



AB 003



**TEST REPORT
IEC CISPR15**

Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment

Report Number..... : Z7-4/043/EMC/21

Date of issue..... : 2021-03-29

Total number of pages : 65

Name of Testing Laboratory preparing the Report : Łukasiewicz - IMiF PREDOM Division
02-255 Warszawa, ul. Krakowiaków 53, Poland

Applicant's name : LUG Light Factory Sp. z o. o.
Address..... : 65-127 Zielona Góra ul. Gorzowska 11, Poland

Test specification:

Standard : PN-EN IEC 55015:2019-11+A11:2020-07, PN-EN 61547:2009,
PN-EN IEC 61000-3-2:2019-04,
PN-EN 61000-3-3:2013-10+A1:2019-10,
EN IEC 55015:2019+A11:2020, EN 61547:2009,
EN IEC 61000-3-2:2019, EN 61000-3-3:2013+A1:2019,
CISPR 15:2018, IEC 61547:2009, IEC 61000-3-2:2018,
IEC 61000-3-3:2013+AMD1:2017

Test procedure : EMC

Non-standard test method : N/A

Test Report Form No. : PREDOM IEC CISPR15_ IEC 61547/20

Test Report Form(s) Originator : Łukasiewicz - IMiF PREDOM Division
02-255 Warszawa, ul. Krakowiaków 53, Poland

Master TRF : Dated 2020-05

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Test item description	LED Luminaire	
Trade Mark(s)		
Original Product/Equipment Manufacturer	LUG Light Factory Sp. z o. o. 65-127 Zielona Góra ul. Gorzowska 11, Poland	
Branding Manufacturer(s)	LUG	
Model/Type reference	URBINO LED ED 1-10V 27650lm/740	
Ratings	220-240V; 50/60Hz; 1x max 205W; IP66; cl.I	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	Testing Laboratory:	Łukasiewicz - IMiF PREDOM Division
Testing location/ address		02-255 Warszawa, ul. Krakowiaków 53, Poland
Tested by (name, function, signature)		Bartłomiej Wysokiński 
Approved by (name, function, signature) ..		Tomasz Małyska 
Supervised by (name, function, signature):		Aleksander Piotrowski 
<input type="checkbox"/>	Testing procedure: CTF Stage 1:	
Testing location/ address		
Tested by (name, function, signature)		
Approved by (name, function, signature) ..		
<input type="checkbox"/>	Testing procedure: CTF Stage 2:	
Testing location/ address		
Tested by (name + signature)		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) .. :		
<input type="checkbox"/>	Testing procedure: CTF Stage 3:	
<input type="checkbox"/>	Testing procedure: CTF Stage 4:	
Testing location/ address		
Tested by (name, function, signature)		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) .. :		
Supervised by (name, function, signature) :		

List of Attachments (including a total number of pages in each attachment): N/A	
Summary of testing: Positive	
Tests performed (name of test and test clause): Conducted EMISSIONS Radiated electromagnetic disturbances Radiated EMISSIONS Harmonic Currents Voltage Fluctuations and Flicker Electrostatic Discharges RF Electromagnetic Fields Power frequency magnetic fields Electrical Fast Transients Conducted Disturbances Induced by RF Fields Surge Voltage Dips and short Interruptions	Testing location: Łukasiewicz - IMiF PREDOM Division 02-255 Warszawa, ul. Krakowiaków 53, Poland
Summary of compliance with National Differences (List of countries addressed): N/A	
Statement concerning the uncertainty of the measurement systems used for the tests no required (N/A)	
<input checked="" type="checkbox"/> Internal procedure used for type testing through which traceability of the measuring uncertainty has been established: Procedure number, issue date and title: General concept of methodologies for determining uncertainty of measurement, dated : October 2013 Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.	
<input type="checkbox"/> Statement not required by the standard used for type testing	

Copy of marking plate:


LUG [®] **CE**

EAC

130222.2L241.381.001
URBINO LED
ED 1-10V 27650lm/740
O62 szary I klasa
130222.2LR7B40S2765.138.V

LED **MADE IN POLAND**
220-240V 50/60Hz **ZM-41036088 / 707773**
Ix max 205 W
IP66
t_a 50°C




UL. GORZOWSKA 11
65-127 ZIELONA GÓRA

Test item particulars: For test item particulars refer to item 1	
Classification of installation and use: LED Luminaire	
Supply Connection: Power connector	
Possible test case verdicts:	
- test case does not apply to the test object..... : N/A	
- test object does meet the requirement : P (Pass)	
- test object does not meet the requirement : F (Fail)	
Testing :	
Date of receipt of test item : 2021-03-04	
Date (s) of performance of tests : 2021-03-08 ÷ 2021-03-24	
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.	
Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 61010-2-010:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies): LUG Light Factory Sp. z o. o. 65-127 Zielona Góra ul. Gorzowska 11, Poland	
General product information (GPI) and other remarks:	
The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.	
According to the information from our applicant, the tests were done on 230V/50Hz supply.	

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1 General description of test item(s)

Description	LED Luminaire				
Model number	130222.2L241.381.001 URBINO LED ED 1-10V 27650lm/740				
Serial number	130222.2LR7B40S2765.138.V				
Brand name	LUG				
Ports	Port name and description	Cable			
		Specified length [m]	Attached during test	Shielded	
Local wired ports	Mains, Supply Connection: power cord	1.3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
Wired network ports			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
Supplemental information to the ports	N/A				
Rated power supply		Voltage and frequency	1 ph/ PE	2 ph/N/PE	3 ph/N/PE
	<input checked="" type="checkbox"/>	AC: 230V/50Hz	<input checked="" type="checkbox"/> / <input checked="" type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>
	<input type="checkbox"/>	DC:			
Rated power	1x max 205W				
Protection class	cl. I				
Clock frequencies	No available data for these selection criteria				
Other parameters	---				
Software version	---				
Hardware version	---				
Dimensions in cm (W x H x D):	33 x 11 x 75				
Mounting position:	<input type="checkbox"/>	Table top equipment			
	<input type="checkbox"/>	Wall/Ceiling mounted equipment			
	<input type="checkbox"/>	Floor standing equipment			
	<input type="checkbox"/>	Hand-held equipment			
	<input checked="" type="checkbox"/>	Other: In accordance with the manufacturer's instructions			

Modules / parts.....:	Module / parts of test item	Type	Manufacturer
	LED Power Supply	OPTOTRONIC OT 200/UNV/1A0 2DIM P7	OSRAM
	<i>See section Annex A</i> <i>Supplementary information: See section Annex B</i>		

Operating modes.....:	No.	Operating mode of test item	Applied for testing	
			Emission	Immunity
	1	Powered by 230VAC 50Hz, in accordance with the manufacturer's instructions	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	2	Powered by 110VAC 60Hz, in accordance with the manufacturer's instructions	<input type="checkbox"/>	<input type="checkbox"/>
3	EUT with battery power Powered by ...VDC (built-in battery), in accordance with the manufacturer's instructions	<input type="checkbox"/>	<input type="checkbox"/>	
Supplemental information to the operating modes	N/A			
Accessories (not part of the test item).....:	Accessory	Type	Manufacturer	
	N/A	N/A	N/A	
Documents as provided by the applicant.....:	Description	File name	Issue date	
	N/A	N/A	N/A	
Modifications to the test item during testing	N/A			

1.1 Description of test item(s) according to CISPR 15 and IEC 61000-3-2

Description of the test item..... :	<input checked="" type="checkbox"/>	Luminaire
	<input type="checkbox"/>	Rope light (6.3)
	<input type="checkbox"/>	Internal Module (6.4.3)
	<input type="checkbox"/>	External module (6.4.4)
	<input type="checkbox"/>	Module having multiple applications (6.4.2)
	<input type="checkbox"/>	Single capped self-ballasted lamp (6.4.5)
	<input type="checkbox"/>	Double-capped self-ballasted lamps, double-capped lamp adapters, double-capped semi-luminaires and double-capped retrofit lamps used in fluorescent lamp luminaires (6.4.6)
	<input type="checkbox"/>	ELV lamps (6.4.7)
	<input type="checkbox"/>	Single-capped semi-luminaires (6.4.8)
	<input type="checkbox"/>	Independent igniter (6.4.9)
	<input type="checkbox"/>	Replaceable starters for fluorescent lamps (6.4.10)
	<input type="checkbox"/>	Others: ---
Lamp technology used	<input checked="" type="checkbox"/>	Light emitting diode (LED/OLED)
	<input type="checkbox"/>	High pressure discharge lamp (HID)
	<input type="checkbox"/>	Fluorescent lamp
	<input type="checkbox"/>	Tungsten halogen lamp
	<input type="checkbox"/>	Incandescent lamp
	<input type="checkbox"/>	Others: ---
Control Gear..... :	<input checked="" type="checkbox"/>	Electronic control gear
	<input type="checkbox"/>	Magnetic control gear / transformer
	<input type="checkbox"/>	Others: ---

Dimming	<input checked="" type="checkbox"/>	Test item has NO dimming functions
	<input type="checkbox"/>	Test item includes dimming functions other than phase control
	<input type="checkbox"/>	Test item has phase control dimming functions with the following characteristic(s):
	<input type="checkbox"/>	rated power less than or equal to 1 kW when operating incandescent lamps
	<input type="checkbox"/>	rated power less than or equal to 200 W for trailing edge dimmers, and universal phase control dimmers with the default mode set to trailing edge, when operating lighting equipment other than incandescent lamps
	<input type="checkbox"/>	rated power less than or equal to 100 W for leading edge dimmers, and universal phase control dimmers without default mode set to trailing edge, when operating lighting equipment other than incandescent lamps
	<input type="checkbox"/>	Other: ---

Type of equipment..... :	<input checked="" type="checkbox"/>	Not for professional use
	<input type="checkbox"/>	For professional use
	<input type="checkbox"/>	Others: ---

1.2 Photos of the test item

Photo of test item:



2 Verdict summary section

CISPR15			
Clause	Requirement – Test case	Basic standard	Verdict
4.3	Assessment of wired network ports Table 1, Table 2, Table 3	CISPR 16-1-1:2019 CISPR 16-1-2:2014+AMD1:2017	Pass
4.4	Assessment of local wired ports Table 4, Table 5, Table 6	CISPR 16-2-1:2014+AMD1:2017 CISPR 32:2015	N/A
4.5	Assessment of the enclosure port	---	---
4.5.2	Frequency range 9 kHz to 30 MHz Table 8, Table 9	CISPR 16-1-4:2019 CISPR 15:2018	Pass
4.5.3	Frequency range 30 MHz to 1 GHz Table 10	CISPR 16-2-3:2016+AMD1:2019	Pass
IEC 61000-3-2			
Clause	Requirement – Test case	Basic standard	Verdict
6.2 6.3	Harmonic current emissions	IEC 61000-3-2:2018 IEC 61000-4-7:2002+AMD1:2008	Pass
IEC 61000-3-3			
Clause	Requirement – Test case	Basic standard	Verdict
4	Voltage changes, voltage fluctuations and flicker	IEC 61000-3-3:2013+AMD1:2017 IEC 61000-4-15:2010	Pass
IEC 61547			
Clause	Requirement – Test case	Basic standard	Verdict
5.2	Electrostatic discharge	IEC 61000-4-2:2008	Pass
5.3	Radio-frequency electromagnetic fields	IEC 61000-4-3:2006+AMD1:2007+ +AMD2:2010	Pass
5.4	Power frequency magnetic fields	IEC 61000-4-8:2009	Pass
5.5	Fast transients	IEC 61000-4-4:2012	Pass
5.6	Injected currents (radio-frequency common mode)	IEC 61000-4-6:2013	Pass
5.7	Surges	IEC 61000-4-5:2014+AMD1:2017	Pass
5.8	Voltage dips and short interruptions	IEC 61000-4-11:2004+AMD1:2017	Pass
Supplementary information: N/A			

3 Test conditions

3.1 General

Environmental reference 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:		
	Temperature	Humidity	Atmospheric pressure
	15 °C – 35 °C	30 % - 60 %	860 hPa – 1060 hPa
	If explicitly required in the basic standard or applied product standard the climatic values are recorded and documented separately in this test report.		
Measurement uncertainties..... :	For all measurements where guidance for the calculation of the instrumentation uncertainty of a measurement is specified in CISPR 16-4-2 , IEC 61000-4 series or a product standard, the measurement instrumentation uncertainty has been calculated an applied in accordance with these standards. In all cases if the test laboratory uncertainty is larger than the value for UCISPR given in CISPR 16-4-2 the uncertainty are included in the test report annex. In case the standards in the IEC 61000-4 series or the product standard requires the indication of the uncertainty in the report these uncertainty values are included in the annex.		

3.2 Specific test conditions for CISPR 15

Test set up..... :	<input checked="" type="checkbox"/>	CISPR 15
	<input type="checkbox"/>	CISPR 30 technical report applied for built-in appliances
Type of test item (Clause 6.2 of CISPR 15)..... :	<input checked="" type="checkbox"/>	Active EUT
	<input type="checkbox"/>	Passive EUT (Deemed to comply without further testing)
	<input type="checkbox"/>	Others: ---
Maximum clock frequency (Clause 3.2.2)..... : *No available data for these selection criteria	<input type="checkbox"/>	≤ 30 MHz → Measurement of radiated emissions up to 300 MHz is sufficient.
	<input checked="" type="checkbox"/>	> 30 MHz → Measurement of radiated emissions up to 1000 MHz is required.

