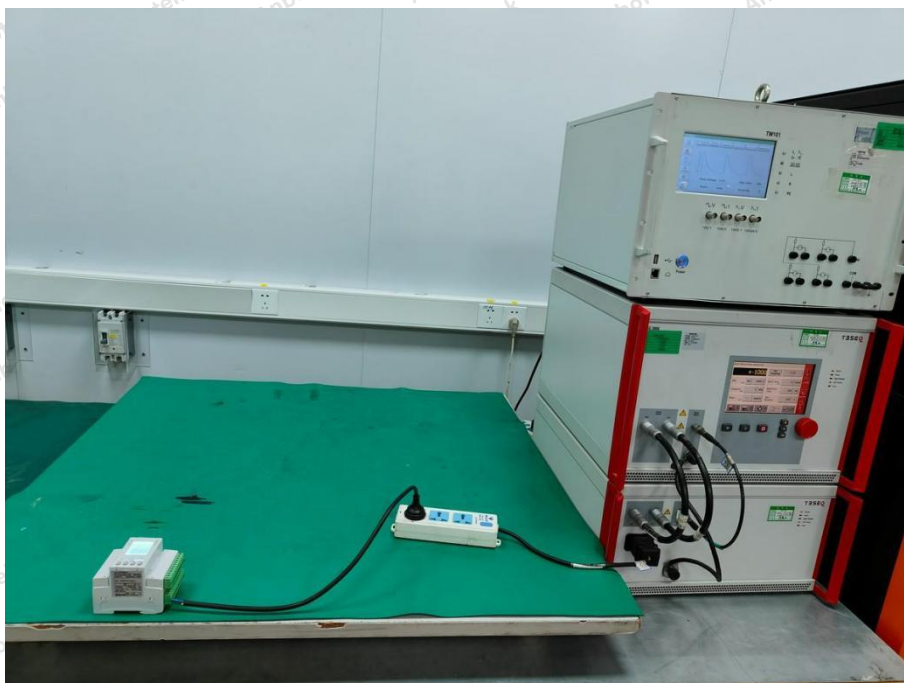
ESD



Electromagnetic field



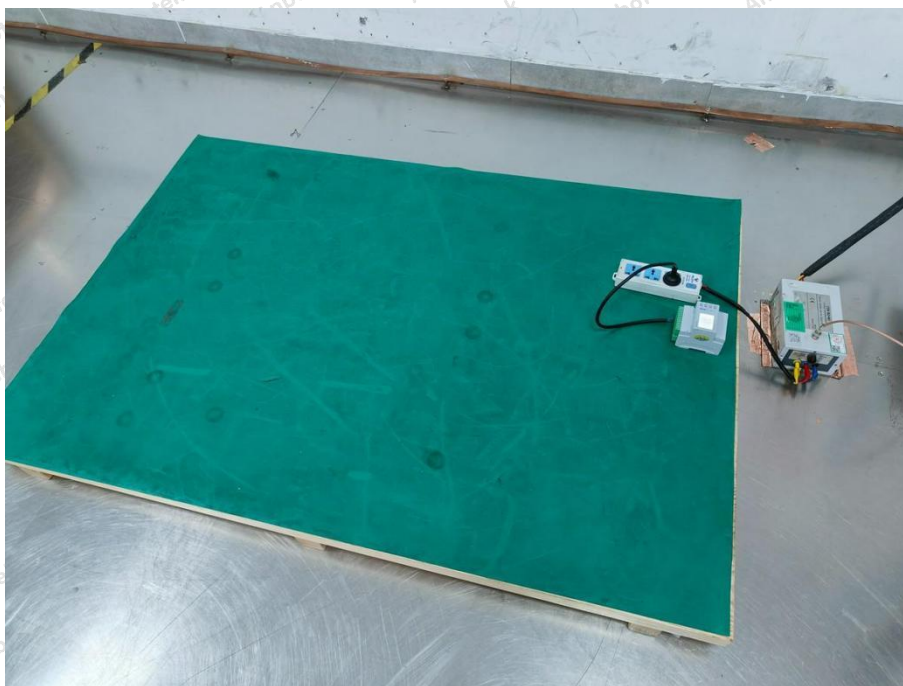
Burst on AC power port



