



Electromagnetic Compatibility (EMC)

TEST REPORT

TR_2023791_1

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Test Report

Electromagnetic Compatibility (EMC)

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Total number of pages : 30

Test item description : Lampshade and Floor Lamp

Model/Type reference : See page 6

Trade Mark : Sinbo

Manufacturer Address : SİNBO KÜÇÜK EV ALETLERİ SANAYİ VE TİCARET ANONİM ŞİRKETİ
Yakuplu Mahallesi Dereboyu Caddesi No:10/1
Beylikdüzü/İstanbul/Türkiye

Applicant's name Address : Same as manufacturer

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SGS Turkey



**Reviewed by
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The report was signed electronically

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1 DOCUMENTATION

1.1 Test Standards

The Equipment Under Test Complies with Following Standard(s)

Title of the standard	Reference standard	Publication Year	Amendment(s) of the standard
Emission-Product family standard -Household appliances, electric tools and similar apparatus	EN IEC 55014-1	2021	
	CISPR 14-1	2020	
Immunity-Product family standard -Household appliances, electric tools and similar apparatus	EN IEC 55014-2	2021	
	CISPR 14-2	2020	
Product family standard -Harmonic current emissions	EN IEC 61000-3-2	2019	A1:2021
	IEC 61000-3-2	2018	A1:2020
Product family standard -Voltage fluctuations and flicker sensation	EN 61000-3-3	2013	A1:2019+A2:2021
	IEC 61000-3-3	2013	A1:2017+A2:2021

1.2 Overview of Test Results

Emission Tests	Result
Conducted Emissions In The Frequency Range	Pass
Radiated Power In The Frequency Range	Pass
Discontinuous Interference (Click)	Pass
Harmonic Currents Emissions	N/A
Voltage Fluctuation And Flicker Sensation	Pass

Immunity Tests	Result
Electrostatic Discharge Immunity (ESD)	N/A
Electrical Fast Transient Immunity (EFT)	N/A
Surge Immunity	N/A
RF-Electromagnetic Conducted Immunity	N/A
Voltage Dips And Short Interruptions Immunity	N/A
Radiated, Radio Frequency, Electromagnetic Field Immunity	N/A

Possible test case verdicts:	
- test case does not apply to the test object	: N/A (Not Applicable)
- test object does meet the requirement	: P (Pass)
- test object does not meet the requirement	: F (Fail)

1.3 Testing Location/Address

Note: All tests have been performed Eldaş Test ve Kalibrasyon Elektrik Sanayi Ticaret A.Ş. under supervision of SGS Engineer. The address of test location as below;

Organize Sanayi Bölgesi

Büyük Selçuklu Blv. No:2 06930

Sincan / ANKARA / TURKEY

Türkak Accreditation Number: AB-1532-T

2 PRODUCT DESCRIPTION

2.1 Equipment Under Test (EUT) Information

Test Item Description : Lampshade and Floor Lamp

Model/Type Reference : See table





Rated Voltage : 110-240 V_{AC}

Rated Frequency : 50/60 Hz

Rated Power/Current : See table

The model STO-6697 has been tested and these models are representative of the range. All models shared similar construction except for appearance. The applicant declares that the models given table enclose similar electrical components with the tested model.

The EUT was tested 50 Hz.

Brand	Model	Model Photo	Rated Voltage & Frequency	Rated Power
SINBO	STO-5003		110-240 V~ 50/60 Hz	Max 40W, E27
	STO-6726			Max 40W, E27
	STO-6697			Max 40W, E14
	STO-6725			Max 40W, E14

Classification of EUT according to CISPR 14-2:

- The EUT is classified as
- Category I
 - Category II
 - Category III
 - Category IV
 - Category V

3 TEST CONDITIONS

3.1 Performance Criteria A for Immunity Testing

During testing the EUT shall operate without any degradation of performance.

3.2 Performance Criteria B for Immunity Testing

During testing temporary degradation of performance or loss of function, which is self-recovered are allowed.

