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Test report No:

6031446.50

## TEST REPORT

### Electromagnetic Compatibility (EMC)

Identification of item tested	Concrete Chain Saw
Trademark	AGP
Model and /or type reference	CS11; E-SAW30; Chain 11; CS280; Chain 280; EZS11; EZS280
Ratings	220-240 V; 50-60 Hz; 2800 W; $n_0$ : 10 000 min <sup>-1</sup> ; 382 mm; Class I 110-120 V; 50-60 Hz; 2600 W; $n_0$ : 10 000 min <sup>-1</sup> ; 382 mm; Class I
Test Laboratory / address	DEKRA Testing and Certification (Shanghai) Ltd. 3F #250 Jiangchangsan Road Building 16 Headquarter Economy Park Shibe Hi-Tech Park, Zhabei District Shanghai 200436 China
Applicant / address	LEE YEONG INDUSTRIAL CO., LTD. No.2, Kejia Rd., Douliu City, Yunlin County 64057, Taiwan
Test method requested, standard	EN 55014-1:2017; EN 55014-2:2015; EN 61000-3-2:2014; EN 61000-3-3:2013
Verdict Summary	IN COMPLIANCE
Tested by	Kaiyuan Dai (Project Engineer) 
Approved by	Zuyao Fan (Project Manager) 
Date of issue	2019-03-14
Report template No	TRF_EN55014-1_EN55014-2_EMC02 V1.0

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## COMPETENCES AND GUARANTEES

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DEKRA 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, DEKRA 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.

**IMPORTANT:** No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

## GENERAL CONDITIONS

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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.
5. The information provided by the customer in this report may affect the validity of the results, the test lab is not responsible for it.
6. The test results presented in this report relate only to the object tested.

## UNCERTAINTY

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For all measurements where guidance for the calculation of the instrumentation uncertainty of a measurement is specified in EN 55016-4-2 (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 DEKRA 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%.

## ENVIRONMENTAL CONDITIONS

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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

<input checked="" type="checkbox"/> Indicates that the listed condition, standard or equipment is applicable for this report/test/EUT.			
<input type="checkbox"/> Indicates that the listed condition, standard or equipment is not applicable for this report/test/EUT.			
Decimal separator used in this report	<input checked="" type="checkbox"/>	Comma (,)	<input type="checkbox"/> 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

## DOCUMENT HISTORY

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Report nr.	Date	Description
6031446.50	2019-03-14	First release

## REMARKS AND COMMENTS

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

The test results relate only to the samples tested.

According to the declaration from manufacturer, 110-120 V version is same as 220-240 V version except the motor; supply cord and plug due to different input voltage. All related tests were performed both on 110-120 V and 220-240 V version. The model of CS11; E-SAW30; Chain 11; CS280; Chain 280; EZS11 and EZS280 are identical, only the models' names are different.

# 1 GENERAL INFORMATION

## 1.1 General Description of the Item(s)

Description of the item .....	Concrete Chain Saw
Model / Type number .....	CS11; E-SAW30; Chain 11; CS280; Chain 280; EZS11; EZS280
Trademark .....	AGP
Manufacturer.....	LEE YEONG INDUSTRIAL CO., LTD. No.2, Kejia Rd., Douliu City, Yunlin County 64057, Taiwan
Factory .....	LEE YEONG INDUSTRIAL CO., LTD. No.2, Kejia Rd., Douliu City, Yunlin County 64057, Taiwan

Rated power supply .....	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	<input checked="" type="checkbox"/>	AC: 220-240 V, 50-60 Hz	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input checked="" type="checkbox"/>	AC: 110-120 V, 50-60 Hz	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	DC: 18 V					
	<input type="checkbox"/>	Battery powered					
Rated Power .....	220-240 V; 50-60 Hz; 2800 W; n <sub>0</sub> : 10 000 min <sup>-1</sup> ; 382 mm; Class I 110-120 V; 50-60 Hz; 2600 W; n <sub>0</sub> : 10 000 min <sup>-1</sup> ; 382 mm; Class I						
Clock frequencies .....	Not provided						
Other parameters.....	N/A						
Mounting position.....	<input type="checkbox"/>	Table top equipment					
	<input type="checkbox"/>	Wall/Ceiling mounted equipment					
	<input type="checkbox"/>	Floor standing equipment					
	<input checked="" type="checkbox"/>	Hand-held equipment					
	<input type="checkbox"/>	Other:					

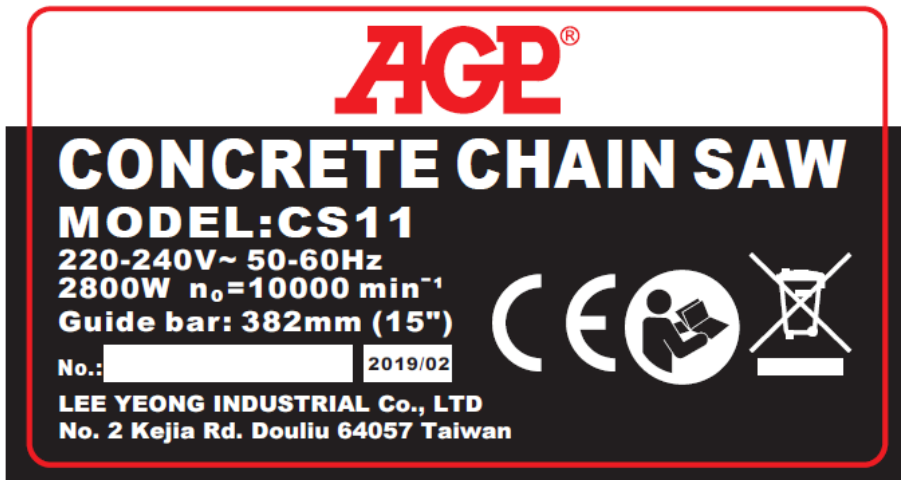
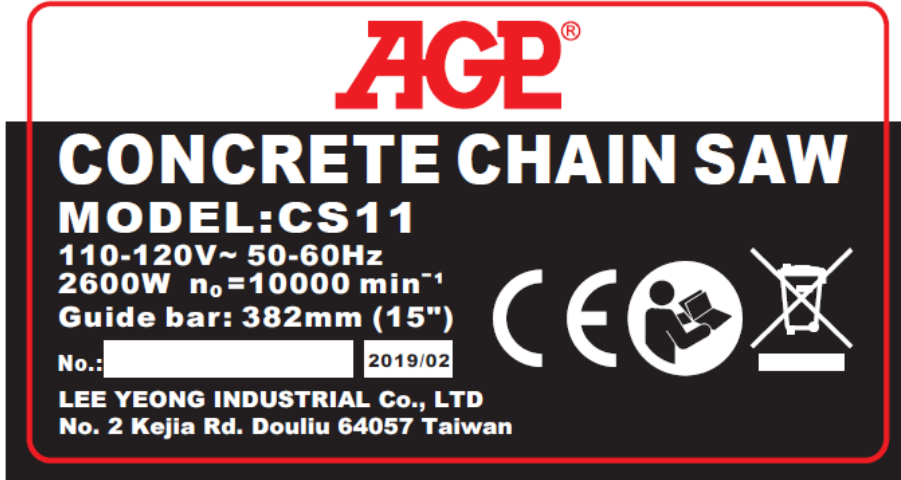
Intended use of the Equipment Under Test (EUT)
This tool is specifically designed for cutting of concrete, masonry and similar materials.

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

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



Copy of marking plate:



Note: Marking plates of E-SAW30; Chain 11; CS280; Chain 280; EZS11; EZS280 are identical with CS11, only models' names are different.

## 1.2 Environment

The requirements and standards apply to equipment intended for use in:

<input checked="" type="checkbox"/>	Residential (domestic) environment.
<input checked="" type="checkbox"/>	Commercial and light-industrial environment.
<input type="checkbox"/>	Industrial environment.

## 1.3 Test Location

Location	Global Certification Corp.
Address	No.146, Sec. 2, Xiangzhang Rd., Xizhi Dist., New Taipei City 221, Taiwan
Date	December 2018
Supervised by	Kaiyuan Dai

## 1.4 Classification according to EN 55014-2

The standard EN 55014-2 is subdivided in four categories. For each category, specific immunity requirements are formulated.

<input checked="" type="checkbox"/>	<p><b>Category I:</b> Apparatus containing no electronic control circuitry.</p> <p><u>Examples:</u> Motor operated appliances, lighting toys, track sets without electronic control units, tools, heating appliances, UV and IR radiators and apparatus containing components such as electromechanical switches and thermostats.</p> <p>Electric circuits consisting of passive components (such as radio interference suppression capacitors or inductors, mains transformers and mains frequency rectifiers) are not considered to be electronic control circuitry.</p>
<input type="checkbox"/>	<p><b>Category II:</b> Transformer toys, dual supply toys, mains powered motor operated appliances, tools, heating appliances and similar electric apparatus (for example – UV radiators, IR radiators and microwave ovens) containing electronic control circuitry with no internal clock frequency or oscillator frequency higher than 15 MHz.</p>
<input type="checkbox"/>	<p><b>Category III:</b> Battery powered apparatus (with built-in batteries or external batteries), which in normal use is not connected to the mains, containing an electronic control circuitry with no internal clock frequency or oscillator frequency higher than 15 MHz.</p>
<input type="checkbox"/>	<p><b>Category IV:</b> All other apparatus covered by the scope of the EN 55014-2 standard.</p>
<p><b>Clock frequency:</b> Fundamental frequency of any signal used in the device, excluding those which are solely used inside integrated circuits (IC).</p>	

## 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	Normal operation	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2		<input type="checkbox"/>	<input type="checkbox"/>
3		<input type="checkbox"/>	<input type="checkbox"/>
4		<input type="checkbox"/>	<input type="checkbox"/>
5		<input type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>
<u>Supplemental information:</u>			

### 2.2 Port(s) of the EUT

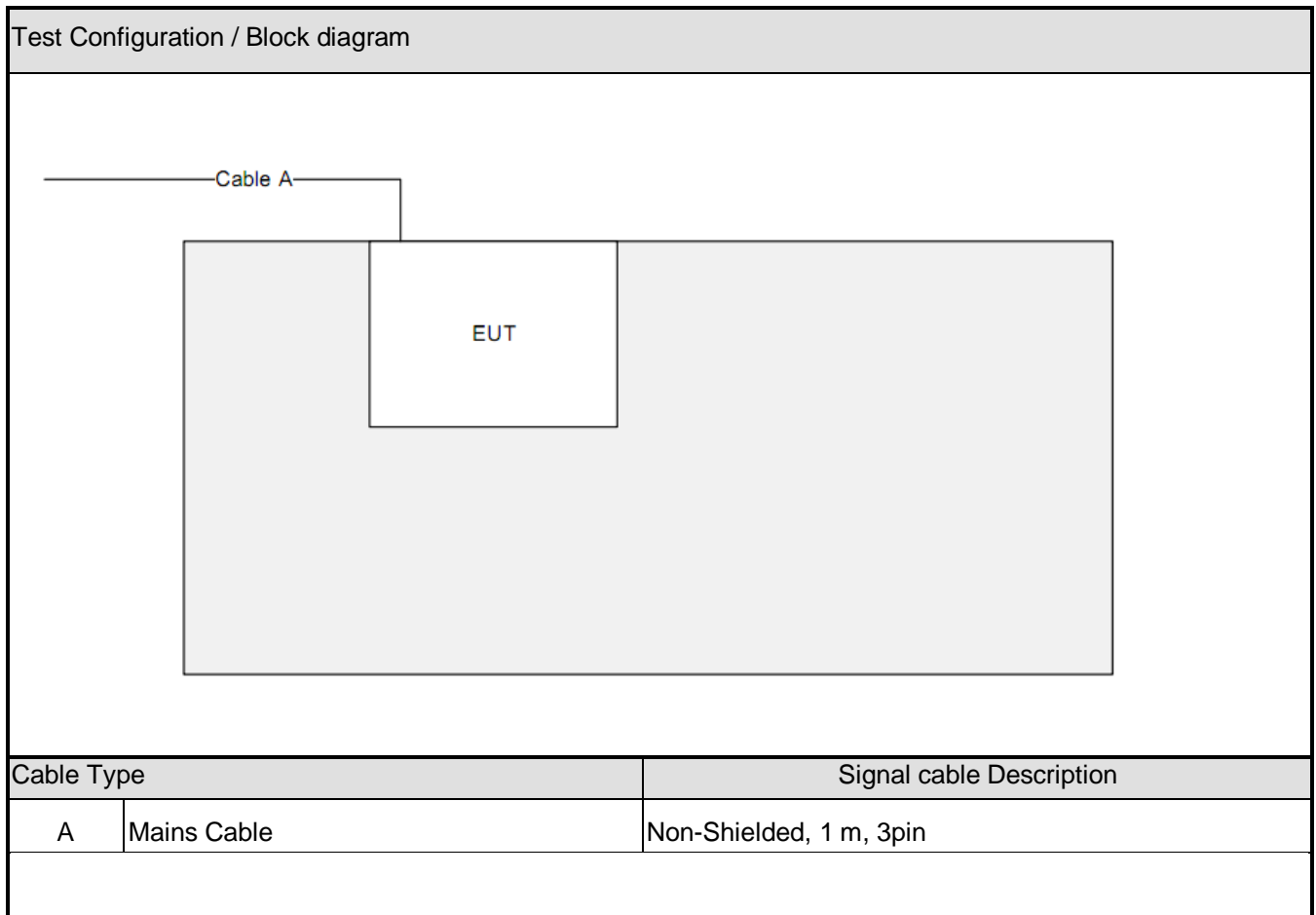
Port name and description	Connected to / Termination	Cable		
		Length used during test [m]	Attached during test	Shielded
N/A			<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>
<u>Supplemental information:</u>				