4 Emission

4.1 Conducted disturbances

Tested by..... :	Bartłomiej Wysokiński	
Test date	2021-03-18	
Test Location (stand)	Disturbance voltage stand Faraday Cage U-11	
Test set-up description	<input type="checkbox"/>	Set-up Type A (40 cm distance to vertical ground plane, 80 cm o ground plane)
	<input checked="" type="checkbox"/>	Set-up Type B (40 cm distance to horizontal ground plane)
	<input type="checkbox"/>	Floor standing equipment set-up (10 cm over ground plane)
	<input type="checkbox"/>	Other: ---
	<input type="checkbox"/>	Artificial hand applied (See photo)
Supplementary Test set-up description	Operating mode: 1	
Test method applied..... :	<input checked="" type="checkbox"/>	Voltage disturbance measurement (Table 1, Table 2, Table 4, Table 5)
	<input type="checkbox"/>	Current disturbance measurement (Table 3, Table 6)
	<input type="checkbox"/>	Other: ---
Supplementary information	During the tests the EUT operated at the rated frequency and voltage specified for the equipment. Level of the disturbance is steady, level tested - maximum disturbance.	

Test set-up photo:



Graphical presentation of the result:

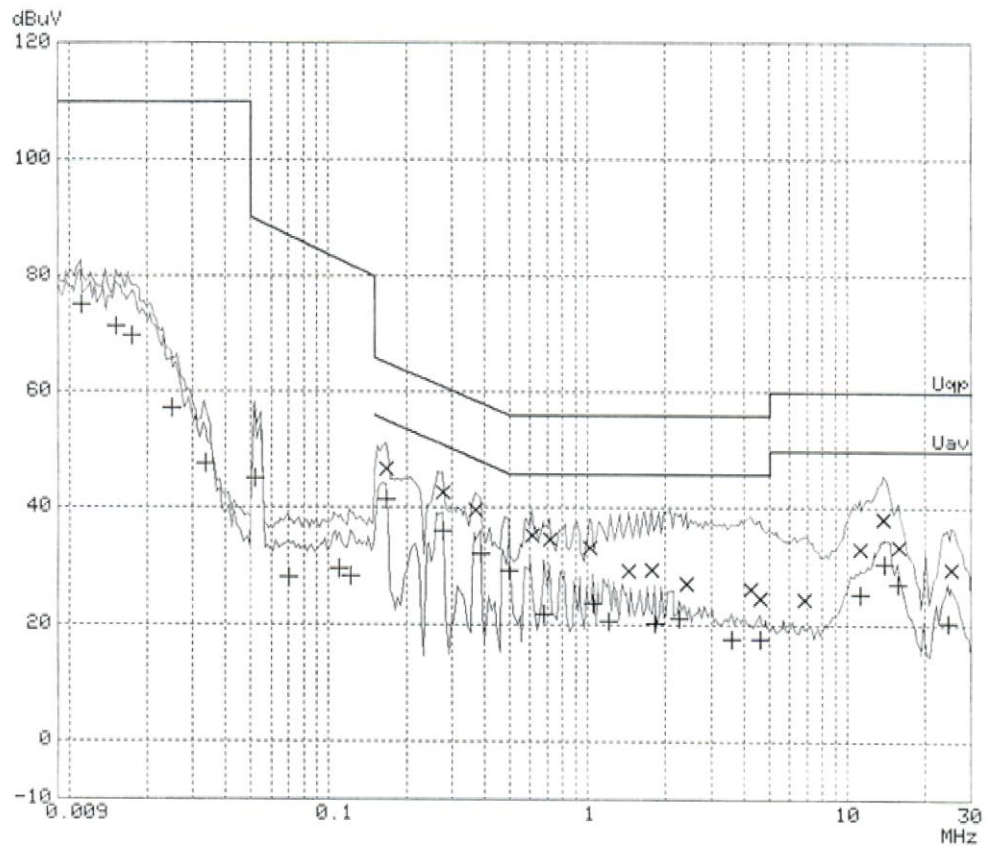
IMiF PREDOM Division Disturbance Voltage Measurement

EUT: URBINO LED
 Manuf: LUG Light Factory Sp. z o.o.
 Test Spec: EN 55015
 File name: _55015_.RES
 Date: 18. Mar 21 13:55

Overview Scan Settings (2 Ranges)

----- Frequencies -----			----- Receiver Settings -----			
Start	Stop	Step	IF BW	Detector	M-Time	Atten Preamp
9k	150k	61.0Hz	200Hz	PK+AV	10ms	60dBLN OFF
150k	30M	3.9k	9k	PK+AV	10ms	15dBLN OFF

Final Measurement: x QP / + AV
 Meas Time: 1 s
 Subranges: 25
 Acc Margin: 25dB



IMiF PREDOM Division Disturbance Voltage Measurement

EUT: URBINO LED
 Manuf: LUG Light Factory Sp. z o.o.
 Test Spec: EN 55015
 File name: _55015_.RES
 Date: 18. Mar 21 13:55

Final Measurement Results:

Indicated Phase/PE shows Configuration of max. Emission

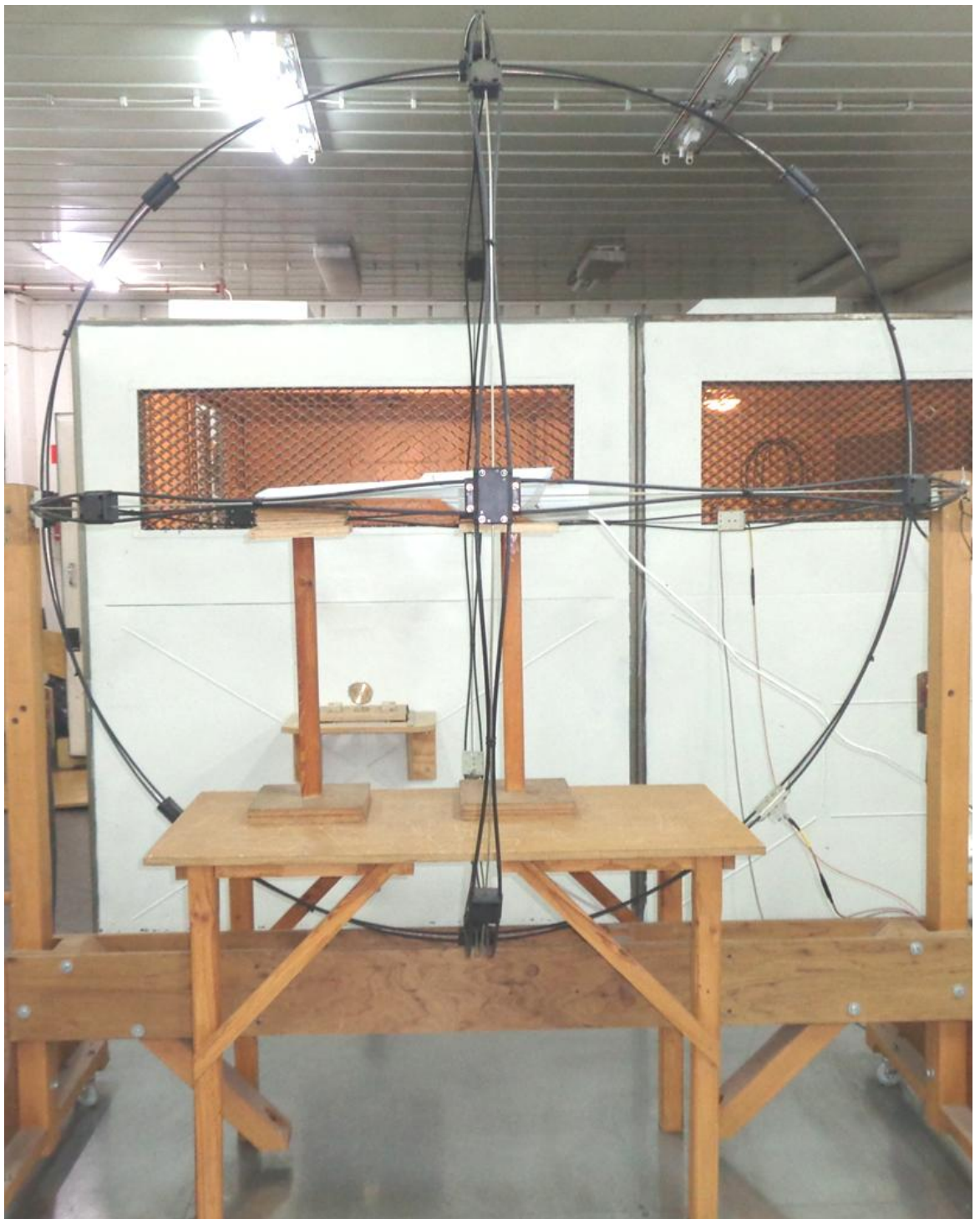
Frequency MHz	QP Level dBuV	Delta Limit dB	Phase -	PE -
0.16563	46.8	-18.4	N	gnd
0.27500	42.7	-18.3	N	gnd
0.36875	39.6	-18.9	N	gnd
0.60703	35.4	-20.5	N	gnd
0.71641	34.7	-21.2	N	gnd
1.02109	33.3	-22.7	N	gnd
1.43906	29.3	-26.6	L1	gnd
1.76719	29.5	-26.4	N	gnd
2.40391	27.1	-28.8	L1	gnd
4.24766	26.2	-29.7	L1	gnd
4.59531	24.6	-31.3	L1	gnd
6.85313	24.4	-35.5	L1	gnd
11.24766	33.1	-26.8	L1	gnd
13.73594	38.2	-21.7	L1	gnd
15.81016	33.3	-26.6	L1	gnd
25.22813	29.6	-30.3	N	gnd

Frequency MHz	AV Level dBuV	Delta Limit dB	Phase -	PE -
0.0111362	75.1		N	gnd
0.0150425	71.3		N	gnd
0.0174229	69.7		L1	gnd
0.0248081	57.2		L1	gnd
0.0335361	47.8		N	gnd
0.05203	45.2		L1	gnd
0.06955	28.2		N	gnd
0.10952	29.5		N	gnd
0.12112	28.3		L1	gnd
0.16563	41.5	-13.7	N	gnd
0.27500	36.0	-14.9	N	gnd
0.38438	32.2	-15.9	N	gnd
0.49375	29.3	-16.8	N	gnd
0.67734	21.9	-24.0	N	gnd
1.04453	23.7	-22.2	L1	gnd
1.20078	20.6	-25.3	L1	gnd
1.81406	20.3	-25.6	L1	gnd
2.25156	21.1	-24.8	L1	gnd
3.57578	17.6	-28.3	L1	gnd
4.61875	17.6	-28.3	L1	gnd
11.25156	25.2	-24.7	L1	gnd
13.94297	30.5	-19.4	L1	gnd
15.71641	27.1	-22.8	L1	gnd
24.45859	20.5	-29.4	L1	gnd

4.2 Radiated electromagnetic disturbances (9 kHz to 30 MHz)

Tested by..... :	Bartłomiej Wysokiński	
Test date	2021-03-19	
Test Location (stand)	Radiated electromagnetic disturbances (9 kHz to 30 MHz) stand	
Applied Limit for antenna measurement (Table 9)..... :	<input type="checkbox"/>	Loop antenna radiated disturbance limit 9 kHz – 30 MHz for equipment with a dimension > 1,6 m
Applied limit according to LLAS diameter (Table 8)..... :	<input checked="" type="checkbox"/>	2 m for equipment length not exceeding 1,6m
	<input type="checkbox"/>	3 m for equipment length between 1,6 m and 2,6 m
	<input type="checkbox"/>	4 m for equipment length between 2,6 m and 3,6 m
Test set-up description..... :	<input checked="" type="checkbox"/>	Equipment placed in the centre of the LLAS
	<input type="checkbox"/>	Equipment on a table 80 cm height
	<input type="checkbox"/>	Equipment on the floor (isolated from ground plane)
	<input type="checkbox"/>	Other: ---
Supplementary test set-up description..... :	Position: Vertical and Horizontal Operating mode: 1	
Supplementary information	---	

Test set-up photo:



Graphical presentation of the result:

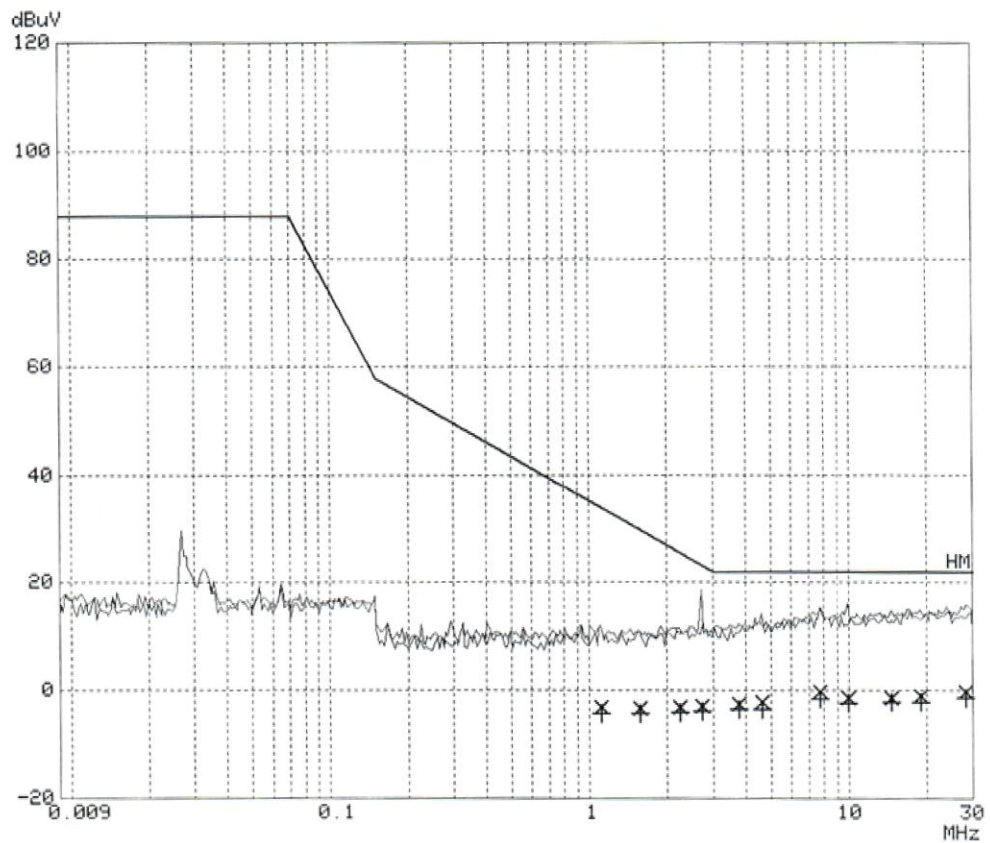
IMiF PREDOM Division Measurement of Radiation Disturbances

