DEKRA Testing and Certification (Shanghai) Ltd.
3F #250 Jiangchangsan Road Building 16 Headquarter Economy Park Shibei Hi-Tech Park,
Zhabei District Shanghai 200436 China
TEL: +86-21-6056 7666 / FAX: +86-21-6056 7555

Test report No: 6168986.50

TEST REPORT
Electromagnetic Compatibility (EMC)

Identification of item tested	EV charging power module
Trademark	MAXWELL
Model and /or type reference	MXR100030
Ratings	AC 285~475V, 50/60Hz
Applicant´s name / address	Shijiazhuang Maxwell Technology Co., Ltd. Room 601, Building C, Zhongfang Yuantai Plaza, No.66 Tiyu North Street, Chang'an District Shijiazhuang 050000 Hebei P.R. China
Test method requested, standard	IEC 61851-21-2:2018 EN IEC 61851-21-2:2021
Verdict Summary	IN COMPLIANCE
Tested by (name / position & signature)	Lei Chen Senior Project Manager
Approved by (name / position & signature)	Adrian Shi Technical Supervisor
Date of issue	2023-08-29
Report template No	TRF_IEC61851-21-2_EMC V1.0

INDEX

page

COMPETENCES AND GUARANTEES

EMTEK (SHENZHEN) CO., LTD. is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, EMTEK (SHENZHEN) CO., LTD. has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

GENERAL CONDITIONS

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.

UNCERTAINTY

For all measurements where guidance for the calculation of the instrumentation uncertainty of a measurement is specified in CISPR 16-4-2 (CISPR 16-4-2), EN/IEC 61000-4 series or a product standard, the measurement instrumentation uncertainty has been calculated and applied in accordance with these standards.

Uncertainties have been calculated according to the EMTEK (SHENZHEN) CO., LTD. internal document. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. Refer to the Annex 1 for furter information.

ENVIRONMENTAL CONDITIONS

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

Ambient temperature	15 °C – 35 °C
Relative Humidity air	30% - 60%
Atmospheric pressure	86 kPa – 106 kPa

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

POSSIBLE TEST CASE VERDICTS

Test case does not apply to test object	N/A
Test object does meet requirement	P (Pass) / PASS
Test object does not meet requirement	F (Fail) / FAIL
Not measured	N/M

DEFINITION OF SYMBOLS USED IN THIS TEST REPORT

☒ Indicates that the listed condition, standard or equipment is applicable for this report/test/EUT.				
☐ Indicates that the listed condition, standard or equipment is not applicable for this report/test/EUT.				
Decimal separator used in this report	☒	Comma (,)	☐	Point (.)

ABBREVIATIONS

For the purposes of the present document, the following abbreviations apply:

EUT	:	Equipment Under Test
QP	:	Quasi-Peak
CAV	:	CISPR Average
AV	:	Average
CDN	:	Coupling Decoupling Network
SAC	:	Semi-Anechoic Chamber
OATS	:	Open Area Test Site
BW	:	Bandwidth
AM	:	Amplitude Modulation
PM	:	Pulse Modulation
HCP	:	Horizontal Coupling Plane
VCP	:	Vertical Coupling Plane
U_N	:	Nominal voltage
Tx	:	Transmitter
Rx	:	Receiver
N/A	:	Not Applicable
N/M	:	Not Measured
TEM	:	Transverse Electromagnetic Mode

DOCUMENT HISTORY

Report nr.	Date	Description
3126260.50	2021-02-22	First release.
6168986.50	2023-08-29	Updated the standard 'FprEN 61851-21-2: 2017' to 'EN IEC 61851-21-2:2021'.

REMARKS AND COMMENTS

The equipment under test (EUT) meet the essential requirements of the stated standard(s)/test(s).

The test results relate only to the samples tested.

This report shall not be reproduced, except in full, without the written approval.

This report is issued base on Dekra report No.: 3126260.50 to updated the standard 'FprEN 61851-21-2: 2017' to 'EN IEC 61851-21-2:2021' and change address for applicant/manufacturer. After technology evaluation, no additional test is required.

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Description of the item .....:	EV charging power module
Model / Type number .....:	MXR100030
Trademark.....:	MAXWELL
Manufacturer.....:	Shijiazhuang Maxwell Technology Co., Ltd. Room 601, Building C, Zhongfang Yuantai Plaza, No.66 Tiyu North Street, Chang'an District Shijiazhuang 050000 Hebei P.R. China

Rated power supply .....:	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	☒	AC: 285 ~ 475V, 50/60Hz	☒	☒	☒	☐	☒
	☐	DC:					
	☐	Battery:					
Rated Power .....:	30KW						
Clock frequencies .....:	≤ 108MHz						
Other parameters.....:	N/A						
Software version .....:	Not provided						
Hardware version.....:	Not provided						
Dimensions in cm (W x H x D)....:	Not provided						
Mounting position.....:	☐	Table top equipment					
	☐	Wall/Ceiling mounted equipment					
	☐	Floor standing equipment					
	☐	Hand-held equipment					
	☒	Other:					

No	Module/parts of test item	Type	Manufacturer
N/A	N/A	N/A	N/A

No	Documents as provided by the applicant - Description	File name	Issue date
N/A	N/A	N/A	N/A

Modifications to the test item during testing .....:	☒	N/A	☐	Supplemental Information

Copy of marking plate:
N/A

1.2 The environment(s) in which the EUT is intended to be used

The equipment under test (EUT) is intended to be used in the following environment(s):

☐	Residential (domestic) environment.
☐	Commercial and light-industrial environment.
☒	Environments other than residential
☐	Healthcare environments (hospitals, clinics, doctor's offices)
☐	Vehicular environment

1.3 Test data

Test Location	EMTEK (SHENZHEN) CO., LTD. Bldg 69, Majialong Industry Zone, Nanshan Distri ct, Shenzhen, Guangdong, China
Date of receipt of test item	2020-10-13
Date (s) of performance of tests	2020-10-21 to 2020-11-04

1.4 Classification according to IEC 61851-21-2

The equipment under test (EUT) is classified as follows, and this classification apply for the emission test :

☒	Class A	Class A off-board electric vehicle charging systems is equipment suitable for use in all locations other than residential ones and those directly connected to a low voltage power supply network which supplies buildings used for residential purposes.
☐	Class B	Class B off-board electric vehicle charging systems is equipment suitable for use in residential establishments and in establishments directly connected to a low voltage power supply network which supplies buildings used for residential purposes. In-cable control and protective devices (IC-CPD) and other mobile charging equipment shall be tested as off-board charging equipment meeting Class B emission requirements (residential).

The equipment under test (EUT) is classified as follows, and this classification apply for the immunity test :

☐	Category 1	a.c. charging immunity requirements – Environments other than residential
☐	Category 2	a.c. charging immunity requirements – Residential environments
☒	Category 3	d.c. charging immunity requirements – Environments other than residential
☐	Category 4	d.c. charging immunity requirements – Residential environments

2 DESCRIPTION OF TEST SETUP

2.1 Operating mode(s) used for tests

During the tests the following operating mode(s) has(have) been used.

Operating mode	Operating mode description	Used for testing	
		Emission	Immunity
1	Standby	☐	☒
2	Load 20%	☒	☒
3	Load 80%	☒	☐
Supplemental information:			

2.2 Port(s) of the EUT

Port name and description	Connected to / Termination	Cable		
		Length used during test [m]	Attached during test	Shielded
AC input port	AC supply	1.4	☒	☐
CPT port	Resistive Load	1.4	☒	☐
			☐	☐
			☐	☐
Supplemental information:				

2.3 Support / Auxiliary equipment / unit / software for the EUT

The EUT has been tested with the following auxiliary equipment / unit / software:

Auxiliary equipment / unit / software	Type / Version	Manufacturer	Supplied by
Resistive Load	N/A	BSX	EMTEK
Supplemental information:			

3 VERDICT SUMMARY SECTION

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

3.1 Standards

Standard	Year	Description
IEC 61851-21-2	2018	Electric vehicle conductive charging system - Part 21-2: Electric vehicle requirements for conductive connection to an AC/DC supply – EMC requirements for off board electric vehicle charging systems
EN IEC 61851-21-2	2021	Electric vehicle conductive charging system - Part 21-2: Electric vehicle requirements for conductive connection to an AC/DC supply - EMC requirements for off board electric vehicle charging systems
EN61000-6-3 +A1 +AC	2007 2011 2012	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for equipment in residential environments
EN 61000-6-1	2007	Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments
CISPR 11 +A1	2015 2016	Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement
CISPR 16-2-1 +A1	2014 2017	Methods of measurement of disturbances and immunity – Conducted disturbance measurements.
CISPR 16-2-3	2016	Methods of measurement of disturbances and immunity – Radiated disturbance measurements.
CISPR 32	2015	Electromagnetic compatibility of multimedia equipment – Emission requirements.
IEC 61000-6-3	2011	Generic standards – Emission standard for residential, commercial and light-industrial environments
IEC 61000-6-1	2016	Generic standards – Emission standard for residential, commercial and light-industrial environments
IEC 61000-3-2	2018	Limits for harmonic current emissions (equipment input current ≤ 16 A per phase).
IEC 61000-3-12	2011	Electromagnetic compatibility (EMC) - Part 3-12: Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and ≤ 75 A per phase.
IEC 61000-3-3 +A1	2013 2018	Limitation of voltage changes, voltage fluctuations and flicker in public lowvoltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection.
IEC 61000-3-11	2017	Electromagnetic compatibility (EMC) - Part 3-11: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems - Equipment with rated current ≤ 75 A and subject to conditional connection.
IEC 61000-4-2	2008	Electrostatic discharge immunity test.
IEC 61000-4-3 +A1 +A2	2006 2007 2010	Radiated, radio-frequency, electromagnetic field immunity test.
IEC 61000-4-4	2012	Electrical fast transient/burst immunity test.
IEC 61000-4-5	2014	Surge immunity test.
IEC 61000-4-6	2013	Immunity to conducted disturbances, induced by radio-frequency fields.
IEC 61000-4-8	2009	Power frequency magnetic field immunity test.

Standard	Year	Description
IEC 61000-4-11 A1	2004 2017	Voltage dips, short interruptions and voltage variations immunity tests.
IEC 61000-4-34 A1	2005 2009	Voltage dips, short interruptions and voltage variations immunity tests for equipment with mains current more than 16A per phase.

3.2 Deviation(s) from the Standard(s) / Test Specification(s)

The following deviation(s) was / were made from the published requirements of the listed standards: N/A.

3.3 Overview of results

EMISSION TESTS – EN 61000-6-3			
Requirement – Test case	**Basic standard(s)**	**Verdict**	**Remark**
Conducted disturbance voltage at mains power input / output port(s)	CISPR 16-2-1	PASS	---
Conducted disturbance voltage at wired network port or Signal/control port	CISPR 16-2-1	PASS	---
Radiated electromagnetic disturbances (2 - 185KHz & 30 – 1000 MHz)	CISPR 16-2-3	PASS	---
Radiated electromagnetic disturbances (above 1 GHz)	CISPR 16-2-3	N/A	See 1)
Harmonic current emissions	IEC 61000-3-2 IEC 61000-3-12	PASS	---
Voltage changes, voltage fluctuations and flicker	IEC 61000-3-3 IEC 61000-3-11	PASS	---
Supplementary information: 1) Highest internal frequency of the EUT ≤ 108MHz.			

IMMUNITY TESTS – EN 61000-6-1			
Requirement – Test case	**Basic standard(s)**	**Verdict**	**Remark**
Electrostatic discharge	IEC 61000-4-2	PASS	---
Radio-frequency electromagnetic fields	IEC 61000-4-3	PASS	---
Fast transients	IEC 61000-4-4	PASS	---
Surge transient	IEC 61000-4-5	PASS	---
Injected currents (radio-frequency common mode)	IEC 61000-4-6	PASS	---
Power frequency magnetic fields	IEC 61000-4-8	PASS	---
Voltage dips and short interruptions	IEC 61000-4-11 IEC 61000-4-34	PASS	---
Supplementary information:			

3.4 Test Matrix

EMISSION TESTS	Model / Type		
	Mode 1	Mode 2	Mode 3
Conducted disturbance voltage at mains power input / output port(s) (150 KHz – 30 MHz)	☐	☒	☒
Conducted disturbance voltage at wired network port or Signal/control port (150 KHz – 30 MHz)	☐	☒	☒
Radiated electromagnetic disturbances (2 - 185KHz & 30 – 1000 MHz)	☐	☒	☒
Radiated electromagnetic disturbances (above 1GHz)	☐	☒	☒
Harmonic current emissions	☐	☐	☒
Voltage changes, voltage fluctuations and flicker	☐	☐	☒
Supplamentary: Information:			

IMMUNITY TESTS	Model / Type		
	Mode 1	Mode 2	Mode 3
Electrostatic discharge	☒	☒	☐
Radio-frequency electromagnetic fields	☒	☒	☐
Fast transients	☒	☒	☐
Surges	☒	☒	☐
Injected currents (radio-frequency common mode)	☒	☒	☐
Power frequency magnetic field immunity	☒	☒	☐
Voltage dips and short interruptions	☒	☒	☐
Supplamentary: Information:			

4 EMISSION TEST RESULTS

4.1 **Conducted disturbance voltage – Mains power port(s)**	**VERDICT: PASS**

Standard	IEC 61851-21-2
Basic standard(s)	CISPR 16-2-1

Limits - Class A (a.c. mains power port)

Frequency range [MHz]	Rated input power of ≦ 20 kVA		Rated input power of >20 kVA to≦ 75 kVA		Rated input power of >75 kVA		IF BW	Detector(s)
	Limit: QP [dB(μV)[1)]]	Limit: AV [dB(μV) [1)]]	Limit: QP [dB(μV)[1)]]	Limit: AV [dB(μV) [1)]]	Limit: QP [dB(μV)[1)]]	Limit: AV [dB(μV) [1)]]		
0,15 - 0,50	79	66	100	90	130	120	9 KHz	QP, CAV
0,50 - 5,0	73	60	86	76	125	115	9 KHz	QP, CAV
5,0 - 30	73	60	90-73	80-60	115	105	9 KHz	QP, CAV

[1)] At the transition frequency, the lower limit applies.

Limits - Class B (a.c. mains power port)

Frequency range [MHz]	Limit: QP [dB(μV)[1)]]	Limit: AV [dB(μV) [1)]]	IF BW	Detector(s)
0,15 - 0,50	66 – 56 [2)]	56 - 46 [2)]	9 KHz	QP, CAV
0,50 - 5,0	56	46	9 KHz	QP, CAV
5,0 - 30	60	50	9 KHz	QP, CAV

[1)] At the transition frequency, the lower limit applies.
[2)] The limit decreases linearly with the logarithm of the frequency.

Limits - d.c. mains power port

Frequency range [MHz]	Rated input power of ≦ 75 kVA		Rated input power of >75 kVA		IF BW	Detector(s)
	Limit: QP [dB(μV)[1)]]	Limit: AV [dB(μV) [1)]]	Limit: QP [dB(μV)[1)]]	Limit: AV [dB(μV) [1)]]		
0,15 - 0,50	79	66	100	90	9 KHz	QP, CAV
0,50 - 5,0	73	60	86	76	9 KHz	QP, CAV
5,0 - 30	73	60	90-73	80-60	9 KHz	QP, CAV

[1)] At the transition frequency, the lower limit applies.

Limits - Class A equipment for AC CPT port

Frequency range [MHz]	Limit: QP [dB(μV)[1)]]	Limit: AV [dB(μV) [1)]]	IF BW	Detector(s)
0,15 - 0,50	79	66	9 KHz	QP, CAV
0,50 - 30	73	60	9 KHz	QP, CAV

Limits - Class B equipment for AC CPT port

Frequency range [MHz]	Limit: QP [dB(μV)[1)]]	Limit: AV [dB(μV) [1)]]	IF BW	Detector(s)
0,15 - 0,50	66 – 56	56 - 46	9 KHz	QP, CAV
0,50 - 5,0	56	46	9 KHz	QP, CAV
5,0 - 30	60	50	9 KHz	QP, CAV
[1)] At the transition frequency, the lower limit applies.				

Limits - DC CPT port

Frequency range [MHz]	Rated input power of ≦ 75 kVA		Rated input power of >75 kVA		IF BW	Detector(s)
	Limit: QP [dB(μV)[1)]]	Limit: AV [dB(μV) [1)]]	Limit: QP [dB(μV)[1)]]	Limit: AV [dB(μV) [1)]]		
0,15 - 0,50	79	66	100	90	9 KHz	QP, CAV
0,50 - 5,0	73	60	86	76	9 KHz	QP, CAV
5,0 - 30	73	60	90-73	80-60	9 KHz	QP, CAV
[1)] At the transition frequency, the lower limit applies.						

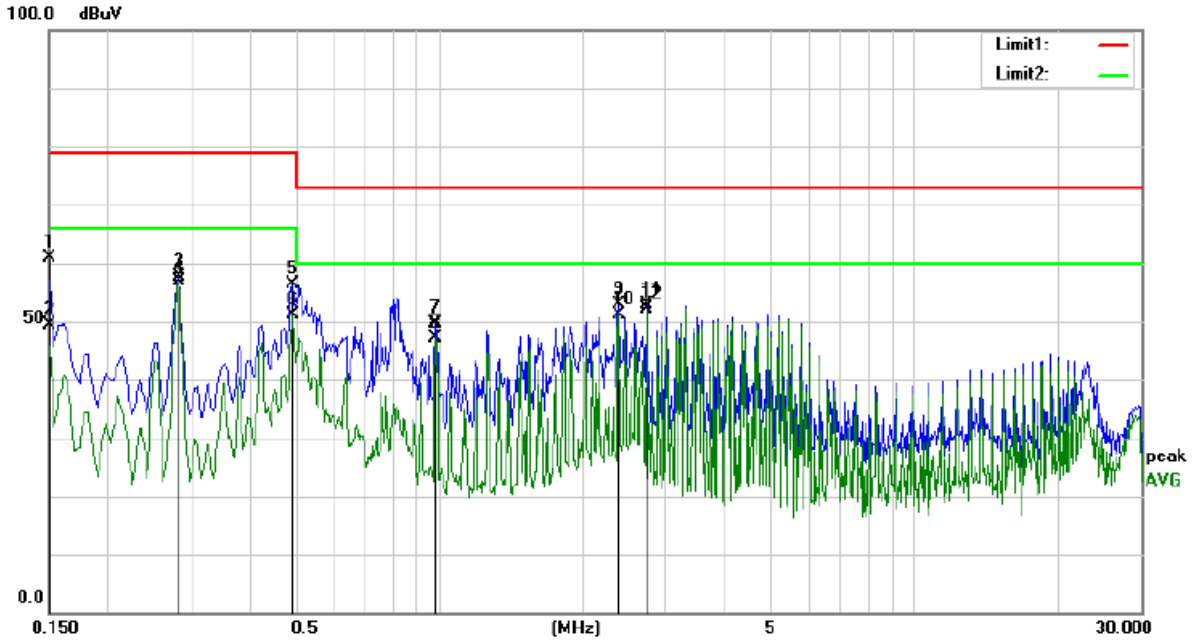
Performed measurements

Port under test		Terminal							
☒	AC mains input port	☐	N	☒	L1	☒	L2	☒	L3
☐	AC CPT port	☐	N	☐	L1	☐	L2	☐	L3
☒	DC CPT port	☒	N			☒	P		

Voltage – Mains [V]	400Vac			
Frequency – Mains [Hz]	50Hz			
Test method applied	☒	Artificial mains network		
	☐	Voltage probe		
Test setup	☒	Table top	☐	Artificial hand applied
	☐	Floor standing	☐	Other:
	Refer to the Annex 3 for test setup photo(s).			
Operating mode(s) used	Mode 2, Mode 3			
Remark	---			

See next page.

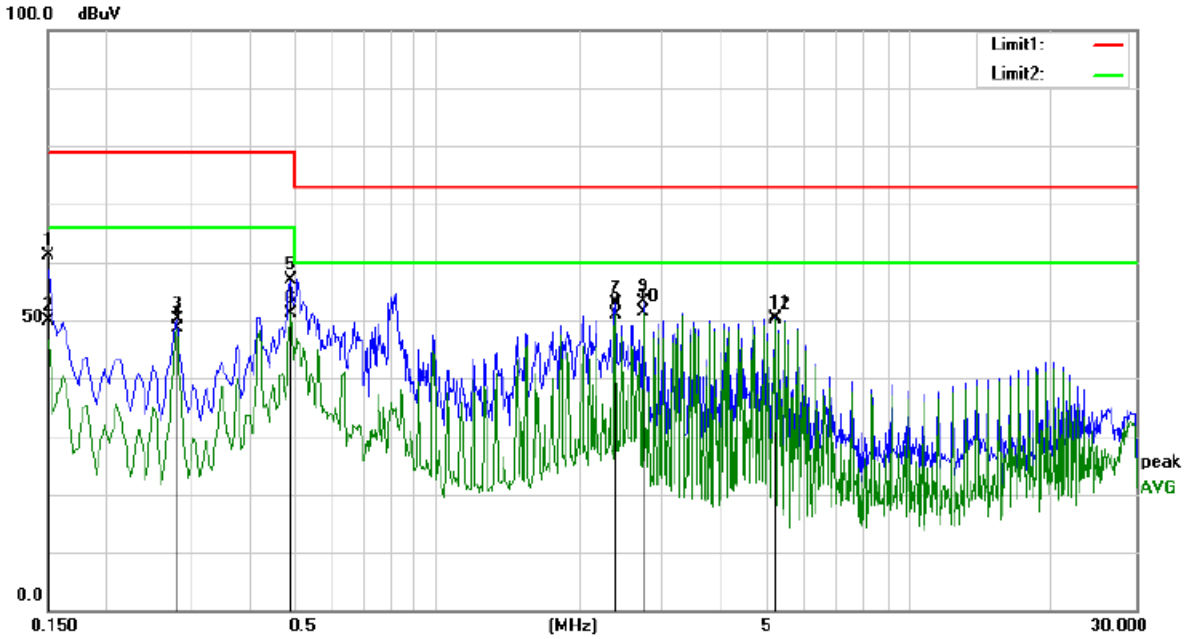
Measurement data	Port under test	AC mains input port
Operating mode / voltage / frequency used during the test		Mode 2 / 400 Vac / 50 Hz



Site Conduction #2 Phase: *L3* Temperature: 25.0
Limit: (CE)IEC 61851 class A_QP Power: AC 400V/50Hz Humidity: 49 %
Mode: 20% LOAD
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	50.65	10.35	61.00	79.00	-18.00	QP	
2		0.1500	38.95	10.35	49.30	66.00	-16.70	AVG	
3		0.2820	47.17	10.51	57.68	79.00	-21.32	QP	
4		0.2820	46.46	10.51	56.97	66.00	-9.03	AVG	
5		0.4900	45.82	10.62	56.44	79.00	-22.56	QP	
6		0.4900	40.48	10.62	51.10	66.00	-14.90	AVG	
7		0.9820	39.34	10.27	49.61	73.00	-23.39	QP	
8		0.9820	36.92	10.27	47.19	60.00	-12.81	AVG	
9		2.3860	42.73	10.24	52.97	73.00	-20.03	QP	
10		2.3860	40.78	10.24	51.02	60.00	-8.98	AVG	
11		2.7340	42.63	10.26	52.89	73.00	-20.11	QP	
12	*	2.7340	41.90	10.26	52.16	60.00	-7.84	AVG	

