



AB 003



**TEST REPORT  
IEC CISPR15**

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

**Report Number**..... : B10-4/098/EMC/22

**Date of issue** ..... : 2022-09-22

**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+A1:2021-08  
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+A1:2021, EN 61000-3-3:2013+A1:2019,  
CISPR 15:2018, IEC 61547:2009,  
IEC 61000-3-2:2018+AMD1:2020, IEC 61000-3-3:2013+AMD1:2017

**Test procedure**..... : EMC

**Non-standard test method**..... : N/A

**Test Report Form No.** ..... : PREDOM IEC CISPR15\_ IEC 61547/21

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





**Master TRF** ..... : Dated 2022-01

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<b>Test item description</b> .....	Luminaire for road and street lighting	
<b>Trade Mark(s)</b> .....		
<b>Original Product/Equipment Manufacturer</b> .....	LUG Light Factory Sp. z o.o. 65-127 Zielona Góra, ul. Gorzowska 11, Poland	
<b>Branding Manufacturer(s)</b> .....	LUG	
<b>Model/Type reference</b> .....	130772.3L231.010 URBINO LED S ED DALI 8950lm/730 IP66 O1 szary I kl.	
<b>Ratings</b> .....	220-240 V 50/60 Hz 1 x max 74 W IP66 cl. I	
<b>Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):</b>		
<input checked="" type="checkbox"/>	<b>Testing Laboratory:</b>	Łukasiewicz - IMiF PREDOM Division
<b>Testing location/ address</b> .....		02-255 Warszawa, ul. Krakowiaków 53, Poland
<b>Tested by (name, function, signature) .....</b>		Marek Gabryszewski 
<b>Approved by (name, function, signature) ..</b>		Tomasz Małyska 
<b>Supervised by (name, function, signature):</b>		Filip Walczak 
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 1:</b>	
<b>Testing location/ address</b> .....		
<b>Tested by (name, function, signature) .....</b>		
<b>Approved by (name, function, signature) ..</b>		
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 2:</b>	
<b>Testing location/ address</b> .....		
<b>Tested by (name + signature) .....</b>		
<b>Witnessed by (name, function, signature) .</b>		
<b>Approved by (name, function, signature) ..</b>		

<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) :		:

<b>List of Attachments (including a total number of pages in each attachment):</b> N/A	
<b>Summary of testing: Tests results - Positive</b>	
<i>According to ISO / IEC Guide 98-4 for the assessment of compliance of the measurement result with the requirements, criterion B was chosen. 50% risk of incorrect assessment decision belongs to the customer and 50% risk of incorrect assessment belongs to the laboratory.</i>	
<b>Tests performed (name of test and test clause):</b> Conducted EMISSIONS (4.3) Radiated electromagnetic disturbances (4.5.2) Radiated EMISSIONS (4.5.3) Harmonic Currents (7) Voltage Fluctuations and Flicker (5) Electrostatic Discharges (5.2) RF Electromagnetic Fields (5.3) Power frequency magnetic fields (5.4) Electrical Fast Transients (5.5) Conducted Disturbances Induced by RF Fields (5.6) Surge (5.7) Voltage Dips and short Interruptions (5.8)	<b>Testing location:</b> Łukasiewicz - IMiF PREDOM Division 02-255 Warszawa, ul. Krakowiaków 53, Poland
<b>Summary of compliance with National Differences (List of countries addressed):</b> N/A	
<b>Statement concerning the uncertainty of the measurement systems used for the tests</b> no required (N/A)	
<input checked="" type="checkbox"/> <b>Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:</b> <b>Procedure number, issue date and title:</b> 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"/> <b>Statement not required by the standard used for type testing</b>	

Copy of marking plate:





<b>Test item particulars</b> ..... : For test item particulars refer to item 1	
<b>Classification of installation and use</b> ..... : Luminaire for road and street lighting	
<b>Supply Connection</b> ..... : Power connector	
<b>Possible test case verdicts:</b>	
- 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)	
<b>Testing:</b>	
<b>Date of receipt of test item</b> ..... : 2022-09-07	
<b>Date (s) of performance of tests</b> ..... : 2022-09-07 ÷ 2022-09-20	
<b>General remarks:</b>	
"(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.	
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60335-1:</b>	
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
<b>When differences exist; they shall be identified in the General product information section.</b>	
<b>Name and address of factory (ies)</b> ..... : LUG Light Factory Sp. z o.o. 65-127 Zielona Góra, ul. Gorzowska 11, Poland	
<b>General product information (GPI) and other remarks:</b>	
The results in this report reflect the results for that specific model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the requirements detailed in this report. According to the information from our Applicant, the tests were done on 230 V / 50 Hz supply.	

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**1 General description of test item(s)**

Description .....	Luminaire for road and street lighting				
Model number .....	130772.3L231.010 URBINO LED S				
Serial number .....	N/A				
Brand name .....	LUG				
Ports .....	Port name and description	Cable			
		Specified length [m]	Attached during test	Shielded	
Local wired ports .....	Mains, Supply Connection: power cord	0.8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
Wired network ports .....	N/A		<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: 230 V / 50 Hz	<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 .....	1 x max 74 W				
Protection class .....	cl. I				
Clock frequencies .....	No available data for these selection criteria				
Other parameters .....	See page 4				
Software version .....	of 08_2022				
Hardware version .....	of 08_2022				
Dimensions in mm (W x H x D):	475 x 105 x 195				
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 .....	<b>Module / parts of test item</b>	<b>Type</b>		<b>Manufacturer</b>	
	<i>See section Annex A</i> <i>Supplementary information: See section Annex B</i>				

Operating modes .....	<b>No.</b>	<b>Operating mode of test item</b>	<b>Applied for testing</b>	
			<b>Emission</b>	<b>Immunity</b>
	1	Powered by 230 VAC 50 Hz, in accordance with the manufacturer's instructions	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	2	Powered by 120 VAC 60 Hz, 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) .....  AE	<b>Accessory</b>	<b>Type</b>	<b>Manufacturer</b>	
	N/A	N/A	N/A	
Documents as provided by the applicant .....	<b>Description</b>	<b>File name</b>	<b>Issue date</b>	
	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: LED converter
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: Supply power

1.2 Photos of the test item

Photo of test item:





Photo of test item:



Photo of test item:



## 2 Verdict summary section

<b>CISPR15</b>			
<b>Clause</b>	<b>Requirement – Test case</b>	<b>Basic standard</b>	<b>Verdict</b>
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+AMD1:2019	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+AMD1:2020 CISPR 15:2018	Pass
4.5.3	Frequency range 30 MHz to 1 GHz Table 10	CISPR 16-2-3:2016+AMD1:2019	Pass
<b>IEC 61000-3-2</b>			
<b>Clause</b>	<b>Requirement – Test case</b>	<b>Basic standard</b>	<b>Verdict</b>
6.2 6.3	Harmonic current emissions	IEC 61000-3-2:2018+AMD1:2020 IEC 61000-4-7:2002+AMD1:2008	Pass
<b>IEC 61000-3-3</b>			
<b>Clause</b>	<b>Requirement – Test case</b>	<b>Basic standard</b>	<b>Verdict</b>
4	Voltage changes, voltage fluctuations and flicker	IEC 61000-3-3:2013+AMD1:2017 IEC 61000-4-15:2010	Pass
<b>IEC 61547</b>			
<b>Clause</b>	<b>Requirement – Test case</b>	<b>Basic standard</b>	<b>Verdict</b>
5.2	Electrostatic discharge	IEC 61000-4-2:2008	Pass
5.3	Radio-frequency electromagnetic fields	IEC 61000-4-3:2020	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 61000-4-11:2020	Pass
Supplementary information:			
According to ISO / IEC Guide 98-4 for the assessment of compliance of the measurement result with the requirements, criterion B was chosen. 50% risk of incorrect assessment decision belongs to the customer and 50% risk of incorrect assessment belongs to the laboratory.			

### 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:		
	<b>Temperature</b>	<b>Humidity</b>	<b>Atmospheric pressure</b>
	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 .....	Marek Gabryszewski	
Test date .....	2022-09-07	
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.....	---	



Test set-up photo:



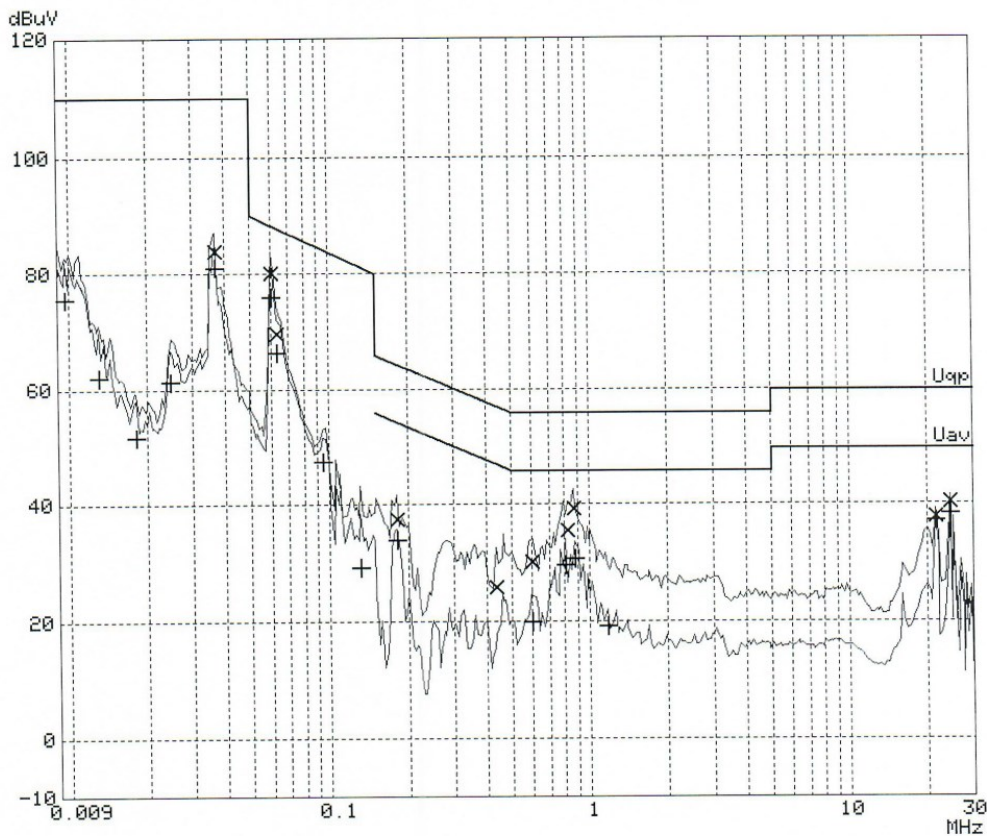
# IMiF PREDOM Division Disturbance Voltage Measurement

EUT: URBINO LED S  
Manuf: LUG Light Factory Sp.z o.o.  
Test Spec: EN 55015  
Comment: phase L1  
File name: \_55015\_.RES  
Date: 07. Sep 22 12:01

### 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	60dB LN	OFF
150k	30M	3.9k	9k	PK+AV	10ms	15dB LN	OFF

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





# IMiF PREDOM Division Disturbance Voltage Measurement

EUT: URBINO LED S  
 Manuf: LUG Light Factory Sp.z o.o.  
 Test Spec: EN 55015  
 Comment: phase L1  
 File name: \_55015\_.RES  
 Date: 07. Sep 22 12:01

## Final Measurement Results:

Indicated Phase/PE shows Configuration of max. Emission

Frequency MHz	QP Level dBuV	Delta Limit dB	Phase -	PE -
0.0365269	83.9	-26.0	N	gnd
0.06015	80.2	-8.2	N	gnd
0.06308	69.6	-18.2	L1	gnd
0.18125	37.5	-26.9	L1	gnd
0.43516	25.9	-31.2	N	gnd
0.59922	30.1	-25.9	L1	gnd
0.82188	35.6	-20.3	N	gnd
0.86484	39.4	-16.6	N	gnd
21.50547	37.9	-22.0	L1	gnd
24.57578	40.4	-19.5	L1	gnd