### 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
N/A			
<u>Supplemental information:</u>			

## 2.4 Test Configuration / Block diagram used for tests



### 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
EN 55014-1	2017 <sup>1)</sup>	Requirements for household appliances, electric tools and similar apparatus – Part 1: Emission.
EN 55016-2-1	2014	Methods of measurement of disturbances and immunity - Conducted disturbance measurements.
EN 55016-2-2	2010	Methods of measurement of disturbances and immunity – Measurement of disturbance power.
EN 55016-2-3 +A1 +A2	2010 2010 2014	Methods of measurement of disturbances and immunity - Radiated disturbance measurements.
EN 61000-3-2	2014	Limits for harmonic current emissions (equipment input current ≤ 16 A per phase).
EN 61000-3-3	2013	Limitation of voltage fluctuations and flicker
EN 55014-2	2015 <sup>1)</sup>	Requirements for household appliances, electric tools and similar apparatus – Part 2: Immunity – Product family standard.
EN 61000-4-2	2009	Electrostatic discharge immunity test.
EN 61000-4-3 +A1 +A2	2006 2008 2010	Radiated, radio-frequency, electromagnetic field immunity test.
EN 61000-4-4	2012	Electrical fast transient/burst immunity test.
EN 61000-4-5	2014	Surge immunity test.
EN 61000-4-6	2014	Immunity to conducted disturbances, induced by radio-frequency fields.
EN 61000-4-11	2004	Voltage dips, short interruptions and voltage variations immunity tests.

<sup>1)</sup> Not harmonized yet.

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

No deviation.

### 3.3 Overview of results

EMISSION TESTS – EN 55014-1			
Requirement – Test case	Basic standard(s)	Verdict	Remark
Conducted disturbance voltage at mains terminals (150 KHz – 30 MHz)	EN 55016-2-1	PASS	---
Conducted disturbance voltage at load terminals (150 KHz – 30 MHz)	EN 55016-2-1	N/A	---
Conducted disturbance voltage at additional terminals (150 KHz – 30 MHz)	EN 55016-2-1	N/A	---
Disturbance power (30 MHz to 300 MHz)	EN 55016-2-2	PASS	See 2)
Radiated electromagnetic disturbances (30 - 1000 MHz)	EN 55016-2-3	N/A	---
Discontinuous disturbance (clicks) on AC power leads	EN 55014-1	N/A	See 1)
<u>Supplementary information:</u>			
1) Exemptions from click measurements applicable (clause 4.2.3).			
2) According to clause 4.1.2.3.2 procedure (a) of the EN 55014-1 standard the EUT is deemed to comply in the frequency range from 300 MHz to 1000 MHz without further measurements.			

EMISSION TESTS – EN 61000-3-2, EN 61000-3-3			
Requirement – Test case	Basic standard(s)	Verdict	Remark
Harmonic current emissions	EN 61000-3-2	PASS	---
Voltage changes, voltage fluctuations and flicker	EN 61000-3-3	PASS	---
<u>Supplementary information:</u>			

IMMUNITY TESTS – EN 55014-2			
Requirement – Test case	Basic standard(s)	Verdict	Remark
Electrostatic discharge	EN 61000-4-2	PASS	
Radio-frequency electromagnetic fields	EN 61000-4-3	N/A	
Fast transients	EN 61000-4-4	PASS	
Surge transient	EN 61000-4-5	PASS	
Injected currents (radio-frequency common mode)	EN 61000-4-6	PASS	
Voltage dips and short interruptions	EN 61000-4-11	PASS	
<u>Supplementary information:</u>			
1) The equipment is classified as category 1 equipment according to EN 55014-2; no immunity tests are applicable.			

## 4 EMISSION TEST RESULTS

<b>4.1</b>	<b>Conducted disturbance voltage - Mains</b>	<b>VERDICT: PASS</b>
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Standard	EN 55014-1
Basic standard	EN 55016-2-1

### Limits - Tools

Frequency range [MHz]	Limit: QP [dB(μV) <sup>1)</sup>	Limit: AV [dB(μV) <sup>1)</sup>	IF BW	Detector(s)
0,15 - 0,35	66 - 56 <sup>2)</sup>	59 - 46 <sup>2)</sup>	9 KHz	QP, CAV
0,35 - 5,0	56	46	9 KHz	QP, CAV
5,0 - 30	60	50	9 KHz	QP, CAV

<sup>1)</sup> At the transition frequency, the lower limit applies.

<sup>2)</sup> The limit decreases linearly with the logarithm of the frequency.

<input type="checkbox"/>	Rated power below 700 W	Limits as above
<input type="checkbox"/>	Rated power between 700 and 1000 W	Limits +4 dB
<input checked="" type="checkbox"/>	Rated power above 1000 W	Limits +10 dB

### Performed measurements

Scan range (0,9 - 1,1 U <sub>N</sub> )	<input type="checkbox"/>	198 – 264 V <sub>AC</sub>	<input type="checkbox"/>	207 – 253 V <sub>AC</sub>	<input checked="" type="checkbox"/>	230 V <sub>AC</sub>
Tested terminal(s) / port	<input checked="" type="checkbox"/>	AC mains input power	<input checked="" type="checkbox"/>	N	<input checked="" type="checkbox"/>	L1
	<input type="checkbox"/>	DC mains input power	<input type="checkbox"/>	Positive (+)	<input type="checkbox"/>	Negative (-)
Voltage – Mains [V]	230 Vac					
Frequency – Mains [Hz]	50 Hz					
Test method applied	<input checked="" type="checkbox"/>	Artificial mains network				
	<input type="checkbox"/>	Voltage probe				
Test setup	<input type="checkbox"/>	Table top	<input checked="" type="checkbox"/>	Artificial hand applied		
	<input type="checkbox"/>	Floor standing	<input type="checkbox"/>	Other:		
	Refer to the Annex 3 for test setup photo(s).					
Operating mode(s) used	Mode 1					
Remark	---					

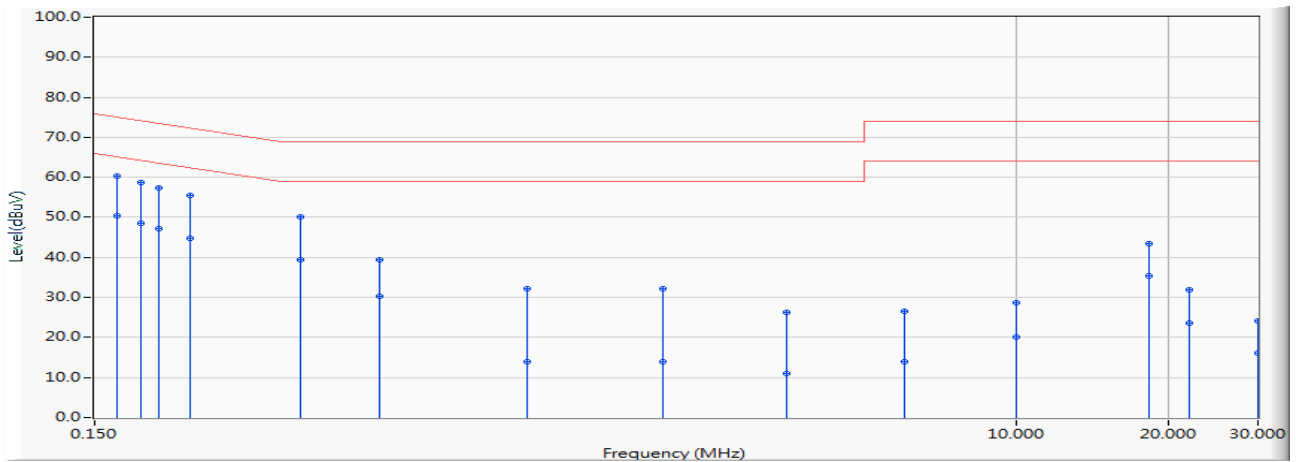
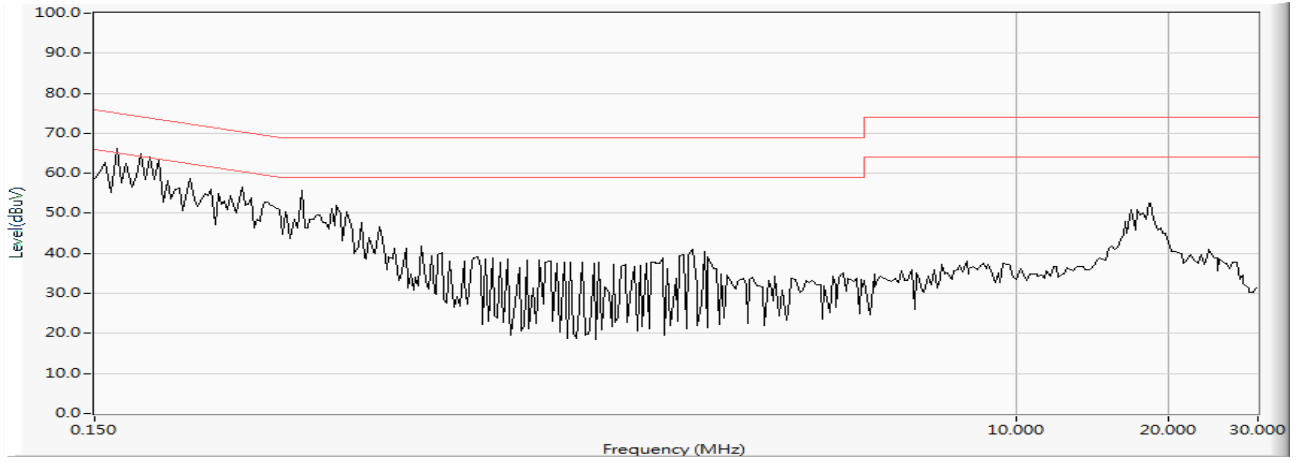


<b>Measurement data</b>	Port under test	AC mains power input
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Operating mode / voltage / frequency used during the test	Mode 1/ 230 Vac/ 50 Hz	
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**Results for 230v model**