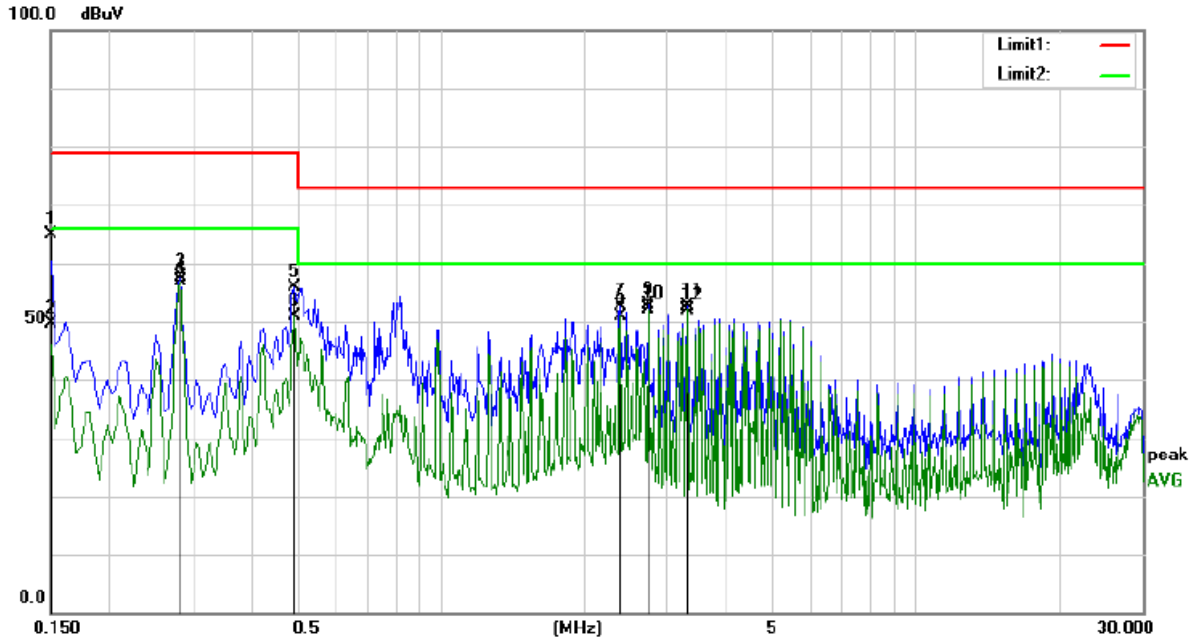
Measurement data	Port under test	AC mains input port



Site Conduction #2 Phase: L2 Temperature: 25.0
Limit: (CE)IEC 61851 class A_QP Power: AC 400V/50Hz Humidity: 49 %
Mode: 20% LOAD
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	50.82	10.35	61.17	79.00	-17.83	QP	
2		0.1500	39.58	10.35	49.93	66.00	-16.07	AVG	
3		0.2820	39.65	10.51	50.16	79.00	-28.84	QP	
4		0.2820	38.17	10.51	48.68	66.00	-17.32	AVG	
5		0.4900	46.22	10.62	56.84	79.00	-22.16	QP	
6		0.4900	40.57	10.62	51.19	66.00	-14.81	AVG	
7		2.3860	42.62	10.24	52.86	73.00	-20.14	QP	
8		2.3860	40.66	10.24	50.90	60.00	-9.10	AVG	
9		2.7340	42.78	10.26	53.04	73.00	-19.96	QP	
10	*	2.7340	41.14	10.26	51.40	60.00	-8.60	AVG	
11		5.1900	40.12	10.31	50.43	73.00	-22.57	QP	
12		5.1900	39.70	10.31	50.01	60.00	-9.99	AVG	

Measurement data	Port under test	AC mains input port



Site Conduction #2 Phase: *L1* Temperature: 25.0

Limit: (CE)IEC 61851 class A_QP Power: AC 400V/50Hz Humidity: 49 %

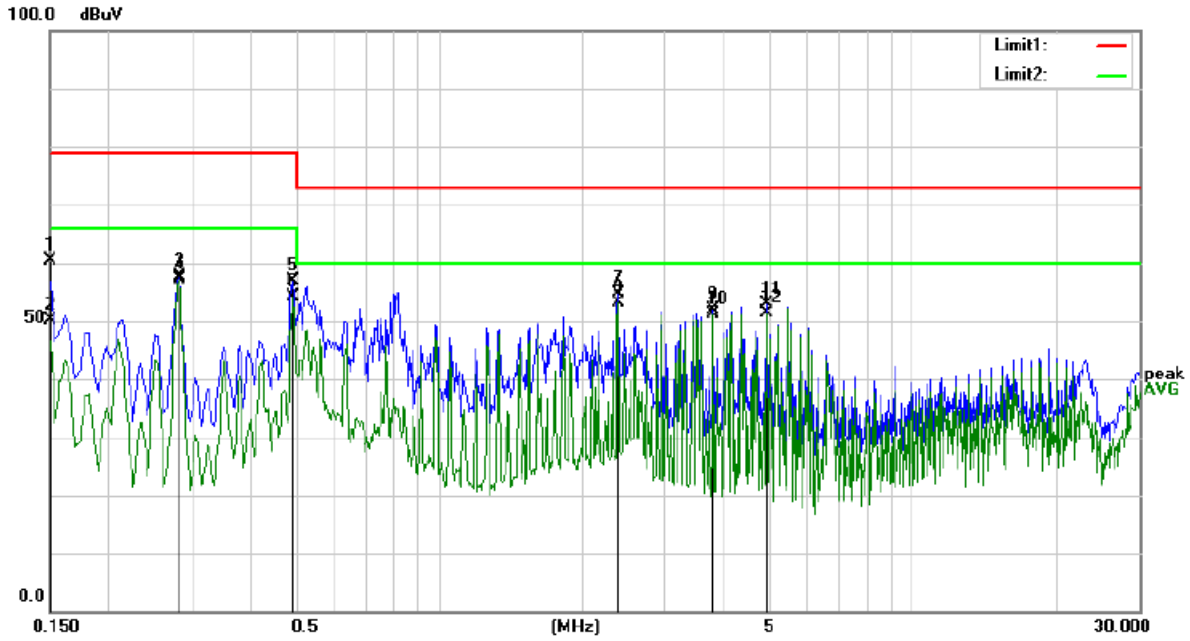
Mode: 20% LOAD

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	54.64	10.35	64.99	79.00	-14.01	QP	
2		0.1500	39.23	10.35	49.58	66.00	-16.42	AVG	
3		0.2820	47.12	10.51	57.63	79.00	-21.37	QP	
4		0.2820	46.43	10.51	56.94	66.00	-9.06	AVG	
5		0.4900	45.33	10.62	55.95	79.00	-23.05	QP	
6		0.4900	40.28	10.62	50.90	66.00	-15.10	AVG	
7		2.3860	42.46	10.24	52.70	73.00	-20.30	QP	
8		2.3860	40.76	10.24	51.00	60.00	-9.00	AVG	
9		2.7340	42.68	10.26	52.94	73.00	-20.06	QP	
10	*	2.7340	41.98	10.26	52.24	60.00	-7.76	AVG	
11		3.2980	42.36	10.27	52.63	73.00	-20.37	QP	
12		3.2980	41.73	10.27	52.00	60.00	-8.00	AVG	

Remark	

Measurement data	Port under test	AC mains input port
Operating mode / voltage / frequency used during the test		Mode 3 / 400 Vac / 50 Hz

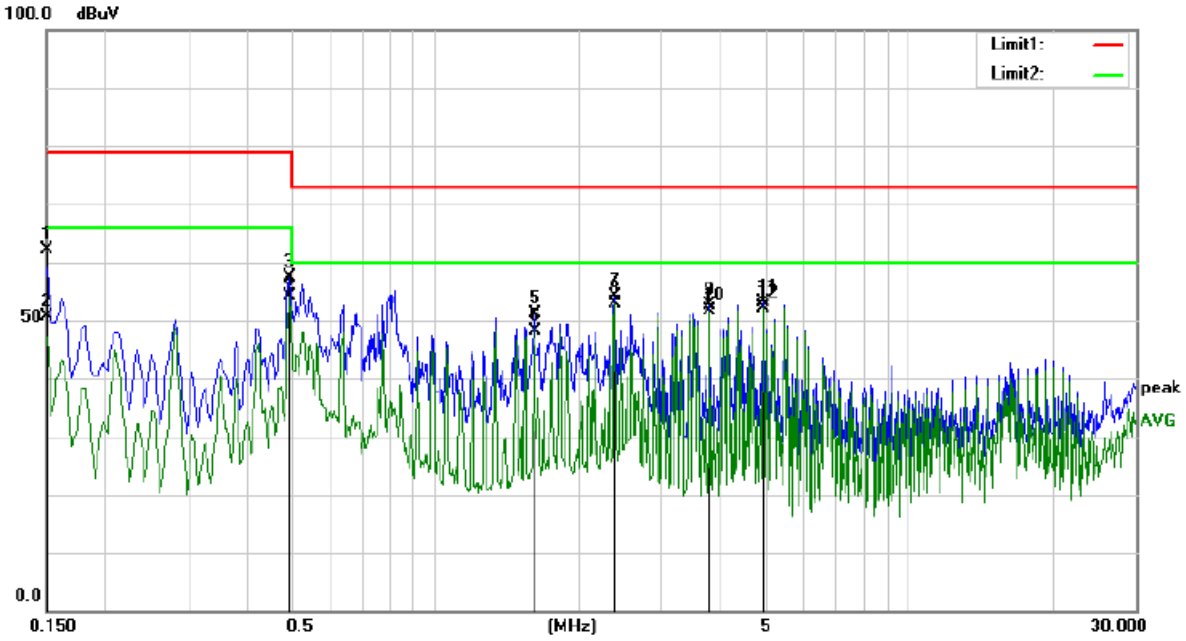


Site Conduction #2 Phase: *L3* Temperature: 25.0
Limit: (CE)IEC 61851 class A_QP Power: AC 400V/50Hz Humidity: 49 %

Mode: 80% LOAD
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	50.03	10.35	60.38	79.00	-18.62	QP	
2		0.1500	39.67	10.35	50.02	66.00	-15.98	AVG	
3		0.2820	47.20	10.51	57.71	79.00	-21.29	QP	
4		0.2820	46.55	10.51	57.06	66.00	-8.94	AVG	
5		0.4900	46.24	10.62	56.86	79.00	-22.14	QP	
6		0.4900	43.54	10.62	54.16	66.00	-11.84	AVG	
7		2.3860	44.41	10.24	54.65	73.00	-18.35	QP	
8	*	2.3860	42.83	10.24	53.07	60.00	-6.93	AVG	
9		3.7860	41.66	10.29	51.95	73.00	-21.05	QP	
10		3.7860	40.94	10.29	51.23	60.00	-8.77	AVG	
11		4.9100	42.47	10.31	52.78	73.00	-20.22	QP	
12		4.9100	41.04	10.31	51.35	60.00	-8.65	AVG	

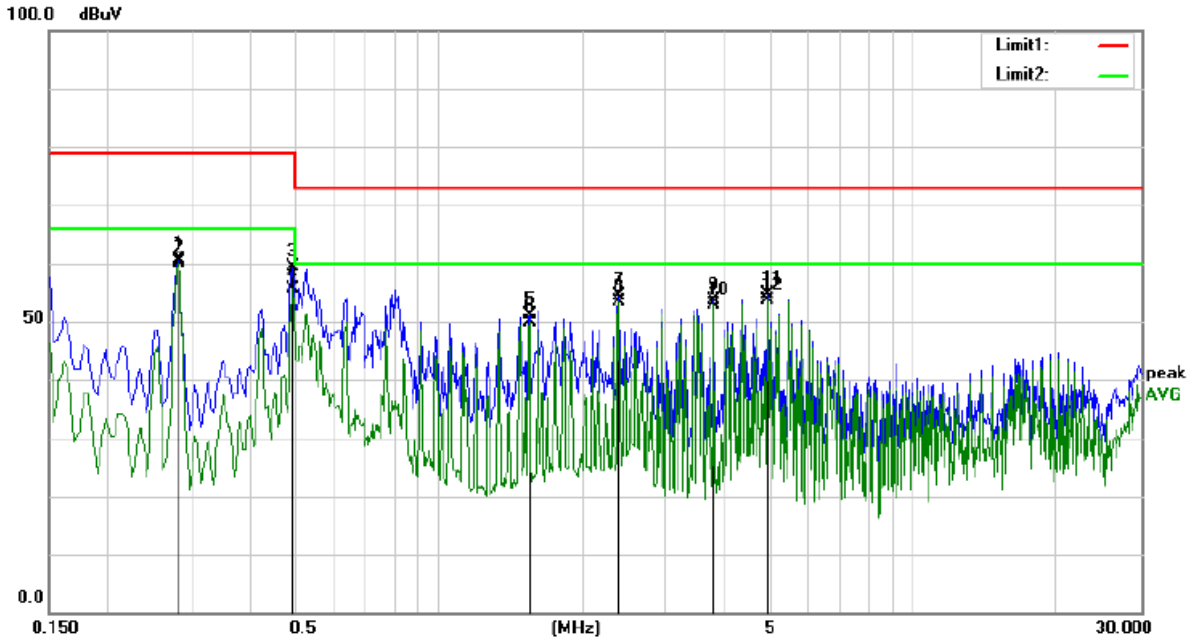
Measurement data	Port under test	AC mains input port



Site Conduction #2 Phase: *L2* Temperature: 25.0
Limit: (CE)IEC 61851 class A_QP Power: AC 400V/50Hz Humidity: 49 %
Mode: 80% LOAD
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	51.85	10.35	62.20	79.00	-16.80	QP	
2		0.1500	40.22	10.35	50.57	66.00	-15.43	AVG	
3		0.4900	46.68	10.62	57.30	79.00	-21.70	QP	
4		0.4900	43.57	10.62	54.19	66.00	-11.81	AVG	
5		1.6140	40.88	10.24	51.12	73.00	-21.88	QP	
6		1.6140	37.88	10.24	48.12	60.00	-11.88	AVG	
7		2.3860	43.89	10.24	54.13	73.00	-18.87	QP	
8	*	2.3860	42.57	10.24	52.81	60.00	-7.19	AVG	
9		3.7860	42.42	10.29	52.71	73.00	-20.29	QP	
10		3.7860	41.36	10.29	51.65	60.00	-8.35	AVG	
11		4.9100	42.76	10.31	53.07	73.00	-19.93	QP	
12		4.9100	41.93	10.31	52.24	60.00	-7.76	AVG	

Measurement data	Port under test	AC mains input port



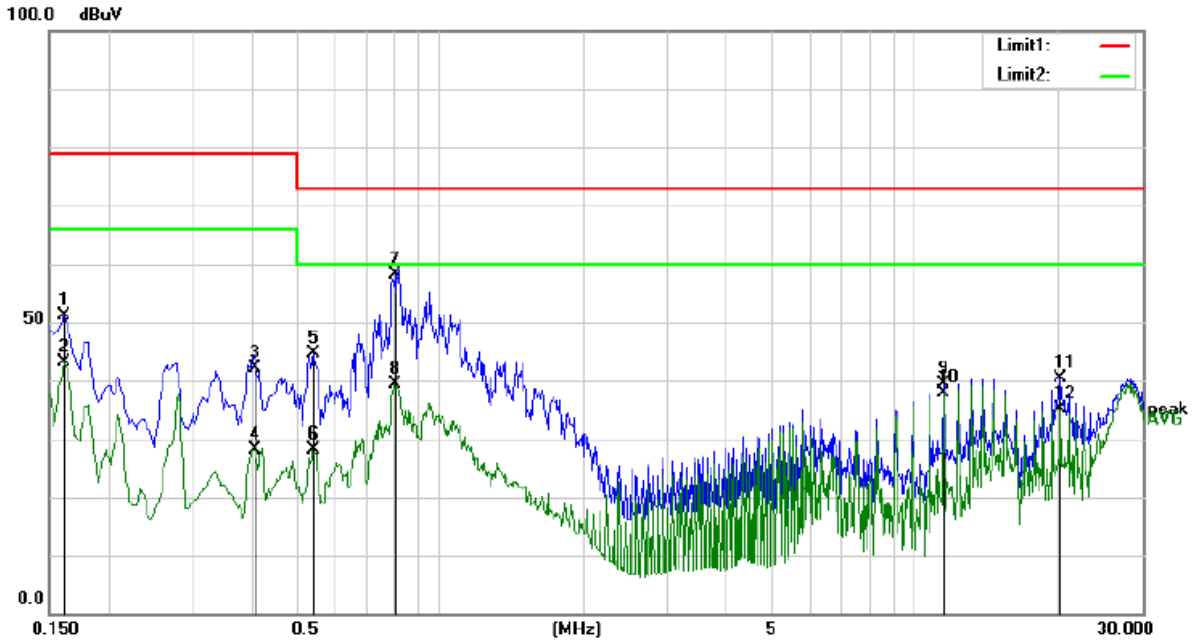
Site Conduction #2 Phase: *L1* Temperature: 25.0
Limit: (CE)IEC 61851 class A_QP Power: AC 400V/50Hz Humidity: 49 %

Mode: 80% LOAD
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2820	50.10	10.51	60.61	79.00	-18.39	QP	
2	*	0.2820	49.54	10.51	60.05	66.00	-5.95	AVG	
3		0.4900	48.68	10.62	59.30	79.00	-19.70	QP	
4		0.4900	45.08	10.62	55.70	66.00	-10.30	AVG	
5		1.5460	40.84	10.24	51.08	73.00	-21.92	QP	
6		1.5460	39.65	10.24	49.89	60.00	-10.11	AVG	
7		2.3860	44.14	10.24	54.38	73.00	-18.62	QP	
8		2.3860	43.24	10.24	53.48	60.00	-6.52	AVG	
9		3.7860	43.34	10.29	53.63	73.00	-19.37	QP	
10		3.7860	42.55	10.29	52.84	60.00	-7.16	AVG	
11		4.9100	44.32	10.31	54.63	73.00	-18.37	QP	
12		4.9100	43.35	10.31	53.66	60.00	-6.34	AVG	

Remark	

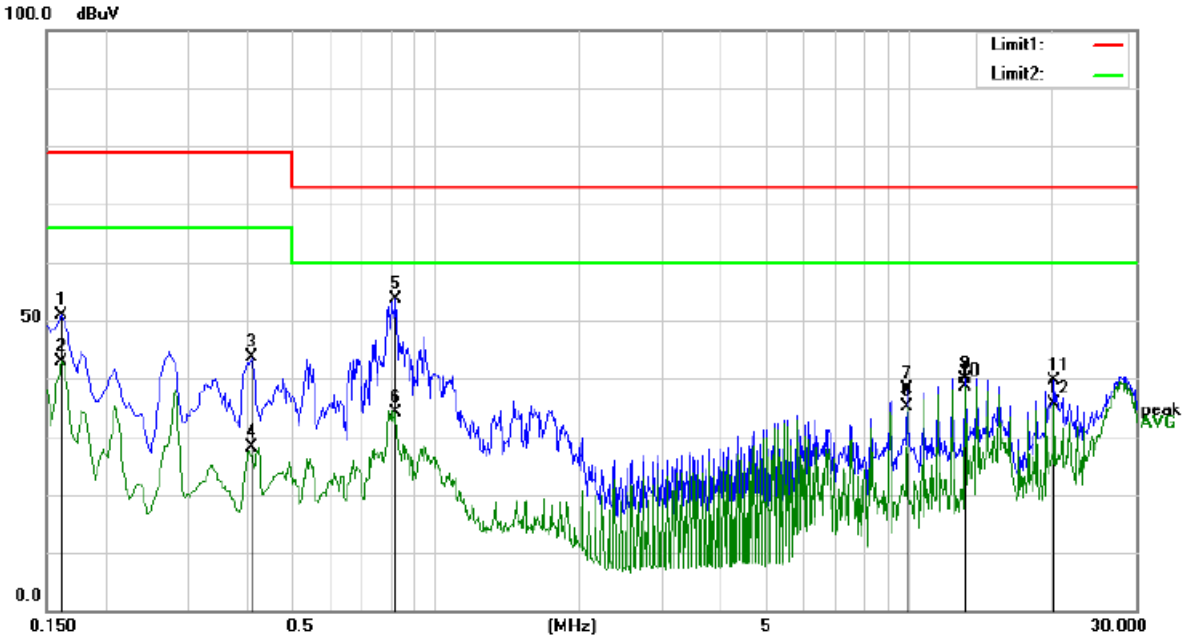
Measurement data	Port under test	DC output port
Operating mode / voltage / frequency used during the test		Mode 2 / 400 Vac / 50 Hz



Site Conduction #2 Phase: + Temperature: 25.0
Limit: (CE)IEC 61851 class A_QP (DC) <75KW Power: AC 400V/50Hz Humidity: 49 %
Mode: 20% LOAD
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1620	40.28	10.91	51.19	79.00	-27.81	QP	
2		0.1620	32.19	10.91	43.10	66.00	-22.90	AVG	
3		0.4100	31.38	10.76	42.14	79.00	-36.86	QP	
4		0.4100	17.48	10.76	28.24	66.00	-37.76	AVG	
5		0.5420	34.02	10.66	44.68	73.00	-28.32	QP	
6		0.5420	17.51	10.66	28.17	60.00	-31.83	AVG	
7	*	0.8060	47.65	10.57	58.22	73.00	-14.78	QP	
8		0.8060	28.75	10.57	39.32	60.00	-20.68	AVG	
9		11.4820	28.78	10.62	39.40	73.00	-33.60	QP	
10		11.4820	27.15	10.62	37.77	60.00	-22.23	AVG	
11		20.1900	29.79	10.49	40.28	73.00	-32.72	QP	
12		20.1900	24.71	10.49	35.20	60.00	-24.80	AVG	

Measurement data	Port under test	DC output port



Site Conduction #2 Phase: - Temperature: 25.0

Limit: (CE)IEC 61851 class A_QP (DC) <75KW Power: AC 400V/50Hz Humidity: 49 %

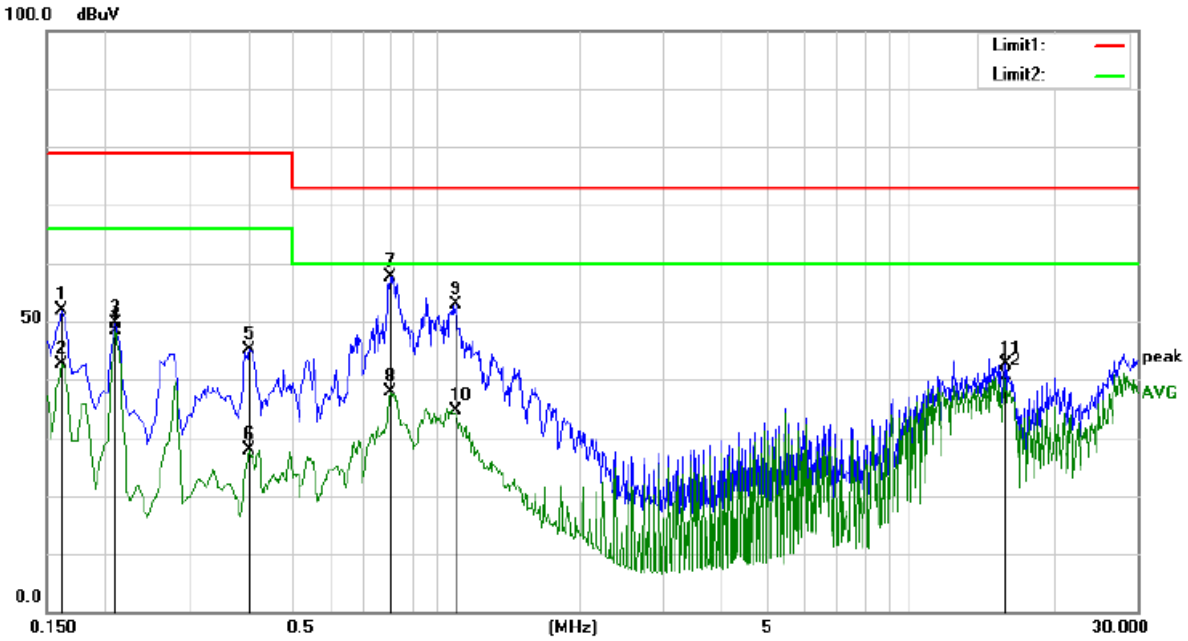
Mode: 20% LOAD

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1620	39.94	10.91	50.85	79.00	-28.15	QP	
2		0.1620	32.08	10.91	42.99	66.00	-23.01	AVG	
3		0.4100	32.96	10.76	43.72	79.00	-35.28	QP	
4		0.4100	17.31	10.76	28.07	66.00	-37.93	AVG	
5	*	0.8180	43.07	10.57	53.64	73.00	-19.36	QP	
6		0.8180	23.52	10.57	34.09	60.00	-25.91	AVG	
7		9.8980	27.58	10.61	38.19	73.00	-34.81	QP	
8		9.8980	24.62	10.61	35.23	60.00	-24.77	AVG	
9		13.0660	29.15	10.61	39.76	73.00	-33.24	QP	
10		13.0660	28.03	10.61	38.64	60.00	-21.36	AVG	
11		20.1940	29.19	10.49	39.68	73.00	-33.32	QP	
12		20.1940	25.14	10.49	35.63	60.00	-24.37	AVG	