EUT: URBINO LED
 Manuf: LUG Light Factory Sp. z o.o.
 Test Spec: EN 55015
 Comment: Horizontal
 File name: 55015_H.RES
 Date: 19. Mar 21 07:50

Overview Scan Settings (2 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
9k	150k	61.0Hz	200Hz	PK	10ms	35dB	OFF
150k	30M	3.9k	9k	PK	10ms	10dB	OFF

Final Measurement: x QP / + AV
 Meas Time: 1 s
 Subranges: 25
 Acc Margin: 25dB



IMI F PREDOM Division Measurement of Radiation Disturbances

EUT: URBINO LED
 Manuf: LUG Light Factory Sp. z o.o.
 Test Spec: EN 55015
 Comment: Horizontal
 File name: 55015_H.RES
 Date: 19. Mar 21 07:50

Final Measurement Results:

Frequency MHz	QP Level dBuV	Delta Limit dB
1.10313	-2.9	-37.0
1.56797	-3.2	-33.1
2.23203	-3.1	-28.9
2.71641	-2.8	-26.2
3.75547	-2.4	-24.4
4.60703	-2.0	-24.0
7.73203	-0.2	-22.2
9.90781	-1.3	-23.3
14.49375	-1.2	-23.2
18.82578	-1.0	-23.0
28.23984	-0.1	-22.1

Frequency MHz	AV Level dBuV	Delta Limit dB
1.10313	-4.2	
1.56797	-4.3	
2.23203	-4.0	
2.71641	-3.8	
3.75547	-3.4	
4.60703	-3.4	
7.73203	-1.5	
9.90781	-2.3	
14.49375	-2.0	
18.82578	-2.0	
28.23984	-1.3	

* limit exceeded

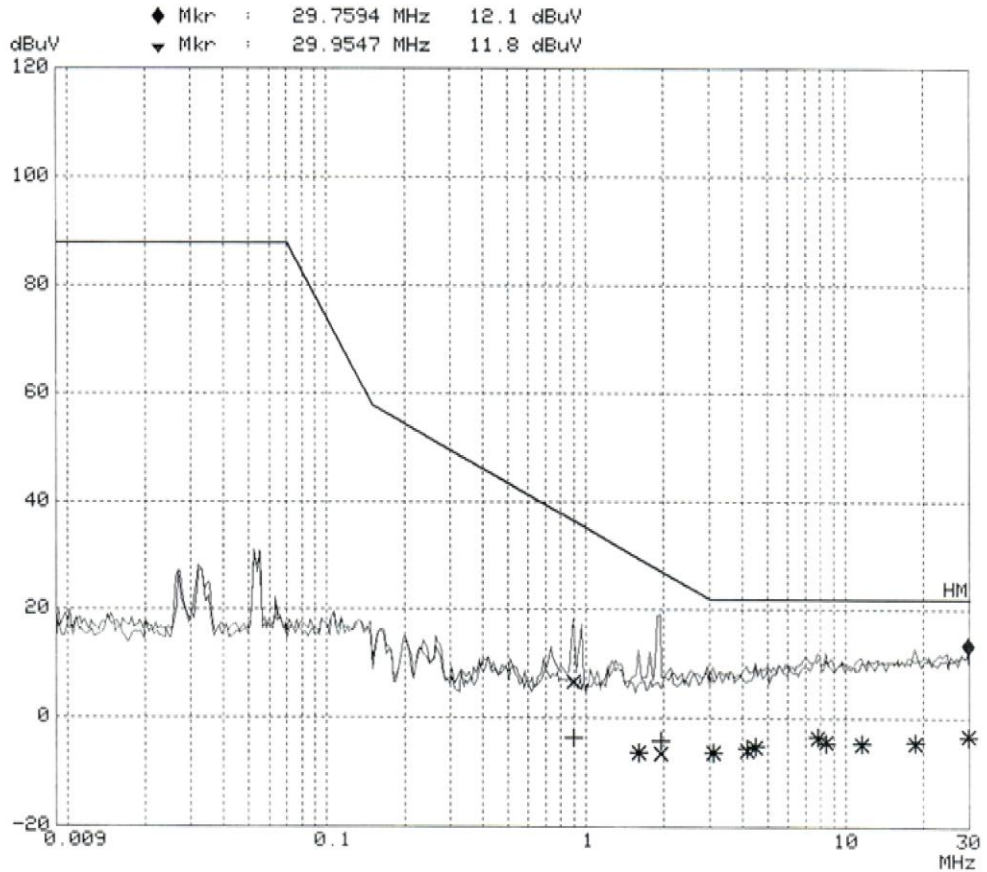
IMiF PREDOM Division Measurement of Radiation Disturbances

EUT: URBINO LED
 Manuf: LUG Light Factory Sp. z o.o.
 Test Spec: EN 55015
 Comment: Vertical
 File name: 55015_V.RES
 Date: 19. Mar 21 08:31

Overview Scan Settings (2 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
9k	150k	61.0Hz	200Hz	PK	10ms	35dB	OFF
150k	30M	3.9k	9k	PK	10ms	5dB	OFF

Final Measurement: x Hor-Max / + Vert-Max
 Meas Time: 1 s
 Subranges: 25
 Acc Margin: 25dB



IMiF PREDOM Division Measurement of Radiation Disturbances

EUT: URBINO LED
 Manuf: LUG Light Factory Sp. z o.o.
 Test Spec: EN 55015
 Comment: Vertical
 File name: 55015_V.RES
 Date: 19. Mar 21 08:31

Final Measurement Results:

Frequency MHz	QP Level hor. dBuV	QP Level vert. dBuV	Delta Limit dB
0.89219	6.7	-3.5	-30.0
1.58750	-6.1	-6.2	-35.8
1.93516	-6.3	-4.0	-31.5
3.08359	-6.0	-6.1	-28.0
4.15391	-5.7	-5.3	-27.3
4.50547	-5.1	-5.0	-27.0
7.79453	-3.4	-3.2	-25.2
8.36875	-4.2	-4.4	-26.2
11.53672	-4.5	-4.4	-26.4
18.54844	-4.3	-4.1	-26.1
29.75938	-3.1	-3.2	-25.1

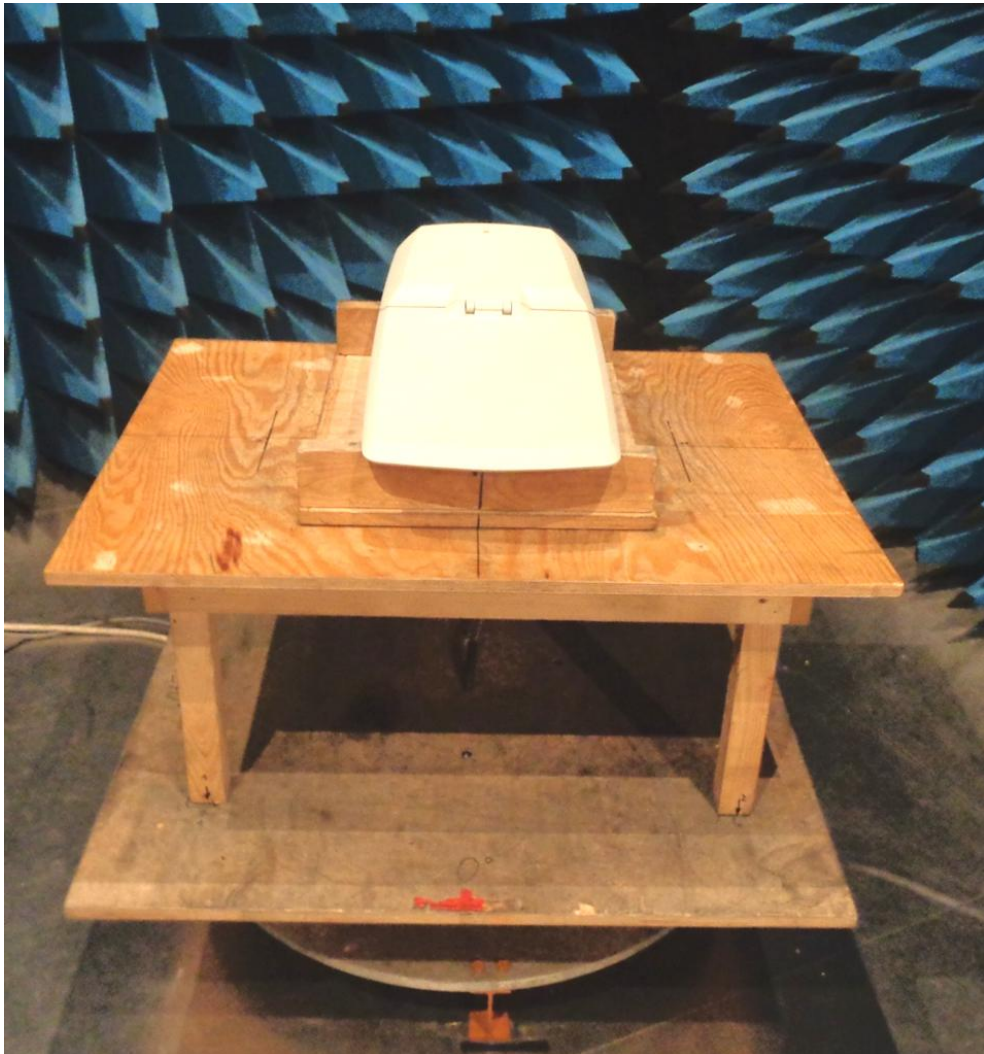
* limit exceeded

4.3 Radiated electromagnetic disturbances (30 MHz to 1000 MHz)

Tested by..... :	Bartłomiej Wysokiński	
Test date	2021-03-16 ÷ 2021-03-17	
Test Location (stand)	Radiated electromagnetic disturbances stand Semi- anechoic chamber U-86	
Applied limit class..... :	<input checked="" type="checkbox"/>	Table 10 Radiated disturbance limits
	<input type="checkbox"/>	Other: ---
Test set-up description	<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"/>	Equipment located approximately in the middle of the validated test volume (FAR)
	<input type="checkbox"/>	Equipment on a 10 cm support over the ground plane according CDNE-Method
	<input type="checkbox"/>	Other: ---
Supplementary test set-up description	Operating mode: 1	
Test method applied..... :	<input type="checkbox"/>	CDN(E)
	<input checked="" type="checkbox"/>	OATS or SAC with measurement distance [m]: 10
	<input type="checkbox"/>	FAR with measurement distance [m]: ---
	<input type="checkbox"/>	TEM Waveguide (test item without cables and max. 300 mm dimension)
	<input type="checkbox"/>	Other: ---
Supplementary information	---	



Test set-up photo:



EMC32 Report 0deg

EMI Auto Test Template: 55015 EMI Test Auto 30MHz-1000MHz - 10m

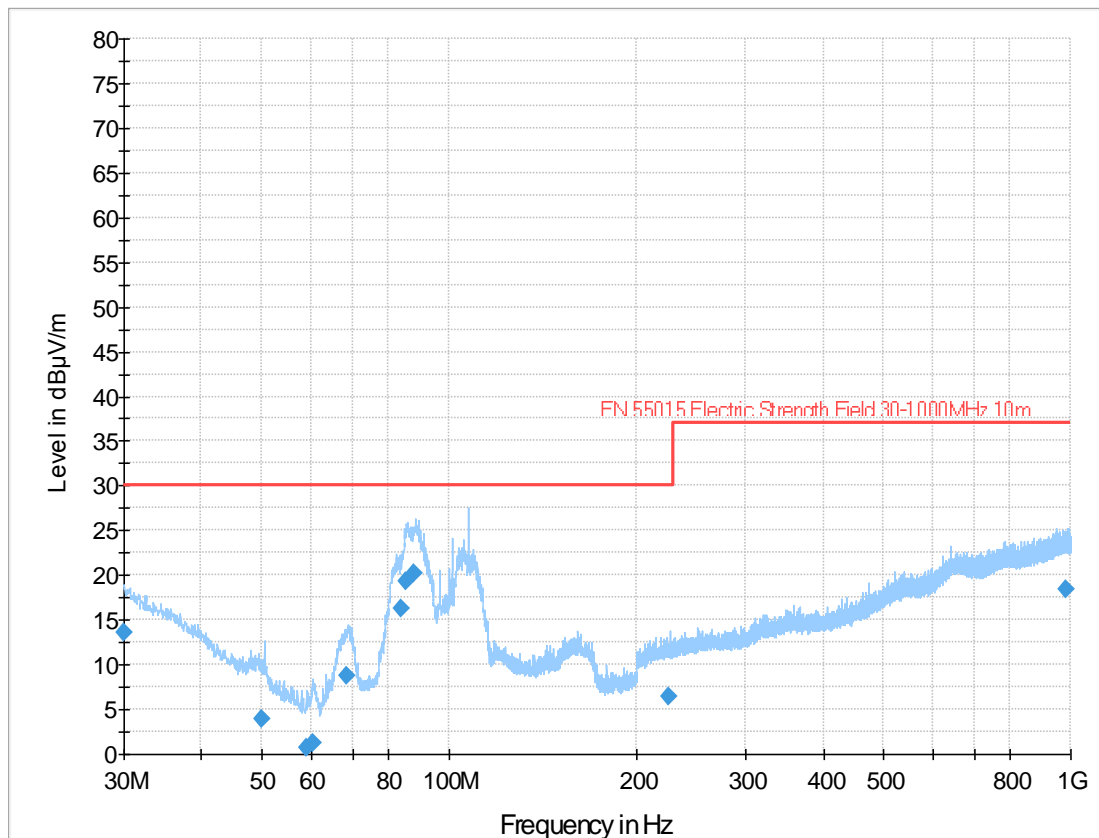
Hardware Setup: HL562 EMI
Measurement Type: Open-Area-Test-Site
Frequency Range: 30 MHz - 1 GHz
Graphics Level Range: 0 dB μ V/m - 80 dB μ V/m