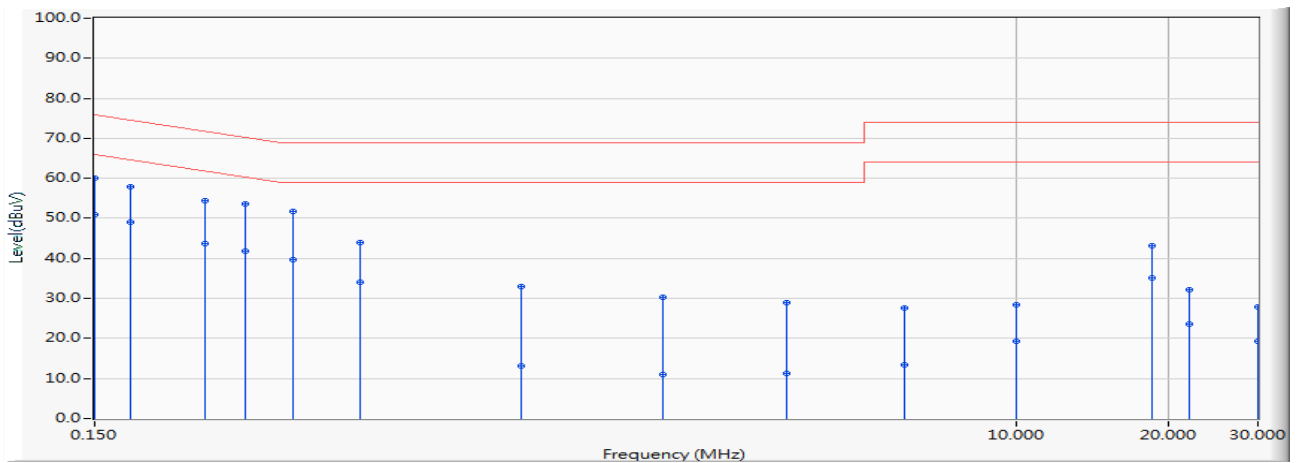
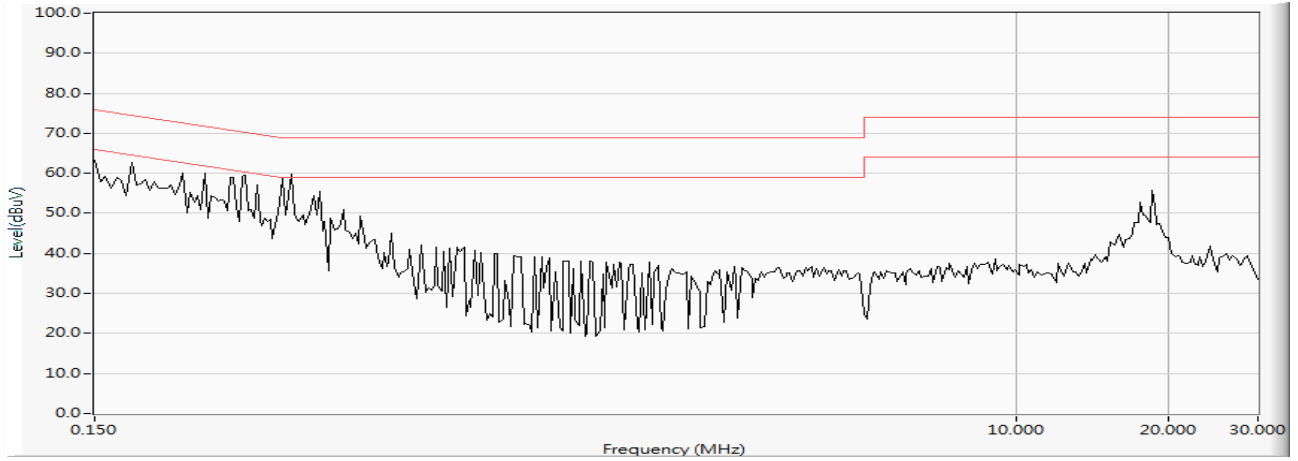
**Line**



Measurement data		Port under test		AC mains power input				
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.166	9.680	50.670	60.350	-14.813	75.163	QUASIPeAK
2		0.166	9.680	40.820	50.500	-17.304	67.804	AVERAGE
3		0.185	9.680	49.030	58.710	-15.557	74.267	QUASIPeAK
4		0.185	9.680	38.900	48.580	-17.945	66.525	AVERAGE
5		0.201	9.680	47.710	57.390	-16.192	73.582	QUASIPeAK
6		0.201	9.680	37.630	47.310	-18.236	65.546	AVERAGE
7		0.232	9.680	45.770	55.450	-16.947	72.397	QUASIPeAK
8		0.232	9.680	35.140	44.820	-19.033	63.853	AVERAGE
9		0.384	9.680	40.430	50.110	-18.890	69.000	QUASIPeAK
10		0.384	9.680	29.620	39.300	-19.700	59.000	AVERAGE
11		0.548	9.691	29.600	39.292	-29.708	69.000	QUASIPeAK
12		0.548	9.691	20.520	30.212	-28.788	59.000	AVERAGE
13		1.076	9.791	22.250	32.041	-36.959	69.000	QUASIPeAK
14		1.076	9.791	4.170	13.961	-45.039	59.000	AVERAGE
15		2.000	9.800	22.280	32.080	-36.920	69.000	QUASIPeAK
16		2.000	9.800	4.110	13.910	-45.090	59.000	AVERAGE
17		3.500	9.807	16.530	26.337	-42.663	69.000	QUASIPeAK
18		3.500	9.807	1.280	11.087	-47.913	59.000	AVERAGE
19		6.000	9.877	16.690	26.567	-47.433	74.000	QUASIPeAK
20		6.000	9.877	4.000	13.877	-50.123	64.000	AVERAGE
21		10.000	10.090	18.710	28.800	-45.200	74.000	QUASIPeAK
22		10.000	10.090	10.070	20.160	-43.840	64.000	AVERAGE
23		18.279	10.389	33.070	43.459	-30.541	74.000	QUASIPeAK
24		18.279	10.389	24.890	35.279	-28.721	64.000	AVERAGE
25		22.000	10.424	21.610	32.034	-41.966	74.000	QUASIPeAK
26		22.000	10.424	13.070	23.494	-40.506	64.000	AVERAGE
27		30.000	10.580	13.630	24.210	-49.790	74.000	QUASIPeAK
28		30.000	10.580	5.620	16.200	-47.800	64.000	AVERAGE
Remark								

<b>Measurement data</b>	Port under test	AC mains power input
Operating mode / voltage / frequency used during the test		Mode 1/ 230 Vac/ 50 Hz

**Neutral**

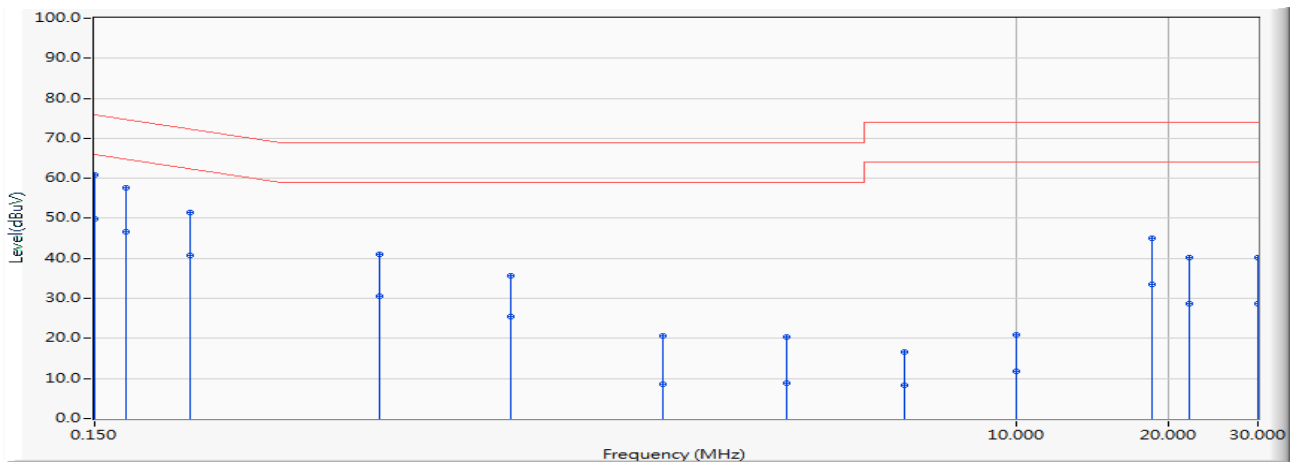
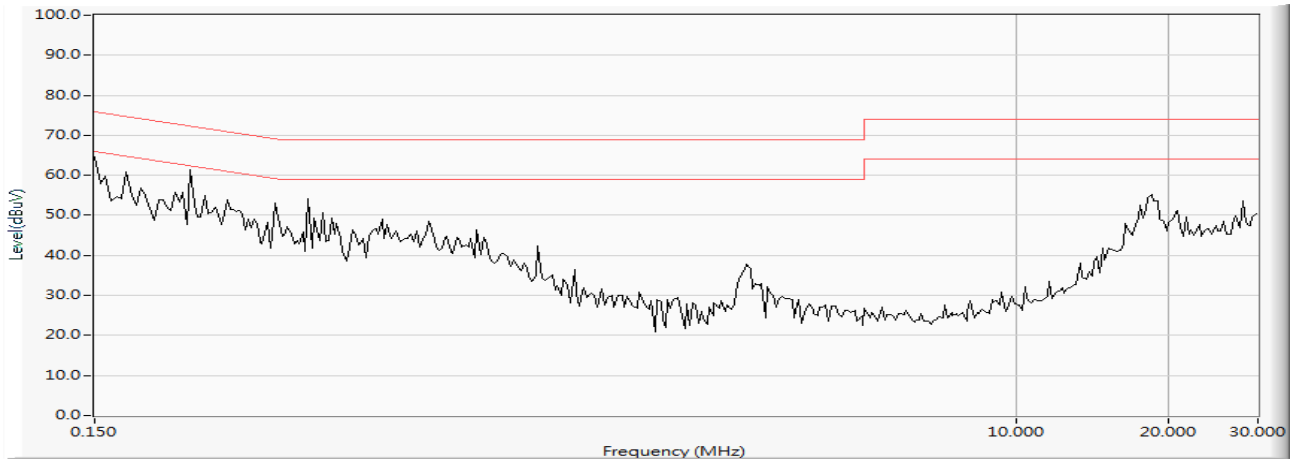


Measurement data				Port under test	AC mains power input			
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.150	9.681	50.380	60.061	-15.939	76.000	QUASIPeAK
2		0.150	9.681	41.380	51.061	-17.939	69.000	AVERAGE
3		0.177	9.680	48.360	58.040	-16.593	74.633	QUASIPeAK
4		0.177	9.680	39.310	48.990	-18.057	67.047	AVERAGE
5		0.248	9.680	44.640	54.320	-17.526	71.846	QUASIPeAK
6		0.248	9.680	34.120	43.800	-19.266	63.066	AVERAGE
7		0.298	9.680	43.810	53.490	-16.839	70.329	QUASIPeAK
8		0.298	9.680	32.130	41.810	-19.088	60.898	AVERAGE
9		0.369	9.680	42.130	51.810	-17.190	69.000	QUASIPeAK
10		0.369	9.680	29.950	39.630	-19.370	59.000	AVERAGE
11		0.502	9.684	34.280	43.963	-25.037	69.000	QUASIPeAK
12		0.502	9.684	24.320	34.003	-24.997	59.000	AVERAGE
13		1.048	9.790	23.180	32.970	-36.030	69.000	QUASIPeAK
14		1.048	9.790	3.290	13.080	-45.920	59.000	AVERAGE
15		2.000	9.800	20.440	30.240	-38.760	69.000	QUASIPeAK
16		2.000	9.800	1.190	10.990	-48.010	59.000	AVERAGE
17		3.500	9.815	19.080	28.895	-40.105	69.000	QUASIPeAK
18		3.500	9.815	1.430	11.245	-47.755	59.000	AVERAGE
19		6.000	9.880	17.730	27.610	-46.390	74.000	QUASIPeAK
20		6.000	9.880	3.410	13.290	-50.710	64.000	AVERAGE
21		10.000	10.080	18.430	28.510	-45.490	74.000	QUASIPeAK
22		10.000	10.080	9.230	19.310	-44.690	64.000	AVERAGE
23		18.459	10.348	32.940	43.288	-30.712	74.000	QUASIPeAK
24		18.459	10.348	24.830	35.178	-28.822	64.000	AVERAGE
25		22.000	10.358	21.850	32.208	-41.792	74.000	QUASIPeAK
26		22.000	10.358	13.150	23.508	-40.492	64.000	AVERAGE
27		30.000	10.450	17.520	27.970	-46.030	74.000	QUASIPeAK
28		30.000	10.450	8.850	19.300	-44.700	64.000	AVERAGE
Remark								