Remark	

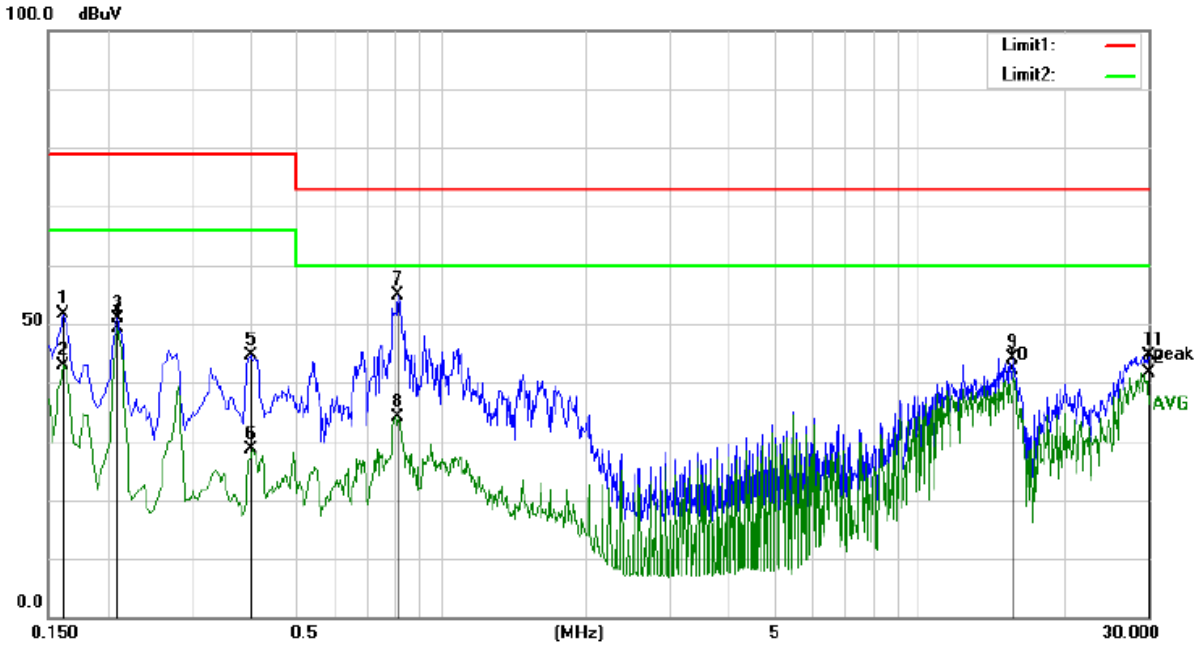
Measurement data	Port under test	DC output port
Operating mode / voltage / frequency used during the test		Mode 3 / 400 Vac / 50 Hz



Site Conduction #2 Phase: + Temperature: 25.0
Limit: (CE)IEC 61851 class A_QP (DC) <75KW Power: AC 400V/50Hz Humidity: 49 %
Mode: 80% LOAD
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1620	40.92	10.91	51.83	79.00	-27.17	QP	
2		0.1620	31.80	10.91	42.71	66.00	-23.29	AVG	
3		0.2100	38.81	10.89	49.70	79.00	-29.30	QP	
4		0.2100	37.42	10.89	48.31	66.00	-17.69	AVG	
5		0.4020	34.40	10.77	45.17	79.00	-33.83	QP	
6		0.4020	17.16	10.77	27.93	66.00	-38.07	AVG	
7	*	0.7980	47.08	10.57	57.65	73.00	-15.35	QP	
8		0.7980	27.40	10.57	37.97	60.00	-22.03	AVG	
9		1.0940	42.24	10.56	52.80	73.00	-20.20	QP	
10		1.0940	24.02	10.56	34.58	60.00	-25.42	AVG	
11		15.8420	32.10	10.60	42.70	73.00	-30.30	QP	
12		15.8420	30.03	10.60	40.63	60.00	-19.37	AVG	

Measurement data	Port under test	DC output port



Site Conduction #2 Phase: - Temperature: 25.0

Limit: (CE)IEC 61851 class A_QP (DC) <75KW Power: AC 400V/50Hz Humidity: 49 %

Mode: 80% LOAD

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1620	40.62	10.91	51.53	79.00	-27.47	QP	
2		0.1620	32.06	10.91	42.97	66.00	-23.03	AVG	
3		0.2100	40.07	10.89	50.96	79.00	-28.04	QP	
4	*	0.2100	38.57	10.89	49.46	66.00	-16.54	AVG	
5		0.3980	33.78	10.77	44.55	79.00	-34.45	QP	
6		0.3980	17.76	10.77	28.53	66.00	-37.47	AVG	
7		0.8100	44.27	10.57	54.84	73.00	-18.16	QP	
8		0.8100	23.66	10.57	34.23	60.00	-25.77	AVG	
9		15.7020	33.57	10.60	44.17	73.00	-28.83	QP	
10		15.7020	31.57	10.60	42.17	60.00	-17.83	AVG	
11		30.0000	34.01	10.50	44.51	73.00	-28.49	QP	
12		30.0000	31.06	10.50	41.56	60.00	-18.44	AVG	

Remark	

4.2 Asymmetric mode conducted emissions — VERDICT: PASS

Standard	IEC 61851-21-2
Basic standard(s)	CISPR 16-2-1

Limits – Class A

Frequency range [MHz]	Coupling device						IF BW	Detector(s)
	AAN		CVP		Current Probe			
	Limit: QP [dB(µV)[1)]]	Limit: AV [dB(µV) [1)]]	Limit: QP [dB(µV)[1)]]	Limit: AV [dB(µV) [1)]]	Limit: QP [dB(µA)[1)]]	Limit: AV [dB(µA) [1)]]		
0,15 - 0,50	97 – 87 [2)]	84 – 74 [2)]	97 – 87 [2)]	84 – 74 [2)]	53 – 43	40– 30	9 KHz	QP, CAV
0,50 - 30	87	74	87	74	43	74	9 KHz	QP, CAV

[1)] At the transition frequency, the lower limit applies.

[2)] The limit decreases linearly with the logarithm of the frequency.

Limits – Class B

Frequency range [MHz]	Coupling device						IF BW	Detector(s)
	AAN		CVP		Current Probe			
	Limit: QP [dB(µV)[1)]]	Limit: AV [dB(µV) [1)]]	Limit: QP [dB(µV)[1)]]	Limit: AV [dB(µV) [1)]]	Limit: QP [dB(µA)[1)]]	Limit: AV [dB(µA) [1)]]		
0,15 - 0,50	84 – 74 [2)]	74 – 64 [2)]	84 – 74 [2)]	74 – 64 [2)]	40– 30	30– 20	9 KHz	QP, CAV
0,50 - 30	74	64	74	64	30	20	9 KHz	QP, CAV

[1)] At the transition frequency, the lower limit applies.

[2)] The limit decreases linearly with the logarithm of the frequency.

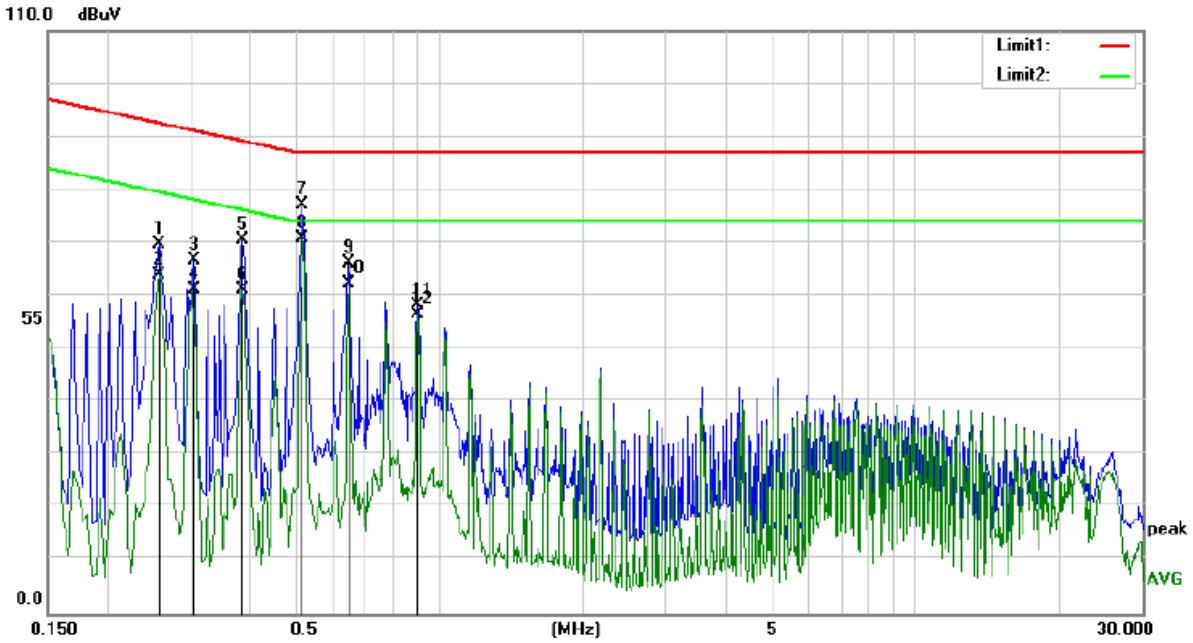
Performed measurements

Port under test			
☐	LAN / Ethernet	☒	Other: Signal
☐	Other:	☐	Other:

Voltage – Mains [V]	400 Vac			
Frequency – Mains [Hz]	50Hz			
Test method applied	☒	ISN – Impedance Stabilisation Network		
	☐	CDN according to EN / IEC 61000-4-6		
	☐	Voltage probe		
	☐	Current probe		
	☐	Artificial mains network		
	☐	Other:		
Test setup	☒	Table top	☐	Artificial hand applied
	☐	Floor standing	☐	Other:
	Refer to the Annex 3 for test setup photo(s).			
Operating mode(s) used	Mode 2, Mode 3			
Remark	All modes were tested, but only worst case was recorded in report.			

See next page.

Measurement data	Port under test	Signal port
Operating mode / voltage / frequency used during the test		Mode 3 / 400 VAC / 50 Hz



Site Conduction #2 Phase: Temperature: 25.0
Limit: (CE)EN55032 class A TELECOM_QP Power: AC 400V/50Hz Humidity: 49 %
Mode: 80% LOAD
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2580	59.95	9.68	69.63	92.50	-22.87	QP	
2		0.2580	54.24	9.68	63.92	79.50	-15.58	AVG	
3		0.3060	56.89	9.72	66.61	91.08	-24.47	QP	
4		0.3060	51.39	9.72	61.11	78.08	-16.97	AVG	
5		0.3860	60.93	9.68	70.61	89.15	-18.54	QP	
6		0.3860	51.47	9.68	61.15	76.15	-15.00	AVG	
7		0.5180	67.51	9.61	77.12	87.00	-9.88	QP	
8	*	0.5180	61.07	9.61	70.68	74.00	-3.32	AVG	
9		0.6460	56.68	9.45	66.13	87.00	-20.87	QP	
10		0.6460	52.89	9.45	62.34	74.00	-11.66	AVG	
11		0.9020	48.56	9.54	58.10	87.00	-28.90	QP	
12		0.9020	46.99	9.54	56.53	74.00	-17.47	AVG	

Remark	

4.3	**Radiated electromagnetic disturbances (2 – 185 KHz & 30 – 1000 MHz)**	**VERDICT: PASS**

Standard	IEC 61851-21-2
Basic standard(s)	CISPR 16-2-3
Test method	Antenna method according to CISPR 16-2-3 standard.
Supplementary information: According to the EN 55011 (CISPR 11) standard Table 1 footnote b) no limits apply to the fundamental and all other frequency components falling within the designated band of RF product(s)/unit(s).	

Limits – Class A equipment

Frequency	Limit: QP [dB(μV/m)[1)]]		IF BW	Detector
[MHz]	@3 m.	@10 m.		
30 - 230	50	40	120 KHz	QP
230 - 1000	57	47	120 KHz	QP
[1)] At the transition frequency, the lower limit applies.				

Limits – Class B equipment

Frequency	Limit: QP [dB(μV/m)[1)]]		IF BW	Detector
[MHz]	@3 m.	@10 m.		
30 - 230	40	30	120 KHz	QP
230 - 1000	47	37	120 KHz	QP
[1)] At the transition frequency, the lower limit applies.				

Limits

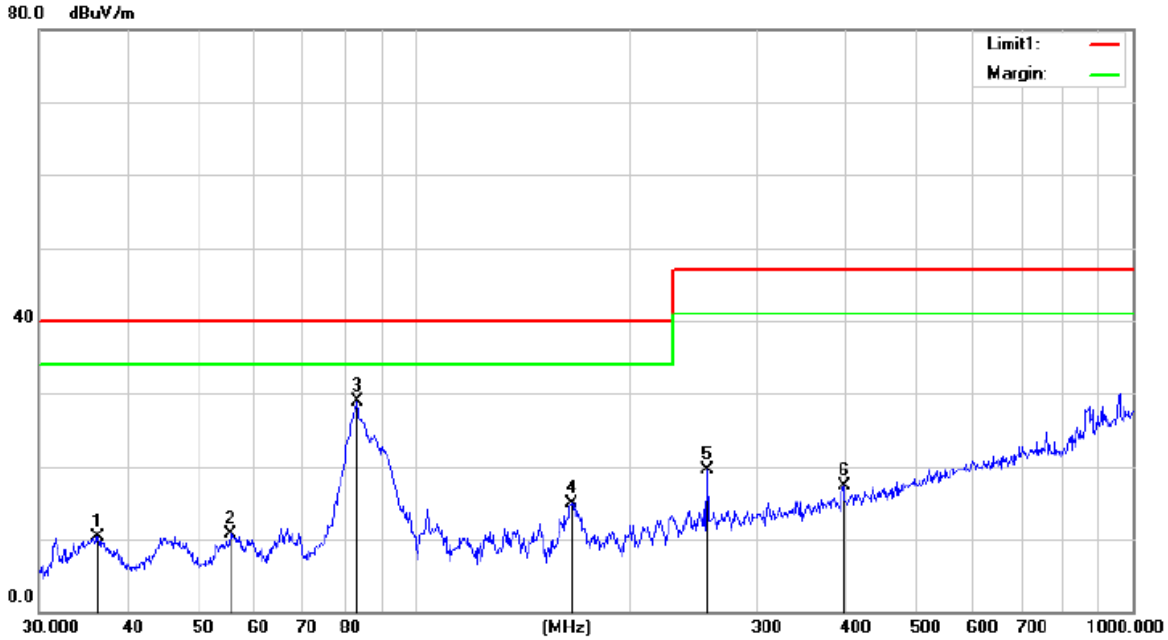
Frequency	Limit: QP [dB(μV/m)[1)]]	IF BW	Detector
[kHz]	@1 m.		
2 - 10	62-60	200 Hz	QP
10 - 30	60	200 Hz	QP
30 - 75	60-95	200 Hz	QP
75 - 120	95-55	200 Hz	QP
120 - 140	55	200 Hz	QP
140 - 185	55-95	200 Hz	QP
1) The limit decreases linearly with frequency. 2) The limit increases linearly with frequency. 3) This test is applicable only to DC charging equipment			

Performed measurements

Port under test	Enclosure	
Voltage – Mains [V]	400 Vac	
Frequency – Mains [Hz]	50Hz	
Test method applied	☒	OATS or SAC with measurement distance [m]: 1 m.
	☐	OATS or SAC with measurement distance [m]: 3 m.
	☒	OATS or SAC with measurement distance [m]: 10 m.
Test setup	☒	Equipment on a table of 80 cm height
	☐	Equipment on the floor (insulated from ground plane)
	☐	Other:
	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 2, Mode 3	
Remark	For 2 – 185 KHz, all modes were tested but only worst case was recorded in report.	

See next page.

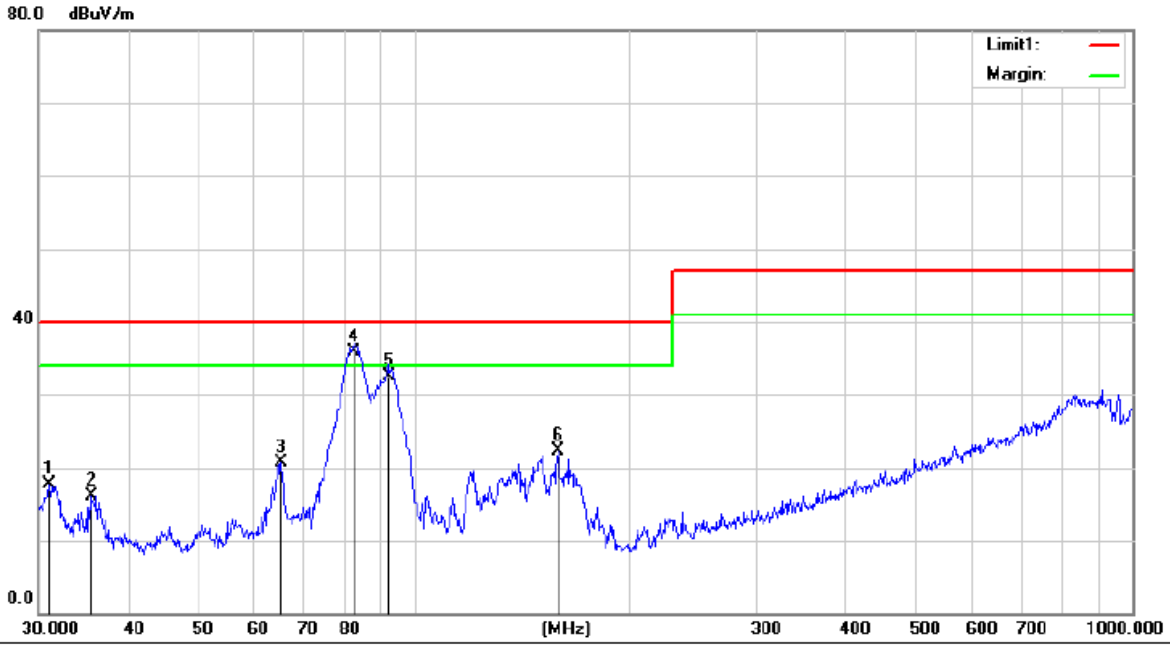
Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / voltage / frequency used during the test		Mode 2 / 400 Vac / 50 Hz		



Site 10m Chamber 1# Polarization: *Horizontal* Temperature: 26
Limit: (RE10M)IEC61851 Class A Power: AC 400V/50Hz Humidity: 60 %
Mode:20% load
Note:

No.	Mk.	Freq.	Reading Level	Ant. Factor	Pre Amp Gain	Cable loss	Measure-ment	Limit	Over		HI	Degree	
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	cm	deg.	Comment
1		36.2541	41.38	11.45	43.47	1	10.36	40.00	-29.64	QP	400	0	
2		55.4147	40.77	12.23	43.52	1.23	10.71	40.00	-29.29	QP	245	159	
3	*	83.2298	62.91	8.12	43.6	1.46	28.89	40.00	-11.11	QP	400	222	
4		165.4866	47.25	9.47	43.89	2.1	14.93	40.00	-25.07	QP	400	308	
5		255.6231	47.12	12.78	43.22	2.78	19.46	47.00	-27.54	QP	400	212	
6		396.2415	40.14	15.23	41.72	3.72	17.37	47.00	-29.63	QP	400	0	

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / voltage / frequency used during the test		Mode 2 / 400 Vac / 50 Hz		

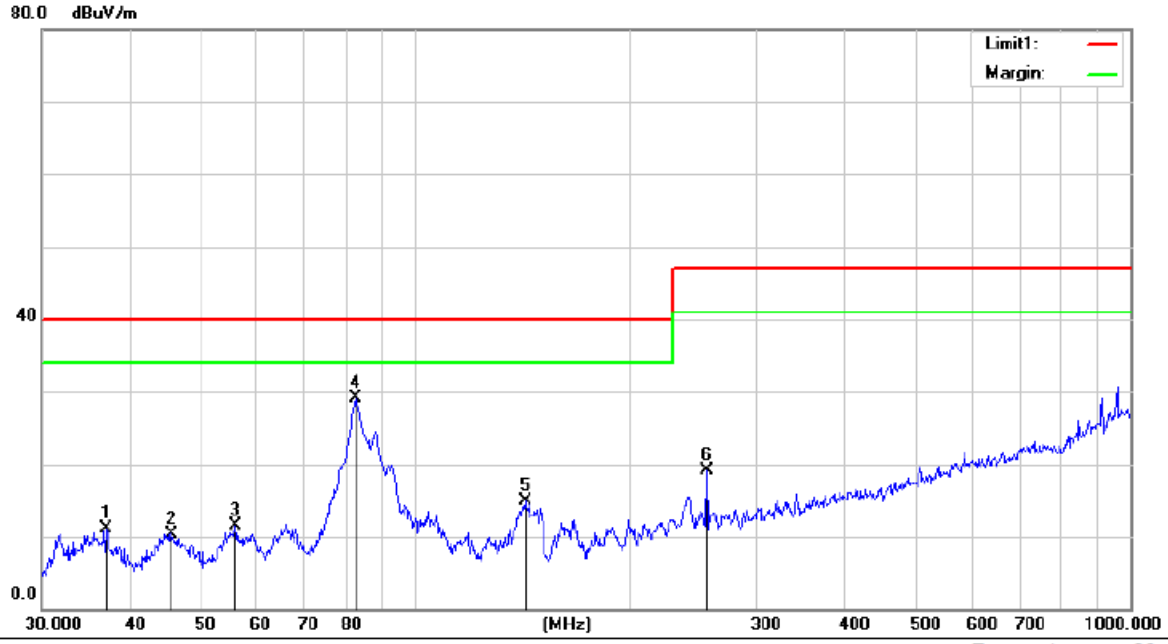


Site 10m Chamber 1# Polarization: *Vertical* Temperature: 26
Limit: (RE10M)IEC61851 Class A Power: AC 400V/50Hz Humidity: 60 %
Mode:20% load
Note:

No.	Mk.	Freq.	Reading Level	Ant. Factor	Pre Amp Gain	Cable loss	Measure-ment	Limit	Over		HI	Degree	
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	cm	deg.	Comment
1		31.0706	49.22	10.47	43.27	1.28	17.70	40.00	-22.30	QP	199	287	
2		35.6240	46.86	11.2	43.28	1.37	16.15	40.00	-23.85	QP	199	192	
3		65.3432	49.87	12.32	43.35	1.83	20.67	40.00	-19.33	QP	101	79	
4	*	82.3588	68.13	9.12	43.39	2.04	35.90	40.00	-4.10	QP	199	220	
5		92.1388	64.75	8.98	43.41	2.18	32.50	40.00	-7.50	QP	101	336	
6		158.6677	53.04	9.77	43.49	2.96	22.28	40.00	-17.72	QP	199	315	