Frequency MHz	AV Level dBuV	Delta Limit dB	Phase -	PE -
0.0096714	75.6		L1	gnd
0.0129673	62.1		L1	gnd
0.0179722	52.0		N	gnd
0.0245029	61.5		L1	gnd
0.0365269	81.1		N	gnd
0.06015	76.0		N	gnd
0.06308	66.5		L1	gnd
0.09439	47.7		L1	gnd
0.13089	29.2		N	gnd
0.18125	33.9	-20.5	L1	gnd
0.59531	19.9	-26.0	L1	gnd
0.80234	29.6	-16.3	N	gnd
0.87656	30.7	-15.2	N	gnd
1.16953	19.2	-26.7	N	gnd
21.50547	37.2	-12.7	L1	gnd
24.57578	38.4	-11.5	L1	gnd

\* limit exceeded

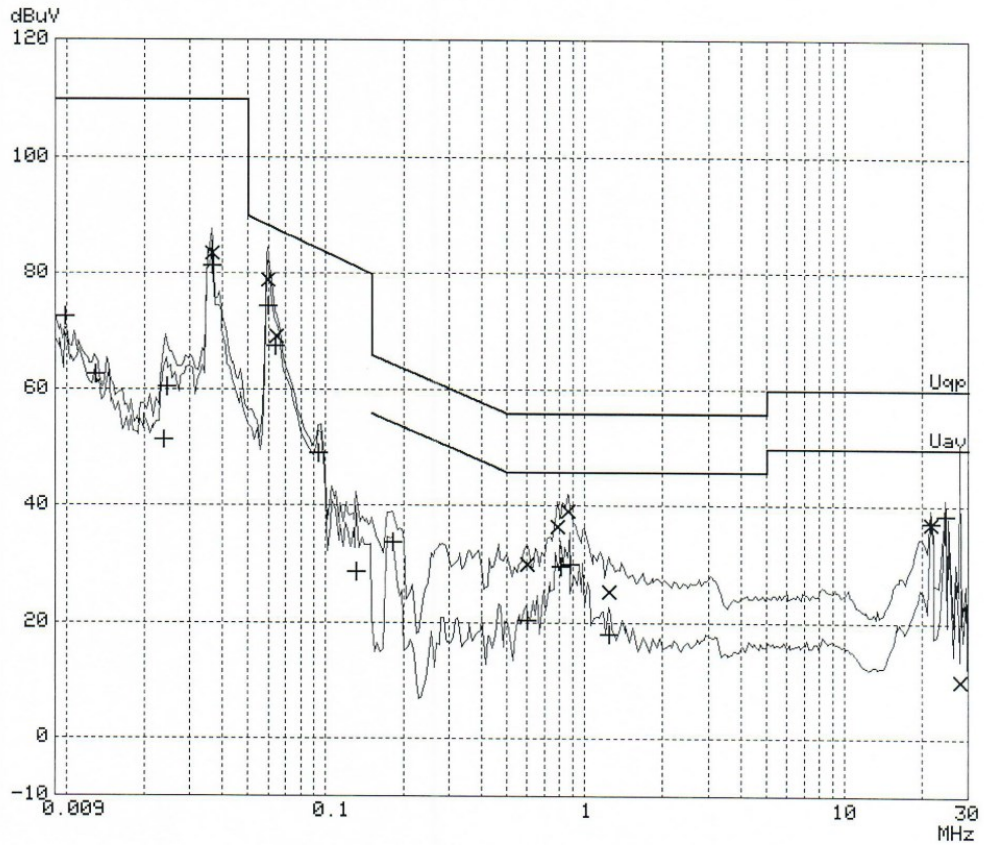
# IMiF PREDOM Division Disturbance Voltage Measurement

EUT: URBINO LED S  
 Manuf: LUG Light Factory Sp.z o.o.  
 Test Spec: EN 55015  
 Comment: phase N  
 File name: \_55015\_.RES  
 Date: 07. Sep 22 11:49

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 S  
 Manuf: LUG Light Factory Sp.z o.o.  
 Test Spec: EN 55015  
 Comment: phase N  
 File name: \_55015\_.RES  
 Date: 07. Sep 22 11:49

## Final Measurement Results:

Indicated Phase/PE shows Configuration of max. Emission

Frequency MHz	QP Level dBuV	Delta Limit dB	Phase -	PE -
0.0363438	83.5	-26.4	N	gnd
0.05972	78.8	-9.5	N	gnd
0.06436	69.2	-18.4	N	gnd
0.59531	29.9	-26.0	L1	gnd
0.78672	36.5	-19.4	N	gnd
0.86094	39.1	-16.8	L1	gnd
1.23984	25.3	-30.6	N	gnd
21.50156	37.0	-22.9	L1	gnd
27.94688	10.0	-49.9	L1	gnd

Frequency MHz	AV Level dBuV	Delta Limit dB	Phase -	PE -
0.0098545	72.5		L1	gnd
0.0129063	62.7		L1	gnd
0.0235874	51.6		L1	gnd
0.0242588	60.6		L1	gnd
0.0364048	81.4		N	gnd
0.05966	74.4		N	gnd
0.06344	67.5		L1	gnd
0.09366	49.2		L1	gnd
0.13089	28.8		L1	gnd
0.18125	33.8	-20.5	L1	gnd
0.59531	20.5	-25.4	L1	gnd
0.80234	29.6	-16.3	N	gnd
0.87266	29.9	-16.0	N	gnd
1.23984	18.1	-27.8	L1	gnd
21.50547	37.1	-12.8	L1	gnd
24.57578	38.3	-11.6	L1	gnd

\* limit exceeded



#### 4.2 Radiated electromagnetic disturbances (9 kHz to 30 MHz)

Tested by .....	Marek Gabryszewski	
Test date .....	2022-09-15	
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 1.6 m
	<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:



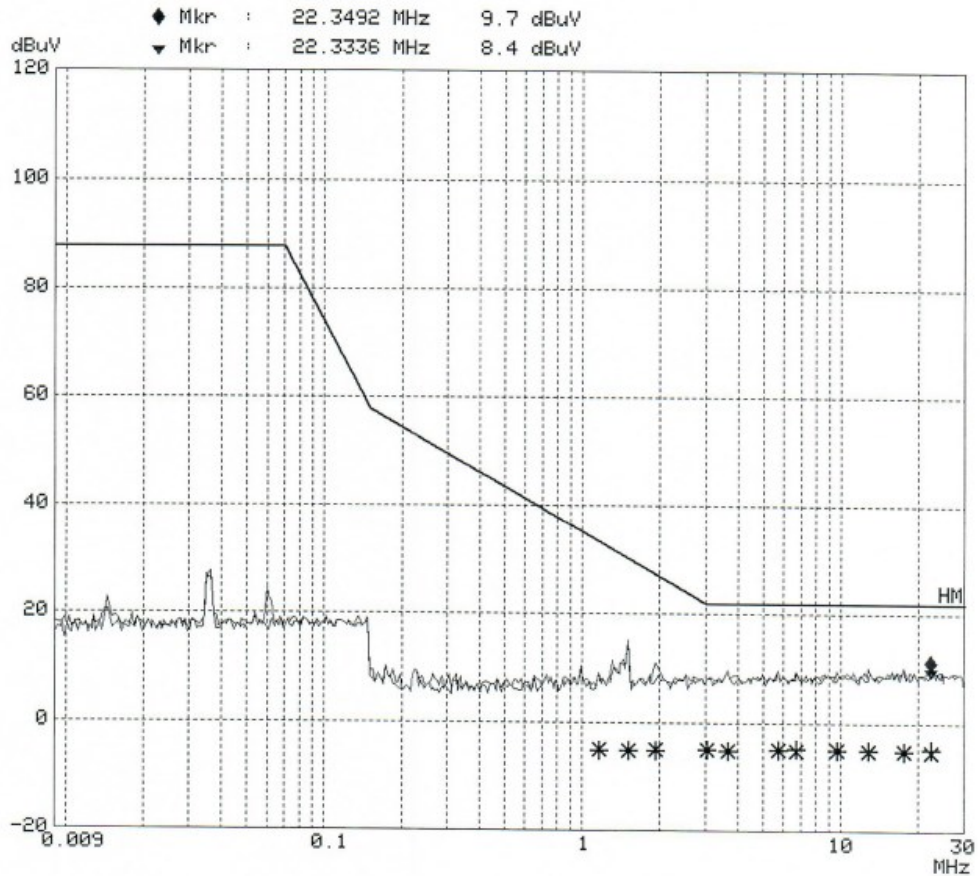
# IMiF PREDOM Division Measurement of Radiation Disturbances

EUT: URBINO LED S  
 Manuf: LUG Light Factory Sp. z o.o.  
 Test Spec: EN 55015  
 Comment: Vertical  
 File name: 55015\_V.RES  
 Date: 15. Sep 22 07:35

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	BLN OFF
150k	30M	3.9k	9k	PK	10ms	5dB	BLN 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 S  
Manuf: LUG Light Factory Sp. z o.o.  
Test Spec: EN 55015  
Comment: Vertical  
File name: 55015\_V.RES  
Date: 15. Sep 22 07:35

## Final Measurement Results:

Frequency MHz	QP Level hor. dBuV	QP Level vert. dBuV	Delta Limit dB
1.16172	-4.7	-5.0	-38.3
1.50938	-4.9	-5.0	-35.3
1.91953	-4.8	-4.9	-32.3
3.02109	-4.8	-4.8	-26.8
3.64609	-5.0	-4.9	-26.9
5.69688	-4.8	-4.8	-26.8
6.70469	-4.9	-4.7	-26.7
9.68125	-4.8	-4.8	-26.8
12.81797	-4.9	-4.8	-26.8
17.50938	-5.0	-5.0	-27.0
22.34922	-5.1	-4.6	-26.6

\* limit exceeded

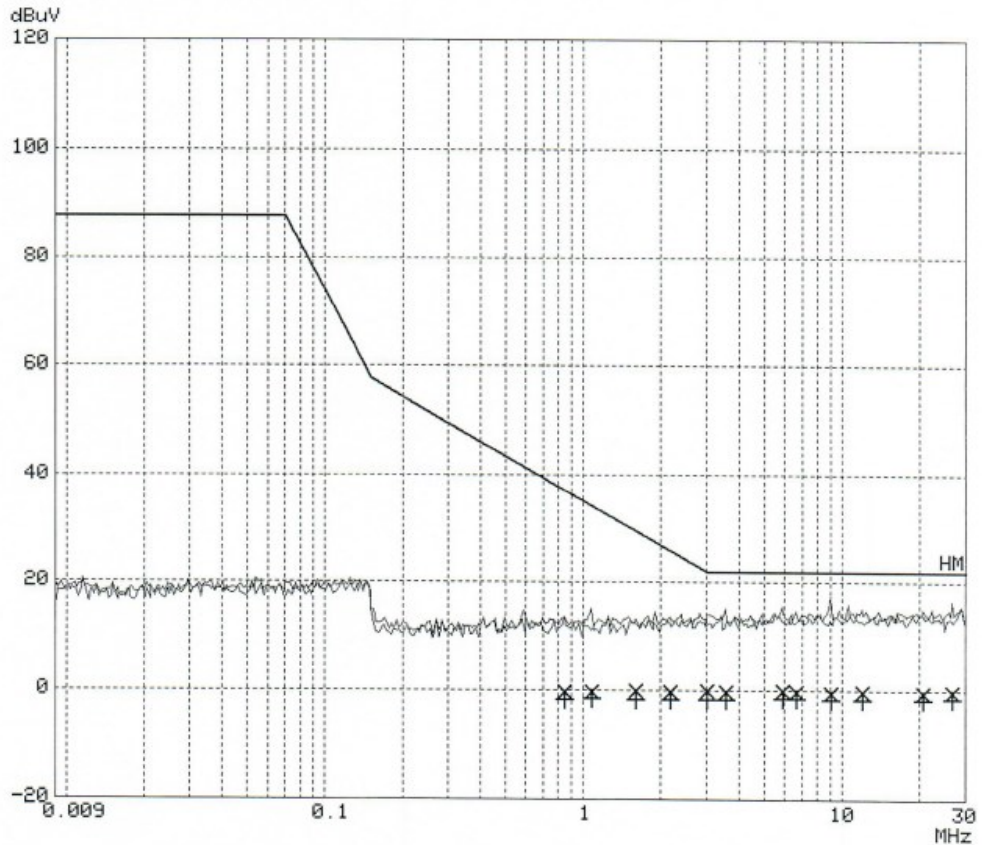
# IMiF PREDOM Division Measurement of Radiation Disturbances