Preview Measurements:
Scan Test Template: EMI Prescan auto

Frequency Zoom:
Zoom Scan Template: EMI Zoom auto

Maximization Measurements:
Template for Single Meas.: EMI Prescan auto

Final Measurements:
Template for Single Meas.: EMI Final auto



Final Result

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.030000	13.54	30.00	16.46	1000.0	120.000	400.0	H	0.0	22
49.920000	3.85	30.00	26.15	1000.0	120.000	110.0	V	0.0	11
59.160000	0.76	30.00	29.24	1000.0	120.000	210.0	V	0.0	8
60.420000	1.25	30.00	28.75	1000.0	120.000	110.0	V	0.0	8
68.476500	8.77	30.00	21.23	1000.0	120.000	210.0	V	0.0	10
83.580000	16.30	30.00	13.70	1000.0	120.000	210.0	V	0.0	12
85.380000	19.37	30.00	10.63	1000.0	120.000	210.0	V	0.0	11
87.729300	20.27	30.00	9.73	1000.0	120.000	310.0	V	0.0	11
226.108500	6.42	30.00	23.58	1000.0	120.000	310.0	H	0.0	12
984.993000	18.41	37.00	18.59	1000.0	120.000	400.0	H	0.0	26

EMC32 Report 90deg

EMI Auto Test Template: 55015 EMI Test Auto 30MHz-1000MHz - 10m

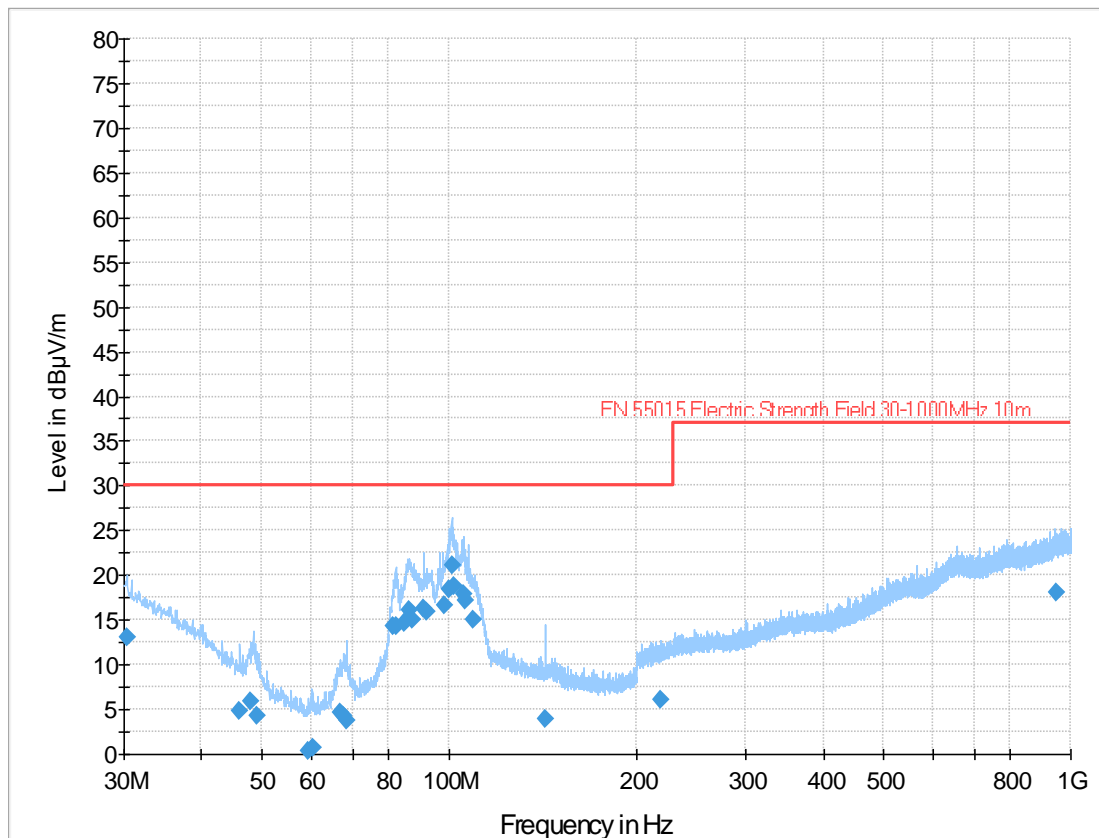
Hardware Setup: HL562 EMI
Measurement Type: Open-Area-Test-Site
Frequency Range: 30 MHz - 1 GHz
Graphics Level Range: 0 dB μ V/m - 80 dB μ V/m

Preview Measurements:
Scan Test Template: EMI Prescan auto

Frequency Zoom:
Zoom Scan Template: EMI Zoom auto

Maximization Measurements:
Template for Single Meas.: EMI Prescan auto

Final Measurements:
Template for Single Meas.: EMI Final auto



Final Result

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.428500	13.11	30.00	16.89	1000.0	120.000	400.0	V	90.0	21
46.080000	4.88	30.00	25.12	1000.0	120.000	110.0	V	90.0	13
48.000000	5.87	30.00	24.13	1000.0	120.000	110.0	V	90.0	12
49.140000	4.25	30.00	25.75	1000.0	120.000	110.0	V	90.0	12
59.460000	0.34	30.00	29.66	1000.0	120.000	110.0	V	90.0	8
60.300000	0.69	30.00	29.31	1000.0	120.000	110.0	V	90.0	8
66.780000	4.61	30.00	25.39	1000.0	120.000	210.0	V	90.0	10
67.680000	4.37	30.00	25.63	1000.0	120.000	310.0	V	90.0	10
68.577700	3.74	30.00	26.26	1000.0	120.000	310.0	V	90.0	10
81.420000	14.40	30.00	15.60	1000.0	120.000	400.0	H	90.0	11
82.320000	14.29	30.00	15.71	1000.0	120.000	400.0	H	90.0	11
84.900000	14.61	30.00	15.39	1000.0	120.000	310.0	H	90.0	11
86.100000	16.12	30.00	13.88	1000.0	120.000	310.0	H	90.0	11
87.420000	15.04	30.00	14.96	1000.0	120.000	310.0	H	90.0	11
91.080000	16.30	30.00	13.70	1000.0	120.000	110.0	V	90.0	11
91.920000	15.84	30.00	14.16	1000.0	120.000	310.0	V	90.0	11
98.340000	16.58	30.00	13.42	1000.0	120.000	310.0	V	90.0	11
99.960000	18.42	30.00	11.58	1000.0	120.000	310.0	V	90.0	11
101.035000	21.16	30.00	8.84	1000.0	120.000	310.0	V	90.0	11
102.000000	18.83	30.00	11.17	1000.0	120.000	310.0	V	90.0	11
105.240000	17.92	30.00	12.08	1000.0	120.000	400.0	V	90.0	11
106.080000	17.16	30.00	12.84	1000.0	120.000	400.0	V	90.0	11
109.620000	14.98	30.00	15.02	1000.0	120.000	400.0	V	90.0	12
142.535500	3.93	30.00	26.07	1000.0	120.000	210.0	V	90.0	11
218.984500	6.14	30.00	23.86	1000.0	120.000	210.0	H	90.0	12
948.744000	18.09	37.00	18.91	1000.0	120.000	310.0	H	90.0	26

EMC32 Report 180deg

EMI Auto Test Template: 55015 EMI Test Auto 30MHz-1000MHz - 10m

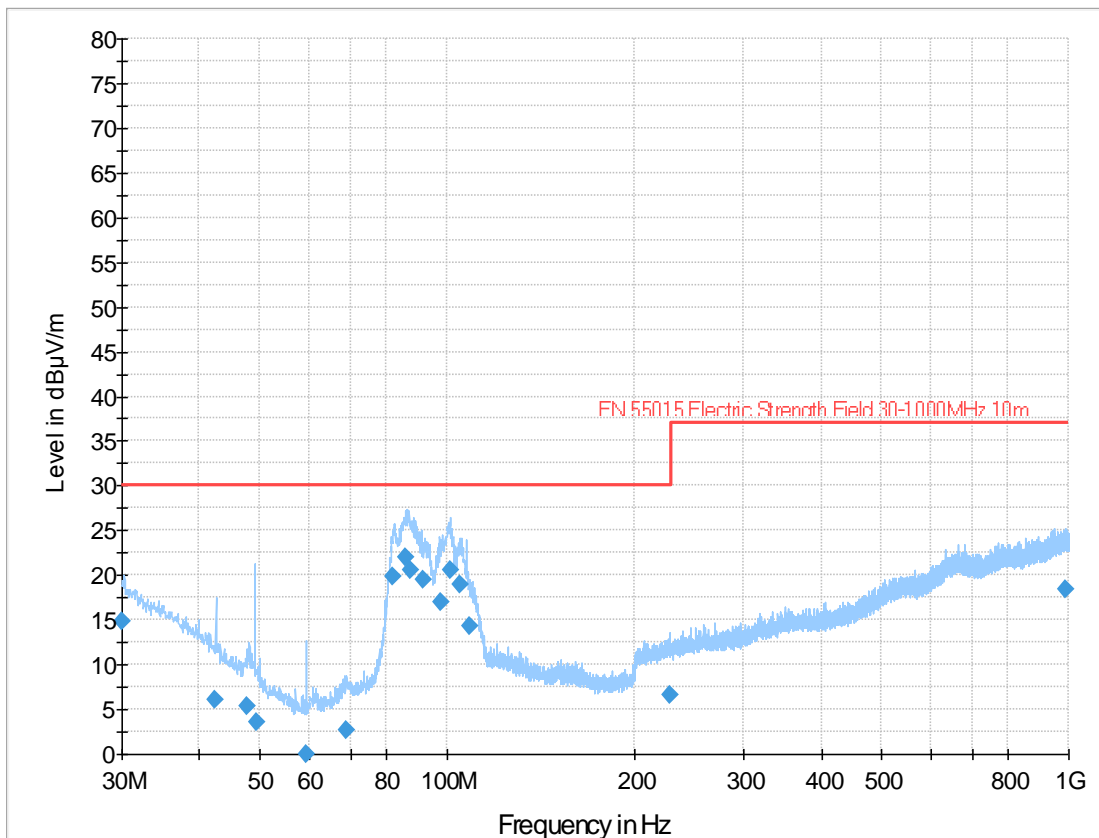
Hardware Setup: HL562 EMI
Measurement Type: Open-Area-Test-Site
Frequency Range: 30 MHz - 1 GHz
Graphics Level Range: 0 dB μ V/m - 80 dB μ V/m

Preview Measurements:
Scan Test Template: EMI Prescan auto

Frequency Zoom:
Zoom Scan Template: EMI Zoom auto

Maximization Measurements:
Template for Single Meas.: EMI Prescan auto

Final Measurements:
Template for Single Meas.: EMI Final auto



Final Result

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.088800	14.81	30.00	15.19	1000.0	120.000	310.0	H	180.0	22
42.267600	6.17	30.00	23.83	1000.0	120.000	400.0	H	180.0	15
47.640000	5.37	30.00	24.63	1000.0	120.000	110.0	V	180.0	12
49.284600	3.51	30.00	26.49	1000.0	120.000	210.0	V	180.0	12
59.263600	0.04	30.00	29.96	1000.0	120.000	400.0	V	180.0	8
69.000000	2.74	30.00	27.26	1000.0	120.000	310.0	V	180.0	10
81.720000	19.78	30.00	10.22	1000.0	120.000	310.0	V	180.0	12
85.859200	22.06	30.00	7.94	1000.0	120.000	310.0	V	180.0	11
87.420000	20.60	30.00	9.40	1000.0	120.000	310.0	V	180.0	11
91.440000	19.53	30.00	10.47	1000.0	120.000	310.0	V	180.0	11
97.440000	16.95	30.00	13.05	1000.0	120.000	310.0	V	180.0	11
101.105000	20.57	30.00	9.43	1000.0	120.000	310.0	V	180.0	11
105.180000	18.92	30.00	11.08	1000.0	120.000	400.0	V	180.0	11
109.020000	14.33	30.00	15.67	1000.0	120.000	400.0	V	180.0	12
228.628000	6.58	30.00	23.42	1000.0	120.000	310.0	H	180.0	12
988.176500	18.47	37.00	18.53	1000.0	120.000	400.0	H	180.0	26