Remark	

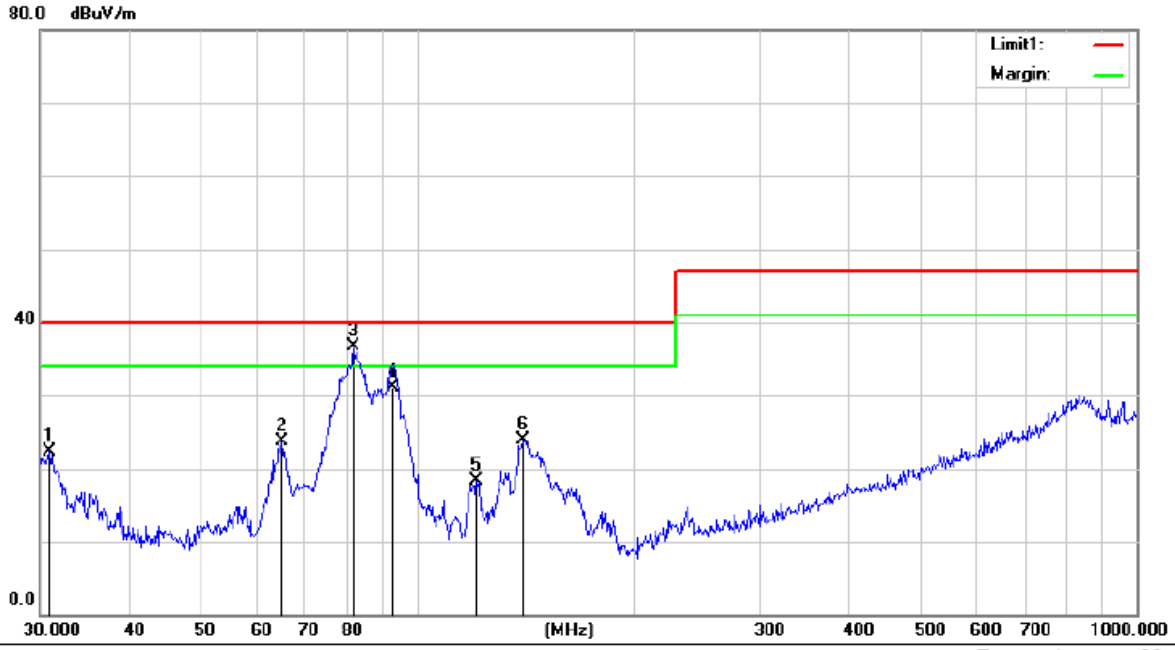
Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / voltage / frequency used during the test		Mode 3 / 400 Vac / 50 Hz		



Site 10m Chamber 1# Polarization: *Horizontal* Temperature: 26
Limit: (RE10M)IEC61851 Class A Power: AC 400V/50Hz Humidity: 60 %
Mode:80% load
Note:

No.	Mk.	Freq.	Reading Level	Ant. Factor	Pre Amp Gain	Cable loss	Measure-ment	Limit	Over		HI	Degree	
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	cm	deg.	Comment
1		36.8953	42.08	11.58	43.47	1.01	11.20	40.00	-28.80	QP	400	193	
2		45.5348	39.50	13.28	43.49	1.11	10.40	40.00	-29.60	QP	400	359	
3		56.0007	41.66	12.14	43.52	1.23	11.51	40.00	-28.49	QP	175	27	
4	*	82.3588	63.33	8.01	43.6	1.45	29.19	40.00	-10.81	QP	400	222	
5		142.3243	47.66	9.08	43.8	1.94	14.88	40.00	-25.12	QP	400	143	
6		255.6231	46.75	12.78	43.22	2.78	19.09	47.00	-27.91	QP	400	199	

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / voltage / frequency used during the test		Mode 3 / 400 Vac / 50 Hz		



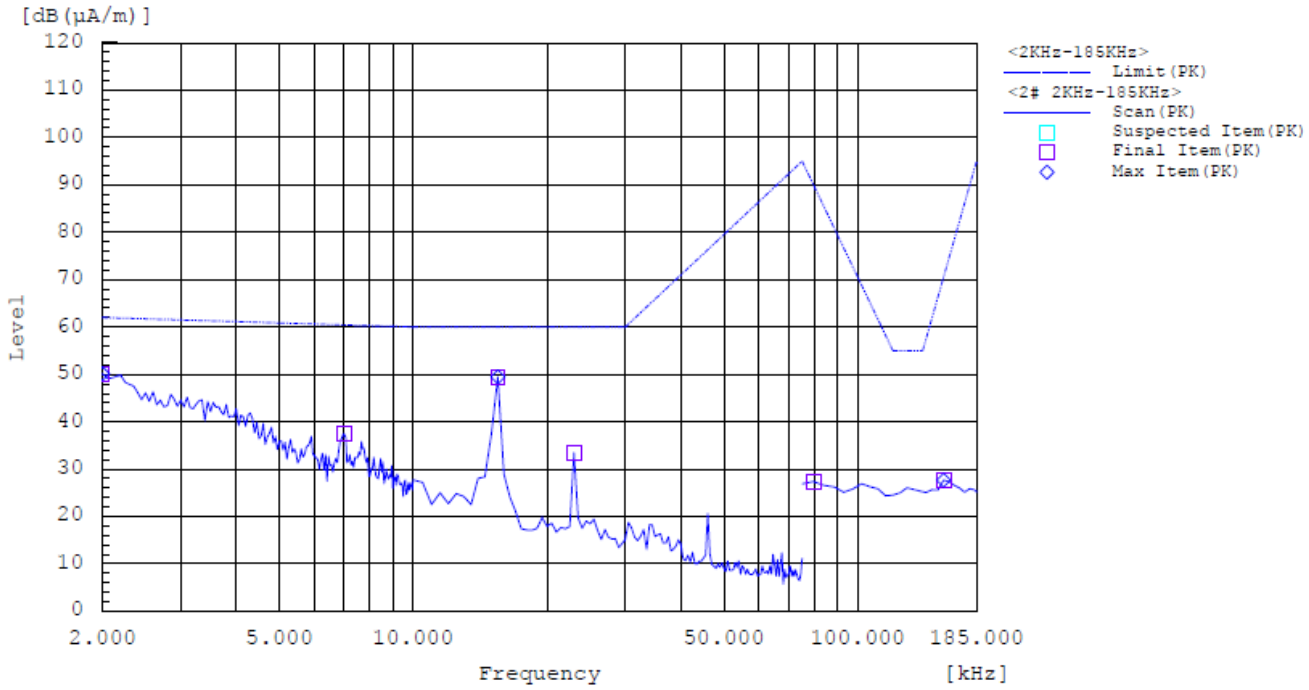
Site 10m Chamber 1# Polarization: *Vertical* Temperature: 26
Limit: (RE10M)IEC61851 Class A Power: AC 400V/50Hz Humidity: 60 %
Mode:80% load
Note:

No.	Mk.	Freq.	Reading Level	Ant. Factor	Pre Amp Gain	Cable loss	Measure-ment	Limit	Over		HI	Degree	
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	cm	deg.	Comment
1		30.8535	53.95	10.44	43.27	1.28	22.40	40.00	-17.60	QP	100	274	
2		65.1145	52.92	12.37	43.35	1.83	23.77	40.00	-16.23	QP	199	128	
3	*	81.7833	68.97	9.19	43.39	2.03	36.80	40.00	-3.20	QP	199	229	
4		92.7871	63.32	9.1	43.41	2.19	31.20	40.00	-8.80	QP	199	335	
5		121.1231	49.72	9.51	43.45	2.53	18.31	40.00	-21.69	QP	199	223	
6		140.3421	54.93	9.7	43.47	2.7	23.86	40.00	-16.14	QP	100	135	

Remark	

Measurement data

Operating mode / voltage / frequency used during the test	Mode 3 / 400 Vac / 50 Hz



Final Result

--- (PK) ---

No.	Frequency [kHz]	Reading [dB(µV)]	c.f [dB]	Result [dB(µA/m)]	Limit [dB(µA/m)]	Margin [dB]	Remark
1	2.000	5.7	44.5	50.2	62.0	11.8	
2	7.000	3.0	34.4	37.4	60.4	23.0	
3	15.500	21.3	28.2	49.5	60.0	10.5	
4	23.000	7.5	26.0	33.5	60.0	26.5	
5	79.500	5.8	21.6	27.4	90.0	62.6	
6	156.000	6.8	20.9	27.7	70.5	42.8	

Remark	

4.4 Radiated electromagnetic disturbances (above 1 GHz) — VERDICT: N/A

Standard	IEC 61851-21-2
Basic standard(s)	CISPR 16-2-3
Test method	Antenna method according to CISPR 16-2-3 standard.

Required highest frequency for radiated measurement		
Highest internal frequency [f_x]		Highest measured frequency
☒	$f_x \leq 108$ MHz	1 GHz
☐	108 MHz < $f_x \leq 500$ MHz	2 GHz
☐	500 MHz < $f_x \leq 1$ GHz	5 GHz
☐	$f_x \geq 1$ GHz	5x f_x or up to 6 GHz

Limits - Class A equipment

Frequency	@3 m		@10 m.		IF BW	Detector
[MHz]	Limit: PK [dB(µV/m)[1)]]	Limit: AV [dB(µV/m)[1)]]	Limit: PK [dB(µV/m)[1)]]	Limit: AV [dB(µV/m)[1)]]		
1 - 3	76	56	66	46	1 MHz	PK, CAV
3 - 6	80	60	70	50	1 MHz	PK, CAV

[1)] At the transition frequency, the lower limit applies.

Limits - Class B equipment

Frequency	@3 m		@10 m.		IF BW	Detector
[MHz]	Limit: PK [dB(µV/m)[1)]]	Limit: AV [dB(µV/m)[1)]]	Limit: PK [dB(µV/m)[1)]]	Limit: AV [dB(µV/m)[1)]]		
1 - 3	70	50	60	40	1 MHz	PK, CAV
3 - 6	74	54	64	44	1 MHz	PK, CAV

[1)] At the transition frequency, the lower limit applies.

Performed measurements

Port under test	---	
Voltage – Mains [V]	---	
Frequency – Mains [Hz]	---	
Test method applied	☐	Absorber-lined OATS or SAC with measurement distance [m]: 3 m.
	☐	Absorber-lined OATS or SAC with measurement distance [m]: 1 m.
Test setup	☐	Equipment on a table of 80 cm height
	☐	Equipment on the floor (insulated from ground plane)
	☐	Other:
	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	---	
Remark	---	

See next page.

Measurement data	☐	**Horizontal**	☐	**Vertical**
Operating mode / voltage / frequency used during the test		---		

Highest internal frequency of the EUT ≤ 108MHz, so it no need to perform the test item.

Remark	

4.5 **Harmonic current emissions**	**VERDICT: PASS**

Standard	IEC 61851-21-2	
Basic standard	IEC 61000-3-2&12	
Exlusions (For these categories of equipment, limits are not specified in the EN 61000-3-2 standard)	☐	Arc welding equipment intended for professional use.
	☐	System(s) with nominal voltage(s) less than 220 V_{AC} (line-to-neutral).
	☐	Equipment with rated power of ≤ 75 W (other than lighting equipment).
	☐	Professional equipment with total rated power > 1 kW.
	☐	Symmetrically controlled heating elements with a rated power ≥ 200 W.
	☐	Independent dimmers for incandescent lamps with rated power ≤ 1 kW.

Classification (I_{input} ≤ 16 A)			
☐	Class A	All apparatus not classified as Class B, C or D	
☐	Class B	Portable tools	
☐	Class C	☐	Lighting equipment with active input power > 25 W
		☐	Lighting equipment with active input power ≤ 25 W (First requirement, Table 3 column 2)
		☐	Lighting equipment with active input power ≤ 25 W (Second requirement)
☐	Class D	Personal computers, television receivers	

Classification (16 A ≤ I_{input} < 75 A)		
☐	Table 2	other than balanced three-phase equipment
☒	Table 3	balanced three-phase equipment
☐	Table 4	balanced three-phase equipment under specified conditions (a,b,c)
☐	Table 5	balanced three-phase equipment under specified conditions (d,e,f)

Performed measurements

Port under test	AC mains power input					
Voltage – Mains [V]	400 Vac					
Frequency – Mains [Hz]	50Hz					
Observation peroid	☐	6.5 min.	☒	2.5 min.	☐	Other:
Version of measurement instrument standard used EN / IEC61000-4-7 (Cl. 7)	☒	EN 61000-4-7:2002 + AM1:2009 (IEC 61000-4-7:2002+AM1:2008)				
	☐	EN 61000-4-7:1991				
Control principle used in the EUT	☐	Comply with the requirements of the Clause 6.1 (EN / IEC 61000-3-2).				
	☒	Comply with the requirements of the Clause 6.1 (EN / IEC 61000-3-12).				
	☐	Not comply with the requirements of the Clause 6.1 (EN / IEC 61000-3-2).				
	☐	Not comply with the requirements of the Clause 6.1 (EN / IEC 61000-3-12).				
Operating mode(s) used	Mode 3					
Remark	---					

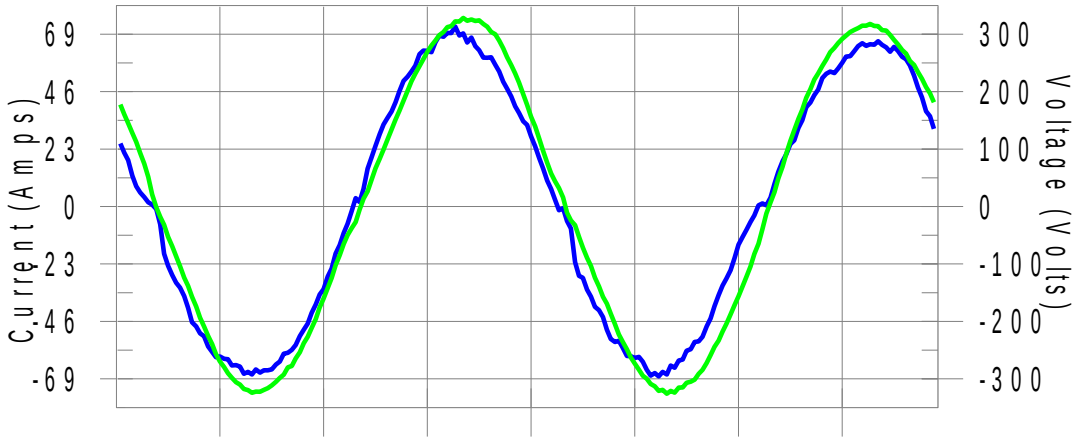
See next page.

Measurement data	Port under test	AC input power-Line
Operating mode / voltage / frequency used during the test		Mode 3 / 400 Vac / 50 Hz

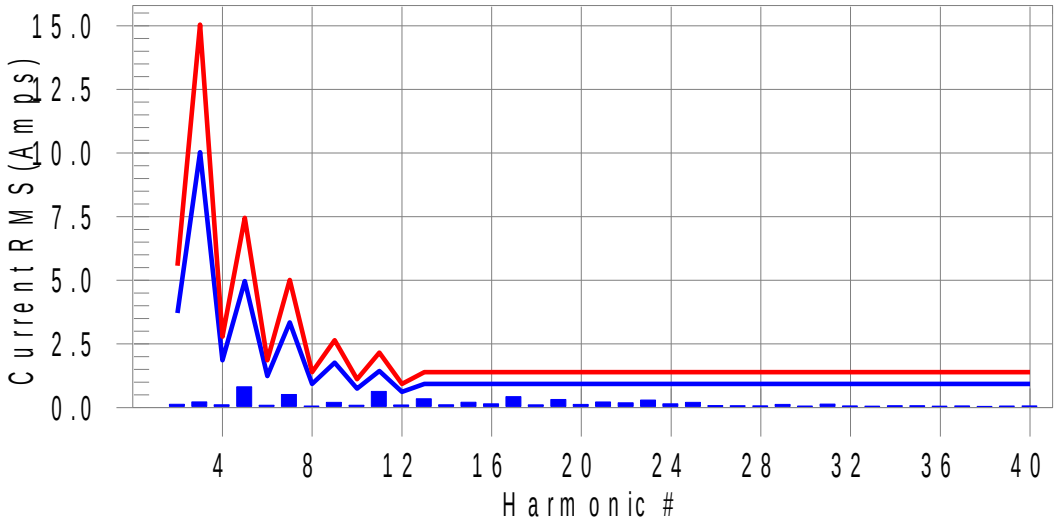
Test date: 2020/10/29 **Start time: 14:07:51** **End time: 14:10:33**
Test duration (min): 2.5 **Data file name: WIN2106_H-000246.cts_data**
Comment: CHARGE MODE

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

Current & voltage waveforms



Harmonics and Class 2 limit line **European Limits**



Test result: Pass **Worst harmonics H11-30.2% of 150% limit, H11-44.3% of 100% limit.**

Measurement data	Port under test	AC input power-Line

Current Test Result Summary (Phase A-Run time)

Test category: Table:2, Rsce=33, Inter-Harm, Test Margin: 100
Test date: 2020/10/29 Start time: 14:07:51 End time: 14:10:33
Test duration (min): 2.5 Data file name: WIN2106_H-000246.cts_data
Comment: CHARGE MODE

Test Result: Pass Measured Iref: 46.438(Amps) Source: Normal
THC/Iref (%): 2.5 Limit (%): 23.0 PWHC/Iref (%): 0.0 PWHC Limit (%): 23.0

Highest parameter values during test:

V_RMS (Volts):	**230.33**	**Frequency (Hz):**	**50.00**
I_Peak (Amps):	**75.074**	**I_RMS (Amps):**	**46.473**
I_Fund (Amps):	**46.352(avg)**	**Crest Factor:**	**1.617**
Power (Watts):	**10617**	**Power Factor:**	**0.992**

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.131	3.715	3.5	0.153	5.573	2.7	Pass
3	0.226	10.031	2.3	0.263	15.046	1.7	Pass
4	0.113	1.858	6.1	0.126	2.786	4.5	Pass
5	0.818	4.969	16.5	0.863	7.453	11.6	Pass
6	0.092	1.238	7.4	0.101	1.858	5.4	Pass
7	0.513	3.344	15.4	0.539	5.015	10.7	Pass
8	0.058	0.929	6.2	0.069	1.393	5.0	Pass
9	0.208	1.765	11.8	0.222	2.647	8.4	Pass
10	0.093	0.743	12.6	0.104	1.115	9.3	Pass
11	0.638	1.440	44.3	0.652	2.159	30.2	Pass
12	0.100	0.619	16.1	0.117	0.929	12.6	Pass
13	0.348	0.929	37.5	0.362	1.393	26.0	Pass
14	0.111	N/A	N/A	0.124	N/A	N/A	N/A
15	0.212	N/A	N/A	0.222	N/A	N/A	N/A
16	0.147	N/A	N/A	0.160	N/A	N/A	N/A
17	0.428	N/A	N/A	0.443	N/A	N/A	N/A
18	0.105	N/A	N/A	0.123	N/A	N/A	N/A
19	0.319	N/A	N/A	0.332	N/A	N/A	N/A
20	0.126	N/A	N/A	0.147	N/A	N/A	N/A
21	0.218	N/A	N/A	0.261	N/A	N/A	N/A
22	0.187	N/A	N/A	0.225	N/A	N/A	N/A
23	0.296	N/A	N/A	0.328	N/A	N/A	N/A
24	0.146	N/A	N/A	0.167	N/A	N/A	N/A
25	0.206	N/A	N/A	0.222	N/A	N/A	N/A
26	0.074	N/A	N/A	0.087	N/A	N/A	N/A
27	0.068	N/A	N/A	0.078	N/A	N/A	N/A
28	0.065	N/A	N/A	0.072	N/A	N/A	N/A
29	0.123	N/A	N/A	0.134	N/A	N/A	N/A
30	0.058	N/A	N/A	0.068	N/A	N/A	N/A
31	0.139	N/A	N/A	0.148	N/A	N/A	N/A
32	0.060	N/A	N/A	0.067	N/A	N/A	N/A
33	0.054	N/A	N/A	0.061	N/A	N/A	N/A
34	0.068	N/A	N/A	0.074	N/A	N/A	N/A
35	0.068	N/A	N/A	0.076	N/A	N/A	N/A
36	0.053	N/A	N/A	0.059	N/A	N/A	N/A
37	0.062	N/A	N/A	0.068	N/A	N/A	N/A
38	0.048	N/A	N/A	0.067	N/A	N/A	N/A
39	0.055	N/A	N/A	0.069	N/A	N/A	N/A
40	0.060	N/A	N/A	0.071	N/A	N/A	N/A

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

Measurement data	Port under test	AC input power-Line

Voltage Source Verification Data (Phase A-Run time)

Test category: Table:2, Rsce=33, Inter-Harm, Test Margin: 100
Test date: 2020/10/29 Start time: 14:07:51 End time: 14:10:33
Test duration (min): 2.5 Data file name: WIN2106_H-000246.cts_data
Comment: CHARGE MODE

Test Result: Pass Source qualification: Normal
Measured source distortion is within the requirements of the standards
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):	**230.33**	**Frequency (Hz):**	**50.00**
I_Peak (Amps):	**75.074**	**I_RMS (Amps):**	**46.473**
I_Fund (Amps):	**46.352(avg)**	**Crest Factor:**	**1.617**
Power (Watts):	**10617**	**Power Factor:**	**0.992**

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.319	0.921	34.61	OK
3	0.346	2.878	12.04	OK
4	0.200	0.921	21.70	OK
5	0.177	3.454	5.13	OK
6	0.150	0.921	16.28	OK
7	0.159	2.878	5.53	OK
8	0.119	0.921	12.89	OK
9	0.307	1.382	22.21	OK
10	0.135	0.921	14.64	OK
11	0.304	1.612	18.89	OK
12	0.123	0.691	17.88	OK
13	0.188	1.381	13.61	OK
14	0.120	0.691	17.42	OK
15	0.184	0.691	26.69	OK
16	0.154	0.691	22.23	OK
17	0.300	0.691	43.37	OK
18	0.121	0.691	17.57	OK
19	0.255	0.691	36.91	OK
20	0.148	0.691	21.36	OK
21	0.172	0.691	24.95	OK
22	0.160	0.691	23.15	OK
23	0.283	0.691	41.01	OK
24	0.106	0.691	15.41	OK
25	0.251	0.691	36.28	OK
26	0.115	0.691	16.69	OK
27	0.139	0.691	20.11	OK
28	0.123	0.691	17.82	OK
29	0.225	0.691	32.59	OK
30	0.087	0.691	12.62	OK
31	0.222	0.691	32.11	OK
32	0.107	0.691	15.45	OK
33	0.118	0.691	17.14	OK
34	0.124	0.691	17.89	OK
35	0.145	0.691	21.05	OK
36	0.089	0.691	12.91	OK
37	0.149	0.691	21.63	OK
38	0.083	0.691	12.03	OK
39	0.099	0.691	14.38	OK
40	0.104	0.691	15.08	OK

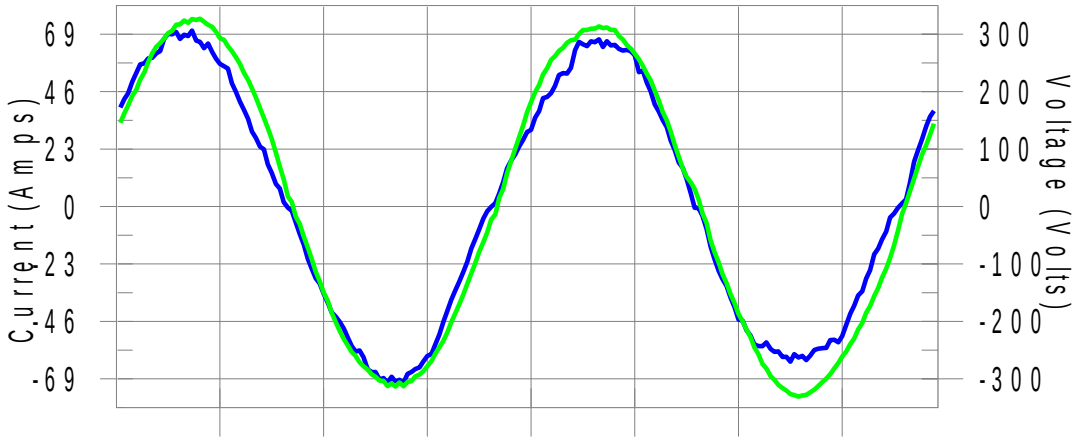
Measurement data	Port under test	AC input power-Line

Harmonics – Per EN/IEC61000-3-12, Ed. 2.0(Phase B-Run time)

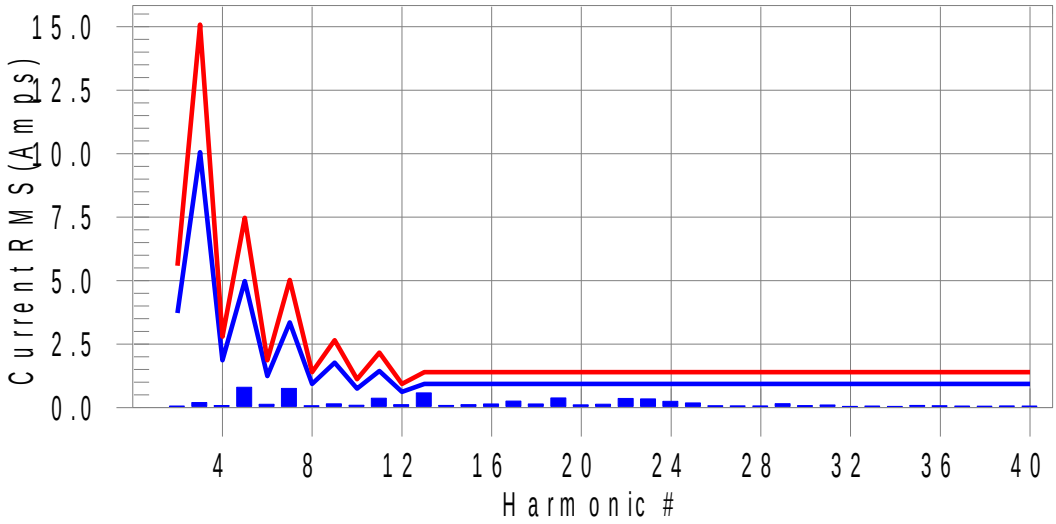
Test category: Table:2, Rsce=33, Inter-Harm, Test Margin: 100
Test date: 2020/10/29 Start time: 14:07:51 End time: 14:10:33
Test duration (min): 2.5 Data file name: WIN2106_H-000246.cts_data
Comment: CHARGE MODE

Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class 2 limit line **European Limits**



Test result: Pass Worst harmonics H13-42.6% of 150% limit, H13-61.9% of 100% limit.

