CERTIFICATE OF CONFORMITY

The undersigned as representative of the following company

Company's name: **COEMAR Lighting Srl**

Company's address: **Via Carpenedolo, 90**
46043 Castiglione delle Stiviere (MN)
Italy

Declares that the following product:

Product Name:
SunLite LED

Results in conformity with the essential requirements as mentioned from the following EU Directives (comprise all applicable amendments)

Reference. No.	Title
2014/30/UE	Directive of the European Parliament and of the Council of 26 February 2014 on the approximation of the laws of the Member States relating to Electromagnetic Compatibility.
2014/35/UE	Directive of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits (LVD)
2011/65/EU **2015/863/EU**	Directive of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS2)
2012/19/EU	Directive of the European Parliament and of the Council of 19 January 2012 on waste electrical and electronic equipments (WEEE)

and that are applied all standards or technical specifications mentioned below
Last two numbers of the Year in which is affixed the CE label: 21

CE

Place & Date Castiglione delle Stiviere, 27 May, 2021

Name and position Salvatore Grillo

Sign

Reference to standards and/or technical specifications, or part of them, used for this Declaration of Conformity:

- Harmonized standards:

Reference. No.	Edition	Title	Part 1
EN 61000-3-2	2014	Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current <= 16 A per phase)	Complete Std
EN 61000-3-3	2013	Electromagnetic compatibility (EMC), Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply system, for equipment with rated current <= 16 A per phase and not subject to conditional connection	Complete Std
EN 55015	2019 +A11 (2020)	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment	Complete Std
EN 60598-1	2015	Luminaires – Part 1: General requirements and tests	Complete Std
EN 60598-2-5	2015	Luminaires – Part 2: Particular requirements – Section 17: Luminaires for stage lighting, television film and photographic studios (outdoor and indoor)	Complete Std
IEC 60529-1	2019	Corrigendum 1- Amendment 2- Degrees of protection provided by enclosures (IP Code)	Complete Std
EN 61547	2009	Equipment for general lighting purposes- EMC immunity requirements	Complete Std
EN 62471	2008	Photobiological safety of lamps and lamp system	Complete Std
EN 62031	2018	Specifies general and safety requirements for light-emitting diode (LED) modules	Complete Std

- other standards and other applications

Reference. No.	Edition	Title	Part 2
IEC 62262 (IK)	2002	Standard EN 62262 specifies the resistance or impact strength of a piece of electrical equipment against external mechanical stress when exposed to special shocks.	Complete Std
EN 62493	2010-03	Assessment of lighting equipment related to human exposure to electromagnetic fields	Complete Std
EN 62722-2-1	2014	Part 2-1: Particular requirements for LED luminaires	Complete Std

Other technical solution detailed in the technical documentations or Technical Construction Folder:

...none.....

Other reference or information required from the applicable EU Directives:

...none.....

1) if appropriate, shall specify the parts or articles the harmonized standard
2) if appropriate, shall specify the parts or articles the standard or technical specifications

*The exporter of the product covered by this document declares that, except where otherwise clearly indicated, these products are of Italian preferential Origin.

Reference to standards and/or technical specifications, or part of them, used for this Declaration of Conformity:

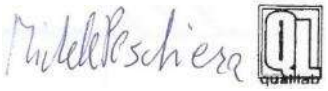
- Harmonized standards (ROHS):

The RoHS Directive restricts the use of lead (Pb), mercury (Hg), cadmium (Cd), hexavalent chromium (Cr6 +), polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE), DEHP, BBP, DBP, DIBP in the production of some electrical and electronic equipment sold in the European Union.
The limitation of these substances is foreseen as they can be released into the environment and pose a threat to human, animal and environmental health, especially when the waste treatment phase is reached.

Items not present or present within RoHS compliance limits:

Lead
Cadmium
Hexavalent Chromium
Mercury
Polybrominated biphenyls (PBB)
Polybrominated diphenylethers (PBDE)
Bis(2-ethylhexyl) phthalate (DEHP)
Butyl benzyl phthalate (BBP)
Dibutyl phthalate (DBP)
Diisobutyl phthalate (DIBP)
Silica Gel

TEST REPORT Nr. 778-QL21-R01 ver. 0

Addresses Indirizzi		
Applicant Richiedente	Coemar lighting Srl - Via Carpendolo, 90 - 46043 - Castiglione delle Stiviere (MN) - Italy	
Manufacturer Produttore	Same as applicant/Come il richiedente	
Dates and authorization Date e autorizzazioni		
Report Date Data emissione rapporto di prova	27/05/2021	
Written by Preparato da	Ing. Cavalli Matteo	
Authorized by Autorizzato da	Ing. Michele Peschiera	
Sample under test (data declared by the applicant and under applicant's responsibility) Dispositivo sottoposto a prova (dati forniti dal richiedente e sotto la sua responsabilità)		
Sample description Descrizione dispositivo	LED luminaire/Apparecchio di illuminazione a LED	
Type Modello	SUNLITE	
Light source Sorgente luminosa	LED (specific model not declared)	
Driver model Modello alimentatore	Meanwel HLG-320	
Output power supply current Corrente in uscita dall'alimentatore	Not declared	
Single led supply current Corrente sul singolo led	750 mA	
Rated absorption Assorbimento nominale	223 W	
Internal clock frequency Frequenza del clock interno	☐ < 30 MHz	☒ > 30 MHz
Power source	☒ AC power ☐ internal battery	☐ DC power ☐ external battery
Rated voltage	☒ 230 V / 50 Hz / 1 Ph ☐ 12 V ☐ 48 V	☐ 115 V / 60 Hz / 1 Ph ☐ 24 V ☐ other:

	Test report n.	778-QL21-R01 ver. 0
	Applicant	Coemar lighting Srl Via Carpendolo, 90 46043 - Castiglione delle Stiviere (MN) - Italy
	Type	SUNLITE

Classification for emission requirement EN 55015	☐ self-contained emergency lighting luminaires ☒ Led light sources and associated equipment	
Classification for immunity requirement EN61547	☐ luminaire for emergency lighting ☒ luminaire including active electronic components	
Set-up	☐ floor standing equipment ☒ table top equipment	
Port 1	☒ enclosure	☐ conductive ☐ non conductive ☒ combined
Port 2 ☒ AC power port ☐ DC power port	☒ unshielded cable ☐ shielded cable ☒ max cable length ≥ 3 m ☐ max cable length < 3 m	☒ L ☒ N ☒ PE ☐ GND ☐ V_{batt}
Additional ports	☐ Not present ☒ other: DMX	☐ DALI
Test configuration for Emission	☒ CFG-N (Normal): highest possible radiation level, max output power ☒ CFG-D_{min} (min dimming level) 1 %: minimum output power ☐ CFG-EL: Emergency lighting	
Test configuration for Immunity	☒ CFG-N (Normal): highest possible radiation level, max output power ☒ CFG-$D_{50\,\%}$ (50 % dimming level): 50 % of its output power ☐ CFG-EL: Emergency lighting mode	
Test configuration of Auxiliary equipment	☐ Not applicable ☒ Other: portable DMX controller supplied by the applicant	
Applicable standards Norme applicabili		
	EN 55015:2019/A11:2020 EN 61547:2009 EN 61000-3-3:2013 EN 61000-3-2: 2014	

Annex Annesso	**Test Name** Identificazione prova	**Test procedure** Procedura di prova	**Port** Porta	**Configuration mode** Configurazione di prova	**Verdict** Esito
I	Radiated emission (0,009 to 30) MHz	EN 55015:2019/A11:2020, Point 4.5.2	Enclosure	☒ CFG-N ☒ CFG-D_{min} ☐ CFG-EL	PASS
II	Radiated emission (30 to 1000) MHz (Antenna method)	EN 55015:2019/A11:2020, Point 4.5.3	Enclosure	☒ CFG-N ☒ CFG-D_{min} ☐ CFG-EL	PASS
III	Conducted emission	EN 55015:2019/A11:2020, Point 4.3.1	☒ AC power port ☒ Signal port	☒ CFG-N ☒ CFG-D_{min} ☐ CFG-EL	PASS
IV	Harmonic current emission	EN 61000-3-2:2014	AC power port	☒ CFG-N ☐ CFG-D_{min}*	PASS
V	Voltage fluctuations and Flicker	EN 61000-3-3:2013	AC power port	☒ CFG-N ☒ CFG-D_{min}	PASS
VI	Electrostatic Discharge Immunity (ESD)	EN 61547:2009, Point 5.2	Enclosure	☒ CFG-N ☒ CFG-$D_{50\,\%}$ ☐ CFG-EL	PASS
VII	Radiated RF Electromagnetic field immunity	EN 61547:2009, Point 5.3	Enclosure	☒ CFG-N ☒ CFG-$D_{50\,\%}$ ☐ CFG-EL	PASS
VIII	Burst / Fast Transient immunity	EN 61547:2009, Point 5.5	☒ AC power port ☒ Signal port	☒ CFG-N ☒ CFG-$D_{50\,\%}$ ☐ CFG-EL	PASS
IX	Surge immunity	EN 61547:2009, Point 5.7	AC power port	☒ CFG-N ☒ CFG-$D_{50\,\%}$ ☐ CFG-EL	PASS
X	Conducted immunity	EN 61547:2009, Point 5.6	☒ AC power port ☒ Signal port	☒ CFG-N ☒ CFG-$D_{50\,\%}$ ☐ CFG-EL	PASS
XI	Voltage dips and voltage interruption	EN 61547:2009, Point 5.8	AC power port	☒ CFG-N ☒ CFG- $D_{50\,\%}$	PASS
XII	Photographs				

*Note: not applicable because the power value is below 5 W

Performance criterion A

During the test, no change of the luminous intensity shall be observed and regulating control, if any, shall operate during the test as intended.

Performance criterion B

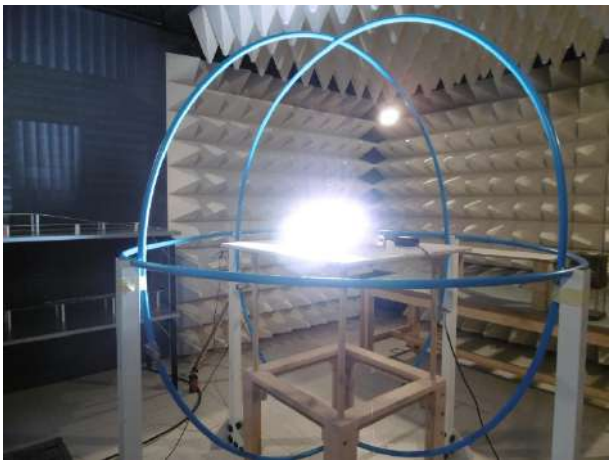
During the test, the luminous intensity may change to any value. After the test, the luminous intensity shall be restored to its initial value within 1min. regulating controls need not function during the test, but after the test, the mode of the control shall be the same as before the test provided that during the test no mode changing commands were given.

Performance criterion C

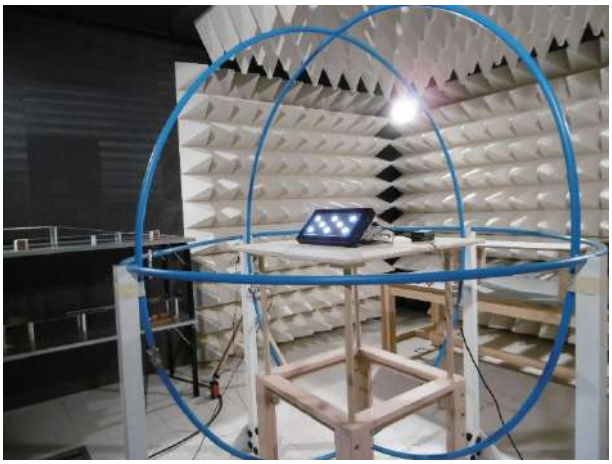
During and after the test, any change of the luminous intensity is allowed and the lamp(s) may be extinguished. After the test, within 30 min, all function shall return to normal, if necessary by temporary interruption of the mains supply and/or operating the regulating control.

ANNEX I	**Radiated emission (0,009 to 30) MHz**
Standards and applicable points	EN 55015:2019/A11:2020, Point 4.5.2
Sample identification	778-QL21-S01
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy
Test date	19/05/2021
Environmental conditions	Temperature 23 °C ± 3 °C r.h. 45 % ± 15 % atmospheric pressure 960 mbar ± 100 mbar
Instruments	EMI Receiver Keysight MXE-EMI-N90238A QL-IN-137 Antenna Laplace Instruments LTD RF-300 QL-IN-123 Coaxial cable SSB Germany ECOFLEX 15 PLUS outside QL-IN-158 Coaxial cable SSB Germany ECOFLEX 15 PLUS inside QL-IN-159 Semi Anechoic Chamber Frankonia QL-IN-156 Multimeter HIOKI DT4282 QL-IN-349 Pressure-temperature-humidity datalogger Deltaohm HD50G14bNTC QL-IN-282
Test procedure	Method according to CISPR 16-1-4:2010/A1:2012/A2:2017 Measurement of the magnetic component of the radiated disturbance field strength with a 2 m loop antenna Frequency range (0,009 to 30) MHz Measurement in X, Y and Z axis Preliminary scan: peak detector Final measurement: quasi-peak detector
Set-up photo	

