

TEST REPORT

Product Name : Outdoor UPS 1-10KVA with air conditioner
Model Number : NTPR1K, NTPR2K, NTPR3K, NTPR6K, NTPR10K

Prepared for : Netcon Enterprise Pvt Ltd
Address : 430A, Kathirvedu, Puzhal, Chennai- 600066, India
Prepared by : EMTEK (SHENZHEN) CO., LTD.
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Report Number : ENS2409250306E00101RM1
Date(s) of Tests : September 29, 2024 to November 22, 2024 & December 31, 2024 to January 09, 2025
Date of issue : January 14, 2025



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TEST REPORT DESCRIPTION

Applicant : Netcon Enterprise Pvt Ltd
Manufacturer : Netcon Enterprise Pvt Ltd
Trademark : 
EUT : Outdoor UPS 1-10KVA with air conditioner
Model Number : NTPR1K, NTPR2K, NTPR3K, NTPR6K, NTPR10K
Rating : Input: 220VAC, 50/60Hz
Output: 220VAC, 50/60Hz
Battery: 192VDC, DC 72V

Measurement Procedure Used:

EN IEC 62040-2: 2018, IEC 62040-2: 2016
EN 61000-3-12:2011

EN IEC 61000-3-11:2019

EN IEC 61000-3-2:2019+A1:2021

EN 61000-3-3:2013+A2:2021

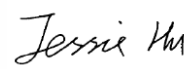
(IEC 61000-4-2:2008, IEC 61000-4-3:2006+A1:2007+A2:2010, IEC61000-4-4:2012, IEC 61000-4-5:2014, IEC 61000-4-6:2013, IEC 61000-4-8:2009, IEC 61000-4-34:2005+A1:2009, IEC 61000-2-2:2002)

The device described above is tested by EMTEK (SHENZHEN) CO., LTD. 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 EMTEK (SHENZHEN) CO., LTD. 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 the EN IEC 62040-2, IEC 62040-2 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of EMTEK (SHENZHEN) CO., LTD.

Date of Test : September 29, 2024 to November 22, 2024 &
December 31, 2024 to January 09, 2025

Prepared by : 
Yuxiang Yuan/Editor

Reviewer : 
Jessie Hu /Supervisor

Approved & Authorized Signer : 
Lisa Wang/Manager



Modified Information

Version	Report No.	Revision Date	Summary
	ENS2409250306E00101R	/	Original Report
M1	ENS2409250306E00101R	January 14, 2025	Add product models which are below 16A input current, carry out CE, RE, harmonic and flicker testing additionally.



1. DESCRIPTION OF STANDARDS AND RESULTS (EUT)

EMISSION				
Description of Test Item		Standard	Limits	Results
conducted emissions	at the AC input port (mains)	EN IEC 62040-2: 2018	C3	Pass
	at the AC output port	EN IEC 62040-2: 2018	C3	Pass
	at the network ports	EN IEC 62040-2: 2018	C3	N/A
Radiated emissions at frequencies up to 1 GHz		EN IEC 62040-2: 2018	C3	Pass
Harmonic Current Emissions		EN 61000-3-12:2011	Table 3	Pass
Voltage Fluctuation and Flicker		EN IEC 61000-3-11:2019	--	Pass
IMMUNITY				
Description of Test Item		Basic Standard	Performance Criteria	Results
Electrostatic Discharge (ESD)		IEC 61000-4-2:2008	B	Pass
RF Field Strength Susceptibility (R/S)		IEC 61000-4-3: 2006+A1:2007+A2:2010	A	Pass
Electro Fast Transient (EFT)		IEC 61000-4-4:2012	B	Pass
Surge (Input AC Power Port)		IEC 61000-4-5:2014	B	Pass
Radio-Frequency, Continuous Conducted Disturbance		IEC 61000-4-6:2013	A	Pass
Power Frequency Magnetic Field		IEC 61000-4-8:2009	A	Pass
Voltage Dips and Interruptions		IEC 61000-4-34:2005+A1:2009	-	Pass
Low Frequency signals		IEC 61000-2-2:2002	A	Pass
Note: N/A is an abbreviation for Not Applicable.				

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : Outdoor UPS 1-10KVA with air conditioner

Model Number : NTPR1K, NTPR2K, NTPR3K, NTPR6K, NTPR10K
(Note: These models are identical in circuitry and electrical, mechanical and physical construction; the only difference is the model and power. We prepare NTPR10K for main test, NTPR3K for differential test.)

Sample ID : ENS2409250306E001/1-1

Test Voltage : AC 230V/50Hz, DC 192V, DC 72V

Applicant : Netcon Enterprise Pvt Ltd

Address : 430A, Kathirvedu, Puzhal, Chennai-600066, India

Manufacturer : Netcon Enterprise Pvt Ltd

Address : 430A, Kathirvedu, Puzhal, Chennai-600066, India

Factory : Netcon Enterprise Pvt Ltd

Address : 430A, Kathirvedu, Puzhal, Chennai-600066, India

Date of Received : September 29, 2024 & December 31, 2024

Date of Test : September 29, 2024 to November 22, 2024 &
December 31, 2024 to January 09, 2025

2.2. Independent Operation Modes

A. On

1. Line mode (Charging & AC Load)
2. Bat mode(Discharging & AC Load)

2.3. Test Manner

Test Items	Test Voltage	Operation Modes	Worst case
Conducted disturbance at mains Terminals	AC 230V/50Hz	Mode A	Mode A.1 (Output) (DC 192V)
Radiated emissions at frequencies up to 1 GHz	AC 230V/50Hz DC 192V DC 72V	Mode A	Mode A.2 (DC 192V)
Harmonic Current Emissions	AC 230V/50Hz	Mode A.1	\
Voltage Fluctuation and Flicker	AC 230V/50Hz	Mode A.1	\
EMS	AC 230V/50Hz DC 192V	Mode A	\

2.4. Description of Support Device

N/A

2.5. Description of Test Facility

Site Description
EMC Lab.

: **Accredited by CNAS**

The Certificate Registration Number is L2291.

The Laboratory has been assessed and proved to be in compliance with CNAS-CL01 (identical to ISO/IEC 17025:2017)

Accredited by FCC

Designation Number: CN1204

Test Firm Registration Number: 882943

Accredited by A2LA

The Certificate Number is 4321.01.

Accredited by Industry Canada

The Conformity Assessment Body Identifier is CN0008

Name of Firm

: EMTEK (SHENZHEN) CO., LTD.

Site Location

: Building 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

2.6. Measurement Uncertainty

Test Item	Uncertainty
Conducted Emission Uncertainty (Conduction 2#)	: 3.16dB (9k~150kHz Conduction) 2.90dB (150k-30MHz Conduction)
Radiated Emission Uncertainty (10m Chamber)	: 4.52dB (30M~1GHz Polarize: H) 4.50dB (30M~1GHz Polarize: V)
Uncertainty for Flicker test	: 0.514%
Uncertainty for Harmonic test	: 4.04%
Uncertainty for C/S Test	: 0.94dB(Using CDN Test) 2.37dB(Using EM Clamp Test)
Uncertainty for R/S Test	: 1.53dB(80MHz-3000MHz)
Uncertainty for test site temperature and humidity	: 0.6℃ 4%

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For Conducted Emissions At the Mains Power Ports

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	EMI Test Receiver	Rohde & Schwarz	ESCI	101045	May 10, 2024	1 Year
☒	PULSE LIMITER	Rohde & Schwarz	ESH3-Z2	100107	May 10, 2024	1 Year
☒	AMN	Schwarzbeck	NNLK 8129	8129203	May 11, 2024	1 Year
☒	EMI Test Receiver	Rohde & Schwarz	ESR3	101707	May 11, 2024	1 Year
☒	AMN	Schwarzbeck	NNLK 8130	8130187	May 10, 2024	1 Year
☒	PULSE LIMITER	Schwarzbeck	VTSD 9561 F-N	00555	May 11, 2024	1Year

3.2. For Radiated Emission Measurement (10m)

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Bilog Antenna	Schwarzbeck	VULB9163	659	Sep. 01, 2023	2 Year
☒	Bilog Antenna	Schwarzbeck	VULB9163	712	July 02, 2023	2 Year
☒	EMI Test Receiver	Rohde & Schwarz	ESR3	101707	May 11, 2024	1 Year
☒	EMI Test Receiver	Rohde & Schwarz	ESR3	101706	May 11, 2024	1 Year
☒	Pre-Amplifier	Lunar EM	LNA10M1G-40	J1011131126001	May 11, 2024	1 Year
☒	Pre-Amplifier	Lunar EM	LNA10M1G-40	J1011131126002	May 11, 2024	1 Year

3.3. For Harmonics and Flick

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	45KVA AC Power source	Teseq	NSG 1007-45/45KV A	1305A02873	May 11, 2024	1 Year
☒	Signal conditioning Unit	Teseq	CCN 1000-3	1305A02873	May 11, 2024	1 Year
☒	Impedance network	Teseq	INA2197/37A	1305A02873	May 11, 2024	1 Year
☒	Impedance network	Teseq	INA 2196/75A	1305A02874	May 11, 2024	1 Year
☐	Proflin 2100 AC Switching Unit	Teseq	NSG 2200-3	A22714	May 11, 2024	1 Year

3.4. Electrostatic Discharge Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	ESD Tester	EMTEST	Dito	P2220263883	Oct. 21, 2024	1 Year

3.5. For RF Strength Susceptibility Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Power Amplifier	MILMEGA	AS0102-55	1018770	May 11, 2024	1 Year
☒	RF Power Meter. Dual Channel	BOONTON	4232A	10539	May 11, 2024	1 Year
☒	Log.-Per. Antenna	SCHWARZBECK	VULP 9118E	811	N/A	N/A
☒	Broad-Band Horn Antenna	SCHWARZBECK	STLP 9149	9149-227	N/A	N/A
☒	Signal Generator	Agilent	N5181A	MY50145187	May 11, 2024	1 Year
☒	50ohm Diode Power Sensor	BOONTON	51011EMC	36164	May 11, 2024	1 Year
☒	Field Strength Meter	DARE	RSS1006A	10I00037SNO 22	May 20, 2024	1 Year
☒	Multi-function interface system	DARE	CTR1009B	12I00250SNO 72	N/A	N/A
☒	Automatic switch group	DARE	RSW1004A	N/A	N/A	N/A
☒	Power Amplifier	MILMEGA	AS1860-50	1059346	May 11, 2024	1 Year
☒	Power Amplifier	Vectawave	VBA 1000-600C	133627	Oct. 18, 2024	1 Year
☒	Directional Coupler	BONN	BDC 0810-50/1500	2229689	Oct. 18, 2024	1 Year

3.6. For Electrical Fast Transient / Burst Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Burst Tester	Partner	IMU-MGS	109938-1635	Oct. 18, 2024	1 Year
☒	Coupling Clamp	HAEFELY	IP-4A	147147	May 12, 2024	1 Year
☒	Three phase CDN	Teseq	CDN 163	202	May 12, 2024	1 Year

3.7. For Surge Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Controller	HAEFELY	Psurge 8000	174031	May 11, 2024	1 Year
☒	Impulse Module	HAEFELY	PIM 100	174124	May 11, 2024	1 Year
☒	Coupling Decoupling	HAEFELY	PCD 130	172181	May 11, 2024	1 Year
☒	Coupling Module	HAEFELY	PCD122	174354	May 11, 2024	1 Year
☒	Impulse Module	HAEFELY	PIM 120	174435	May 11, 2024	1 Year
☒	Coupling Module	HAEFELY	PCD 126A	174387	May 11, 2024	1 Year
☒	Impulse Module	HAEFELY	PIM 110	174391	May 11, 2024	1 Year
☒	Impulse Module	HAEFELY	PIM 150	178707	May 12, 2024	1 Year
☒	Impulse Module	PMI	PCDN8	190422	May 12, 2024	1 Year

3.8. For Injected Current Susceptibility Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Continuous Wave Simulator	EMTEST	CWS500C	0900-12	May 10, 2024	1 Year
☒	EM Injection Clamp	EMTEST	F-2031-23MM	368	May 12, 2024	1 Year
☒	Attenuator	EMTEST	100W 6dB DC-3G	/	May 10, 2024	1 Year
☒	Signal Generator	R&S	SMB100A	103041	May 10, 2024	1 Year
☒	Three phase CDN	TESEQ	CDN M532S	33799	May 11, 2024	1 Year
☒	Power meter	AGILENT	E4418B	MY45102886	May 10, 2024	1 Year
☒	Directional coupler	SKET	DC_0110000 M-100W	SK2018080301	May 10, 2024	1 Year

3.9. For Magnetic Field Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Magnetic Field Tester	HAEFELY	MAG100	250040.1	May 10, 2024	1 Year

3.10. For Voltage Dips Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	45KVA AC Power source	Teseq	NSG 1007-45/45KV A	1305A02873	May 11, 2024	1 Year
☐	Signal conditioning Unit	Teseq	CCN 1000-3	1305A02873	May 11, 2024	1 Year
☐	Impedance network	Teseq	INA2197/37A	1305A02873	May 11, 2024	1 Year
☐	Impedance network	Teseq	INA 2196/75A	1305A02874	May 11, 2024	1 Year
☒	Proflin 2100 AC Switching Unit	Teseq	NSG 2200-3	A22714	May 11, 2024	1 Year

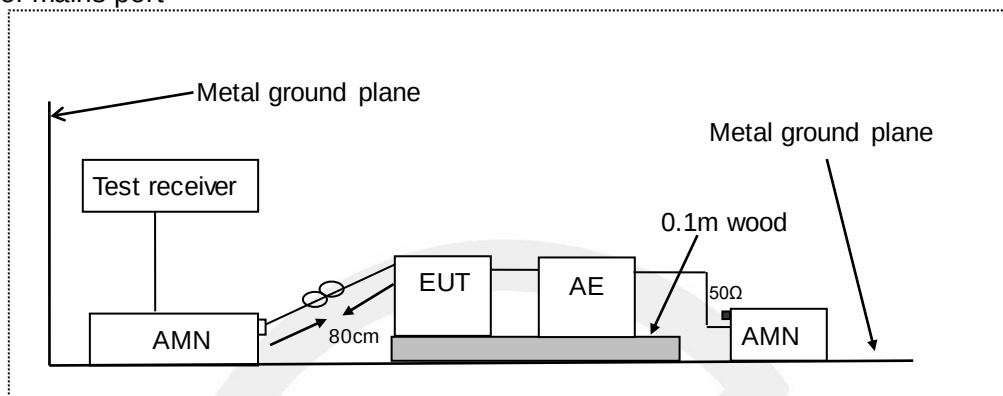
3.11. Low Frequency Signals Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Programmable AC Source	CHROMA	6530	5341	May 10, 2024	1 Year

4. CONDUCTED EMISSIONS FROM THE AC MAINS POWER PORTS

4.1. Block Diagram of Test Setup

For mains port

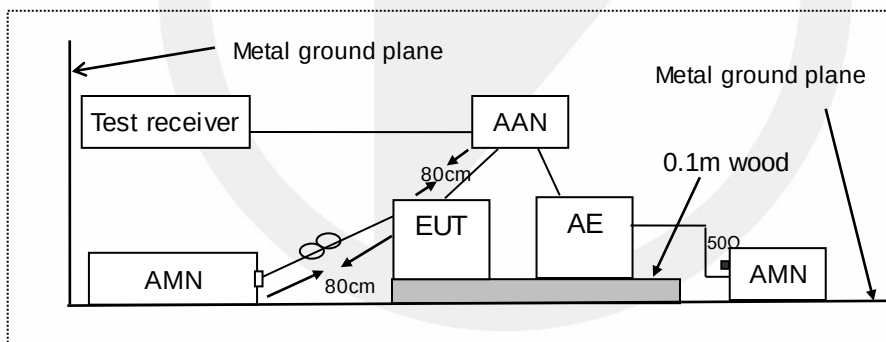


AMN: Artificial Mains Network

AE: Associated equipment

EUT: Equipment under test

For network port:



AMN: Artificial mains network

AE: Associated equipment

EUT: Equipment under test

AAN: Asymmetric artificial network

4.2. Limits

Table 1 – Limits of mains terminal and network port disturbance voltage for category C1 and category C2 UPS in the frequency range 0,15 MHz to 30 MHz

Frequency range MHz	Limits dB (μV)							
	Category C1 UPS				Category C2 UPS			
	Mains terminal		Network port		Mains terminal		Network port	
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0,15 to 0,50 ^b	66 to 56 ^a	56 to 46 ^a	84 to 74 ^a	74 to 64 ^a	79	66	97 to 87 ^a	84 to 74 ^a
0,50 to 5 ^b	56	46	74	64	73	60	87	74
5 to 30	60	50			73	60		
^a The limit decreases linearly with the logarithm of the frequency.								
^b The lower limit shall apply at the transition frequency.								

Table 2 – Limits of mains terminal and network port disturbance voltage for category C3 UPS in the frequency range 0,15 MHz to 30 MHz

UPS rated output current A	Frequency range MHz	Limits dB (μV)			
		Mains terminal		Network port	
		Quasi-peak	Average	Quasi-peak	Average
> 16 to 100	0,15 to 0,50 ^b	100	90	110 to 100 ^a	94 to 84 ^a
	0,50 to 5,0 ^b	86	76	100	84
	5,0 to 30,0	90 to 73 ^a	80 to 60 ^a		
> 100	0,15 to 0,50 ^b	130	120	110 to 100 ^a	94 to 84 ^a
	0,50 to 5,0 ^b	125	115	100	84
	5,0 to 30,0	115	105		
^a The limits decrease linearly with the logarithm of the frequency.					
^b The lower limit shall apply at the transition frequency.					

4.3. Test Procedure

For mains port:

The EUT was placed on a plank 0.1 m height from the metal ground plane and 0.4 m from the conducting wall of the shielding room and it was kept at least 0.8 m from any other grounded conducting surface.

All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units.

Connect EUT to the power mains through a artificial mains network (AMN). Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

All the support units are connecting to the other AMN.

The AMN provides 50 ohm coupling impedance for the measuring instrument.

The CISPR states that the AMN with 50 ohm and 50 microhenry should be used.

Both sides of AC line were checked for maximum conducted interference.

For network port:

The EUT is put on the table 0.1m high above the ground by insulating support and connected to the AC mains through artificial mains network(AMN) or connected to the wired network port through an asymmetric artificial network(ANN). AMN provided a 50ohm coupling impedance for the tested equipment AC mains port, ANN provided a common mode (asymmetric mode) impedance of 150 Ω to the wired network port under test. Both sides of AC line and the wired network line are investigated to find out the maximum conducted emission according to the EN IEC 62040-2 regulations during conducted emission measurement.

The frequency range from 150 kHz to 30 MHz was sweep.

Set the test-receiver system to quasi peak detect function and average detect function, and to measure the conducted emissions values.

Test results were obtained from the following equation:

Emission Level (dB μ V) = AMN Factor (dB) + Cable Loss (dB) + Reading (dB μ V)

Margin (dB) = Emission Level (dB μ V) - Limit (dB μ V)

4.4. Measuring Results

PASS.

