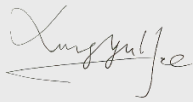
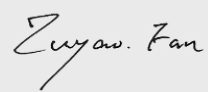


This report will not be used for social proof function in China market.

Test report No:

6066405.50V1.1

TEST REPORT**Electromagnetic Compatibility (EMC)**

Identification of item tested	Electric Pump
Trademark	N/A
Model and /or type reference	#P3141
Ratings	220-240 V~50/60 Hz 95 W
Test Laboratory / address	DEKRA Testing and Certification (Shanghai) Ltd. 3 F., No. 250 Jiangchangsan Road, Jing'an District, Shanghai City, 200436, China
Applicant's name / address	Bestway (Hong Kong) International Ltd. Suite 713, 7/Floor, East Wing, Tsim Sha Tsui Centre, 66 Mody Road, Kowloon, Hong Kong
Test method requested, standard	EN 55014-1:2006+A1:2009+A2:2011 EN 55014-1:2017; EN 55014-2:2015; EN 61000-3-2:2014; EN 61000-3-3:2013
Verdict Summary	IN COMPLIANCE
Tested by (name / position & signature)	Xingyu He Test Engineer 
Approved by (name / position & signature)	Zuyao Fan Project Manager 
Date of issue	2020-04-01
Report template No	TRF_EN55014-1_EN55014-2_EM01 V1.0

INDEX

	page
Competences and Guarantees.....	4
General conditions.....	4
Uncertainty.....	4
Environmental conditions.....	4
Possible test case verdicts	5
Definition of symbols used in this test report	5
Abbreviations	5
Document History	6
Remarks and Comments	6
1 General Information.....	7
1.1 General Description of the Item(s)	7
1.2 Environment	8
1.3 Test data	8
1.4 Classification according to EN 55014-2	9
2 Description of Test Setup	10
2.1 Operating mode(s) used for tests.....	10
2.2 Port(s) of the EUT	10
2.3 Support / Auxiliary equipment / unit / software for the EUT	10
2.4 Test Configuration / Block diagram used for tests	11
3 Verdict summary section	12
3.1 Standards	12
3.2 Deviation(s) from the Standard(s) / Test Specification(s)	12
3.3 Overview of results.....	13
4 Emission Test Results	14
4.1 Conducted disturbance voltage - Mains.....	14
4.2 Disturbance power (30 MHz – 300 MHz).....	19
4.3 Radiated electromagnetic disturbances (30 – 1000 MHz).....	22
4.4 Discontinuous disturbance (clicks) on AC power leads	23
4.5 Harmonic current emissions.....	24
4.6 Voltage changes, voltage fluctuations and flicker	27
5 Immunity Test Results	29
5.1 Performance (Compliance) criteria	29
5.1.1 Performance criteria related to immunity tests	29
5.1.2 Manufacturer defined performance criteria.....	29

5.2	Monitored – Checked Functions / Parameters.....	30
5.3	Electrostatic discharge immunity.....	31
5.4	Radio-frequency electromagnetic fields immunity	32
5.5	Electrical Fast Transients immunity	33
5.6	Surge transient immunity	34
5.7	Injected currents (RF common mode) immunity	35
5.8	Power supply interruptions and dips immunity.....	36
6	Identification of the Equipment Under Test	37
7	Annex 1 – Measurement Uncertainties	38
8	Annex 2 – Used Equipment.....	39
9	Annex 3 – Test Photos	41

COMPETENCES AND GUARANTEES

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.

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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 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%. Refer to the Annex 1 for further 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
N/A	: Not Applicable
N/M	: Not Measured

DOCUMENT HISTORY

Report nr.	Date	Description
6066405.50	2020-03-10	First release.
6066405.50V1.1	2020-04-01	Second release.

REMARKS AND COMMENTS

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

The test results relate only to the samples tested.

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Description of the item	See page 1
Model / Type number	See page 1
Serial number	N/A
Trademark	N/A
Manufacturer	Bestway (Hongkong) International Ltd Suite 713, 7/Floor, East Wing, Tsim Sha Tsui Centre, 66 Mody Road, Kowloon, Hongkong
Factory	Bestway (Nantong) Recreation Corp No.8 Hui Min West Road, Economic Development Zone, Rugao, Jiangsu 226500, P.R. China

Clock frequencies	N/A
Other parameters	N/A
Mounting position	☒ Table top equipment ☐ Wall/Ceiling mounted equipment ☐ Floor standing equipment ☐ Hand-held equipment ☐ Other:

Intended use of the Equipment Under Test (EUT)
The apparatus as supplied for the test is Electric Pump, intended for residential and commercial use. These products have electronic control unit and with no earth connection.

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

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

Modifications to the test item during testing	☒ N/A	☐ Supplemental information:
---	---	--

Copy of marking plate:

N/A

1.2 Environment

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

☒	Residential (domestic) environment.
☒	Commercial and light-industrial environment.
☐	Industrial environment.

1.3 Test data

Test Location	DEKRA Testing and Certification (Shanghai) Ltd. 1 F, No. 250, Jiangchangsan Road, Shanghai City
Date(receive sample)	2020-03
Date (start test)	2020-03
Date (finish test)	2020-03

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.