Measurement data	Port under test	AC input power-Line

Current Test Result Summary (Phase B-Run time)

Test category: Table:2, Rsce=33, Inter-Harm, Test Margin: 100
Test date: 2020/10/29 Start time: 14:07:51 End time: 14:10:33
Test duration (min): 2.5 Data file name: WIN2106_H-000246.cts_data
Comment: CHARGE MODE

Test Result: Pass Measured Iref: 46.554(Amps) Source: Normal
THC/Iref (%): 2.7 Limit (%): 23.0 PWHC/Iref (%): 0.0 PWHC Limit (%): 23.0

Highest parameter values during test:

V_RMS (Volts):	**230.28**	**Frequency (Hz):**	**50.00**
I_Peak (Amps):	**76.239**	**I_RMS (Amps):**	**46.591**
I_Fund (Amps):	**46.426(avg)**	**Crest Factor:**	**1.639**
Power (Watts):	**10627**	**Power Factor:**	**0.992**

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.055	3.724	1.5	0.070	5.586	1.3	Pass
3	0.196	10.056	2.0	0.227	15.083	1.5	Pass
4	0.080	1.862	4.3	0.093	2.793	3.3	Pass
5	0.800	4.981	16.1	0.820	7.472	11.0	Pass
6	0.130	1.241	10.5	0.143	1.862	7.7	Pass
7	0.755	3.352	22.5	0.771	5.028	15.3	Pass
8	0.072	0.931	7.7	0.084	1.397	6.0	Pass
9	0.147	1.769	8.3	0.170	2.654	6.4	Pass
10	0.094	0.745	12.6	0.102	1.117	9.2	Pass
11	0.368	1.443	25.5	0.378	2.165	17.5	Pass
12	0.115	0.621	18.5	0.126	0.931	13.5	Pass
13	0.577	0.931	61.9	0.595	1.397	42.6	Pass
14	0.086	N/A	N/A	0.097	N/A	N/A	N/A
15	0.117	N/A	N/A	0.153	N/A	N/A	N/A
16	0.142	N/A	N/A	0.155	N/A	N/A	N/A
17	0.258	N/A	N/A	0.272	N/A	N/A	N/A
18	0.143	N/A	N/A	0.185	N/A	N/A	N/A
19	0.379	N/A	N/A	0.394	N/A	N/A	N/A
20	0.106	N/A	N/A	0.142	N/A	N/A	N/A
21	0.136	N/A	N/A	0.159	N/A	N/A	N/A
22	0.362	N/A	N/A	0.394	N/A	N/A	N/A
23	0.343	N/A	N/A	0.438	N/A	N/A	N/A
24	0.249	N/A	N/A	0.275	N/A	N/A	N/A
25	0.184	N/A	N/A	0.194	N/A	N/A	N/A
26	0.071	N/A	N/A	0.081	N/A	N/A	N/A
27	0.066	N/A	N/A	0.076	N/A	N/A	N/A
28	0.061	N/A	N/A	0.068	N/A	N/A	N/A
29	0.151	N/A	N/A	0.158	N/A	N/A	N/A
30	0.074	N/A	N/A	0.085	N/A	N/A	N/A
31	0.104	N/A	N/A	0.112	N/A	N/A	N/A
32	0.049	N/A	N/A	0.057	N/A	N/A	N/A
33	0.057	N/A	N/A	0.067	N/A	N/A	N/A
34	0.048	N/A	N/A	0.056	N/A	N/A	N/A
35	0.082	N/A	N/A	0.093	N/A	N/A	N/A
36	0.069	N/A	N/A	0.082	N/A	N/A	N/A
37	0.058	N/A	N/A	0.069	N/A	N/A	N/A
38	0.051	N/A	N/A	0.060	N/A	N/A	N/A
39	0.063	N/A	N/A	0.071	N/A	N/A	N/A
40	0.058	N/A	N/A	0.064	N/A	N/A	N/A

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

Measurement data	Port under test	AC input power-Line

Voltage Source Verification Data (Phase B-Run time)

Test category: Table:2, Rsce=33, Inter-Harm, Test Margin: 100
Test date: 2020/10/29 Start time: 14:07:51 End time: 14:10:33
Test duration (min): 2.5 Data file name: WIN2106_H-000246.cts_data
Comment: CHARGE MODE

Test Result: Pass Source qualification: Normal
Measured source distortion is within the requirements of the standards
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):	**230.28**	**Frequency (Hz):**	**50.00**
I_Peak (Amps):	**76.239**	**I_RMS (Amps):**	**46.591**
I_Fund (Amps):	**46.426(avg)**	**Crest Factor:**	**1.639**
Power (Watts):	**10627**	**Power Factor:**	**0.992**

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.319	0.921	34.62	OK
3	0.326	2.877	11.32	OK
4	0.204	0.921	22.14	OK
5	0.165	3.453	4.77	OK
6	0.129	0.921	14.00	OK
7	0.277	2.878	9.62	OK
8	0.152	0.921	16.55	OK
9	0.294	1.381	21.27	OK
10	0.163	0.921	17.65	OK
11	0.159	1.611	9.86	OK
12	0.161	0.691	23.28	OK
13	0.319	1.381	23.10	OK
14	0.124	0.691	17.95	OK
15	0.194	0.690	28.03	OK
16	0.147	0.691	21.25	OK
17	0.178	0.691	25.74	OK
18	0.170	0.691	24.65	OK
19	0.294	0.691	42.53	OK
20	0.126	0.691	18.22	OK
21	0.162	0.690	23.40	OK
22	0.180	0.690	26.07	OK
23	0.326	0.691	47.14	OK
24	0.156	0.691	22.58	OK
25	0.204	0.691	29.56	OK
26	0.144	0.690	20.80	OK
27	0.127	0.690	18.43	OK
28	0.139	0.691	20.08	OK
29	0.239	0.691	34.54	OK
30	0.127	0.690	18.40	OK
31	0.156	0.691	22.54	OK
32	0.086	0.691	12.46	OK
33	0.113	0.690	16.33	OK
34	0.100	0.691	14.46	OK
35	0.177	0.691	25.61	OK
36	0.130	0.691	18.78	OK
37	0.126	0.691	18.27	OK
38	0.081	0.691	11.79	OK
39	0.078	0.691	11.23	OK
40	0.100	0.691	14.51	OK

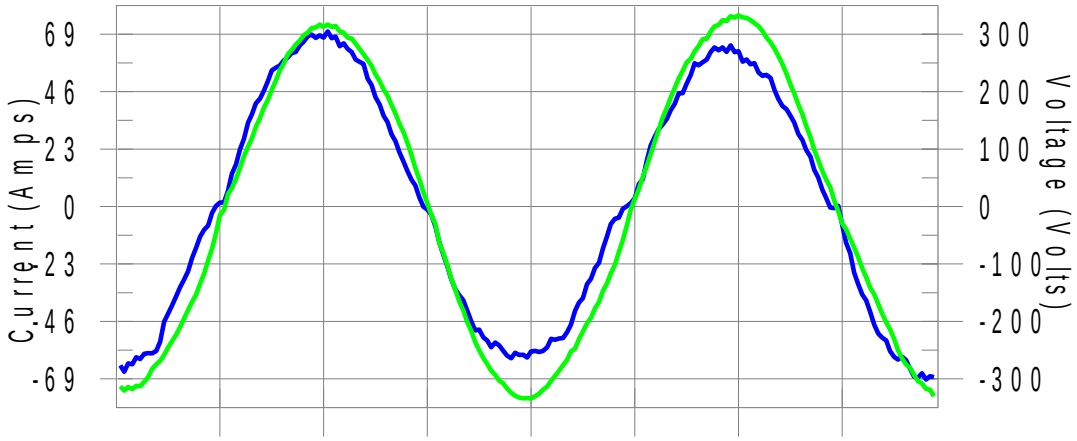
Measurement data	Port under test	AC input power-Line

Harmonics – Per EN/IEC61000-3-12, Ed. 2.0(Phase C-Run time)

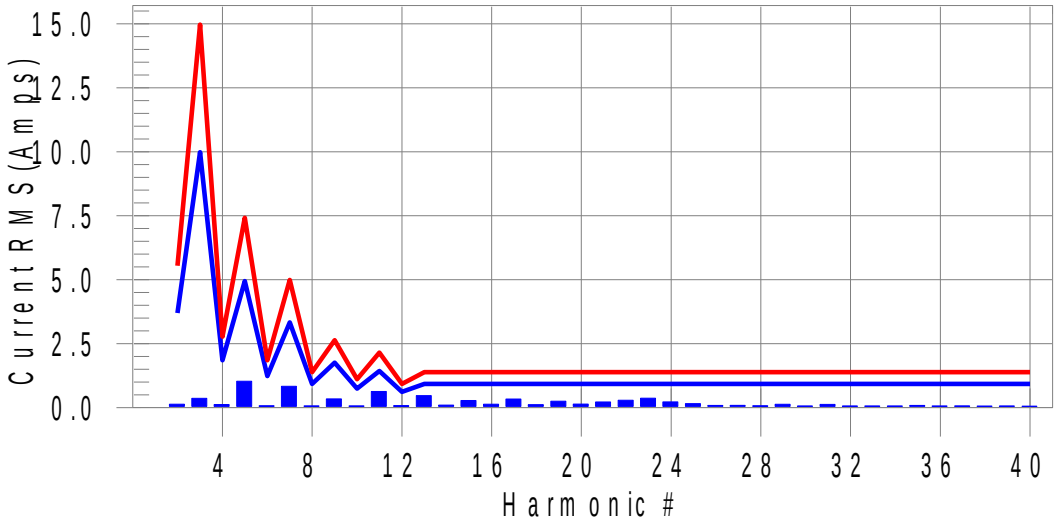
Test category: Table:2, Rsce=33, Inter-Harm, Test Margin: 100
Test date: 2020/10/29 Start time: 14:07:51 End time: 14:10:33
Test duration (min): 2.5 Data file name: WIN2106_H-000246.cts_data
Comment: CHARGE MODE

Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class 2 limit line **European Limits**



Test result: Pass Worst harmonics H13-34.9% of 150% limit, H13-50.5% of 100% limit.

Measurement data	Port under test	AC input power-Line

Current Test Result Summary (Phase C-Run time)

Test category: Table:2, Rsce=33, Inter-Harm, Test Margin: 100
Test date: 2020/10/29 Start time: 14:07:51 End time: 14:10:33
Test duration (min): 2.5 Data file name: WIN2106_H-000246.cts_data
Comment: CHARGE MODE

Test Result: Pass Measured Iref: 46.198(Amps) Source: Normal
THC/Iref (%): 3.3 Limit (%): 23.0 PWHC/Iref (%): 0.0 PWHC Limit (%): 23.0

Highest parameter values during test:

V_RMS (Volts):	**230.08**	**Frequency (Hz):**	**50.00**
I_Peak (Amps):	**86.195**	**I_RMS (Amps):**	**46.240**
I_Fund (Amps):	**46.056(avg)**	**Crest Factor:**	**1.865**
Power (Watts):	**10533**	**Power Factor:**	**0.991**

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.135	3.696	3.7	0.156	5.544	2.8	Pass
3	0.362	9.979	3.6	0.400	14.968	2.7	Pass
4	0.118	1.848	6.4	0.131	2.772	4.7	Pass
5	1.029	4.943	20.8	1.063	7.415	14.3	Pass
6	0.072	1.232	5.8	0.086	1.848	4.7	Pass
7	0.831	3.326	25.0	0.870	4.989	17.4	Pass
8	0.064	0.924	7.0	0.074	1.386	5.4	Pass
9	0.342	1.756	19.5	0.357	2.633	13.5	Pass
10	0.067	0.739	9.0	0.077	1.109	7.0	Pass
11	0.629	1.432	43.9	0.643	2.148	29.9	Pass
12	0.075	0.616	12.1	0.092	0.924	10.0	Pass
13	0.466	0.924	50.5	0.484	1.386	34.9	Pass
14	0.099	N/A	N/A	0.110	N/A	N/A	N/A
15	0.277	N/A	N/A	0.301	N/A	N/A	N/A
16	0.133	N/A	N/A	0.149	N/A	N/A	N/A
17	0.335	N/A	N/A	0.380	N/A	N/A	N/A
18	0.116	N/A	N/A	0.136	N/A	N/A	N/A
19	0.252	N/A	N/A	0.268	N/A	N/A	N/A
20	0.138	N/A	N/A	0.169	N/A	N/A	N/A
21	0.219	N/A	N/A	0.238	N/A	N/A	N/A
22	0.288	N/A	N/A	0.339	N/A	N/A	N/A
23	0.368	N/A	N/A	0.404	N/A	N/A	N/A
24	0.224	N/A	N/A	0.256	N/A	N/A	N/A
25	0.155	N/A	N/A	0.177	N/A	N/A	N/A
26	0.085	N/A	N/A	0.092	N/A	N/A	N/A
27	0.090	N/A	N/A	0.103	N/A	N/A	N/A
28	0.072	N/A	N/A	0.086	N/A	N/A	N/A
29	0.127	N/A	N/A	0.145	N/A	N/A	N/A
30	0.060	N/A	N/A	0.076	N/A	N/A	N/A
31	0.125	N/A	N/A	0.134	N/A	N/A	N/A
32	0.059	N/A	N/A	0.068	N/A	N/A	N/A
33	0.062	N/A	N/A	0.071	N/A	N/A	N/A
34	0.061	N/A	N/A	0.067	N/A	N/A	N/A
35	0.084	N/A	N/A	0.093	N/A	N/A	N/A
36	0.059	N/A	N/A	0.065	N/A	N/A	N/A
37	0.067	N/A	N/A	0.072	N/A	N/A	N/A
38	0.056	N/A	N/A	0.066	N/A	N/A	N/A
39	0.062	N/A	N/A	0.068	N/A	N/A	N/A
40	0.052	N/A	N/A	0.060	N/A	N/A	N/A

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

Measurement data	Port under test	AC input power-Line

Voltage Source Verification Data (Phase C-Run time)

Test category: Table:2, Rsce=33, Inter-Harm, Test Margin: 100
Test date: 2020/10/29 Start time: 14:07:51 End time: 14:10:33
Test duration (min): 2.5 Data file name: WIN2106_H-000246.cts_data
Comment: CHARGE MODE

Test Result: Pass Source qualification: Normal
Measured source distortion is within the requirements of the standards
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):	**230.08**	**Frequency (Hz):**	**50.00**
I_Peak (Amps):	**86.195**	**I_RMS (Amps):**	**46.240**
I_Fund (Amps):	**46.056(avg)**	**Crest Factor:**	**1.865**
Power (Watts):	**10533**	**Power Factor:**	**0.991**

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.319	0.920	34.67	OK
3	0.296	2.875	10.28	OK
4	0.200	0.920	21.72	OK
5	0.204	3.450	5.90	OK
6	0.148	0.920	16.13	OK
7	0.215	2.875	7.47	OK
8	0.123	0.920	13.36	OK
9	0.187	1.380	13.54	OK
10	0.124	0.920	13.51	OK
11	0.277	1.610	17.18	OK
12	0.118	0.690	17.08	OK
13	0.267	1.380	19.33	OK
14	0.131	0.690	19.00	OK
15	0.305	0.690	44.22	OK
16	0.142	0.690	20.65	OK
17	0.280	0.690	40.52	OK
18	0.121	0.690	17.58	OK
19	0.220	0.690	31.85	OK
20	0.128	0.690	18.57	OK
21	0.254	0.690	36.80	OK
22	0.177	0.690	25.70	OK
23	0.279	0.690	40.51	OK
24	0.129	0.690	18.73	OK
25	0.212	0.690	30.70	OK
26	0.108	0.690	15.64	OK
27	0.103	0.690	14.99	OK
28	0.140	0.690	20.24	OK
29	0.221	0.690	32.08	OK
30	0.098	0.690	14.24	OK
31	0.209	0.690	30.25	OK
32	0.112	0.690	16.31	OK
33	0.132	0.690	19.10	OK
34	0.114	0.690	16.59	OK
35	0.193	0.690	27.96	OK
36	0.096	0.690	13.95	OK
37	0.163	0.690	23.62	OK
38	0.110	0.690	15.88	OK
39	0.132	0.690	19.13	OK
40	0.091	0.690	13.14	OK

5th Harmonic Phase Angle and Magnitude for Phase A:
H-5_min_phase: 252.3 Degree (Leading)
H-5_max_phase: 258.0 Degree (Leading)
H-5_ave_phase: 255.1 Degree (Leading)

Measurement data	Port under test	AC input power-Line

H-5_ave_vector_magnitude: 0.814 Amp
H-5_standard_ave_magnitude: 0.818 Amp
H-5_standard_max_magnitude: 0.863 Amp
Ratio of H-5_ave_vector / H-5_standard_ave: 0.995

Phase A = 44.308% of tested Rsce = 33.000, Rsce = 14.622
Phase B = 61.924% of tested Rsce = 33.000, Rsce = 20.435
Phase C = 50.479% of tested Rsce = 33.000, Rsce = 16.658
Minimum Rsce required: Rsce = 20.435

Remark	

4.6 **Voltage changes, voltage fluctuations and flicker**	**VERDICT: PASS**

Standard	IEC 61851-21-2
Basic standard	IEC 61000-3-3 &11

Limits

P_{ST} (Short term flicker)	☒	≤ 1	☐	Not Applicable
P_{LT} (Long term flicker)	☒	≤ 0,65	☐	Not Applicable
d_C (Relative Voltage change)	☒	≤ 3,3%	☐	Not Applicable
T_{max} (Maximum time duration)	☒	≤ 500ms	☐	Not Applicable
d_{MAX} (Max. voltage change)	☒	≤ 4%	☐	6%
	☐	7%	☐	Not Applicable
Supplemental information:				

Performed measurements

Reason for not performing the measurement(s)	☐	Tests are not necessary because the EUT is unlikely to produce significant voltage fluctuations or flicker (clause 6.1).				
Port under test	AC Mains power input					
Voltage – Mains [V]	400 Vac					
Frequency – Mains [Hz]	50Hz					
Test method	☒	Flickermeter according EN / IEC 61000-4-15:2011				
	☐	Simulation (Clause 4.2.3 of EN / IEC 61000-3-3)				
	☐	Analytical method (Clause 4.2.4 of EN / IEC 61000-3-3)				
	☐	Use of P_{st} = 1 curve (Clause 4.2.5 of EN / IEC 61000-3-3)				
Observation peroid	☒	10 min.	☐	120 min.	☐	Other:
	☐	24 times switching according to Annex B				
Operating mode(s) used	Mode 3					
Remark	---					

See next page.