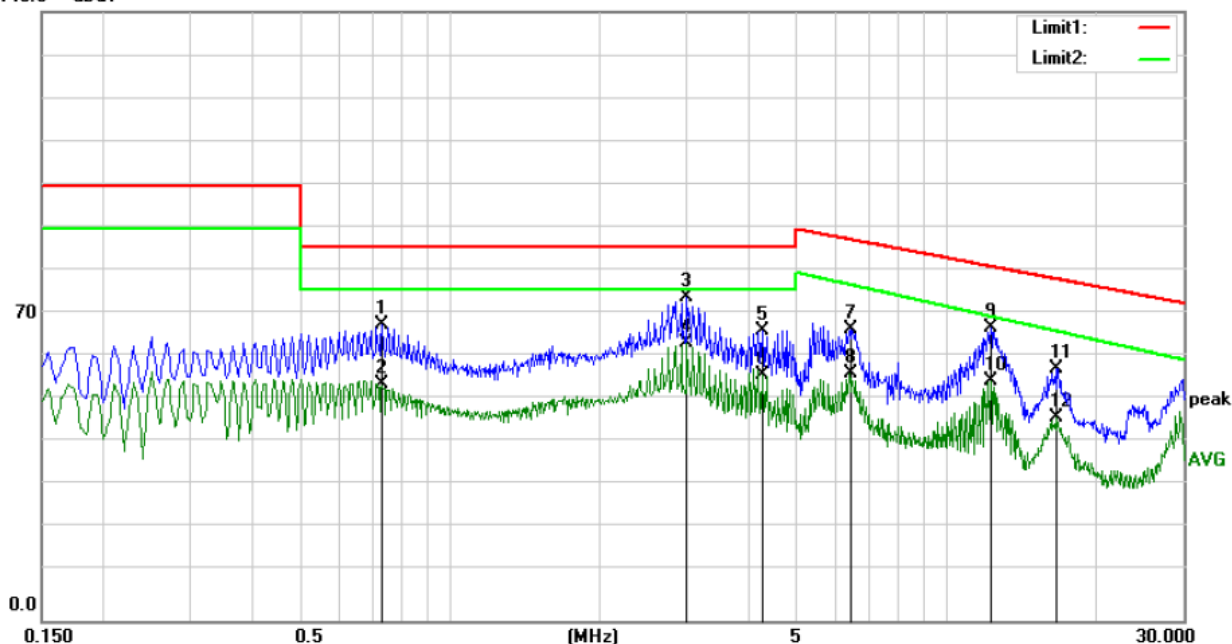
Please see the attached pages.

Temperature	:	24.8°C
Humidity	:	53%
Atmospheric Pressure	:	101kpa
Test Engineer	:	Chengtao Yin
Test Date	:	2024-11-22

Temperature	:	23.5°C
Humidity	:	42%
Atmospheric Pressure	:	101kpa
Test Engineer	:	Chengtao Yin
Test Date	:	2025-01-03

INPUT

140.0 dBuV



Site Conduction 2#

Phase: **L1**

Temperature: 24.8

Limit: (CE)EN62040-2 C3_QP

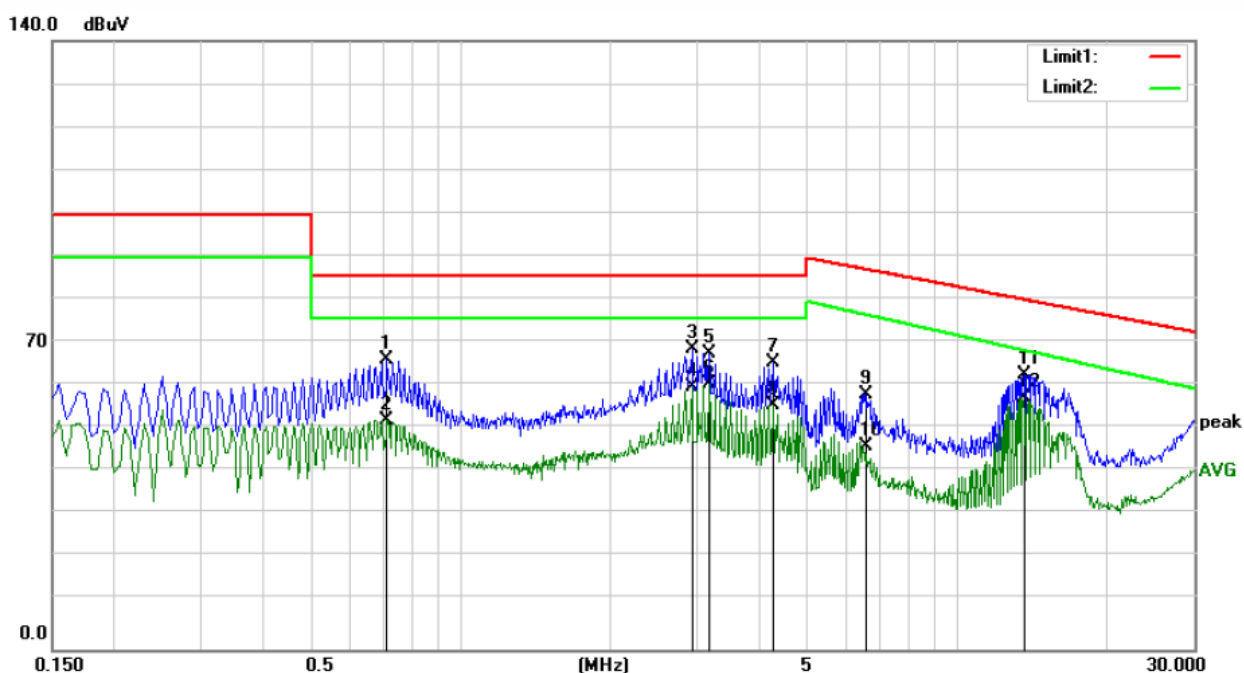
Power: AC 230V/50Hz

Humidity: 53 %

Mode: Line mode

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV	dBuV	dB		
1		0.7300	57.62	10.45	68.07	86.00	-17.93	peak	
2		0.7300	44.09	10.45	54.54	76.00	-21.46	AVG	
3	*	3.0050	64.08	10.35	74.43	86.00	-11.57	peak	
4		3.0050	53.62	10.35	63.97	76.00	-12.03	AVG	
5		4.2550	56.28	10.40	66.68	86.00	-19.32	peak	
6		4.2550	46.07	10.40	56.47	76.00	-19.53	AVG	
7		6.4050	56.31	10.63	66.94	87.65	-20.71	peak	
8		6.4050	46.12	10.63	56.75	77.24	-20.49	AVG	
9		12.2800	56.66	10.57	67.23	81.47	-14.24	peak	
10		12.2800	44.60	10.57	55.17	69.97	-14.80	AVG	
11		16.5800	47.15	10.73	57.88	78.63	-20.75	peak	
12		16.5800	35.86	10.73	46.59	66.62	-20.03	AVG	



Site Conduction 2#

Phase: **N**

Temperature: 24.8

Limit: (CE)EN62040-2 C3_QP

Power: AC 230V/50Hz

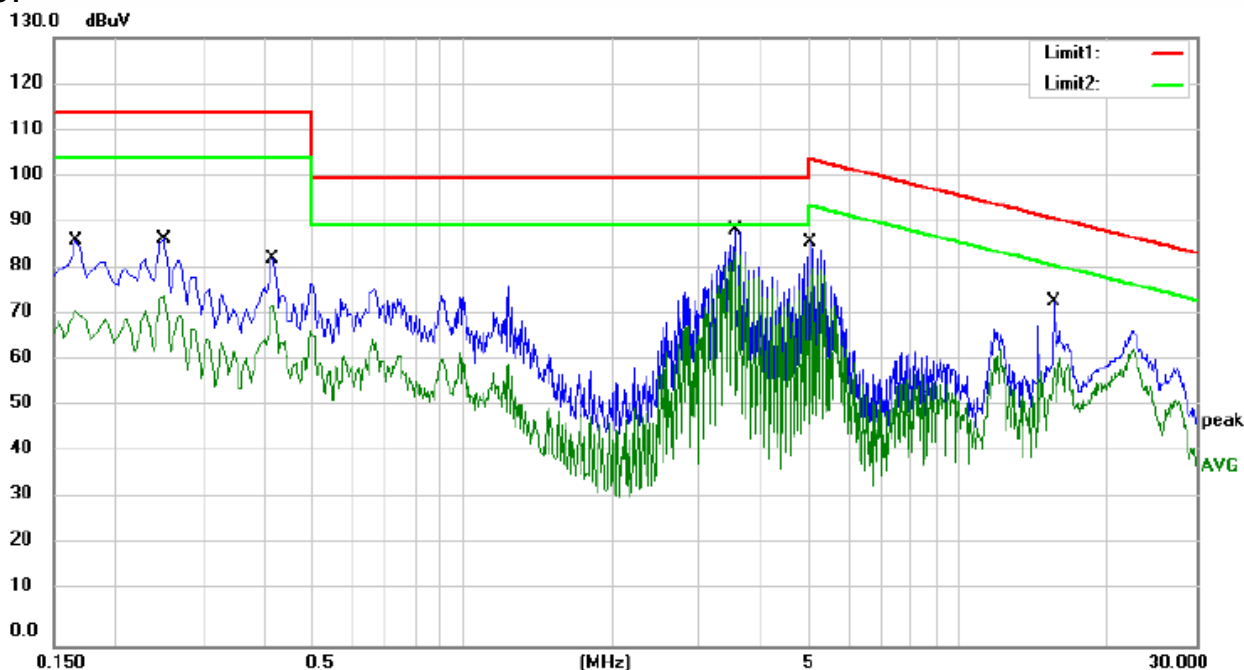
Humidity: 53 %

Mode: Line mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.7100	56.37	10.44	66.81	86.00	-19.19	peak	
2		0.7100	42.21	10.44	52.65	76.00	-23.35	AVG	
3		2.9200	58.82	10.37	69.19	86.00	-16.81	peak	
4		2.9200	50.00	10.37	60.37	76.00	-15.63	AVG	
5		3.1700	57.54	10.36	67.90	86.00	-18.10	peak	
6		3.1700	50.57	10.36	60.93	76.00	-15.07	AVG	
7		4.2550	55.46	10.40	65.86	86.00	-20.14	peak	
8		4.2550	45.70	10.40	56.10	76.00	-19.90	AVG	
9		6.5800	48.11	10.66	58.77	87.39	-28.62	peak	
10		6.5800	36.18	10.66	46.84	76.93	-30.09	AVG	
11		13.6800	52.41	10.60	63.01	80.45	-17.44	peak	
12	*	13.6800	47.17	10.60	57.77	68.77	-11.00	AVG	

OUTPUT



Site 10m Chamber 1#

Phase: **L1**

Temperature: 24.8C

Limit: (CE)EN62040-2 C3_QP (OUT<100A)

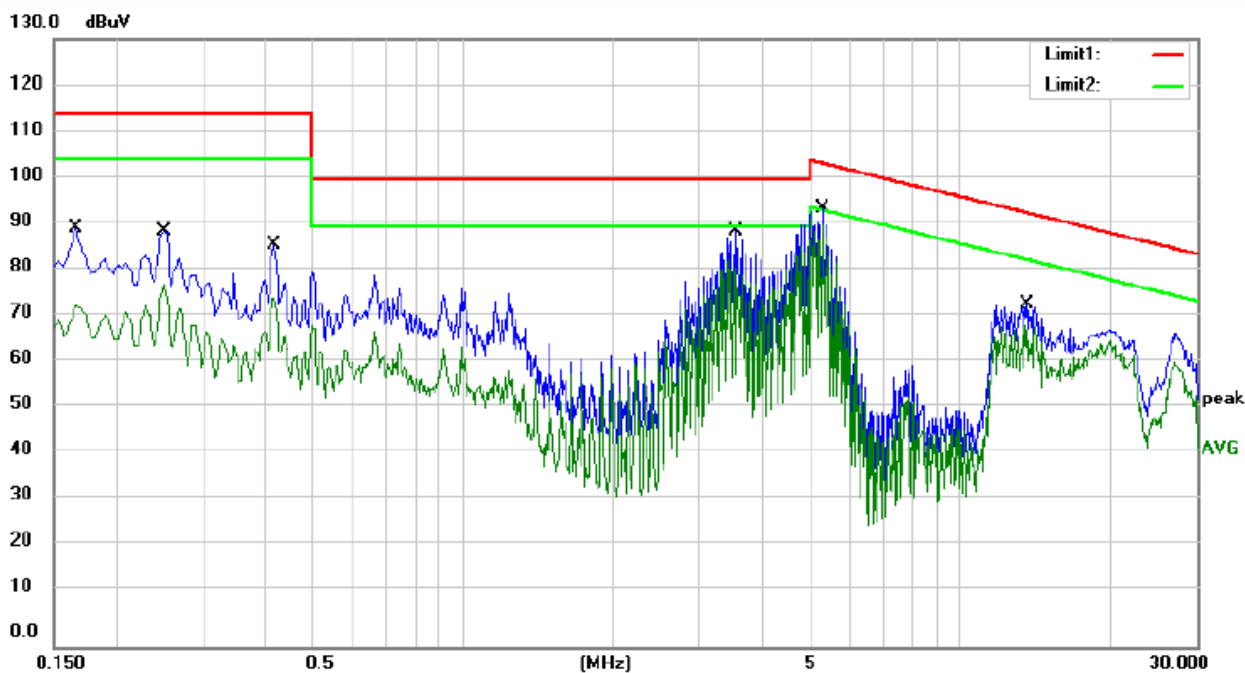
Power: AC 230V/50Hz

Humidity: 53 %

Mode: Line mode

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1660	66.21	20.48	86.69	114.00	-27.31	QP	
2		0.1660	51.14	20.48	71.62	104.00	-32.38	AVG	
3		0.2500	66.68	20.28	86.96	114.00	-27.04	QP	
4		0.2500	54.55	20.28	74.83	104.00	-29.17	AVG	
5		0.4140	62.47	20.36	82.83	114.00	-31.17	QP	
6		0.4140	52.28	20.36	72.64	104.00	-31.36	AVG	
7		3.5380	68.61	20.42	89.03	100.00	-10.97	QP	
8	*	3.5380	64.05	20.42	84.47	90.00	-5.53	AVG	
9		5.0260	66.03	20.39	86.42	103.94	-17.52	QP	
10		5.0260	60.41	20.39	80.80	93.94	-13.14	AVG	
11		15.5100	95.98	-22.49	73.49	91.36	-17.87	QP	
12		15.5100	84.00	-22.49	61.51	81.36	-19.85	AVG	



Site: 10m Chamber 1#

Phase: **N**

Temperature: 24.8C

Limit: (CE)EN62040-2 C3_QP (OUT<100A)

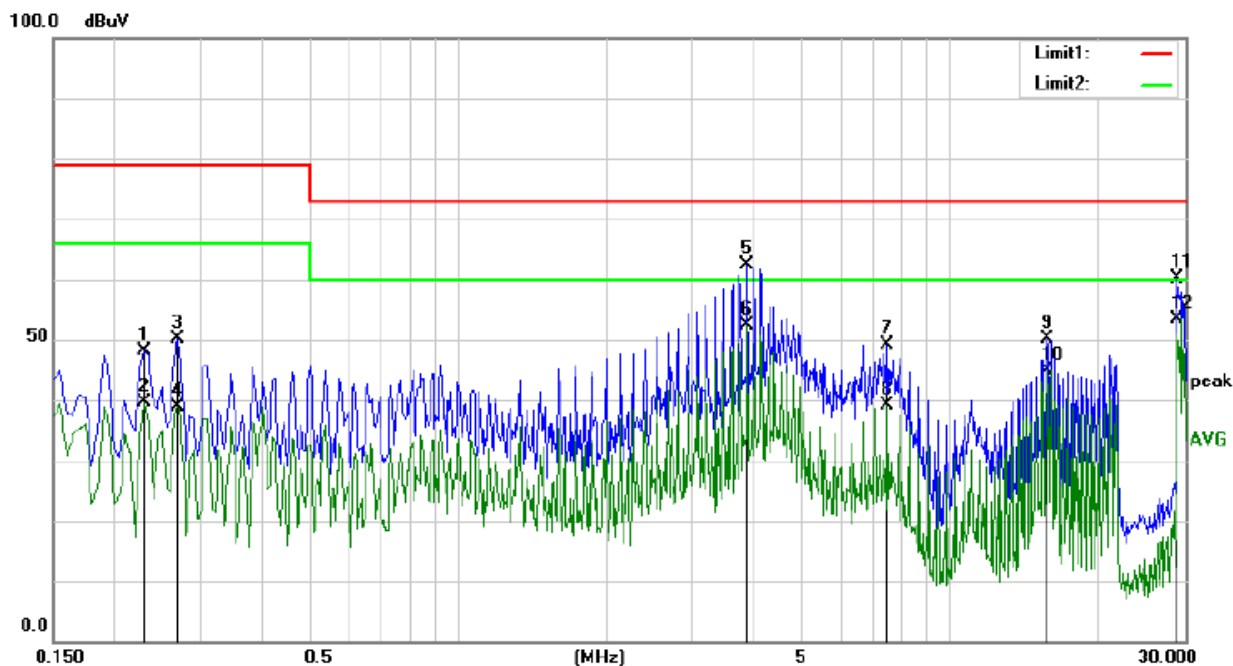
Power: AC 230V/50Hz

Humidity: 53 %

Mode: Line mode

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1660	69.10	20.48	89.58	114.00	-24.42	QP	
2		0.1660	52.56	20.48	73.04	104.00	-30.96	AVG	
3		0.2500	68.66	20.28	88.94	114.00	-25.06	QP	
4		0.2500	57.31	20.28	77.59	104.00	-26.41	AVG	
5		0.4180	65.68	20.35	86.03	114.00	-27.97	QP	
6		0.4180	54.38	20.35	74.73	104.00	-29.27	AVG	
7		3.5620	68.52	20.42	88.94	100.00	-11.06	QP	
8		3.5620	62.53	20.42	82.95	90.00	-7.05	AVG	
9		5.3020	73.19	20.42	93.61	103.35	-9.74	QP	
10	*	5.3020	71.15	20.42	91.57	93.35	-1.78	AVG	
11		13.6740	95.94	-22.69	73.25	92.77	-19.52	QP	
12		13.6740	91.53	-22.69	68.84	82.77	-13.93	AVG	