Surge on AC mains



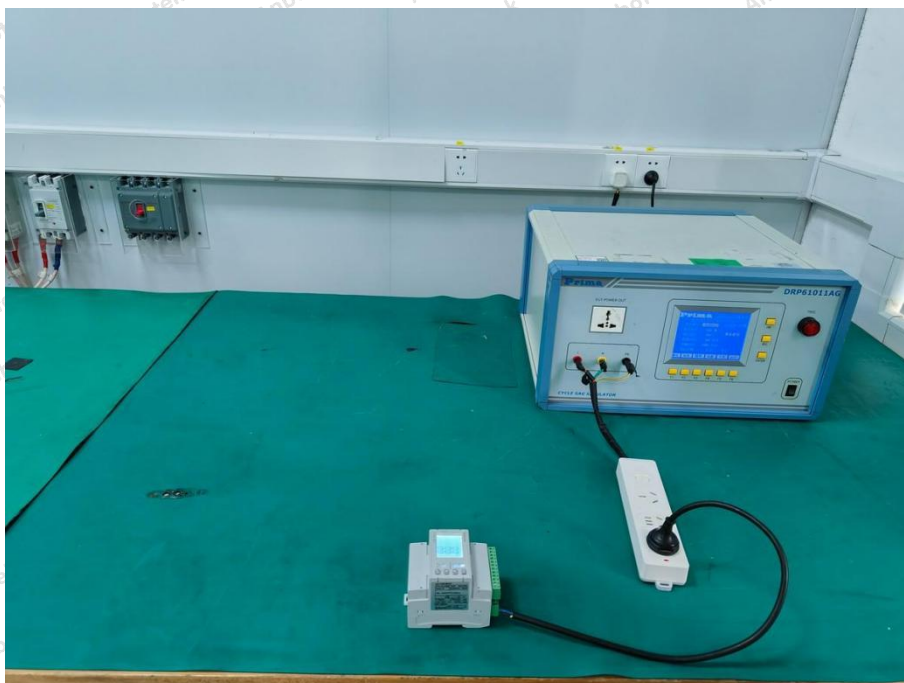
Conducted RF on AC mains

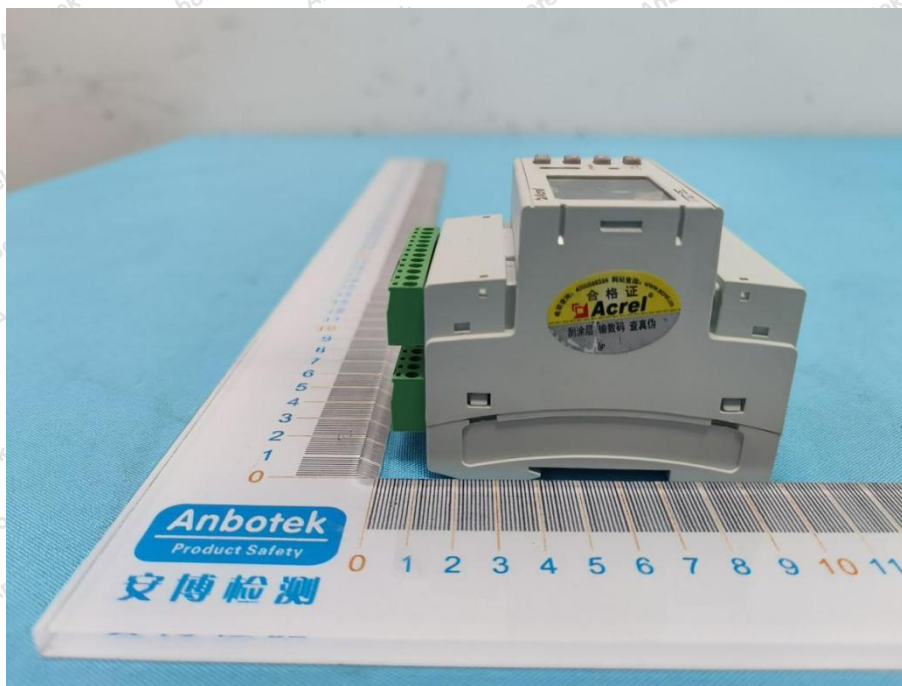