EMC32 Report 270deg

EMI Auto Test Template: 55015 EMI Test Auto 30MHz-1000MHz - 10m

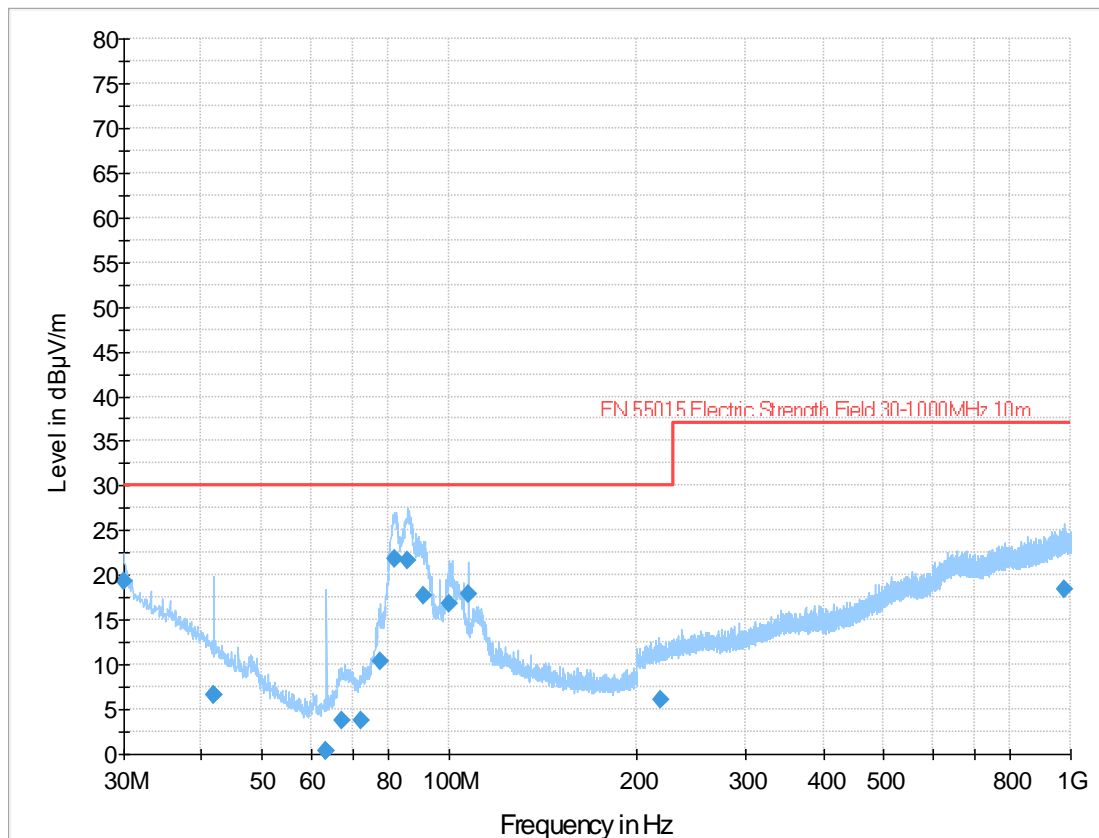
Hardware Setup: HL562 EMI
Measurement Type: Open-Area-Test-Site
Frequency Range: 30 MHz - 1 GHz
Graphics Level Range: 0 dB μ V/m - 80 dB μ V/m

Preview Measurements:
Scan Test Template: EMI Prescan auto

Frequency Zoom:
Zoom Scan Template: EMI Zoom auto

Maximization Measurements:
Template for Single Meas.: EMI Prescan auto

Final Measurements:
Template for Single Meas.: EMI Final auto



Final Result

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.030000	19.35	30.00	10.65	1000.0	120.000	400.0	V	270.0	21
41.700600	6.70	30.00	23.30	1000.0	120.000	400.0	V	270.0	16
41.880000	6.58	30.00	23.42	1000.0	120.000	400.0	V	270.0	16
63.332300	0.41	30.00	29.59	1000.0	120.000	310.0	V	270.0	9
63.540000	0.33	30.00	29.67	1000.0	120.000	400.0	V	270.0	9
67.320000	3.78	30.00	26.22	1000.0	120.000	110.0	V	270.0	10
72.300000	3.69	30.00	26.31	1000.0	120.000	210.0	V	270.0	11
77.520000	10.33	30.00	19.67	1000.0	120.000	310.0	V	270.0	12
81.660000	21.89	30.00	8.11	1000.0	120.000	310.0	V	270.0	12
85.751900	21.70	30.00	8.30	1000.0	120.000	310.0	V	270.0	11
90.720000	17.74	30.00	12.26	1000.0	120.000	310.0	V	270.0	11
100.109500	16.81	30.00	13.19	1000.0	120.000	110.0	H	270.0	12
107.592000	17.81	30.00	12.19	1000.0	120.000	110.0	V	270.0	11
218.462000	6.14	30.00	23.86	1000.0	120.000	110.0	H	270.0	12
978.527500	18.37	37.00	18.63	1000.0	120.000	310.0	H	270.0	26

5 Harmonic current emissions according to IEC 61000-3-2

Tested by..... :	Bartłomiej Wysokiński		
Test date	2021-03-22		
Test Location (stand)	U-84		
Version of measurement instrument standard used IEC 61000-4-7 (Clause 7)	<input type="checkbox"/>	IEC 61000-4-7:1991	
	<input checked="" type="checkbox"/>	IEC 61000-4-7:2002 + AMD1:2008	
Test set-up description..... :	---		
Operating modes of EUT	1		
Limit classification in accordance with the standard..... :	<input type="checkbox"/>	Class A	
	<input type="checkbox"/>	Class B	
	<input checked="" type="checkbox"/>	Class C with rated power > 25 W (Table 2)	
	<input type="checkbox"/>	Class C with rated power ≥ 5 and ≤ 25 W (First requirement, Table 3 column 2)	
		<input type="checkbox"/>	Table 3, column 2 (Power related limits)
		<input type="checkbox"/>	3 rd harmonic ≤ 86 %, 5 th harmonic ≤ 61 % and waveform conditions
		<input type="checkbox"/>	THD ≤ 70 %, Harmonics: 3 rd ≤ 35 %, 5 th ≤ 25 %, 7 th ≤ 30 %, 9 th and 11 th ≤ 20 %, 2 nd ≤ 5 %
		<input type="checkbox"/>	Other: ---
<input type="checkbox"/>	Class D		
Observation period..... :	Description	Period selected T_{obs}	
	<input checked="" type="checkbox"/>	Quasi stationary	2.5 min
	<input type="checkbox"/>	Short cyclic	$T_{obs} \geq 10$ cycles =
	<input type="checkbox"/>	Random	$T_{obs} =$
	<input type="checkbox"/>	Long cyclic	Full program cycle or 2.5 min. with highest THC $T_{obs} =$
Control method used in the sample according clause 6.2 of the standard	<input checked="" type="checkbox"/>	The EUT does not utilize half-wave rectification or any other method to control the active input power. Such equipment is in conformity with the standard if the measured values comply with the applicable limit.	
	<input type="checkbox"/>	The EUT uses half-wave rectification directly on the mains supply, or it uses symmetrical or asymmetrical methods to control the active input power. Such equipment is permitted under conditions only. An evaluation on the control method is required. However, the equipment shall still comply with the harmonic requirements of the standard.	
Supplementary information	---		

Test set-up photo:



Tabulated/Graphical Results for Harmonic Current Emissions:

Name: Serial no:
 Department: Operating modes:
 Company: IMiF PREDOM Division Comment1:
 Test report no: Z7-4/043/EMC/21 Comment2:
 Device: URBINO LED Comment3:
 Specimen: Comment4:
 Manufacturer: LUG Light Factory Date: 22.03.2021
 Type: Test date: 22.03.2021

Voltage: 231.12 Vrms THD=0.01 % THV=0.013 V POHV=0.006 V PWHD=0.02 %
 Current: 0.920 Arms 1.317 Apk THD=2.89 % THC=0.027 A POHC=0.011 A PWHD=7.21 %
 Power: 209.4 W P1=209.4 W 212.6 VA
 Power factor: 0.985 CosPhi1: 0.985

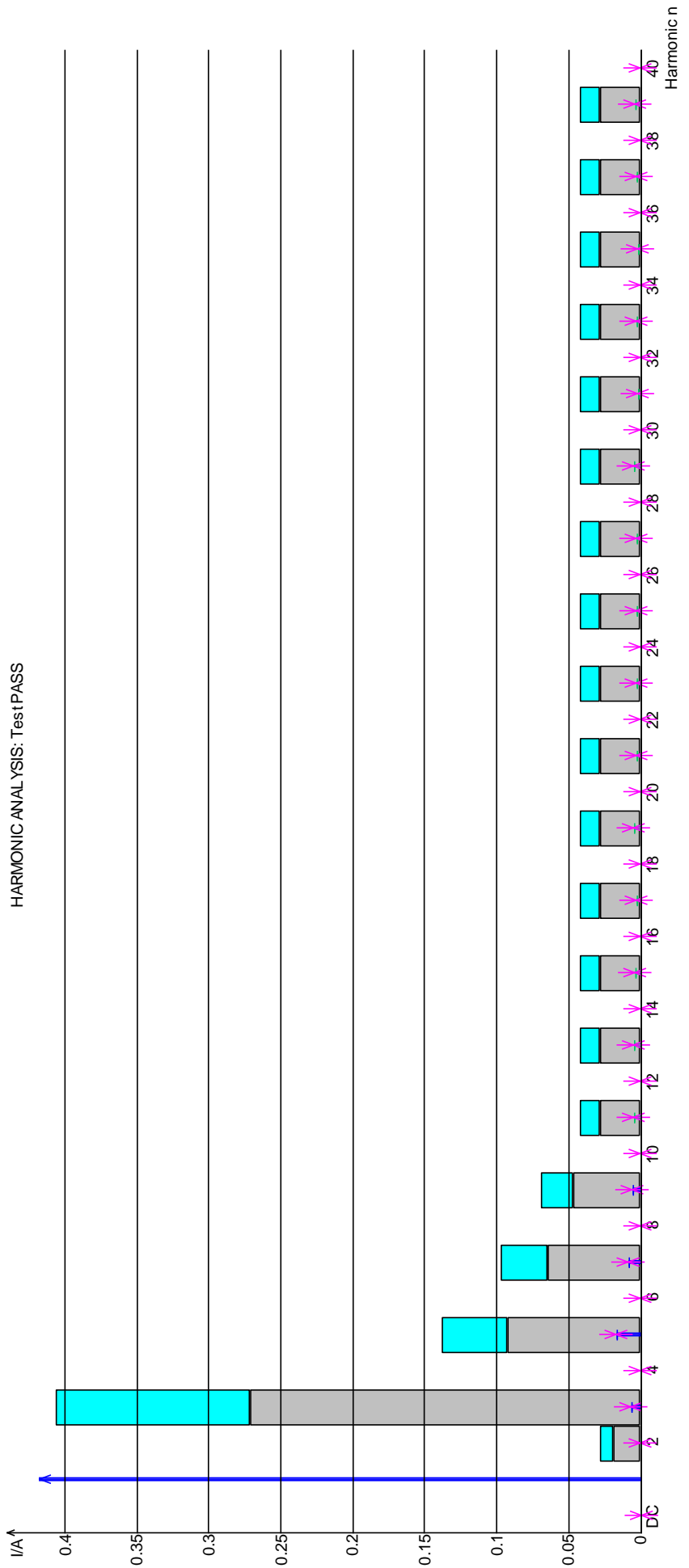
Test conditions: EN 61000-3-2, f=50 Hz, Phase=L1, Range=0.80 A
 Time window=10/12 (200ms), Grouping (>2nd harm.)=on, Rated I1=3.0 A, Rated pf=1.0
 No Ztest selected
 harmonic currents < 0.6 % of I or < 5 mA are disregard for calc. of THD, THC, POHC, PWHD

HARMONIC ANALYSIS: Test PASS in Timewindow 1 of 750
 Rated I1/Pf exceeded, changed to 0.92 A / 1.000

Ha	Value	Percent	Angle	EN61000-3-2 Class C a)	Margin	PASS	FAIL
DC	-0.0005 A	-0.06 %	----	-----	-----	X	
1	0.9195 A	100.00 %	9.8 Deg	-----	-----	X	
2	0.0003 A	0.03 %	157.3 Deg	0.0184 A	-98.4 %	X	
3	0.0073 A	0.79 %	-83.4 Deg	0.2759 A	-97.4 %	X	
4	0.0002 A	0.02 %	172.1 Deg	-----	-----	X	
5	0.0174 A	1.89 %	-15.0 Deg	0.0920 A	-81.1 %	X	
6	0.0002 A	0.02 %	-74.2 Deg	-----	-----	X	
7	0.0091 A	0.99 %	-27.6 Deg	0.0644 A	-85.9 %	X	
8	0.0003 A	0.03 %	-139.8 Deg	-----	-----	X	
9	0.0064 A	0.70 %	-48.7 Deg	0.0460 A	-86.1 %	X	
10	0.0002 A	0.02 %	-22.1 Deg	-----	-----	X	
11	0.0054 A	0.59 %	-37.5 Deg	0.0276 A	-80.4 %	X	
12	0.0002 A	0.02 %	-171.8 Deg	-----	-----	X	
13	0.0050 A	0.54 %	-53.4 Deg	0.0276 A	-81.9 %	X	
14	0.0002 A	0.03 %	23.7 Deg	-----	-----	X	
15	0.0050 A	0.54 %	-58.0 Deg	0.0276 A	-82.0 %	X	
16	0.0002 A	0.02 %	159.2 Deg	-----	-----	X	
17	0.0036 A	0.39 %	-59.1 Deg	0.0276 A	-87.0 %	X	
18	0.0003 A	0.03 %	133.3 Deg	-----	-----	X	
19	0.0048 A	0.52 %	-83.1 Deg	0.0276 A	-82.7 %	X	
20	0.0003 A	0.03 %	-18.6 Deg	-----	-----	X	
21	0.0029 A	0.32 %	-64.1 Deg	0.0276 A	-89.5 %	X	
22	0.0003 A	0.03 %	107.3 Deg	-----	-----	X	
23	0.0035 A	0.38 %	-92.4 Deg	0.0276 A	-87.4 %	X	
24	0.0002 A	0.02 %	-27.1 Deg	-----	-----	X	
25	0.0035 A	0.38 %	-87.8 Deg	0.0276 A	-87.4 %	X	
26	0.0002 A	0.03 %	-176.4 Deg	-----	-----	X	
27	0.0028 A	0.31 %	-82.0 Deg	0.0276 A	-89.8 %	X	
28	0.0003 A	0.03 %	66.8 Deg	-----	-----	X	
29	0.0048 A	0.52 %	-85.0 Deg	0.0276 A	-82.7 %	X	
30	0.0002 A	0.03 %	174.3 Deg	-----	-----	X	
31	0.0025 A	0.28 %	-105.0 Deg	0.0276 A	-90.8 %	X	
32	0.0002 A	0.03 %	-92.9 Deg	-----	-----	X	
33	0.0033 A	0.36 %	-106.8 Deg	0.0276 A	-88.1 %	X	
34	0.0001 A	0.02 %	54.9 Deg	-----	-----	X	
35	0.0026 A	0.29 %	-109.5 Deg	0.0276 A	-90.4 %	X	
36	0.0003 A	0.03 %	-88.7 Deg	-----	-----	X	
37	0.0031 A	0.33 %	-140.2 Deg	0.0276 A	-88.9 %	X	
38	0.0004 A	0.04 %	34.0 Deg	-----	-----	X	
39	0.0038 A	0.42 %	-94.5 Deg	0.0276 A	-86.1 %	X	
40	0.0004 A	0.05 %	119.1 Deg	-----	-----	X	

value < 0.6 % of I or < 5 mA

Tested with SPS EMC 4.1.3 / PAS5000 by Spitzenberger & Spies GmbH & Co. KG, Schmidstr. 32-34, 94234 Viechtach, Germany, 22.03.2021