EUT: URBINO LED S  
 Manuf: LUG Light Factory Sp. z o.o.  
 Test Spec: EN 55015  
 Comment: Horizontal  
 File name: 55015\_H.RES  
 Date: 15. Sep 22 07:51

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	35dBLN	OFF
150k	30M	3.9k	9k	PK	10ms	10dBLN	OFF

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





# IMiF PREDOM Division Measurement of Radiation Disturbances

EUT: URBINO LED S  
 Manuf: LUG Light Factory Sp. z o.o.  
 Test Spec: EN 55015  
 Comment: Horizontal  
 File name: 55015\_H.RES  
 Date: 15. Sep 22 07:51

## Final Measurement Results:

Frequency MHz	QP Level dBuV	Delta Limit dB
0.84531	-0.1	-37.6
1.07578	-0.0	-34.6
1.59141	0.0	-29.6
2.16563	-0.2	-26.2
3.00938	0.1	-21.8
3.55625	-0.2	-22.2
5.86094	0.0	-21.9
6.65000	-0.2	-22.2
9.04844	-0.3	-22.3
11.92344	-0.1	-22.1
20.61094	-0.2	-22.2
26.67734	-0.0	-22.0

Frequency MHz	AV Level dBuV	Delta Limit dB
0.84531	-1.4	
1.07578	-1.3	
1.59141	-1.4	
2.16563	-1.4	
3.00938	-1.4	
3.55625	-1.4	
5.86094	-1.3	
6.65000	-1.2	
9.04844	-1.4	
11.92344	-1.4	
20.61094	-1.4	
26.67734	-1.3	

\* limit exceeded

**4.3 Radiated electromagnetic disturbances (30 MHz to 1000 MHz)**

Tested by .....	Marek Gabryszewski	
Test date .....	2022-09-08	
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

## 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 $\mu$ V/m - 60 dB $\mu$ V/m

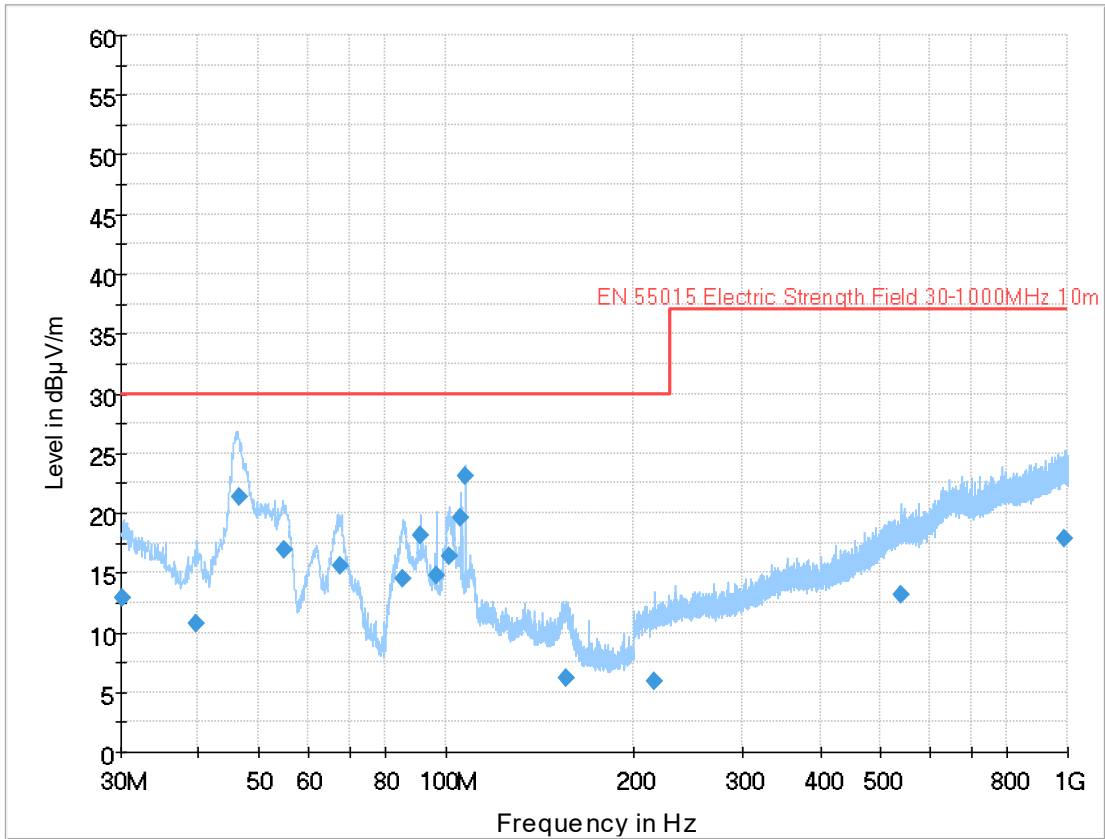
Preview Measurements:  
Scan Test Template: EMI Prescan auto

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

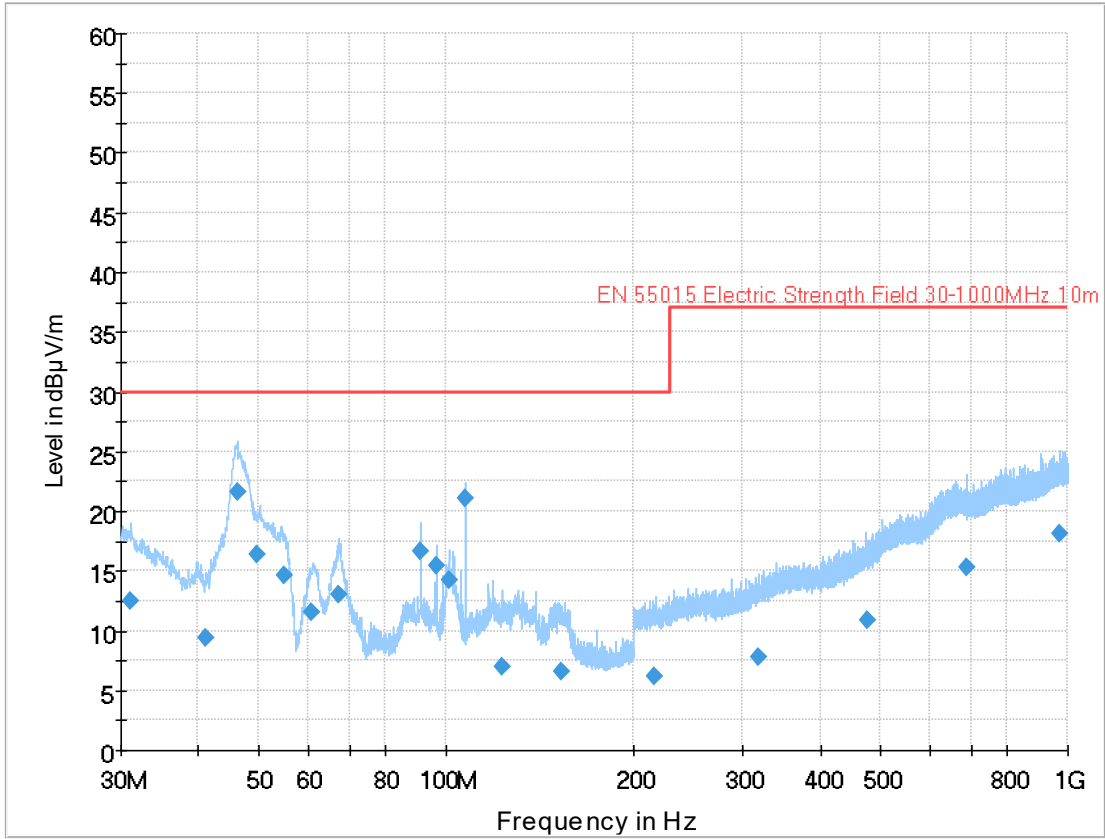
# EMC32 Report 0deg



## Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.240000	12.89	30.00	17.11	1000.0	120.000	400.0	H	0.0	22
39.720000	10.79	30.00	19.21	1000.0	120.000	100.0	V	0.0	17
46.458700	21.38	30.00	8.62	1000.0	120.000	100.0	V	0.0	13
54.960000	16.85	30.00	13.15	1000.0	120.000	100.0	V	0.0	10
67.493700	15.53	30.00	14.47	1000.0	120.000	200.0	V	0.0	10
85.020000	14.56	30.00	15.44	1000.0	120.000	300.0	V	0.0	12
91.034900	18.08	30.00	11.92	1000.0	120.000	400.0	V	0.0	11
96.497300	14.72	30.00	15.28	1000.0	120.000	300.0	V	0.0	11
101.035000	16.38	30.00	13.62	1000.0	120.000	400.0	V	0.0	11
105.601000	19.55	30.00	10.45	1000.0	120.000	100.0	V	0.0	11
107.512000	23.05	30.00	6.95	1000.0	120.000	200.0	V	0.0	11
156.360000	6.21	30.00	23.79	1000.0	120.000	100.0	V	0.0	11
216.187000	5.95	30.00	24.05	1000.0	120.000	100.0	H	0.0	12
538.020000	13.11	37.00	23.89	1000.0	120.000	300.0	V	0.0	19
989.610000	17.88	37.00	19.12	1000.0	120.000	200.0	V	0.0	26