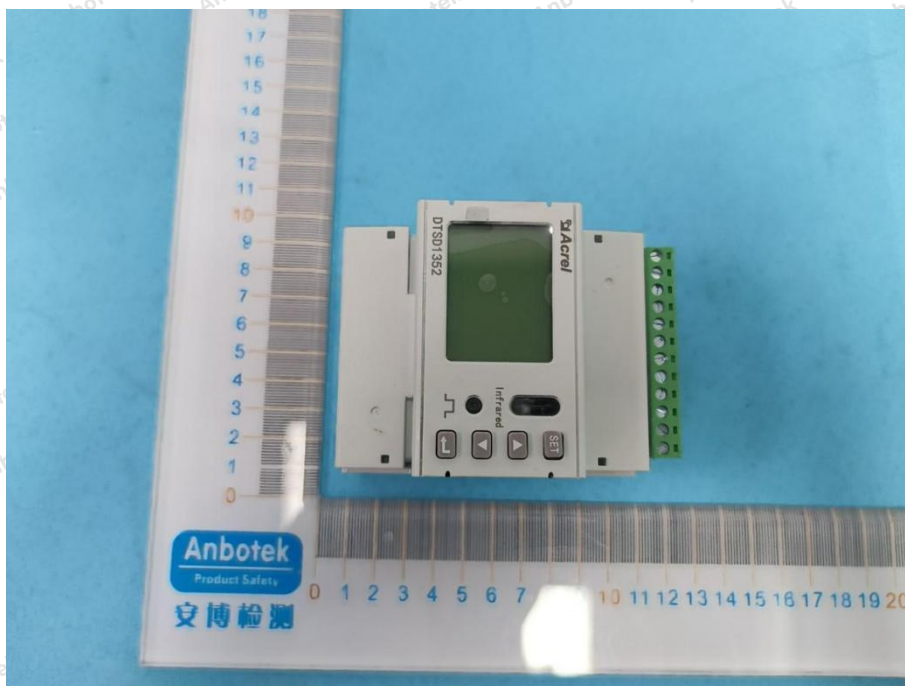
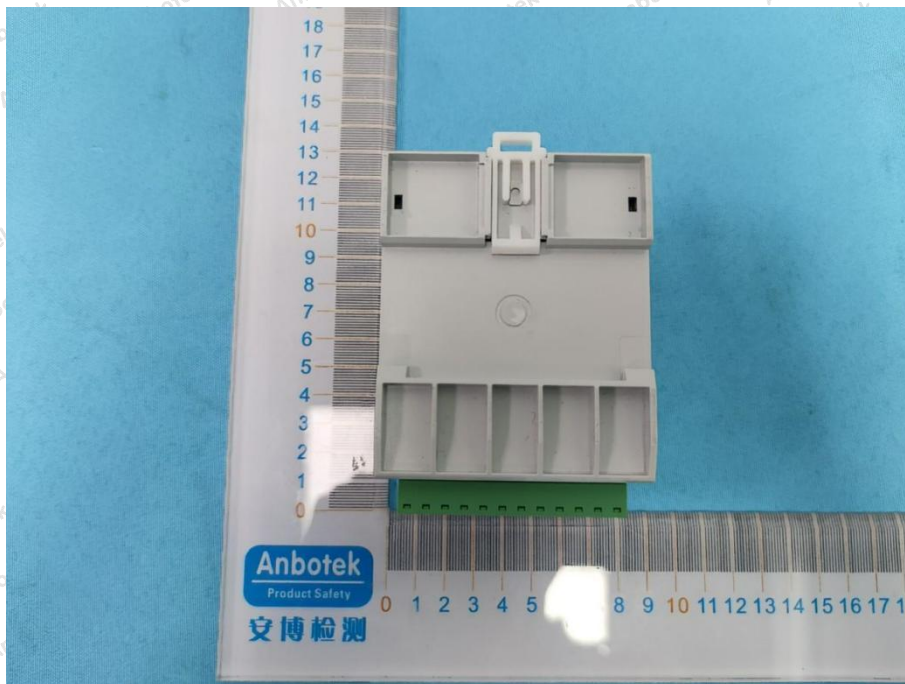
Power frequency magnetic field