CFG-N

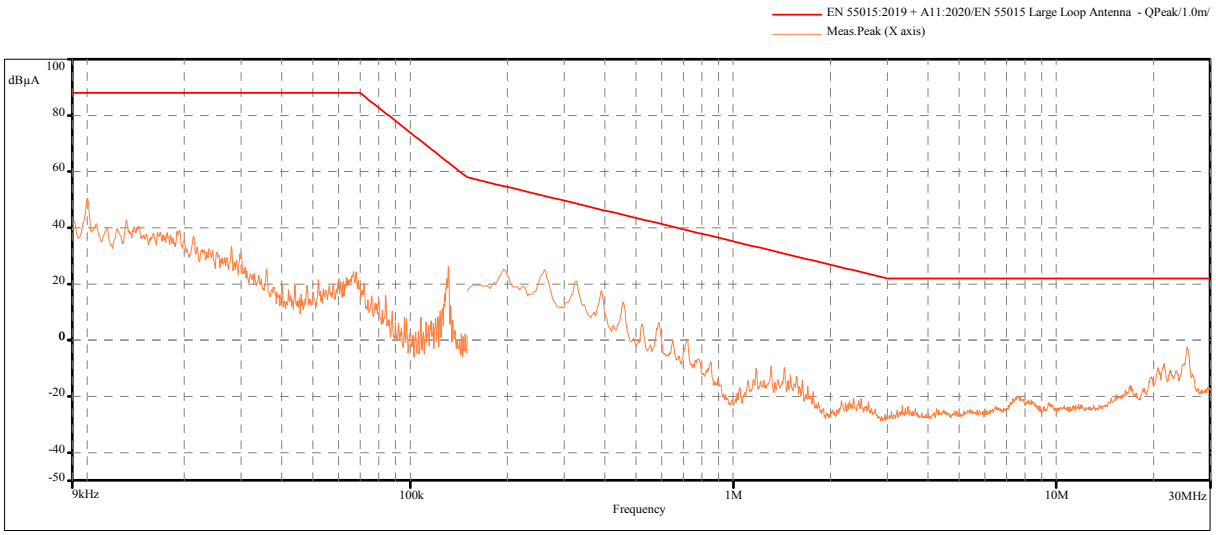


CFG-D_{min}

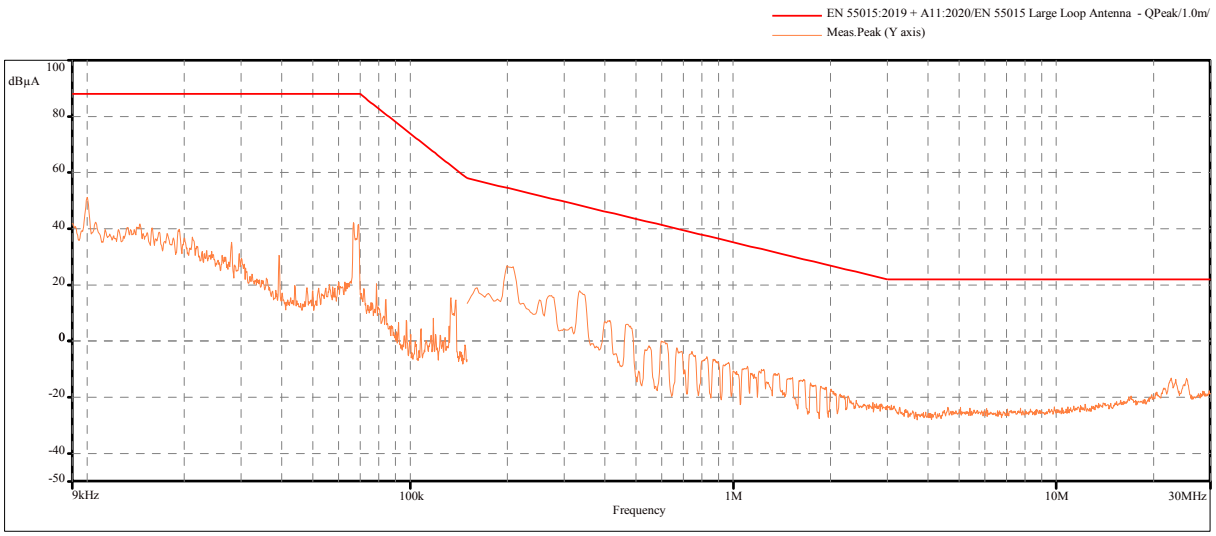


Test requirements	EN 55015 tab.8

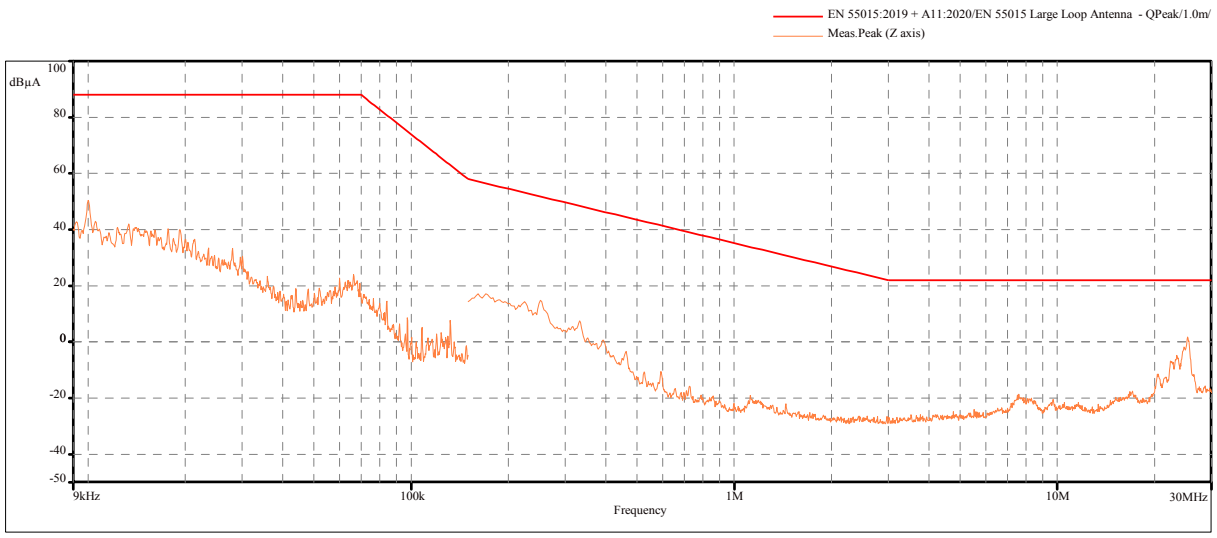
CFG-N	
Test measurement	X-axis



Test measurement	Y-axis

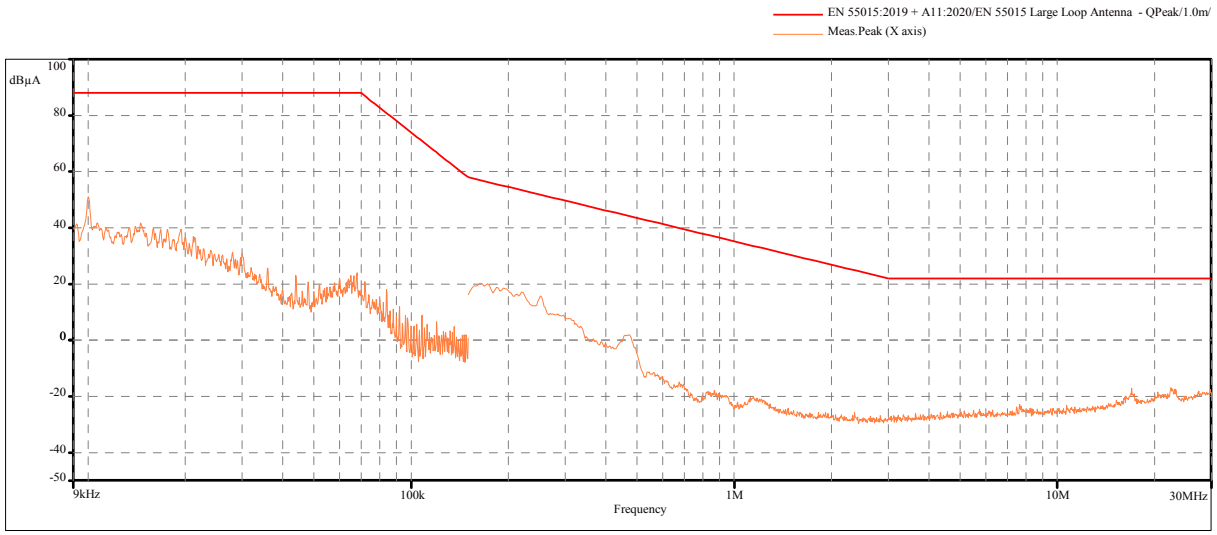


Test measurement	Z-axis

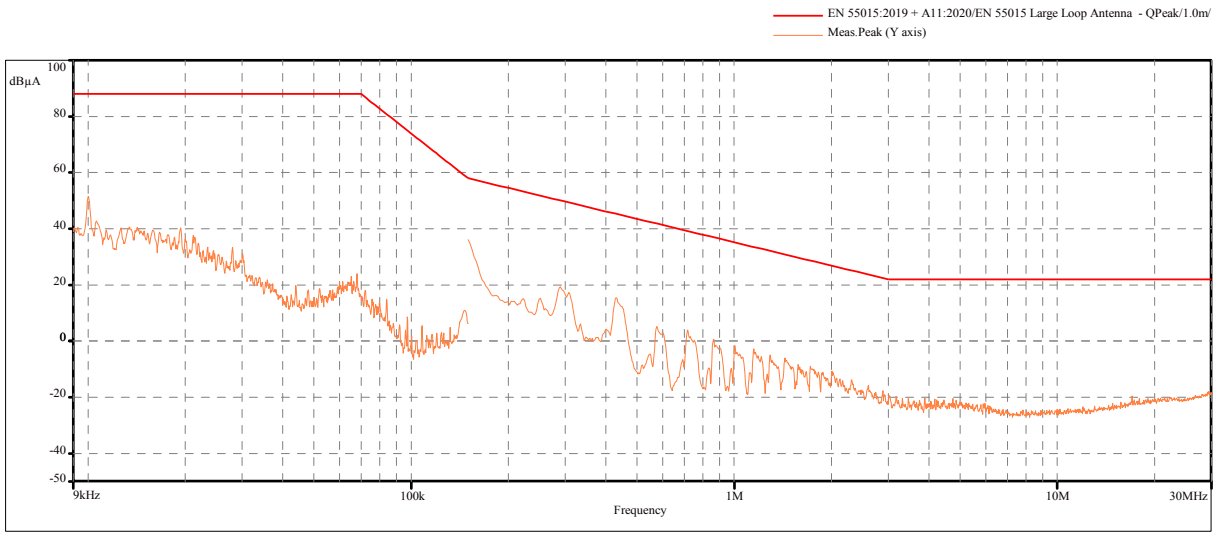


CFG-D_{min}

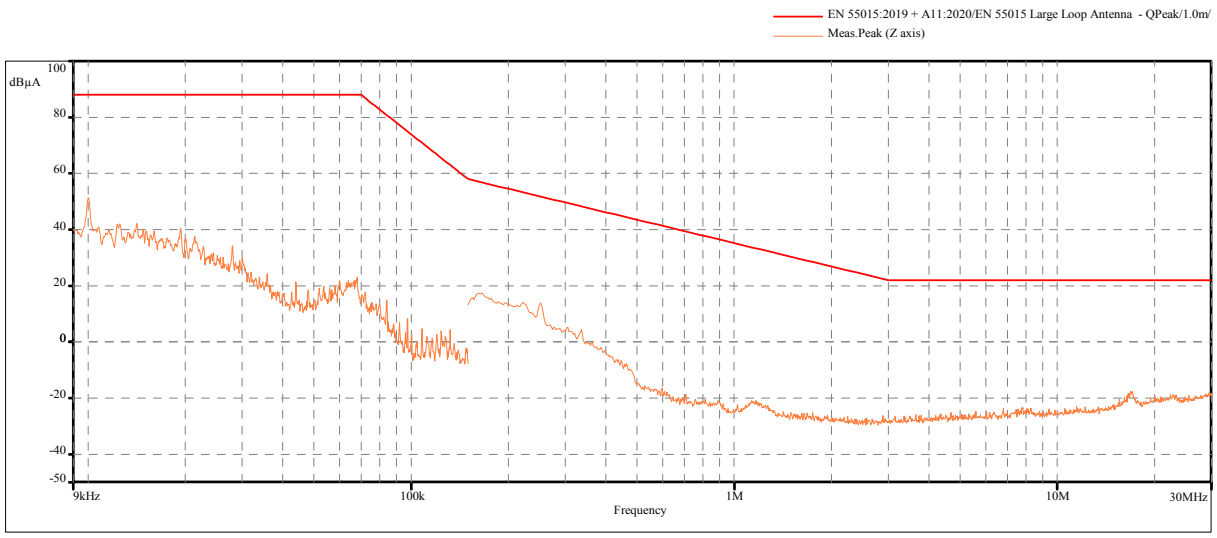
Test measurement	X-axis



Test measurement	Y-axis



Test measurement	Z-axis



VERDICT	**PASS**

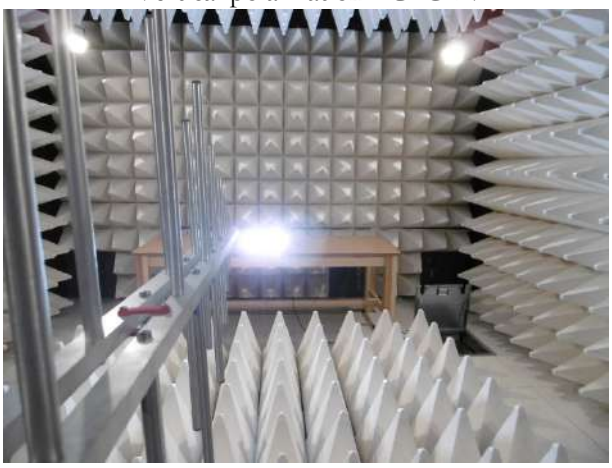
ANNEX II	**Radiated emission (30 to 1000) MHz (Antenna method)**
Standards and applicable points	EN 55015:2019/A11:2020, Point 4.5.3
Sample identification	778-QL21-S01
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy
Test date	24/05/2021
Environmental conditions	Temperature 23 °C ± 3 °C r.h. 45 % ± 15 % atmospheric pressure 960 mbar ± 100 mbar
Instruments	EMI Receiver Keysight MXE-EMI-N90238A QL-IN-137 Coaxial cable SSB Germany ECOFLEX 15 PLUS outside QL-IN-158 Coaxial cable SSB Germany ECOFLEX 15 PLUS inside QL-IN-159 Antenna Rohde & Schwarz ALX-4000E QL-IN-120 Semi Anechoic Chamber Frankonia QL-IN-156 Multimeter HIOKI DT4282 QL-IN-349 Pressure-temperature-humidity datalogger Deltaohm HD50G14bNTC QL-IN-282
Test procedure	Method according to CISPR 16-2-1:2014/A1:2017

Frequency range:	(30 to 1000) MHz
Pre-scan Detector:	Peak
Final measurement:	Q-Peak
RBW:	120 kHz
Frequency step:	50 kHz
Measure time:	5 ms for Peak detector and 1 s for Q-Peak detector
Antenna distance:	3 m
Antenna height:	1,55 m
Adjustments:	Modification of semi-anechoic chamber by addition of extra RF absorption material on the floor (ferrites and cones)
Polarization:	Vertical, Horizontal
DUT positions:	Pos 1: LEDs facing the antenna Pos 2: + 90° clockwise to Pos 1 Pos 3: + 180° clockwise to Pos 1 Pos 4: + 270° clockwise to Pos 1