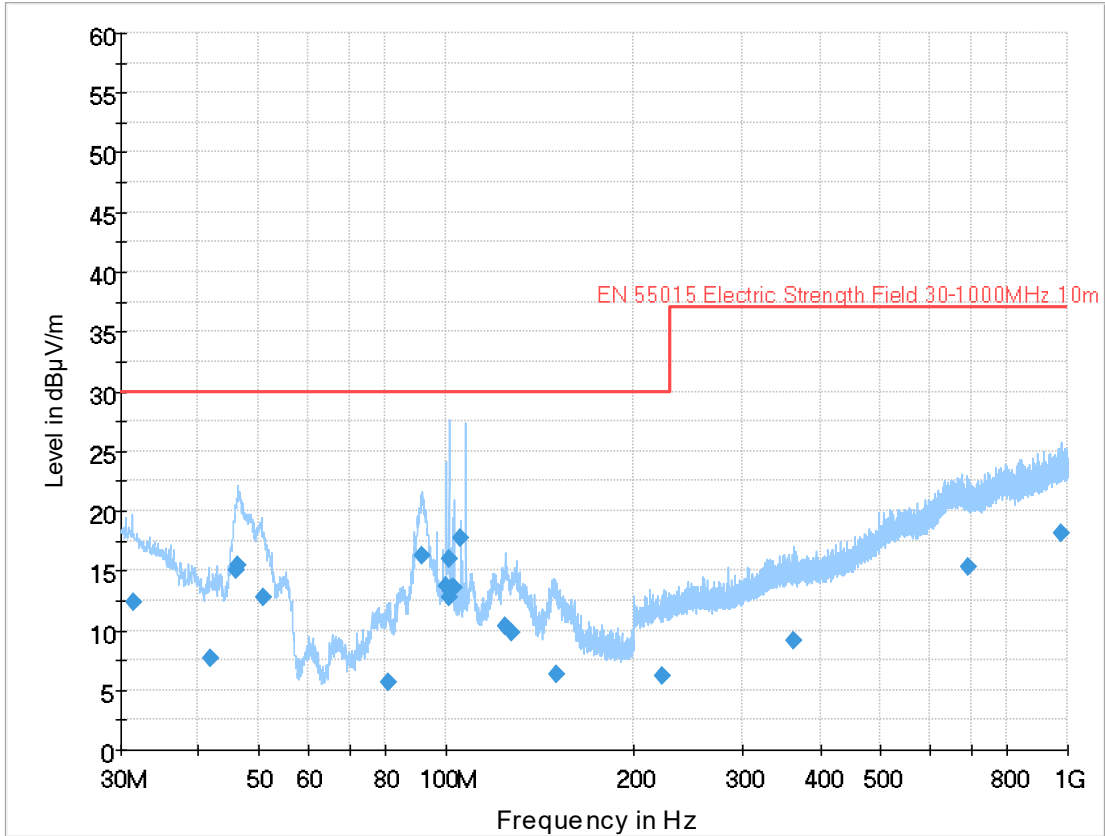
# EMC32 Report 90deg



## Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
31.140000	12.54	30.00	17.46	1000.0	120.000	200.0	H	90.0	22
41.040000	9.41	30.00	20.59	1000.0	120.000	100.0	V	90.0	16
46.149300	21.62	30.00	8.38	1000.0	120.000	100.0	V	90.0	13
49.620000	16.41	30.00	13.59	1000.0	120.000	100.0	V	90.0	11
54.900000	14.67	30.00	15.33	1000.0	120.000	100.0	V	90.0	10
60.780000	11.49	30.00	18.51	1000.0	120.000	100.0	V	90.0	8
67.354000	13.02	30.00	16.98	1000.0	120.000	200.0	V	90.0	10
91.014900	16.69	30.00	13.31	1000.0	120.000	200.0	H	90.0	11
96.507300	15.49	30.00	14.51	1000.0	120.000	300.0	V	90.0	11
101.025000	14.21	30.00	15.79	1000.0	120.000	100.0	H	90.0	12
107.512500	21.02	30.00	8.98	1000.0	120.000	100.0	V	90.0	11
123.420000	6.98	30.00	23.02	1000.0	120.000	400.0	H	90.0	13
153.120000	6.52	30.00	23.48	1000.0	120.000	200.0	V	90.0	11
216.244500	6.12	30.00	23.88	1000.0	120.000	200.0	H	90.0	12
317.340000	7.76	37.00	29.24	1000.0	120.000	200.0	H	90.0	14
476.040000	10.87	37.00	26.13	1000.0	120.000	400.0	H	90.0	17
688.860000	15.29	37.00	21.71	1000.0	120.000	400.0	H	90.0	22
972.984500	18.09	37.00	18.91	1000.0	120.000	300.0	H	90.0	26

# EMC32 Report 180deg

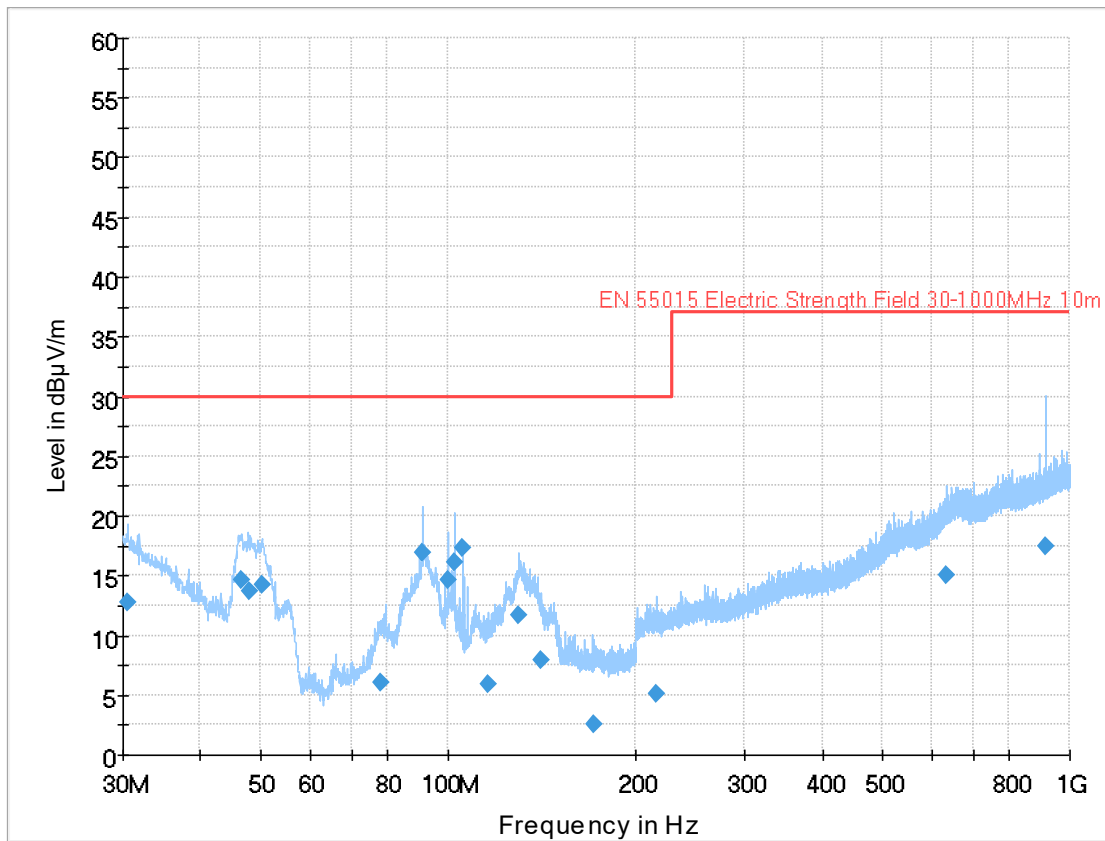


## Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
31.403700	12.40	30.00	17.60	1000.0	120.000	300.0	H	180.0	22
41.700000	7.69	30.00	22.31	1000.0	120.000	100.0	V	180.0	16
46.019000	15.08	30.00	14.92	1000.0	120.000	100.0	V	180.0	13
46.200000	15.38	30.00	14.62	1000.0	120.000	100.0	V	180.0	13
50.760000	12.81	30.00	17.19	1000.0	120.000	100.0	V	180.0	11
81.000000	5.61	30.00	24.39	1000.0	120.000	200.0	V	180.0	12
91.323100	16.29	30.00	13.71	1000.0	120.000	300.0	V	180.0	11
100.129500	13.68	30.00	16.32	1000.0	120.000	400.0	V	180.0	11
101.055000	15.98	30.00	14.02	1000.0	120.000	100.0	V	180.0	11
101.100000	12.82	30.00	17.18	1000.0	120.000	100.0	V	180.0	11
102.408000	13.62	30.00	16.38	1000.0	120.000	400.0	V	180.0	11
103.024500	13.56	30.00	16.44	1000.0	120.000	400.0	V	180.0	11
105.651500	17.69	30.00	12.31	1000.0	120.000	100.0	V	180.0	11
124.380000	10.27	30.00	19.73	1000.0	120.000	200.0	V	180.0	12
127.800000	9.84	30.00	20.16	1000.0	120.000	400.0	V	180.0	12
150.240000	6.35	30.00	23.65	1000.0	120.000	100.0	V	180.0	11
223.010500	6.15	30.00	23.85	1000.0	120.000	300.0	H	180.0	12
363.060000	9.08	37.00	27.92	1000.0	120.000	100.0	V	180.0	15
692.700000	15.26	37.00	21.74	1000.0	120.000	300.0	H	180.0	22
977.991500	18.13	37.00	18.87	1000.0	120.000	200.0	H	180.0	26



## EMC32 Report 270deg



### Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.517300	12.74	30.00	17.26	1000.0	120.000	400.0	H	270.0	22
46.560000	14.63	30.00	15.37	1000.0	120.000	100.0	V	270.0	13
47.851200	13.69	30.00	16.31	1000.0	120.000	100.0	V	270.0	12
50.160000	14.28	30.00	15.72	1000.0	120.000	100.0	V	270.0	11
78.120000	6.01	30.00	23.99	1000.0	120.000	300.0	V	270.0	12
91.014900	16.92	30.00	13.08	1000.0	120.000	300.0	H	270.0	11
100.149500	14.62	30.00	15.38	1000.0	120.000	100.0	V	270.0	11
102.408000	16.09	30.00	13.91	1000.0	120.000	100.0	V	270.0	11
105.562000	17.37	30.00	12.63	1000.0	120.000	100.0	V	270.0	11
115.800000	5.85	30.00	24.15	1000.0	120.000	400.0	H	270.0	13
130.070000	11.67	30.00	18.33	1000.0	120.000	200.0	V	270.0	12
141.000000	7.91	30.00	22.09	1000.0	120.000	200.0	V	270.0	11
172.080000	2.54	30.00	27.46	1000.0	120.000	400.0	V	270.0	11
215.860500	5.14	30.00	24.86	1000.0	120.000	400.0	V	270.0	11
634.440000	14.99	37.00	22.01	1000.0	120.000	300.0	V	270.0	21
912.309000	17.46	37.00	19.54	1000.0	120.000	100.0	V	270.0	25

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

Tested by .....	Marek Gabryszewski		
Test date .....	2022-09-09		
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 $\geq 5$ and $\leq 25$ W (First requirement, Table 3 column 2)	
		<input type="checkbox"/>	Table 3, column 2 (Power related limits)
	<input type="checkbox"/>	3 <sup>rd</sup> harmonic $\leq 86$ %, 5 <sup>th</sup> harmonic $\leq 61$ % and waveform conditions	
	<input type="checkbox"/>	THD $\leq 70$ %, Harmonics: 3 <sup>rd</sup> $\leq 35$ %, 5 <sup>th</sup> $\leq 25$ %, 7 <sup>th</sup> $\leq 30$ %, 9 <sup>th</sup> and 11 <sup>th</sup> $\leq 20$ %, 2 <sup>nd</sup> $\leq 5$ %	
	<input type="checkbox"/>	Other: Lighting equipment having a rated power-less to 5 W - test not required.	
<input type="checkbox"/>	Class D		
Observation period .....	Description		
	<input checked="" type="checkbox"/>	Quasi stationary	
	<input type="checkbox"/>	Short cyclic	
	<input type="checkbox"/>	Random	
	<input type="checkbox"/>	Long cyclic	
		Period selected $T_{obs}$	
		2.5 min	
		$T_{obs} \geq 10$ cycles =	
		$T_{obs} =$	
		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:	B10-4/098/EMC/22	Comment2:	
Device:	URBINO LED S	Comment3:	
Specimen:		Comment4:	
Manufacturer:	LUG Light Factory	Date:	09.09.2022
Type:		Test date:	09.09.2022

Maximum RMS current and corresponding values in timewindow 1:

Voltage:	230.20 Vrms	THD=0.00 %	THV=0.010 V	POHV=0.004 V	PWHD=0.01 %
Current:	0.337 Arms	-0.453 Apk	THD=8.02 %	THC=0.027 A	POHC=0.003 A
Power:	76.8 W	P1=76.8 W	77.5 VA		
Power factor:	0.991	CosPhi1: 0.995			

Test conditions: EN IEC 61000-3-2:2019/FprA1:2020, f=50 Hz, Phase=L1, Range=0.80 A  
 Time window=16, Grouping (>2nd harm.)=off, Rated I1=3.0 A  
 No Ztest selected  
 Time window=16, Grouping (>2nd harm.)=off, Rated I1=3.0 A