Measurement data	Port under test	AC input power-Line
Operating mode used during the test	Mode 3 / 400 Vac / 50 Hz	

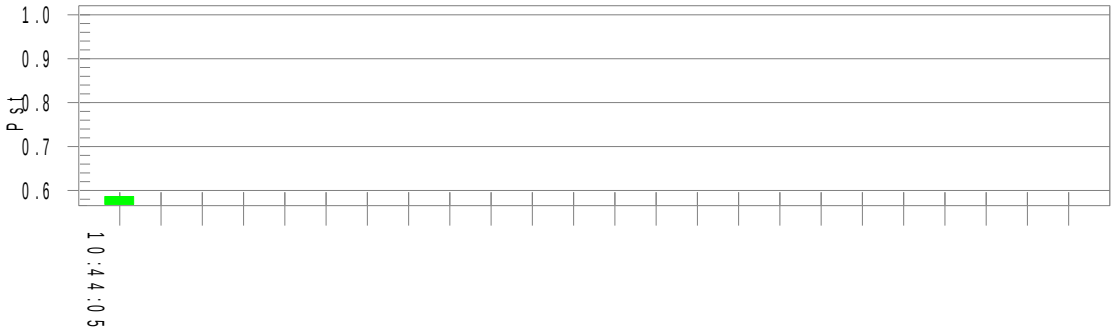
Flicker Test Summary Per EN/IEC61000-3-11, Ed. 1.0(Phase A-Run time) per EN/IEC61000-3-11IEC61000-3-11 Ed. 1.0 (2000)

Test category: All parameters **Test Margin: 100**
Test date: 2020/11/3 **Start time: 10:33:42** **End time: 10:44:11**
Test duration (min): 10 **Data file name: WIN2106_F-000258.cts_data**
Comment: CHARGE MODE

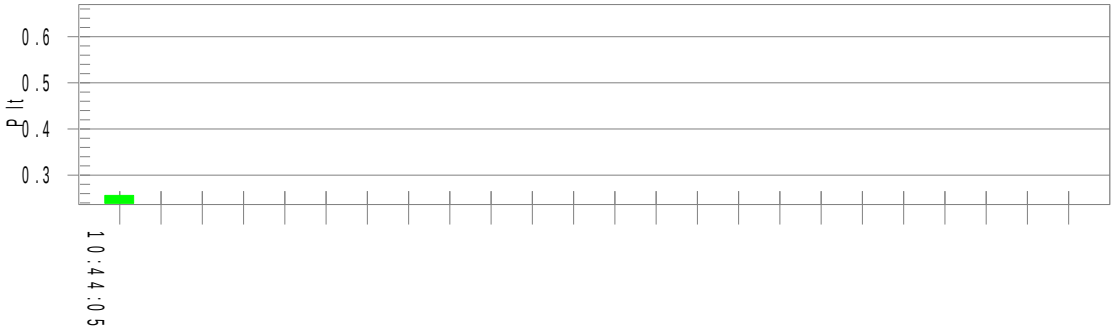
Z-test Phase = (0.150 + j 0.150 Ohm) Neutral = (0.100 + j 0.100 Ohm)

Test Result: Pass
Status: Test Completed

Pst_i and limit line



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt): 229.32

T-max (mS):	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**-0.60**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.586**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.256**	**Test limit:**	**0.650**	**Pass**

Calculated dmax(%): 0.804
Calculated dc(%): 0.000
Calculated Pst : 0.783
Calculated Plt : 0.342

The maximum permissible system impedance Zsys:

Z-phase A = 0.347 Ohm + j 0.217 Ohm (0.347 Ohm + 690 ?H)
Z-neutral A = 0.231 Ohm + j 0.144 Ohm (0.231 Ohm + 460 ?H)

Measurement data	Port under test	AC input power-Line

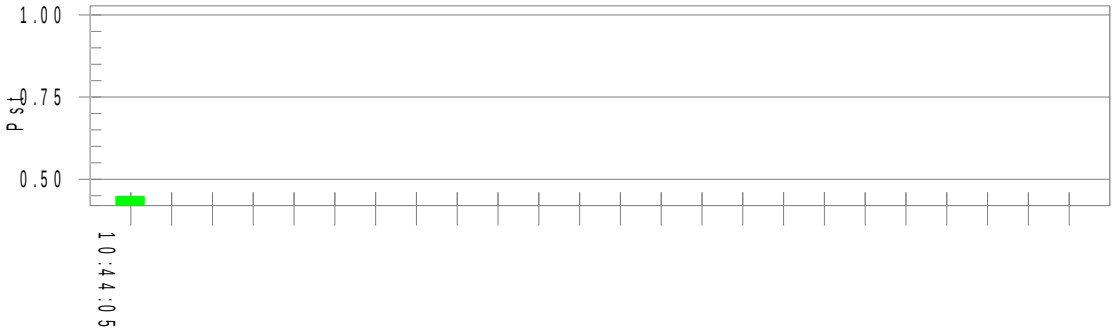
Flicker Test Summary Per EN/IEC61000-3-11, Ed. 1.0(Phase B-Run time) per EN/IEC61000-3-11

Test category: All parameters **Test Margin: 100**
Test date: 2020/11/3 **Start time: 10:33:42** **End time: 10:44:11**
Test duration (min): 10 **Data file name: WIN2106_F-000258.cts_data**
Comment: CHARGE MODE

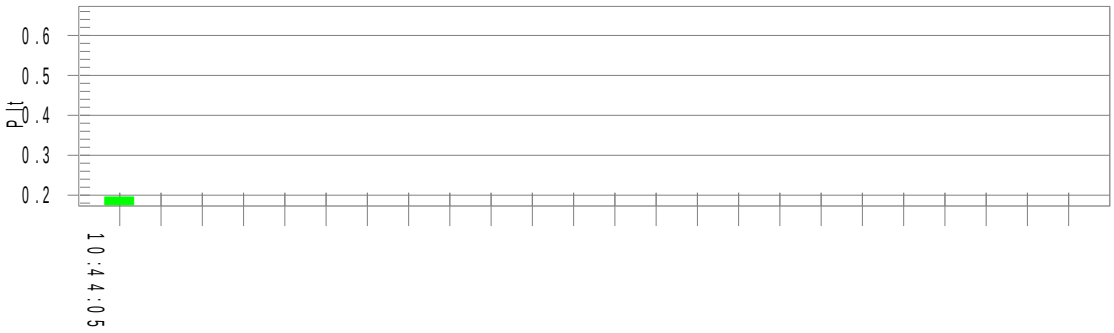
Z-test Phase = (0.150 + j 0.150 Ohm) Neutral = (0.100 + j 0.100 Ohm)

Test Result: Pass
Status: Test Completed

Pst_i and limit line



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt): 231.02

Time(mS) > dt:	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**-0.47**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.448**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.196**	**Test limit:**	**0.650**	**Pass**

Calculated dmax(%): 0.627
Calculated dc(%): 0.000
Calculated Pst : 0.597
Calculated Plt : 0.261

The maximum permissible system impedance Zsys :

Z-phase B = 0.520 Ohm + j 0.325 Ohm (0.520 Ohm + 1034 ?H)
Z-neutral B = 0.346 Ohm + j 0.217 Ohm (0.346 Ohm + 689 ?H)

Measurement data	Port under test	AC input power-Line

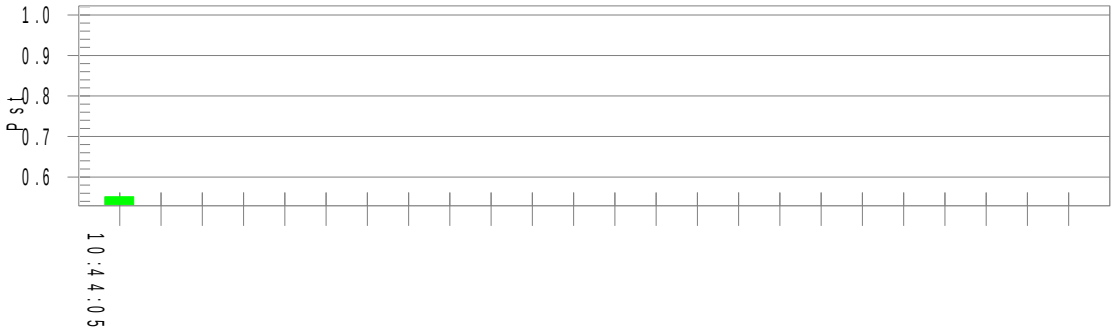
Flicker Test Summary Per EN/IEC61000-3-11, Ed. 1.0(Phase C-Run time) per EN/IEC61000-3-11

Test category: All parameters **Test Margin: 100**
Test date: 2020/11/3 **Start time: 10:33:42** **End time: 10:44:11**
Test duration (min): 10 **Data file name: WIN2106_F-000258.cts_data**
Comment: CHARGE MODE

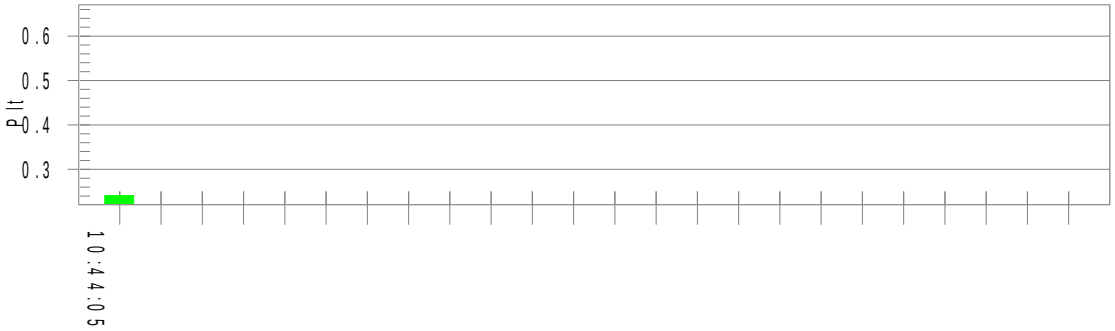
Z-test Phase = (0.150 + j 0.150 Ohm) Neutral = (0.100 + j 0.100 Ohm)

Test Result: Pass
Status: Test Completed

Pst_i and limit line



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt): 230.94

Time(mS) > dt:	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**-0.47**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.551**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.241**	**Test limit:**	**0.650**	**Pass**

Calculated dmax(%): 0.630
Calculated dc(%): 0.000
Calculated Pst : 0.736
Calculated Plt : 0.321

The maximum permissible system impedance Zsys :

Z-phase C = 0.380 Ohm + j 0.238 Ohm (0.380 Ohm + 756 ?H)
Z-neutral C = 0.253 Ohm + j 0.158 Ohm (0.253 Ohm + 504 ?H)

Remark	

5 IMMUNITY TEST RESULTS

5.1 Performance (Compliance) criteria

[Source: IEC 61851-21-2]

Performance criterion A: The EUT shall continue to operate as intended within the tolerances defined by the EUT manufacturer during and after the application of the appropriate tests. It shall not change the state in which it is operating (i.e. charging shall continue if in charge mode and shall remain idle if in waiting mode).

Performance criterion B: The EUT shall continue to operate as intended within the tolerances defined by the EUT manufacturer at the completion of the applicable tests. Additionally, during the application of the appropriate tests the primary functions of the charger shall be maintained (within the tolerances defined by the EUT manufacturer). Secondary functions (for example displays, etc.) may degrade in performance during the test but shall resume to the original condition subsequent to testing. Subsequent to the application of the applicable test, the EUT shall not have changed the state in which it is operating (i.e. charging shall continue if in charge mode and shall remain idle if in waiting mode).

Performance criterion C: During and after completion of the appropriate tests, the EUT can change to a failsafe condition. This state requires user intervention to restart the charge cycle or the automatic resumption of charging if the safety conditions have been fulfilled as defined in IEC 61851-1:2017 (simplified mode 3).

5.1.1 Performance criteria related to immunity tests

Immunity test	Performance criteria
Electrostatic discharge	B
Radio-frequency electromagnetic fields	A
Fast transients	B
Surge transient	B
Injected currents (radio-frequency common mode)	A
Power frequency magnetic field immunity	A
Voltage dips and short interruptions	B, C

5.1.2 Manufacturer defined performance criteria

Not provided.

5.2 Monitored – Checked Functions / Parameters

During the immunity tests the following functions of the EUT has/have been monitored/checked.

☐	Motor speed	☐	Display data
☐	Switching	☐	Data storage
☐	Standby mode	☐	Sensor functions
☐	Temperature	☐	Audible signals
☐	Power consumption	☒	Others : Screen
☐	AC mains input current	☒	Others : Output voltage
☐	Timing	☒	Others : Input current
☐	Illumination	☐	Others :
Supplementary information :			

Immunity test	**Monitored - Checked function(s)/parameter(s) during / after the test**	**Method**
Electrostatic discharge	PASS	Visual
Radio-frequency electromagnetic fields	PASS	Visua
Fast transients	PASS	Visual
Surge transient	PASS	Visual
Injected currents (radio-frequency common mode)	PASS	Visual
Power frequency magnetic field immunity	PASS	Visual
Voltage dips and short interruptions	PASS	Visual
Supplementary information :		

5.3 Electrostatic discharge immunity — VERDICT: PASS

Electrostatic discharges (ESD) are the result of persons or objects that accumulate static electricity due to for instance walking on synthetic carpets. The ESD can influence the operation of equipment or damage its electronics, either by a direct discharge or indirectly by coupling or radiation. Both effects are simulated during the tests.

Requirements

Standard	IEC 61851-21-2							
Basic standard	IEC 61000-4-2							
Port under test	Enclosure							
Air discharges	☒	±2 kV	☒	±4 kV	☒	±8 kV	☐	kV
Contact discharges	☐	±2 kV	☒	±4 kV	☐	±8 kV	☐	kV
Number of discharges	≥ 10 per polarity with ≥ 1 sec interval.							
Performance criterion	B; During the test degradation is allowed. No change of operating state or stored data is allowed. Refer to the chapter 5.1 for details.							

Performed tests

Set-up	☒	Table-top	☐	Floor standing	
Ambient temperature [°C]	23.8			Relative Humidity air [%]	48
Voltage – Mains [V]	400 Vac				
Frequency – Mains [Hz]	50Hz				
Operating mode(s) used	Mode 1, Mode 2				

	Test Location	Test Voltage [kV] & Polarity	Coupling type	# of applied discharges / polarity	Discharge interval [s]
☒	Slot/Screen/Button/LED	±2, ±4, ±8	Air	10	1
☒	Metal/Screw	±4	Contact	10	1
☒	HCP top side.	±4	Contact	10	1
☒	HCP bottom side.	±4	Contact	10	1
☒	VCP right side.	±4	Contact	10	1
☒	VCP left side.	±4	Contact	10	1
☒	VCP front side.	±4	Contact	10	1
☒	VCP rear side.	±4	Contact	10	1

Observation(s)	During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.

Supplementary information:

5.4 Radio-frequency electromagnetic fields immunity — VERDICT: PASS

During the test it is verified if the equipment under test (EUT) has sufficient immunity against radiated electromagnetic fields. Industrial electromagnetic sources, walkie-talkies, radio transmitters, television transmitters and telecommunication equipment including cellular telephones and other emitting devices can generate these fields.

Requirements

Standard	IEC 61851-21-2			
Basic standard	IEC 61000-4-3			
Port under test	Enclosure			
AC&DC charging immunity requirements – Environments other than residential				
Frequency range	Test level	Modulation	Dwell time	Step size
80 – 1000 MHz	10 V/m	80% AM (1kHz)	≥ 0,5 s	≤ 1%
1400 – 2000 MHz	3 V/m	80% AM (1kHz)	≥ 0,5 s	≤ 1%
2000 – 2700 MHz	3 V/m	80% AM (1kHz)	≥ 0,5 s	≤ 1%
AC&DC charging immunity requirements – Residential environments				
80 – 1000 MHz	3 V/m	80% AM (1kHz)	≥ 0,5 s	≤ 1%
1400 – 2000 MHz	3 V/m	80% AM (1kHz)	≥ 0,5 s	≤ 1%
2000 – 2700 MHz	3 V/m	80% AM (1kHz)	≥ 0,5 s	≤ 1%
Supplementary information:				

Performed tests

Test method	☒	EN 61000-4-3	☐	EN 61000-4-20		
Test set-up	☒	Equipment on the table (0,8 m height)				
(see annex 3 for photo)	☐	Equipment standing on floor (0,05 – 0,15 m height)				
Voltage – Mains [V]	400 Vac		Frequency – Mains [Hz]	50 Hz		
Operating mode(s) used	Mode 1, Mode 2					
Frequency range (applied)	Antenna Polarization	Test level (applied)	Modulation (applied)	Dwell time (applied)	Test Criteria	
80 – 1000 MHz	H	10V/m	80% AM (1kHz)	1 s	A	
(step size 1%)	V	10V/m	80% AM (1kHz)	1 s	A	
1400 – 2000 MHz	H	3 V/m	80% AM (1kHz)	1 s	A	
(step size 1%)	V	3 V/m	80% AM (1kHz)	1 s	A	
2000 – 2700 MHz	H	3 V/m	80% AM (1kHz)	1 s	A	
(step size 1%)	V	3 V/m	80% AM (1kHz)	1 s	A	
Exposed side of the EUT	☒	Front (0°)	☒	Right (90°)	☐	Top
	☒	Rear (180°)	☒	Left (270°)	☐	Bottom
Observation(s)	During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.					
Supplementary information:						

5.5 Electrical Fast Transients immunity — VERDICT: PASS

The EFT immunity test simulates disturbances by bursts of very short transients caused for example by switching off loads such as an AC motor or bouncing relay contacts. The transients are likely to disturb electronics but less likely to cause damage.

Requirements

Standard	IEC 61851-21-2		
Basic standard	IEC 61000-4-4		
Pulse characteristics	5/50 ns		
AC charging immunity requirements – Environments other than residential			
Port under test	Test level	Repetition frequency	Duration
Power input (AC)	± 4000 V	5 KHz	≥1 min. / polarity
Wired network and signal/ control	± 2000 V	5 KHz	≥1 min. / polarity
CPT	± 2000 V	5 KHz	≥1 min. / polarity
AC charging immunity requirements – Residential environments			
Power input (AC)	± 1000 V & ± 2000 V	5 KHz	≥1 min. / polarity
Wired network and signal/ control	± 500 V& ± 2000 V	5 KHz	≥1 min. / polarity
CPT	± 2000 V	5 KHz	≥1 min. / polarity
DC charging immunity requirements – Environments other than residential			
Power input (AC)	± 4000 V	5 KHz	≥1 min. / polarity
Power input (DC)	± 2000 V	5 KHz	≥1 min. / polarity
Wired network and signal/ control	± 2000 V	5 KHz	≥1 min. / polarity
CPT	± 2000 V	5 KHz	≥1 min. / polarity
DC charging immunity requirements – Residential environments			
Power input (AC)	± 2000 V	5 KHz	≥1 min. / polarity
Power input (DC)	± 2000 V	5 KHz	≥1 min. / polarity
Wired network and signal/ control	± 2000 V	5 KHz	≥1 min. / polarity
CPT	± 2000 V	5 KHz	≥1 min. / polarity

[1] Only applicable to ports interfacing with cables whose total length may exceed 3 m.

[2] Not applicable to input ports intended for connection to a battery or a rechargeable battery which must be removed or disconnected from the apparatus for recharging. Apparatus with a DC power input port intended for use with an AC–DC power adaptor shall be tested on the AC power input of the AC- DC power adaptor specified by the manufacturer or, where none is so specified, using a typical AC–DC power adaptor. The test is applicable to DC power input ports intended to be connected permanently to cables longer than 3 m.

Performed tests

Voltage – Mains [V]	400 Vac			
Frequency – Mains [Hz]	50 Hz			
Operating mode(s) used	Mode 1, Mode 2			
Test Set-up (see annex 3 for photo)	☐	Equipment standing on floor at (0,1 ± 0,01) m above ground plane		
	☒	Equipment on the table (0,1 ± 0,01) m above ground plane		
	☐	Artificial hand applied. Location refer to chapter 9.		
Coupling	☒	Common mode	☐	Other:

Port under test	Test Voltage &Polarity	Repetition Frequency	Test duration / polarity	Injection method			
Power input (AC)	±4KV	5 KHz	120 s	☒	CDN	☐	Clamp
CPT	±2KV	5 KHz	120 s	☐	CDN	☒	Clamp
Signal	±2KV	5 KHz	120 s	☐	CDN	☒	Clamp
Observation(s)	During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.						
Supplementary information:							

5.6 Surge transient immunity — VERDICT: PASS

The surge transient immunity test simulates the surges that are caused by over-voltages due to indirect (induced) lightning transients. The pulse is a slow transient with high-energy contents and due to its long duration may cause damage to an unprotected EUT.

Requirements

Standard	IEC 61851-21-2		
Basic standard	IEC 61000-4-5		
Pulse characteristics	1,2/50µs Voltage; 8/20µs Current		
Repetition rate	≤ 60 secs. (for each test level and phase angle)		
Number of pulses	5 pulses (at each polarity and phase angle)		
AC charging immunity requirements – Environments other than residential			
Port	Test level & Polarity & Coupling		Phase angle [°]
	Line to Line [1]	Line to Earth [1]	
Power input (AC)	± 2 kV	± 4 kV	0, 90, 180, 270
Wired network and signal/ control	N/A	± 1 kV	---
CPT	± 1 kV	± 2 kV	0, 90, 180, 270
AC charging immunity requirements – Residential environments			
Power input (AC)	±1 kV	± 2 kV	0, 90, 180, 270
Wired network and signal/ control	N/A	± 1 kV	---
CPT	± 1 kV	± 2 kV	0, 90, 180, 270
DC charging immunity requirements – Environments other than residential			
Power input (AC)	± 2 kV	± 4 kV	0, 90, 180, 270
Power input (DC)	± 1 kV	± 2 kV	---
Wired network and signal/ control	N/A	± 1 kV	---
CPT	± 1 kV	± 2 kV	---
DC charging immunity requirements – Residential environments			
Power input (AC)	± 1 kV	± 2 kV	0, 90, 180, 270
Power input (DC)	± 1 kV	± 2 kV	---
Wired network and signal/ control	N/A	± 1 kV	---
CPT	± 1 kV	± 2 kV	---
[1] In addition to the specified test level, all lower test levels as detailed in IEC 61000-4-5 should also be satisfied.			
[2] Only in case of long distance lines, > 30 m.			

Performed tests

Voltage – Mains [V]	400 Vac
Frequency – Mains [Hz]	50 Hz
Operating mode(s) used	Mode 1, Mode 2
Repetition rate	60 secs. (for each test level and phase angle)
Number of pulses	5 pulses (at each polarity and phase angle)

See next page

Port under test		Coupling	Test level & Polarity	Phase angle [°]	Test Criteria
☒	Power input (AC)	L1+L2, L1+L3, L2+L3,	±2 kV	0, 90, 180, 270	A
☒	Power input (AC)	L1/L2/L3+PE	±4 kV	0, 90, 180, 270	A
☒	Signal	Tx+Rx	±1 kV	----	A
☒	Signal	Tx/Rx+PE	±1 kV	----	A
Observation(s)		During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.			
Supplementary information:					

5.7 Injected currents (RF common mode) immunity — VERDICT: PASS

During this test the immunity of the equipment for induced or conducted electromagnetic fields is checked. Fields generated by radio and other transmitters cause RF voltages in long cables like the mains network. This test reproduces these induced disturbing voltages by injecting them to the EUT via the cabling.

Requirements

Standard	IEC 61851-21-2			
Basic standard	IEC 61000-4-6			
Frequency range	0,15 – 80 MHz			
AC charging immunity requirements – Environments other than residential				
Port under test	Test level, *U*o	Modulation	Step size	Dwell time
Power input (AC)	10 V	80% AM (1kHz)	≤ 1%	≥ 0,5 s
Wired network and signal/ control	10 V	80% AM (1kHz)	≤ 1%	≥ 0,5 s
CPT	10 V	80% AM (1kHz)	≤ 1%	≥ 0,5 s
AC charging immunity requirements – Residential environments				
Power input (AC)	3 V	80% AM (1kHz)	≤ 1%	≥ 0,5 s
Wired network and signal/ control	3 V	80% AM (1kHz)	≤ 1%	≥ 0,5 s
CPT	10 V	80% AM (1kHz)	≤ 1%	≥ 0,5 s
DC charging immunity requirements – Environments other than residential				
Power input (AC)	10 V	80% AM (1kHz)	≤ 1%	≥ 0,5 s
Power input (DC)	10 V	80% AM (1kHz)	≤ 1%	≥ 0,5 s
Wired network and signal/ control	10 V	80% AM (1kHz)	≤ 1%	≥ 0,5 s
CPT	10 V	80% AM (1kHz)	≤ 1%	≥ 0,5 s
DC charging immunity requirements – Residential environments				
Power input (AC)	3 V	80% AM (1kHz)	≤ 1%	≥ 0,5 s
Power input (DC)	3 V	80% AM (1kHz)	≤ 1%	≥ 0,5 s
Wired network and signal/ control	3 V	80% AM (1kHz)	≤ 1%	≥ 0,5 s
CPT	10 V	80% AM (1kHz)	≤ 1%	≥ 0,5 s

1) Only applicable to ports interfacing with cables whose total length, may exceed 3 m.

2) DC connections between parts of equipment/system which are not connected to a DC distribution network are treated as I/O signal/control ports.

See next page

Performed tests

Test method (applied)	Frequency range (applied)	Modulation (applied)	Step size (applied)
EN 61000-4-6	0,15 – 80 MHz	80% AM (1kHz)	1%
Voltage – Mains [V]	400 Vac	Frequency – Mains [Hz]	50 Hz
Operating mode(s) used	Mode 1, Mode 2		

Test set-up (see annex 3 for photo)	☐	Equipment standing on floor at (0,1 ± 0,01) m above ground plane.
	☒	Equipment on the table (0,1 ± 0,01) m above ground plane.
	☐	Artificial hand applied. Location refer to Annex 3.