Set-up photo

Pos 1

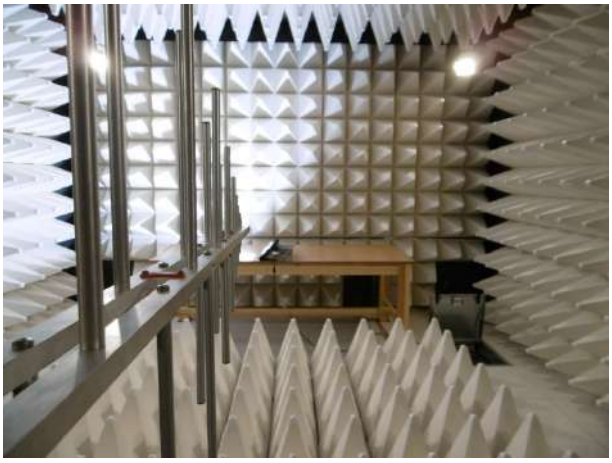
Vertical polarization - CFG-N



Horizontal polarization - CFG-D_{min}

Pos 2

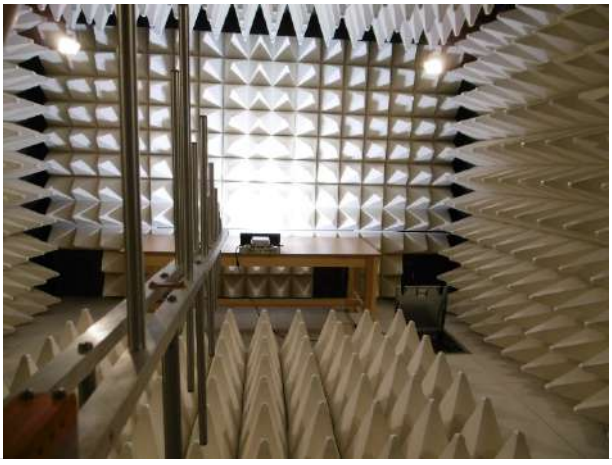
Vertical polarization - CFG-N



Horizontal polarization - CFG-D_{min}

Pos 3

Vertical polarization - CFG-N



Horizontal polarization - CFG-D_{min}

Pos 4

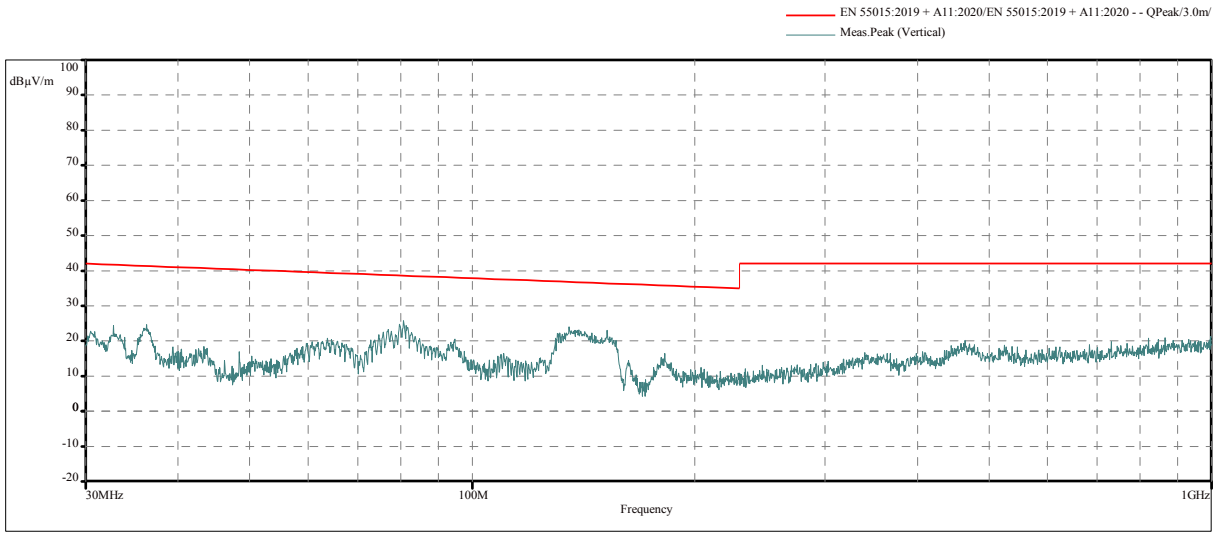
Vertical polarization - CFG-N

Horizontal polarization - CFG-D_{min}

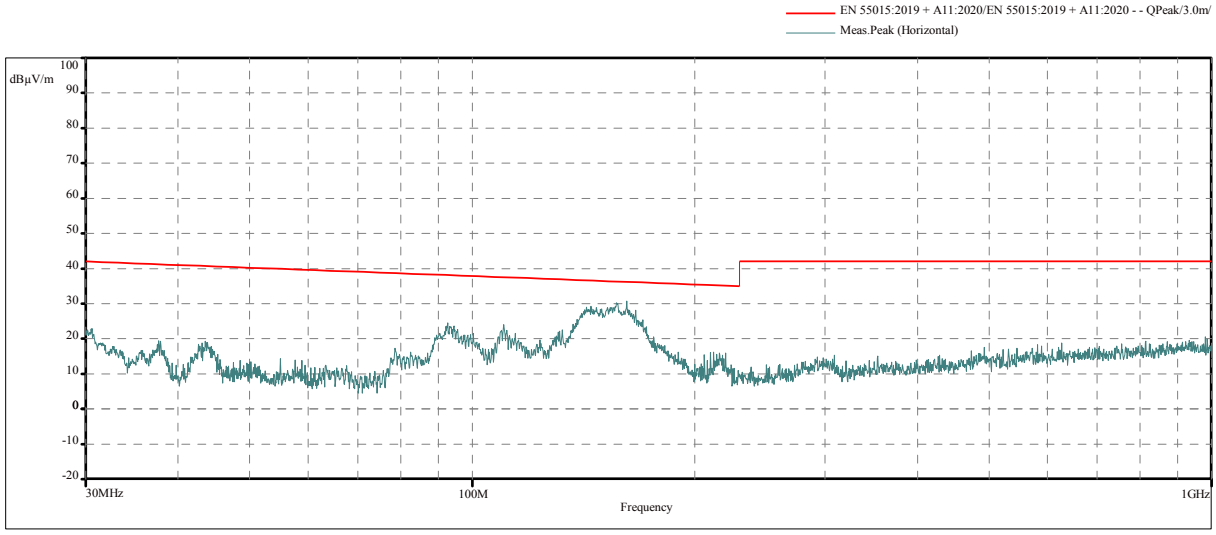
Test requirements	EN 55015 tab.10

Test measurement	CFG-N

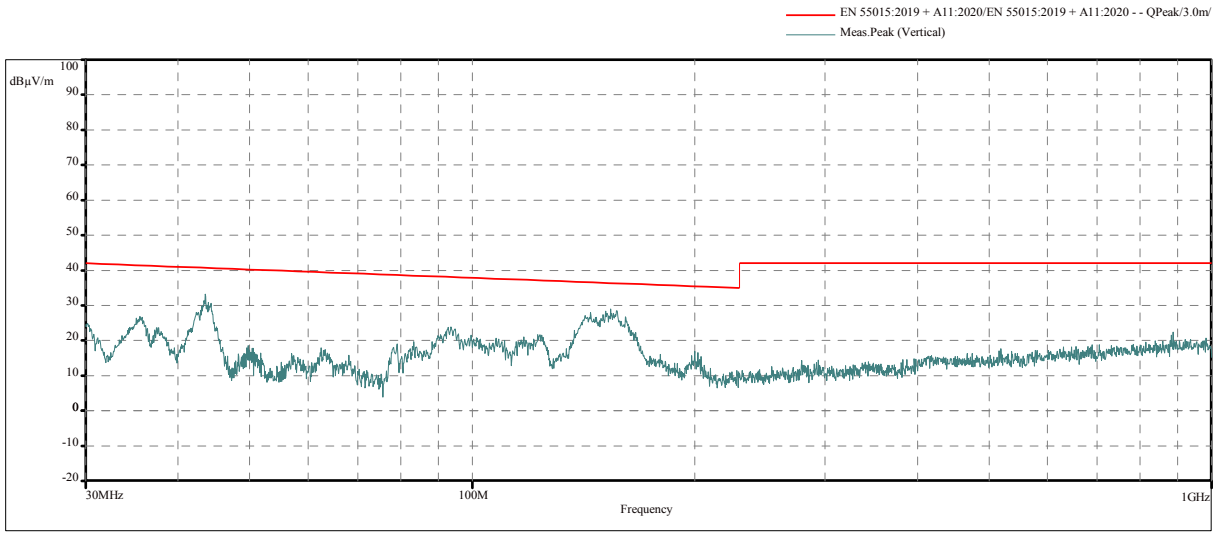
Pos 1 - Vertical Polarization



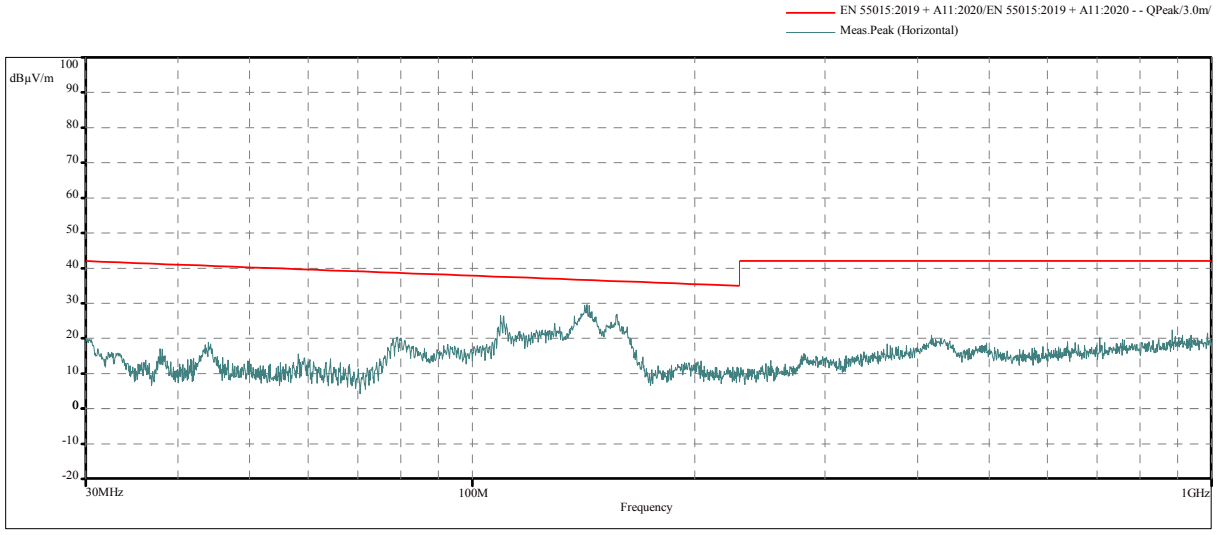
Pos 1 - Horizontal Polarization



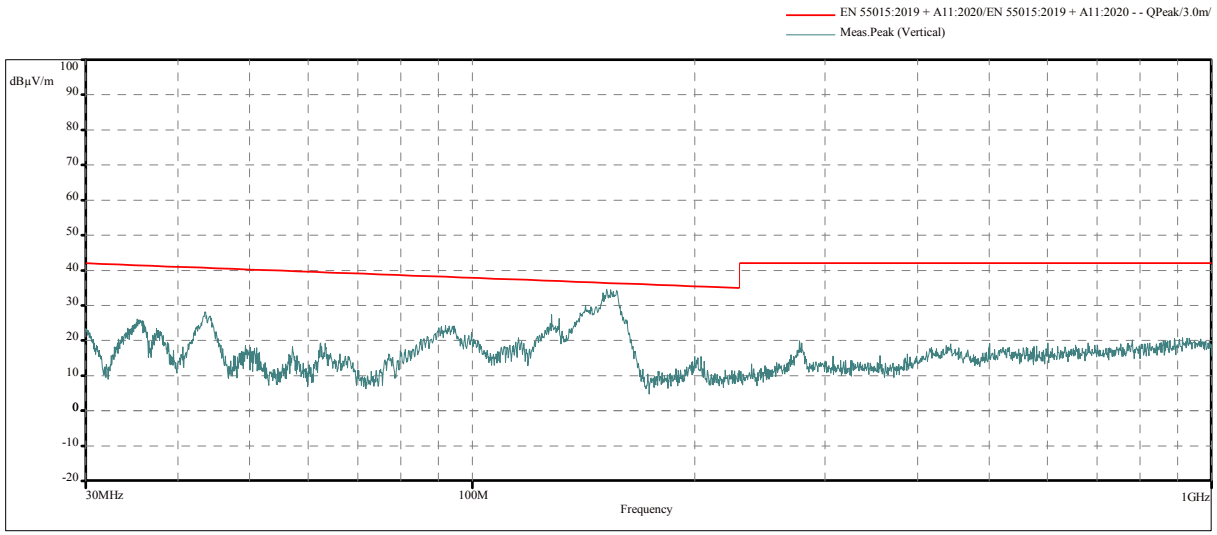
Pos 2 - Vertical Polarization



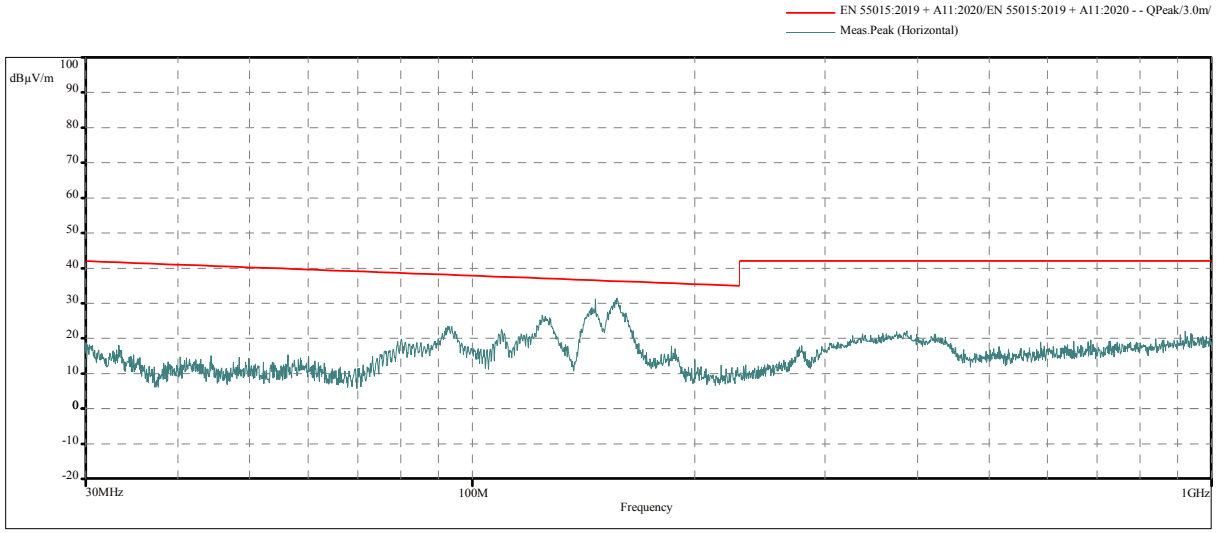
Pos 2 - Horizontal Polarization



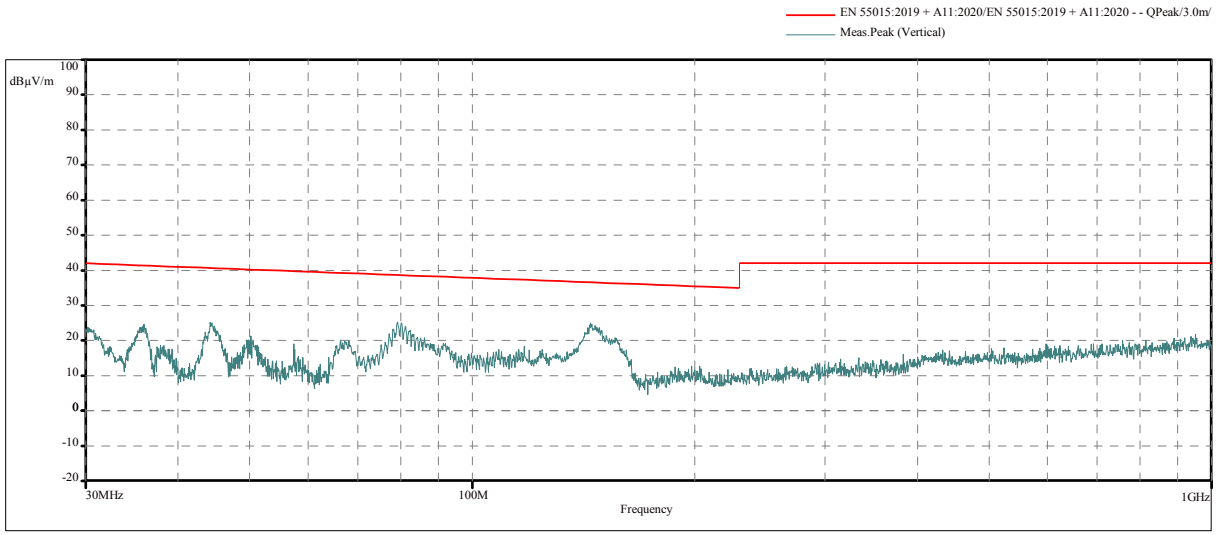
Pos 3 - Vertical Polarization



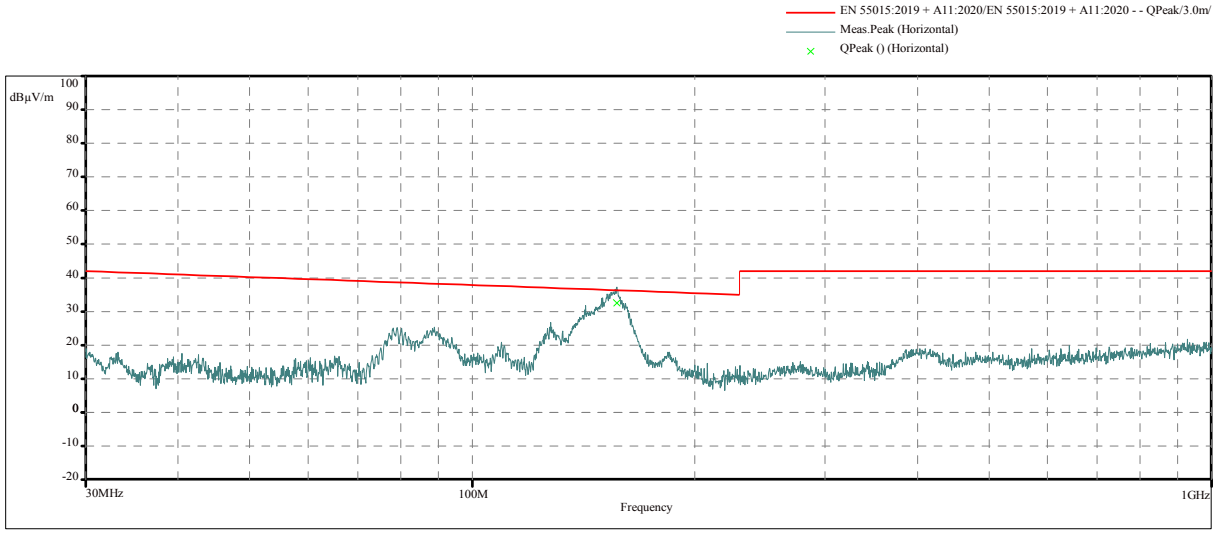