Measurement data	Port under test	AC mains power input
Operating mode / voltage / frequency used during the test		Mode 1/ 110 Vac/ 60 Hz

**Results for 110v model**

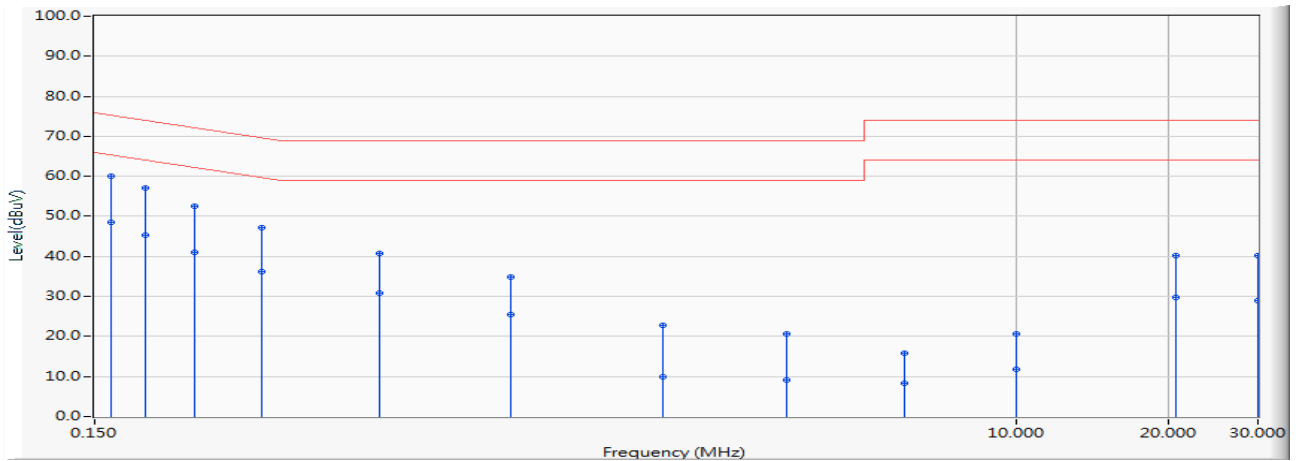
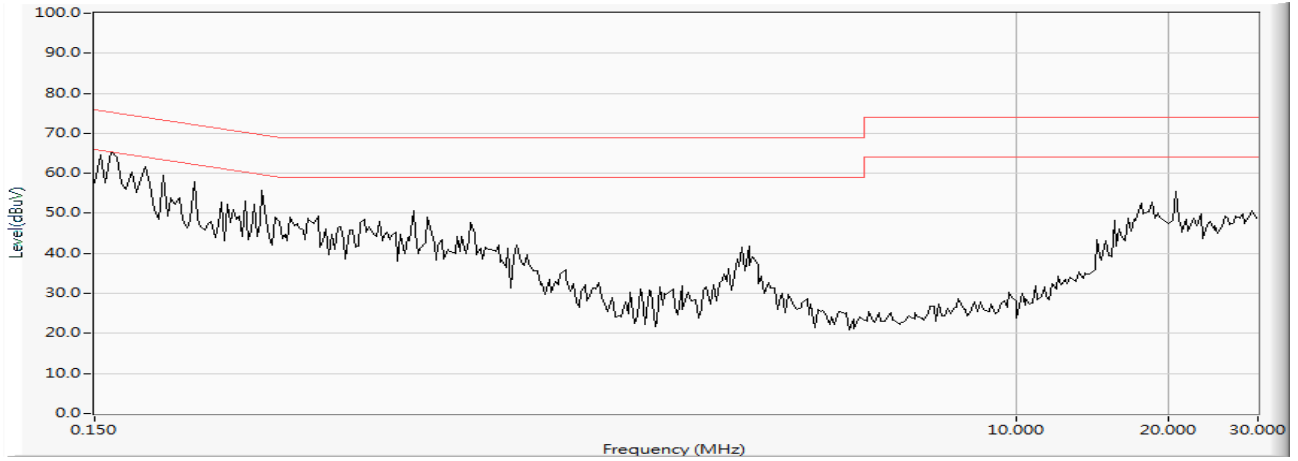
**Line**



Measurement data		Port under test		AC mains power input				
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.150	9.680	51.060	60.740	-15.260	76.000	QUASIPeAK
2		0.150	9.680	40.270	49.950	-19.050	69.000	AVERAGE
3		0.173	9.680	48.020	57.700	-17.121	74.821	QUASIPeAK
4		0.173	9.680	36.860	46.540	-20.776	67.316	AVERAGE
5		0.232	9.680	41.890	51.570	-20.827	72.397	QUASIPeAK
6		0.232	9.680	31.020	40.700	-23.153	63.853	AVERAGE
7		0.550	9.693	31.330	41.022	-27.978	69.000	QUASIPeAK
8		0.550	9.693	20.940	30.632	-28.368	59.000	AVERAGE
9		1.000	9.790	25.760	35.550	-33.450	69.000	QUASIPeAK
10		1.000	9.790	15.590	25.380	-33.620	59.000	AVERAGE
11		2.000	9.800	10.760	20.560	-48.440	69.000	QUASIPeAK
12		2.000	9.800	-1.160	8.640	-50.360	59.000	AVERAGE
13		3.500	9.807	10.460	20.267	-48.733	69.000	QUASIPeAK
14		3.500	9.807	-1.010	8.797	-50.203	59.000	AVERAGE
15		6.000	9.877	6.830	16.707	-57.293	74.000	QUASIPeAK
16		6.000	9.877	-1.690	8.187	-55.813	64.000	AVERAGE
17		10.000	10.090	10.920	21.010	-52.990	74.000	QUASIPeAK
18		10.000	10.090	1.720	11.810	-52.190	64.000	AVERAGE
19		18.498	10.392	34.560	44.952	-29.048	74.000	QUASIPeAK
20		18.498	10.392	23.210	33.602	-30.398	64.000	AVERAGE
21		22.000	10.424	29.690	40.114	-33.886	74.000	QUASIPeAK
22		22.000	10.424	18.390	28.814	-35.186	64.000	AVERAGE
23		30.000	10.580	29.650	40.230	-33.770	74.000	QUASIPeAK
24		30.000	10.580	18.170	28.750	-35.250	64.000	AVERAGE
Remark								

Measurement data	Port under test	AC mains power input
Operating mode / voltage / frequency used during the test		Mode 1/ 110 Vac/ 60 Hz

**Neutral**



Measurement data		Port under test		AC mains power input				
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.162	9.680	50.410	60.090	-15.274	75.364	QUASIPeAK
2		0.162	9.680	38.730	48.410	-19.682	68.092	AVERAGE
3		0.189	9.680	47.340	57.020	-17.071	74.091	QUASIPeAK
4		0.189	9.680	35.650	45.330	-20.942	66.272	AVERAGE
5		0.236	9.680	42.870	52.550	-19.706	72.256	QUASIPeAK
6		0.236	9.680	31.250	40.930	-22.721	63.651	AVERAGE
7		0.322	9.680	37.500	47.180	-22.509	69.689	QUASIPeAK
8		0.322	9.680	26.640	36.320	-23.664	59.984	AVERAGE
9		0.550	9.693	31.190	40.882	-28.118	69.000	QUASIPeAK
10		0.550	9.693	21.260	30.952	-28.048	59.000	AVERAGE
11		1.000	9.790	25.040	34.830	-34.170	69.000	QUASIPeAK
12		1.000	9.790	15.590	25.380	-33.620	59.000	AVERAGE
13		2.000	9.800	13.090	22.890	-46.110	69.000	QUASIPeAK
14		2.000	9.800	0.210	10.010	-48.990	59.000	AVERAGE
15		3.500	9.815	10.940	20.755	-48.245	69.000	QUASIPeAK
16		3.500	9.815	-0.810	9.005	-49.995	59.000	AVERAGE
17		6.000	9.880	5.980	15.860	-58.140	74.000	QUASIPeAK
18		6.000	9.880	-1.690	8.190	-55.810	64.000	AVERAGE
19		10.000	10.080	10.480	20.560	-53.440	74.000	QUASIPeAK
20		10.000	10.080	1.650	11.730	-52.270	64.000	AVERAGE
21		20.630	10.359	29.930	40.289	-33.711	74.000	QUASIPeAK
22		20.630	10.359	19.330	29.689	-34.311	64.000	AVERAGE
23		30.000	10.450	29.750	40.200	-33.800	74.000	QUASIPeAK
24		30.000	10.450	18.480	28.930	-35.070	64.000	AVERAGE
Remark								



<b>4.2 Conducted disturbance voltage– Load terminals</b>	<b>VERDICT: N/A</b>
--	---------------------

Standard	EN 55014-1
Basic standard	EN 55016-2-1

**Limits**

Frequency range [MHz]	Limit: QP [dB(μV) <sup>1)</sup>	Limit: AV [dB(μV) <sup>1)</sup>	IF BW	Detector(s)
0,15 - 0,50	80	70	9 KHz	QP, CAV
5,0 - 30	74	64	9 KHz	QP, CAV

<sup>1)</sup> At the transition frequency, the lower limit applies.

**Performed measurements**

<b>Port(s) / Terminal(s) under test</b>	
<input type="checkbox"/> (please write the name of the port under test)	<input type="checkbox"/> Other:
<input type="checkbox"/> Other:	<input type="checkbox"/> Other:
<b>Voltage— Mains [V]</b>	(Please write the voltage/voltages used for testing)
<b>Frequency— Mains [Hz]</b>	(Please write the frequency/frequencies used for testing)
<b>Test method applied</b>	<input type="checkbox"/> Voltage probe
	<input type="checkbox"/> ISN— Impedance Stabilisation Network
	<input type="checkbox"/> GDN according to EN / IEC 61000-4-6
	<input type="checkbox"/> Current probe
	<input type="checkbox"/> Artificial mains network
<b>Test setup</b>	<input type="checkbox"/> Table top <input type="checkbox"/> Artificial hand applied
	<input type="checkbox"/> Floor standing <input type="checkbox"/> Other:
	Refer to the Annex 3 for test setup photo(s).
<b>Operating mode(s) used</b>	Please write the operating mode(s) used during testing
<b>Remark</b>	---

<b>4.3 Conducted disturbance voltage– Additional terminals</b>	<b>VERDICT: N/A</b>
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Standard	EN 55014-1
Basic standard	EN 55016-2-1

**Limits**

Frequency range [MHz]	Limit: QP [dB(μV) <sup>1)</sup>	Limit: AV [dB(μV) <sup>1)</sup>	IF BW	Detector(s)
0,15 - 0,50	80	70	9 KHz	QP, CAV
5,0 - 30	74	64	9 KHz	QP, CAV

<sup>1)</sup> At the transition frequency, the lower limit applies.