3.3 Performance Criteria C for Immunity Testing

Temporary loss of function is allowed if the function is self-recoverable or can be restored by the operation of controls.

3.4 EUT Test Conditions During EMC-Testing

Configuration of the EUT will be made corresponding and actual assembling conditions as far as possible.

3.5 Environmental Conditions

Tests have been performed in a controlled laboratory environment, where the environmental conditions are maintained with in the applicable ranges.

Ambient temperature	15 °C - 35 °C
Relative Humidity	30% - 60%

4 TEST RESULTS AND CONDITIONS

4.1 Emission Test Results

4.1.1 Conducted Emissions In The Frequency Range

Standard	EN IEC 55014-1 / CISPR 14-1
----------	-----------------------------

Frequency [MHz]	QP [dB(μV)]	AV [dB(μV)]
0,15 – 0,50	66 – 56	59 – 46
0,50 – 5	56	46
5 – 30	60	50

Test Plan/Test Description

Conducted disturbance voltage will be measured with an artificial main network from 150 kHz to 30 MHz with 5 kHz steps and a resolution bandwidth of 9 kHz. Measurements will be carried out with Peak- and Average-detectors from Phase-line and Neutral-line.

If the Peak-values are more than 6 dB below the Quasi Peak-limit no final Quasi Peak-measurement will be made otherwise Quasi Peak-values and Average-values will be recorded from the worst points. Rest of the sub ranges will be measured by using the same procedure.

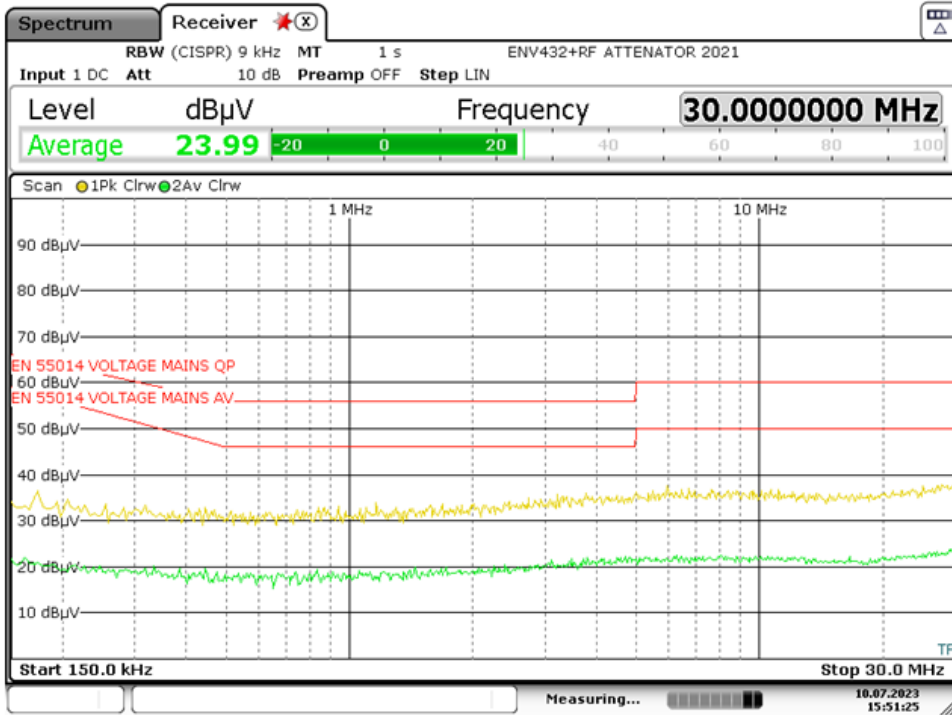
This measurement will be made from the AC-mains lines. The EUT is working as described in the section "EUT Test Conditions". Test results are presented at the next page.

Operating mode

Measurements were made with 15 W halogen lamp installed.