☐	Category I: Apparatus containing no electronic control circuitry. <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. 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.
☒	Category II: 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 clock frequency higher than 15 MHz. (For toys, examples include educational computers, organs, track sets with electronic control units.)
☐	Category III: equipment which in normal use, is not connected to a power network and has no cables attached. This category includes apparatus provided with rechargeable batteries, solar or other similar d.c. power sources which can be charged or operated by connecting the apparatus to the mains power. However, this apparatus shall also be tested as an apparatus in category II while it is connected to the mains network.(For toys, examples include musical soft toys, cord-controlled toys and motor-operated electronic toys.)
☐	Category IV: All other apparatus covered by the scope of the EN 55014-2 standard.
Clock frequency: Fundamental frequency of any signal used in the device, excluding those which are solely used inside integrated circuits (IC).	

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	The EUT operates normally.	☒	☒
2		☐	☐
3		☐	☐
4		☐	☐
5		☐	☐
<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
AC input port	AC mains	0.8 m	☒	☐
			☐	☐
			☐	☐
			☐	☐
			☐	☐
<u>Supplemental information:</u>				

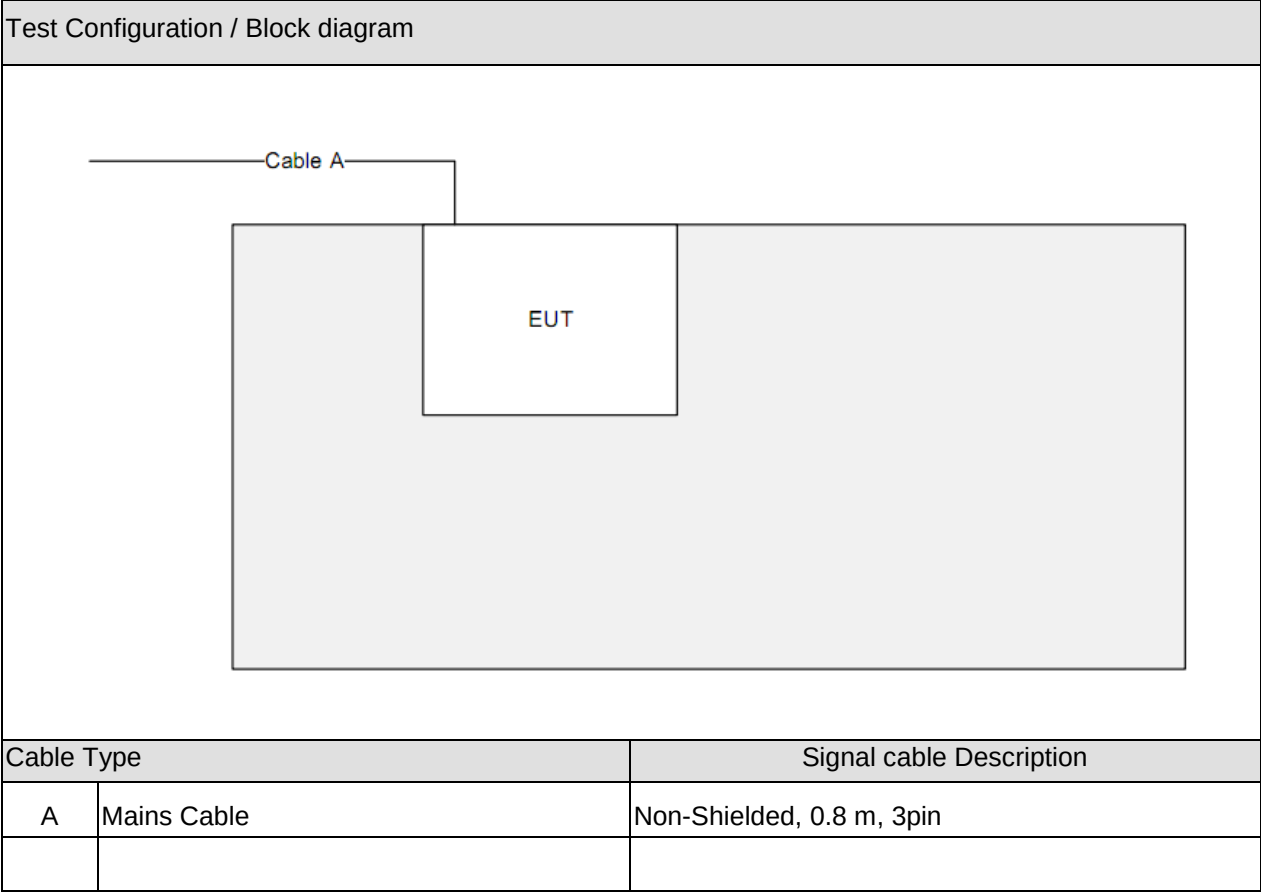
2.3 Support / Auxiliary equipment / unit / software for the EUT

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

Auxiliary equipment / unit / software	Type / Version	Manufacturer	Supplied by
N/A			Applicant
			DEKRA
<u>Supplemental information:</u>			

2.4 Test Configuration / Block diagram used for tests

The following test setup / configuration / block diagram has been used during the 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 A1 A2	2006 2009 2011	Requirements for household appliances, electric tools and similar apparatus – Part 1: Emission.
EN 55014-1	2017	
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 changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection.
EN 55014-2	2015	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.

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 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 3)
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) Not applicable because no test requirements have been specified for DC/battery powered apparatus. 3) According to clause 4.3.4.2 procedure (a) of the CISRP 14-1 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> 1) The EUT is regarded as an "Equipment with rated power of ≤ 75 W". According to "Clause 7, Figure 1 - Flowchart for determining conformity" the EUT is deemed to comply with the requirements of the EN 61000-3-2 standard. 2) The EUT is regarded as a professional equipment with a total rated power greater than 1 KW. The test is not applicable.			