**Performed measurements**

<b>Port(s) / Terminal(s) under test</b>			
<input type="checkbox"/>	(please write the name of the port under test)		<input type="checkbox"/> Other:
<input type="checkbox"/>	Other:		<input type="checkbox"/> Other:
<b>Voltage – Mains [V]</b>		(Please write the voltage/voltages used for testing)	
<b>Frequency – Mains [Hz]</b>		(Please write the frequency/frequencies used for testing)	
<b>Test method applied</b>	<input type="checkbox"/>	GDN according to EN / IEC 61000-4-6	
	<input type="checkbox"/>	ISN – Impedance Stabilisation Network	
	<input type="checkbox"/>	Voltage probe	
	<input type="checkbox"/>	Current probe	
	<input type="checkbox"/>	Artificial mains network	
	<input type="checkbox"/>	Other:	
<b>Test setup</b>	<input type="checkbox"/>	Table top	<input type="checkbox"/> Artificial hand applied
	<input type="checkbox"/>	Floor standing	<input type="checkbox"/> Other:
	Refer to the Annex 3 for test setup photo(s).		
<b>Operating mode(s) used</b>		Please write the operating mode(s) used during testing	
<b>Remark</b>		---	

<b>4.4 Disturbance power (30 MHz – 300 MHz)</b>	<b>VERDICT: PASS</b>
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Standard	EN 55014-1
Basic standard	EN 55016-2-2

**Limits - Tools**

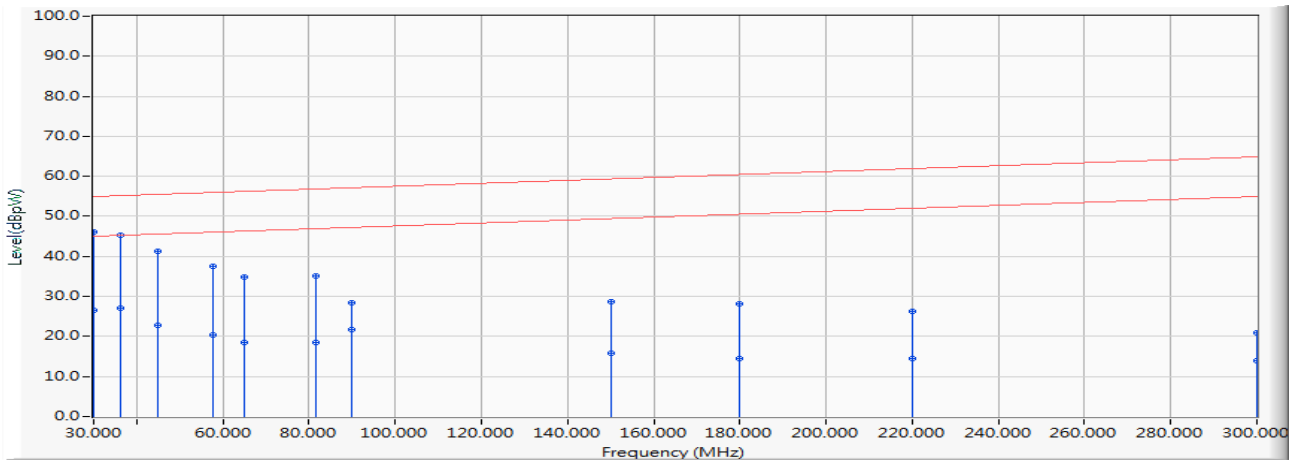
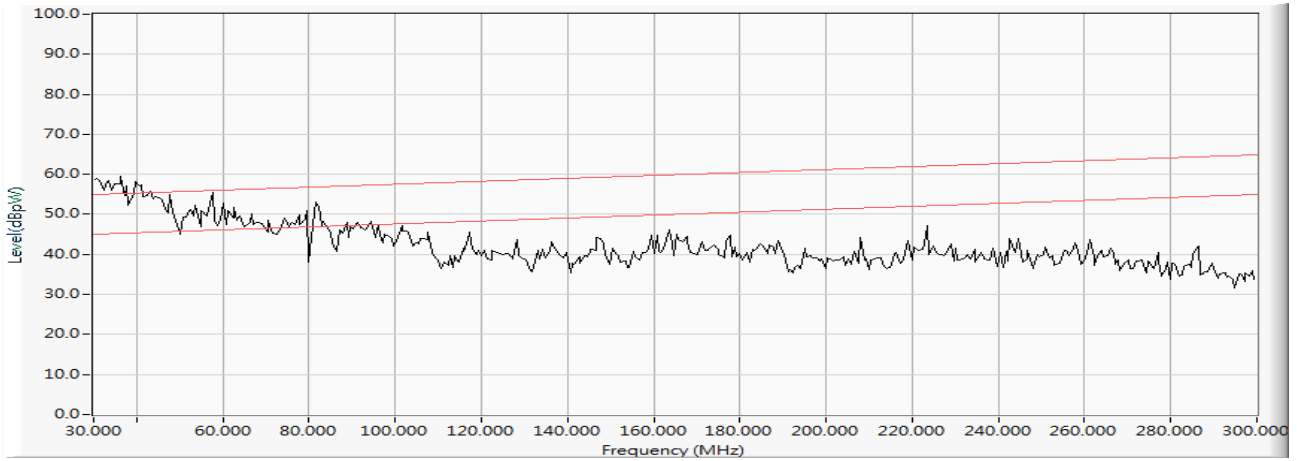
Frequency range [MHz]	Limit: QP [dB(pW)]	Limit: AV [dB(pW)]	IF BW	Detector(s)
30 - 300	45 – 55 <sup>1)</sup>	35 – 45 <sup>1)</sup>	120 KHz	QP, CAV
Margin				
200 - 300	0 – 10 <sup>1)</sup>	---	120 KHz	QP, CAV
<sup>1)</sup> The limit increases linearly with the frequency.				
<input type="checkbox"/>	Rated power below 700 W		Limits as above	
<input type="checkbox"/>	Rated power between 700 and 1000 W		Limits +4 dB	
<input checked="" type="checkbox"/>	Rated power above 1000 W		Limits +10 dB	

**Performed measurements**

Port(s) under test						
<input checked="" type="checkbox"/>	AC mains input power	<input type="checkbox"/>	Load	<input type="checkbox"/>	Control	
<input type="checkbox"/>	Other:	<input type="checkbox"/>	Other:	<input type="checkbox"/>	Other:	
Scan range (0,9 - 1,1 U <sub>N</sub> )	<input type="checkbox"/>	198 – 264 V <sub>AC</sub>	<input type="checkbox"/>	207 – 253 V <sub>AC</sub>	<input checked="" type="checkbox"/>	230 V <sub>AC</sub>
Voltage – Mains [V]	230 Vac					
Frequency – Mains [Hz]	50 Hz					
Test setup	<input checked="" type="checkbox"/>	Table top	<input type="checkbox"/>	Floor standing		
	<input type="checkbox"/>	Other:				
Refer to the Annex 3 for test setup photo(s).						
Conditions for exemption from measurements above 300 MHz	<input checked="" type="checkbox"/>	"Limits" reduced by "Margin" applied and passed				
	<input type="checkbox"/>	Maximum clock frequency < 30 MHz				
Operating mode(s) used	Mode 1					
Remark	---					

<b>Measurement data</b>	Port under test	AC mains power input
Operating mode / voltage / frequency used during the test		Mode 1/ 230 Vac/ 50 Hz

**Results for 230v model**

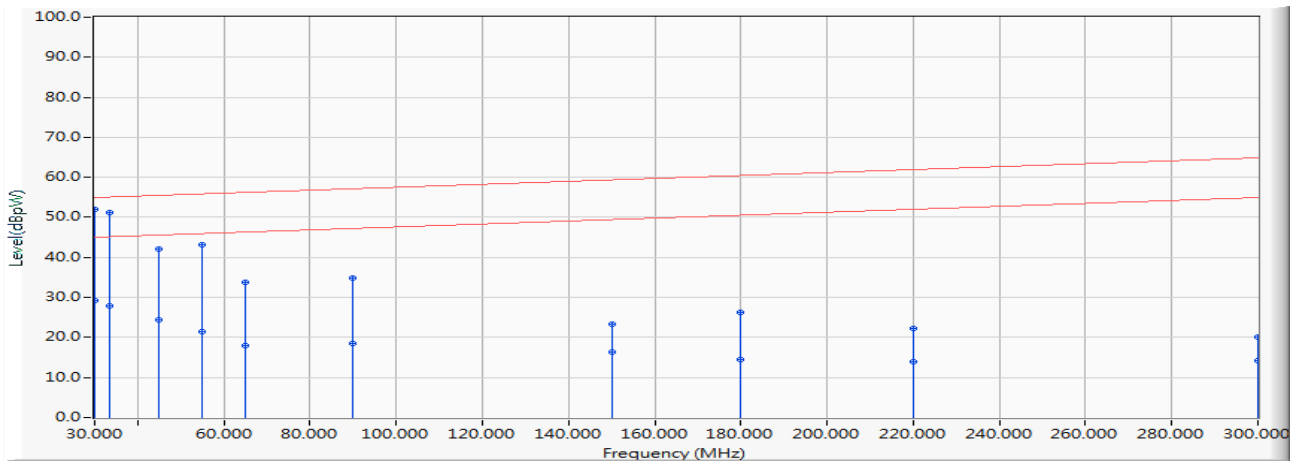
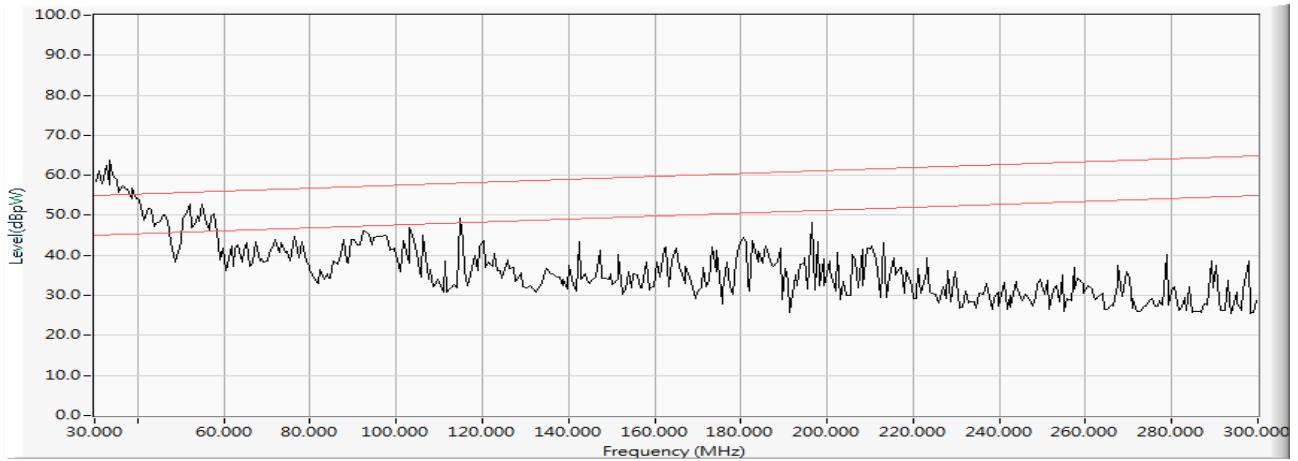


Remark

Measurement data		Port under test		AC mains power input				
Operating mode / voltage / frequency used during the test				Mode 1/ 230 Vac/ 50 Hz				
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBpW)	Measure Level (dBpW)	Margin (dB)	Limit (dBpW)	Detector Type
1	*	30.000	8.700	37.350	46.050	-8.950	55.000	QUASIPeAK
2		30.000	8.700	17.860	26.560	-18.440	45.000	AVERAGE
3		36.250	8.005	37.270	45.275	-10.547	55.822	QUASIPeAK
4		36.250	8.005	19.020	27.025	-18.797	45.822	AVERAGE
5		45.000	7.460	33.710	41.170	-15.591	56.761	QUASIPeAK
6		45.000	7.460	15.310	22.770	-23.991	46.761	AVERAGE
7		57.562	7.539	29.920	37.459	-20.371	57.830	QUASIPeAK
8		57.562	7.539	12.810	20.349	-27.481	47.830	AVERAGE
9		65.000	6.670	28.210	34.880	-23.478	58.358	QUASIPeAK
10		65.000	6.670	11.800	18.470	-29.888	48.358	AVERAGE
11		81.562	6.442	28.790	35.232	-24.112	59.344	QUASIPeAK
12		81.562	6.442	12.090	18.532	-30.812	49.344	AVERAGE
13		90.000	6.715	21.580	28.295	-31.476	59.771	QUASIPeAK
14		90.000	6.715	15.090	21.805	-27.966	49.771	AVERAGE
15		150.000	5.755	22.860	28.615	-33.375	61.990	QUASIPeAK
16		150.000	5.755	9.980	15.735	-36.255	51.990	AVERAGE
17		180.000	5.171	23.040	28.211	-34.571	62.782	QUASIPeAK
18		180.000	5.171	9.420	14.591	-38.191	52.782	AVERAGE
19		220.000	5.174	21.050	26.224	-37.429	63.653	QUASIPeAK
20		220.000	5.174	9.220	14.394	-39.259	53.653	AVERAGE
21		300.000	5.585	15.320	20.905	-44.095	65.000	QUASIPeAK
22		300.000	5.585	8.310	13.895	-41.105	55.000	AVERAGE
Remark								

<b>Measurement data</b>	Port under test	AC mains power input
Operating mode / voltage / frequency used during the test		Mode 1/ 110 Vac/ 60 Hz