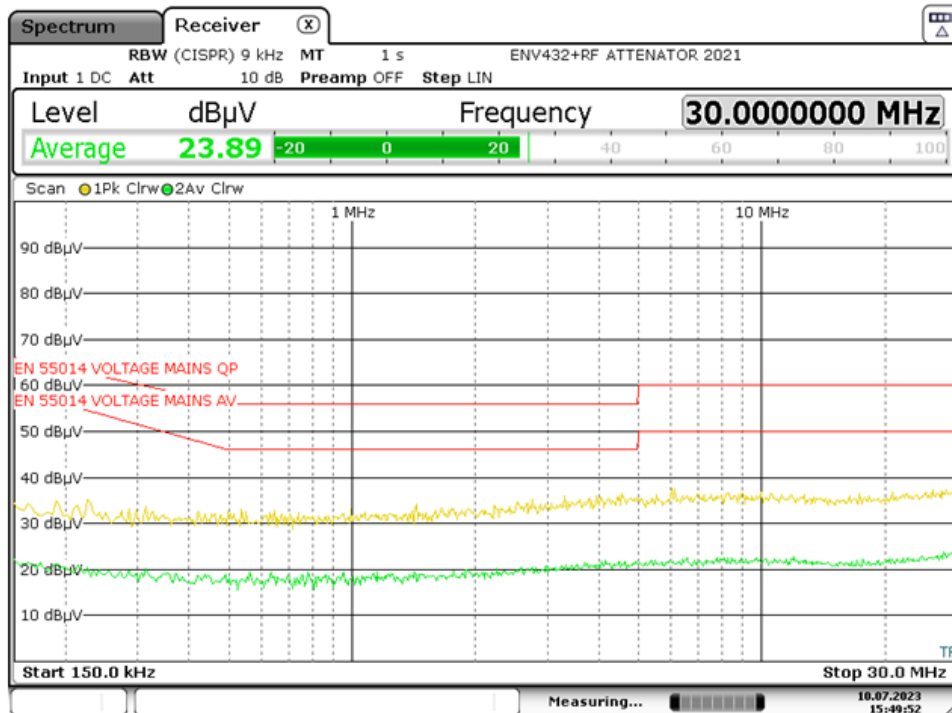
Test Results

Line port



Date: 10.JUL.2023 15:51:25

Neutral port



Date: 10.JUL.2023 15:49:53

Test setup : Conducted Emissions In The Frequency Range**TEST SUMMARY P**

The EUT fulfills the requirements of the EN IEC 55014-1 Conducted Emission part.

4.1.2 Radiated Power In The Frequency Range

Standard	EN IEC 55014-1 / CISPR 14-1	
Frequency [MHz]	QP [dB(pW)]	AV [dB(pW)]
30 – 300	45 – 55	35 – 45
Margin		
200 - 300	0 – 10	-

Test Plan/Test Description

Radiated absorbing power will be measured with an absorbing clamp from 30 MHz to 300 MHz with 100 kHz steps using the resolution bandwidth of 120 kHz. The maximum interference level will be found by moving the clamp along the cable. Final measurements will be made from the worst peaks only with QuasiPeak-detector and Average-detector. No QuasiPeak- or Average-measurements will be made if the Peak-values are more than 10 dB below the QP-limit.