Pos 3 - Horizontal Polarization



Pos 4 - Vertical Polarization

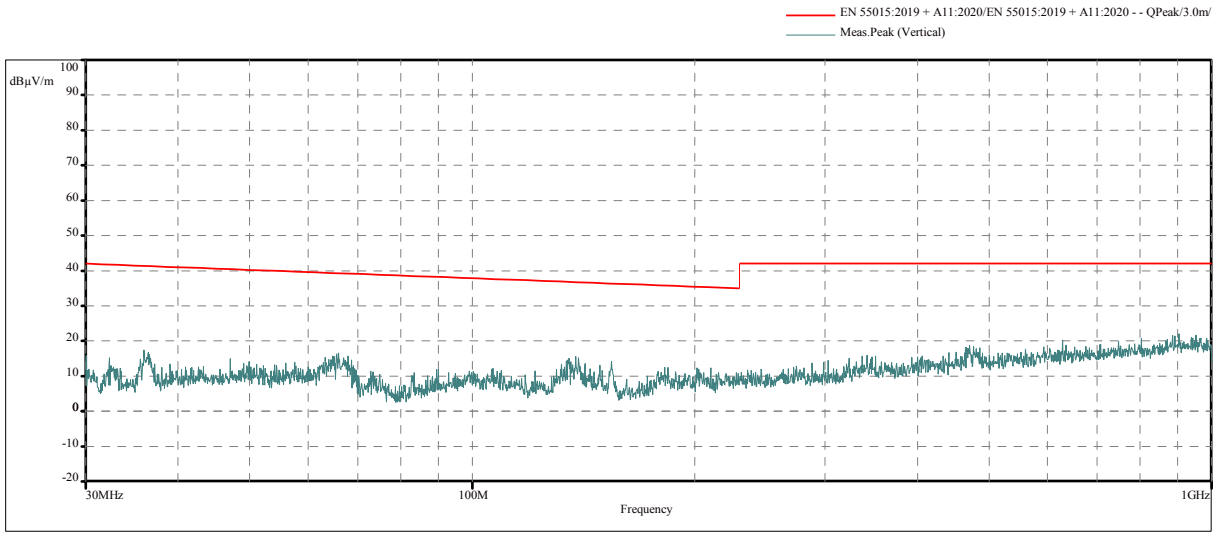


Pos 4 - Horizontal Polarization

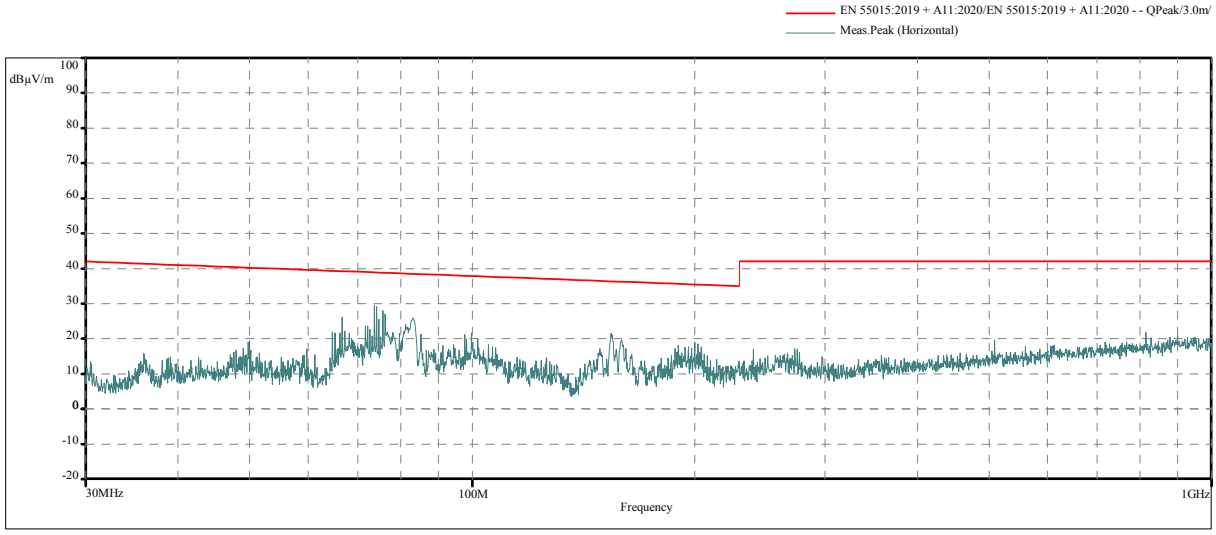


Test measurement	CFG-D_{min}

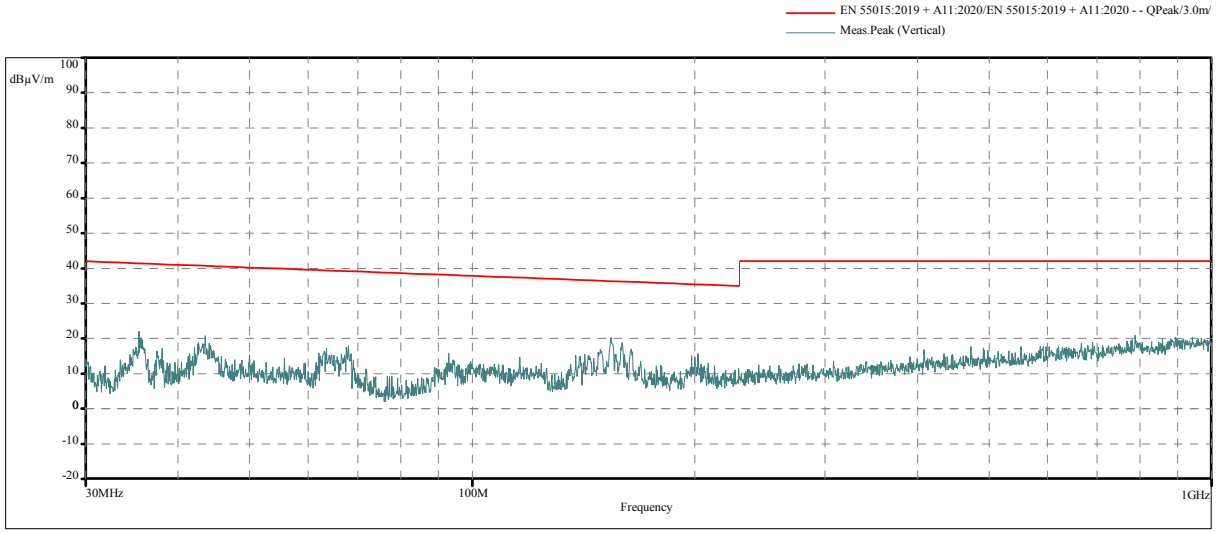
Pos 1 - Vertical Polarization



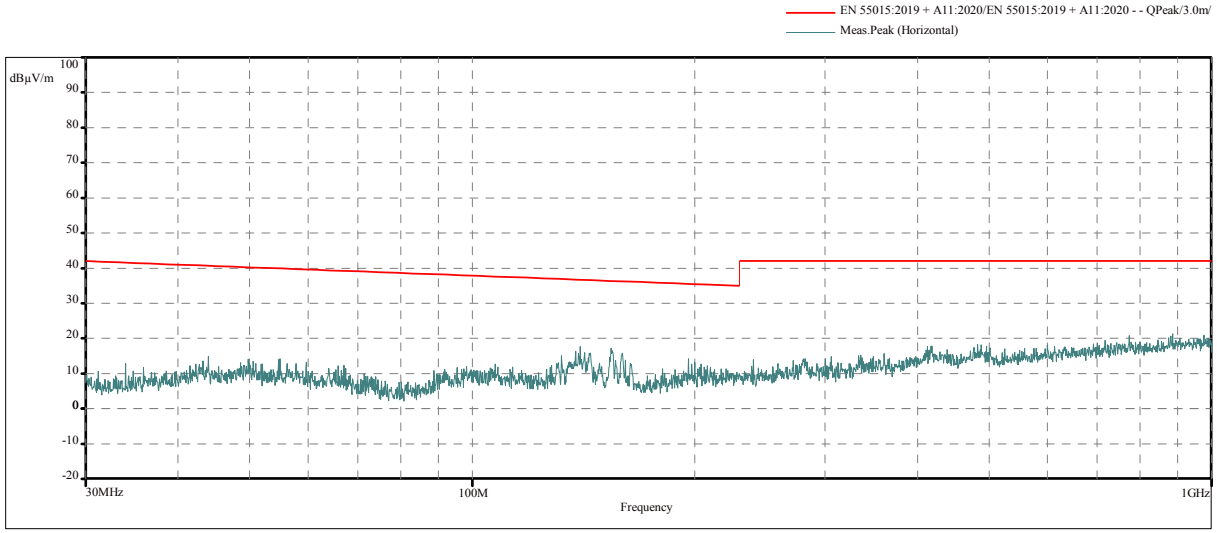
Pos 1 - Horizontal Polarization



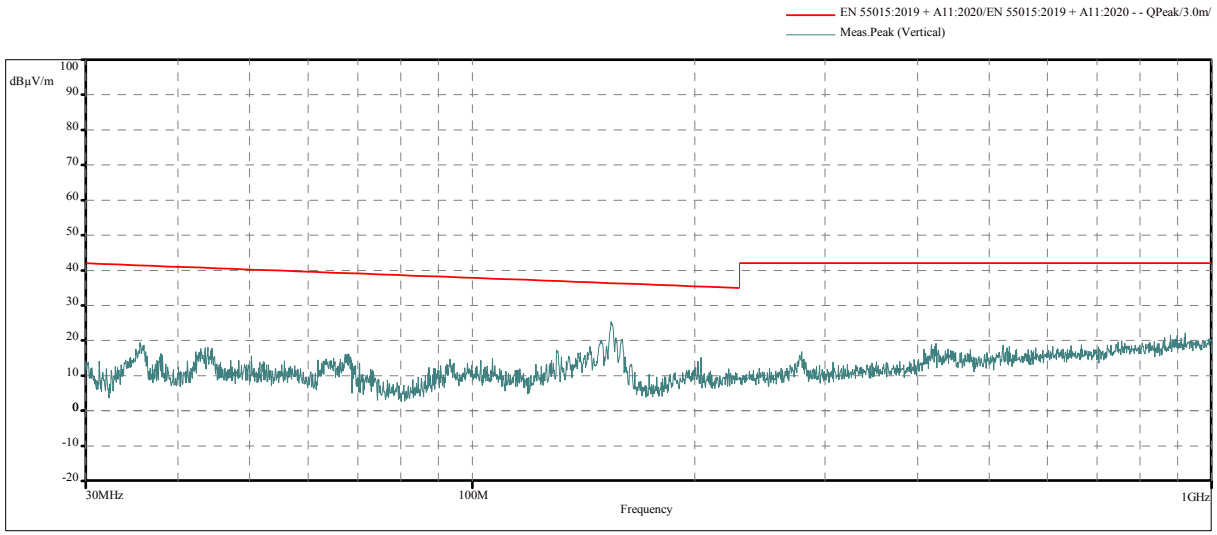
Pos 2 - Vertical Polarization



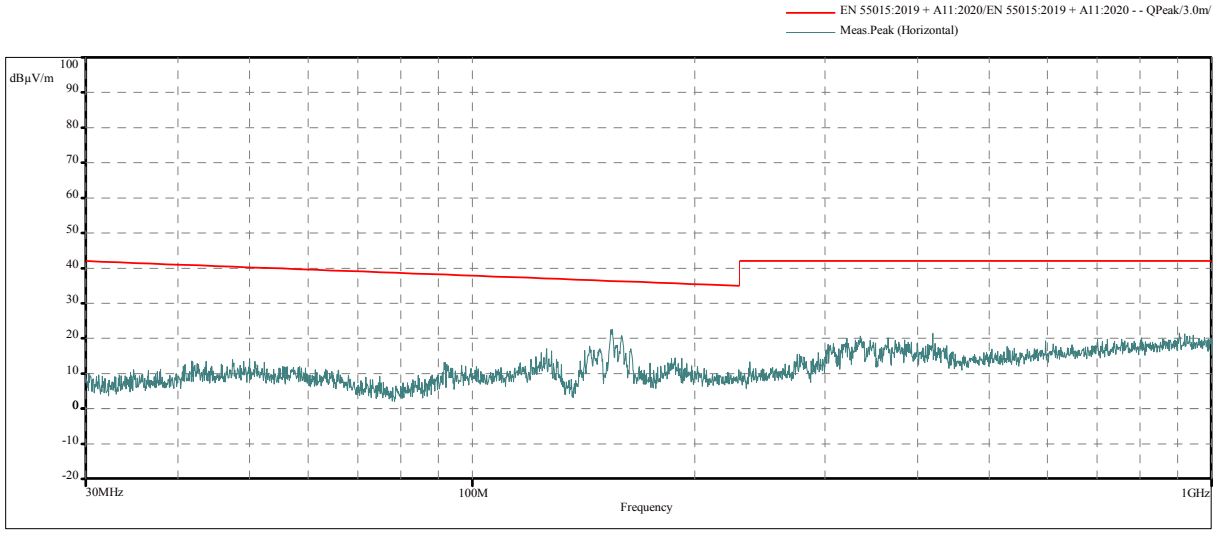
Pos 2 - Horizontal Polarization



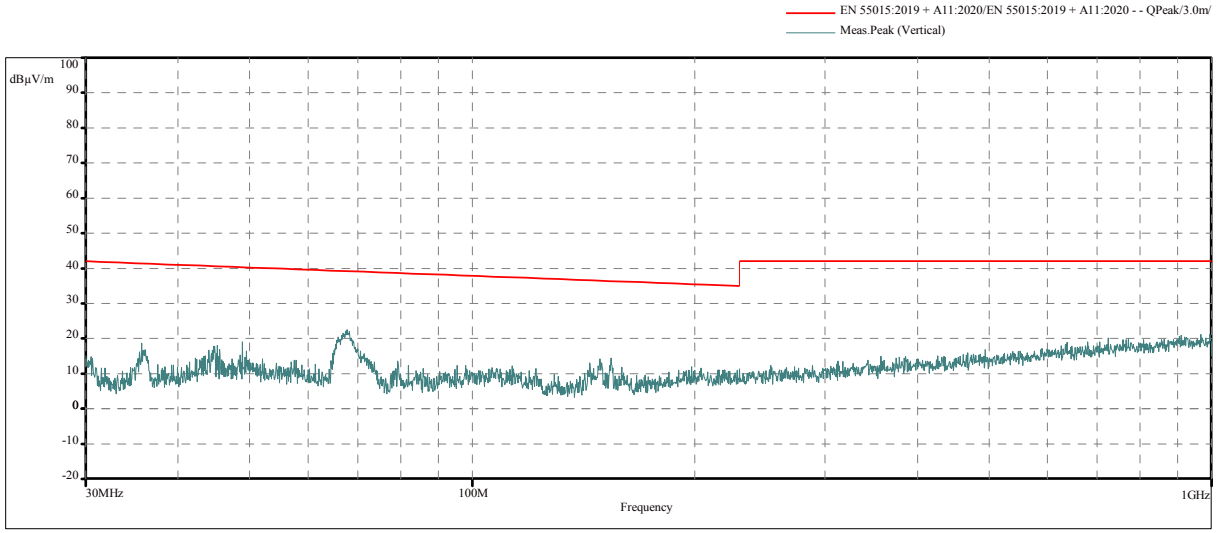
Pos 3 - Vertical Polarization



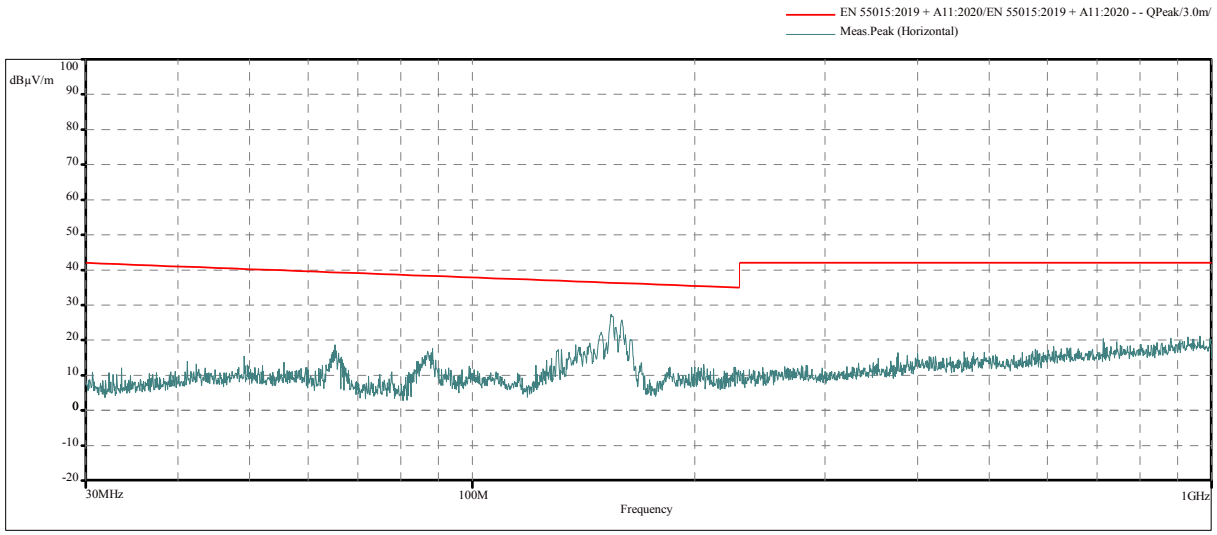
Pos 3 - Horizontal Polarization



Pos 4 - Vertical Polarization



Pos 4 - Horizontal Polarization

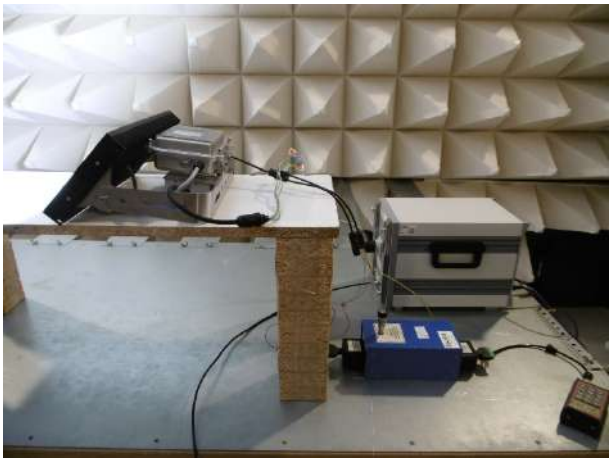


VERDICT	**PASS**

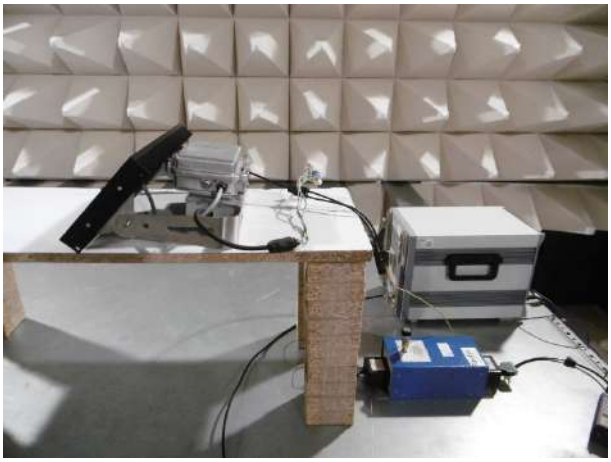
ANNEX III	**Conducted emission**
Standards and applicable points	EN 55015:2019/A11:2020, Point 4.3.1
Sample identification	778-QL21-S01
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy
Test date	19/05/2021
Environmental conditions	Temperature 23 °C ± 3 °C r.h. 45 % ± 15 % atmospheric pressure 960 mbar ± 100 mbar
Instruments	EMI Receiver Keysight MXE-EMI-N90238A QL-IN-137 Line impedance simulator network Teseq NNB51 QL-IN-134 Impedence stabilization network COM POWER ISN-T2 QL-IN-251 Coaxial cable SSB Germany ECOFLEX 15 PLUS outside QL-IN-158 Coaxial cable SSB Germany ECOFLEX esterno 10 PLUS QL-IN-161 Semi Anechoic Chamber Frankonia QL-IN-156 Multimeter HIOKI DT4282 QL-IN-349 Pressure-temperature-humidity datalogger Deltaohm HD50G14bNTC QL-IN-282
Test procedure	Method according to CISPR 16-2-1:2014/A1:2017 Frequency range (0,009 to 30) MHz for AC power port Frequency range (0,15 to 30) MHz for Signal port Measurement on lines N - L for AC power port Measurement on lines DMX+ DMX- for Signal port Preliminary scan: peak detector Final measurement: quasi-peak detector
Set-up photo	