Site Conduction 2#

Phase: **L1**

Temperature: 23.5

Limit: (CE)EN62040-2 C2_QP

Power: AC 230V/50Hz

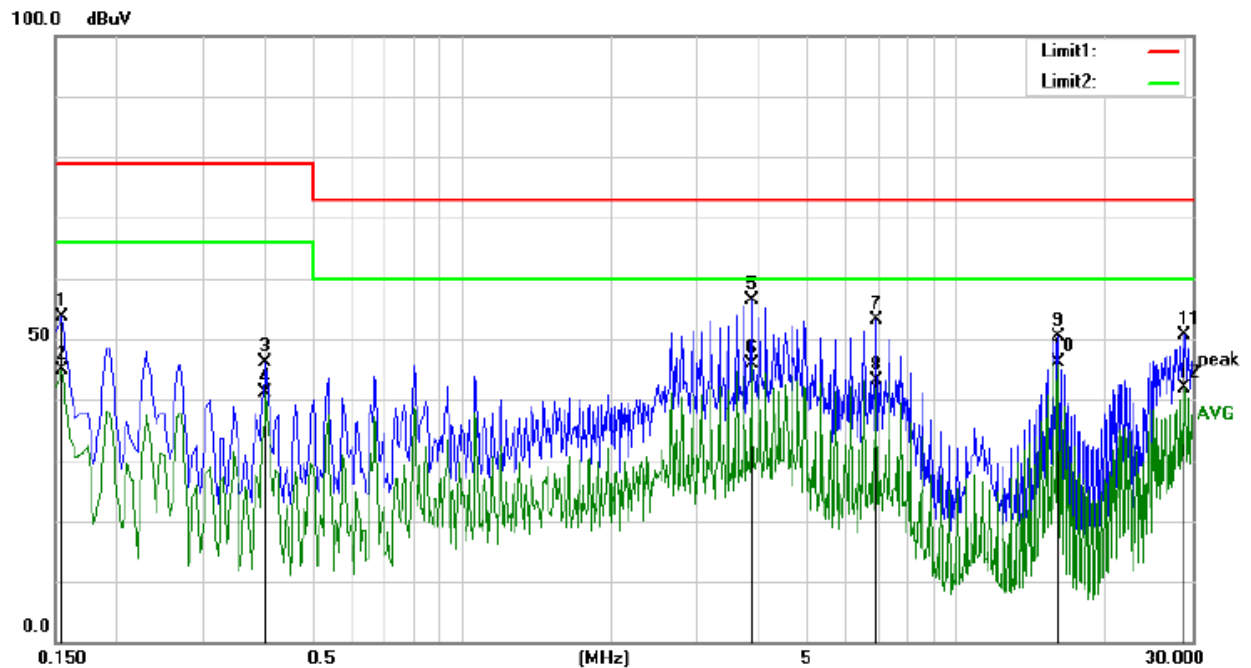
Humidity: 42 %

M/N: NTPR3K

Mode: Line Mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2300	37.64	10.52	48.16	79.00	-30.84	QP	
2		0.2300	29.21	10.52	39.73	66.00	-26.27	AVG	
3		0.2700	39.65	10.53	50.18	79.00	-28.82	QP	
4		0.2700	28.28	10.53	38.81	66.00	-27.19	AVG	
5		3.8700	52.03	10.39	62.42	73.00	-10.58	QP	
6		3.8700	41.95	10.39	52.34	60.00	-7.66	AVG	
7		7.4550	38.53	10.69	49.22	73.00	-23.78	QP	
8		7.4550	28.32	10.69	39.01	60.00	-20.99	AVG	
9		15.7300	39.41	10.67	50.08	73.00	-22.92	QP	
10		15.7300	34.30	10.67	44.97	60.00	-15.03	AVG	
11		29.0300	48.93	11.08	60.01	73.00	-12.99	QP	
12	*	29.0300	42.26	11.08	53.34	60.00	-6.66	AVG	



Site Conduction 2#

Phase: **N**

Temperature: 23.5

Limit: (CE)EN62040-2 C2_QP

Power: AC 230V/50Hz

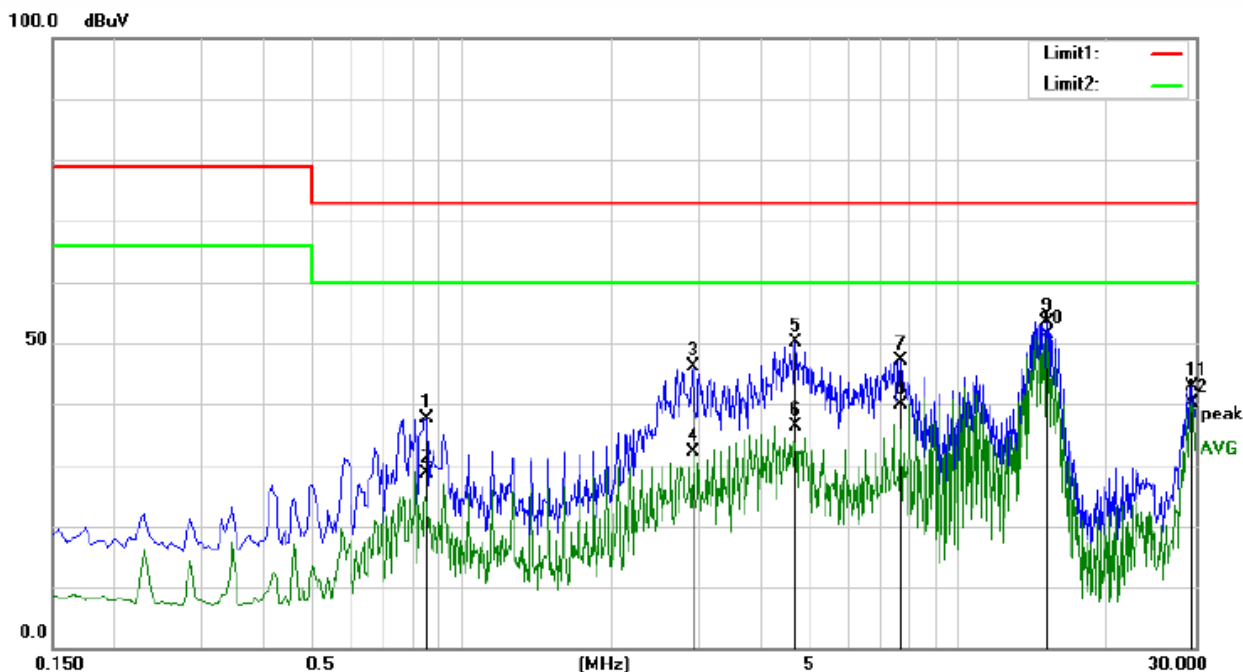
Humidity: 42 %

M/N: NTPR3K

Mode: Line Mode

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1550	43.04	10.51	53.55	79.00	-25.45	QP	
2		0.1550	34.45	10.51	44.96	66.00	-21.04	AVG	
3		0.4000	35.62	10.50	46.12	79.00	-32.88	QP	
4		0.4000	30.59	10.50	41.09	66.00	-24.91	AVG	
5		3.8600	45.94	10.44	56.38	73.00	-16.62	QP	
6		3.8600	35.42	10.44	45.86	60.00	-14.14	AVG	
7		6.9050	42.65	10.51	53.16	73.00	-19.84	QP	
8		6.9050	32.52	10.51	43.03	60.00	-16.97	AVG	
9		16.1050	39.67	10.78	50.45	73.00	-22.55	QP	
10	*	16.1050	35.30	10.78	46.08	60.00	-13.92	AVG	
11		28.7800	39.53	11.07	50.60	73.00	-22.40	QP	
12		28.7800	30.76	11.07	41.83	60.00	-18.17	AVG	



Site: Conduction 2#

Phase: L1

Temperature: 23.5

Limit: (CE)EN62040-2 C2_QP

Power: AC 230V/50Hz

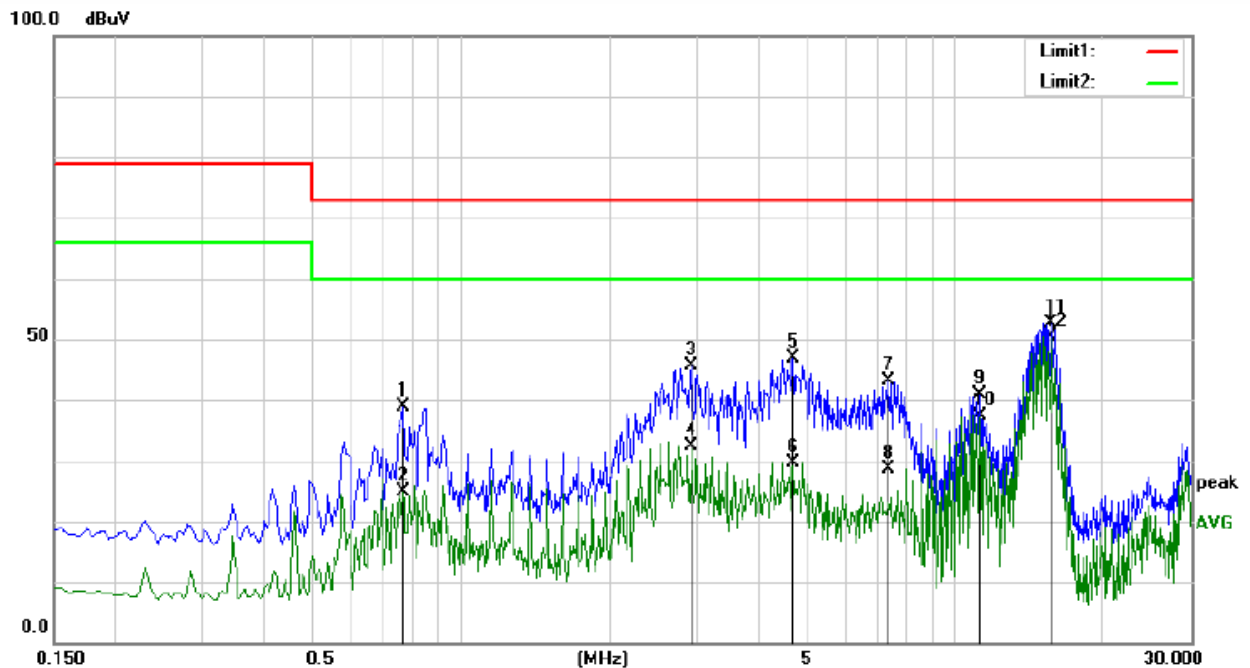
Humidity: 42 %

M/N: NTPR3K

Mode: Bat Mode

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.8500	27.02	10.49	37.51	73.00	-35.49	QP	
2		0.8500	18.26	10.49	28.75	60.00	-31.25	AVG	
3		2.9300	35.86	10.37	46.23	73.00	-26.77	QP	
4		2.9300	21.79	10.37	32.16	60.00	-27.84	AVG	
5		4.7050	39.60	10.43	50.03	73.00	-22.97	QP	
6		4.7050	25.95	10.43	36.38	60.00	-23.62	AVG	
7		7.6550	36.41	10.68	47.09	73.00	-25.91	QP	
8		7.6550	29.30	10.68	39.98	60.00	-20.02	AVG	
9		15.1050	42.75	10.63	53.38	73.00	-19.62	QP	
10	*	15.1050	40.66	10.63	51.29	60.00	-8.71	AVG	
11		29.4050	31.76	11.08	42.84	73.00	-30.16	QP	
12		29.4050	29.14	11.08	40.22	60.00	-19.78	AVG	



Site Conduction 2#

Phase: **N**

Temperature: 23.5

Limit: (CE)EN62040-2 C2_QP

Power: AC 230V/50Hz

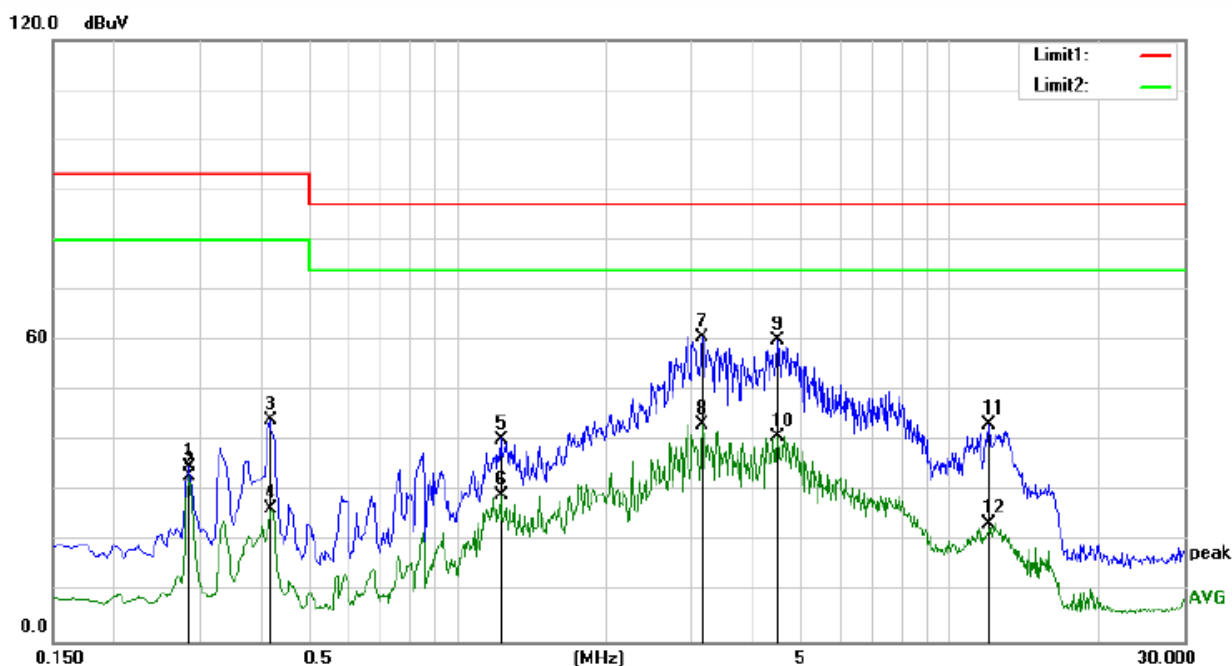
Humidity: 42 %

M/N: NTPR3K

Mode: Bat Mode

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.7650	28.35	10.45	38.80	73.00	-34.20	QP	
2		0.7650	14.53	10.45	24.98	60.00	-35.02	AVG	
3		2.9300	35.23	10.37	45.60	73.00	-27.40	QP	
4		2.9300	22.08	10.37	32.45	60.00	-27.55	AVG	
5		4.7000	36.40	10.43	46.83	73.00	-26.17	QP	
6		4.7000	19.28	10.43	29.71	60.00	-30.29	AVG	
7		7.3300	32.34	10.69	43.03	73.00	-29.97	QP	
8		7.3300	17.86	10.69	28.55	60.00	-31.45	AVG	
9		11.2300	30.31	10.55	40.86	73.00	-32.14	QP	
10		11.2300	26.93	10.55	37.48	60.00	-22.52	AVG	
11		15.6800	42.05	10.67	52.72	73.00	-20.28	QP	
12	*	15.6800	39.70	10.67	50.37	60.00	-9.63	AVG	



Site Conduction 2#

Phase: **L1**

Temperature: 23.5

Limit: (CE)EN62040-2 C2_QP(OUTPUT)

Power: AC 230V/50Hz

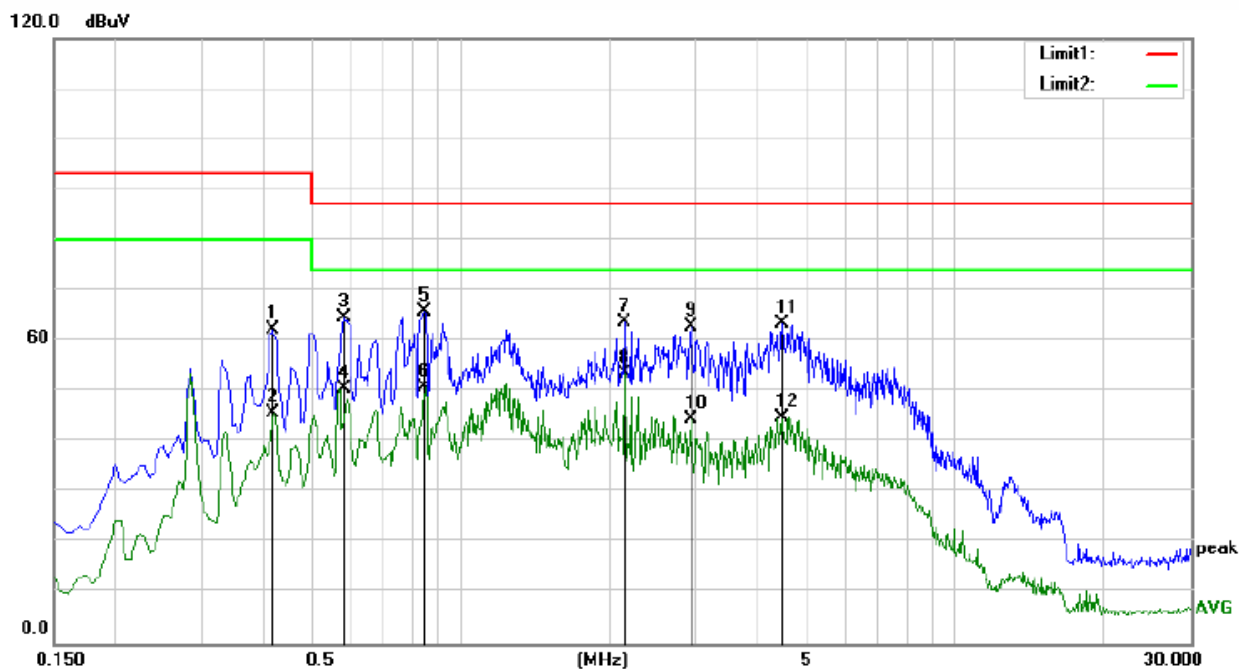
Humidity: 42 %

M/N: NTPR3K

Mode: Line Mode

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2850	24.50	10.50	35.00	93.00	-58.00	QP	
2		0.2850	22.77	10.50	33.27	80.00	-46.73	AVG	
3		0.4150	33.83	10.50	44.33	93.00	-48.67	QP	
4		0.4150	16.20	10.50	26.70	80.00	-53.30	AVG	
5		1.2250	29.99	10.51	40.50	87.00	-46.50	QP	
6		1.2250	18.67	10.51	29.18	74.00	-44.82	AVG	
7	*	3.1450	50.26	10.47	60.73	87.00	-26.27	QP	
8		3.1450	32.98	10.47	43.45	74.00	-30.55	AVG	
9		4.4800	49.88	10.42	60.30	87.00	-26.70	QP	
10		4.4800	30.46	10.42	40.88	74.00	-33.12	AVG	
11		12.0550	32.80	10.68	43.48	87.00	-43.52	QP	
12		12.0550	13.02	10.68	23.70	74.00	-50.30	AVG	



Site Conduction 2#

Phase: **N**

Temperature: 23.5

Limit: (CE)EN62040-2 C2_QP(OUTPUT)

Power: AC 230V/50Hz

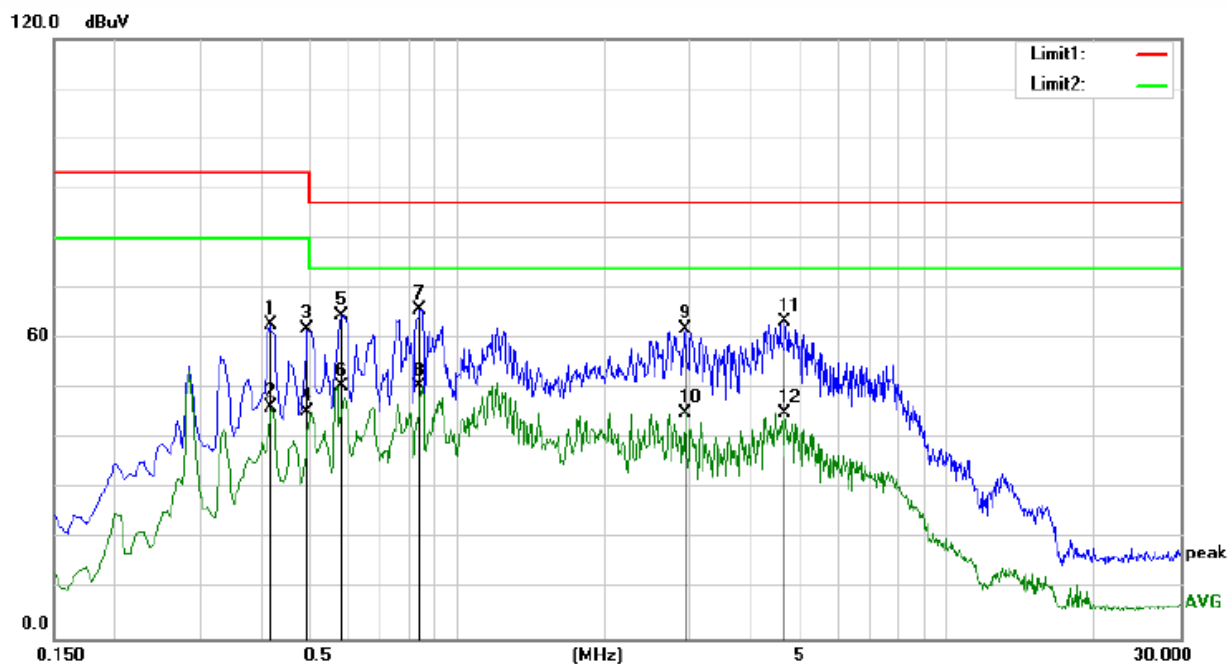
Humidity: 42 %

M/N: NTPR3K

Mode: Line Mode

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.4150	51.81	10.50	62.31	93.00	-30.69	QP	
2		0.4150	35.16	10.50	45.66	80.00	-34.34	AVG	
3		0.5800	54.19	10.51	64.70	87.00	-22.30	QP	
4		0.5800	40.03	10.51	50.54	74.00	-23.46	AVG	
5		0.8450	55.19	10.51	65.70	87.00	-21.30	QP	
6		0.8450	40.22	10.51	50.73	74.00	-23.27	AVG	
7		2.1450	53.25	10.46	63.71	87.00	-23.29	QP	
8	*	2.1450	43.01	10.46	53.47	74.00	-20.53	AVG	
9		2.9250	52.38	10.47	62.85	87.00	-24.15	QP	
10		2.9250	34.18	10.47	44.65	74.00	-29.35	AVG	
11		4.4750	53.05	10.42	63.47	87.00	-23.53	QP	
12		4.4750	34.37	10.42	44.79	74.00	-29.21	AVG	