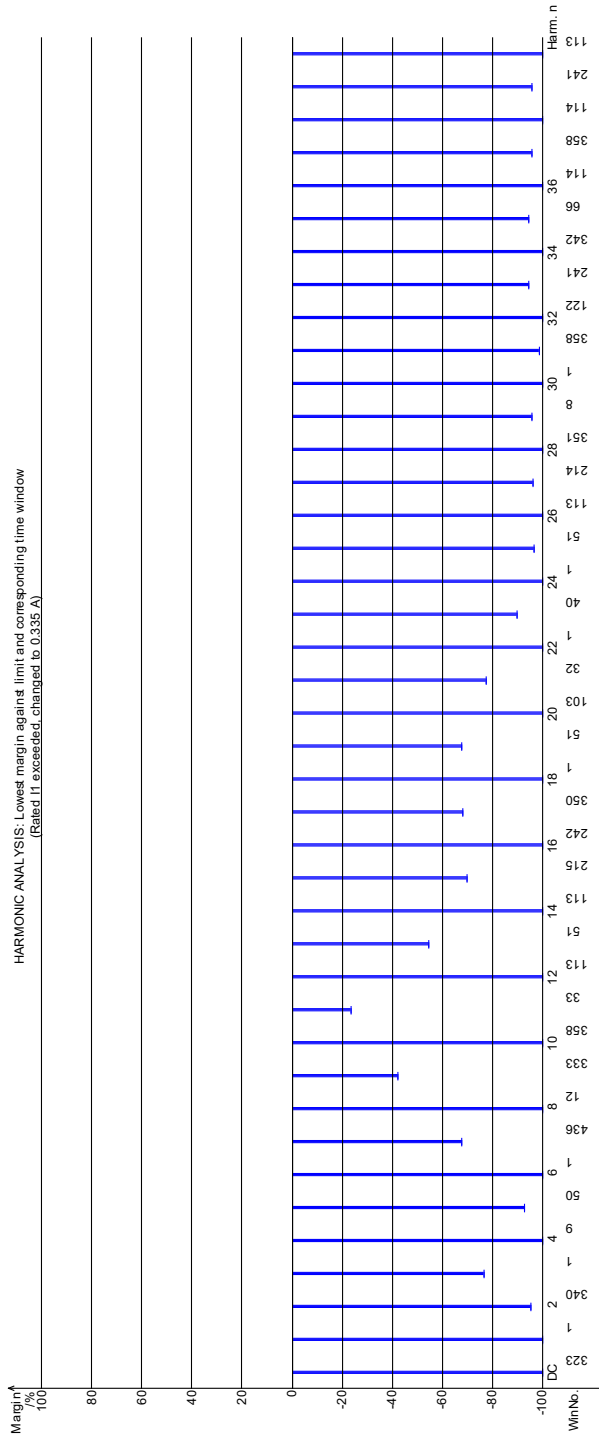
HARMONIC ANALYSIS: Test PASS  
 Tobs = worst 2.5 min: tw 1..469; POHC (C.2): avg=0.00 A, limit=0.03 A  
 Iavg=0.335 Arms; Rated I1 exceeded, changed to 0.335 A

Ha	Entire measurement (2.5 min = 469 time windows)						Worst 2.5 min		Worst 2.5 min avg		P A S S	F A I L
	Maximum	Window	EN61000-3-2 Class C>25W	Margin in MaxWin	100 to 150%	Ex- ceeded	100 to 150%	Ex- ceeded	Value	Ex- ceeded		
DC	-0.0006 A	340	-----	-----	0	0	0	0	-0.0005 A	0	X	
1	0.3354 A	1	-----	-----	0	0	0	0	0.3344 A	0	X	
2	0.0003 A	340	0.0067 A	-95.5 %	0	0	0	0	0.0003 A	0	X	
3	0.0213 A	1	0.0906 A	-76.5 %	0	0	0	0	0.0211 A	0	X	
4	0.0001 A	182	-----	-----	0	0	0	0	0.0001 A	0	X	
5	0.0024 A	50	0.0335 A	-92.9 %	0	0	0	0	0.0023 A	0	X	
6	0.0001 A	121	-----	-----	0	0	0	0	0.0000 A	0	X	
7	0.0076 A	436	0.0235 A	-67.8 %	0	0	0	0	0.0075 A	0	X	
8	0.0001 A	121	-----	-----	0	0	0	0	0.0000 A	0	X	
9	0.0097 A	333	0.0168 A	-42.4 %	0	0	0	0	0.0096 A	0	X	
10	0.0000 A	358	-----	-----	0	0	0	0	0.0000 A	0	X	
11	0.0077 A	33	0.0101 A	-23.5 %	0	0	0	0	0.0077 A	0	X	
12	0.0000 A	124	-----	-----	0	0	0	0	0.0000 A	0	X	
13	0.0046 A	51	0.0101 A	-54.8 %	0	0	0	0	0.0045 A	0	X	
14	0.0000 A	375	-----	-----	0	0	0	0	0.0000 A	0	X	
15	0.0030 A	215	0.0101 A	-69.8 %	0	0	0	0	0.0030 A	0	X	
16	0.0000 A	255	-----	-----	0	0	0	0	0.0000 A	0	X	
17	0.0032 A	350	0.0101 A	-68.3 %	0	0	0	0	0.0032 A	0	X	
18	0.0000 A	125	-----	-----	0	0	0	0	0.0000 A	0	X	
19	0.0032 A	51	0.0101 A	-67.9 %	0	0	0	0	0.0032 A	0	X	
20	0.0000 A	115	-----	-----	0	0	0	0	0.0000 A	0	X	
21	0.0023 A	32	0.0101 A	-77.6 %	0	0	0	0	0.0022 A	0	X	
22	0.0000 A	113	-----	-----	0	0	0	0	0.0000 A	0	X	
23	0.0010 A	40	0.0101 A	-89.9 %	0	0	0	0	0.0010 A	0	X	
24	0.0000 A	226	-----	-----	0	0	0	0	0.0000 A	0	X	
25	0.0003 A	51	0.0101 A	-96.5 %	0	0	0	0	0.0003 A	0	X	
26	0.0000 A	124	-----	-----	0	0	0	0	0.0000 A	0	X	
27	0.0004 A	214	0.0101 A	-96.3 %	0	0	0	0	0.0003 A	0	X	
28	0.0000 A	351	-----	-----	0	0	0	0	0.0000 A	0	X	
29	0.0004 A	8	0.0101 A	-95.8 %	0	0	0	0	0.0004 A	0	X	
30	0.0000 A	255	-----	-----	0	0	0	0	0.0000 A	0	X	
31	0.0001 A	358	0.0101 A	-98.6 %	0	0	0	0	0.0001 A	0	X	
32	0.0000 A	377	-----	-----	0	0	0	0	0.0000 A	0	X	
33	0.0006 A	241	0.0101 A	-94.5 %	0	0	0	0	0.0005 A	0	X	
34	0.0000 A	351	-----	-----	0	0	0	0	0.0000 A	0	X	
35	0.0006 A	66	0.0101 A	-94.3 %	0	0	0	0	0.0006 A	0	X	
36	0.0000 A	114	-----	-----	0	0	0	0	0.0000 A	0	X	
37	0.0004 A	358	0.0101 A	-95.6 %	0	0	0	0	0.0004 A	0	X	
38	0.0000 A	375	-----	-----	0	0	0	0	0.0000 A	0	X	
39	0.0004 A	241	0.0101 A	-95.6 %	0	0	0	0	0.0004 A	0	X	
40	0.0001 A	365	-----	-----	0	0	0	0	0.0000 A	0	X	

average value < 0.6 % of Iavg or < 5 mA

Graphical Harmonic Overview - EN61000-3-2 Class C<25W

HARMONIC ANALYSIS: Lowest margin against limit and corresponding time window  
 (Rated II exceeded, changed to 0.335 A)



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

Tested by .....	Marek Gabryszewski	
Test date .....	2022-09-09	
Test Location (stand) .....	U-84	
Test set-up description .....	---	
Test method .....	<input checked="" type="checkbox"/>	4.2.2 Flicker meter 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:	B10-4/098/EMC/22	Comment2:	
Device:	URBINO LED S	Comment3:	
Specimen:		Comment4:	
Manufacturer:	LUG Light Factory	Date:	09.09.2022
Type:		Test date:	09.09.2022

Test conditions: EN 61000-3-3:2013 + A1:2019 / 230 V / 50 Hz / Phase L1  
 EN 61000-4-15:2011 / d(t) = 3.3 % / 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
12:18:54	0.000	0.0100	- . - - - -	0.000	0.000	- . - - -	X	
Limits:		1.000	0.650	0.500	6.000	3.300		
Plt: 0.010000								
Evaluated: PST, dc, dmax, Tmax								

## FLICKER: Source test PASS!

Time	Pmax	Pst	Sliding Plt	Tmax [s]	dmax  [%]	dc  [%]	PASS	FAIL
12:18:54	0.000	0.0100	- . - - - -	0.000	0.000	- . - - -	X	
Plt: 0.010000								
Evaluated: PST <= 0.4    dmax < 20 % dmax1								

Tested with SPSEMC4.5.1 / PAS5000 by Spitz enberger & Spies GmbH & Co. KG, Schmidds tr. 32-34, 94234 Viechtach, Germany, 09.09.2022

## 7 Immunity



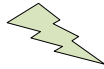
### 7.1 General information

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 .....	<b>Criterion</b>	<b>Description</b>
	A	Manufacturer defined performance criteria- not specified.
	B	Apply performance criteria as defined by the standard.
	C	See above: Performance criteria as defined by the standard
D		
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: 230 V / 50 Hz	



**7.2 Electrostatic discharges**

Tested by .....	Marek Gabryszewski	
Test date .....	2022-09-15	
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.....	---	
Symbols identifying discharge applied .....		Contact discharge
		Air discharge
		Air discharge, discharge did not occur

Test set-up photo:



Photo of selected test points:

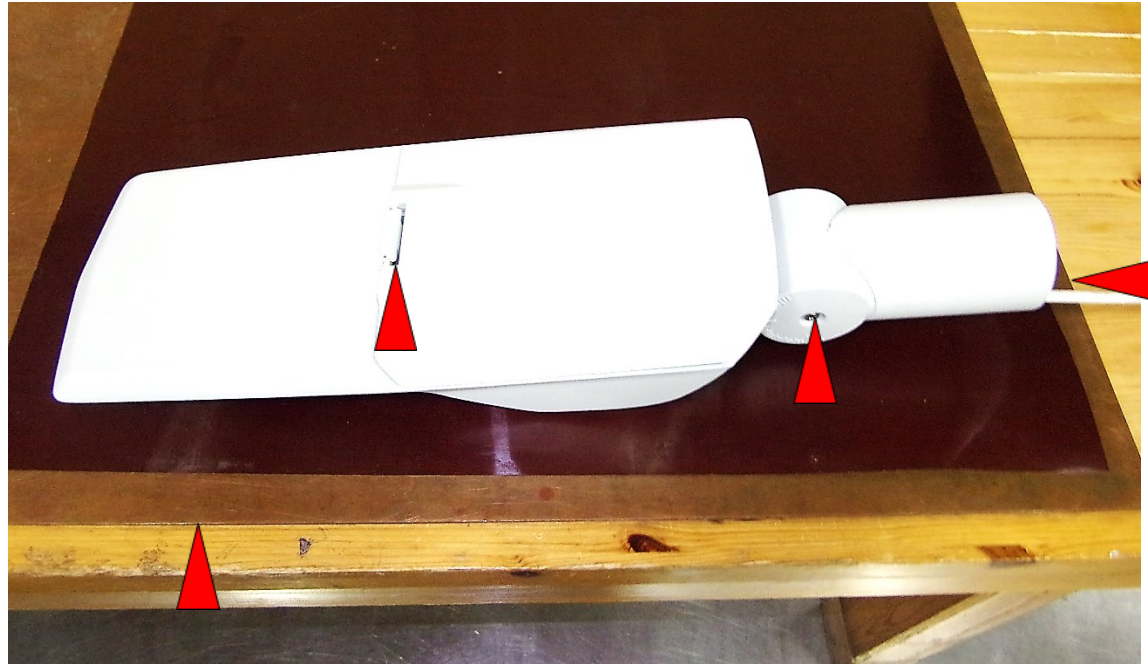
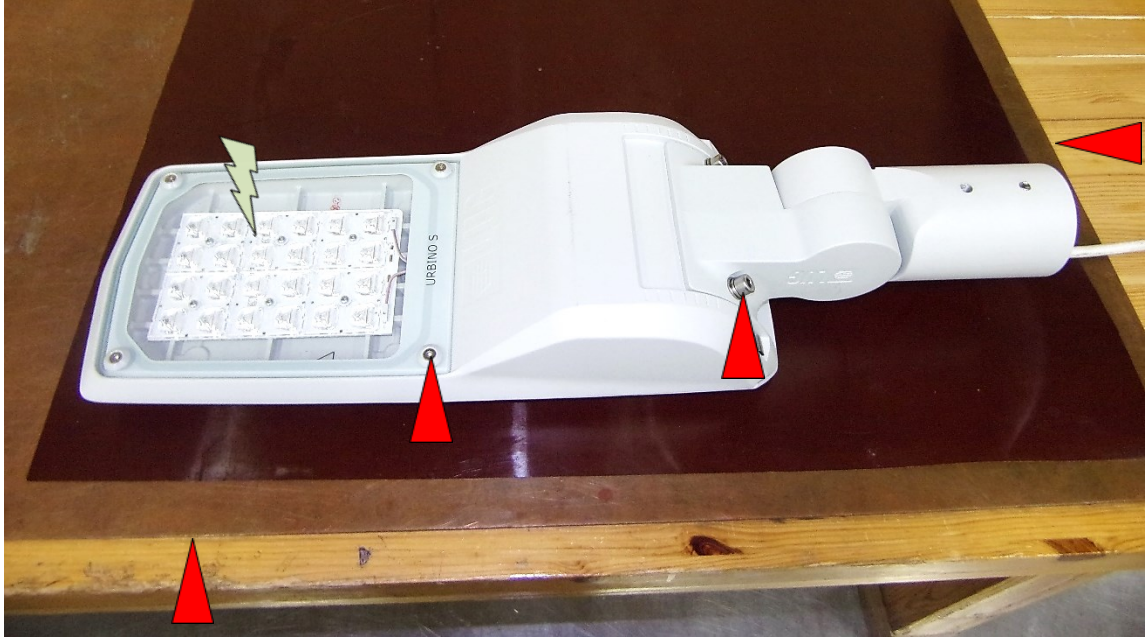