Port under test	Test Level (applied	Injection method	Dwell time (applied)	Test Criteria
AC input power	10 V	CDN	3 s	A
CPT	10 V	Clamp	3 s	A
Signal	10 V	Clamp	3 s	A

Observation(s)	During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.
Supplementary information:	

5.8	**Power frequency magnetic field immunity**	**VERDICT: PASS**

Magnetic fields caused by for example nearby mains frequency transformers may disturb equipment with sensitivity for these type of disturbances such as CRT monitors.

Requirements

Standard	IEC 61851-21-2
Basic standard	IEC 61000-4-8
Port under test	Enclosure
Field strength	3 A/m, 30 A/m[1)], 100 A/m[2)]
Test Frequency	50 / 60 Hz
Notes: Applicable only to apparatus containing devices susceptible to magnetic fields. [1)] Apply for systems ⩽ 32 A; [2)] Apply for systems > 32 A	

Performed tests

Reason for not performing the test	☐	The test is not applicable as the apparatus does not contain any components susceptible to this low-frequency magnetic fields.
Voltage – Mains [V]	400 Vac	
Frequency – Mains [Hz]	50 Hz	
Operating mode(s) used	Mode 1, Mode 2	
Test set-up (see annex 3 for photo)	☒	Single Coil. Dimensions: 1 m x 1 m
	☐	Single Coil. Dimensions: 2 m x 2 m
	☐	Homogeneous field (Helmholtz coil). Dimensions: 1 m x 1 m
	☐	0,1 m above metal surface

Axis under test		Tested Field strength	Test Frequency	Test Duration	Test Criteria
☒	X-axis	100 A/m	50 Hz	5 mins	A
☒	Y-axis	100 A/m	50 Hz	5 mins	A
☒	Z-axis	100 A/m	50 Hz	5 mins	A
Observation(s)		During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.			
Supplementary information:					

5.9 Power supply interruptions and dips immunity — VERDICT: PASS

The purpose of the test is to verify the immunity of the equipment against voltage dips and voltage interruptions. It helps to ensure that the equipment functions properly (as expected and safely) with power supply fluctuations. Voltage dips and interruptions are caused by faults in the LV, MV, HV networks (short-circuit or ground faults).

Requirements

Standard	IEC 61851-21-2			
Basic standard	IEC 61000-4-11 (≤16 A) IEC 61000-4-34 (>16 A)			
# of dips & interruptions	3 dips / interruptions for each test level and phase angle			
Interval between events	≥ 10 seconds			
Port under test	Test level	Period (Cycles)		Performance Criterion
		50 Hz	60 Hz	
Power input (AC)	40%	10	12	B; Refer to the chapter 5.1 for details.
	70%	25	30	B; Refer to the chapter 5.1 for details.
	0%	1	1	B; Refer to the chapter 5.1 for details.
	0%	250	300	C; Refer to the chapter 5.1 for details.

NOTE: Where the equipment has a rated voltage range 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 selected for testing.
- In all other cases, the test procedure shall be applied for both the lowest and highest voltages declared in the voltage range.

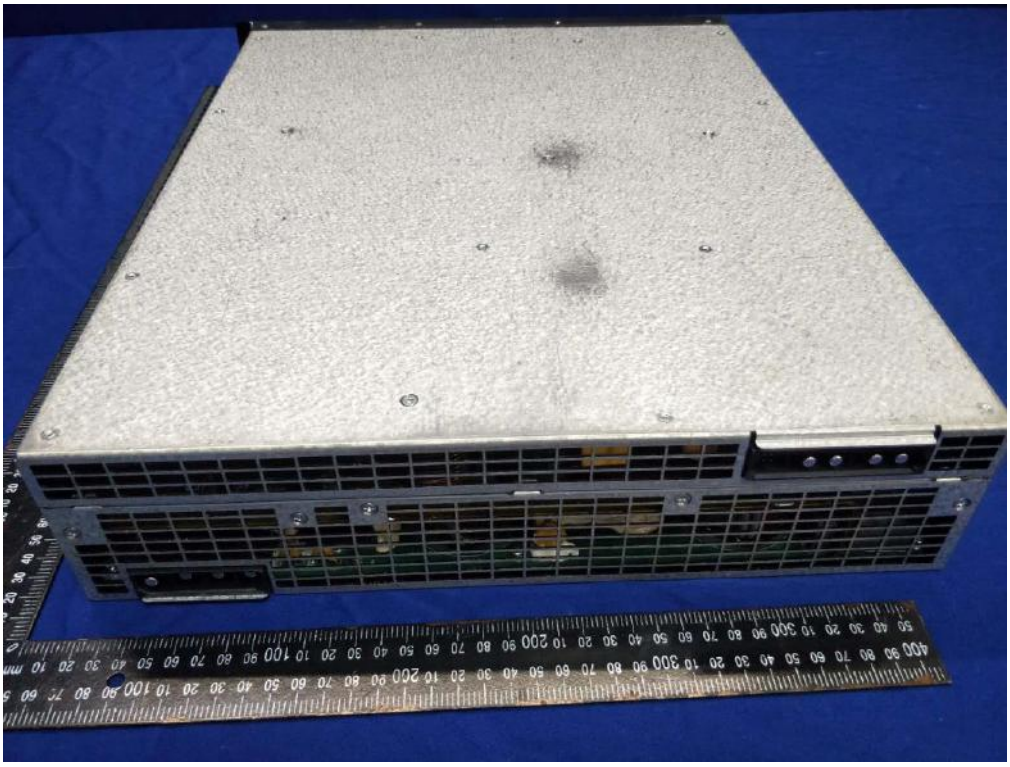
Performed tests

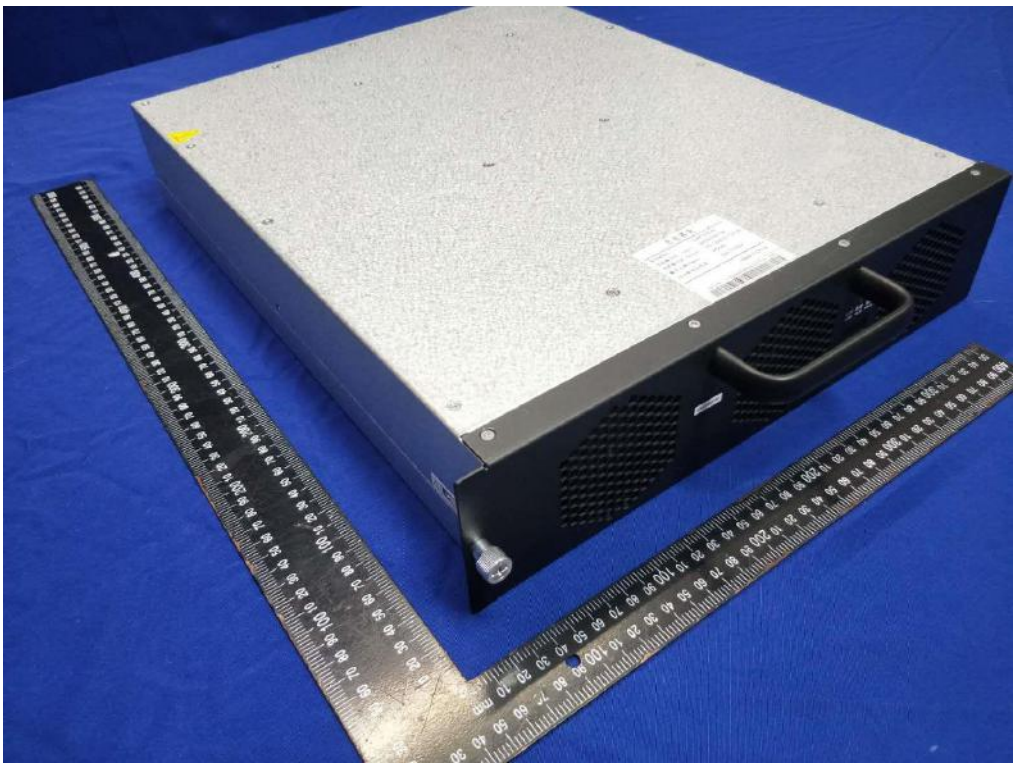
U_{NOM} [V_{AC}]	Terminal	Test level [% U_{NOM}]	Duration [cycles] 50 Hz	Repetion rate [s]	Number of dips per test	Phase angle [°]	Test Criteria
230	L-N	40	10	10	3	0,45,90,135,180, 225,270,315	A Note 1
230	L-N	70	25	10	3	0,45,90,135,180, 225,270,315	A Note 1
230	L-N	0	1	10	3	0,45,90,135,180, 225,270,315	A Note 1
230	L-N	0	250	10	3	0,45,90,135,180, 225,270,315	C Note 2

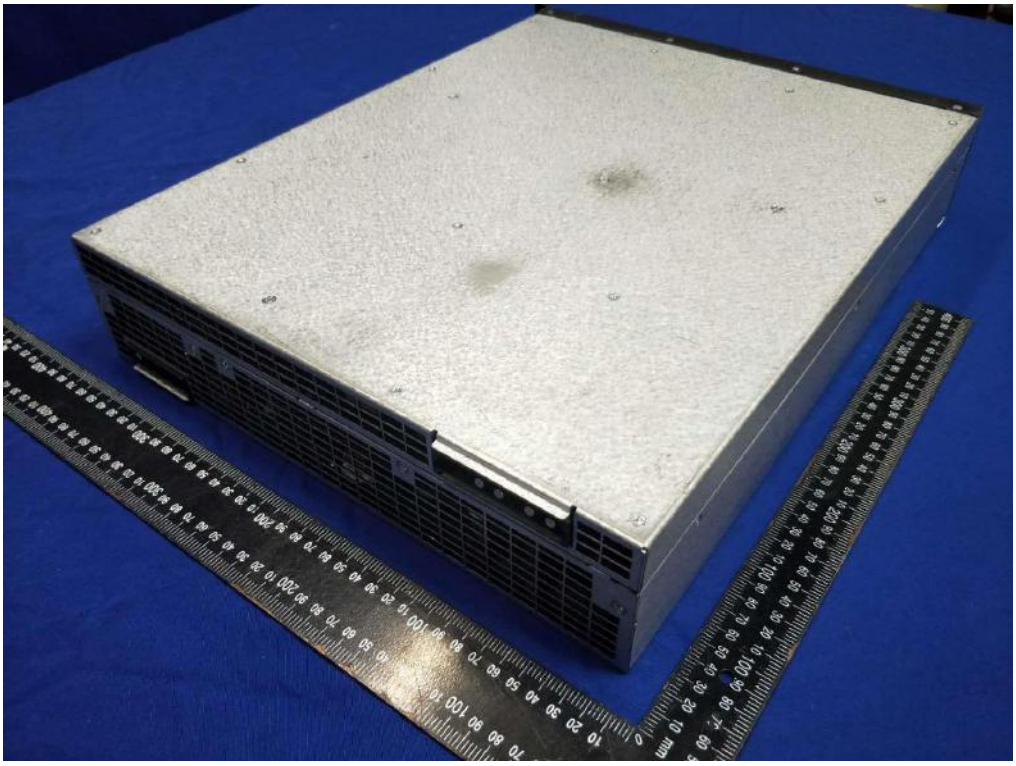
Operating mode(s) used	Mode 1, Mode 2
Observation(s)	Note 1: During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed. Note 2: Dips to 0%, Duration 250 cycles, EUT stopped operation, but it can be resumed by user.
Supplementary information:	

6 IDENTIFICATION OF THE EQUIPMENT UNDER TEST

The photographs show the tested device.







7 ANNEX 1 - MEASUREMENT UNCERTAINTIES

The table(s) below show(s) measurment uncertainties of the EMC test set-ups. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

Test Item	**Uncertainty**
Conducted Emission	3.16dB (9k~150kHz Conduction 2#)
	2.90dB (150k-30MHz Conduction 2#)
Radiated Emission Uncertainty(3m 3# Chamber)	4.40dB (30M~1GHz Polarize: H)
	5.04dB (30M~1GHz Polarize: V)
	4.94dB (1~6GHz)
Flicker test	0.07%
Harmonic test	1.8%
C/S Test	1.45 (Using CDN Test)
	2.37 (Using EM Clamp Test)
R/S Test	2.10dB (80MHz-200MHz)
	1.76dB (200MHz-1000MHz)
Emperature and humidity	0.6℃
	4%

8 ANNEX 2 – USED EQUIPMENT

Location: EMTEK (SHENZHEN) CO., LTD.

For Power Line Conducted Emission Measurement

Equipment	Manufacturer	Model No.	Serial No.	Cal. date	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESCI	101045	May 17, 2020	1Year
PULSE LIMTER	Rohde & Schwarz	ESH3-Z2	100107	May 16, 2020	1Year
AMN	Schwarzbeck	NNLK 8129	8129203	May 16, 2020	1Year

For Radiated Emission Measurement

Equipment	Manufacturer	Model No.	Serial No.	Cal. date	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESU 26	100154	May 17, 2020	1Year
Pre-Amplifie	Lunar EM	LNA10M1G-40	J1011130912001	May 17, 2020	1Year
Bilog Antenna	Schwarzbeck	VULB9163	659	Nov 10, 2018	2 Year
EMI Test Receiver	Rohde & Schwarz	ESU 26	100154	May 17, 2020	1Year
Horn antenna	Schwarzbeck	BBHA9120D	9120D-1177	June 12, 2018	2 Year
Pre-Amplifie	SKET	LNPA_0118G-45	SK2019051801	May 17, 2020	1Year
Receiver	Rohde & Schwarz	ESR7(10HZ-7GHZ)	N/A	May 16, 2020	1 Year
Magnetic Field Antenna	Schwarzbeck	FESP 5133-7/41	282	July 04, 2020	2 Year

For Harmonic Current / Flicker Measurement

Equipment	Manufacturer	Model No.	Serial No.	Cal. date	Cal. Interval
45KVA AC Power source	Teseq	NSG 1007-45/45KVA	1305A02873	May 17, 2020	1 Year
Signal conditioning Unit	Teseq	CCN 1000-3	1305A02873	May 17, 2020	1 Year
Impedance network	Teseq	INA2197/37A	1305A02873	May 17, 2020	1 Year
Impedance network	Teseq	INA 2196/75A	1305A02874	May 17, 2020	1 Year
Profline 2100 AC Switching Unit	Teseq	NSG 2200-3	A22714	May 17, 2020	1 Year

For Electrostatic Discharge Immunity Test

Equipment	Manufacturer	Model No.	Serial No.	Cal. date	Cal. Interval
ESD Tester	TESEQ AG	NSG 438A	130	May 17, 2020	1 Year

For RF Strength Susceptibility Test

Equipment	Manufacturer	Model No.	Serial No.	Cal. date	Cal. Interval
Power Amplifier	MILMEGA	AS0102-55	1018770	May 17, 2020	1 Year
50ohm Diode Power Sensor	BOONTON	51011EMC	34236	May 17, 2020	1 Year
RF Power Meter. Dual Channel	BOONTON	4232A	10539	May 17, 2020	1 Year
Log.-Per. Antenna	SCHWARZBECK	VULP 9118E	811	N/A	N/A
Signal Generator	Agilent	N5181A	MY50145187	May 17, 2020	1 Year
50ohm Diode Power Sensor	BOONTON	51011EMC	36164	May 17, 2020	1 Year
Broad-Band Horn Antenna	SCHWARZBECK	STLP 9149	9149-227	N/A	N/A
Field Strength Meter	DARE	RSS1006A	10I00037SNO22	May 17, 2020	1 Year
Multi-function interface system	DARE	CTR1009B	12I00250SNO72	N/A	N/A
Automatic switch group	DARE	RSW1004A	N/A	N/A	N/A
Power Amplifier	MILMEGA	AS1860-50	1059346	May 17, 2020	1 Year
Power Amplifier	MILMEGA	80RF1000-175	1059345	May 17, 2020	1 Year

For Electrical Fast Transient / Burst Immunity Test

Equipment	Manufacturer	Model No.	Serial No.	Cal. date	Cal. Interval
Burst Tester	HAEFELY	PEFT4010	080981-16	May 16, 2020	1Year
Coupling Clamp	HAEFELY	IP-4A	147147	May 16, 2020	1Year
Three phase CDN	Teseq	CDN 163	202	May 16, 2020	1 Year

For Surge Immunity Test

Equipment	Manufacturer	Model No.	Serial No.	Cal. date	Cal. Interval
Controller	HAEFELY	Psurge 8000	174031	May 16, 2020	1Year
Impulse Module	HAEFELY	PIM 100	174124	May 16, 2020	1Year
Coupling Decoupling	HAEFELY	PCD 130	172181	May 16, 2020	1Year
Coupling Module	HAEFELY	PCD122	174354	May 16, 2020	1Year
Impulse Module	HAEFELY	PIM 120	174435	May 16, 2020	1Year
Coupling Module	HAEFELY	PCD 126A	174387	May 16, 2020	1Year
Impulse Module	HAEFELY	PIM 110	174391	May 16, 2020	1Year

For Injected Current Susceptibility Test

Equipment	Manufacturer	Model No.	Serial No.	Cal. date	Cal. Interval
Continuous Wave Simulator	EMTEST	CWS500C	0900-12	May 17, 2020	1Year
CDN	EMTEST	CDN-M2	510010010010	May 16, 2020	1Year
CDN	EMTEST	CDN-M3	0900-11	May 16, 2020	1Year
EM Injection Clamp	EMTEST	F-2031-23MM	368	May 16, 2020	1Year
Attenuator	EMTEST	100W 6dB DC-3G	/	May 16, 2020	1Year
Signal Generator	R&S	SMB100A	103041	May 17, 2020	1Year
Power meter	AGILENT	E4418B	MY45102886	May 17, 2020	1 Year
Three phase CDN	TESEQ	CDN M532S	33799	May 16, 2020	1 Year

For Magnetic Field Immunity Test

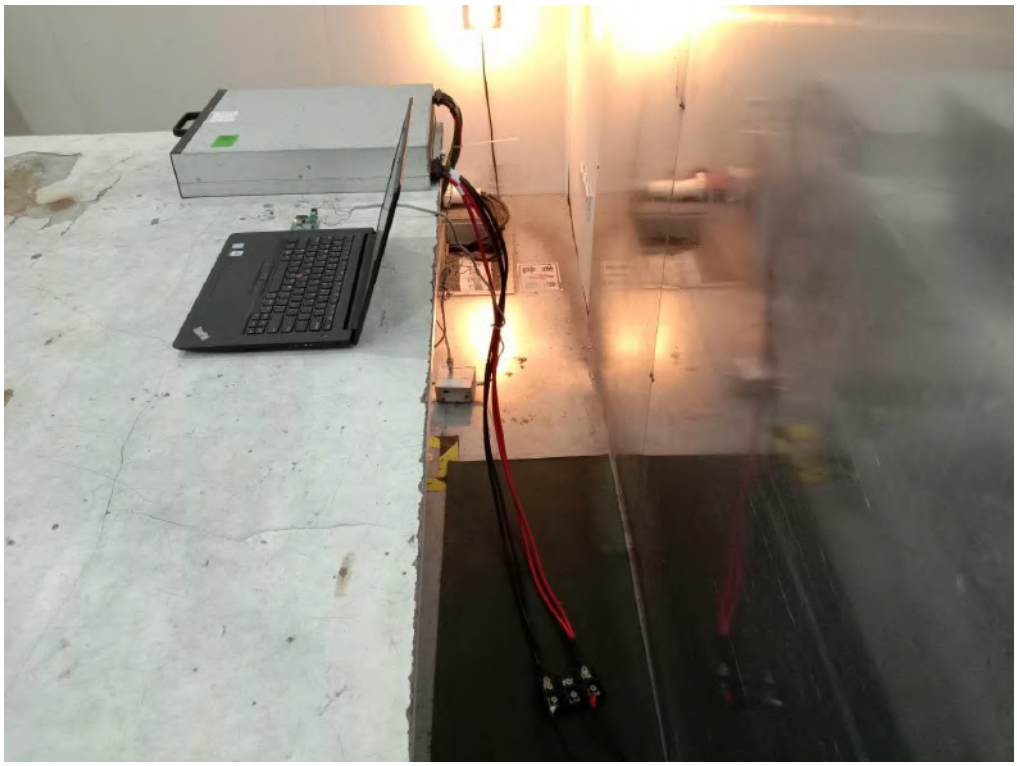
Equipment	Manufacturer	Model No.	Serial No.	Cal. date	Cal. Interval
Magnetic Field Tester	HAEFELY	MAG100	250040.1	May 17, 2020	1Year

For Voltage Dips and Interruptions Test

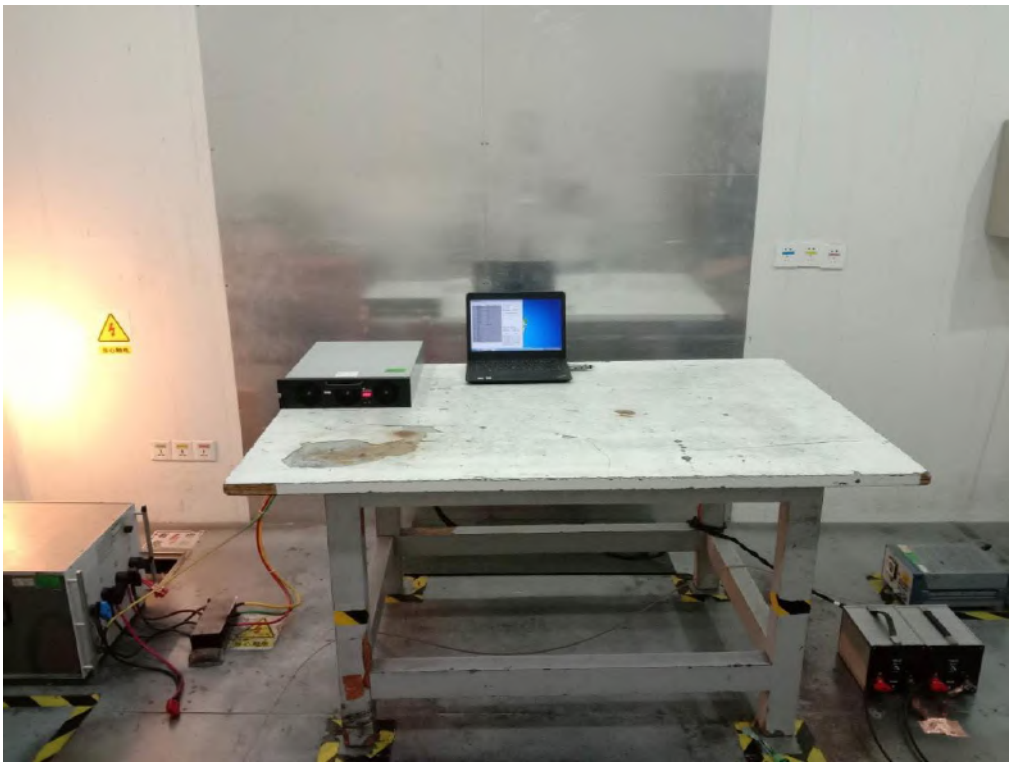
Equipment	Manufacturer	Model No.	Serial No.	Cal. date	Cal. Interval
45KVA AC Power source	Teseq	NSG 1007-45/45KVA	1305A02873	May 17, 2020	1 Year
Signal conditioning Unit	Teseq	CCN 1000-3	1305A02873	May 17, 2020	1 Year
Impedance network	Teseq	INA2197/37A	1305A02873	May 17, 2020	1 Year
Impedance network	Teseq	INA 2196/75A	1305A02874	May 17, 2020	1 Year
Profline 2100 AC Switching Unit	Teseq	NSG 2200-3	A22714	May 17, 2020	1 Year