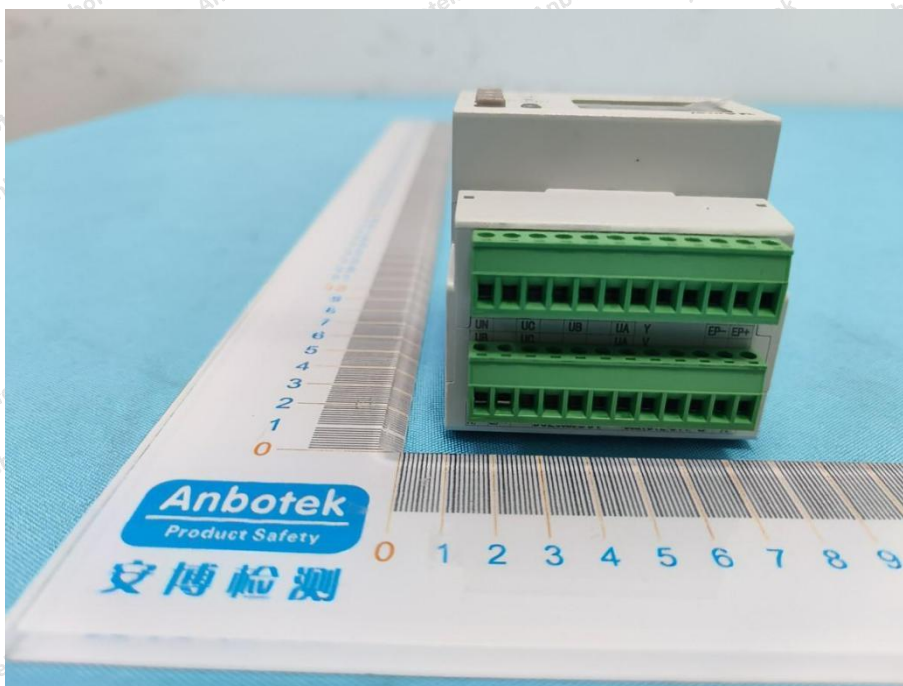
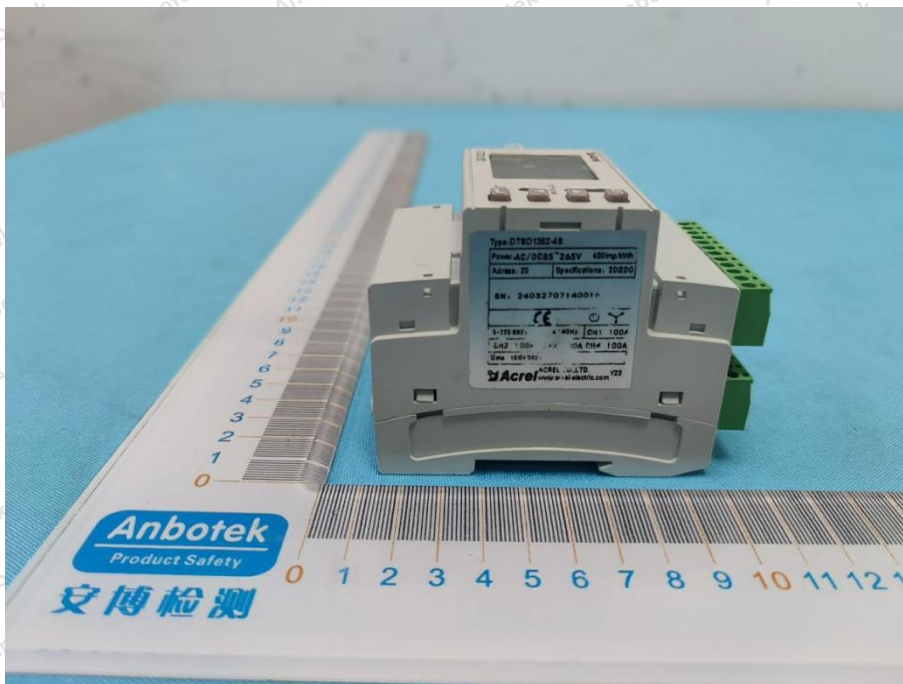


Voltage dip and short interruptions



APPENDIX II -- EXTERNAL PHOTOGRAPH







CE Label

1. The CE conformity marking must consist of the initials 'CE' taking the following form:
If the CE marking is reduced or enlarged, the proportions given in the above graduated drawing must be respected.
2. The CE marking must have a height of at least 5 mm except where this is not possible on account of the nature of the apparatus.
3. The CE marking must be affixed to the product or to its data plate. Additionally it must be affixed to the packaging, if any, and to the accompanying documents.
4. The CE marking must be affixed visibly, legibly and indelibly.
It must have the same height as the initials 'CE'.

----- End of Report -----