Site Conduction 2#

Phase: **N**

Temperature: 23.5

Limit: (CE)EN62040-2 C2_QP(OUTPUT)

Power: AC 230V/50Hz

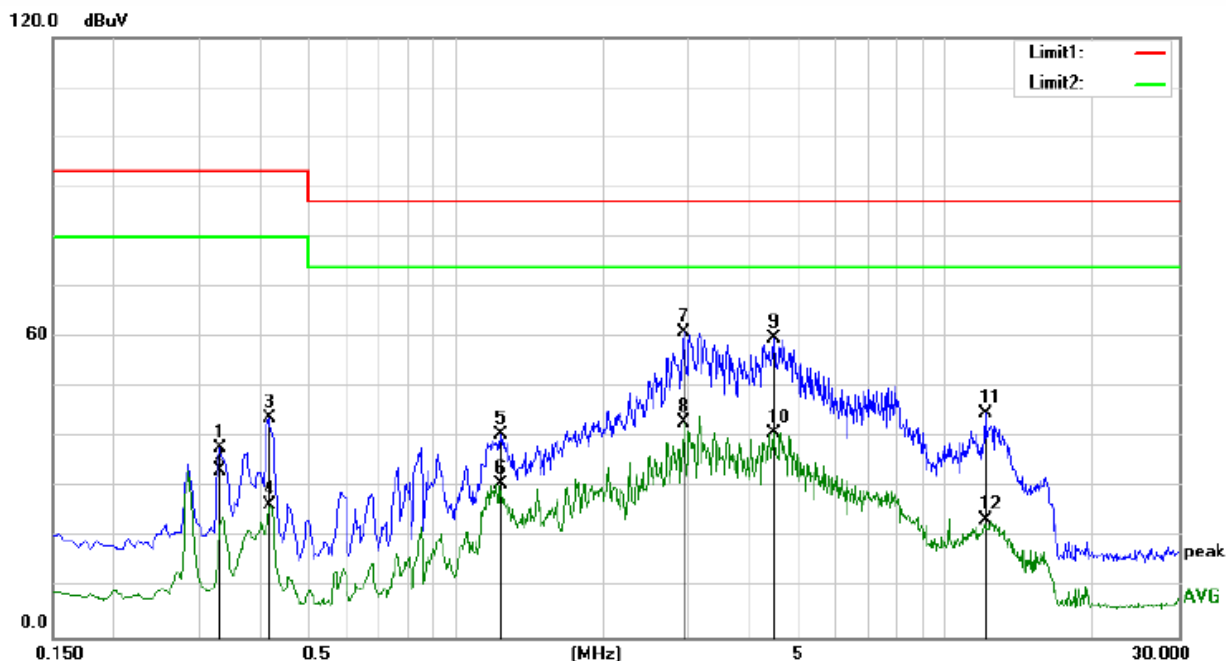
Humidity: 42 %

M/N: NTPR3K

Mode: Bat Mode

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV	dBuV	dB		
1		0.4150	52.36	10.50	62.86	93.00	-30.14	QP	
2		0.4150	35.77	10.50	46.27	80.00	-33.73	AVG	
3		0.4950	51.36	10.52	61.88	93.00	-31.12	QP	
4		0.4950	34.93	10.52	45.45	80.00	-34.55	AVG	
5		0.5800	54.15	10.51	64.66	87.00	-22.34	QP	
6		0.5800	39.91	10.51	50.42	74.00	-23.58	AVG	
7	*	0.8400	55.39	10.51	65.90	87.00	-21.10	QP	
8		0.8400	40.09	10.51	50.60	74.00	-23.40	AVG	
9		2.9300	51.56	10.47	62.03	87.00	-24.97	QP	
10		2.9300	34.72	10.47	45.19	74.00	-28.81	AVG	
11		4.6900	52.97	10.41	63.38	87.00	-23.62	QP	
12		4.6900	34.84	10.41	45.25	74.00	-28.75	AVG	



Site Conduction 2#

Phase: **L1**

Temperature: 23.5

Limit: (CE)EN62040-2 C2_QP(OUTPUT)

Power: AC 230V/50Hz

Humidity: 42 %

M/N: NTPR3K

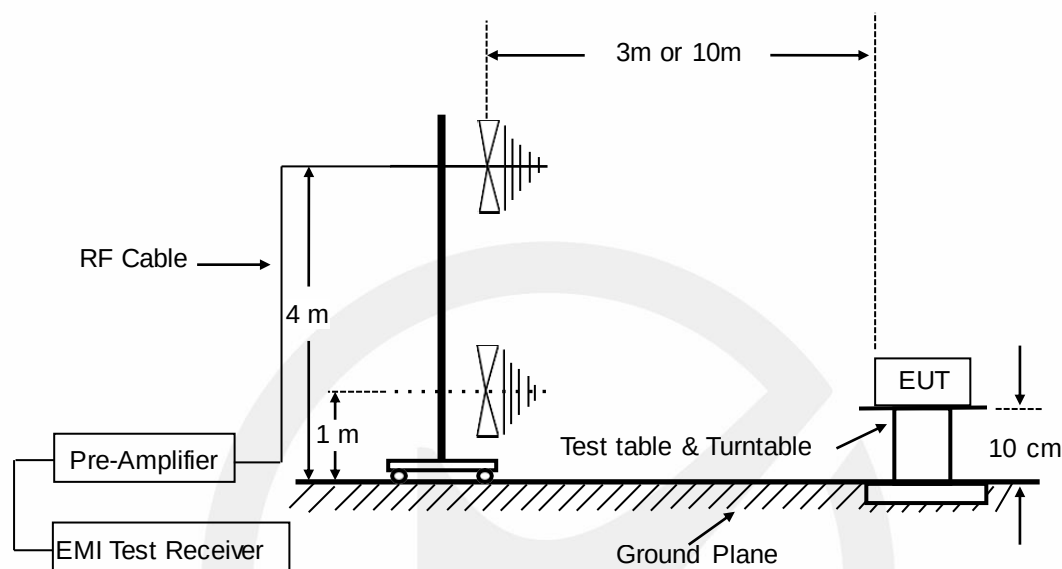
Mode: Bat Mode

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV	dBuV	dB		
1		0.3300	27.49	10.50	37.99	93.00	-55.01	QP	
2		0.3300	22.82	10.50	33.32	80.00	-46.68	AVG	
3		0.4150	33.60	10.50	44.10	93.00	-48.90	QP	
4		0.4150	16.19	10.50	26.69	80.00	-53.31	AVG	
5		1.2400	30.11	10.51	40.62	87.00	-46.38	QP	
6		1.2400	20.15	10.51	30.66	74.00	-43.34	AVG	
7	*	2.9250	50.48	10.47	60.95	87.00	-26.05	QP	
8		2.9250	32.72	10.47	43.19	74.00	-30.81	AVG	
9		4.4750	49.47	10.42	59.89	87.00	-27.11	QP	
10		4.4750	30.42	10.42	40.84	74.00	-33.16	AVG	
11		12.1050	34.03	10.69	44.72	87.00	-42.28	QP	
12		12.1050	12.74	10.69	23.43	74.00	-50.57	AVG	

5. RADIATED EMISSION MEASUREMENT (UP TO 1GHZ)

5.1. Block Diagram of Test Setup



5.2. Radiated Limit

Table 3 – Limits of radiated emission in the frequency range 30 MHz to 1 000 MHz

Frequency range MHz	Quasi-peak limits dB (μV/m)		
	Category C1 UPS	Category C2 UPS	Category C3 UPS
30 to 230 ^a	30	40	50
230 to 1 000	37	47	60

^a The lower limit shall apply at the transition frequency.

NOTE 1 The test distance is 10 m. If the emission measurement at 10 m cannot be made because of high ambient noise levels or for other reasons, measurements are made at a closer distance, for example 3 m. An inverse proportionality factor of 20 dB per decade is used to normalize the measured data to the specified distance for determining compliance.

NOTE 2 Where interference occurs additional provisions can be necessary.

5.3. Test Procedure

The EUT was placed on a non-conductive plank whose total height equaled 10cm. All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units.

The EUT was set 3 meters (or 10 meters) away from the receiving antenna that was mounted on a non-conductive mast. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level.

The turntable can rotate 360 degree to determine the position of the maximum emission level.

The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.

The identification of the frequency of highest emission with respect to the limit was found by investigating emissions at a number of significant frequencies. The probable frequency of maximum emission had been found and that the associated cable and EUT configuration and mode of operation had been identified.

The bandwidth of the Receiver is set at 120 kHz.

Test results were obtained from the following equation:

Emission level (dBμV/m) = Antenna Factor -Amp Factor +Cable Loss + Reading

Margin (dB) = Emission Level (dBμV/m) - Limit (dBμV/m)

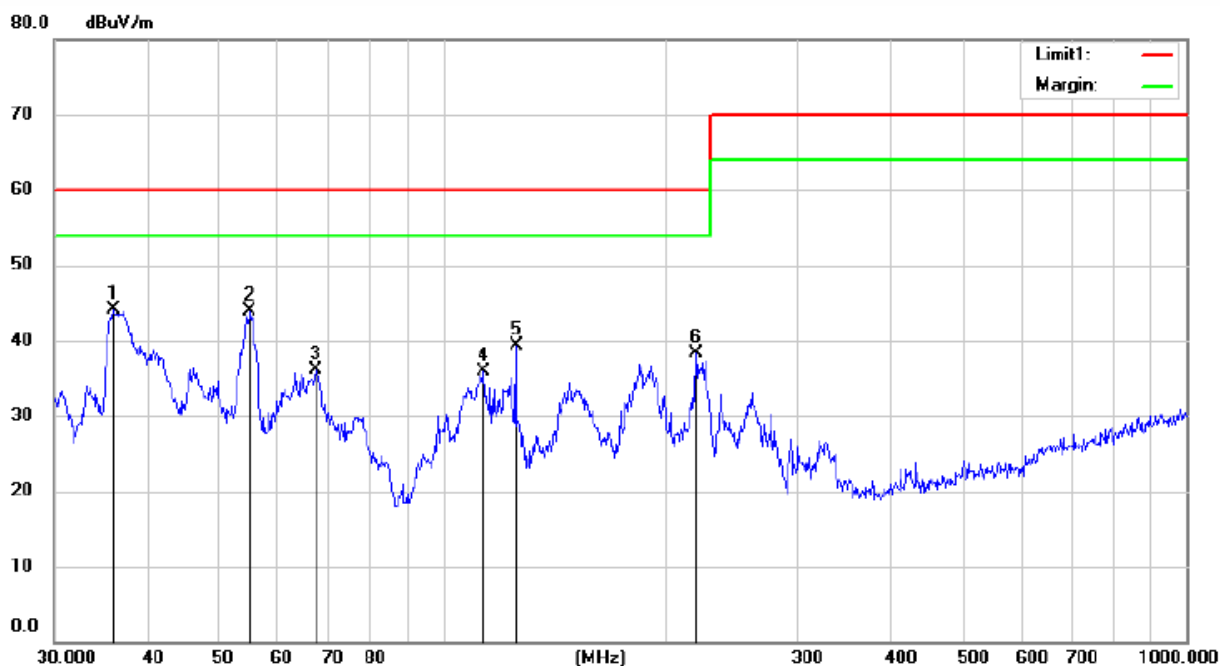
5.4. Measuring Results

PASS.

Please see the attached pages.

Temperature	:	24.7°C
Humidity	:	49%
Atmospheric Pressure	:	101kpa
Test Engineer	:	Chengtao Yin
Test Date	:	2024-11-22

Temperature	:	20.7°C
Humidity	:	42%
Atmospheric Pressure	:	101kpa
Test Engineer	:	Chengtao Yin
Test Date	:	2024-12-31



Site 3m Chamber #2

Polarization: **Horizontal**

Temperature: 24.7 C

Limit: (RE)EN62040-2 C3

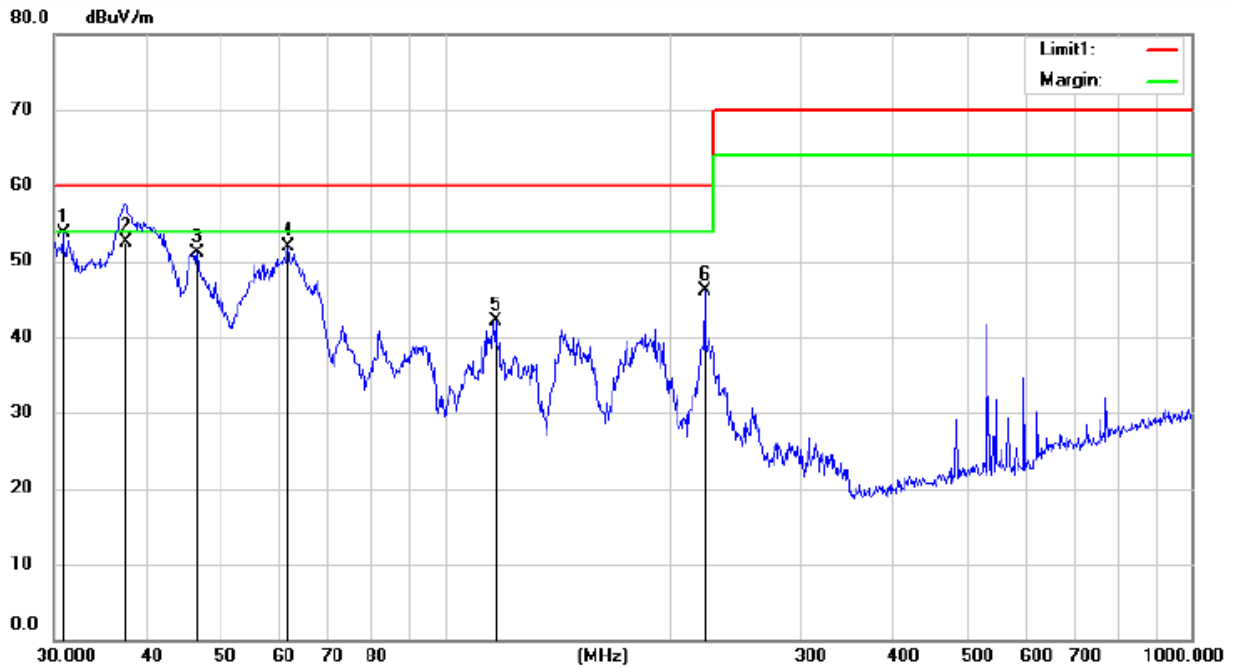
Power: DC 192V

Humidity: 49 %

Mode: BAT MODE

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	36.0007	62.53	-18.35	44.18	60.00	-15.82	QP		
2		55.0274	61.94	-17.97	43.97	60.00	-16.03	QP		
3		67.4382	56.95	-20.88	36.07	60.00	-23.93	QP		
4		113.3163	52.69	-16.75	35.94	60.00	-24.06	QP		
5		125.4457	57.98	-18.58	39.40	60.00	-20.60	QP		
6		219.0753	54.95	-16.57	38.38	60.00	-21.62	QP		



Site 3m Chamber #2

Polarization: **Vertical**

Temperature: 24.7 C

Limit: (RE)EN62040-2_C3

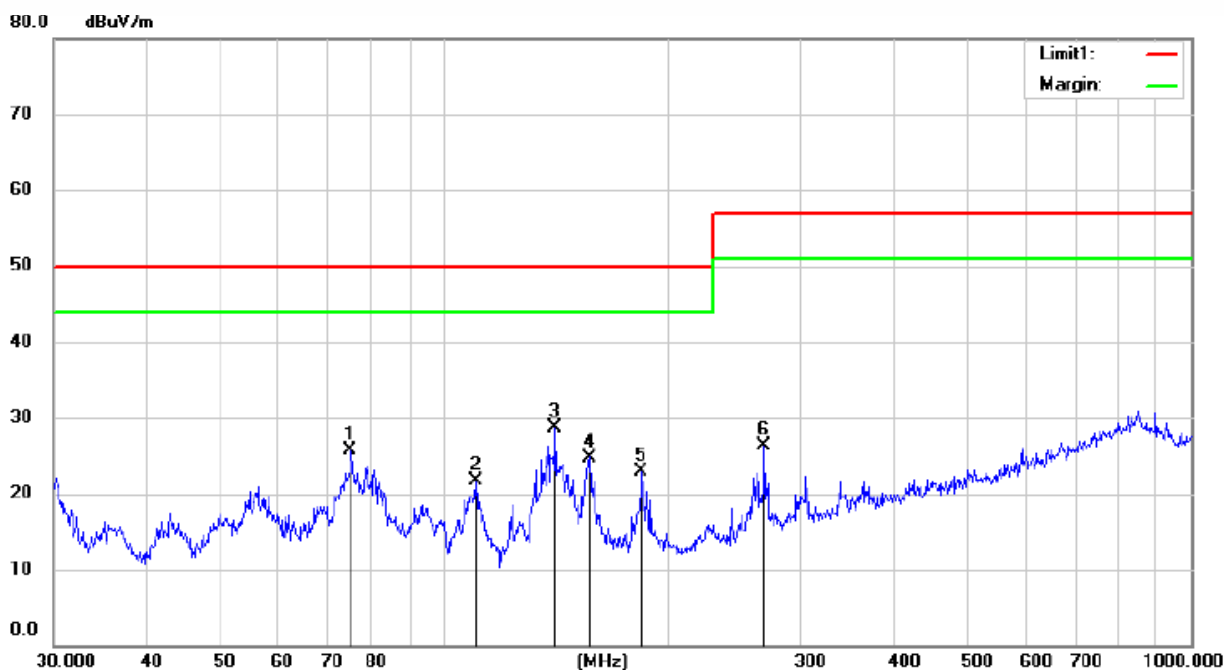
Power: DC 192V

Humidity: 49 %

Mode: BAT MODE

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Comment
1	*	30.8535	72.29	-18.67	53.62	60.00	-6.38	QP		
2		37.4165	70.78	-18.28	52.50	60.00	-7.50	QP		
3		46.6664	69.07	-18.00	51.07	60.00	-8.93	QP		
4		61.7781	70.88	-18.90	51.98	60.00	-8.02	QP		
5		116.9495	59.53	-17.41	42.12	60.00	-17.88	QP		
6		222.9502	62.46	-16.42	46.04	60.00	-13.96	QP		