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) Not applicable because no test requirements have been specified for DC/battery powered apparatus. 2) The equipment is classified as category 1 equipment according to EN 55014-2; no immunity tests are applicable.			

4 EMISSION TEST RESULTS

4.1	Conducted disturbance voltage - Mains	VERDICT: PASS
-----	---------------------------------------	---------------

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

Limits

Frequency range [MHz]	Limit: QP [dB(μV) ¹⁾	Limit: AV [dB(μV) ¹⁾	IF BW	Detector(s)
0,15 - 0,50	66 – 56 ²⁾	59 - 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.				

Performed measurements

Tested terminal(s) / port	☒	AC mains input power	☒	N	☒	L1	☐	L2	☐	L3
	☐	DC mains input power	☐	Positive (+)			☐	Negative (-)		
Voltage – Mains [V]	230 Vac									
Frequency – Mains [Hz]	50 Hz									
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 1									
Remark	---									

See next page.

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

Line:

Level (dBuV)

120

105.0

90.0

75.0

60.0

45.0

30.0

15.0

0.0

-15.0

-30

Frequency (MHz)

.15

.2

.5

1

2

5

10

20

30

Date: 2020-03-05

EN55014-1 QP

EN55014-1 AV

	Freq	Limit	Level	Read	Cable	Over	Remark		
	MHz	dBuV	dBuV	Level	Factor	Loss	Limit		
				dBuV	dB	dB	dB		
1	pp	0.18	64.64	59.65	50.00	9.65	0.02	-4.99	QP
2	av	0.18	57.23	49.25	39.60	9.65	0.02	-7.98	Average
3		0.24	62.26	53.37	43.70	9.67	0.02	-8.89	QP
4		0.24	54.14	41.77	32.10	9.67	0.02	-12.37	Average
5		0.50	56.00	46.40	36.70	9.70	0.03	-9.60	QP
6		0.50	46.00	33.70	24.00	9.70	0.03	-12.30	Average
7		1.24	56.00	38.73	29.00	9.73	0.05	-17.27	QP
8		1.24	46.00	26.03	16.30	9.73	0.05	-19.97	Average
9		4.25	56.00	32.21	22.40	9.81	0.08	-23.79	QP
10		4.25	46.00	18.71	8.90	9.81	0.08	-27.29	Average
11		9.71	60.00	29.77	19.79	9.98	0.13	-30.23	QP
12		9.71	50.00	17.07	7.09	9.98	0.13	-32.93	Average

Note:

1. All Readings are performed with Quasi-Peak and/or average measurements as necessary.

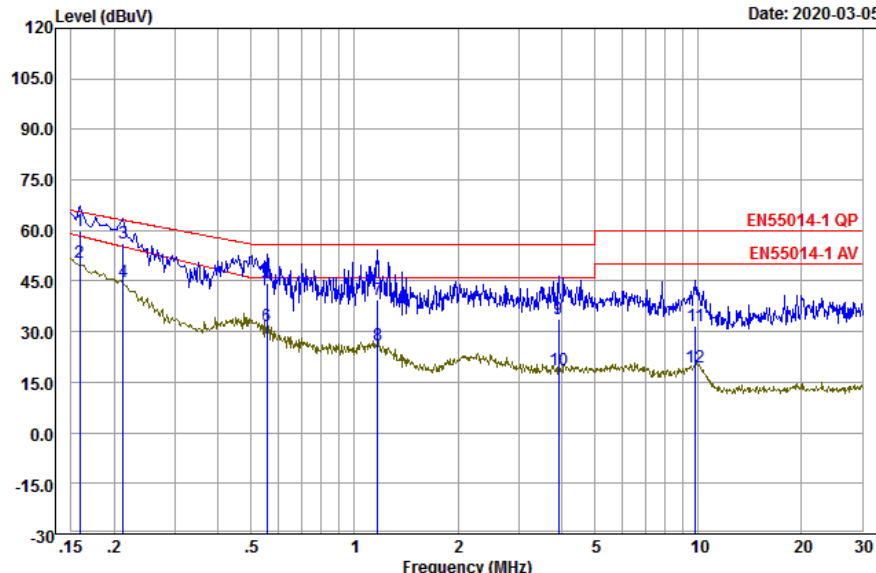
2. Measurement Level = Reading Level + Factor +Cable Loss.

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

Neutral:

Level (dBuV)

Date: 2020-03-05



	Freq	Limit	Level	Read	Cable	Over	Remark
	MHz	dBuV	dBuV	dBuV	dB	dB	
1	pp	0.16	65.52	59.84	50.20	9.64	0.02 -5.68 QP
2	av	0.16	58.37	50.54	40.90	9.64	0.02 -7.83 Average
3		0.21	63.10	56.16	46.50	9.66	0.02 -6.94 QP
4		0.21	55.22	44.96	35.30	9.66	0.02 -10.26 Average
5		0.56	56.00	44.30	34.60	9.70	0.03 -11.70 QP
6		0.56	46.00	31.60	21.90	9.70	0.03 -14.40 Average
7		1.17	56.00	39.43	29.70	9.73	0.05 -16.57 QP
8		1.17	46.00	26.13	16.40	9.73	0.05 -19.87 Average
9		3.92	56.00	33.71	23.91	9.80	0.08 -22.29 QP
10		3.92	46.00	18.81	9.01	9.80	0.08 -27.19 Average
11		9.81	60.00	31.68	21.70	9.98	0.13 -28.32 QP
12		9.81	50.00	19.48	9.50	9.98	0.13 -30.52 Average