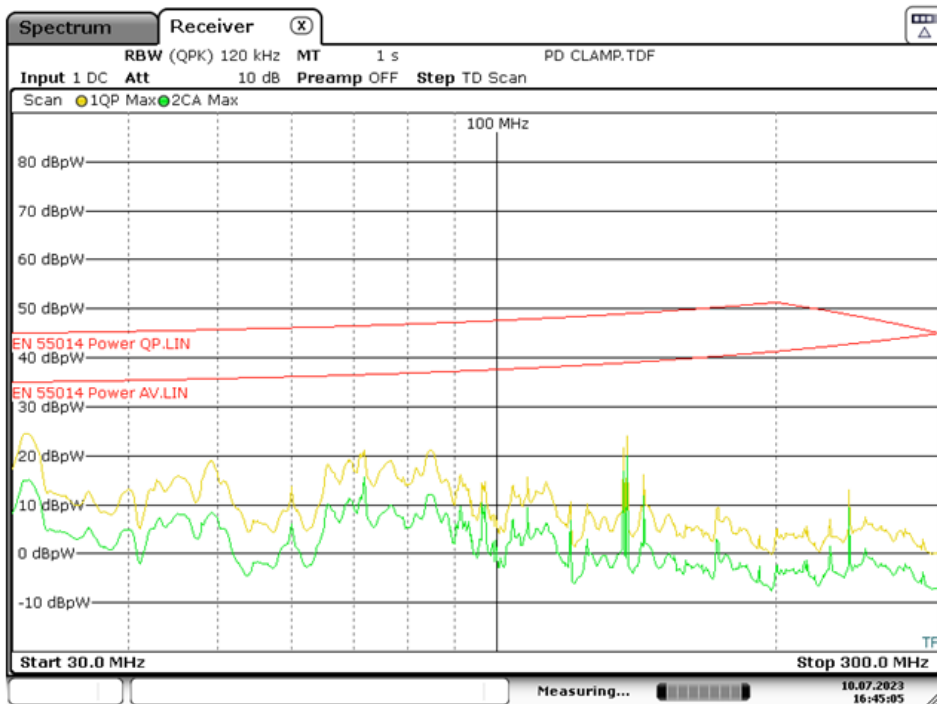
This measurement will be made from the AC-mains.

The EUT is working as described in the section “EUT Test Conditions”.

Operating mode

Measurements were made with 15 W halogen lamp installed.

Test Result



Date: 10. JUL. 2023 16:45:06

According to clause 4.3.4.2 procedure (a) of the EN IEC 55014-1 standard the EUT is deemed to comply in the frequency range from **300 MHz to 1000 MHz** without further measurements.

Test setup : Radiated Power In The Frequency Range**TEST SUMMARY P**

The EUT fulfills the requirements of the EN IEC 55014-1 Radiated Power part.

4.1.3 Discontinuous Interference (Click)

Standard	EN IEC 55014-1 / CISPR 14-1
-----------------	------------------------------------

Frequency [MHz]	QP [dB(μV)]
0,15	66
0,50	56
1,40	56
30,00	60

Test Plan/Test Description

The EUT will be exercised as intended for. The click rate analysis will be made with four frequencies and with different continuous interference limits (e.g. sensitivity (dBμV)). Measured frequencies will be 0.15 MHz, 0.50 MHz, 1.40 MHz and 30 MHz. The limits are 66 dBμV for 0.15 MHz, 56 dBμV for both 0.50 MHz and 1.40 MHz and 60 dBμV for 30 MHz at the first test run (Run A).

The test time (T) is 120 min. If the total number of switching operations (n_2) is measured to be 40 before the time of 120 min is passed, the test shall be interrupted and the test time will be recorded. After that the test will be repeated with the new sensitivity limits. If the click rate $N \leq 5$, all click durations are ≤ 20 ms and 90 % of the click durations are ≤ 10 ms, repeating the test is not necessary.

The sensitivity of the second test run will be calculated from the following formula:

Sensitivity (Run B) = Run A + 20 * log (30/(Run A switching operations * 0.5)).

The time for second test run will be the same as the time taken for the first test run.

If the total number of the counted clicks (run B) will be $\leq 0.25 \times n_1$ and the click duration will not exceed 200 ms during the test, EUT fulfils the requirements of the standard.

Test will be made with all the operations of the EUT, which are controlled by either the thermostat or the energy regulators. Different operations will be tested separately. Both lines (neutral and phase L) will be tested separately.

The click rate N is half of the number of switching operations per minute for duty cycle $50 \pm 10\%$ of the control devices.