Site 3m Chamber #3

Polarization: **Horizontal**

Temperature: 20.7 C

Limit: (RE)EN62040-2_C2

Power: DC 72V

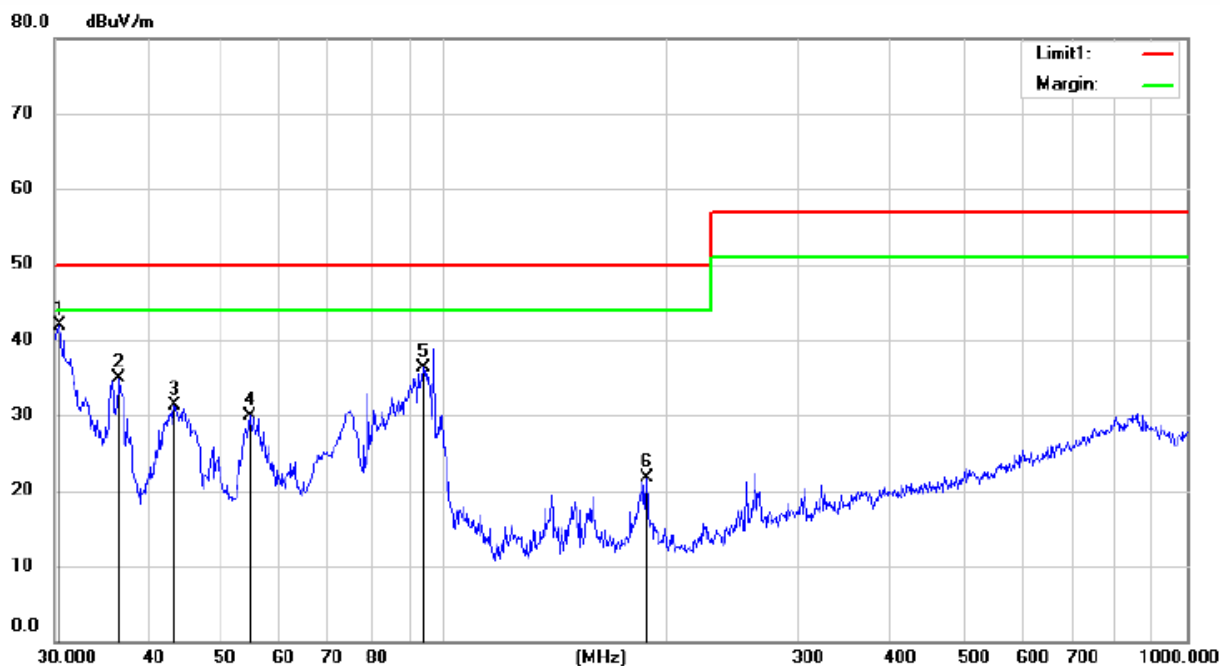
Humidity: 42 %

M/N: NTPR3K

Mode: BAT mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		74.9191	42.58	-16.91	25.67	50.00	-24.33	QP		
2		110.1816	38.23	-16.50	21.73	50.00	-28.27	QP		
3	*	140.8351	46.29	-17.51	28.78	50.00	-21.22	QP		
4		156.4578	41.90	-17.10	24.80	50.00	-25.20	QP		
5		183.8440	38.65	-15.72	22.93	50.00	-27.07	QP		
6		268.4853	38.90	-12.57	26.33	57.00	-30.67	QP		



Site 3m Chamber #3

Polarization: **Vertical**

Temperature: 20.7 C

Limit: (RE)EN62040-2_C2

Power: DC 72V

Humidity: 42 %

M/N: NTPR10K

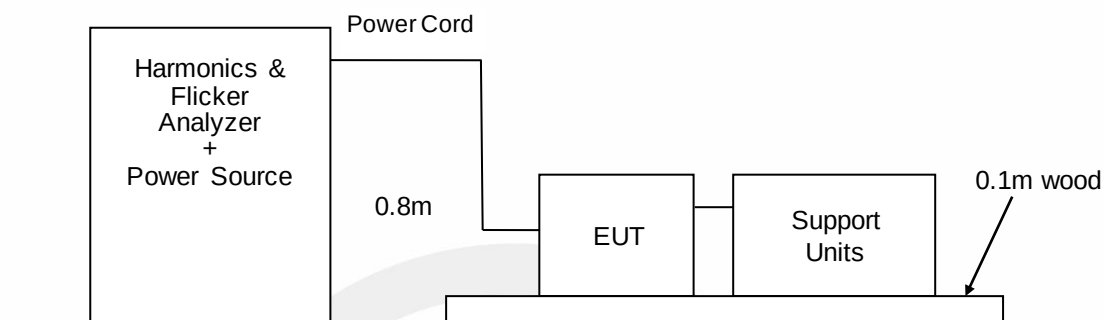
Mode: BAT mode

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	30.4238	58.45	-16.51	41.94	50.00	-8.06	QP		
2		36.6375	50.21	-15.31	34.90	50.00	-15.10	QP		
3		43.5057	45.98	-14.64	31.34	50.00	-18.66	QP		
4		54.8348	44.11	-14.16	29.95	50.00	-20.05	QP		
5		94.0980	53.00	-16.63	36.37	50.00	-13.63	QP		
6		187.7530	37.43	-15.72	21.71	50.00	-28.29	QP		

6. HARMONIC CURRENT EMISSION MEASUREMENT

6.1. Block Diagram of Test Setup



6.2. Measuring Standard

EN 61000-3-12:2011 EN IEC 61000-3-2:2019+A1:2021

6.3. Operation Condition of EUT

Same as Section 6.4, except the test setup replaced as Section 6.1.

6.4. Measuring Results

PASS.

Please see the attached page.

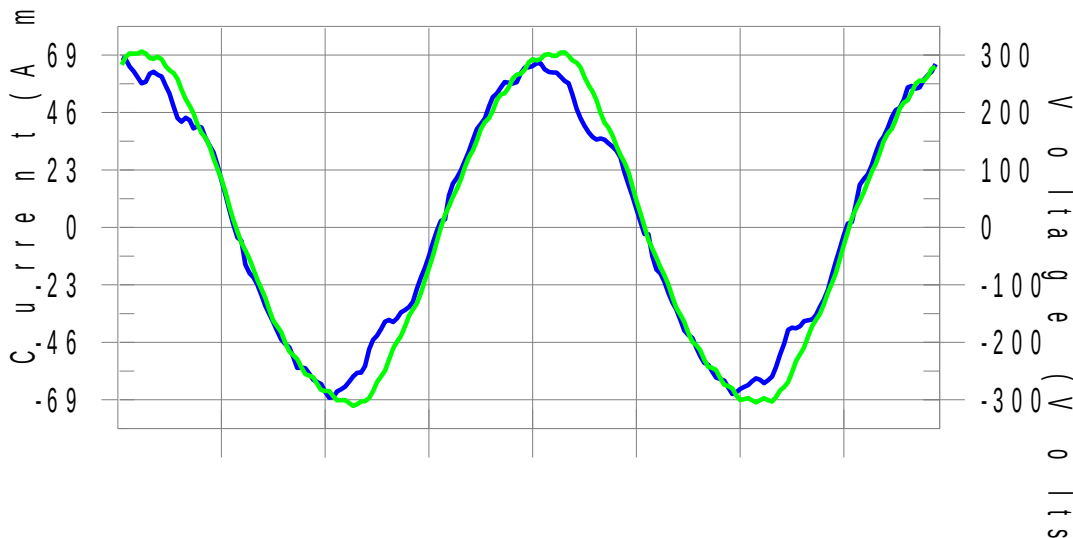
Harmonics – Per EN/IEC61000-3-12, Ed. 2.0

EUT: Outdoor UPS 1-10KVA with air conditioner Tested by: KUNWU
Test category: Table:2, Rsce=33, Inter-Harm, Test Margin: 100
Test date: 2024/9/29 Start time: 17:21:04 End time: 17:23:46
Test duration (min): 2.5 Data file name: CTSMXH_H-000049.cts_data
Comment: LINE MODE
Customer: Netcon Enterprise Pvt Ltd

Test Result: Pass

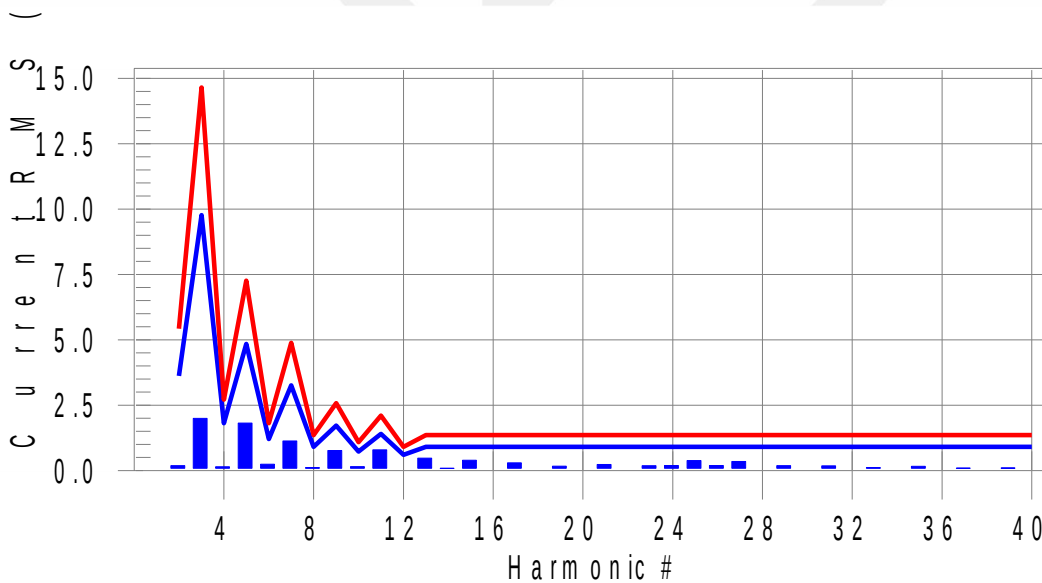
Source qualification: Distorted

Current & voltage waveforms



Harmonics and Class 2 limit line

European Limits



Test result: Pass Worst harmonics H11-40.8% of 150% limit, H11-56.5% of 100% limit.

Current Test Result Summary

EUT: Outdoor UPS 1-10KVA with atir conditioner Tested by: KUNWU
 Test category: Table:2, Rsce=33, Inter-Harm, Test Margin: 100
 Test date: 2024/9/29 Start time: 17:21:04 End time: 17:23:46
 Test duration (min): 2.5 Data file name: CTSMXH_H-000049.cts_data
 Comment: LINE MODE
 Customer: Netcon Enterprise Pvt Ltd

Test Result: Pass Measured Iref: 45.224(Amps) Source: Distorted
 THC/Iref (%): 7.0 Limit (%): 23.0 PWHC/Iref (%): 0.0 PWHC Limit (%): 23.0

Highest parameter values during test:

V_RMS (Volts): 217.95 Frequency (Hz): 50.03
 I_Peak (Amps): 76.623 I_RMS (Amps): 45.320
 I_Fund (Amps): 45.090(avg) Crest Factor: 1.694
 Power (Watts): 9728 Power Factor: 0.992

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.187	3.618	5.2	0.236	5.427	4.4	Pass
3	1.997	9.768	20.4	2.058	14.653	14.0	Pass
4	0.142	1.809	7.8	0.186	2.713	6.8	Pass
5	1.814	4.839	37.5	1.896	7.258	26.1	Pass
6	0.240	1.206	19.9	0.274	1.809	15.1	Pass
7	1.132	3.256	34.8	1.214	4.884	24.9	Pass
8	0.117	0.904	13.0	0.148	1.357	10.9	Pass
9	0.765	1.719	44.5	0.835	2.578	32.4	Pass
10	0.146	0.724	20.1	0.188	1.085	17.3	Pass
11	0.792	1.402	56.5	0.859	2.103	40.8	Pass
12	0.078	0.603	12.9	0.093	0.904	10.3	Pass
13	0.480	0.904	53.1	0.511	1.357	37.7	Pass
14	0.085	N/A	N/A	0.101	N/A	N/A	N/A
15	0.395	N/A	N/A	0.438	N/A	N/A	N/A
16	0.062	N/A	N/A	0.075	N/A	N/A	N/A
17	0.292	N/A	N/A	0.356	N/A	N/A	N/A
18	0.060	N/A	N/A	0.073	N/A	N/A	N/A
19	0.166	N/A	N/A	0.191	N/A	N/A	N/A
20	0.055	N/A	N/A	0.067	N/A	N/A	N/A
21	0.230	N/A	N/A	0.271	N/A	N/A	N/A
22	0.080	N/A	N/A	0.119	N/A	N/A	N/A
23	0.181	N/A	N/A	0.200	N/A	N/A	N/A
24	0.194	N/A	N/A	0.363	N/A	N/A	N/A
25	0.381	N/A	N/A	0.457	N/A	N/A	N/A
26	0.194	N/A	N/A	0.363	N/A	N/A	N/A
27	0.346	N/A	N/A	0.425	N/A	N/A	N/A
28	0.077	N/A	N/A	0.116	N/A	N/A	N/A
29	0.187	N/A	N/A	0.210	N/A	N/A	N/A
30	0.041	N/A	N/A	0.053	N/A	N/A	N/A
31	0.177	N/A	N/A	0.201	N/A	N/A	N/A
32	0.033	N/A	N/A	0.041	N/A	N/A	N/A
33	0.115	N/A	N/A	0.131	N/A	N/A	N/A
34	0.036	N/A	N/A	0.045	N/A	N/A	N/A
35	0.163	N/A	N/A	0.172	N/A	N/A	N/A
36	0.031	N/A	N/A	0.041	N/A	N/A	N/A
37	0.090	N/A	N/A	0.103	N/A	N/A	N/A
38	0.029	N/A	N/A	0.040	N/A	N/A	N/A
39	0.096	N/A	N/A	0.104	N/A	N/A	N/A
40	0.024	N/A	N/A	0.033	N/A	N/A	N/A

Note: Measured I-ref was applied for this test.

Voltage Source Verification Data

EUT: Outdoor UPS 1-10KVA with atir conditioner Tested by: KUNWU
Test category: Table:2, Rsce=33, Inter-Harm, Test Margin: 100
Test date: 2024/9/29 Start time: 17:21:04 End time: 17:23:46
Test duration (min): 2.5 Data file name: CTSMXH_H-000049.cts_data
Comment: LINE MODE
Customer: Netcon Enterprise Pvt Ltd
Test Result: Pass Source qualification: Distorted
Current harmonics are corrected for source distortion, and are within +/-5%
Measurements are compliant with IEC/EN61000-3-12 Ed. 2.0 & IEC/EN61000-4-7 Ed. 2.1

Highest parameter values during test:

Voltage (Vrms):	217.95	Frequency (Hz):	50.03
I_Peak (Amps):	76.623	I_RMS (Amps):	45.320
I_Fund (Amps):	45.090(avg)	Crest Factor:	1.694
Power (Watts):	9728	Power Factor:	0.992

Harm#	Harmonics	V-rms	Limit V-rms	% of Limit	Status
2		0.573	0.863	66.39	OK
3		7.112	2.696	263.78	Dist.
4		0.192	0.863	22.20	OK
5		2.118	3.269	64.79	OK
6		0.302	0.865	34.88	OK
7		2.377	2.702	87.97	OK
8		0.254	0.863	29.37	OK
9		2.543	1.299	195.72	Dist.
10		0.191	0.862	22.19	OK
11		0.964	1.513	63.74	OK
12		0.120	0.648	18.50	OK
13		1.101	1.296	84.92	OK
14		0.070	0.648	10.79	OK
15		0.292	0.649	45.02	OK
16		0.084	0.649	13.00	OK
17		0.358	0.648	55.24	OK
18		0.041	0.649	6.39	OK
19		0.200	0.647	30.90	OK
20		0.060	0.650	9.16	OK
21		0.151	0.648	23.32	OK
22		0.175	0.649	26.93	OK
23		0.445	0.648	68.67	OK
24		0.557	0.648	86.05	OK
25		0.948	0.648	146.26	Dist.
26		0.565	0.648	87.25	OK
27		1.039	0.648	160.33	Dist.
28		0.160	0.648	24.62	OK
29		0.287	0.648	44.35	OK
30		0.053	0.649	8.15	OK
31		0.108	0.648	16.63	OK
32		0.040	0.648	6.20	OK
33		0.124	0.648	19.07	OK
34		0.037	0.648	5.68	OK
35		0.129	0.649	19.88	OK
36		0.033	0.649	5.09	OK
37		0.127	0.649	19.63	OK
38		0.035	0.648	5.47	OK
39		0.114	0.650	17.46	OK
40		0.025	0.648	3.89	OK

Minimum Rsce required: Rsce = 18.646
Phase A = 56.5% of tested Rsce = 33.000, Rsce = 18.646

Harmonics – Class-A per IEC 61000-3-2 (Run time) incl. inter-harmonics

EUT: OUTDOOR UPS1-10KVA WITH AIR CODITIONER

Tested by: XLB

Test category: Class-A (European limits)

Test Margin: 100

Test date: 2025/1/8

Start time: 10:54:19

End time: 10:57:02

Test duration (min): 2.5

Data file name: CTSMXL_H-001113.cts_data

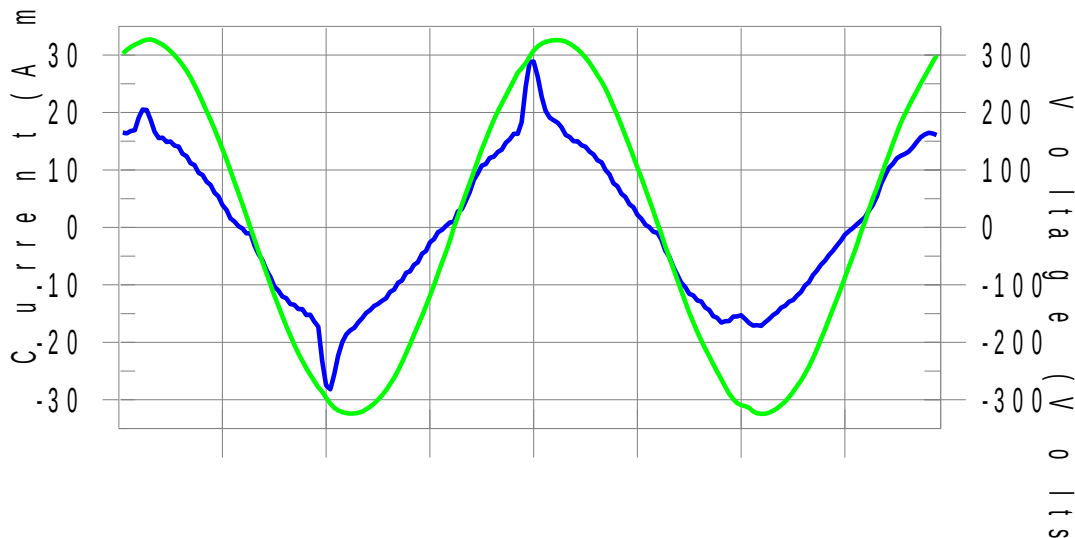
Comment: LINE MODE(disconnect the battery)

Customer: AL MASHREQ DISTRIBUTION COMPANY W.L.L

Test Result: Pass

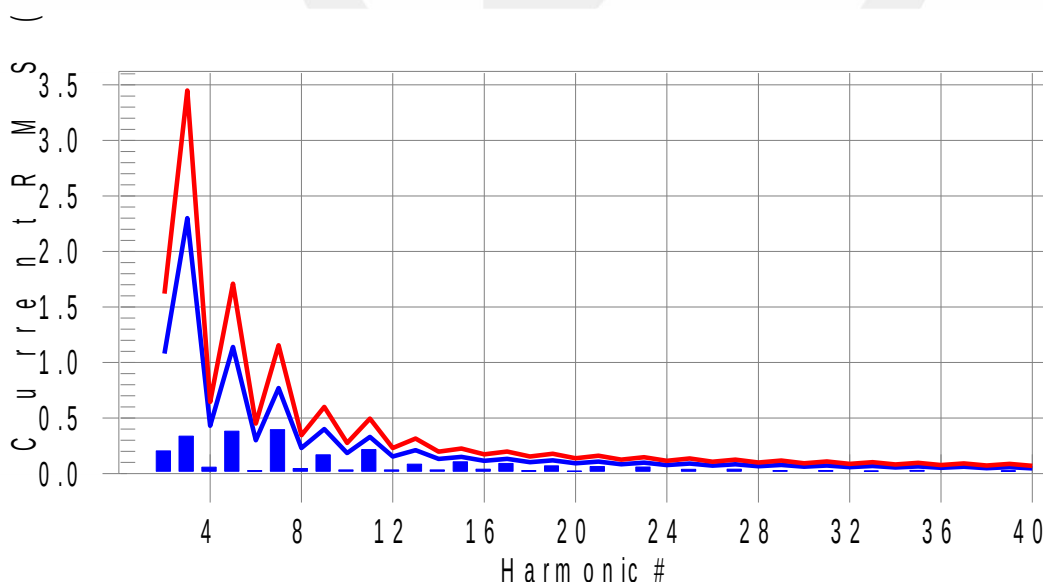
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line

European Limits



Test result: Pass Worst harmonics H15-51.3% of 150% limit, H15-70.5% of 100% limit.