**Results for 110v model**



Remark

Measurement data		Port under test		AC mains power input				
Operating mode / voltage / frequency used during the test				Mode 1/ 110 Vac/ 60 Hz				
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBpW)	Measure Level (dBpW)	Margin (dB)	Limit (dBpW)	Detector Type
1	*	30.000	8.700	43.200	51.900	-3.100	55.000	QUASIPeAK
2		30.000	8.700	20.520	29.220	-15.780	45.000	AVERAGE
3		33.562	8.309	43.020	51.328	-4.159	55.487	QUASIPeAK
4		33.562	8.309	19.470	27.778	-17.709	45.487	AVERAGE
5		45.000	7.460	34.610	42.070	-14.691	56.761	QUASIPeAK
6		45.000	7.460	16.880	24.340	-22.421	46.761	AVERAGE
7		55.000	7.475	35.570	43.045	-14.587	57.632	QUASIPeAK
8		55.000	7.475	14.060	21.535	-26.097	47.632	AVERAGE
9		65.000	6.670	27.030	33.700	-24.658	58.358	QUASIPeAK
10		65.000	6.670	11.190	17.860	-30.498	48.358	AVERAGE
11		90.000	6.715	28.180	34.895	-24.876	59.771	QUASIPeAK
12		90.000	6.715	11.680	18.395	-31.376	49.771	AVERAGE
13		150.000	5.755	17.540	23.295	-38.695	61.990	QUASIPeAK
14		150.000	5.755	10.710	16.465	-35.525	51.990	AVERAGE
15		180.000	5.171	21.070	26.241	-36.541	62.782	QUASIPeAK
16		180.000	5.171	9.330	14.501	-38.281	52.782	AVERAGE
17		220.000	5.174	17.000	22.174	-41.479	63.653	QUASIPeAK
18		220.000	5.174	8.820	13.994	-39.659	53.653	AVERAGE
19		300.000	5.585	14.480	20.065	-44.935	65.000	QUASIPeAK
20		300.000	5.585	8.580	14.165	-40.835	55.000	AVERAGE
Remark								

<b>4.5</b>	<b>Radiated electromagnetic disturbances (30 – 1000 MHz)</b>	<b>VERDICT:</b>	<b>N/A</b>
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Standard	EN 55014-1
Basic standard	EN 55016-2-3
Test method	Antenna method according to EN 55016-2-3 standard.

**Limits**

Frequency [MHz]	Limit: QP [dB(μV/m) <sup>1)</sup>			IF BW	Detector
	@3 m.	@5 m.	@10 m.		
30 - 230	40	36	30	120 KHz	QP
230 - 1000	47	43	37	120 KHz	QP

<sup>1)</sup> At the transition frequency, the lower limit applies.

**Performed measurements**

Port under test	Enclosure	
Voltage — Mains [V]	(Please write the voltage/voltages used for testing)	
Frequency — Mains [Hz]	(Please write the frequency/frequencies used for testing)	
Test method applied	<input checked="" type="checkbox"/>	OATS or SAC with measurement distance [m]: 3 m.
	<input type="checkbox"/>	OATS or SAC with measurement distance [m]: 5 m.
	<input type="checkbox"/>	OATS or SAC with measurement distance [m]: 10 m.
Test setup	<input checked="" type="checkbox"/>	Equipment on a table of 80 cm height
	<input type="checkbox"/>	Equipment on the floor (insulated from ground plane)
	<input type="checkbox"/>	Other:
		Refer to the Annex 3 for test setup photo(s).
Operating mode(s) used	Please write the operating mode(s) used during testing	
Remark	---	



<b>4.6 Discontinuous disturbance (clicks) on AC power leads</b>	<b>VERDICT: N/A</b>
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Standard	EN 55014-1		
Frequency [MHz]	Limit: QP [dB(μV)]	IF BW	Detector
0,15	66	9 KHz	Quasi-Peak (QP)
0,50	56	9 KHz	Quasi-Peak (QP)
1,40	56	9 KHz	Quasi-Peak (QP)
30,0	60	9 KHz	Quasi-Peak (QP)

**Performed measurements**

Scan range (0,9 – 1,1 U <sub>N</sub> )	<input checked="" type="checkbox"/> 198 – 264 V <sub>AC</sub>	<input type="checkbox"/> 207 – 253 V <sub>AC</sub>	<input type="checkbox"/> – V <sub>AC</sub>
Voltage – Mains [V]	264 Vac		
Frequency – Mains [Hz]	50 Hz		
Test method applied	<input checked="" type="checkbox"/> Artificial mains network		
	<input type="checkbox"/> Voltage probe		
Test setup	<input checked="" type="checkbox"/> Table top	<input type="checkbox"/> Floor standing	
	<input type="checkbox"/> Other:		
Operating mode(s) used	Mode 1		
Remark	---		

Reason for not performing the test	<input checked="" type="checkbox"/>	The amplitudes of the observed disturbances were all below the limit for continuous disturbance, these are not considered to be clicks.
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Measurement results	<input checked="" type="checkbox"/> Neutral	<input checked="" type="checkbox"/> Line 1	<input type="checkbox"/> Line 2	<input type="checkbox"/> Line 3
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Frequency (MHz)	First Measurement: Determination of the limit L <sub>q</sub> – Quasi-peak							
	Limit L (dBμV)	Number of short clicks	Number of long clicks	Number of clicks – N <sub>1</sub>	Time of meas. (min.)	Click rate N	Increased limit (dB)	Increased Limit L <sub>q</sub>
0,15	66	0	0	0	2			
0,5	56	0	0	0	2			
1,4	56	0	0	0	2			
30	60	0	0	0	2			

The calculated click rate N is not more than 5 times per minute and all the clicks are classified as short (t ≤ 10 ms). Thus, the EUT is deemed to comply with the limits without any further measurement at an increased limit.

Frequency (MHz)	Second measurement with Limit = L <sub>q</sub> (Upper quartile method):			
	Limit L <sub>q</sub> (dBμV)	Number of clicks – N <sub>2</sub>	Number of authorized clicks N <sub>2</sub> ≤ N <sub>1</sub> /4	Verdict
0,15				
0,5				
1,4				
30				

Supplementary information: ---

<b>4.7 Harmonic current emissions</b>	<b>VERDICT: PASS</b>
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Standard	EN 61000-3-2	
Exclusions  (For these categories of equipment, limits are not specified in the EN 61000-3-2 standard)	<input type="checkbox"/>	Arc welding equipment intended for professional use.
	<input type="checkbox"/>	System(s) with nominal voltage(s) less than 220 V <sub>AC</sub> (line-to-neutral).
	<input type="checkbox"/>	Equipment with rated power of ≤ 75 W (other than lighting equipment).
	<input type="checkbox"/>	Professional equipment with total rated power > 1 kW.
	<input type="checkbox"/>	Symmetrically controlled heating elements with a rated power ≥ 200 W.
	<input type="checkbox"/>	Independent dimmers for incandescent lamps with rated power ≤ 1 kW.

Classification			
<input type="checkbox"/>	Class A	All apparatus not classified as Class B, C or D	
<input checked="" type="checkbox"/>	Class B	Portable tools	
<input type="checkbox"/>	Class C	<input type="checkbox"/>	Lighting equipment with active input power > 25 W
		<input type="checkbox"/>	Lighting equipment with active input power ≤ 25 W (First requirement, Table 3 column 2)
		<input type="checkbox"/>	Lighting equipment with active input power ≤ 25 W (Second requirement)
<input type="checkbox"/>	Class D	Personal computers, television receivers	

**Performed measurements**

Port under test	AC mains power input					
Voltage – Mains [V]	230 Vac					
Frequency – Mains [Hz]	50 Hz					
Observation period	<input type="checkbox"/>	6.5 min.	<input checked="" type="checkbox"/>	2.5 min.	<input type="checkbox"/>	Other:
Version of measurement instrument standard used EN / IEC61000-4-7 (Cl. 7)	<input checked="" type="checkbox"/>	EN 61000-4-7:2002 + AM1:2009 (IEC 61000-4-7:2002+AM1:2008)				
	<input type="checkbox"/>	EN 61000-4-7:1991				
Control principle used in the EUT	<input checked="" type="checkbox"/>	Comply with the requirements of the Clause 6.1 (EN / IEC 61000-3-2).				
	<input type="checkbox"/>	Not comply with the requirements of the Clause 6.1 (EN / IEC 61000-3-2).				
Operating mode(s) used	Mode 1					
Remark						

See next page.

Measurement data	Port under test	AC mains power input												
Operating mode / voltage / frequency used during the test		Mode 1/ 230 Vac/ 50 Hz												
<p><b>Harmonic Emission - IEC 61000-3-2 , EN 61000-3-2 , (EN60555-2)</b> <span style="float: right;">2018/12/7 下午 03:21:57</span></p> <table border="0"> <tr> <td>Urms = 229.9 V</td> <td>P = 1005 W</td> <td>THC = 1.484 A</td> <td>Range: 50 A</td> </tr> <tr> <td>Irms = 4.907 A</td> <td>pf = 0.891</td> <td></td> <td>V-nom: 230 V</td> </tr> <tr> <td></td> <td></td> <td></td> <td>TestTime: 5 min (100%)</td> </tr> </table> <p style="text-align: center;"><b>Test completed, Result: PASSED</b></p> <p style="text-align: right;">HAR-1000 EMC-Partner</p> <p>Full Bar : Actual Values                  Empty Bar : Maximum Values                  Blue : Current , Green : Voltage , Red : Failed</p>			Urms = 229.9 V	P = 1005 W	THC = 1.484 A	Range: 50 A	Irms = 4.907 A	pf = 0.891		V-nom: 230 V				TestTime: 5 min (100%)
Urms = 229.9 V	P = 1005 W	THC = 1.484 A	Range: 50 A											
Irms = 4.907 A	pf = 0.891		V-nom: 230 V											
			TestTime: 5 min (100%)											
Remark														