AC power port

CFG-N



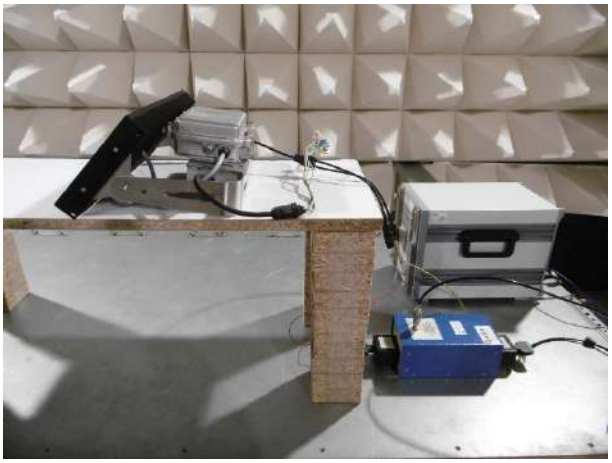
CFG-D_{min}



Signal port

CFG-N

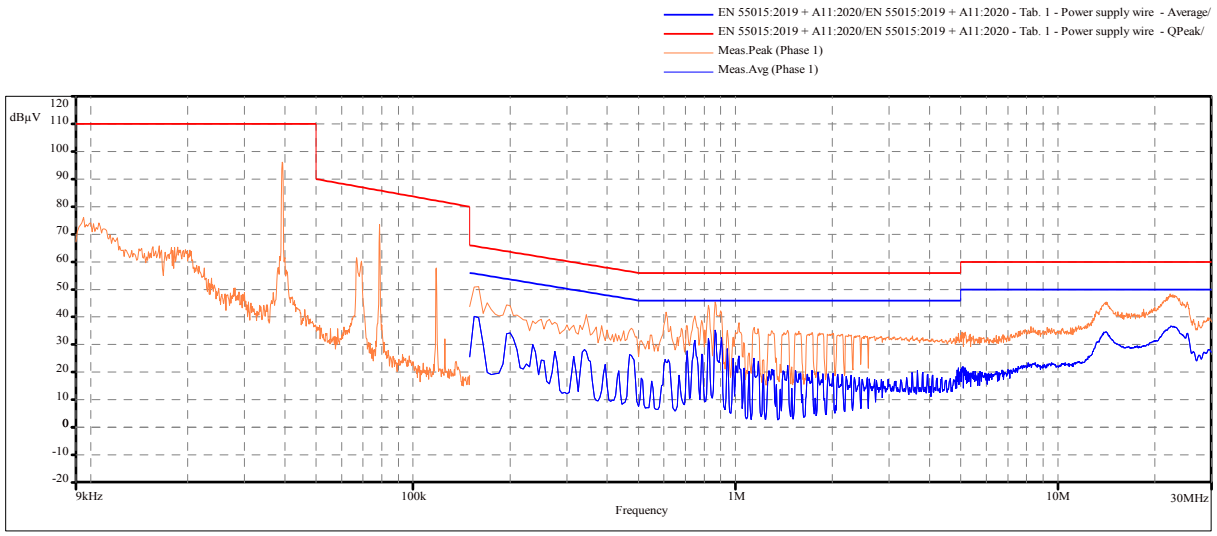
CFG-D_{min}



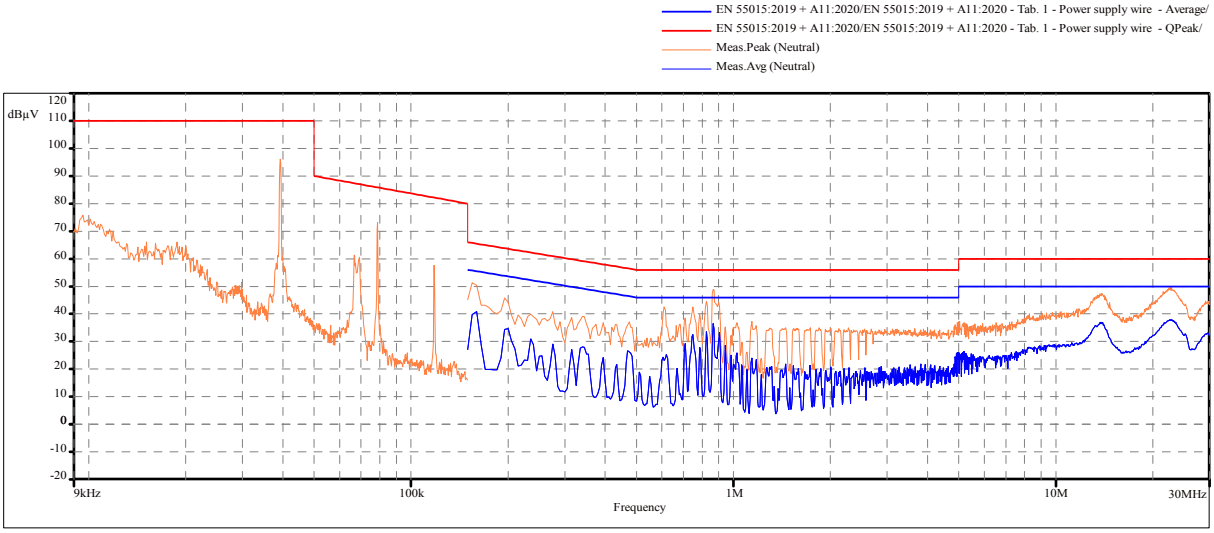
Test requirements	EN 55015 tab.1 for AC power port EN 55015 tab. 2 for Signal port
Test measurement	

AC power port

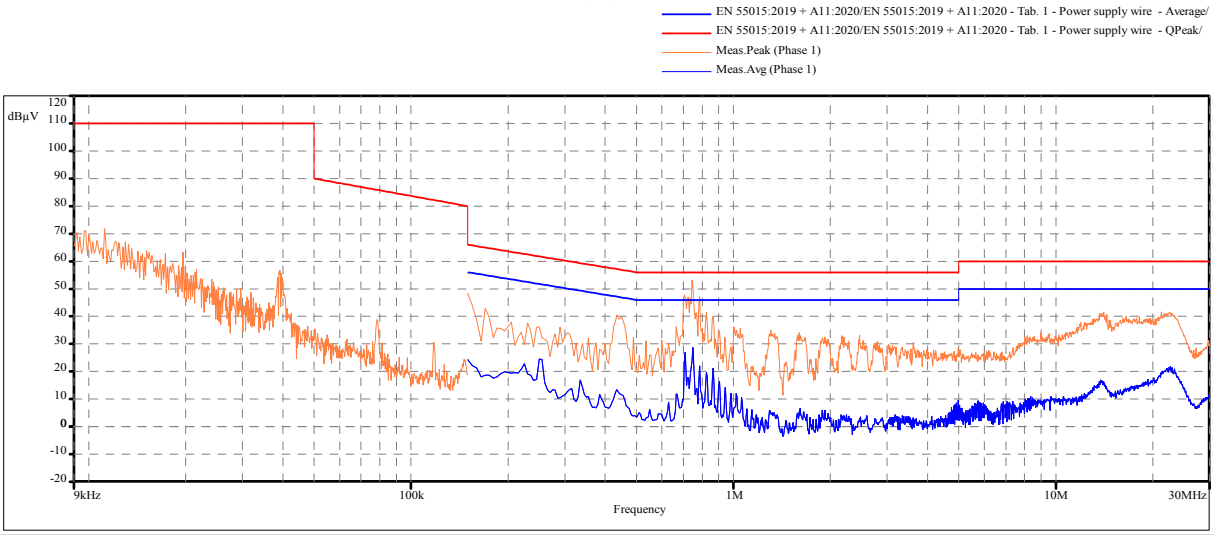
CFG-N - Line L



AC power port
CFG-N - Line N

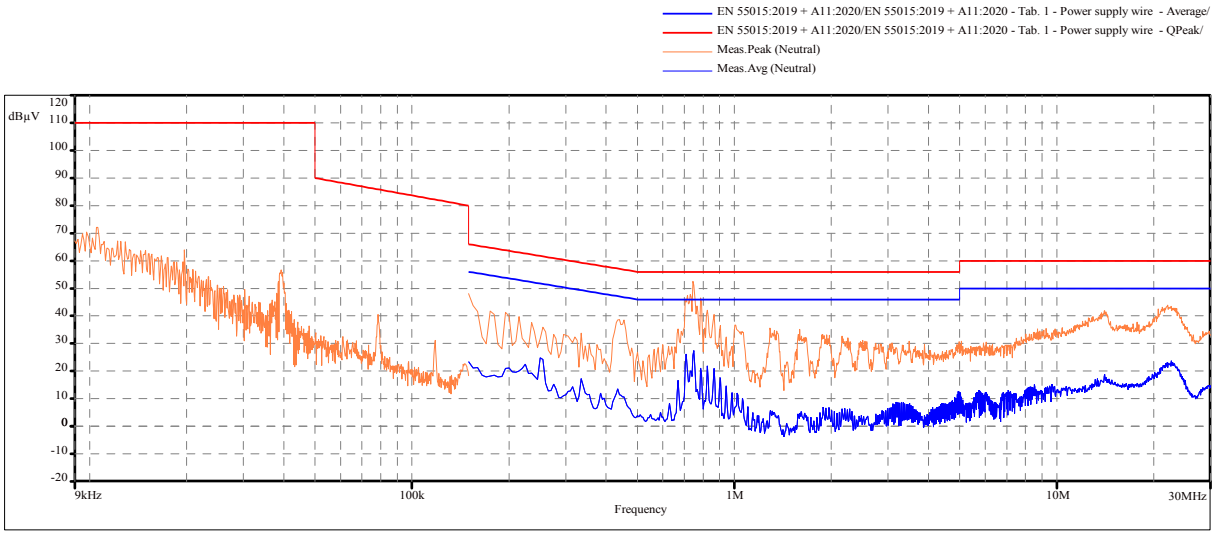


AC power port
CFG-D_{min} - Line L



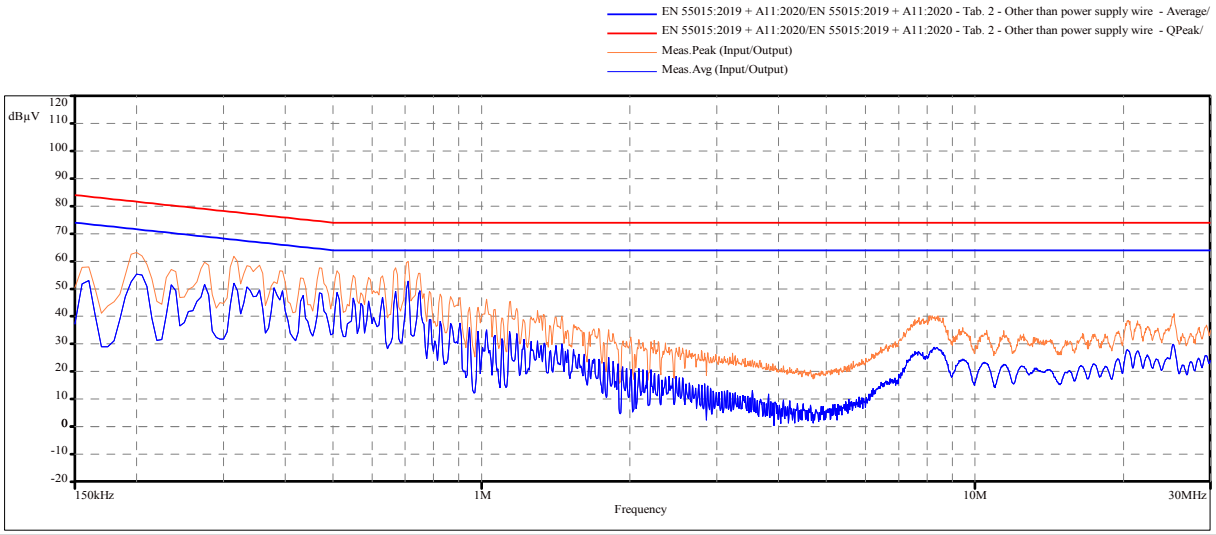
AC power port

CFG-D_{min} - Line N



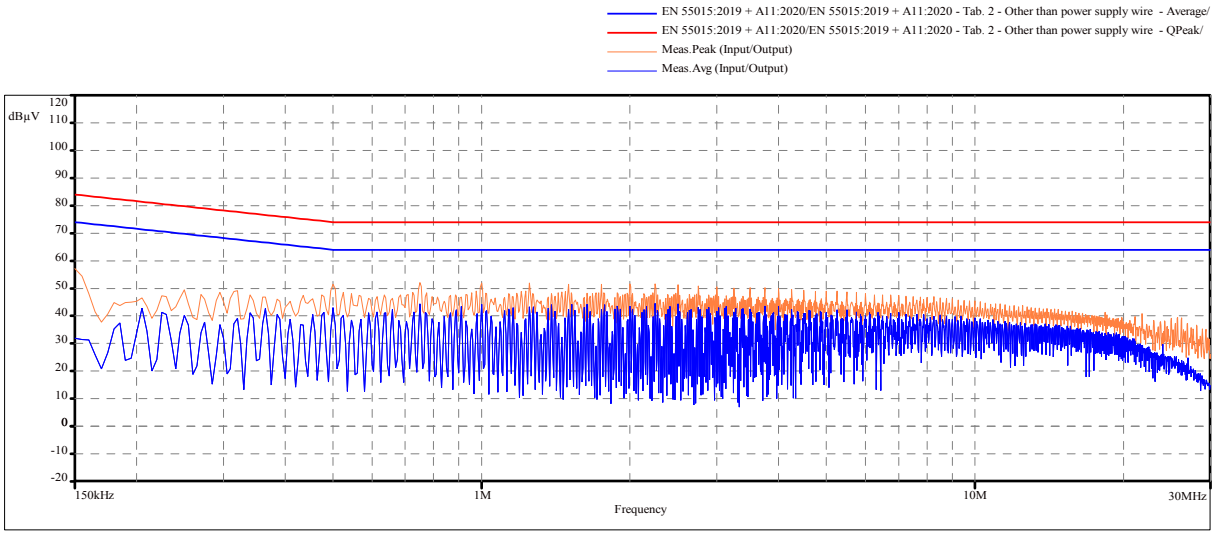
Signal port

CFG-N



Singal port

CFG-D_{min}



VERDICT	**PASS**

ANNEX IV	**Harmonic current emission**
Standards and applicable points	EN 61000-3-2:2014
Sample identification	778-QL21-S01
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy
Test date	19/05/2021
Environmental conditions	Temperature 23 °C ± 3 °C r.h. 45 % ± 15 % atmospheric pressure 960 mbar ± 100 mbar
Instruments	Harmonic and flickers instrument EmTest DPA 500 N QL-IN-174 Benchtop AC power supply Chroma 61603 QL-IN-199 Multimeter HIOKI DT4282 QL-IN-349 Pressure-temperature-humidity datalogger Deltaohm HD50G14bNTC QL-IN-282
Test procedure	Method according to EN 61000-3-2:2014 The Sample under test is powered by the AC generator Observation time 2,5 minutes for each measurement
Test requirements	EN 61000-3-2:2014
Test measurement	

CFG-N

Measurement smoothed data:	Fund. Current: 1,019 A Power Factor: 0,975 Active input power: 228,865 W

Test measurement	Random cycle measurement - CFG-N

Average and Maximum harmonic current results									
*H*n	Average (100 % / 150 % *)				Maximum (150 %)				Harmonic Result
	I_{eff} [%]	of Limit [%]	Limit [A]	Result	I_{eff} [%]	of Limit [%]	Limit [A]	Result	
1	100,000				100,000				
2	0,165	8,226	2,000	n/a	0,185	6,152	3,000	n/a	n/a
3	3,569	12,203	29,249	PASS	3,601	8,208	43,873	PASS	PASS
4	0,099				0,130				
5	2,173	21,729	10,000	PASS	2,195	14,635	15,000	PASS	PASS
6	0,088				0,115				
7	1,809	25,838	7,000	PASS	1,831	17,441	10,500	PASS	PASS
8	0,085				0,112				
9	1,385	27,707	5,000	PASS	1,399	18,655	7,500	PASS	PASS
10	0,090				0,117				
11	1,187	39,570	3,000	PASS	1,218	27,076	4,500	PASS	PASS
12	0,081				0,110				
13	1,332	44,409	3,000	PASS	1,355	30,102	4,500	PASS	PASS
14	0,084				0,114				
15	1,177	39,227	3,000	PASS	1,205	26,767	4,500	PASS	PASS
16	0,121				0,207				
17	1,178	39,250	3,000	PASS	1,209	26,857	4,500	PASS	PASS
18	0,107				0,141				
19	0,922	30,731	3,000	PASS	0,960	21,339	4,500	PASS	PASS
20	0,111				0,143				
21	0,956	21,239	4,500	PASS	0,985	21,883	4,500	PASS	PASS
22	0,104				0,136				
23	0,916	20,356	4,500	PASS	0,951	21,128	4,500	PASS	PASS
24	0,090				0,116				
25	0,088	1,945	4,500	n/a	0,114	2,543	4,500	n/a	n/a
26	0,089				0,120				
27	0,558	12,400	4,500	n/a	0,581	12,914	4,500	n/a	n/a
28	0,098				0,128				
29	0,582	12,934	4,500	n/a	0,608	13,519	4,500	PASS	PASS
30	0,092				0,133				
31	0,301	6,680	4,500	n/a	0,323	7,182	4,500	n/a	n/a
32	0,092				0,121				
33	0,351	7,796	4,500	n/a	0,372	8,274	4,500	n/a	n/a
34	0,087				0,116				
35	0,392	8,720	4,500	n/a	0,414	9,198	4,500	n/a	n/a
36	0,089				0,121				
37	0,456	10,127	4,500	n/a	0,479	10,634	4,500	n/a	n/a
38	0,086				0,112				
39	0,541	12,014	4,500	n/a	0,564	12,537	4,500	n/a	n/a
40	0,091				0,119				