Current Test Result Summary (Run time)

EUT: OUTDOOR UPS1-10KVA WITH AIR CODITIONER Tested by: XLB
 Test category: Class-A (European limits) Test Margin: 100
 Test date: 2025/1/8 Start time: 10:54:19 End time: 10:57:02
 Test duration (min): 2.5 Data file name: CTSMXL_H-001113.cts_data
 Comment: LINE MODE(disconnect the battery)
 Customer: AL MASHREQ DISTRIBUTION COMPANY W.L.L

Test Result: Pass Source qualification: Normal
 THC(A): 0.769 I-THD(%): 6.4 POHC(A): 0.121 POHC Limit(A): 0.251

Highest parameter values during test:

V_RMS (Volts): 230.329 Frequency(Hz): 50.00
 I_Peak (Amps): 29.311 I_RMS (Amps): 12.262
 I_Fund (Amps): 12.084 Crest Factor: 2.405
 Power (Watts): 2735.1 Power Factor: 0.980

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.204	1.080	18.9	0.216	1.620	13.3	Pass
3	0.337	2.300	14.7	0.379	3.450	11.0	Pass
4	0.057	0.430	N/A	0.075	0.645	N/A	Pass
5	0.382	1.140	33.5	0.395	1.710	23.1	Pass
6	0.026	0.300	N/A	0.045	0.450	N/A	Pass
7	0.396	0.770	51.4	0.405	1.155	35.1	Pass
8	0.046	0.230	N/A	0.062	0.345	N/A	Pass
9	0.169	0.400	42.3	0.187	0.600	31.2	Pass
10	0.033	0.184	N/A	0.047	0.276	N/A	Pass
11	0.215	0.330	65.1	0.220	0.495	44.5	Pass
12	0.032	0.153	N/A	0.047	0.230	N/A	Pass
13	0.084	0.210	40.2	0.092	0.315	29.2	Pass
14	0.032	0.131	N/A	0.045	0.197	N/A	Pass
15	0.106	0.150	70.5	0.116	0.225	51.3	Pass
16	0.039	0.115	N/A	0.050	0.173	N/A	Pass
17	0.091	0.132	69.0	0.100	0.198	50.6	Pass
18	0.026	0.102	N/A	0.035	0.153	N/A	Pass
19	0.069	0.118	N/A	0.072	0.178	N/A	Pass
20	0.021	0.092	N/A	0.027	0.138	N/A	Pass
21	0.063	0.107	N/A	0.074	0.161	N/A	Pass
22	0.018	0.084	N/A	0.059	0.125	N/A	Pass
23	0.059	0.098	N/A	0.063	0.147	N/A	Pass
24	0.011	0.077	N/A	0.014	0.115	N/A	Pass
25	0.038	0.090	N/A	0.040	0.135	N/A	Pass
26	0.018	0.071	N/A	0.025	0.107	N/A	Pass
27	0.039	0.083	N/A	0.041	0.125	N/A	Pass
28	0.012	0.066	N/A	0.019	0.099	N/A	Pass
29	0.026	0.078	N/A	0.061	0.116	N/A	Pass
30	0.014	0.061	N/A	0.022	0.092	N/A	Pass
31	0.028	0.073	N/A	0.031	0.109	N/A	Pass
32	0.010	0.058	N/A	0.014	0.086	N/A	Pass
33	0.023	0.068	N/A	0.024	0.102	N/A	Pass
34	0.011	0.054	N/A	0.013	0.081	N/A	Pass
35	0.028	0.064	N/A	0.059	0.096	N/A	Pass
36	0.010	0.051	N/A	0.016	0.077	N/A	Pass
37	0.019	0.061	N/A	0.025	0.091	N/A	Pass
38	0.007	0.048	N/A	0.015	0.073	N/A	Pass
39	0.024	0.058	N/A	0.028	0.087	N/A	Pass
40	0.008	0.046	N/A	0.010	0.069	N/A	Pass

Voltage Source Verification Data (Run time)

EUT: OUTDOOR UPS1-10KVA WITH AIR CODITIONER Tested by: XLB
 Test category: Class-A (European limits) Test Margin: 100
 Test date: 2025/1/8 Start time: 10:54:19 End time: 10:57:02
 Test duration (min): 2.5 Data file name: CTSMXL_H-001113.cts_data
 Comment: LINE MODE(disconnect the battery)
 Customer: AL MASHREQ DISTRIBUTION COMPANY W.L.L

Test Result: Pass Source qualification: Normal

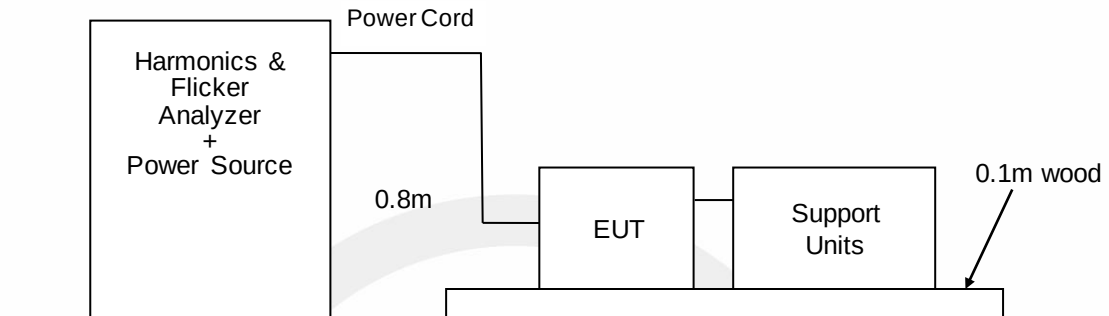
Highest parameter values during test:

Voltage (Vrms):	230.329	Frequency(Hz):	50.00
I_Peak (Amps):	29.311	I_RMS (Amps):	12.262
I_Fund (Amps):	12.084	Crest Factor:	2.405
Power (Watts):	2735.1	Power Factor:	0.980

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.085	0.461	18.44	OK
3	0.152	2.072	7.32	OK
4	0.030	0.461	6.42	OK
5	0.078	0.921	8.41	OK
6	0.029	0.460	6.37	OK
7	0.043	0.691	6.28	OK
8	0.035	0.461	7.70	OK
9	0.109	0.461	23.60	OK
10	0.040	0.461	8.70	OK
11	0.094	0.230	41.02	OK
12	0.043	0.230	18.76	OK
13	0.095	0.230	41.04	OK
14	0.040	0.230	17.21	OK
15	0.107	0.230	46.44	OK
16	0.035	0.230	15.12	OK
17	0.105	0.230	45.70	OK
18	0.036	0.230	15.69	OK
19	0.078	0.230	33.97	OK
20	0.023	0.230	9.94	OK
21	0.083	0.230	36.19	OK
22	0.050	0.230	21.51	OK
23	0.107	0.230	46.67	OK
24	0.013	0.230	5.57	OK
25	0.024	0.230	10.59	OK
26	0.052	0.230	22.39	OK
27	0.058	0.230	25.25	OK
28	0.018	0.230	7.99	OK
29	0.086	0.230	37.39	OK
30	0.034	0.230	14.72	OK
31	0.053	0.230	22.87	OK
32	0.015	0.230	6.39	OK
33	0.038	0.230	16.39	OK
34	0.016	0.230	6.76	OK
35	0.090	0.230	39.06	OK
36	0.033	0.230	14.23	OK
37	0.100	0.230	43.23	OK
38	0.013	0.230	5.74	OK
39	0.053	0.230	22.82	OK
40	0.018	0.230	7.61	OK

7. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

7.1. Block Diagram of Test Setup



7.2. Standard Limits

EN IEC 61000-3-11:2019 EN 61000-3-3:2013+A2:2021 Limits

The limits shall be applicable to voltage fluctuations and flicker at the supply terminals of the equipment under test, measured or calculated according to clause 4 under test conditions described in clause 6. Tests made to prove the compliance with the limits are considered to be type tests.

The following limits apply:

- the value of the short-term flicker indicator, P_{st} shall not be greater than 1,0;
- the value of the long-term flicker indicator, P_{lt} shall not be greater than 0,65;
- the value of $d(t)$ during a voltage change shall not exceed 3,3 % for more than 500 ms;
- the relative steady-state voltage change, d_c , shall not exceed 3,3 %;
- the maximum relative voltage change d_{max} , shall not exceed:

Test Procedure

The total impedance of the test circuit, excluding the appliance under test, but including the internal impedance of the supply source, shall be equal to the reference impedance. The stability and tolerance of the reference impedance shall be adequate to ensure that the overall accuracy of 8% is achieved during the whole assessment procedure.

7.3. Test Results

PASS.

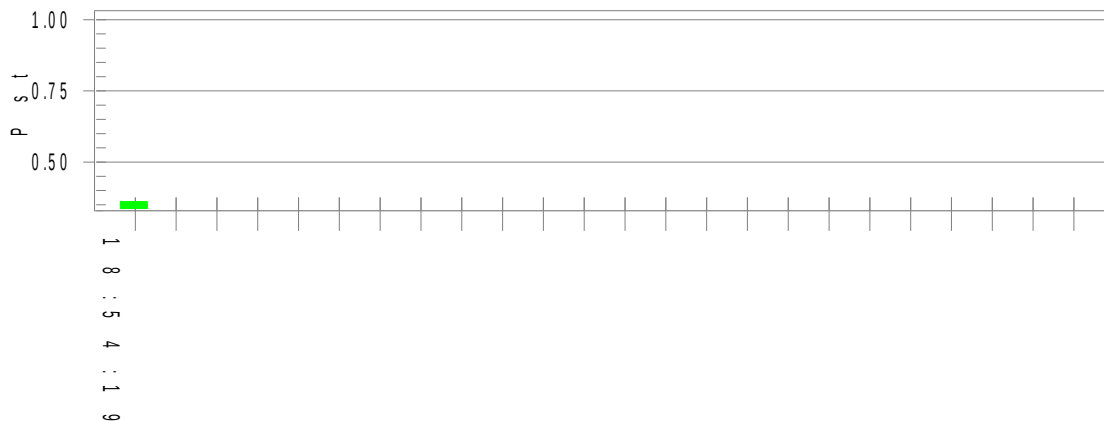
Please see the attached page.

Flicker Test Summary Per EN/IEC61000-3-11

EUT: OUTDOOR UPS 1-10KVA WITH AIR CONDITIONER Tested by: KUNWU
 Test category: All parameters Test Margin: 100
 Test date: 2024/9/29 Start time: 18:43:58 End time: 18:54:25
 Test duration (min): 10 Data file name: CTSMXH_F-000114.cts_data
 Comment: LINE MODE
 Customer: Netcon Enterprise Pvt Ltd
 Z-test Phase = (0.150 + j 0.150 Ohm) Neutral = (0.100 + j 0.100 Ohm)

Test Result: Pass
 Status: Test Completed

Pst_i and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	224.44		
T-max (mS):	0.0	Test limit (mS):	500.0 Pass
Highest dc (%):	-0.31	Test limit (%):	3.30 Pass
Highest dmax (%):	0.66	Test limit (%):	4.00 Pass
Highest Pst (10 min. period):	0.361	Test limit:	1.000 Pass

Calculated dmax(%): 0.661
 Calculated dc(%): -0.309
 Calculated Pst : 0.361
 Calculated Plt : 0.158

The maximum permissible system impedance Zsys:

Z = 1.844 Ohm + j 1.152 Ohm (1.844 Ohm + 3668 uH)

Flicker Test Summary per IEC61000-3-3 (Run time)

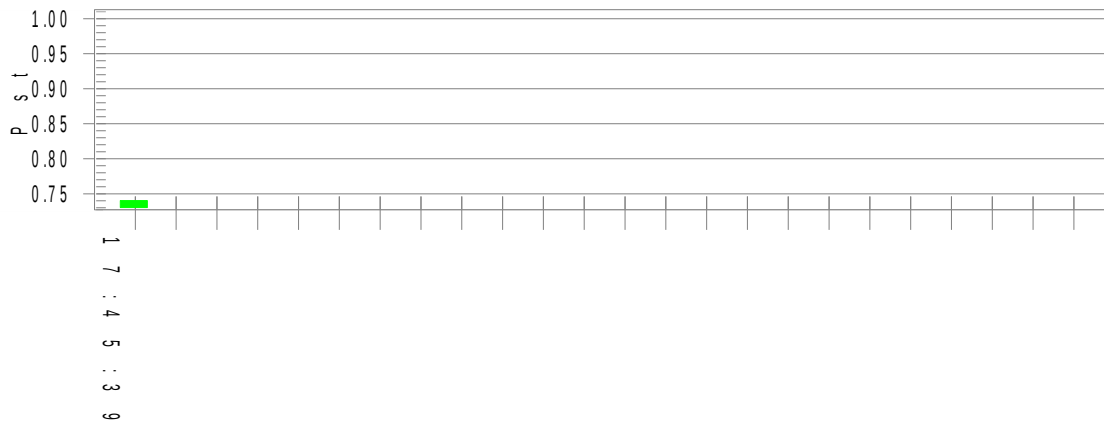
EUT: OUTDOOR UPS1-10KVA WITH AIR CODITIONER Tested by: XLB
 Test category: All parameters (European limits) Test Margin: 100
 Test date: 2025/1/3 Start time: 17:35:18 End time: 17:45:45
 Test duration (min): 10 Data file name: F-000346.cts_data
 Comment: LINE MODE
 Customer: AL MASHREQ DISTRIBUTION COMPANY W.L.L

Test Result: Pass

Status: Test Completed

Pst_i and limit line

European Limits



Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.55			
T-max (mS):	0	Test limit (mS):	500.0	Pass
Highest dc (%):	-0.27	Test limit (%):	3.30	Pass
Highest dmax (%):	0.57	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.740	Test limit:	1.000	Pass

8. IMMUNITY PERFORMANCE CRITERIA DESCRIPTION

Performance Level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test, relative to a performance level by its manufacturer or the requestor of the test, or the agreed between the manufacturer and the purchaser of the product.

Definition related to the performance level:

1. Based on the used product standard
2. Based on the declaration of the manufacturer, requestor or purchaser

EN IEC 62040-2:

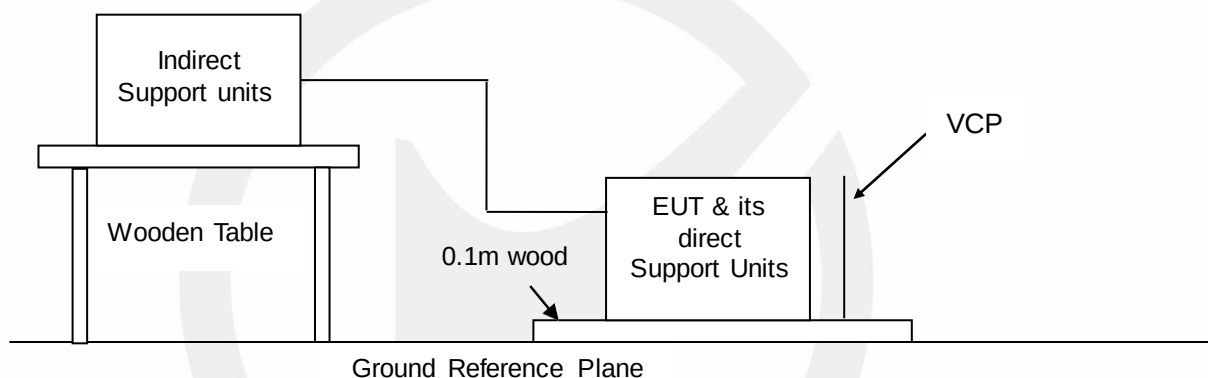
	Criterion A	Criterion B
Output characteristics	Voltage permitted to vary only within the steady-state characteristics applicable ($\geq 100\text{ms}$ limits in Figures 1, 2 or 3 of EN62040-3)	Voltage permitted to vary within the inverse time characteristics applicable ($< 100\text{ m sec}$ limits in Figures 1, 2 or 3 of EN 62040-3)
External and internal indications and metering	Change only during test	Change only during test
Control signals to external devices	No change	Change only temporarily in consistency with the actual UPS mode of operation
Mode of operation	No change	Change only temporarily

9. ELECTROSTATIC DISCHARGE

9.1. Test Specification

Test Standard	: EN IEC 62040-2
Basic Standard	: IEC 61000-4-2
Performance criterion	: B
Test level	: $\pm 8.0\text{kV}$ (Air discharge) $\pm 4.0\text{kV}$ (Contact discharge)

9.2. Block Diagram of Test Setup



9.3. Test Procedure

- In the case of air discharge testing, the climatic conditions shall be within the following ranges:
 - ambient temperature: 15°C to 35°C ;
 - relative humidity : 30% to 60%;
 - atmospheric pressure : 86 kPa (860 mbar) to 106 kPa (1060 mbar)
- Test programs and software shall be chosen so as to exercise all normal modes of operation of the EUT. The use of special exercising software is encouraged, but permitted only where it can be shown that the EUT is being comprehensively exercised.
- In the case of contact discharges, the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.
- In the case of painted surface covering a conducting substrate, the following procedure shall be adopted :
 - If the coating is not declared to be an insulating coating by the equipment manufacturer, then the pointed tip of the generator shall penetrate the coating so as to make contact with the conducting substrate.
 - Coating declared as insulating by the manufacturer shall only be submitted to the air discharge.
 - The contact discharge test shall not be applied to such surfaces.
- In the case of air discharges, the round discharge tip of the discharge electrode shall be approached as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator (discharge electrode) shall be removed from the EUT. The generator is then retriggered for a new single discharge. This procedure shall be repeated until the discharges are completed. In the case of an air discharge test, the discharge switch, which is used for contact discharge, shall be closed.