Measurement data				Port under test		AC mains power input				
Operating mode / voltage / frequency used during the test						Mode 1/ 230 Vac/ 50 Hz				
Urms =	229.9V	Freq =	49.987	Range:	50 A					
Irms =	4.907A	Ipk =	8.740A	cf =	1.781					
P =	1005W	S =	1128VA	pf =	0.891					
THDi =	31.8 %	THDu =	0.10 %	Class	B					
Test - Time :		5min		( 100 %)						
Test completed, Result: PASSED										
Order	Freq. [Hz]	Iavg [A]	Irms [A]	Irms% [%]	Irms%L [%]	I <sub>max</sub> [A]	I <sub>max</sub> % [%]	I <sub>max</sub> %L [%]	Limit [A]	Status
1	50	4.2410	4.6722	95.211		6.4728	131.90			0.00
2	100	0.0423	0.0336	0.6841	2.0722	0.1373	2.7985	8.4771	1.6200	0.00
3	150	1.3764	1.4130	28.794	40.955	3.3722	68.719	97.745	3.4500	0.00
4	200	0.0172	0.0244	0.4975	3.7851	0.1312	2.6741	20.345	0.6450	0.00
5	250	0.3235	0.3082	6.2811	18.025	1.1047	22.512	64.604	1.7100	0.00
6	300	0.0042	0.0153	0.3109	3.3908	0.0793	1.6169	17.632	0.4500	0.00
7	350	0.1842	0.1953	3.9801	16.910	0.2472	5.0373	21.402	1.1550	0.00
8	400	0.0019	0.0183	0.3731	5.3074	0.0519	1.0572	15.038	0.3450	0.00
9	450	0.1212	0.1251	2.5498	20.854	0.1740	3.5448	28.992	0.6000	0.00
10	500	0.0015	0.0183	0.3731	6.6343	0.0397	0.8085	14.374	0.2760	0.00
11	550	0.1153	0.1221	2.4876	24.661	0.1678	3.4204	33.908	0.4950	0.00
12	600	0.0012	0.0153	0.3109	6.6343	0.0366	0.7463	15.922	0.2300	0.00
13	650	0.1024	0.1099	2.2388	34.877	0.1526	3.1095	48.441	0.3150	0.00
14	700	0.0011	0.0183	0.3731	9.2880	0.0336	0.6841	17.028	0.1971	0.00
15	750	0.0715	0.0732	1.4925	32.552	0.1190	2.4254	52.897	0.2250	0.00
16	800	0.0035	0.0244	0.4975	14.153	0.0366	0.7463	21.230	0.1725	0.00
17	850	0.0565	0.0580	1.1816	29.206	0.0854	1.7413	43.041	0.1985	0.00
18	900	0.0223	0.0305	0.6219	19.903	0.0427	0.8706	27.864	0.1533	0.00
19	950	0.0560	0.0610	1.2438	34.361	0.0671	1.3682	37.797	0.1776	0.00
20	1000	0.0007	0.0183	0.3731	13.269	0.0275	0.5597	19.903	0.1380	0.00
21	1050	0.0488	0.0549	1.1194	34.180	0.0580	1.1816	36.079	0.1607	0.00
22	1100	0.0005	0.0122	0.2488	9.7302	0.0153	0.3109	12.163	0.1255	0.00
23	1150	0.0354	0.0397	0.8085	27.036	0.0488	0.9950	33.275	0.1467	0.00
24	1200	0.0004	0.0092	0.1866	7.9611	0.0153	0.3109	13.269	0.1150	0.00
25	1250	0.0314	0.0336	0.6841	24.866	0.0427	0.8706	31.648	0.1350	0.00
26	1300	0.0003	0.0092	0.1866	8.6245	0.0153	0.3109	14.374	0.1062	0.00
27	1350	0.0308	0.0336	0.6841	26.855	0.0366	0.7463	29.297	0.1250	0.00
28	1400	0.0003	0.0092	0.1866	9.2880	0.0122	0.2488	12.384	0.0986	0.00
29	1450	0.0266	0.0305	0.6219	26.223	0.0366	0.7463	31.467	0.1164	0.00
30	1500	0.0002	0.0092	0.1866	9.9514	0.0153	0.3109	16.586	0.0920	0.00
31	1550	0.0027	0.0214	0.4353	19.622	0.0305	0.6219	28.031	0.1089	0.00
32	1600	0.0002	0.0092	0.1866	10.615	0.0122	0.2488	14.153	0.0862	0.00
33	1650	0.0038	0.0244	0.4975	23.872	0.0305	0.6219	29.839	0.1023	0.00
34	1700	0.0002	0.0092	0.1866	11.278	0.0122	0.2488	15.038	0.0812	0.00
35	1750	0.0014	0.0244	0.4975	25.318	0.0305	0.6219	31.648	0.0964	0.00
36	1800	0.0002	0.0092	0.1866	11.942	0.0122	0.2488	15.922	0.0767	0.00
37	1850	0.0011	0.0214	0.4353	23.419	0.0244	0.4975	26.765	0.0912	0.00
38	1900	0.0002	0.0061	0.1244	8.4034	0.0122	0.2488	16.807	0.0726	0.00
39	1950	0.0010	0.0183	0.3731	21.159	0.0214	0.4353	24.685	0.0865	0.00
40	2000	0.0001	0.0061	0.1244	8.8457	0.0122	0.2488	17.691	0.0690	0.00

Measurement data		Port under test	AC mains power input
Fixed Limits for Class B: (1.5 times Limits of Class A)			
Order	Limits in Ampere		
	100%	150%	
2	1.6205	2.4307	
3	3.4485	5.1727	
4	0.6439	0.9659	
5	1.7090	2.5635	
6	0.4486	0.6729	
7	1.1536	1.7303	
8	0.3448	0.5173	
9	0.6012	0.9018	
10	0.2747	0.4120	
11	0.4944	0.7416	
12	0.2289	0.3433	
13	0.3143	0.4715	
14	0.1984	0.2975	
15	0.2258	0.3387	
16	0.1740	0.2609	
17	0.1984	0.2975	
18	0.1526	0.2289	
19	0.1770	0.2655	
20	0.1373	0.2060	
21 *	0.1617	0.2426	
22	0.1251	0.1877	
23 *	0.1465	0.2197	
24	0.1160	0.1740	
25 *	0.1343	0.2014	
26	0.1068	0.1602	
27 *	0.1251	0.1877	
28	0.0977	0.1465	
29 *	0.1160	0.1740	
30	0.0916	0.1373	
31 *	0.1099	0.1648	
32	0.0854	0.1282	
33 *	0.1038	0.1556	
34	0.0824	0.1236	
35 *	0.0977	0.1465	
36	0.0763	0.1144	
37 *	0.0916	0.1373	
38	0.0732	0.1099	
39 *	0.0854	0.1282	
40	0.0702	0.1053	
Remark			

<b>4.8 Voltage changes, voltage fluctuations and flicker</b>	<b>VERDICT: PASS</b>
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Standard	EN 61000-3-3
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**Limits**

P <sub>ST</sub> (Short term flicker)	<input type="checkbox"/>	≤ 1	<input checked="" type="checkbox"/>	Not Applicable
P <sub>LT</sub> (Long term flicker)	<input type="checkbox"/>	≤ 0,65	<input checked="" type="checkbox"/>	Not Applicable
d <sub>C</sub> (Relative Voltage change)	<input checked="" type="checkbox"/>	≤ 3,3%	<input type="checkbox"/>	Not Applicable
d <sub>MAX</sub> (Max. voltage change)	<input type="checkbox"/>	≤ 4%	<input type="checkbox"/>	6%
	<input checked="" type="checkbox"/>	7%	<input type="checkbox"/>	Not Applicable
<u>Supplemental information:</u>				

**Performed measurements**

Reason for not performing the measurement(s)	<input type="checkbox"/>	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]	230 Vac					
Frequency – Mains [Hz]	50 Hz					
Test method	<input checked="" type="checkbox"/>	Flickermeter according EN / IEC 61000-4-15:2011				
	<input type="checkbox"/>	Simulation (Clause 4.2.3 of EN / IEC 61000-3-3)				
	<input type="checkbox"/>	Analytical method (Clause 4.2.4 of EN / IEC 61000-3-3)				
	<input type="checkbox"/>	Use of P <sub>st</sub> = 1 curve (Clause 4.2.5 of EN / IEC 61000-3-3)				
Observation period	<input type="checkbox"/>	10 min.	<input type="checkbox"/>	120 min.	<input type="checkbox"/>	Other:
	<input checked="" type="checkbox"/>	24 times switching according to Annex B				
Operating mode(s) used	Mode 1					
Remark	---					

See next page.

Measurement data	Port under test	AC mains power input										
Operating mode used during the test	Mode1/ 230 Vac/ 50 Hz											
<table border="1"> <tbody> <tr> <td data-bbox="193 472 874 512">Tmax (dt &gt; 3,3%)</td> <td data-bbox="874 472 1331 512">0,0 ms</td> </tr> <tr> <td data-bbox="193 512 874 553">Maximum voltage change <math>d_{MAX}</math></td> <td data-bbox="874 512 1331 553">2,21%</td> </tr> <tr> <td data-bbox="193 553 874 593">Relative Voltage change <math>d_C</math></td> <td data-bbox="874 553 1331 593">1,18%</td> </tr> <tr> <td data-bbox="193 593 874 633">Short term flicker <math>P_{ST}</math></td> <td data-bbox="874 593 1331 633">Not applicable*</td> </tr> <tr> <td data-bbox="193 633 874 674">Long term flicker <math>P_{LT}</math></td> <td data-bbox="874 633 1331 674">Not applicable*</td> </tr> </tbody> </table>			Tmax (dt > 3,3%)	0,0 ms	Maximum voltage change $d_{MAX}$	2,21%	Relative Voltage change $d_C$	1,18%	Short term flicker $P_{ST}$	Not applicable*	Long term flicker $P_{LT}$	Not applicable*
Tmax (dt > 3,3%)	0,0 ms											
Maximum voltage change $d_{MAX}$	2,21%											
Relative Voltage change $d_C$	1,18%											
Short term flicker $P_{ST}$	Not applicable*											
Long term flicker $P_{LT}$	Not applicable*											
Remark												

## 5 IMMUNITY TEST RESULTS

### 5.1 Performance (Compliance) criteria

[According to EN 55014-2 (CISPR 14-2)]

Performance criteria A : The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer when the apparatus is used as intended. If the minimum performance level or the permissible performance loss is not specified by the manufacturer then either of these may be derived from the product description and documentation and from what the user may reasonably expect from the apparatus if used as intended.

Performance criteria B : The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level ( or permissible loss of performance) specified by the manufacturer when the apparatus is used as intended. During the test, degradation of performance is allowed however no change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer then either of these may be derived from the product description and documentation and from what the user may reasonable expect from the apparatus if used as intended.

Performance criteria C : Temporary loss of function is allowed provided the function is self- recoverable or can be restored by the operation of the controls or by any operation specified in the instruction for use.

#### 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
Voltage dips and short interruptions	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.

<input type="checkbox"/>	Motor speed	<input type="checkbox"/>	Display data
<input type="checkbox"/>	Switching	<input type="checkbox"/>	Data storage
<input type="checkbox"/>	Standby mode	<input type="checkbox"/>	Sensor functions
<input type="checkbox"/>	Temperature	<input type="checkbox"/>	Audible signals
<input type="checkbox"/>	Power consumption	<input type="checkbox"/>	Others : LED's
<input type="checkbox"/>	AC mains input current	<input type="checkbox"/>	Others :
<input type="checkbox"/>	Timing	<input type="checkbox"/>	Others :
<input type="checkbox"/>	Illumination	<input type="checkbox"/>	Others :
<u>Supplementary information :</u>			

Immunity test	Monitored - Checked function(s)/parameter(s) during / after the test	Method
Electrostatic discharge	N/A	---
Radio-frequency electromagnetic fields	N/A	---
Fast transients	N/A	---
Surge transient	N/A	---
Injected currents (radio-frequency common mode)	N/A	---
Voltage dips and short interruptions	N/A	---
<u>Supplementary information :</u>		

<b>5.3 Electrostatic discharge immunity</b>	<b>VERDICT: N/A</b>
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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	EN 55014-2							
Basic standard	EN 61000-4-2							
Port under test	Enclosure							
Air discharges <sup>1)</sup>	<input checked="" type="checkbox"/>	±2 kV	<input checked="" type="checkbox"/>	±4 kV	<input checked="" type="checkbox"/>	±8 kV	<input type="checkbox"/>	kV
Contact discharges <sup>1)</sup>	<input type="checkbox"/>	±2 kV	<input checked="" type="checkbox"/>	±4 kV	<input type="checkbox"/>	±8 kV	<input type="checkbox"/>	kV
Number of discharges	≥ 10 per polarity with ≥ 1 sec interval.							
<sup>1)</sup> Tests with lower voltages are not required.								