Note:

1. All Readings are performed with Quasi-Peak and/or average measurements as necessary.

2. Measurement Level = Reading Level + Factor +Cable Loss.

Remark	---
--------	-----

Note:

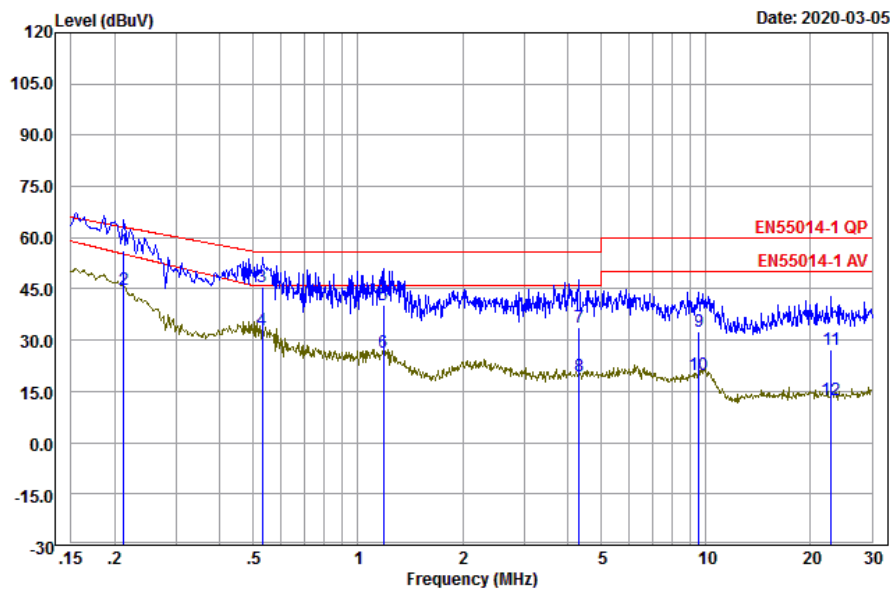
1. All Readings are performed with Quasi-Peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Factor + Cable Loss.

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

Line:

Level (dBUV)

Date: 2020-03-05



	Freq	Limit	Read	Cable	Over	Remark
	MHz	dBuV	dBuV	Factor	Loss	dB
1 pp	0.21	63.10	56.36	46.70	9.66	0.02 -6.74 QP
2 av	0.21	55.22	44.86	35.20	9.66	0.02 -10.36 Average
3	0.53	56.00	45.80	36.10	9.70	0.03 -10.20 QP
4	0.53	46.00	33.10	23.40	9.70	0.03 -12.90 Average
5	1.18	56.00	40.33	30.60	9.73	0.05 -15.67 QP
6	1.18	46.00	26.33	16.60	9.73	0.05 -19.67 Average
7	4.31	56.00	33.82	24.00	9.82	0.09 -22.18 QP
8	4.31	46.00	19.42	9.60	9.82	0.09 -26.58 Average
9	9.55	60.00	32.47	22.50	9.97	0.13 -27.53 QP
10	9.55	50.00	19.77	9.80	9.97	0.13 -30.23 Average
11	22.90	60.00	27.08	16.71	10.37	0.18 -32.92 QP
12	22.90	50.00	12.58	2.21	10.37	0.18 -37.42 Average

Note:

1. All Readings are performed with Quasi-Peak and/or average measurements as necessary.

2. Measurement Level = Reading Level + Factor +Cable Loss.

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

Neutral:

Level (dBuV)

<

Note:

1. All Readings are performed with Quasi-Peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Factor + Cable Loss.

4.2 Disturbance power (30 MHz – 300 MHz)	VERDICT: PASS
---	----------------------

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

Limits

Frequency range [MHz]	Limit: QP [dB(pW)]	Limit: AV [dB(pW)]	IF BW	Detector(s)
30 - 300	45 – 55 ¹⁾	35 – 45 ¹⁾	120 KHz	QP, CAV
Margin				
200 - 300	0 – 10 ¹⁾	---	120 KHz	QP, CAV
¹⁾ The limit increases linearly with the frequency.				

Performed measurements

Port(s) under test					
☒	AC mains input power	☐	Load	☐	Control
☐	Other:	☐	Other:	☐	Other:
Voltage – Mains [V]		230 Vac			
Frequency – Mains [Hz]		50 Hz			
Test setup	☒	Table top	☐	Floor standing	
	☐	Other:			
	Refer to the Annex 3 for test setup photo(s).				
Conditions for exemption from measurements above 300 MHz	☒	“Limits” reduced by “Margin” applied and passed			
	☒	Maximum clock frequency < 30 MHz			
Operating mode(s) used		Mode 1			
Remark		---			

See next page.