- f. The test voltage shall be increased from the minimum to the selected test severity level, in order to determine any threshold of failure. The final test level should not exceed the product specification value in order to avoid damage to the equipment.
- g. The test shall be performed with both air discharge and contact discharge. According to the CE severity level on pre-selected points, at least 10 single discharges (in the most sensitive polarity) shall be applied on air discharge and at least 25 single discharges (in the most sensitive polarity) shall be applied on contact discharge. For the time interval between successive single discharges, an initial value of one second is recommended. Longer intervals may be necessary to determine whether a system failure has occurred.
- h. Ensure that the applied charge on the EUT has been dis-charged before next ESD pulse.

9.4. Test Results

PASS

Temperature : 21.8°C
Humidity : 50%
Atmospheric Pressure : 101kpa
Test Engineer : Kun Wu
Test Date : 2024-09-30

Air Discharge:

Amount of discharge	Test Voltage	Location	Actual criterion	Required performance criterion	Result (Pass/Fail)
Mini 10 /Point	±2, 4, 8kV	Slot/Button/Screen	A	B	Pass

Contact Discharge

Amount of discharge	Test Voltage	Location	Actual criterion	Required performance criterion	Result (Pass/Fail)
Mini 25 /Point	±2; 4kV	Metal/Screw	A	B	Pass

Indirect Discharge

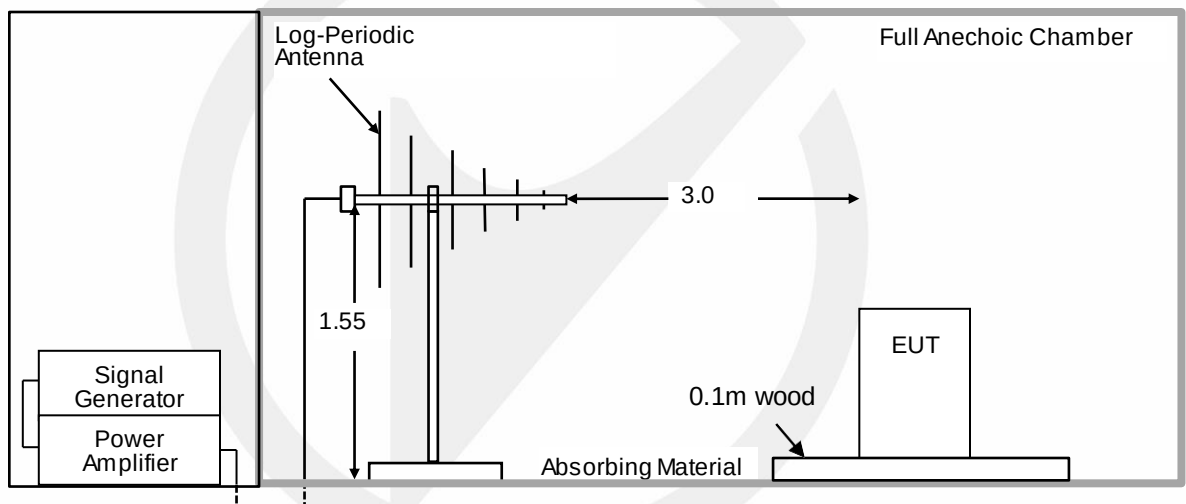
Amount of discharge	Test Voltage	Location	Actual criterion	Required performance criterion	Result (Pass/Fail)
Mini 10 /Point	±2; 4kV	VCP	A	B	Pass

10. RF FIELD STRENGTH SUSCEPTIBILITY TEST

10.1. Test Specification

Test Standard	: EN IEC 62040-2
Basic Standard	: IEC 61000-4-3
Performance criterion	: A
Test level	: 10V/m
Frequency Range	: 80M-1000MHz
Modulation	: AM 80%, 1kHz sine-wave

10.2. Block Diagram of Test Setup



10.3. Test procedure

The procedure defined in this part requires the generation of electromagnetic fields within which the test sample is placed and its operation observed. To generate fields that are useful for simulation of actual (field) conditions may require significant antenna drive power and the resultant high field strength levels. To comply with local regulations and to prevent biological hazards to the testing personnel, it is recommended that these tests be carried out in a shielded enclosure or semi-anechoic chamber.

- The antenna which is enabling the complete frequency range of 80-1000 MHz is placed 3m away from the equipment. The required field strength is determined by placing the field strength meter(s) on top of or directly alongside the equipment under test and monitoring the field strength meter via a remote field strength indicator outside the enclosure while adjusting the continuous-wave to the antenna.
- The test is performed with the antenna facing the front and back sides of the EUT with. Both vertical and horizontal polarizations from antenna are tested.

10.4.Test results

PASS

Temperature : 22.4℃
Humidity : 50%
Atmospheric Pressure : 101kpa
Test Engineer : Kun Wu
Test Date : 2024-09-30

Freq. Range (MHz)	Field	Modulation	Polarity	Position (°)	Actual criterion	Required performance criterion	Result
80-1000	10V/m	AM	H / V	Front	A	A	Pass
80-1000	10V/m	AM	H / V	Right	A	A	Pass
80-1000	10V/m	AM	H / V	Back	A	A	Pass
80-1000	10V/m	AM	H / V	Left	A	A	Pass

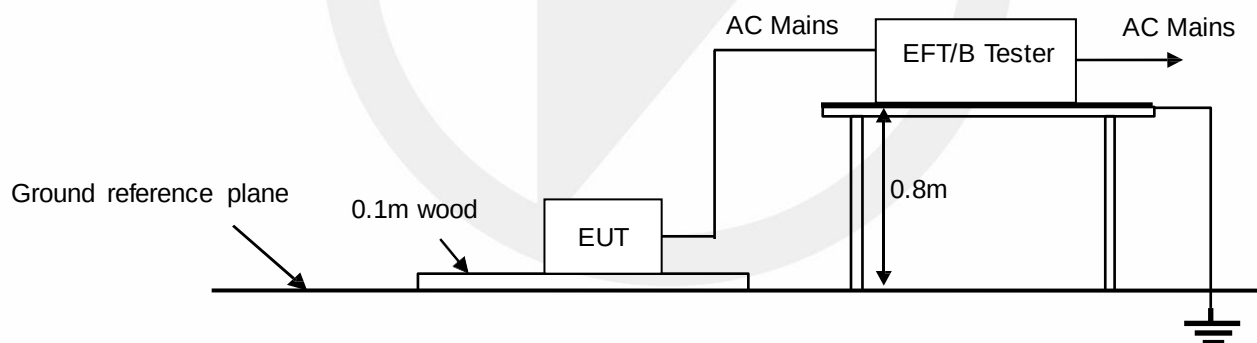
11.ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

11.1.Test Specification

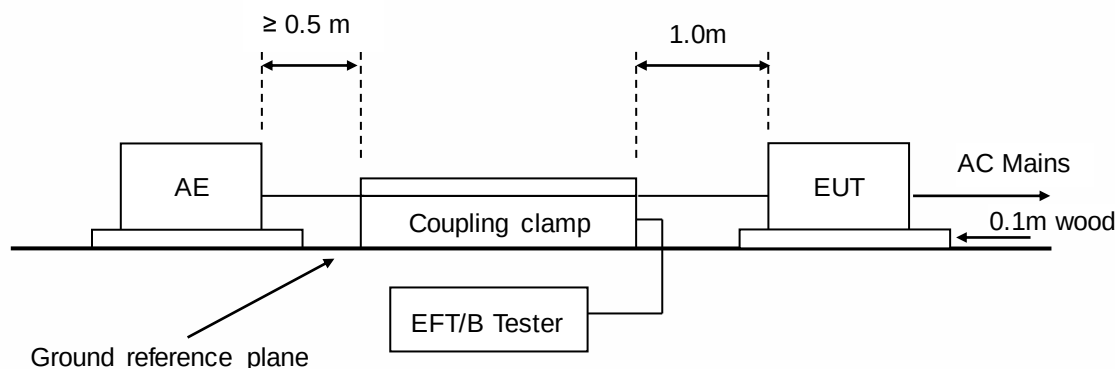
Test Standard : EN IEC 62040-2
 Basic Standard : IEC 61000-4-4
 Performance criterion : B
 Test level : ☒ 2kV, AC input power ports
 ☒ 2kV, AC output power ports
 ☐ 2kV, DC port
 ☒ 2KV, DC interface
 ☐ 2kV, Network port
 Repetition frequency : ☒ 5kHz, ☐ 100kHz
 Tr/Th: : 5/50ns
 Burst Period : 300ms
 Test Time : 120s

11.2.Block Diagram of Test Setup

AC Lines:



Signal lines:



11.3. Test Procedure

The EUT is put on the wood that is 0.1 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

11.4. Test Results

PASS

Temperature : 20.6° C
Humidity : 49%
Atmospheric Pressure : 101kpa
Test Engineer : Kun Wu
Test Date : 2024-09-30

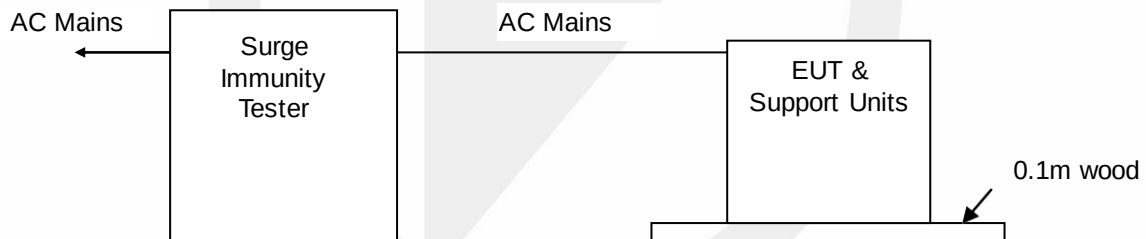
Injection Line	Voltage (kV)	Injected Method	Actual criterion	Required performance criterion	Result (Pass/Fail)
☒ AC input power ports	± 2	☒ CDN ☐ Direct injection ☐ Capacitive coupling clamp	A	B	Pass
☒ AC output power ports	± 2	☒ CDN ☐ Direct injection ☐ Capacitive coupling clamp	A	B	Pass
☐ DC port	± 2	☐ CDN ☐ Direct injection ☐ Capacitive coupling clamp	N/A	B	N/A
☒ DC interface	± 2	☐ CDN ☐ Direct injection ☒ Capacitive coupling clamp	A	B	Pass
☐ Network port	± 2	☐ CDN ☐ Direct injection ☐ Capacitive coupling clamp	N/A	B	N/A

12.SURGE IMMUNITY TEST

12.1.Test Specification

Test Standard	: EN IEC 62040-2
Basic Standard	: IEC 61000-4-5
Test level	: ☒ 1.0kV, Line - Line, AC input power ports, Criterion B ☒ 2.0kV, Line - Earth, AC input power ports, Criterion B ☒ 1.0kV, Line - Line, AC output power ports, Criterion B ☒ 2.0kV, Line - Earth, AC output power ports, Criterion B ☐ 1.0kV, Line - Line, DC port, Criterion B ☐ 2.0kV, Line - Earth, DC port, Criterion B ☐ 1.0kV, Network ports, Criterion B
Number of surges	: 5 (for each combination of parameters)
Repetition rate	: 1 minute / time
Polarity:	: Positive / Negative
Phase angle:	: 0°, 90°, 180°, 270°

12.2.Block Diagram of Test Setup



12.3.Test Procedure

This test simulates a lightning event by inducing transients onto the AC/DC power supply lines in common mode (Line to Ground) and differential mode (Line to Line). Each device was tested in a total of two surge configurations: Line to Ground (L-G): Combination Wave, Line to Protective Earth with 9uF and 10Ohm and Neutral to Protective Earth with 9uF and 10Ohm, common mode, generator earthed.

Line to Line (L-L): Combination Wave,

Line to Neutral with 18uF, differential mode, generator floated.

2 ohm : the source impedance of the low-voltage power supply network.

12 ohm : the source impedance of the low-voltage power supply network and ground.

a. If not otherwise specified the surges have to be applied synchronized to the voltage phase at the zero-crossing and the peak value of the a.c. voltage wave (positive and negative).

b. The surges have to be applied line to line and line to earth. When testing line to earth, the test voltage has to be applied successively between each of the lines and earth, if there is no other specification.

c. The test procedure shall also consider the non-linear current-voltage characteristics of the equipment under test. Therefore the test voltage has to be increased by steps up to the test level specified in the product standard or test plan. All lower levels including the selected test level shall be satisfied.

d. For testing the secondary protection, the output voltage of the generator shall be increased up to the

worst-case voltage breakdown level (let-through level) of the primary protection.

e. Testing shall be performed according to a Test Plan, which shall be included in the test report.

f. To find all critical points of the duty cycle of the equipment, a sufficient number of positive and negative test pulses shall be applied.

12.4. Test results

PASS

Temperature : 20.6° C
Humidity : 49%
Atmospheric Pressure : 101kpa
Test Engineer : Kun Wu
Test Date : 2024-09-30

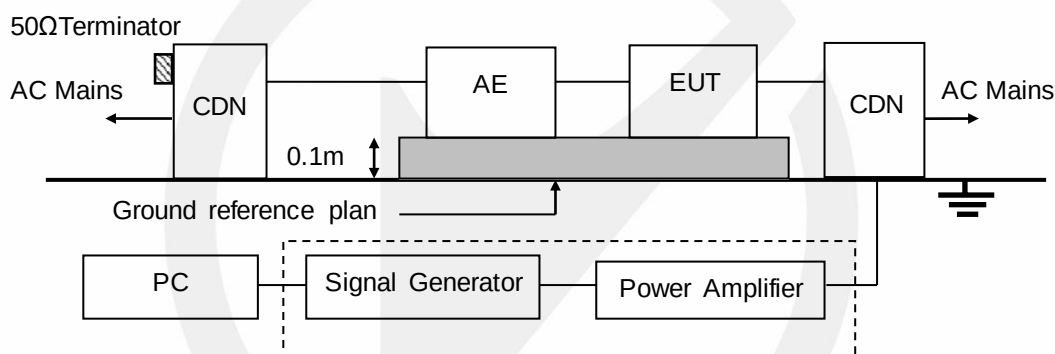
Coupling Line	Voltage (kV)	Waveform (μs)	Polarity	Actual criterion	Required performance criterion	Result (Pass/Fail)
☒ AC input power ports (Line to line)	0.5, 1	1.2/50 (8/20)	Pos./ Neg.	A	B	Pass
☒ AC input power ports (Line to earth)	0.5, 1, 2	1.2/50 (8/20)	Pos./ Neg.	A	B	Pass
☒ AC output power ports (Line to line)	0.5, 1	1.2/50 (8/20)	Pos./ Neg.	A	B	Pass
☒ AC output power ports (Line to earth)	0.5, 1, 2	1.2/50 (8/20)	Pos./ Neg.	A	B	Pass
☐ DC port (Line to line)	0.5, 1	1.2/50 (8/20)	Pos./ Neg.	N/A	B	N/A
☐ DC port (Line to earth)	0.5, 1, 2	1.2/50 (8/20)	Pos./ Neg.	N/A	B	N/A
☐ Network Ports	0.5, 1	1.2/50 (8/20)	Pos./ Neg.	N/A	B	N/A

13. INJECTED CURRENTS SUSCEPTIBILITY TEST

13.1. Test Specification

Test Standard	: EN IEC 62040-2
Basic Standard	: IEC 61000-4-6
Performance criterion	: A
Test level	: 10V
Frequency Range	: 0.15M-80MHz
Modulation	: AM 80%, 1kHz sine-wave
Frequency Step	: 1% of fundamental

13.2. Block Diagram of Test Setup



13.3. Test Procedure

- The EUT shall be operated within its intended climatic conditions. The temperature and relative humidity should be recorded.
- The EUT is placed on a 0.1m high test table, and a well grounded cable is connected to metallic plane above the test table.
- All cables/wires must be laid out on test plate (3cm in thickness), and the EUT is set up on test plate (10 cm in thickness) as shown in test setup photo, and the cables/wires must not be in mid-air, they should be touching the surface of test plate. Ensure that the EUT is properly connected to the accessory equipment.
- The test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn while the other non-excited RF-input ports of the coupling devices are terminated by a 50 ohm load resistor.
- The frequency range is swept from 150 kHz to 80 MHz, using the signal levels established during the setting process, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave, pausing to adjust the RF-signal level or to switch coupling devices as necessary. The rate of sweep shall no exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall no exceed 1% of the start and thereafter 1% of the preceding frequency value.
- The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised, and able to respond. Sensitive frequencies e.g. clock frequency (ies) and harmonics or frequencies of dominant interest shall be analyzed separately.
- Attempts should be made to fully exercise the EUT during testing, and to fully interrogate all exercise modes selected for susceptibility
- Testing shall be performed according to a Test Plan, which shall be included in the test report.