Note: Harmonic currents less than 0,6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.
** Application of limits for average is 100 % except for odd harmonics from 21 to 39, where 150 % applies.*

Test measurement	Random cycle measurement for repeatability - CFG-N

Average and Maximum harmonic current results									
*H*n	Average (100 % / 150 % *)				Maximum (150 %)				Harmonic Result
	I_{eff} [%]	of Limit [%]	Limit [A]	Result	I_{eff} [%]	of Limit [%]	Limit [A]	Result	
1	100,000				100,000				
2	0,167	8,345	2,000	n/a	0,188	6,282	3,000	n/a	n/a
3	3,531	12,077	29,240	PASS	3,558	8,112	43,860	PASS	PASS
4	0,100				0,129				
5	2,187	21,869	10,000	PASS	2,221	14,807	15,000	PASS	PASS
6	0,085				0,116				
7	1,836	26,223	7,000	PASS	1,858	17,695	10,500	PASS	PASS
8	0,087				0,116				
9	1,392	27,844	5,000	PASS	1,411	18,817	7,500	PASS	PASS
10	0,088				0,121				
11	1,179	39,298	3,000	PASS	1,205	26,767	4,500	PASS	PASS
12	0,082				0,115				
13	1,318	43,940	3,000	PASS	1,335	29,670	4,500	PASS	PASS
14	0,085				0,115				
15	1,192	39,723	3,000	PASS	1,208	26,845	4,500	PASS	PASS
16	0,110				0,133				
17	1,196	39,858	3,000	PASS	1,231	27,358	4,500	PASS	PASS
18	0,097				0,130				
19	0,923	30,767	3,000	PASS	0,961	21,348	4,500	PASS	PASS
20	0,093				0,125				
21	0,938	20,841	4,500	PASS	0,966	21,470	4,500	PASS	PASS
22	0,098				0,132				
23	0,919	20,413	4,500	PASS	0,943	20,955	4,500	PASS	PASS
24	0,086				0,114				
25	0,091	2,011	4,500	n/a	0,126	2,807	4,500	n/a	n/a
26	0,083				0,114				
27	0,550	12,224	4,500	n/a	0,564	12,540	4,500	n/a	n/a
28	0,091				0,123				
29	0,563	12,522	4,500	n/a	0,583	12,964	4,500	n/a	n/a
30	0,099				0,130				
31	0,301	6,678	4,500	n/a	0,325	7,219	4,500	n/a	n/a
32	0,099				0,130				
33	0,354	7,869	4,500	n/a	0,378	8,392	4,500	n/a	n/a
34	0,091				0,126				
35	0,402	8,932	4,500	n/a	0,421	9,359	4,500	n/a	n/a
36	0,089				0,121				
37	0,471	10,470	4,500	n/a	0,488	10,839	4,500	n/a	n/a
38	0,088				0,120				
39	0,554	12,303	4,500	n/a	0,573	12,733	4,500	n/a	n/a
40	0,090				0,117				

Note: Harmonic currents less than 0,6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.
** Application of limits for average is 100 % except for odd harmonics from 21 to 39, where 150 % applies.*

VERDICT	**PASS**

ANNEX V	**Voltage fluctuations and Flicker**
Standards and applicable points	EN 61000-3-3:2013
Sample identification	778-QL21-S01
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy
Test date	19/05/2021
Environmental conditions	Temperature 23 °C ± 3 °C r.h. 45 % ± 15 % atmospheric pressure 960 mbar ± 100 mbar
Instruments	Harmonic and flickers instrument EmTest DPA 500 N QL-IN-174 Benchtop AC power supply Chroma 61603 QL-IN-199 Multimeter HIOKI DT4282 QL-IN-349 Pressure-temperature-humidity datalogger Deltaohm HD50G14bNTC QL-IN-282
Test procedure	Method according to EN 61000-3-3:2013 The Sample under test is powered by the AC generator d_{max}, d_c, d_t, P_{st} and P_{lt} parameters are evaluated by the instrument by 3 measurements of 10 minutes each
Test requirements	EN 61000-3-3:2013
Test measurement	

CFG-N

	Sample under test values	**Limit**	**Result**
P_{lt}	0,097	0,65	PASS
Max P_{st}	0,155	1,00	PASS
Max dc [%]	0,059	3,30	PASS
Max d_{max} [%]	< 0,2	4,00	PASS
Max T_{max} [s]	0,000	0,50	PASS

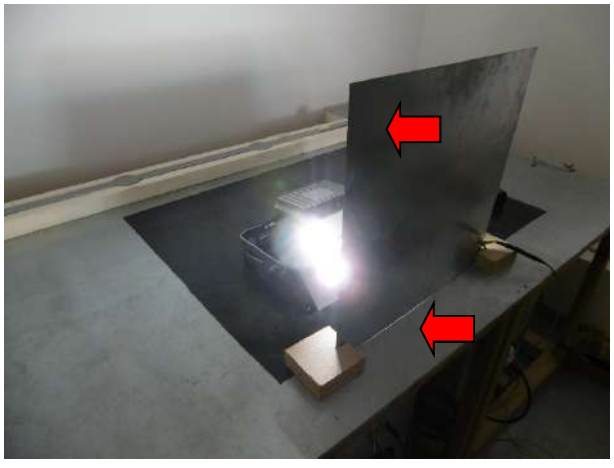
CFG-D_{min}

	Sample under test values	**Limit**	**Result**
P_{lt}	0,094	0,65	PASS
Max P_{st}	0,149	1,00	PASS
Max dc [%]	0,009	3,30	PASS
Max d_{max} [%]	0,238	4,00	PASS
Max T_{max} [s]	0,000	0,50	PASS

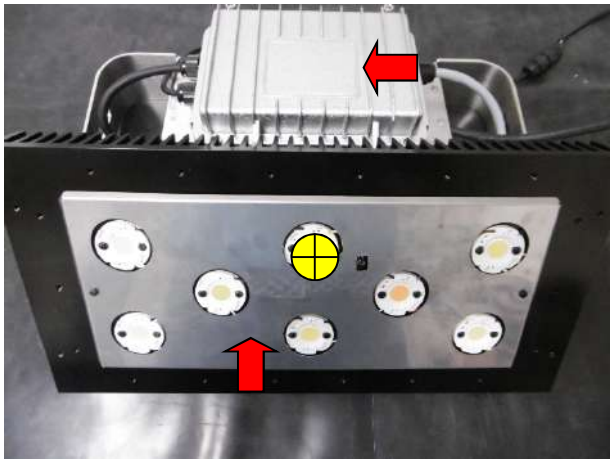
VERDICT	**PASS**

ANNEX VI	**Electrostatic Discharge Immunity (ESD)**
Standards and applicable points	EN 61547:2009, Point 5.2
Sample identification	778-QL21-S01
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy
Test date	19/05/2021
Environmental conditions	Temperature 23 °C ± 3 °C r.h. 45 % ± 15 % atmospheric pressure 960 mbar ± 100 mbar
Instruments	ESD gun EmTest ESD NX 30 QL-IN-151 RC ESD filter EM Test RC filter ESD 150 pF - 330 Ω QL-IN-164 ESD tip EM Test Contact discharge QL-IN-168 ESD tip EM Test Air discharge QL-IN-169 ESD cable EM Test Horizontal plane bleeder 2 x 470 Ω QL-IN-171 ESD cable Qualilab Vertical plane bleeder 2x470 Ω QL-IN-170 Multimeter HIOKI DT4282 QL-IN-349 Pressure-temperature-humidity datalogger Deltaohm HD50G14bNTC QL-IN-282
Test procedure	Method according to EN 61000-4-2:2009 1 discharge every 1 second for contact method 1 discharge every 1 second for air method (if applicable) Nr of discharges for contact method: 20 (10 positive, 10 negative) Nr of discharges for air method: 20 (10 positive, 10 negative) Operation mode: Sample under test ON
Set-up photo	

CFG-N



CFG-$D_{50\,\%}$



Contact discharge Air discharge

Test requirements	EN 61547:2009: criterion B

Test measurement	

CFG-N

Level	Coupling	Discharge point	Behavior during the test	Observed status
± 8 kV	Air*	Non conductive parts	Normal behavior**	A
± 4 kV	Contact direct	Conductive parts	Normal behavior	A
± 4 kV	Contact indirect	Vertical plane	Normal behavior	A
± 4 kV	Contact indirect	Horizontal plane	Normal behavior	A

* EN61547 par.5.2 air discharges shall be used where contact discharges cannot be applied
** No discharge occurred

CFG- $D_{50\,\%}$

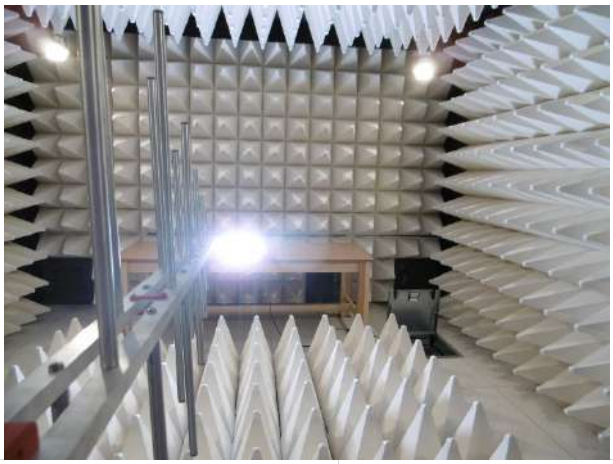
Level	Coupling	Discharge point	Behavior during the test	Observed status
± 8 kV	Air*	Non conductive parts	Normal behavior**	A
± 4 kV	Contact direct	Conductive parts	Normal behavior	A
± 4 kV	Contact indirect	Vertical plane	Normal behavior	A
± 4 kV	Contact indirect	Horizontal plane	Normal behavior	A

* EN61547 par.5.2 air discharges shall be used where contact discharges cannot be applied
** No discharge occurred

VERDICT	**PASS**

ANNEX VII	**Radiated RF Electromagnetic field immunity**
Standards and applicable points	EN 61547:2009, Point 5.3
Sample identification	778-QL21-S01
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy
Test date	19/05/2021
Environmental conditions	Temperature 23 °C ± 3 °C r.h. 45 % ± 15 % atmospheric pressure 960 mbar ± 100 mbar
Instruments	Semi Anechoic Chamber Frankonia QL-IN-156 Average power sensor Rohde&Schwarz NRP6A QL-IN-338 Average power sensor Rohde&Schwarz NRP6A QL-IN-339 Signal generator Rohde&Schwarz SMB100B QL-IN-341 Open Switch and Control Unit Rohde&Schwarz OSP320 QL-IN-342 EFS Laser Frankonia Laser QL-IN-132 Coaxial cable Huber & Suhner SUCOFLEX 106 outsideQL-IN-173 Coaxial cable Huber & Suhner SUCOFLEX 106 inside QL-IN-172 RF-Power Amplifier Frankonia VLH-700B1 QL-IN-140 Antenna Frankonia ALX-4000E QL-IN-120 Meter Stanley Fatmax autolock QL-IN-242 Multimeter HIOKI DT4282 QL-IN-349 Pressure-temperature-humidity datalogger Deltaohm HD50G14bNTC QL-IN-282
Test procedure	Method according to EN 61000-4-3:2006/A1:2008/ IS1:2009/A2:2010 Antenna height: 1,55 m Distance: 3,0 m Polarity: horizontal and vertical Frequency range: (80 to 1000) MHz Frequency step: 1 % of previous frequency Modulation: AM (1 kHz, 80 %) Dwell time: 1 second at each frequency Level: 3 V/m (unmodulated)

	Test report n.	778-QL21-R01 ver. 0
	Applicant	Coemar lighting Srl Via Carpendolo, 90 46043 - Castiglione delle Stiviere (MN) - Italy
	Type	SUNLITE

Set-up photo	
CFG-N	CFG-$D_{50\,\%}$
	
Test requirements	EN 61547:2009: criterion A
Test measurement	Normal behavior, status A
VERDICT	**PASS**

ANNEX VIII	**Burst / Fast Transient immunity**
Standards and applicable points	EN 61547:2009, Point 5.5
Sample identification	778-QL21-S01
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy
Test date	19/05/2021
Environmental conditions	Temperature 23 °C ± 3 °C r.h. 45 % ± 15 % atmospheric pressure 960 mbar ± 100 mbar
Instruments	Ultra Compact Tester (Burst/Surge/Power Fails) EmTest UCS 500 N5 QL-IN-144 Oscilloscope Yokogawa DLM2022 QL-IN-179 Capacitive Clamp EmTest HFK QL-IN-228 High voltage probe Testec TT-HVP 15 HF QL-IN-277 Multimeter HIOKI DT4282 QL-IN-349 Pressure-temperature-humidity datalogger Deltaohm HD50G14bNTC QL-IN-282
Test procedure	Method according to EN 61000-4-4:2012 Frequency: 5 kHz T_r/T_h: 5/50 ns Level: ± 1 kV (for AC power port) Duration: 2 minutes for polarity Pause: 10 seconds Input: AC power port (L – N)
Set-up photo	

AC power port

CFG-N

CFG-$D_{50\,\%}$

Signal port

CFG-N

CFG-$D_{50\,\%}$

Test requirements	EN 61547:2009: criterion B
Test measurement	Normal behavior, status A
VERDICT	**PASS**

ANNEX IX	**Surge immunity**
Standards and applicable points	EN 61547:2009, Point 5.7
Sample identification	778-QL21-S01
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy
Test date	19/05/2021
Environmental conditions	Temperature 23 °C ± 3 °C r.h. 45 % ± 15 % atmospheric pressure 960 mbar ± 100 mbar
Instruments	Ultra Compact Tester (Burst/Surge/Power Fails) EmTest UCS 500 N5 QL-IN-144 Oscilloscope Yokogawa DLM2022 QL-IN-179 High voltage probe Testec TT-HVP 15 HF QL-IN-277 Multimeter HIOKI DT4282 QL-IN-349 Pressure-temperature-humidity datalogger Deltaohm HD50G14bNTC QL-IN-282
Test procedure	Method according to EN 61000-4-5:2014 pulses: 5 positive polarity, 5 negative polarity time between consecutive pulses: 30 seconds rise time: 1,2 µs duration: 50 µs phase angles: 90° (positive pulse), 270° (negative pulse) Sample with power ≤ 25 W: line-to-line (± 0,5 kV) and lines to ground (± 1 kV) Sample with power > 25 W: line-to-line (± 1 kV) and lines to ground (± 2 kV) *all lower test levels as detailed in EN 61000-4-5 shall be tested
Set-up photo	