The test results are shown on the following pages.

Operating mode

Measurements were made with 15 W halogen lamp installed.

Test Results

Test results, measured phase L

Table 3. Run A

Used frequencies [MHz]:	0,15	0,5	1,4	30
Sensitivity [dB(μ V)]:	66	56	56	60
Number of counted clicks, (short):	0	0	0	0
Number of counted clicks, (long):	0	0	0	0
Total number of clicks (n_1):	0	0	0	0

Duration over 200 ms [s]	0	0	0	0
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Switching operations rate 0
 Total time of run (T): 120 minutes

Table 4. Run B

Sensitivity dB(μ V) (L+L _q)	-	-	-	-
Number of clicks allowed above permitted limits:	-	-	-	-
Number of counted clicks, (short):	-	-	-	-
Number of counted clicks, (long):	-	-	-	-
Total number of clicks (n_1):	-	-	-	-

Click rate used: -
 Total time of run (T): -

Test result: PASS

Remarks: No click emission detected.

Test results, measured phase N

Table 5. Run A

Used frequencies [MHz]:	0,15	0,5	1,4	30
Sensitivity [dB(μ V)]:	66	56	56	60
Number of counted clicks, (short):	0	0	0	0
Number of counted clicks, (long):	0	0	0	0
Total number of clicks (n_1):	0	0	0	0

Duration over 200 ms [s]	0	0	0	0
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Switching operations rate 0
 Total time of run (T): 120 minutes

Table 6. Run B

Sensitivity dB(μ V) (L+L _q)	-	-	-	-
Number of clicks allowed above permitted limits:	-	-	-	-
Number of counted clicks, (short):	-	-	-	-
Number of counted clicks, (long):	-	-	-	-
Total number of clicks (n ₁):	-	-	-	-

Click rate used: -
 Total time of run (T): -

Test result: PASS

Remarks: No click emission detected.

TEST SUMMARY P
 The EUT fulfills the requirements of the EN IEC 55014-1 Discontinuous Interference part.

4.1.4 Harmonic Currents Emissions

Standard	EN IEC 61000-3-2 / IEC 61000-3-2
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Test Plan/Test Description

Depending on the type of EUT, the test class will be determined by the test engineer.

Concerning all products the maximum peak current A (pk), the fundamental current and power factor (PF) will be measured prior to measurement. These values are used in order to set the limits in actual test depending on the class.

Preliminary measurements will be made in order to find out the state, which produces the maximum amount of harmonics. Harmonics up to 40 will be measured.

***This test is not applicable because the rated power is less than 75 W.**

Operating mode

Test Result

Test setup : Harmonic Current Emissions

TEST SUMMARY	N/A
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4.1.5 Voltage Fluctuation And Flicker Sensation

Standard	EN 61000-3-3 / IEC 61000-3-3
-----------------	-------------------------------------

Test Plan/Test Description

The EUT will be exercised as intended for. The total testing time is 10 min. Relative steady-state voltage change d_c , maximum relative change d_{max} and the value of $d(t)$ shall be measured with a flicker meter.

Limits

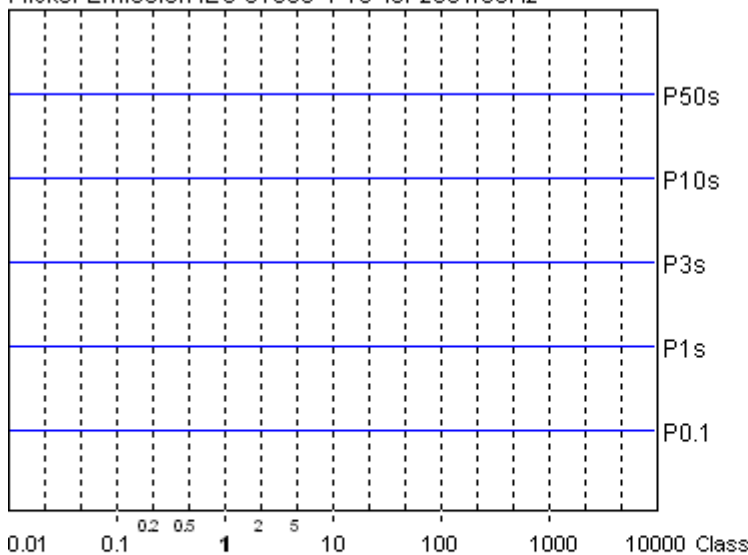
P_{ST}	≤ 1
P_{LT}	N/A
d_C	$\leq 3,3 \%$
d_{MAX}	$\leq 4 \%$