13.4. Test results

PASS

Temperature : 20.6° C
Humidity : 49%
Atmospheric Pressure : 101kpa
Test Engineer : Kun Wu
Test Date : 2024-09-30

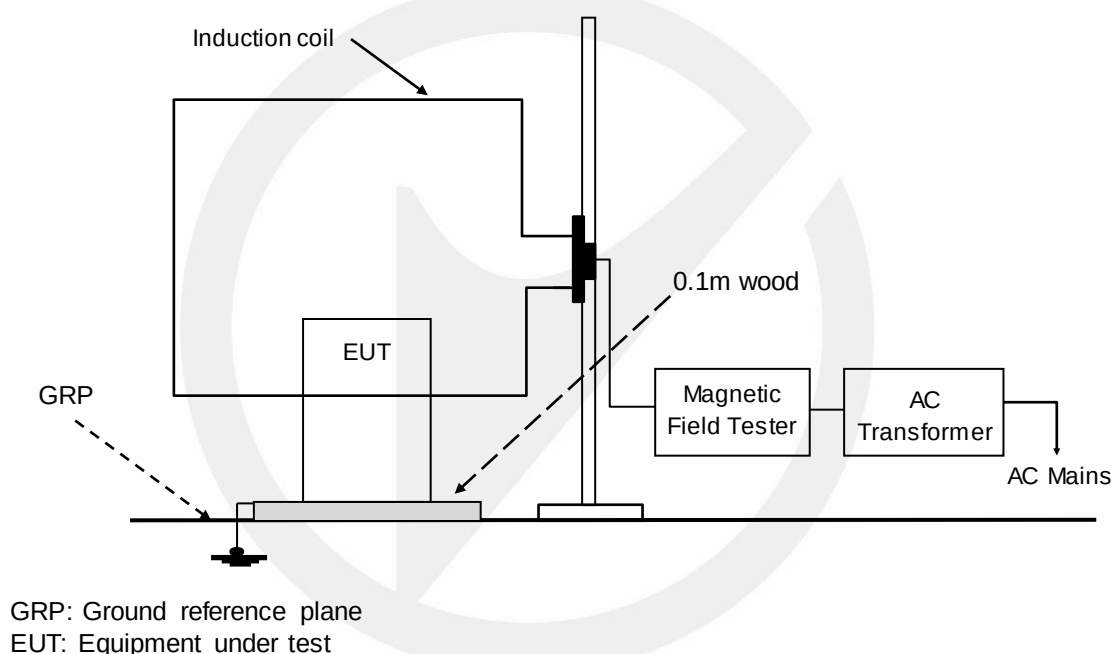
Range (MHz)	Levers	Injection port	Coupling type	Actual criterion	Required performance criterion	Result (Pass/Fail)
0.15-80	10V	☒ AC input power ports ☒ AC output power ports ☐ DC port ☐ Network port	☒ CDN ☐ EM Clamp ☐ Current Clamp ☐ Direct injection	A	A	Pass
0.15-80	10V	☐ AC input power ports ☐ AC output power ports ☐ DC port ☐ Network port	☐ CDN ☐ EM Clamp ☐ Current Clamp ☐ Direct injection	N/A	A	N/A

14. MAGNETIC FIELD SUSCEPTIBILITY TEST

14.1. Test Specification

Test Standard	: EN IEC 62040-2
Basic Standard	: IEC 61000-4-8
Performance criterion	: A
Test level	: 30A/m

14.2. Block Diagram of Test Setup



14.3. Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) wood, this small table is also placed on a larger table, 0.1 m above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

14.4. Test Results

PASS

Temperature : 20.6° C
Humidity : 49%
Atmospheric Pressure : 101kpa
Test Engineer : Kun Wu
Test Date : 2024-09-30

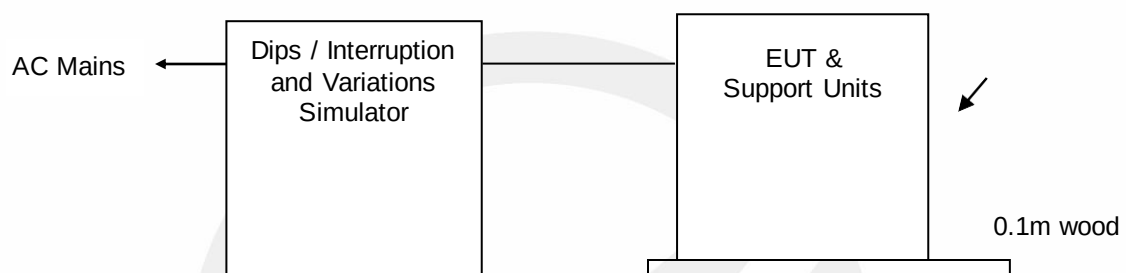
Test Level (A/m)	Frequency	Testing Duration	Coil Orientation	Actual criterion	Required performance criterion	Result (Pass/Fail)
30	☒ 50Hz ☒ 60Hz	5 mins	☒ x-axis ☒ y-axis ☒ z-axis	A	A	Pass

15. VOLTAGE DIPS AND INTERRUPTIONS TEST

15.1. Test Specification

Test Standard : EN IEC 62040-2
Basic Standard : IEC 61000-4-34

15.2. Block Diagram of Test Setup



15.3. Test Procedure

- a. Where the equipment has a rated voltage the following shall apply - If the voltage range does not exceed 20% of the lower voltage specified for the rated voltage range, a single voltage within that range may be specified as a basis for test level specification.
 - In all other cases, the test procedure shall be applied for both the lowest and highest voltages declared in the voltage range.
- b. Test Conditions
 - Select operated voltage and frequency of EUT - Test of interval : 10 sec.
 - Level and duration : Sequence of 3 dips/interrupts.
 - Voltage rise (and fall) time : 1.5 μ s.

15.4. Test results

PASS

Temperature : 20.6° C
Humidity : 49%
Atmospheric Pressure : 101kpa
Test Engineer : Kun Wu
Test Date : 2024-09-30

	Test Level (% UT)	Phase angle (°)	Reduction (%)	Duration (periods)	Actual criterion	Required performance criterion	Result (Pass/Fail)
Voltage Dips	0%	0°, 180°	100%	0.5	A	B	Pass
	70%	0°, 180°	30%	25	A	C	Pass
Voltage Interruption	0%	0°, 180°	100%	250	B	C	Pass
Note: When the sample drops to 0% and 250P, the working mode of the sample changes and the test ends, It can automatically recover to normal.							

Immunity to voltage dips, short interruptions and voltage variations characterize intrinsic UPS performance, and no specific EMC tests are required.

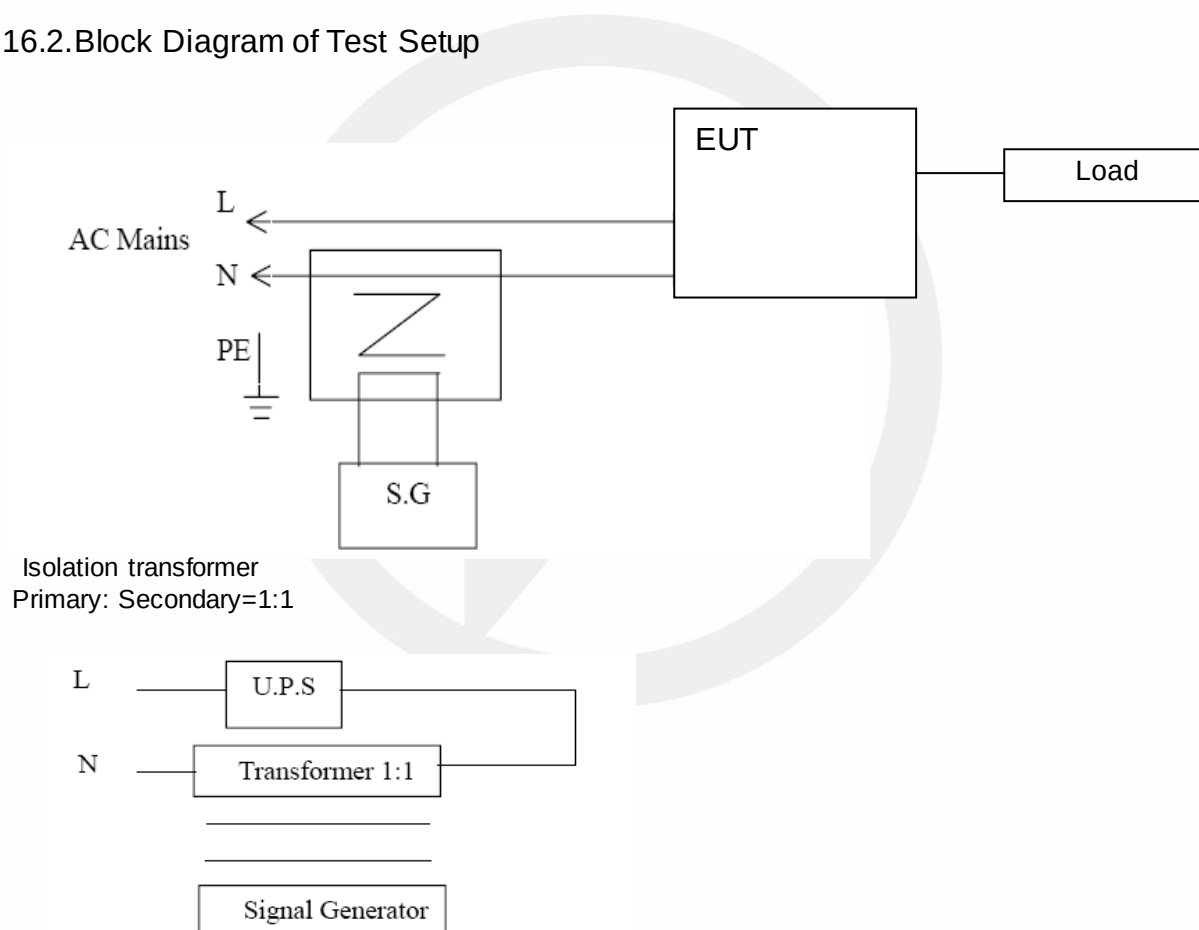
Note: Above is referenced to the customer request.

16. LOW FREQUENCY SIGNALS TEST

16.1. Test Specification

Test Standard	: EN IEC 62040-2
Basic Standard	: IEC 61000-2-2
Performance criterion	: A
Test frequency	: 140-360Hz
Test level	: 10V(rms)Sinusoidal

16.2. Block Diagram of Test Setup



16.3. Test Procedure

- 1) Set up the EUT and test generator as shown on Block diagram.
- 2) Add the 10V (rms) Sinusoidal interference signal and the interference signal frequency from 140Hz ~ 360Hz to L terminal.
- 3) Repeat the second step at the N-terminus.

16.4. Test Results

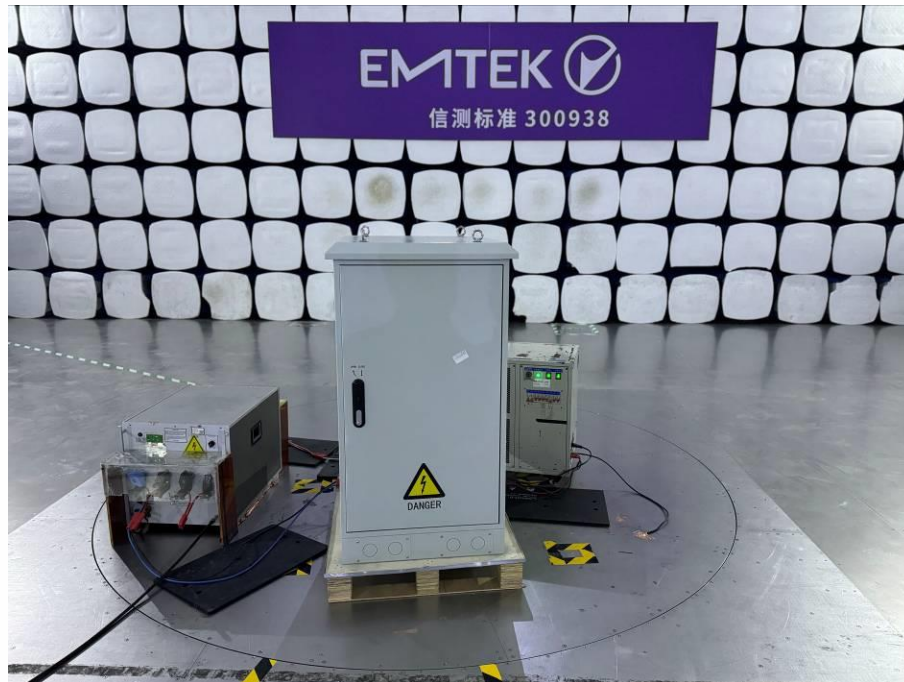
PASS.

Temperature : 20.6° C
Humidity : 49%
Atmospheric Pressure : 101kpa
Test Engineer : Kun Wu
Test Date : 2024-09-30

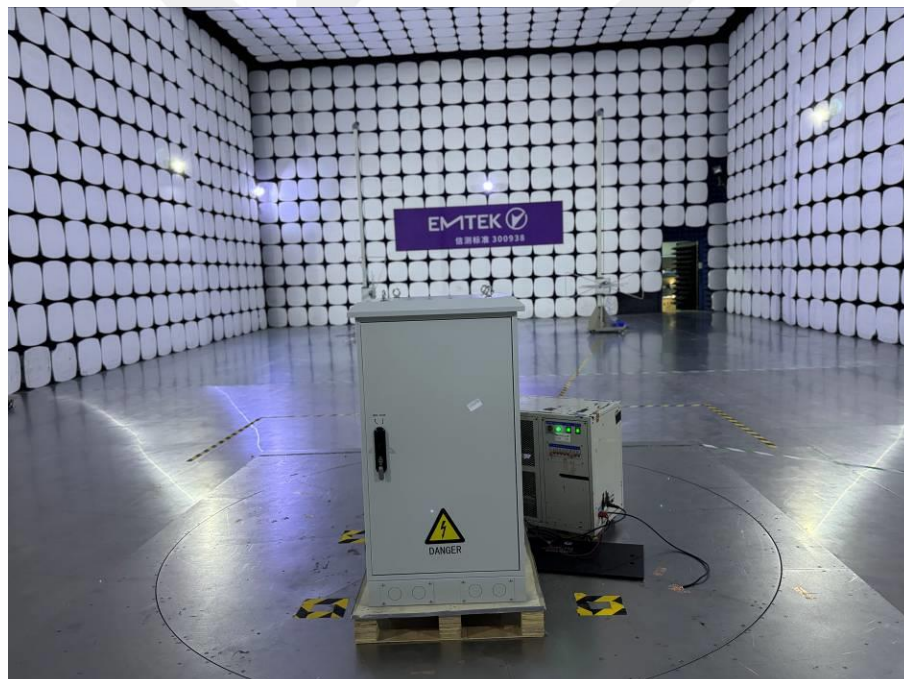
Frequency Range (Hz)	Step (Hz)	Position	Strength	Result	Note
140	10	L,N	10V(rms) Sinusoidal	Pass	A
160				Pass	A
200				Pass	A
240				Pass	A
280				Pass	A
320				Pass	A
360				Pass	A

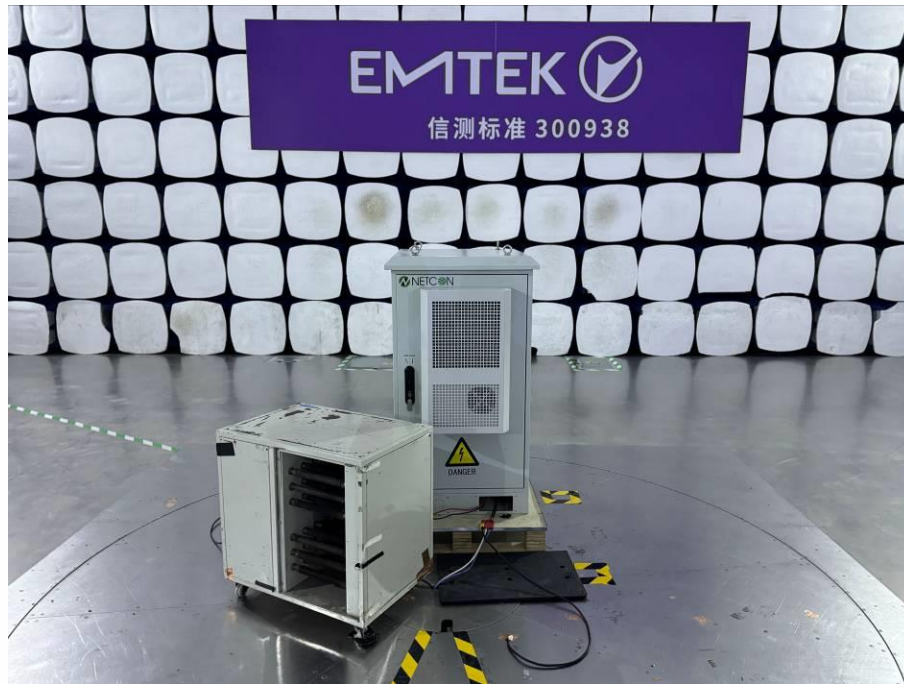
17. PHOTOGRAPHS

17.1. Photo of Conducted Emissions



17.2. Photo of Radiation Emission Measurement





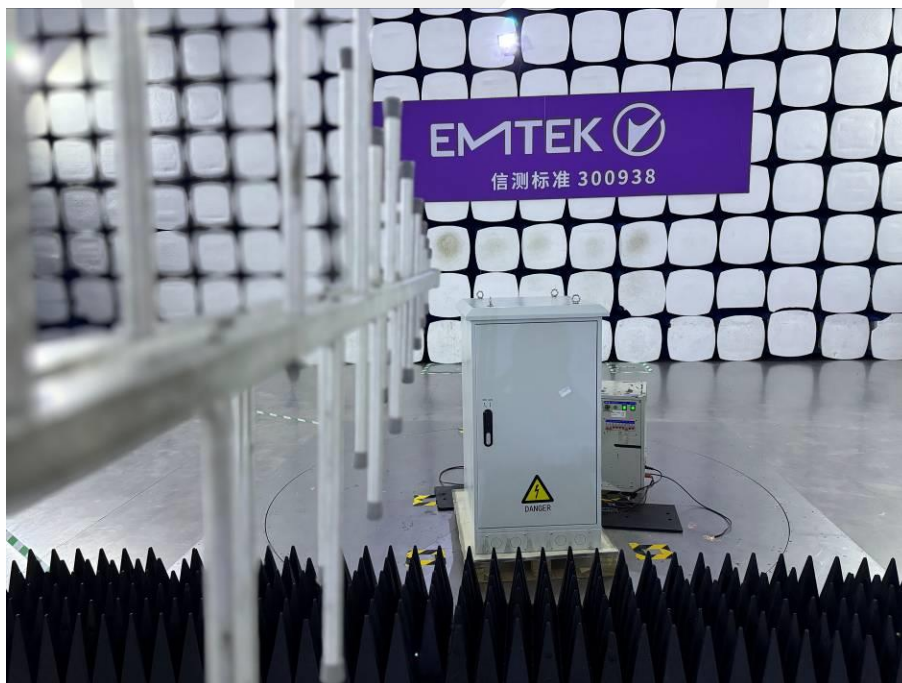
17.3.Photo of Harmonic / Flicker Measurement



17.4.Photo of Electrostatic Discharge Test



17.5.Photo of RF Field Strength Susceptibility Test



17.6.Photo of Electrical Fast Transient / Burst Test



17.7.Photo of Surge Test



17.8.Photo of Injected Currents Susceptibility Test



17.9.Photo of Magnetic Field Susceptibility Test



17.10.Photo of Voltage Dips and Interruption Immunity Test



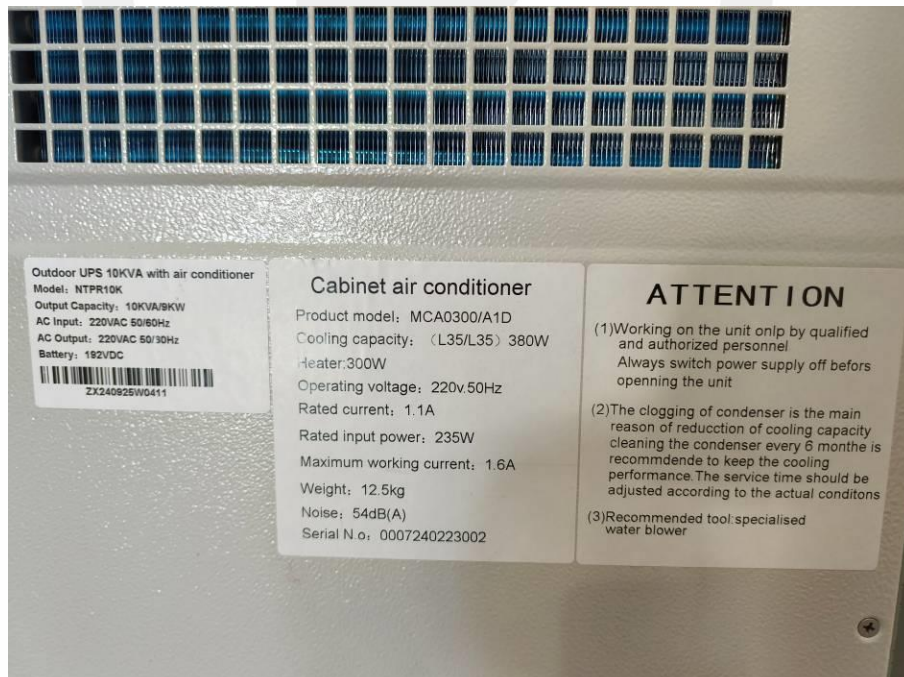
17.11.Photo of Low Frequency Signals Test





APPENDIX (PHOTOS OF EUT)





End of Report

Statement

- 1 . This report is invalid without the signature of the authorized approver and "special seal for testing".
- 2 . This report shall not be copied partly without authorization.
- 3 . The test results or observations are applicable only to tested sample. Client shall be responsible for representativeness of the sample and authenticity of the material.
- 4 . 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.
- 5 . The test results or observations are provided in accordance with measured value, without taking risks caused by uncertainty into account. Without explicit stipulation in special agreements, standards or regulations, EMTEK shall not assume any responsibility.
- 6 . Objections shall be raised within 20 days from the date receiving the report.