Measurement data			Port under test		AC input power		
Operating mode / voltage / frequency used during the test					Mode 1 blow / 230 Vac / 50 Hz		
Level (dBpW)							

Note:

1. All Readings are performed with Quasi-Peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Factor + Cable Loss.

Measurement data		Port under test	AC input power
Operating mode / voltage / frequency used during the test			Mode 1 suck / 230 Vac / 50 Hz
Level (dBpW)			

4.3	Radiated electromagnetic disturbances (30 – 1000 MHz)	VERDICT:	N/A
-----	--	-----------------	------------

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) ¹⁾]			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

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

Performed measurements

Port under test	Enclosure	
Voltage — Mains [V]	230 Vac	
Frequency — Mains [Hz]	50 Hz , 60 Hz	
Test method applied	☒	OATS or SAC with measurement distance [m]: 3 m.
	☐	OATS or SAC with measurement distance [m]: 5 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 1	
Remark	---	

4.4	Discontinuous disturbance (clicks) on AC power leads	VERDICT:	N/A
-----	---	-----------------	------------

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

Voltage — Mains [V]	230 Vac		
Frequency — Mains [Hz]	50 Hz , 60 Hz		
Test method applied	☒	Artificial mains network	
	☐	Voltage probe	
Test setup	☒	Table top	☐ Floor standing
	☐	Other:	
	Refer to the Annex 3 for test setup photo(s).		
Operating mode(s) used	Mode 1		
Remark	---		

Reason for not performing the test	☒	The amplitudes of the observed disturbances were all below the limit for continuous disturbance, these are not considered to be clicks.						
Measurement results	☒	Neutral	☒	Line 1	☐	Line 2	☐	Line 3
Frequency (MHz)	First Measurement: Determination of the limit L_q – Quasi-peak							
	Limit L (dBμV)	Number of short clicks	Number of long clicks	Number of clicks — N_1	Time of meas. (min.)	Click rate N	Increased limit (dB)	Increased Limit L_q
0,15	66	0	0	0	120	5	16	82
0,5	56	0	0	0	120	5	16	72
1,4	56	0	0	0	120	5	16	72
30	60	0	0	0	120	5	16	76
☒	The calculated click rate N is not more than 5 times per minute and all the clicks are classified as short ($t \leq 10$ 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_q (Upper quartile method):							
	Limit L_q (dBμV)	Number of clicks — N_2	Number of authorized clicks $N_2 \leq N_1/4$				Verdict	
0,15								
0,5								
1,4								
30								
Supplementary information: —								

4.5 Harmonic current emissions	VERDICT: PASS
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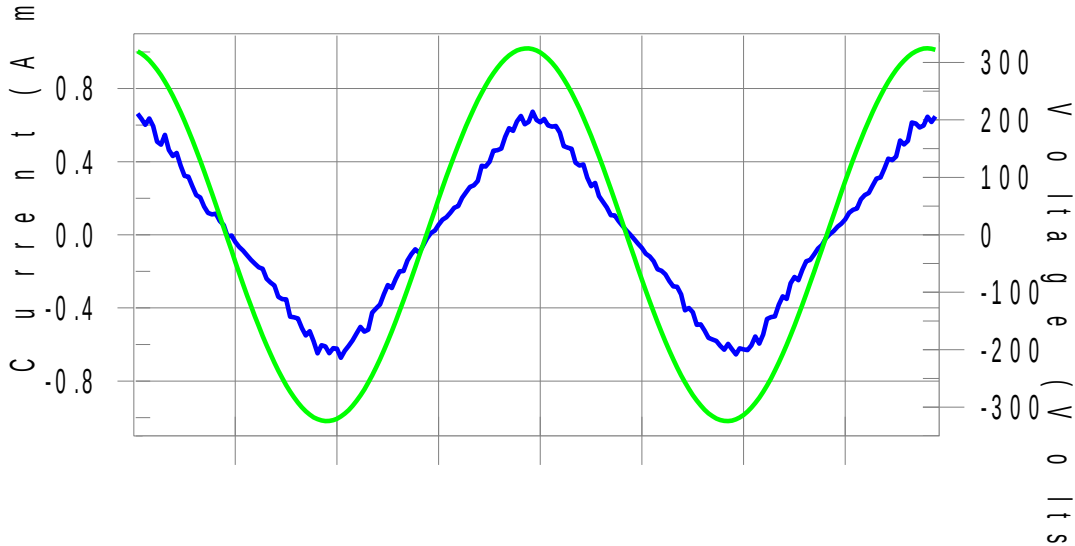
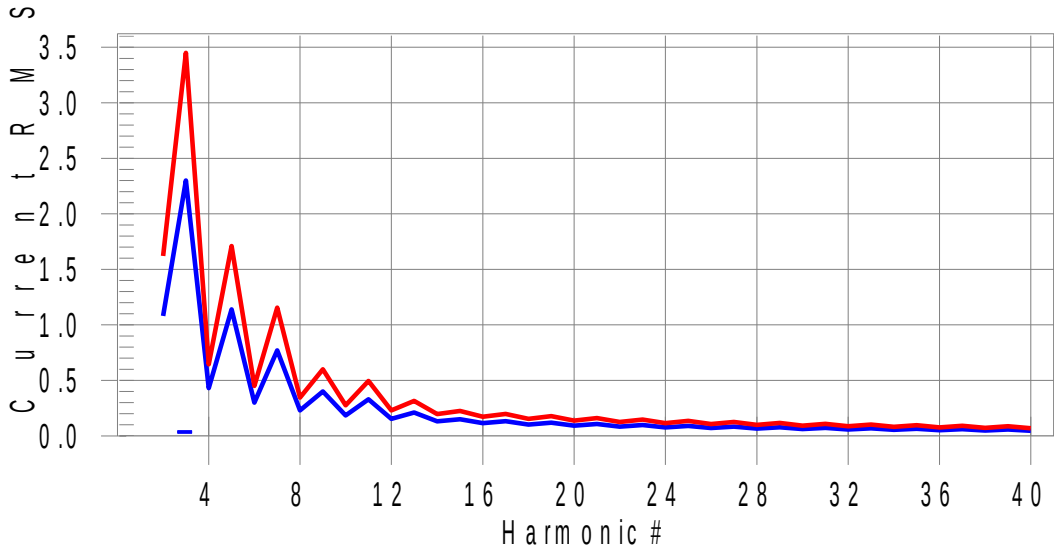
Standard	EN 61000-3-2	
Exclusions (For these categories of equipment, limits are not specified in the EN 61000-3-2 standard)	☐	Arc welding equipment intended for professional use.
	☐	System(s) with nominal voltage(s) less than 220 V _{AC} (line-to-neutral).
	☐	Equipment with rated power of ≤ 75 W (other 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		
☒	Class A	All apparatus not classified as Class B, C or D
☐	Class B	Portable tools, arc welding equipment which is not professional equipment.
☐	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, refrigerators and freezers having one or more variable-speed drives to control compressor motor(s).