**Performed tests**

Set-up	<input checked="" type="checkbox"/>	Table-top	<input type="checkbox"/>	Floor-standing
Ambient temperature [°C]	23 °C		Relative Humidity air [%]	46.1%
Voltage—Mains [V]	230 Vac			
Frequency—Mains [Hz]	50 Hz			
Operating mode(s) used	Mode 1			

	Test Point (Location of discharge, see also photo)	Test Voltage [kV] & Polarity	Coupling type	# of applied discharges / polarity	Discharge interval [s]
<input checked="" type="checkbox"/>	Points on conductive surface as indicated in the picture below.	±2, ±4, ±8	Contact	10	1
<input checked="" type="checkbox"/>	Points on non-conductive surface as indicated in the picture below.	±4, ±8	Air	10	1
<input checked="" type="checkbox"/>	HCP top side.	±4	Contact	10	1
<input checked="" type="checkbox"/>	HCP bottom side.	±4	Contact	10	1
<input checked="" type="checkbox"/>	VCP right side.	±4	Contact	10	1
<input checked="" type="checkbox"/>	VCP left side.	±4	Contact	10	1
<input checked="" type="checkbox"/>	VCP front side.	±4	Contact	10	1
<input checked="" type="checkbox"/>	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.
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Supplementary information:

**5.4 Radio-frequency electromagnetic fields immunity**
**VERDICT: N/A**

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	EN 55014-2			
Basic standard	EN 61000-4-3			
Port under test	Enclosure			
Frequency range	Test level	Modulation	Dwell time	Step size
80 – 1000 MHz	3 V/m	80% AM (1kHz)	≥ 0,5 s	≤ 1%
<u>Supplementary information:</u>				

**Performed tests**

Test method	<input checked="" type="checkbox"/>	EN 61000-4-3	<input type="checkbox"/>	EN 61000-4-20		
Test set-up	<input checked="" type="checkbox"/>	Equipment on the table (0,8 m height)				
	<input type="checkbox"/>	Equipment standing on floor (0,05 – 0,15 m height)				
Voltage — Mains [V]	230 Vac					
Frequency — Mains [Hz]	50 Hz					
Operating mode(s) used	Mode 1					
Frequency range (applied)	Antenna Polarization	Test level (applied)	Modulation (applied)	Dwell time (applied)	Remark	
80 – 1000 MHz (step size 1%)	H	3 V/m	80% AM (1kHz)	3 s		
	V	3 V/m	80% AM (1kHz)	3 s		
Exposed side of the EUT	<input checked="" type="checkbox"/>	Front (0°)	<input checked="" type="checkbox"/>	Right (90°)	<input type="checkbox"/>	Top
	<input checked="" type="checkbox"/>	Rear (180°)	<input checked="" type="checkbox"/>	Left (270°)	<input type="checkbox"/>	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 was observed.					
<u>Supplementary information:</u>						

<b>5.5</b>	<b>Electrical Fast Transients immunity</b>	<b>VERDICT: N/A</b>
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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	EN 55014-2			
Basic standard	EN 61000-4-4			
Pulse characteristics	5/50 ns			
Port		Test level	Repetition frequency	Duration
<input checked="" type="checkbox"/>	AC input-output power <sup>1)</sup>	± 1000 V	5 KHz	2 min. / polarity
<input type="checkbox"/>	DC input-output power <sup>2)</sup>	± 500 V	5 KHz	2 min. / polarity
<input type="checkbox"/>	Signal and Control lines <sup>3)</sup>	± 500 V	5 KHz	2 min. / polarity
<sup>1)</sup> For extra low voltage a.c ports, this testing is only applicable to ports interfacing with cables whose total length may exceed 3 m according to the manufacturer's functional specification. <sup>2)</sup> Not applicable to battery operated appliances that cannot be connected to the mains while in use. <sup>3)</sup> Applicable only to ports interfacing with cables whose total length may exceed 3 m according to the manufacturer's functional specification.				

**Performed tests**

Voltage — Mains [V]	230 Vac		
Frequency — Mains [Hz]	50 Hz		
Operating mode(s) used	Mode 1		
Test Set-up	<input checked="" type="checkbox"/>	Equipment standing on floor at (0,1 ± 0,01) m above ground plane	
	<input type="checkbox"/>	Equipment on the table (0,1 ± 0,01) m above ground plane	
	<input type="checkbox"/>	Artificial hand applied.	
Coupling	<input checked="" type="checkbox"/>	Common mode	<input type="checkbox"/> Other:

Port(s) under test	Test Voltage & Polarity	Repetition Frequency	Test duration /polarity	Injection method		
				<input checked="" type="checkbox"/> CDN	<input type="checkbox"/> Clamp	<input type="checkbox"/> Other
AC / DC mains power input	1 kV	5 KHz	2 min	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AC / DC power output		5 KHz		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ethernet / LAN		5 KHz		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Observation(s)	During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance was observed.					

<b>5.6 Surge transient immunity</b>	<b>VERDICT: N/A</b>
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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	EN 55014-2		
Basic standard	EN 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)		
Port	Test level & Polarity & Coupling		Phase angle [°]
	Line to Line	Line to Earth	
AC input power <sup>1)</sup>	+ 1 kV	N/A	90
AC input power <sup>1)</sup>	- 1 kV	N/A	270
<sup>1)</sup> Tests with lower voltages are not required.			

**Performed tests**

Voltage—Mains [V]	230 Vac
Frequency—Mains [Hz]	50 Hz
Operating mode(s) used	Mode 1
Repetition rate	60 secs. (for each test level and phase angle)
Number of pulses	5 pulses (at each polarity and phase angle)

Port(s) under test	Coupling	Test level & Polarity	Phase angle [°]	Remark
<input checked="" type="checkbox"/> AC mains input power	Line to Neutral	+1 kV	90	
<input checked="" type="checkbox"/> AC mains input power	Line to Neutral	-1 kV	270	
<input checked="" type="checkbox"/> AC mains input power	Line to Earth	+2 kV	90	
<input checked="" type="checkbox"/> AC mains input power	Line to Earth	-2 kV	270	
<input checked="" type="checkbox"/> AC mains input power	Neutral to Earth	+2 kV	90	
<input checked="" type="checkbox"/> AC mains input power	Neutral to Earth	-2 kV	270	
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.			
<u>Supplementary information:</u>				
1. The EUT does not include an earth port.				

<b>5.7</b>	<b>Injected currents (RF common mode) immunity</b>	<b>VERDICT: N/A</b>
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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		EN 55014-2		
Basic standard		EN 61000-4-6		
Frequency range		Modulation	Step size	Dwell time
<input type="checkbox"/>	0,15 – 80 MHz	80% AM (1kHz)	≤ 1%	≥ 0,5 s
<input checked="" type="checkbox"/>	0,15 – 230 MHz	80% AM (1kHz)	≤ 1%	≥ 0,5 s
Port			Test level, U <sub>0</sub>	
<input checked="" type="checkbox"/>	AC input-output power <sup>1)</sup>		3 V	
<input type="checkbox"/>	DC input-output power <sup>2) 3)</sup>		1 V	
<input type="checkbox"/>	Signal and Control lines <sup>4)</sup>		1 V	
<sup>1)</sup> For extra low voltage a.c ports, this testing is only applicable to ports interfacing with cables whose total length may exceed 3 m according to the manufacturer's functional specification. <sup>2)</sup> Not applicable to battery operated appliances that cannot be connected to the mains while in use. <sup>3)</sup> Applicable to battery operated appliances that can be connected to the mains while in use, or to appliances for which the length of d.c. cables may exceed 3 m according to the manufacturer's functional specification. <sup>4)</sup> Applicable only to ports interfacing with cables whose total length may exceed 3 m according to the manufacturer's functional specification.				

**Performed tests**

Frequency range (applied)		Modulation (applied)		Step-size (applied)
<input type="checkbox"/>	0,15 – 80 MHz	<input checked="" type="checkbox"/>	0,15 – 230 MHz	80% AM (1kHz)
Voltage – Mains [V]		230 Vac	Frequency – Mains [Hz]	
			50 Hz	
Operating mode(s) used		Mode 1		
Test set-up		<input type="checkbox"/> Equipment standing on floor at (0,1 ± 0,01) m above ground plane. <input type="checkbox"/> Equipment on the table (0,1 ± 0,01) m above ground plane. <input checked="" type="checkbox"/> Artificial hand applied.		

Port(s) under test	Test Level (applied)	Injection method	Dwell time (applied)	Remark
AC mains power input	3 V	CDN-M3	3 s	
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:				

<b>5.8</b>	<b>Power supply interruptions and dips immunity</b>	<b>VERDICT: N/A</b>
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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	EN 55014-2			
Basic standard	EN 61000-4-11			
# of dips & interruptions	3 dips / interruptions for each test level and phase angle			
Interval between events	≥ 10 seconds			
Port	Test level <sup>1)</sup>	Period (Cycles)		Performance Criteria
		50 Hz	60 Hz	
AC input power port	$U_{NOM} - 100\%$	0,5	0,5	C; Refer to the chapter 5.1 for details.
AC input power port	$U_{NOM} - 60\%$	10	12	C; Refer to the chapter 5.1 for details.
AC input power port	$U_{NOM} - 30\%$	25	30	C; Refer to the chapter 5.1 for details.
<sup>1)</sup> Changes to the voltage level shall occur at a zero crossing point in the a.c. voltage waveform. <b>NOTE:</b> Where the equipment has a rated voltage range the following shall apply: <ul style="list-style-type: none"> <li>- 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.</li> <li>- In all other cases, the test procedure shall be applied for both the lowest and highest voltages declared in the voltage range.</li> </ul>				

**Performed tests**

$U_{NOM} [V_{AC}]$	Terminal	Voltage dip [% $U_{NOM}$ ]	Duration [cycles]		Repetition rate [s]	Number of dips per test	Phase angle [°]
			50 Hz	60 Hz			
230	L-N	0	0,5	/	10	3	0, 180
230	L-N	40	10	/	10	3	0, 180
230	L-N	70	25	/	10	3	0, 180
Operating mode(s) used		Mode 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 was observed.					
<u>Supplementary information:</u>							

## 6 IDENTIFICATION OF THE EQUIPMENT UNDER TEST

### EUT PHOTOS





## 7 MEASUREMENT UNCERTAINTIES

The table(s) below show(s) measurement 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%.

### Conducted Emissions

The measurement uncertainty is evaluated as  $\pm 2.26$  dB.

### Disturbance Power Emission

The measurement uncertainty is evaluated as  $\pm 3.34$  dB.

### Harmonic Current Emission

The measurement uncertainty is evaluated as 0.1%.

### Voltage Fluctuation and Flicker

The measurement uncertainty is evaluated as  $\pm 4\%$ .

## 8 USED EQUIPMENT

### Conducted Emission / SR2-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Test Receiver	R&S	ESCS 30	825442/014	2018/03/13	2019/03/12
Artificial Mains Network	R&S	ENV4200	848411/010	2018/01/22	2019/01/21
LISN	R&S	ENV216	100092	2018/07/23	2019/07/22
Coaxial Cable	Harbour	RG-400	SR2-H	2018/08/15	2019/08/14
Quietek EMI system	Quietek	Version 2.2	SR2-H	N/A	N/A

### Disturbance Power Emission / SR2-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Test Receiver	R&S	ESCS 30	825442/014	2018/03/13	2019/03/12
Absorbing Clamp	Luthi	MDS 21B	P1602169770	2018/02/05	2019/02/04
Quietek EMI	Dekra	Version 2	SR2-H	N/A	N/A

### Power Harmonics / SR3-H

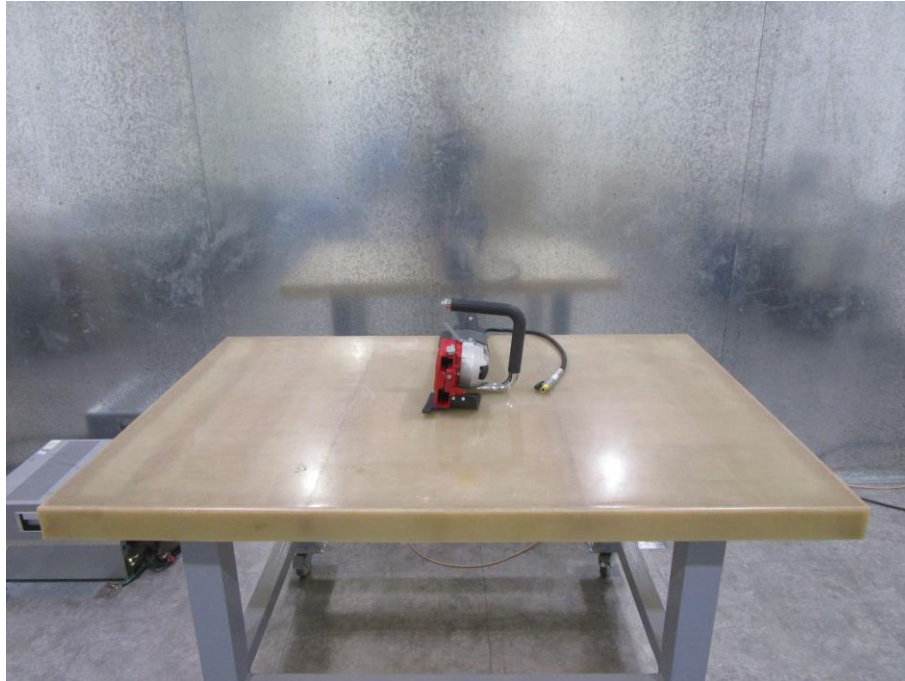
Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
EMC Emission Tester	EMC-Partner	HAR-1000-1P	109	2018/01/15	2019/01/14

### Voltage Fluctuation and Flicker / SR3-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
EMC Emission Tester	EMC-Partner	HAR-1000-1P	109	2018/01/15	2019/01/14

## 9 TEST PHOTOS

### Conducted disturbance voltage at mains terminals



### Disturbance power



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