6 Voltage changes, voltage fluctuations and flicker according to IEC 61000-3-3

Tested by..... :	Bartłomiej Wysokiński	
Test date	2021-03-22	
Test Location (stand)	U-84	
Test set-up description	---	
Test method	<input checked="" type="checkbox"/>	4.2.2 Flickermeter according IEC 61000-4-15
	<input type="checkbox"/>	4.2.3 Simulation
	<input type="checkbox"/>	4.2.4 Analytical method
	<input type="checkbox"/>	4.2.5 Use of $P_{st} = 1$ curve
Observation time selected..... :	<input checked="" type="checkbox"/>	10 Minutes
	<input type="checkbox"/>	120 Minutes
	<input type="checkbox"/>	24 times switching according to Annex B
Limit for dmax applied	<input type="checkbox"/>	4 %
	<input checked="" type="checkbox"/>	6 %
	<input type="checkbox"/>	7 %
Supplementary information	---	

Test set-up photo:



Tabulated Results for Voltage Fluctuations and Flicker:

Name:		Serial no:	
Department:		Operating modes:	
Company:	IMiF PREDOM Division	Comment1:	
Test report no:	Z7-4/043/EMC/21	Comment2:	
Device:	URBINO LED	Comment3:	
Specimen:		Comment4:	
Manufacturer:	LUG Light Factory	Date:	22.03.2021
Type:		Test date:	22.03.2021

Test conditions: EN 61000-3-3 / 230 V / 50 Hz / Phase L1
 EN 61000-4-15/ Obs 1 x 10 min / Ztest (0.400+j0.250) Ohm
 Ra+jXa (0.2400+j0.1500) Ohm / Rn+jXn (0.1600+j0.1000) Ohm

FLICKER: Test PASS!

Time	Pmax	Pst	Sliding Plt	Tmax [s]	dmax [%]	dc [%]	PASS	FAIL
11:35:17	0.000	0.0070	0.0070	0.000	0.000	- . - - -	X	
Limits:		1.000	0.650	0.500	6.000	3.300		
Plt: 0.007000								
Evaluated: PST, dc, dmax, Tmax								

FLICKER: Source test PASS!

Time	Pmax	Pst	Sliding Plt	Tmax [s]	dmax [%]	dc [%]	PASS	FAIL
11:35:17	0.000	0.0040	- . - - - -	0.000	0.000	- . - - -	X	
Plt: 0.004000								
Evaluated: PST <= 0.4 dmax < 20 % dmax1								

Tested with SPS EMC 4.1.3 / PAS5000 by Spitzenberger & Spies GmbH & Co. KG, Schmidstr. 32-34, 94234 Viechtach, Germany, 22.03.2021

7 Immunity

7.1 General information

Performance criteria as defined by the standard	
Criterion	Description from standard
A	During the test, no change of the luminous intensity shall be observed and the regulating control, if any shall operate during the test as intended.
B	During the test, the luminous intensity may change to any value. After the test, the luminous intensity shall be restored to its initial value within 1 min. Regulating controls need not function during the test, but after the test, the mode of the control shall be the same as before the test provided that during the test no mode changing commands were given.
C	During and after the test, any change of the luminous intensity is allowed and the lamp(s) may be extinguished. After the test, within 30 min, all functions shall return to normal, if necessary by temporary interruption of the mains supply and/or operating the regulating control. Additional requirement for lighting equipment incorporating a starting device: After the test, the lighting equipment is switched off. After half an hour, it is switched on again. The lighting equipment shall start and operate as intended.
Other:	---

Manufacturer defined performance criteria..... :	Criterion	Description
	A	N/A
	B	N/A
	C	N/A
	D	N/A
Monitoring during the tests..... :	Radio-frequency electromagnetic fields: visual EUT observation using a camera.	
Mains voltage applied during the testing if not otherwise specified...:	AC 230V/50Hz	

7.2 Electrostatic discharges

Tested by..... :	Bartłomiej Wysokiński	
Test date	2021-03-24	
Test Location(Stand)	ESD stand	
Test set-up	<input checked="" type="checkbox"/>	Table top equipment
	<input type="checkbox"/>	Floor standing equipment
	<input type="checkbox"/>	Wall or ceiling mounted equipment (Treated as table top)
Supplementary test set-up description	Operating mode: 1	
Size of horizontal coupling plate .. :	1.6 x 0.8 m	
Size of vertical coupling plate:	0.5 x 0.5 m	
Number of discharges for each test point..... :	10 positive / 10 negative	
Discharge interval	1/s	
Performance criterion	B	
Supplementary information	---	

Test set-up photo:



Photo of selected test points: Contact



Photo of selected test points: Contact

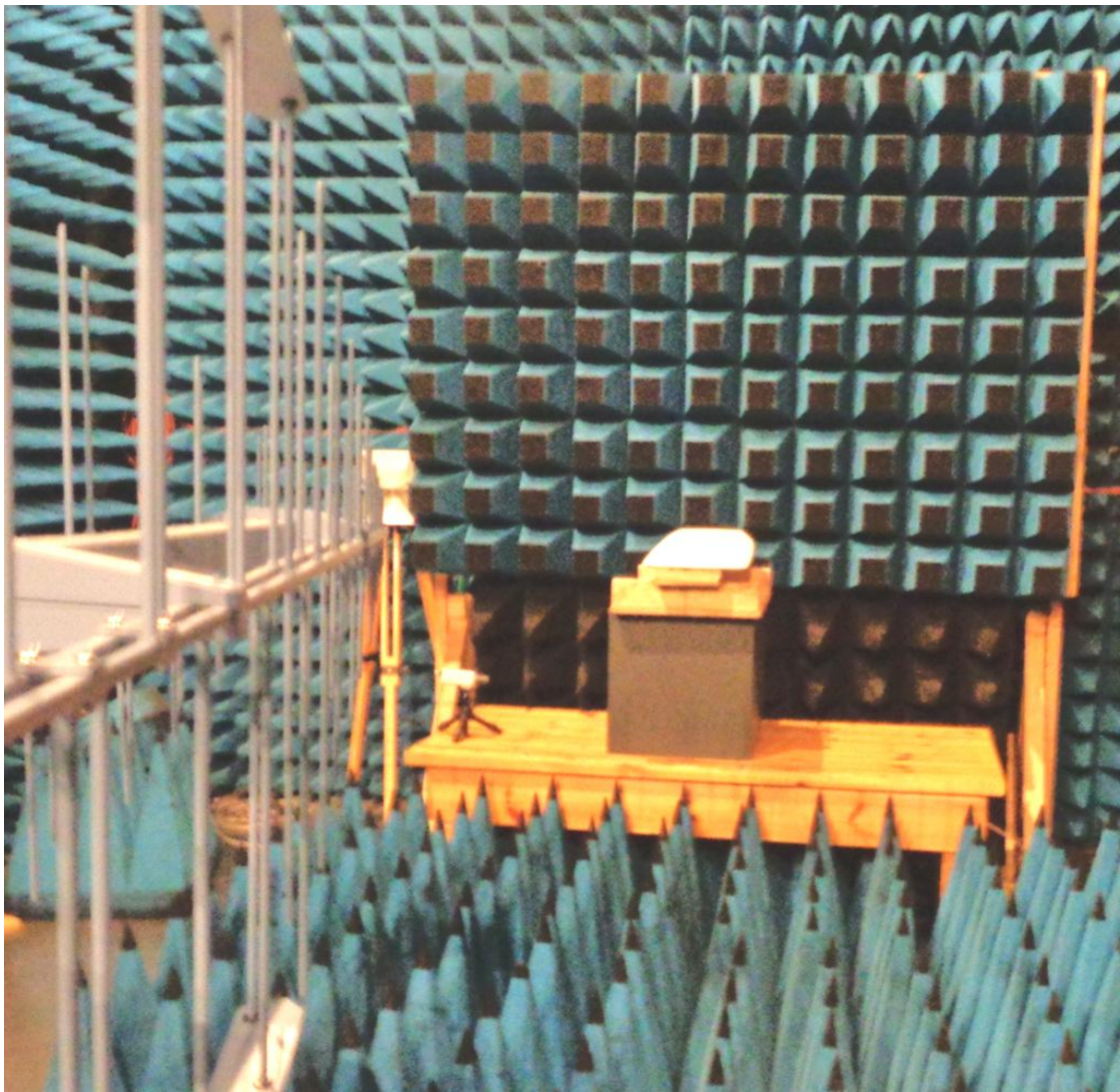


Table: Test results for electrostatic discharges							
No.	Location of discharge	Polarity	Discharge	Number of discharges	Test level [kV]	Operating mode	Observations
1	HCP	P	C	10	4	1	Pass
2	HCP	N	C	10	4	1	Pass
3	VCP	P	C	10	4	---	X
4	VCP	N	C	10	4	---	X
5	Points on conductive surface as indicated in the picture above	P	C	10	4	1	Pass
6	Points on conductive surface as indicated in the picture above	N	C	10	4	1	Pass
7	Points on non-conductive surface as indicated in the picture above	P	A	10	8	---	X
8	Points on non-conductive surface as indicated in the picture above	N	A	10	8	---	X
HCP = Horizontal coupling plate VCP = Vertical coupling plate		N = Negative P = Positive		A = Air discharge C = Contact discharge X = Not performed nor required			
Supplementary information: No observed response from EUT							

7.3 Radio-frequency electromagnetic fields

Tested by.....	Bartłomiej Wysokiński		
Test date	2021-03-17		
Test location (stand).....	Radio-frequency electromagnetic fields stand Semi-anechoic chamber U-86		
Test set-up	<input checked="" type="checkbox"/>	Equipment on the table (see photos below)	
	<input type="checkbox"/>	Equipment standing on floor (0,05 – 0,15 m height)	
Supplementary test set up description	Operating mode: 1		
Exposed side of EUT	<input checked="" type="checkbox"/>	0° (Front)	
	<input checked="" type="checkbox"/>	90 °	
	<input checked="" type="checkbox"/>	180 ° (Rear)	
	<input checked="" type="checkbox"/>	270 °	
	<input type="checkbox"/>	Top side	
	<input checked="" type="checkbox"/>	Bottom side	
Reason for not exposing a side... :	As a result of the analysis, it was found that the EUT (front) side is the most susceptible to radiation, see below photos, next page.		
Distance Antenna to EUT.....	3 m		
Step size [%]	1		
Performance criterion	A		
Supplementary information	---		

Test set-up photo:



Test results for radiated electromagnetic field

Frequency range	Test Level [V/m]	Polarization	Modulation	Operating mode	Dwell time [s]	Observations
80 MHz ÷ 1 GHz	3.0	V	AM: 80.0 %; 1.0 kHz	1	1.0	Pass
80 MHz ÷ 1 GHz	3.0	H	AM: 80.0 %; 1.0 kHz	1	1.0	Pass