Photo of selected test points:

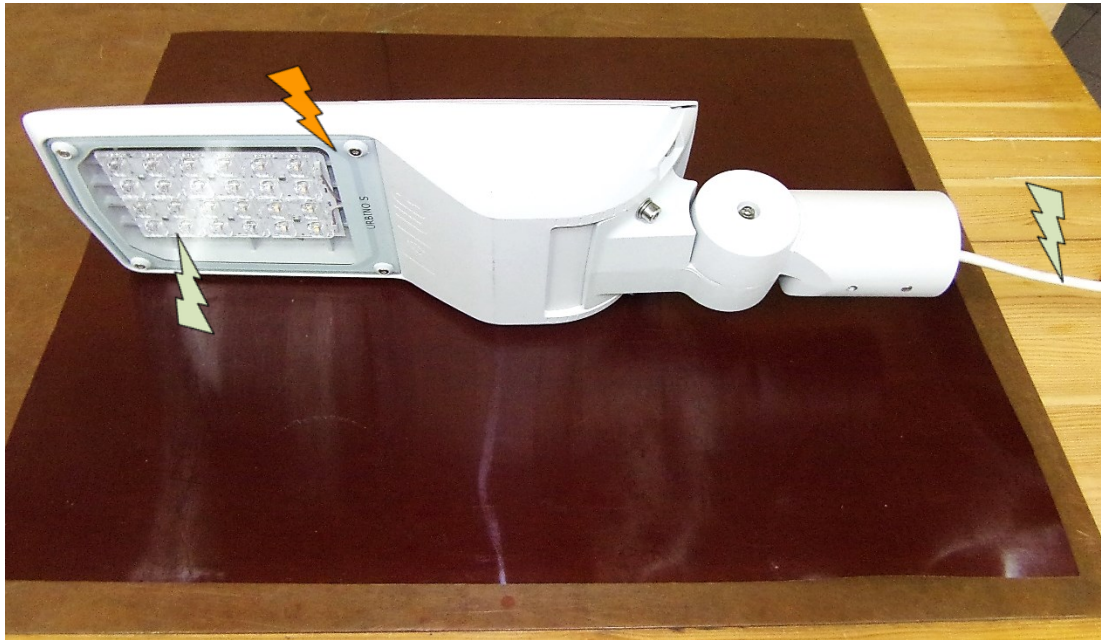


Table: Test results for electrostatic discharges

No.	Location of discharge	Polarity	Discharge	Number of discharges	Test level [kV]	Operating mode	Observations
1	HCP	P	C	10	4	1	Pass
2	VCP	P	C	10	4	1	Pass
3	Points on conductive surface as indicated in the picture above	P	C	10	4	1	Pass
4	Points on conductive surface as indicated in the picture above	N	C	10	4	1	Pass
5	Points on non-conductive surface as indicated in the picture above	P	A	10	8	1	Pass
6	Points on non-conductive surface as indicated in the picture above	N	A	10	8	1	Pass

HCP = Horizontal coupling plate  
VCP = Vertical coupling plate

N = Negative  
P = Positive

A = Air discharge  
C = Contact discharge  
X = Not performed nor required

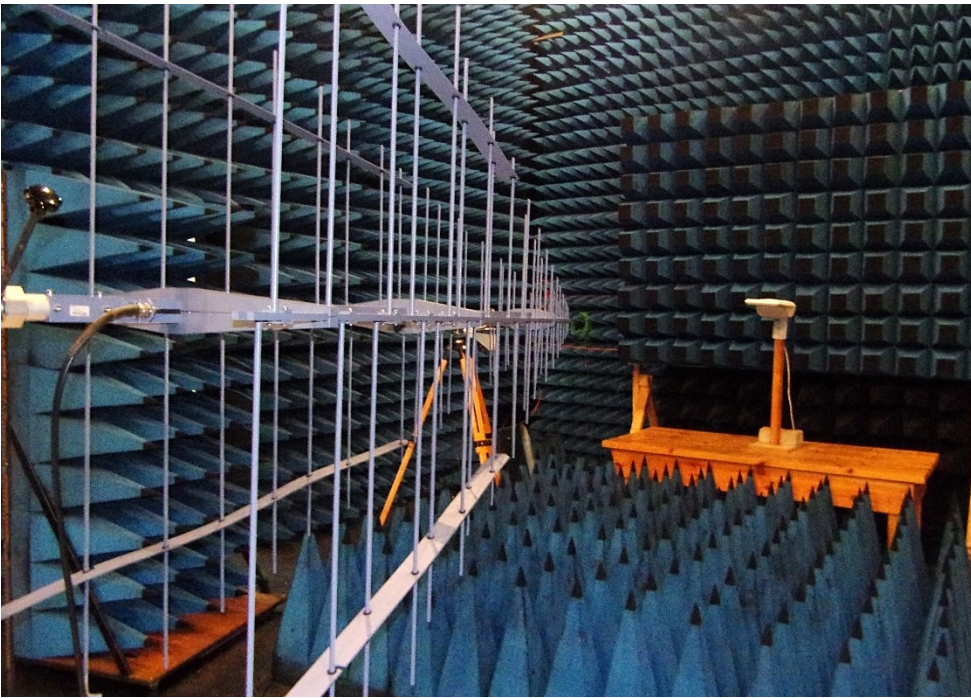
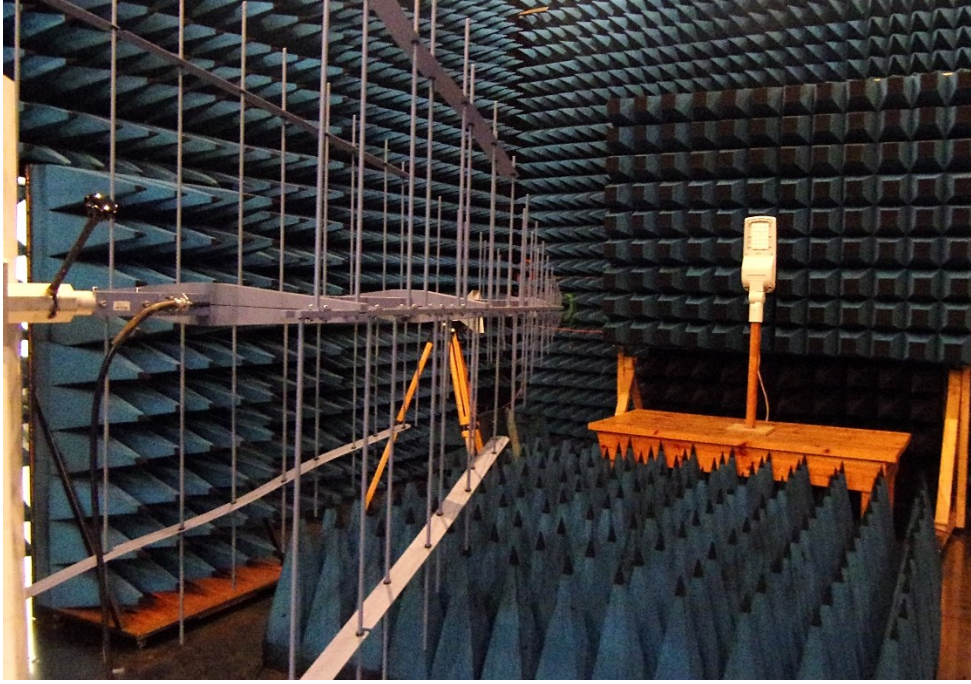
Supplementary information: No observed response from EUT.



### 7.3 Radio-frequency electromagnetic fields

Tested by .....	Marek Gabryszewski		
Test date .....	2022-09-14		
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 checked="" 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:



<b>Test results for radiated electromagnetic field</b>						
<b>Frequency range</b>	<b>Test Level [V/m]</b>	<b>Polarization</b>	<b>Modulation</b>	<b>Operating mode</b>	<b>Dwell time [s]</b>	<b>Observations</b>
80 MHz ÷ 1 GHz	3.0	V	AM: 80.0 %; 1.0 kHz	1	3.0	Pass
80 MHz ÷ 1 GHz	3.0	H	AM: 80.0 %; 1.0 kHz	1	3.0	Pass
H = Horizontal V = Vertical X = Not performed nor required						
Supplementary information: No observed response from EUT.						

# EMC32 Report position antenna: V

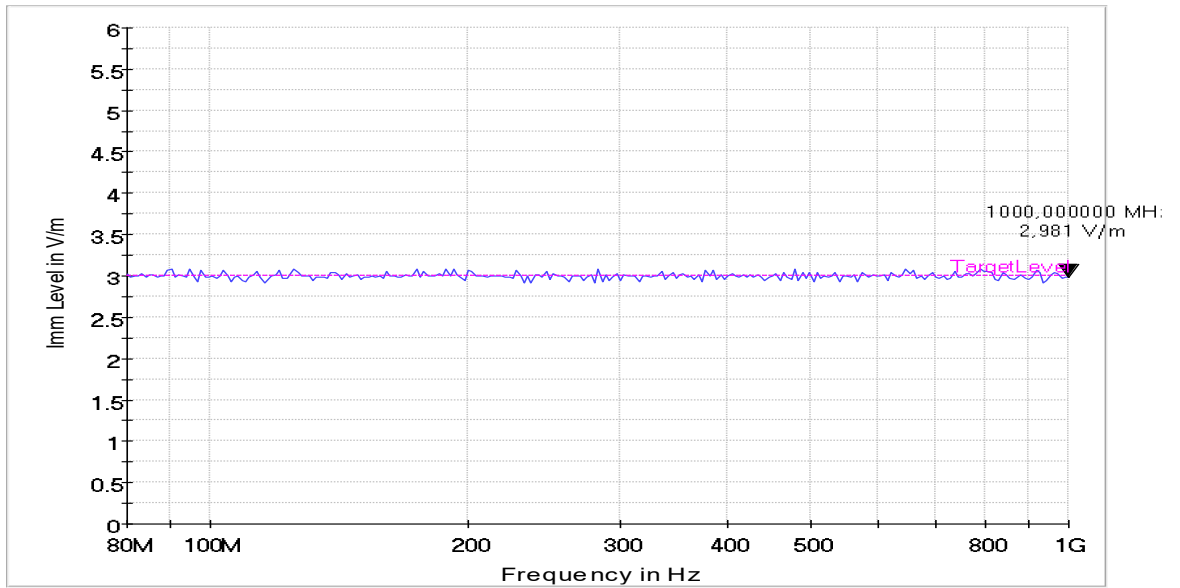
## EMS Scan Template: EMS Scan 3Vm 80-1000MHz [EMS Radiated]