Operating mode

Measurements were made with 15 W halogen lamp installed.

Test Result

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



Actual Flicker (Fli):	0.00
Short-term Flicker (Pst):	0.07
Limit (Pst):	1.00
Long-term Flicker (Plt):	0.07
Limit (Plt):	0.00
Maximum Relative Volt. Change (dmax):	0.00%
Limit (dmax):	4.00%
Relative Steady-state Voltage Change (dc):	0.05%
Limit (dc):	3.30%
Tmax 3.30% (dt):	0.00ms
Limit (dt>Lim):	500ms

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

Urms = 230.1 V P = 15.95 W
 Irms = 0.098 A pf = 0.710

LAMBADER

Test completed, Result: PASSED

10.07.2023 16:54:29

Range: 50 A
 V-nom: 230 V
 TestTime: 10 min (100%)

HAR-1000 EMC-Partner

Test setup : Voltage Fluctuation And Flicker Sensation**TEST SUMMARY P**

The EUT fulfills the requirements of the EN 61000-3-3.

4.2 Immunity Test Results

4.2.1 Electrostatic Discharge Immunity (ESD)

Standard	EN IEC 55014-2 / CISPR 14-2
Basic standard	EN 61000-4-2

Test Plan/Test Description

Tests will be done using the air discharge on non-conductive parts of the EUT. The contact discharge will be given to all conductive parts of the EUT. Also the indirect contact discharges will be given to vertical coupling planes in order to simulate the objects placed near the EUT. All four sides and the top of the EUT will be tested with both polarities.

At least ten discharges will be given with both polarities to the selected points.

The air discharge will be given with ± 8 kV test levels.

The contact and the indirect contact discharge will be given with ± 4 kV test levels.

Operating mode

Test results

Test setup : Electrostatic Discharge Immunity (ESD)

TEST SUMMARY	N/A
---------------------	------------

4.2.2 Electrical Fast Transient Immunity (EFT)

Standard	EN IEC 55014-2 / CISPR 14-2
Basic standard	EN 61000-4-4

Test Plan/Test Description

Tests will be done to the AC-power supply port with the voltage level of ± 1 kV and 5 kHz. First the level will be tested with both polarities. After both polarities have been tested, the coupling path will be changed. Phase line, neutral will be tested separately. Both polarities will be tested with 120 seconds duration time and with 5 seconds recovery time between the tests.

Operating mode

Test results

Test setup : Electrical Fast Transient Immunity (EFT)

TEST SUMMARY	N/A
---------------------	------------

4.2.3 Surge Immunity

Standard	EN IEC 55014-2 / CISPR 14-2
Basic standard	EN 61000-4-5

Test Plan/Test Description

Test will be done to the AC power supply port with step by step voltage levels starting at:

- ± 1 kV between phase and phase, Output impedance: 2 ohm
- ± 1 kV between phase and neutral, Output impedance: 2 ohm
- ± 2 kV between phase and protective earth, Output impedance: 12 ohm
- ± 2 kV between neutral and protective earth, Output impedance: 12 ohm

Positive and negative pulses will be given with 90° and 270° phase angles. Each pulse will be given five times with 60 seconds repetition rate. First the positive and the negative pulse will be given to the selected coupling path, then the phase angle will be changed and after that the voltage level will be increased to the next test level.