Performed measurements

Port under test	AC mains power input					
Voltage – Mains [V]	230 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).				
	☐	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 input power
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz
Test Result: Pass Source qualification: Normal Current & voltage waveforms  Harmonics and Class A limit line European Limits  Test result: Pass Worst harmonics H3-1.4% of 150% limit, H3-2.1% of 100% limit		

Measurement data				Port under test	AC input power		
Test Result: Pass Source qualification: Normal THC(A): 0.048 I-THD(%): 12.0 POHC(A): 0.003 POHC Limit(A): 0.251							
Highest parameter values during test:							
V_RMS (Volts): 229.55				Frequency(Hz): 50.00			
I_Peak (Amps): 0.718				I_RMS (Amps): 0.408			
I_Fund (Amps): 0.404				Crest Factor: 1.785			
Power (Watts): 92.4				Power Factor: 0.990			
Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.080	N/A	0.002	1.620	N/A	Pass
3	0.047	2.300	2.1	0.050	3.450	1.4	Pass
4	0.001	0.430	N/A	0.002	0.645	N/A	Pass
5	0.002	1.140	N/A	0.003	1.710	N/A	Pass
6	0.002	0.300	N/A	0.003	0.450	N/A	Pass
7	0.002	0.770	N/A	0.003	1.155	N/A	Pass
8	0.002	0.230	N/A	0.004	0.345	N/A	Pass
9	0.002	0.400	N/A	0.002	0.600	N/A	Pass
10	0.002	0.184	N/A	0.002	0.276	N/A	Pass
11	0.002	0.330	N/A	0.003	0.495	N/A	Pass
12	0.001	0.153	N/A	0.001	0.230	N/A	Pass
13	0.003	0.210	N/A	0.003	0.315	N/A	Pass
14	0.001	0.131	N/A	0.001	0.197	N/A	Pass
15	0.003	0.150	N/A	0.004	0.225	N/A	Pass
16	0.001	0.115	N/A	0.002	0.173	N/A	Pass
17	0.002	0.132	N/A	0.002	0.198	N/A	Pass
18	0.001	0.102	N/A	0.001	0.153	N/A	Pass
19	0.001	0.118	N/A	0.001	0.178	N/A	Pass
20	0.001	0.092	N/A	0.001	0.138	N/A	Pass
21	0.001	0.107	N/A	0.001	0.161	N/A	Pass
22	0.001	0.084	N/A	0.001	0.125	N/A	Pass
23	0.001	0.098	N/A	0.001	0.147	N/A	Pass
24	0.001	0.077	N/A	0.001	0.115	N/A	Pass
25	0.001	0.090	N/A	0.001	0.135	N/A	Pass
26	0.002	0.071	N/A	0.002	0.107	N/A	Pass
27	0.001	0.083	N/A	0.002	0.125	N/A	Pass
28	0.001	0.066	N/A	0.001	0.099	N/A	Pass
29	0.001	0.078	N/A	0.002	0.116	N/A	Pass
30	0.001	0.061	N/A	0.001	0.092	N/A	Pass
31	0.001	0.073	N/A	0.001	0.109	N/A	Pass
32	0.001	0.058	N/A	0.001	0.086	N/A	Pass
33	0.001	0.068	N/A	0.001	0.102	N/A	Pass
34	0.001	0.054	N/A	0.001	0.081	N/A	Pass
35	0.001	0.064	N/A	0.001	0.096	N/A	Pass
36	0.001	0.051	N/A	0.001	0.077	N/A	Pass
37	0.001	0.061	N/A	0.001	0.091	N/A	Pass
38	0.001	0.048	N/A	0.001	0.073	N/A	Pass
39	0.001	0.058	N/A	0.001	0.087	N/A	Pass
40	0.000	0.046	N/A	0.001	0.069	N/A	Pass
Remark	---						

4.6	Voltage changes, voltage fluctuations and flicker	VERDICT: PASS
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Standard	EN 61000-3-3
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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
<u>Supplemental information:</u>				

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]	230 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 1					
Remark	---					

See next page.

Measurement data		Port under test	AC input power
Operating mode used during the test		Mode 1 / 230 Vac / 50 Hz	
Results			
Tmax (dt > 3,3%)		0,0 ms	
Maximum relative voltage change d _{MAX}		0.27	
Relative Voltage change d _c		<0,050%	
Short term flicker P _{ST}		0,00	
Long term flicker P _{LT}		0,00	

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.