Hardware Setup: EMS radiated\Copy of Hardware Setup 80-1000MHz\_SMBV100A

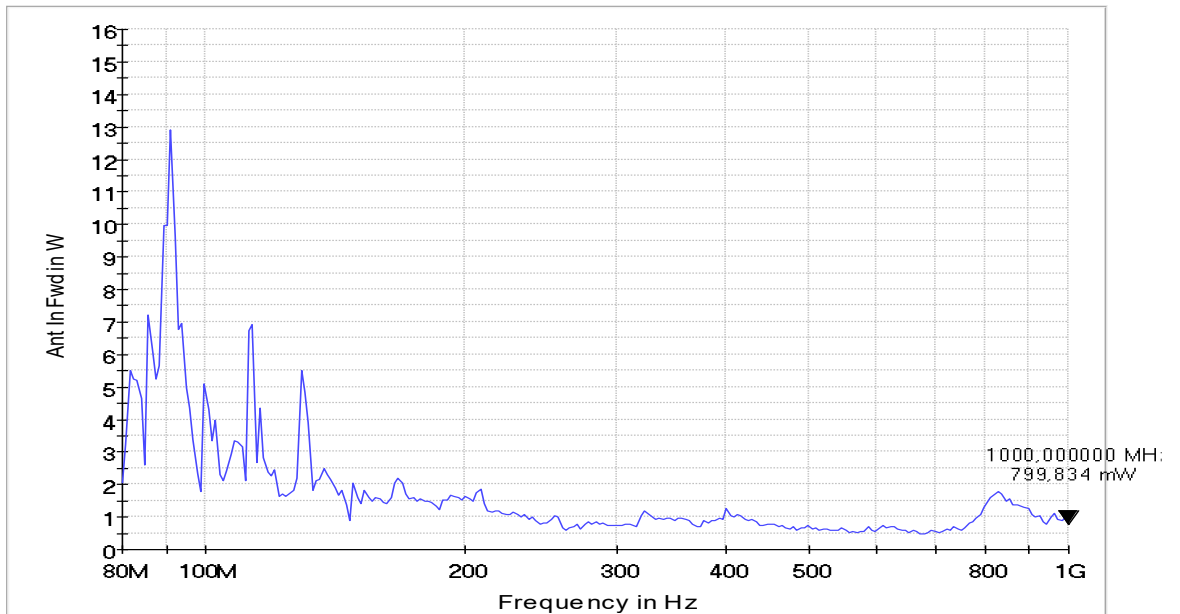
Level On: Substitution Method: EMS radiated\.Kalibracija pola  
EMS\C28Vm\_80-1000

Subrange	Step Width	Level	Modulation	Dwell Time
80MHz - 1GHz	1% LOG	3V/m	AM: 80.0%; 1.0kHz	3s

Imm Level



Ant In Fwd





# EMC32 Report position antenna: H

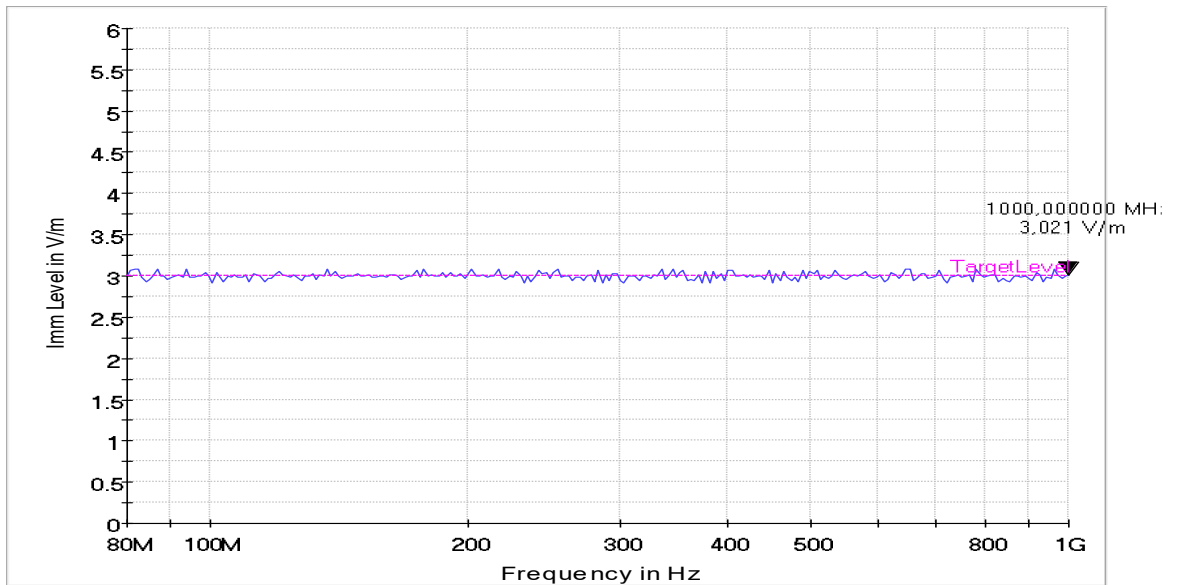
## EMS Scan Template: EMS Scan 3Vm 80-1000MHz [EMS Radiated]

Hardware Setup: EMS radiated\Copy of Hardware Setup 80-1000MHz\_SMBV100A

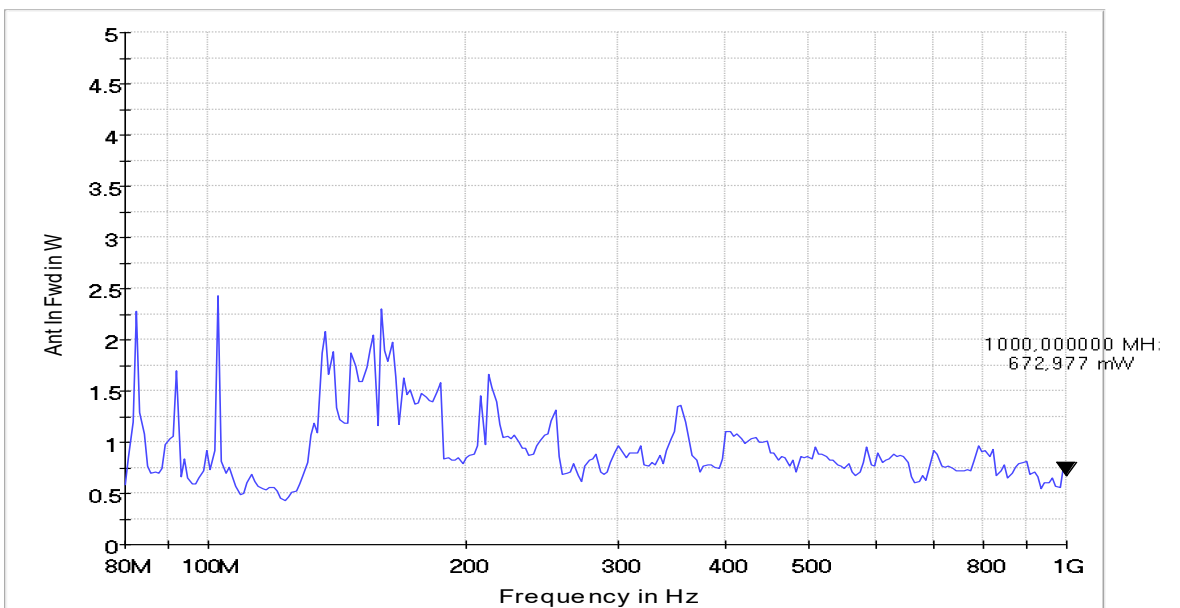
Level On: Substitution Method: EMS radiated\.Kalibracija pola  
EMS\C28Vm\_80-1000

Subrange	Step Width	Level	Modulation	Dwell Time
80MHz - 1GHz	1% LOG	3V/m	AM: 80.0%; 1.0kHz	3s

Imm Level



Ant In Fwd



**7.4 Power frequency magnetic fields**

Tested by .....	Marek Gabryszewski	
Test date .....	2022-09-16	
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 .....	---	

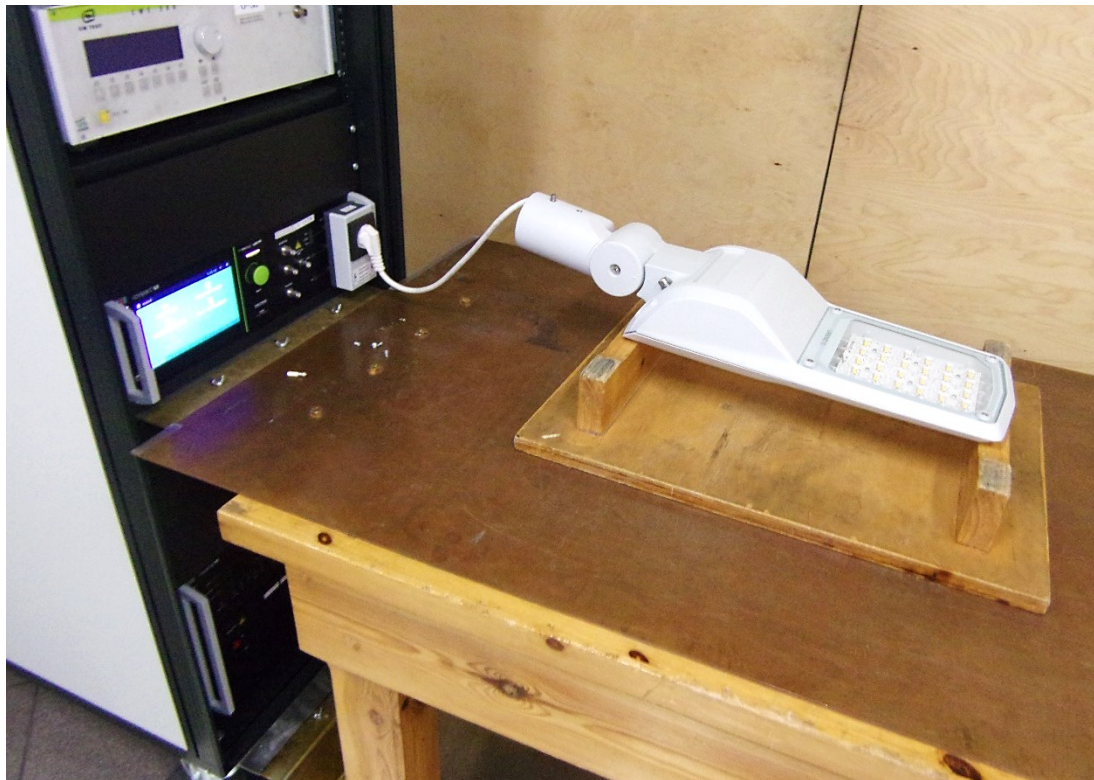


<b>Test results for power frequency magnetic field immunity test</b>							
<b>Test frequency</b>	<b>Test Level [A/m]</b>	<b>Test time [s]</b>	<b>Coil size/type</b>	<b>Axis</b>	<b>Operating mode</b>	<b>Mains voltage/frequency (PMM)</b>	<b>Observations</b>
50 Hz	3.0	180	1 m x 1 m	X	1	230 V / 50 Hz	Pass
50 Hz	3.0	180	1 m x 1 m	Y	1	230 V / 50 Hz	Pass
50 Hz	3.0	180	1 m x 1 m	Z	1	230 V / 50 Hz	Pass
X = Not performed nor required							
Supplementary information: No observed response from EUT.							

## 7.5 Fast transients

Tested by .....	Marek Gabryszewski
Test date .....	2022-09-13
Test location (stand) .....	Fast transient stand
Test set-up .....	<input checked="" type="checkbox"/> Equipment on the table ( $0.1 \pm 0.01$ ) m above ground plane
	<input type="checkbox"/> Equipment standing on floor at ( $0.1 \pm 0.01$ ) 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:



<b>Test results fast transients</b>						
<b>Port</b>	<b>Coupling</b>	<b>Level [kV]</b>	<b>Polarity</b>	<b>Operating mode</b>	<b>Mains voltage/frequency</b>	<b>Observation</b>
AC power port	L1 N	1	Positive	---	---	X
AC power port	L1 N	1	Negative	---	---	X
AC power port	L1 N PE	1	Positive	1	230 V / 50 Hz	Pass
AC power port	L1 N PE	1	Negative	1	230 V / 50 Hz	Pass
SIP/SOP	Clamp	0.5	Positive	---	---	X
SIP/SOP	Clamp	0.5	Negative	---	---	X
X = Not performed nor required						
Supplementary information: No observed response from EUT.						