H = Horizontal

V = Vertical

X = Not performed nor required

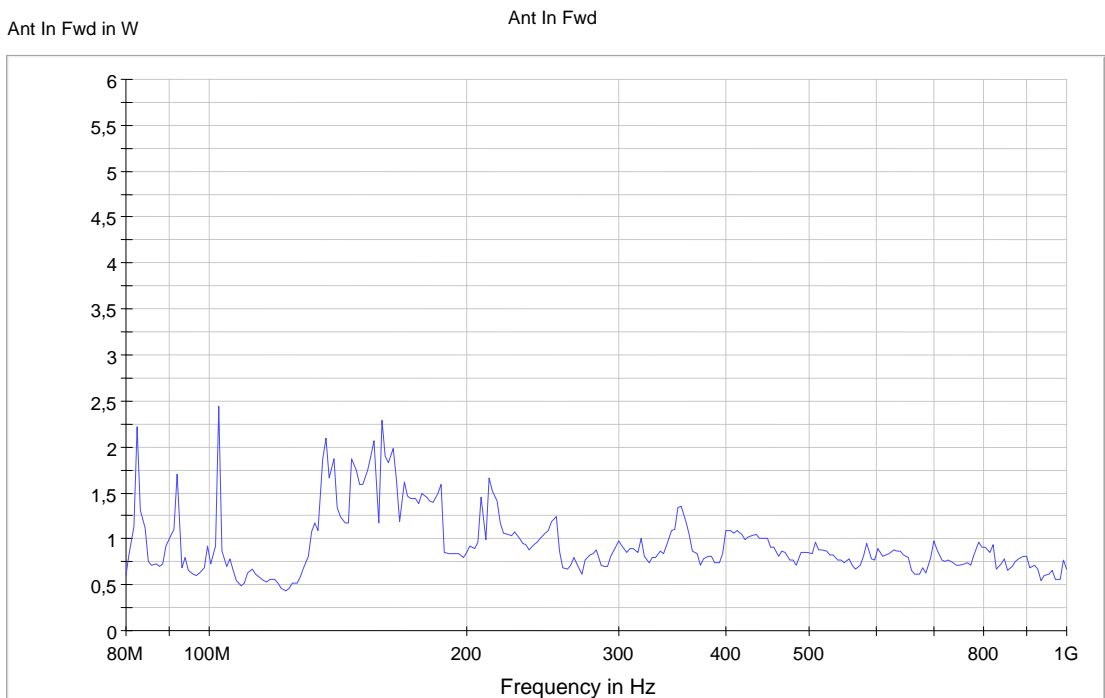
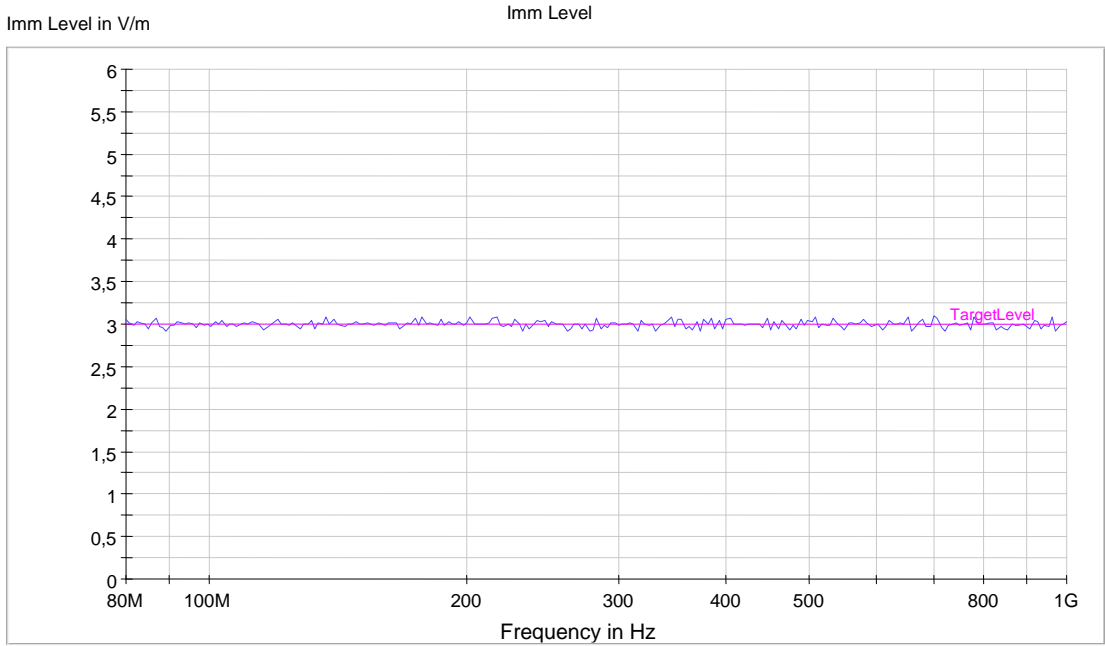
Supplementary information: No observed response from EUT

EMC32 Report position antenna: H

EMS Scan Template: EMS Scan 3Vm 80-1000MHz [EMS Radiated]

Hardware Setup: EMS radiated\Copy of Hardware Setup 80-1000MHz
24.05.2017_SMBV100A
Level On: Substitution Method: EMS radiated\Kalibracja pola
EMS\C28Vm_80-1000

Subrange	Step Width	Level	Modulation	Dwell Time
80MHz - 1GHz	1% LOG	3V/m	AM: 80,0%; 1,0kHz	1s

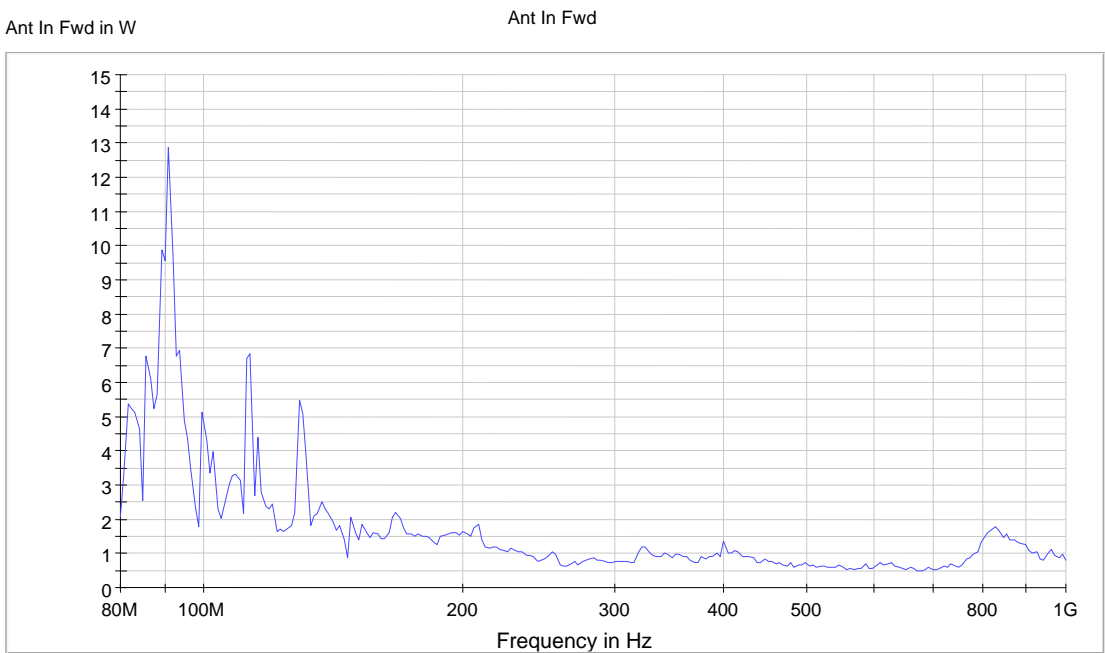
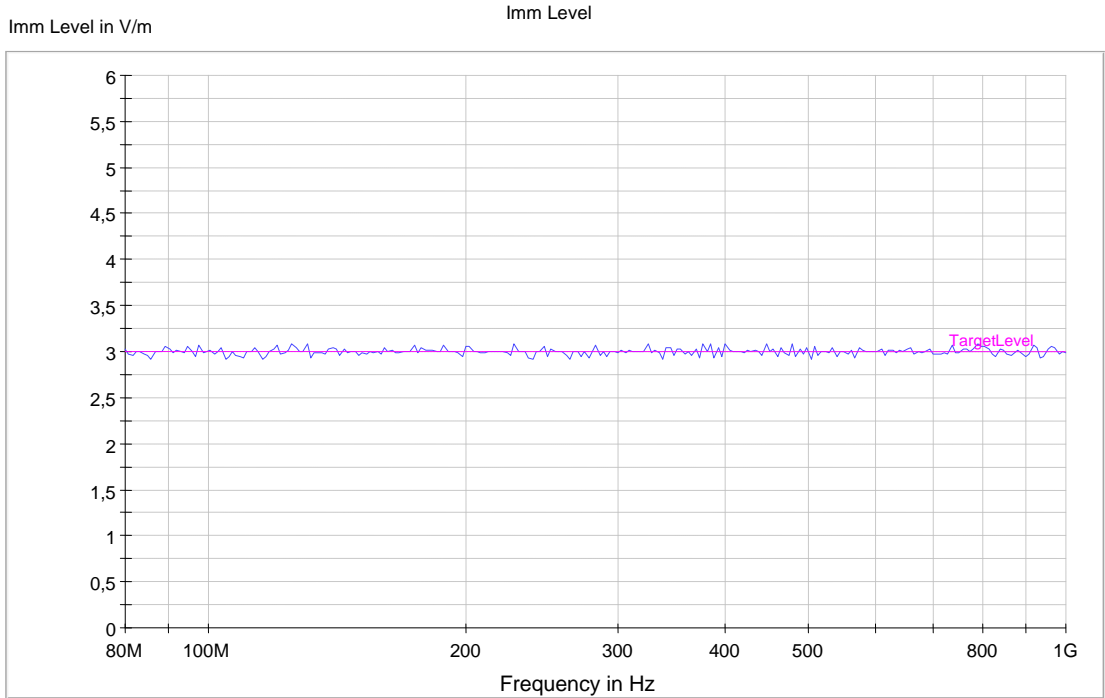


EMC32 Report position antenna: V

EMS Scan Template: EMS Scan 3Vm 80-1000MHz [EMS Radiated]

Hardware Setup: EMS radiated\Copy of Hardware Setup 80-1000MHz
 24.05.2017_SMBV100A
 Level On: Substitution Method: EMS radiated\.Kalibracja pola
 EMS\C28Vm_80-1000

Subrange	Step Width	Level	Modulation	Dwell Time
80MHz - 1GHz	1% LOG	3V/m	AM: 80,0%; 1,0kHz	1s



7.4 Power frequency magnetic fields

Tested by.....	: Bartłomiej Wysokiński
Test date	: 2021-03-19
Test location (Stand)	: PMM 1008
Applicability	<input checked="" type="checkbox"/> The test was performed
	<input type="checkbox"/> The test was not performed Reason: According to the manufacturers information there are no magnetic sensitive components in the product.
Test set-up	<input type="checkbox"/> 0,1 m above metal surface
	<input type="checkbox"/> Homogeneous field (Helmholtz coil). Dimensions: ---
	<input checked="" type="checkbox"/> Single Coil. Dimensions: 1 x 1 m
	<input type="checkbox"/> Single Coil. Dimensions: 1 x 2,6 m
Performance criterion	: A
Supplementary information	: ---

Test set-up photo:



Test results for power frequency magnetic field immunity test

Test frequency	Test Level [A/m]	Test time [s]	Coil size/type	Axis	Operating mode	Mains voltage/frequency	Observations
50Hz/60Hz	3	180	1m x 1m	X	1	230V/50Hz	Pass
50Hz/60Hz	3	180	1m x 1m	Y	1	230V/50Hz	Pass
50Hz/60Hz	3	180	1m x 1m	Z	1	230V/50Hz	Pass

X = Not performed nor required

Supplementary information: No observed response from EUT

7.5 Fast transients

Tested by.....	: Bartłomiej Wysokiński
Test date	: 2021-03-24
Test location (stand).....	: Fast transient stand
Test set-up	<input checked="" type="checkbox"/> Equipment on the table (0,1 ± 0,01) m above ground plane
	<input type="checkbox"/> Equipment standing on floor at (0,1 ± 0,01) m above ground plane
	<input type="checkbox"/> Artificial hand applied. Location see photo.
Supplementary test set-up description	: Operating mode: 1
Repetition frequency	: 5 kHz
Test time.....	: 4 min
Performance criterion.....	: B
Supplementary information	: ---

Test set-up photo:



Test results fast transients						
Port	Coupling	Level [kV]	Polarity	Operating mode	Mains voltage/frequency	Observation
Mains	L1 N	1	Positive	---	---	X
Mains	L1 N	1	Negative	---	---	X
Mains	L1 N PE	1	Positive	1	230V/50Hz	Pass
Mains	L1 N PE	1	Negative	1	230V/50Hz	Pass
X = Not performed nor required						
Supplementary information: No observed response from EUT						

7.6 Injected currents (radio-frequency common mode)

Tested by..... :	Bartłomiej Wysokiński	
Test date	2021-03-22	
Test location (Stand)	Injected currents stand	
Test set-up	<input checked="" type="checkbox"/>	Equipment located (0,1 ± 0,05) m above ground plane
	<input type="checkbox"/>	Elevated ground plane according to Annex F
	<input type="checkbox"/>	Artificial hand applied. Location see photo.
Supplementary test set-up description	Operating mode: 1	
Modulation..... :	<input checked="" type="checkbox"/>	80 % AM with 1 kHz
	<input type="checkbox"/>	Other: ---
Step size..... :	1 %	
Performance criterion	A	
Supplementary information	---	

Test set-up photo:


Test results for conducted disturbances, induced by radio-frequency fields

Frequency range	Test Level [V]	Port under test	CDN type	Port with terminated CDN	Operating mode	Dwell time [s]	Observations
0.15 ÷ 80 MHz	3,0	Mains	CDN-M2	---	---	---	X
0.15 ÷ 80 MHz	3,0	Mains	CDN-M3	ATT 6	1	1,0	Pass

X = Not performed nor required

Supplementary information: No observed response from EUT

7.7 Surges

Tested by.....	: Bartłomiej Wysokiński
Test date	: 2021-03-24
Test location(Stand)	: Surge stand
Test set-up description	: Operating mode: 1
Repetition rate	: 1 / min
Number of pulses for each coupling	: 5
Performance criterion	: C
Supplementary information	: ---

Test set-up photo:



Test results for surges								
Port	Coupling	CDN	Level [kV]	Polarity	Phase angles [°]	Operating mode	Mains voltage/frequency	Observation
Mains	L1-N	MCN	1	Positive	90	1	230V/50Hz	Pass
Mains	L1-N	MCN	1	Negative	270	1	230V/50Hz	Pass
Mains	N-PE	MCN	2	Positive	90	1	230V/50Hz	Pass
Mains	L1-PE	MCN	2	Positive	90	1	230V/50Hz	Pass
Mains	N-PE	MCN	2	Negative	270	1	230V/50Hz	Pass
Mains	L1-PE	MCN	2	Negative	270	1	230V/50Hz	Pass
Lower test levels:			<input type="checkbox"/>	Tested				
			<input checked="" type="checkbox"/>	Not tested				
P = Positive N = Negative X = Not performed nor required				MCN = Mains Coupling Network ICN = Coupling Network for interconnection lines D = Direct Coupling (shielded lines)				
Supplementary information: No observed response from EUT.								