9 ANNEX 3 - TEST PHOTOS

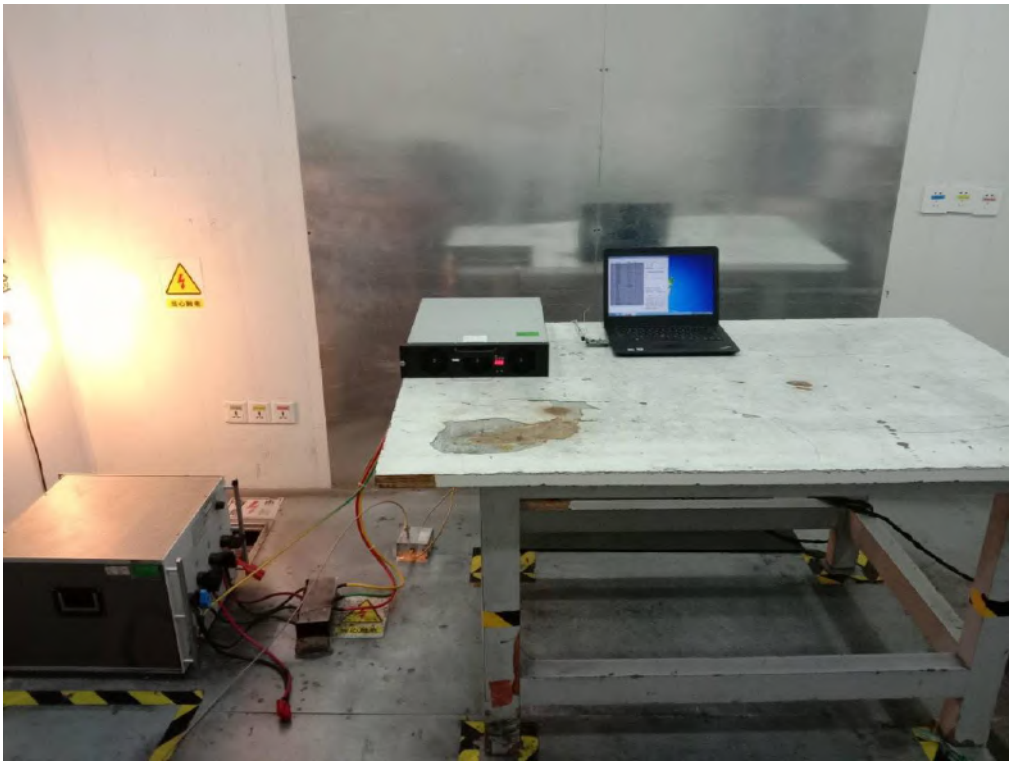
Conducted disturbance voltage at AC main input port



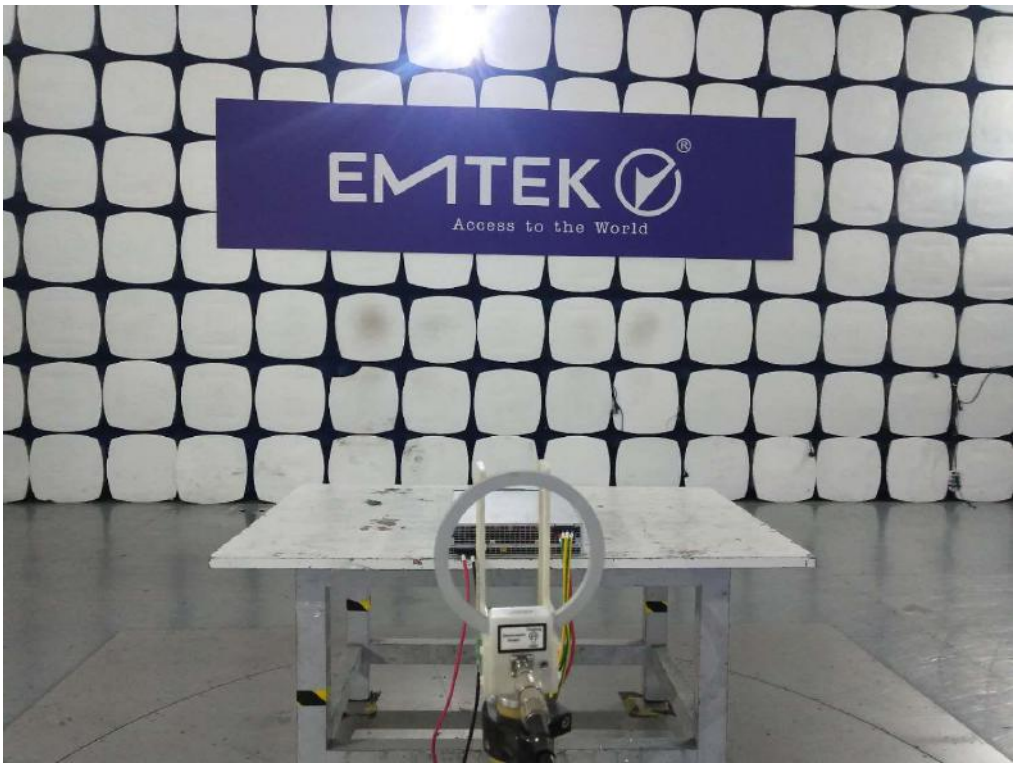
Conducted disturbance voltage at DC output port



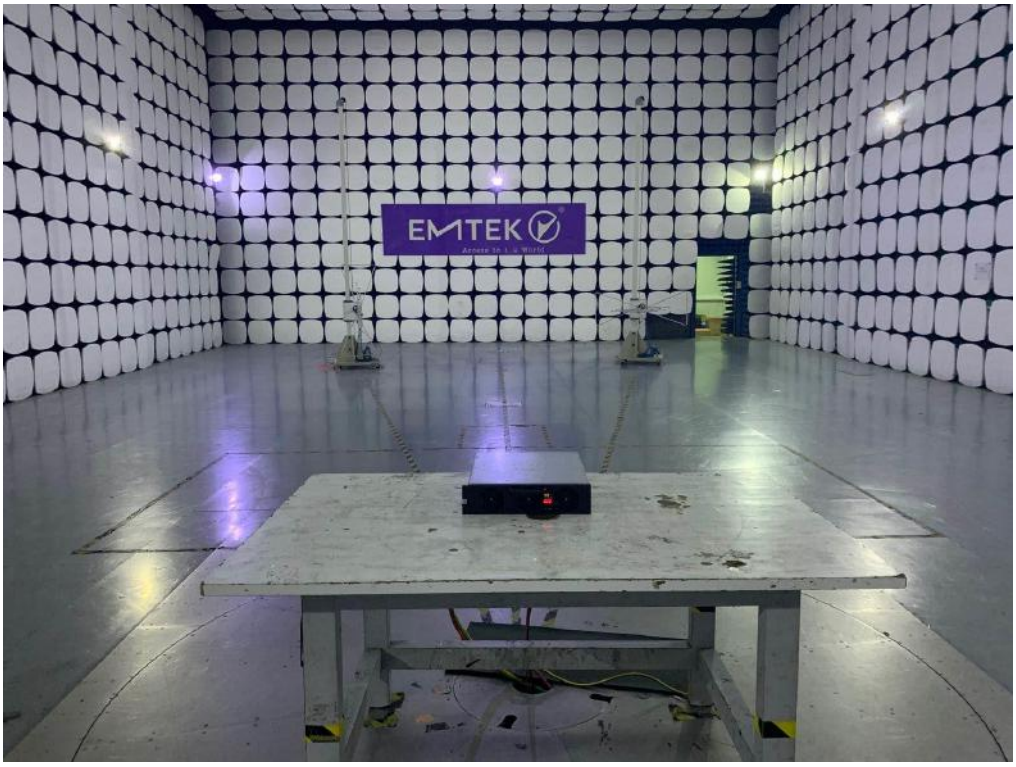
Conducted disturbance voltage at Signal port



Radiated electromagnetic disturbances (2 KHz to 185 KHz)

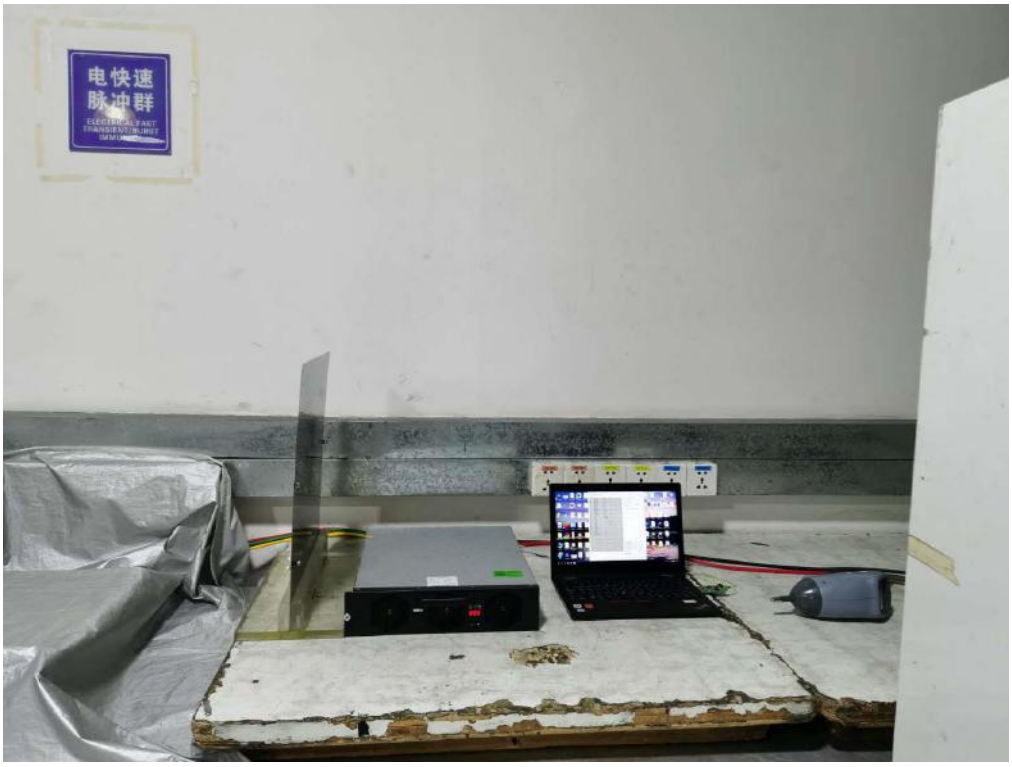


Radiated electromagnetic disturbances (30 MHz to 1000 MHz)

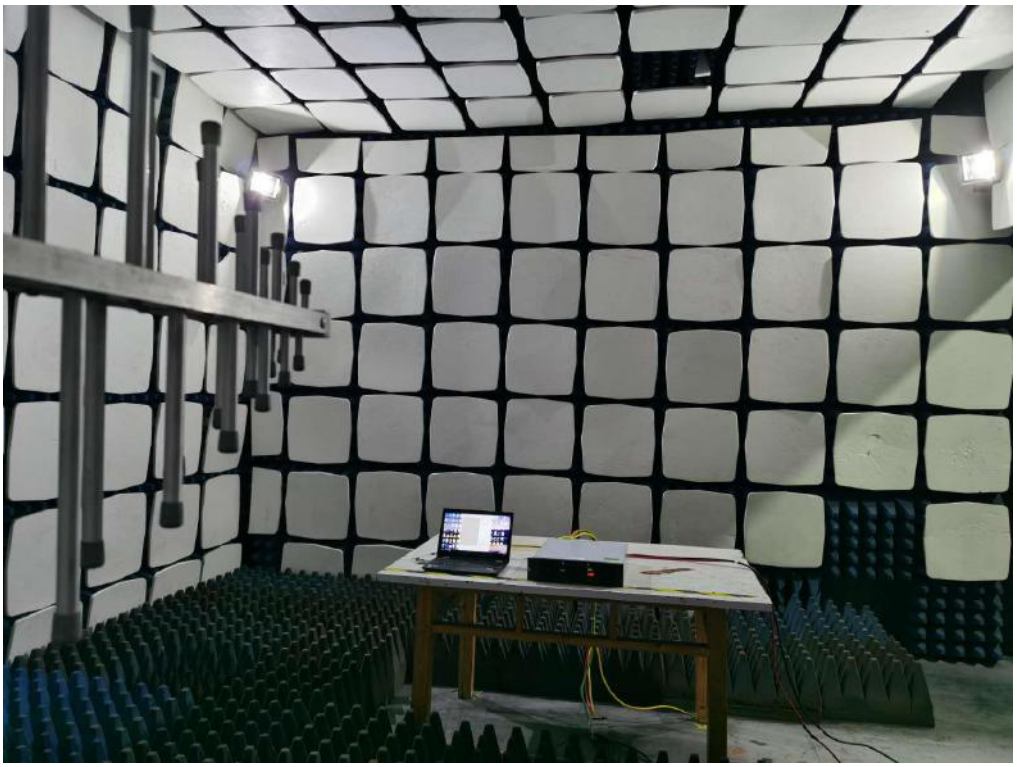


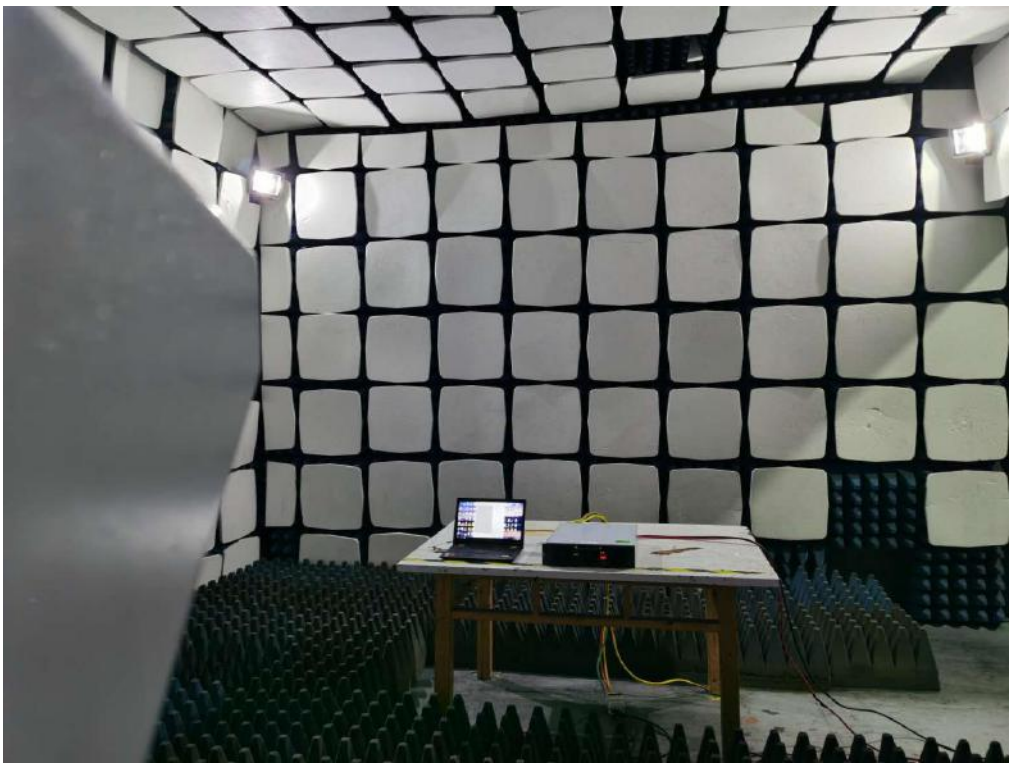
Harmonic current emissions & Flicker

Electrostatic Discharge Immunity



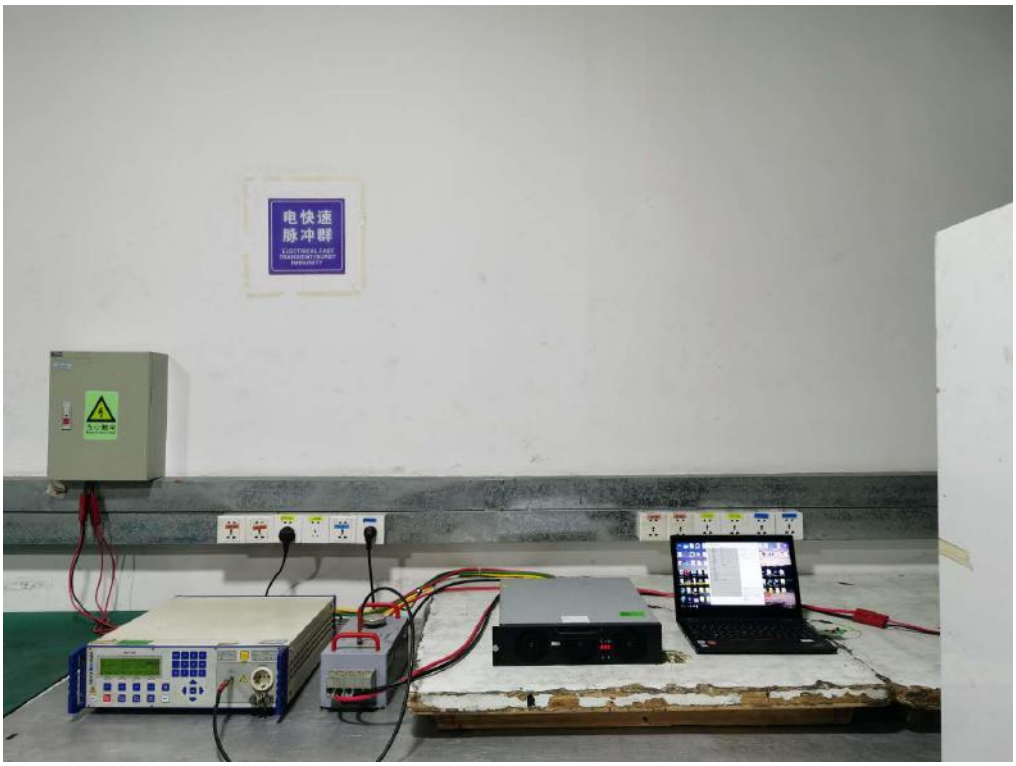
Radiated EM Field Immunity



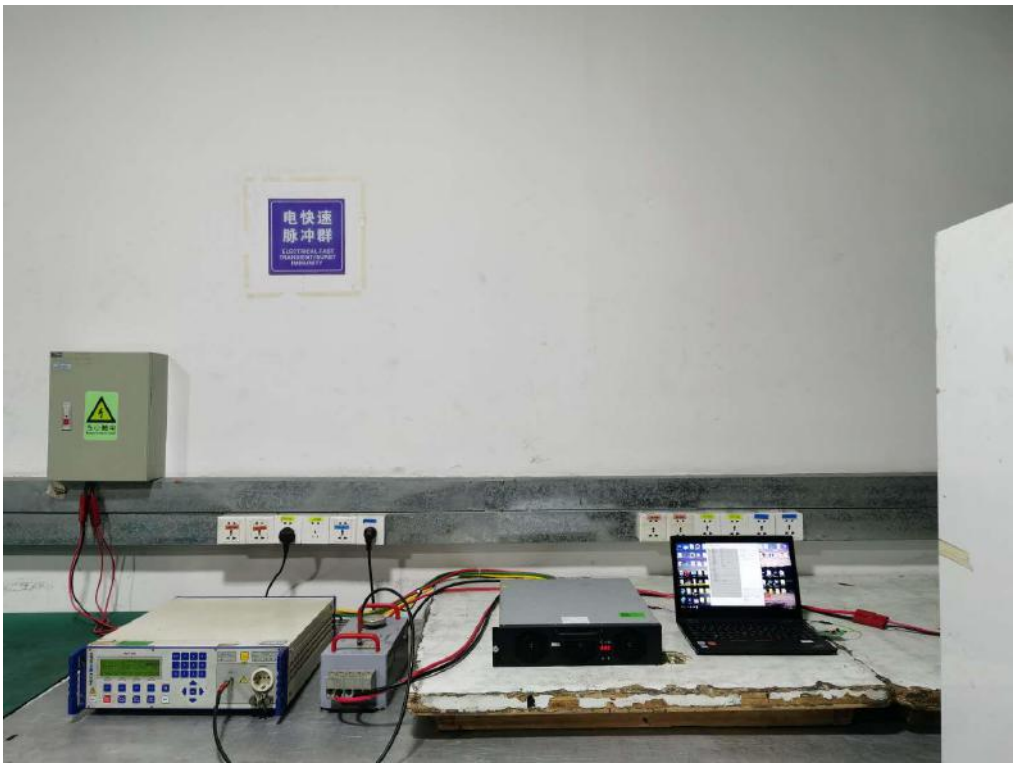


Electrical fast transient (EFT) / Burst transients immunity at AC main input port

Electrical fast transient (EFT) / Burst transients immunity at DC output port



Electrical fast transient (EFT) / Burst transients immunity at Signal port



Surge transients immunity at AC main input port

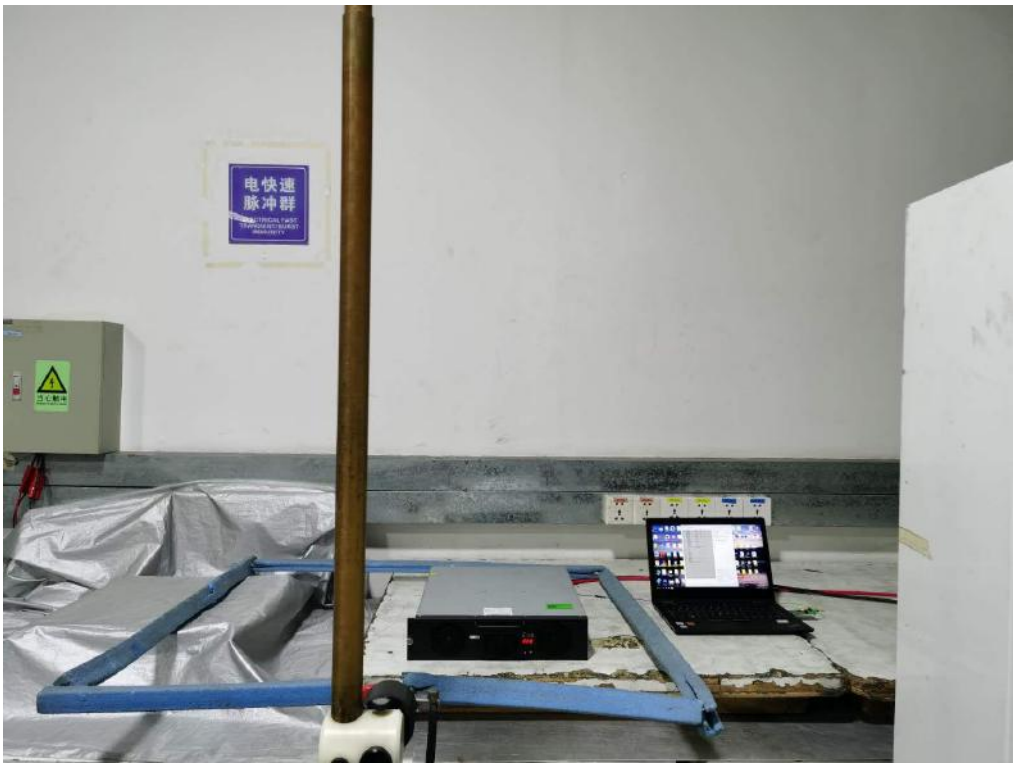
Surge transients immunity at Signal port

Conducted RF disturbances immunity at AC main input port

Conducted RF disturbances immunity at DC output port

Conducted RF disturbances immunity at Signal port

Power frequency magnetic field immunity



Power supply voltage interruptions & dips immunity

--- END ---