### 7.6 Injected currents (radio-frequency common mode)

Tested by .....	Marek Gabryszewski	
Test date .....	2022-09-13	
Test location (Stand) .....	Injected currents stand	
Test set-up .....	<input checked="" type="checkbox"/>	Equipment located ( $0.1 \pm 0.05$ ) 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:





<b>Test results for conducted disturbances, induced by radio-frequency fields</b>							
<b>Frequency range</b>	<b>Test Level [V]</b>	<b>Port under test</b>	<b>CDN type</b>	<b>Port with terminated CDN</b>	<b>Operating mode</b>	<b>Dwell time [s]</b>	<b>Observations</b>
0.15 ÷ 80 MHz	3.0	AC power port	CDN-M2	---	---	---	X
0.15 ÷ 80 MHz	3.0	AC power port	CDN-M3	ATT 6	1	1.0	Pass
0.15 ÷ 80 MHz	3.0	AC power port	CDN-M5	---	---	---	X
X = Not performed nor required							
Supplementary information: No observed response from EUT.							



## 7.7 Surges

Tested by .....	Marek Gabryszewski
Test date .....	2022-09-13
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 .....	B
Supplementary information.....	---

Test set-up photo:



Test results for surges								
Port	Coupling	CDN	Level [kV]	Polarity	Phase angles [°]	Operating mode	Mains voltage/frequency	Observation
AC power port	L1-N	MCN	1	Positive	90	1	230 V / 50 Hz	Pass
AC power port	L1-N	MCN	1	Negative	270	1	230 V / 50 Hz	Pass
AC power port	N-PE	MCN	2	Positive	90	1	230 V / 50 Hz	Pass
AC power port	N-PE	MCN	2	Negative	270	1	230 V / 50 Hz	Pass
AC power port	L1-PE	MCN	2	Positive	90	1	230 V / 50 Hz	Pass
AC power port	L1-PE	MCN	2	Negative	270	1	230 V / 50 Hz	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 .....	Marek Gabryszewski
Test date .....	2022-09-09
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°	12	1	Pass
Supplementary information: No observed response from EUT.						

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: *Observed response from EUT. During the test, the luminous intensity change, dimming, flashing light. 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. Consistent with the evaluation criterion.						

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: B10-4/098/EMC/22 Comment2:  
 Device: URBINO LED S Comment3:  
 Specimen: Comment4:  
 Manufacturer: LUG Light Factory Date: 09.09.2022  
 Type: Test date: 09.09.2022

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:

Pass

Tested with SPSEMC 4.1.3 /PASS000 by Spitzenberger & Spies GmbH & Co. KG, Schmidstr. 32-34, 94234 Weichstach, Germany, 09/09/2022

Name: Serial no:  
 Department: Operating modes:  
 Company: IMiF PREDOM Division Comment1:  
 Test report no: B10-4/098/EMC/22 Comment2:  
 Device: URBINO LED S Comment3:  
 Specimen: Comment4:  
 Manufacturer: LUG Light Factory Date: 09.09.2022  
 Type: Test date: 09.09.2022

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  
 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:

Pass, (B)

Tested with SPSEMC 4.1.3 /PASS000 by Spitzenberger & Spies GmbH & Co. KG, Schmidstr. 32-34, 94234 Weichstach, Germany, 09/09/2022

## 8 List of test equipment

Equipment	Type	Inventory number	Manufacturer
Test Stand:	Disturbance voltages		
EMI Test Receiver	ESCS 30	U-57	Rohde & Schwarz
Artificial Mains Network	ESH 2-Z5	U-57/A	Rohde & Schwarz
Artificial hand	RC	Pp-416	PREDOM-OBR
Faraday Cage	EK-1	U-11	Unitra Unima Olsztyn
Test Stand:	Disturbance powerstand		
EMI Test Receiver	ESCS 30	U-57	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		
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-117A	EM TEST
Combined 3-Phase Coupling/ Decoupling Networks	COUPLING NX5	U-117B	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
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 0830-40	P-369	BONN Elektronik
Power Amplifier	BLMA 4060-10	P-467	BONN Elektronik
Power Meter	NRVD	P-375	Rohde & Schwarz
Power Sensor	NRP-Z211	P-468/469	Rohde & Schwarz
Power Sensor	URV5-Z2	P-373/374	Rohde & Schwarz
Ultra log antenna	HL 046	P-434	Rohde & Schwarz
Horn antenna	HF 907	P-447	Rohde & Schwarz
Test Stand:	Power frequency magnetic fields		
Magnetic field generator	1008	P-326	PMM



## 9 Measurement instrumentation uncertainties

Type of disturbance test method	Used test equipment (only main instruments, no details)	Calculated uncertainty	$U_{\text{CISPR}}$
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:

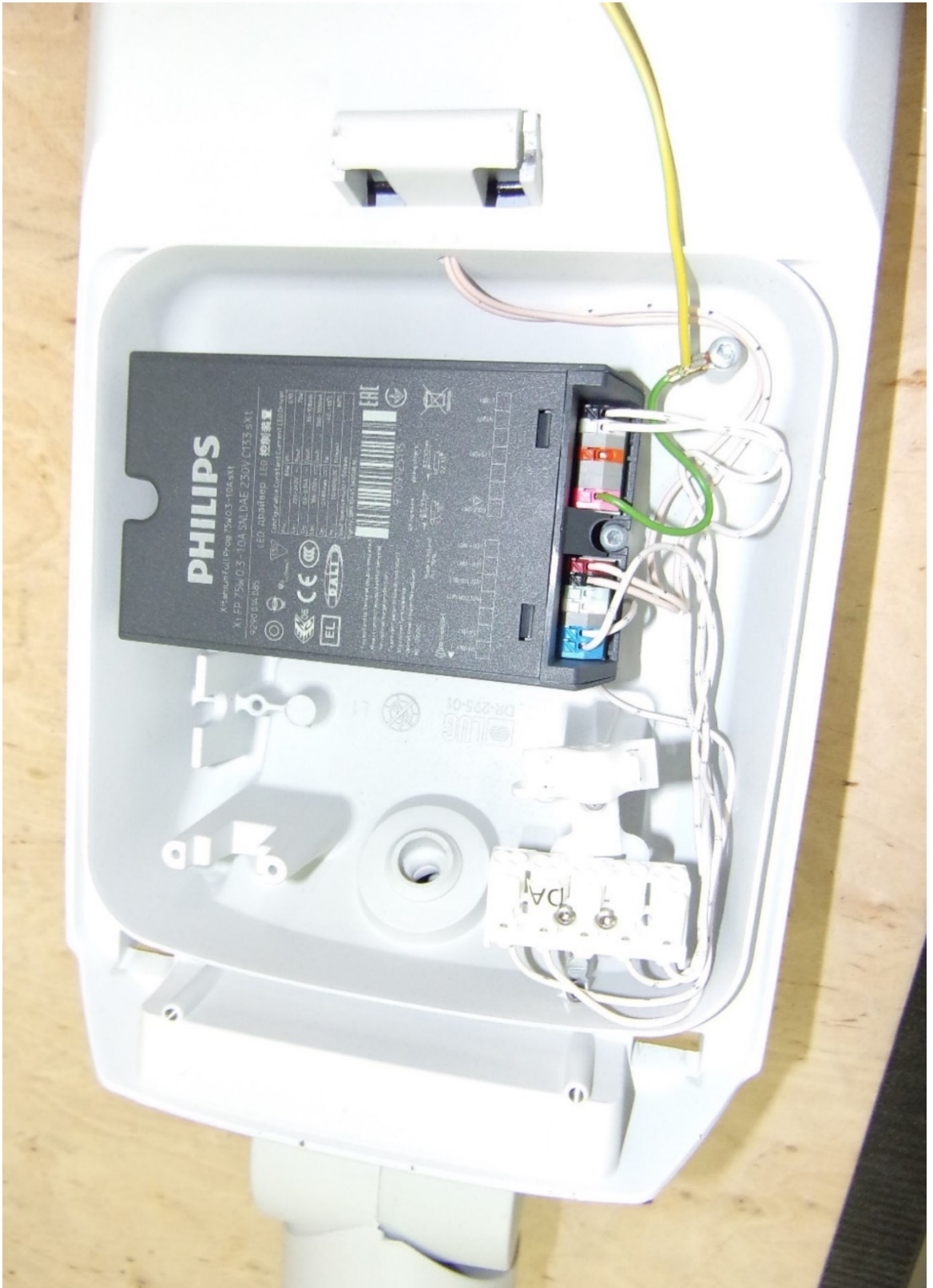
Critical components information			
Object	Manufacturer/ Trademark	Type/Model	Remark
Power supply	PHILIPS	Xitanium Full Prog 75W 0.3-1.0A sXt Xi FP 75W 0.3-1.0A SNLDAE 230V C133 sXt	See page 64

See Technical documentation and photos Annex B.

10.2 Annex B:

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





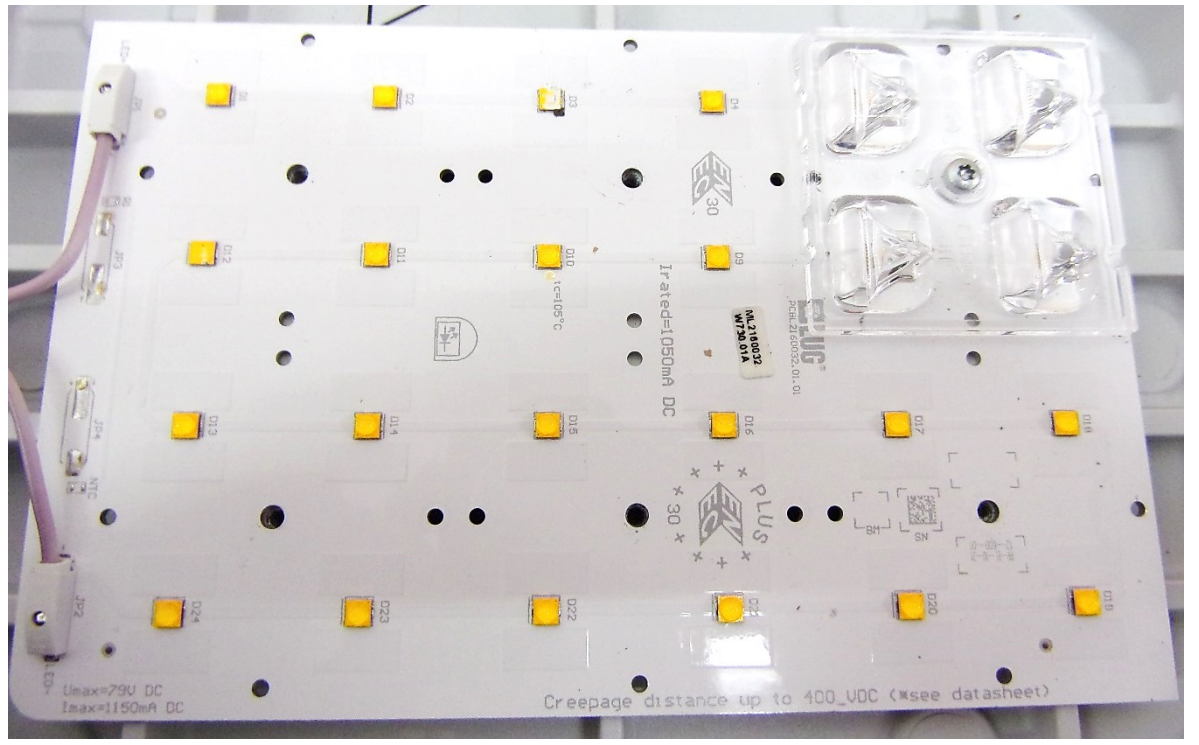


Power supply





LED module



End of the Report