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

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

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	EN 55014-2							
Basic standard	EN 61000-4-2							
Port under test	Enclosure							
Air discharges ¹⁾	☐	±2 kV	☐	±4 kV	☒	±8 kV	☐	kV
Contact discharges ¹⁾	☐	±2 kV	☒	±4 kV	☐	±8 kV	☐	kV
Number of discharges	≥ 10 per polarity with ≥ 1 sec interval.							
¹⁾ Tests with lower voltages are not required.								

Performed tests

Set-up	☒	Table-top	☐	Floor standing	
Ambient temperature [°C]	20°C		Relative Humidity air [%]		48%
Voltage – Mains [V]	230 Vac				
Frequency – Mains [Hz]	50Hz				
Operating mode(s) used	Mode 1				

Test Point		Test Voltage [kV] & Polarity	Coupling type	# of applied discharges / polarity	Discharge interval [s]
☒	Points on conductive surface.	±4	Contact	10	1
☒	Points on non-conductive surface.	±8	Air	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:	N/A
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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	☒	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]	230 Vac					
Frequency — Mains [Hz]	50Hz					
Operating mode(s) used	Mode 1					
Frequency range (applied)	Antenna Polarization	Test level (applied)	Modulation (applied)	Dwell time (applied)	Remark	
80 — 1000 MHz	H	3 V/m	80% AM (1kHz)	3 s	---	
(step size 1%)	V	3 V/m	80% AM (1kHz)	3 s	---	
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 was observed.					
<u>Supplementary information:</u> ---						

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	EN 55014-2			
Basic standard	EN 61000-4-4			
Pulse characteristics	5/50 ns			
Port		Test level	Repetition frequency	Duration
☒	AC input-output power ¹⁾	± 1000 V	5 KHz	1 min. / polarity
☐	DC input-output power ²⁾	± 500 V	5 KHz	1 min. / polarity
☐	Signal and Control lines ³⁾	± 500 V	5 KHz	1 min. / polarity
¹⁾ 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. ²⁾ Not applicable to battery operated appliances that cannot be connected to the mains while in use. ³⁾ 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]	50Hz		
Operating mode(s) used	Mode 1		
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.	
Coupling	☒	Common mode	☐ Other:

Port(s) under test	Test Voltage &Polarity	Repetition Frequency	Test duration / polarity	Injection method			
AC power input	± 1 kV	5 KHz	60 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 was observed.						
<u>Supplementary information:</u> ---							

5.6	Surge transient immunity	VERDICT: PASS
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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 ¹⁾	+ 1 kV	+ 2 kV	90
AC input power ¹⁾	- 1 kV	- 2 kV	270
¹⁾ Tests with lower voltages are not required.			

Performed tests

Voltage – Mains [V]	230 Vac
Frequency – Mains [Hz]	50Hz
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
☒	AC mains input power	Line to Neutral	+1 kV	90	---
☒	AC mains input power	Line to Neutral	-1 kV	270	---
☐	AC mains input power	Line to Earth	+2 kV	90	---
☐	AC mains input power	Line to Earth	-2 kV	270	---
☐	AC mains input power	Neutral to Earth	+2 kV	90	---
☐	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 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		EN 55014-2		
Basic standard		EN 61000-4-6		
Frequency range		Modulation	Step size	Dwell time
☐	0,15 – 80 MHz	80% AM (1kHz)	≤ 1%	≥ 0,5 s
☒	0,15 – 230 MHz	80% AM (1kHz)	≤ 1%	≥ 0,5 s
Port		Test level, U_0		
☒	AC input-output power ¹⁾		3 V	
☐	DC input-output power ^{2) 3)}		1 V	
☐	Signal and Control lines ⁴⁾		1 V	
¹⁾ 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.				
²⁾ Not applicable to battery operated appliances that cannot be connected to the mains while in use.				
³⁾ 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.				
⁴⁾ 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)
☐	0,15 – 80 MHz	☒	0,15 – 230 MHz	80% AM (1kHz)
Voltage – Mains [V]		230 Vac		Frequency – Mains [Hz]
Operating mode(s) used		Mode 1		
Test set-up (see Annex 3 for photo)		☒	Equipment standing on floor at $(0,1 \pm 0,01)$ m above ground plane.	
		☐	Equipment on the table $(0,1 \pm 0,01)$ m above ground plane.	
		☐	Artificial hand applied. Location refer to Annex 3.	

Port(s) under test		Test Level (applied)	Injection method	Dwell time (applied)	Remark
AC input power		3V	CDN-M2/3	3s	---
Ethernet / LAN		3V	RF-Injection Clamp	3s	---
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> ---					

5.8 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	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 ¹⁾	Period (Cycles)		Performance Criterion
		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.
¹⁾ Changes to the voltage level shall occur at a zero crossing point in the a.c. voltage waveform. 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	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	0,5	10	3	0, 180
230	L-N	40	10	12	10	3	0, 180
230	L-N	70	25	30	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 ANNEX 1 – 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%.