7.8 Voltage dips and short interruptions

Tested by..... :	Bartłomiej Wysokiński
Test date	2021-03-22
Test Location (Stand)	U-84
Test set-up description	Operating mode: 1
Repetition rate	10 s
Number of dips or interruptions... :	3
Performance criterion	B (Voltage dips) C (Short interruptions $U_N=0\%$)
Supplementary information	---

Test results voltage dips						
U_N [V]	Frequency in Hz	Test Level [% of U_N]	Phase angle	Duration [Cycles]	Operating mode	Observations
230	50	70	0°	10	1	Pass
Supplementary information: see below Tabulated Results for Voltage Dips and Interruptions						

Test results voltage interruptions						
U_N [V]	Frequency [Hz]	Test Level [% of U_N]	Phase angle	Duration [Cycles]	Operating mode	Observations
230	50	0	0°	0.5	1	Pass
Supplementary information: see below Tabulated Results for Voltage Dips and Interruptions						

Test set-up photo:



Tabulated Results for Voltage Dips and Interruptions:

Name:		Serial no:	
Department:		Operating modes:	
Company:	IMiF PREDOM Division	Comment1:	
Test report no:	Z7-4/043/EMC/21	Comment2:	
Device:	URBINO LED	Comment3:	
Specimen:		Comment4:	
Manufacturer:	LUG Light Factory	Date:	22.03.2021
Type:		Test date:	22.03.2021

Test conditions: EN 61000-4-11 voltage dips, short interruptions and variations test

Voltage / frequency:	230.0 V / 50.0 Hz
Test phase:	Single phase / L1-N
Executed test:	61547 short interruption
Test description:	--
Disturbances per step:	3 (per phase angle) / 10.5 sec delay between

Step	Disturbance	Test level	Duration	Phase angle(s) (Ref. L1)
1	Voltage dip / short interruption	0 %	0.5 periods	0° L1

Test results:

- Normal performance within limits specified by manufacturer, requestor or purchaser
 - Temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention
 - Temporary loss of function or degradation of performance, the correction of which requires operator intervention
 - Loss of function or degradation of performance which is not recoverable, owing to damage to hardware or software, or loss of data

Comments:

TEST PASS

Tested with SPS EMC 4.13 / PAS5000 by Spitzenberger & Spies GmbH & Co. KG, Schmidstr. 32-34, 94234 Viechtach, Germany, 22.03.2021

Name:		Serial no:	
Department:		Operating modes:	
Company:	IMiF PREDOM Division	Comment1:	
Test report no:	Z7-4/043/EMC/21	Comment2:	
Device:	URBINO LED	Comment3:	
Specimen:		Comment4:	
Manufacturer:	LUG Light Factory	Date:	22.03.2021
Type:		Test date:	22.03.2021

Test conditions: EN 61000-4-11 voltage dips, short interruptions and variations test

Voltage / frequency:	230.0 V / 50.0 Hz
Test phase:	Single phase / L1-N
Executed test:	61547 dips
Test description:	--
Disturbances per step:	3 (per phase angle) / 10.5 sec delay between

Step	Disturbance	Test level	Duration	Phase angle(s) (Ref. L1)
1	Voltage dip / short interruption	70 %	10 periods	0° L1

Test results:

- Normal performance within limits specified by manufacturer, requestor or purchaser
 - Temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention
 - Temporary loss of function or degradation of performance, the correction of which requires operator intervention
 - Loss of function or degradation of performance which is not recoverable, owing to damage to hardware or software, or loss of data

Comments:

TEST PASS

Tested with SPS EMC 4.13 / PAS5000 by Spitzenberger & Spies GmbH & Co. KG, Schmidstr. 32-34, 94234 Viedtach, Germany, 22.03.2021

8 List of test equipment

Equipment	Type	Inventory number	Manufacturer
Test Stand:	Disturbance voltages		
EMI Test Receiver	ESCS 30	P-395	Rohde & Schwarz
Artificial Mains Network	ESH 2-Z5	U-57/A	Rohde & Schwarz
Faraday Cage	EK-1	U-11	UnitraUnima Olsztyn
Test Stand:	Disturbance powerstand		
EMI Test Receiver	ESCS 30	P-395	Rohde & Schwarz
Absorbing clamp	MDS-21	P-395/A	Rohde & Schwarz
Faraday Cage	EK-1	U-11	UnitraUnima Olsztyn
Test Stand:	Harmonic current emissions, Voltage changes, voltage fluctuations and flicker, Voltage Dips, Short Interruptions and Voltage Variations		
Test System	EMV D 15000/PAS	U-84	Spitzenberger+Spies GmbH
Test Stand:	Electrostatic discharges		
Simulator ESD	NSG 435	P-396	Schaffner
Test Stand:	Fast Transients / Surges		
Multifunctional Test Generator	COMPACT NX5	U-55/1	EM TEST
Combined 3-Phase Coupling/ Decoupling Networks	COUPLING NX5	U-55/3	EM TEST
Test Stand:	Conducted Disturbances Immunity		
Continuous Wave Simulator	CWS 500	U-56	EM TEST
Coupling-Decoupling Network	CDN-M5,M3,M2	U-56/D,C,B	EM TEST
Attenuator	ATT 6	U-56/F	EM TEST
Test Stand:	Radiated electromagnetic disturbances stand Semi-anechoic chamber U-86		
EMI Test Receiver	ESIB 26	P-377	Rohde & Schwarz
Antenna	HL 562	P-382	Rohde & Schwarz
Coupling Decoupling Network Emission	CDN-M5,M3,M2 with 50 Ω impedance	U-56/D,C,B	EM TEST
Test Stand:	Radiated, radio-frequency, electromagnetic field stand Semi-anechoic chamber U-86		
Vector Signal Generator	SMBV100A	P-601	Rohde & Schwarz
Power Amplifier	BLWA 0810-250/75D	P-370	BONN Elektronik
Power Amplifier	BLMA 4060-10	P-467	BONN Elektronik
Power Meter	NRVD	P-375	Rohde & Schwarz
Power Sensor	URV5-Z2	P-373/374	Rohde & Schwarz
Ultra log antenna	HL 046	P-434	Rohde & Schwarz
Test Stand:	Power frequency magnetic fields		
Magnetic field generator	1008	P-326	PMM
Test Stand:	Radiated electromagnetic disturbances		
Large Loop Antenna	HM 020	P-312	Rohde & Schwarz
EMI Test Receiver	ESCS 30	P-395	Rohde & Schwarz

9 Measurement instrumentation uncertainties

Type of disturbance test method	Used test equipment (only main instruments, no details)	Calculated uncertainty	U_{CISPR}
Disturbance voltage Mains terminals 9 kHz ... 150 kHz 150 kHz ... 30 MHz	EMI Test Receiver Artificial Mains Network	3.6 dB	4.0 dB 3.6 dB
Electric field strength Horiz. 30 MHz ... 200 MHz Horiz. 200 MHz ... 1000 MHz Vert. 30 MHz ... 130 MHz Vert. 130 MHz ... 200 MHz Vert. 200 MHz ... 1000 MHz	EMI Test Receiver Antenna	Horiz. 30 MHz ... 200 MHz 4.9 dB Horiz. 200 MHz ... 300 MHz 5.2 dB Vert. 30 MHz ... 200 MHz 5.1 dB Vert. 30 MHz ... 200 MHz 5.2 dB Vert. 200 MHz ... 300 MHz 5.2 dB	5.2 dB

10 Annex

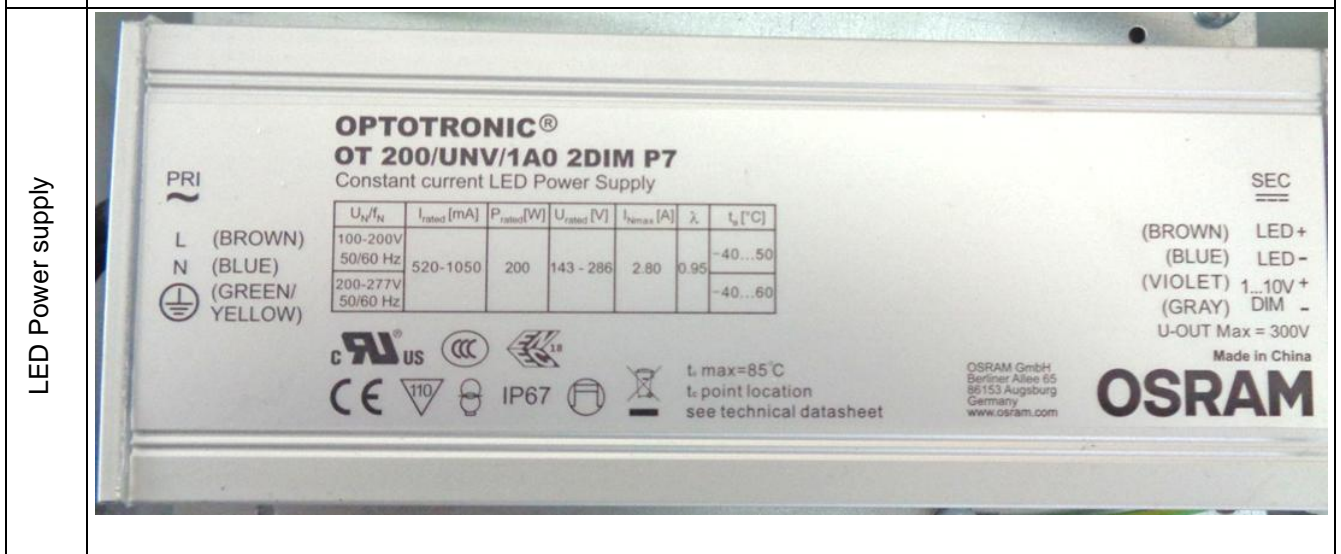
10.1 Annex A:

Component/ Part No.	Type No./model No.	Manufacturer/Trademark
LED Power Supply	OPTOTRONIC OT 200/UNV/1A0 2DIM P7	OSRAM

See Technical documentation and photos Annex B.

10.2 Annex B:

TABLE: Photography of the components	
Component/ Part No.	Photography

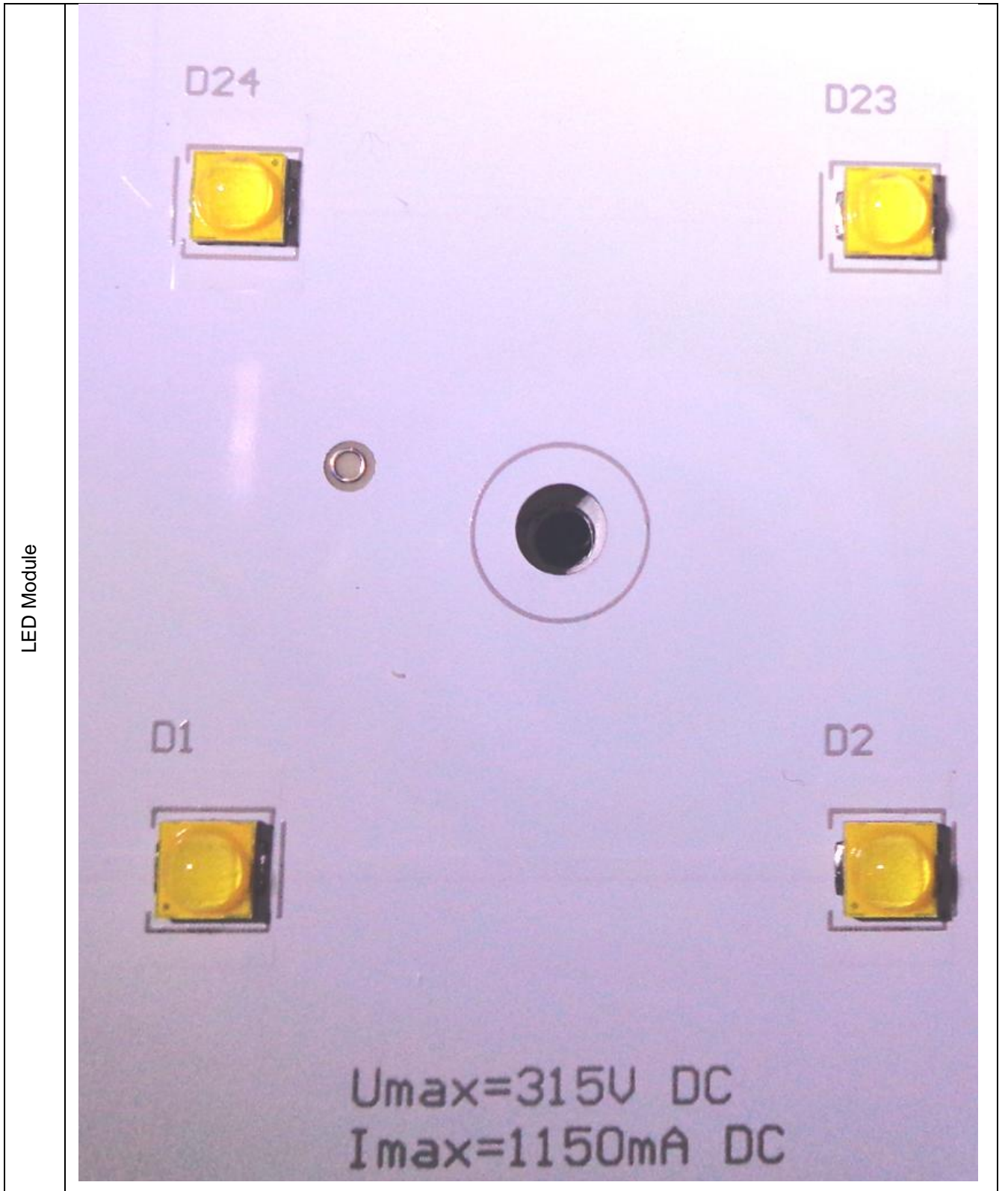


LED Module



LED Module





End of the Report