Operating mode

Test results

Test setup : Surge Immunity

TEST SUMMARY	N/A
---------------------	------------

4.2.4 RF-Electromagnetic Conducted Immunity

Standard	EN IEC 55014-2 / CISPR 14-2
Basic standard	EN 61000-4-6

Test Plan/Test Description

Test will be done from 150 kHz to 230 MHz. The calibration is done with 1 % logarithmic step size with an unmodulated signal. In the calibration setup the signal is fed to coupling network. The required power levels are recorded over the whole frequency range.

The EUT is placed 10 cm above the reference ground plane.

Test will be carried out with a voltage level of 3 V_{rms} (80 % AM- unmodulated, 1 kHz sine signal). Test will be performed to AC-power supply port.

Operating mode

Test results

Test setup : RF-Electromagnetic Conducted Immunity

TEST SUMMARY	N/A
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4.2.5 Voltage Dips And Short Interruptions Immunity

Standard	EN IEC 55014-2 / CISPR 14-2
Basic standard	EN IEC 61000-4-11

Test Plan/Test Description

Test will be done to the AC-power supply port with the following voltage percentage dips of the rated voltage: 30% and 60%. Test will be also done with 100% voltage interruptions of the rated voltage.

Operating mode

Test results

Test setup : Voltage Dips And Short Interruptions Immunity

TEST SUMMARY	N/A
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4.2.6 Radiated, Radio Frequency, Electromagnetic Field Immunity

Standard	EN IEC 55014-2 / CISPR 14-2
Basic standard	EN IEC 61000-4-3

Test Plan/Test Description

The EUT has been supplied with 230 Vac in Full-Anechoic Chamber on a wooden table that was above 10 cm height from floor. The test has been made by turning EUT four dimensions on vertical and horizontal polarizations of the antenna.

Test Results

Operating mode

Test setup : Radiated, Radio Frequency, Electromagnetic Field Immunity

TEST SUMMARY	N/A
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5 PHOTOS OF EQUIPMENT UNDER TEST







Details of view :	STO-6697	<input checked="" type="checkbox"/> general	<input type="checkbox"/> front	<input type="checkbox"/> rear	<input type="checkbox"/> right	<input type="checkbox"/> inside
						

Details of view :		<input type="checkbox"/> general	<input type="checkbox"/> front	<input type="checkbox"/> rear	<input type="checkbox"/> right	<input type="checkbox"/> inside

6 LIST OF TEST EQUIPMENT USED

Equipment Name	Brand	Model	Serial No	Calibration Due Date
EMI Test Receiver	Rohde&Schwarz	ESR7	101817	08.2023
Harmonics 1000	EMC PARTNER	HAR1000-1P	HAR1000-1P 230V-0232	03.2024
LISN	EMC Elektronik	LS100A4	16011301	11.2023
Transient Limiter	EMC Elektronik	TL10K30M	121404	11.2023
RF Attenuator	BIRD ELEKTRONIC	8341-200	2382	11.2023
Em Measurement P.D Clamp	EMC Elektronik	EL1000M	1024040602	12.2023

Validation is done on all devices, per six month

7 MEASUREMENT UNCERTAINTIES

Equipment	Uncertainty
Harmonic current emission	± 5.42 %
Voltage fluctuation	± 7.31 %
Mains conducted disturbance voltage	± 3.28 dB 9kHz-150 kHz ± 2.82 dB 150kHz-30 MHz
Discontinuous disturbance (clicks)	± 3.93 dB
Disturbance power	± 2.29 dB
Electrostatic Discharges (ESD)	Interference generator fulfils basic requirements
Electrical fast transient (EFT)	Interference generator fulfils basic requirements
Surge transients	Interference generator fulfils basic requirements
Power supply voltage interruptions & dips	Interference generator fulfils basic requirements



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End of the Report