Emission tests		Uncertainty	Ucisp
Conducted disturbance (mains port), 9 kHz – 30MHz		3,08 dB	3,83 dB
Conducted disturbance using an AAN, 150kHz – 30MHz		4,04 dB 4,44 dB	4,20 dB 4,59 dB
Conducted disturbance using a VP, 150kHz – 30MHz		1,82 dB	2,91 dB
Conducted disturbance using a CVP, 150kHz – 30MHz		3,44 dB	3,85 dB
Conducted disturbance using a CP, 150kHz – 30MHz		2,06 dB	2,89 dB
CDNE, 30MHz – 300MHz		3,34 dB	3,79 dB
Disturbance power, 30 MHz – 300 MHz		3,76 dB	4,52 dB
Radiated electromagnetic disturbances, (9 KHz – 30 MHz)		2,62 dB	3,3 dB
Radiated emissions; (Horz.)	30 MHz – 300 MHz	3,60 dB	5,34 dB
	300 MHz – 1000 MHz	3,10 dB	
Radiated emissions; (Vert.)	30 MHz – 300 MHz	3,20 dB	6,32 dB
	300 MHz – 1000 MHz	3,20 dB	
LF harmonic current emissions		0,2%	na
LF voltage fluctuations		2,5%	na
EMF		2,02 dB	na

Immunity tests	Uncertainty
Electrostatic discharge	$U_{peak}=6\%$, $U_{30ns}=6\%$, $U_{60ns}=6\%$, $U_{rt}=13\%$
Radio-frequency electromagnetic fields	1,48 dB
Fast transients	$U_{tr}=6,2\%$, $U_{pw}=3\%$, $U_{bp}=3\%$, $U_{bd}=3\%$
Surges	$U_{peak}=3,3\%$, $U_{ft}=3\%$, $U_{dt}=3\%$
Injected currents (radio-frequency common mode)	1,71 dB
Voltage dips and short interruptions	$U_{out}=0,4\%$, $U_f=3\%$, $U_{f-d}=3\%$

8 ANNEX 2 – USED EQUIPMENT

DEKRA SH

Conducted Emission

Equipment	Manufacturer	Model No.	Serial No.	Cal. due date
EMI test receiver	R&S	ESCI	101351	2020/07/18
EMI test receiver	R&S	ESR3	102305	2020/07/18
Artificial Mains Network	R&S	ENV216	101620	2020/08/12
Artificial Mains Network	SCHWARZBECK	NSLK 8128	8128-287	2020/08/09
Asymmetric artificial network	SCHWARZBECK	NTFM8131	8131-151	2020/07/18
Asymmetric artificial network	TESEQ	ISN T800	30306	2020/07/18
High power voltage probe	SCHWARZBECK	TK9421	#308	2020/04/20
Capacitive voltage probe	TESEQ	CVP 2200A	43476	2020/07/18
Current probe	ETS.LINDGREN	91550-1L	218473	2020/08/12

CDNE

Equipment	Manufacturer	Model No.	Serial No.	Cal. due date
EMI test receiver	R&S	ESCI	101351	2020/07/18
EMI test receiver	R&S	ESR3	102305	2020/07/18
Coupling/Decoupling Network	SCHWARZBECK	CDNE M3	00088	2020/12/11
Coupling/Decoupling Network	TESEQ	CDN M016S	34640	2020/07/18

Radiated electromagnetic disturbances (9 kHz to 30 MHz)

Equipment	Manufacturer	Model No.	Serial No.	Cal. due date
EMI test receiver	R&S	ESCI	101351	2020/07/18
EMI test receiver	R&S	ESR3	102305	2020/07/18
3-dimensional large loop antenna	SCHWARZBECK	HXYZ 9170	HXYZ9170-245	2020/07/18

Disturbance Power

Equipment	Manufacturer	Model No.	Serial No.	Cal. due date
EMI test receiver	R&S	ESCI	101351	2020/07/18
EMI test receiver	R&S	ESR3	102305	2020/07/18
EMI absorbing clamp	SCHWARZBECK	MDS 21B	4183	2020/07/25

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Equipment	Manufacturer	Model No.	Serial No.	Cal. due date
EMI test receiver	R&S	ESR3	102305	2020/07/18
Artificial Mains Network	R&S	ENV216	101620	2020/07/18
Artificial Mains Network	SCHWARZBECK	NSLK 8128	8128-287	2020/08/09

Harmonic & Flicker

Equipment	Manufacturer	Model No.	Serial No.	Cal. due date
Harmonic currents and flicker tester	California Instruments	CTS	1306A00135	2020/05/14
AC power source	California Instruments	5001iX-CTS-400	1306A00135	2020/05/14
Harmonic currents and flicker tester	TESEQ	Proflin 2145	1736A02510	2020/08/09

ESD

Equipment	Manufacturer	Model No.	Serial No.	Cal. due date
ESD generator	TESEQ	NSG 435	6716	2020/06/05

EFT, Surge and V-Dips

Equipment	Manufacturer	Model No.	Serial No.	Cal. due date
EFT, Surge, DIPS all-in-one	TESEQ	NSG-3040-MF	2006/EFT:0535 /SURGE:1234 /DIPS:2062	2020/05/14

Injected currents

Equipment	Manufacturer	Model No.	Serial No.	Cal. due date
Compact immunity test system (RF)	TESEQ	NSG 4070-30	35895	2020/05/14
Coupling decoupling network (CDN)	TESEQ	CDN M016S	34640	2020/05/14
Attenuator	TESEQ	ANT 6050	34847	2020/05/14

9 ANNEX 3 – TEST PHOTOS

Conducted disturbance voltage at mains terminals



Disturbance power



Harmonic current emissions & Flicker



Electrostatic discharge immunity



Electrical fast transient (EFT) / Burst transients & Surge transients immunity



Conducted RF disturbances immunity



Power supply voltage interruptions & dips immunity



End of the report