CFG-N

CFG-$D_{50\,\%}$

Test requirements	EN 61547:2009: criterion C for luminaire including active electronic components; criterion B for luminaire for emergency lighting
Test measurement	

CFG-N

≤ 25 W	> 25 W	Test level kV	Observed behavior - L-N	Observed behavior - L-N-PE
		+ 0,5	A	A
		- 0,5	A	A
		+ 1,0	A	A
		- 1,0	A	A
		+ 2,0	-	A
		- 2,0	-	A

CFG-$D_{50\ \%}$

≤ 25 W	> 25 W	Test level kV	Observed behavior - L-N	Observed behavior - L-N-PE
		+ 0,5	A	A
		- 0,5	A	A
		+ 1,0	A	A
		- 1,0	A	A
		+ 2,0	-	A
		- 2,0	-	A

VERDICT	**PASS**

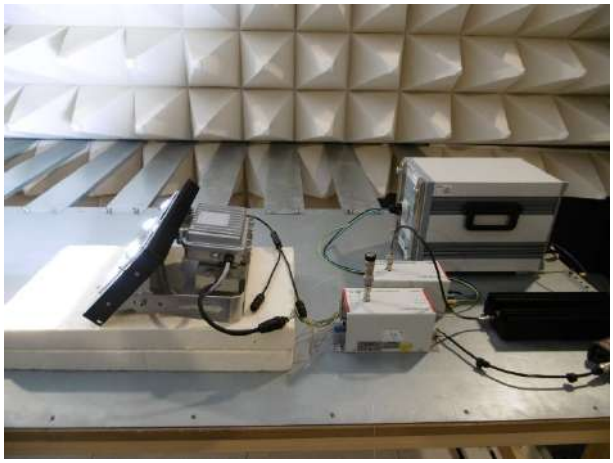
ANNEX X	**Conducted immunity**
Standards and applicable points	EN 61547:2009, Point 5.6
Sample identification	778-QL21-S01
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy
Test date	19/05/2021
Environmental conditions	Temperature 23 °C ± 3 °C r.h. 45 % ± 15 % atmospheric pressure 960 mbar ± 100 mbar
Instruments	Semi Anechoic Chamber Frankonia QL-IN-156 Average power sensor Rohde&Schwarz NRP6A QL-IN-338 Average power sensor Rohde&Schwarz NRP6A QL-IN-339 Signal generator Rohde&Schwarz SMB100B QL-IN-341 Open Switch and Control Unit Rohde&Schwarz OSP320 QL-IN-342 Coaxial cable SSB Germany ECOFLEX external 10 PLUS QL-IN-161 Coaxial cable ECOFLEX inside N-BNCQL-IN-162 Coaxial cable SSB Germany ECOFLEX 15 PLUS outside QL-IN-158 Amplifier Rohde&Schwarz BBA150-AM QL-IN-335 Attenuator Em Test 6dB/80W QL-IN-142 Coupling/decoupling network Teseq M016 QL-IN-128 Coupling/decoupling network Teseq A201A QL-IN-129 Multimeter HIOKI DT4282 QL-IN-349 Pressure-temperature-humidity datalogger Deltaohm HD50G14bNTC QL-IN-282
Test procedure	Method according to EN 61000-4-6:2014 Frequency range: (0,15 to 80) MHz Frequency step: 1 % of previous frequency Modulation: AM (1 kHz, 80 %) Dwell time: 1 second at each frequency Level: 3 V_{rms} (unmodulated) Input: AC power port Input: Signal port

Set-up photo	

AC power port

CFG-N

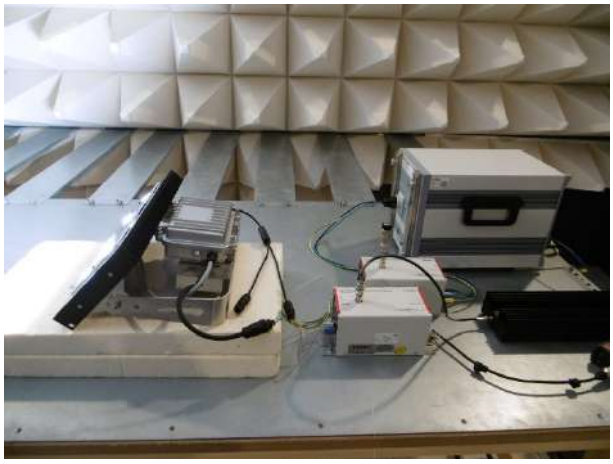
CFG-$D_{50\,\%}$



Signal port

CFG-N

CFG-$D_{50\,\%}$



Test requirements	EN 61547:2009: criterion A
Test measurement	Normal behavior, status A
VERDICT	**PASS**

ANNEX XI	**Voltage dips and voltage interruption**
Standards and applicable points	EN 61547:2009, Point 5.8
Sample identification	778-QL21-S01
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy
Test date	19/05/2021
Environmental conditions	Temperature 23 °C ± 3 °C r.h. 45 % ± 15 % atmospheric pressure 960 mbar ± 100 mbar
Instruments	Ultra Compact Tester (Burst/Surge/Power Fails) EmTest UCS 500 N5 QL-IN-144 Variac Belotti Variatori V40NC QL-IN-152 Oscilloscope Yokogawa DLM2022 QL-IN-179 High voltage probe Testec TT-HVP 15 HF QL-IN-277 Multimeter HIOKI DT4282 QL-IN-349 Pressure-temperature-humidity datalogger Deltaohm HD50G14bNTC QL-IN-282
Test procedure	Method according to EN 61000-4-11:2004 Repetition: 10 seconds Number of applications: 3 Voltage dips: 70 % for 10T (200 ms) Voltage short interruptions: 0 % for 0,5T (10 ms) Phase angle: 0°, 180° Input: AC power port
Set-up photo	

CFG-N

CFG-$D_{50\,\%}$

Test requirements	EN 61547:2009: criterion C for Voltage dips; criterion B for Voltage interruption
Test measurement	Voltage dips: normal behavior, A Voltage interruption: normal behavior, A
VERDICT	**PASS**

ANNEX XII Photographs

Portable DMX controller

	Test report	1081-QL21-R01 ver. 0
	Applicant	Coemar Lighting Srl Via Carpendolo, 90 46043 - Castiglione delle Stiviere (MN) - Italy
	Type	SUNLITE

TEST REPORT Nr. 1081-QL21-R01 ver. 0

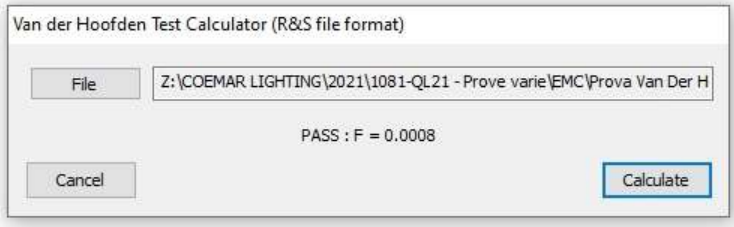
Addresses Indirizzi		
Applicant Richiedente	Coemar Lighting Srl - Via Carpenedolo, 90 - 46043 - Castiglione delle Stiviere (MN) - Italy	
Manufacturer Produttore	Same as applicant/Come il richiedente	
Dates and authorization Date e autorizzazioni		
Sampling Campionamento	Sampling performed by the applicant /Campionamento a carico del cliente	
Report Date Data emissione rapporto di prova	23/08/2021	
Written by Preparato da	Ing. Matteo Cavalli	
Authorized by Autorizzato da	Ing. Michele Peschiera	
Sample under test (data declared by the applicant and under applicant's responsibility) Dispositivo sottoposto a prova (Dati forniti dal richiedente e sotto la sua responsabilità)		
Sample description Descrizione dispositivo	LED luminaire/Apparecchio di illuminazione a LED	
Type Modello	SUNLITE	
Light source Sorgente luminosa	LED (specific model not declared)	
Power supply Alimentazione	AC 230 V, 50 Hz	
Driver model Modello alimentatore	Menawel HLG-320	
Single led supply current Corrente sul singolo led	750 mA	
Applicable Standard Norme applicabili		
	EN 62493:2010	

Annex **Annesso**	**Test Name** **Identificazione prova**	**Test Procedure** **Procedura di prova**	**Test Requirement** **Requisito di prova**	**Verdict / Result** **Esito / Risultato**
I	Assessment of lighting equipment related to human exposure to electromagnetic Field (Van der Hoofden test)	EN 62493:2010, Section 6	Factor F ≤ 1	PASS
II	Photographs	-	-	-

Test configuration	**Description**
CFG 1	Sample under test supplied with 230 V_{AC}, 50 Hz

ANNEX I	**Van der Hoofden test**
Standards and applicable points	EN 62493:2010, Section 6
Sample identification	1081-QL21-S01
Test configuration	CFG 1
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy
Test date	23/08/2021
Environmental conditions	Ambient Temperature (23 ± 5) °C Relative Humidity (25 to 75) % Ambient Pressure (860 to 1060) mbar
Instruments	Semi Anechoic Chamber Frankonia FF160046 QL-IN-156 Meter Stanley Fatmax QL-IN-242 Van der Hoofden test-head Schwarzbeck VDHH 9502 QL-IN-363 Multimeter HIOKI DT4282 QL-IN-349 Pressure-temperature-humidity datalogger Deltaohm HD50G14bNTC QL-IN-282
Test procedure	According to EN62493:2010 Sample under test positioned 50 cm from Van der Hoofden antenna

Frequency range	RBW	Measurement time	Frequency step	Detector
20 kHz to 150 kHz	200 Hz	100 ms	220 Hz	Peak
150 kHz to 10 MHz	9 kHz	20 ms	10 kHz	Peak

Test requirements	Factor F ≤ 1
Test measurement	
VERDICT / RESULT	PASS

ANNEX II Photographs

TEST REPORT 1081-QL21-R01 ver. 0

Addresses Indirizzi		
Applicant Richiedente	Coemar Lighting Srl - Via Carpenedolo, 90 - 46043 - Castiglione delle Stiviere (MN) - Italy	
Manufacturer Produttore	Same as applicant/Come il richiedente	
Dates and authorization Date e autorizzazioni		
Report Date Data emissione rapporto di prova	23/08/2021	
Written by Preparato da	Ing. Michele Peschiera	
Authorized by Autorizzato da	Ing. Carsten Seyring	
Sample under test (data declared by the applicant and under applicant's responsibility) Dispositivo sottoposto a prova (dati forniti dal richiedente e sotto la sua responsabilità)		
Sample description Descrizione dispositivo	LED luminaire/Apparecchio di illuminazione a LED	
Type Modello	SUNLITE	
Light source Sorgente luminosa	N° 2 LED Bridgelux BXRE V13- 27S2001- C - 72/73 THRIVE generazione 7 N° 6 LED Bridgelux BXRE V13- 65S2001- C - 73/74 THRIVE generazione 7 (worst case)	
Secondary optic Ottica secondaria	15° LEDIL CP17417_YASMEEN_70_S_B	
Power supply Alimentazione	AC 230 V, 50 Hz	
Driver model Modello alimentatore	Meanwel HLG-320	
Single led supply current Corrente sul singolo led	750 mA	

Applicable standards Norme applicabili	
	IEC TR 62778:2014 (application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires)
Test Setup Setup di prova	
Test instrument Strumenti di misura	Spectrometer Bentham Ltd IDR300PSL QL-IN-009 (spectrometer calibration lamps QL-IN-015, QL-IN-016, QL-IN-017) Multimeter ISOTECH idm 303 QL-IN-085 Meter Stanley FATMAX autolock QL-IN-242 Temperature datalogger Testo 174T QL-IN-021 Numeral wattmeter HIOKI 3333 power hitester QL-IN-182
Other test instrument used if risk group > 1 Altri Strumenti di misura utilizzati in caso di gruppo di rischio >1	Mirror Photogoniometer LMT Gmbh GO-DS 2000 QL-IN-001 Temperature-humidity datalogger Testo 174H QL-IN-181
Test ambient temperature Temperatura ambiente durante la prova	25,0 °C ± 1,0 °C. Ambient temperature registrations available on request Le registrazioni delle temperature ambientali sono disponibili su richiesta

Test Name **Identificazione prova**	**Test Procedure** **Procedura di prova**	**Test Measurement** **Misure di prova**	**Overall risk group** **Gruppo di rischio complessivo**
Blue Light Risk Group (distance 200 mm)	IEC TR 62778:2014	Blue light	**RISK GROUP 1**
Blue Light Risk Group 1 threshold distance of the tested version (For derived versions see formula in annex III)	IEC TR 62778:2014	Blue light	**Not applicable**

Uncertainty Incertezza	
Radiance Radianza	3,6 %
Irradiance Irradianza	3,3 %
Risk Group 1 threshold distance Distanza di soglia gruppo di rischio 1	Not applicable
Statement Dichiarazione	The measured value (y) and the associated expanded uncertainty (U) represent the interval ($y \pm U$) which contains the value of the measured quantity with a probability of approximately 95 % and a coverage factor $k = 2$. If the limits are not breached by the measured value, then the product is considered compliant with the specification. Il valore misurato (y) e l'incertezza estesa associata (U) rappresentano l'intervallo ($y \pm U$) che contiene il valore della grandezza misurata con una probabilità di circa il 95 % e un fattore di copertura $k = 2$. Il prodotto viene considerato conforme alle specifiche se i limiti non vengono superati dal valore misurato.

ANNEX I	**Blue light risk group IEC TR 62778**
Standard	IEC TR 62778:2014
Sample N°	1081-QL21-S01
Place of test	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy
Date of test	23/08/2021
Test procedure	In accordance to IEC TR 62778 figure 7 the sample was measured at a distance of 200 mm to the sensor and blue light evaluated. If blue light risk at 200 mm is > 1 Out of E_B and E the factor $K_{B,v}$ was calculated with $K_{B,v}=E_B/E$ The threshold illuminance E_{thr} was calculated with $E_{thr}=E_B/K_{B,v}$, with E_B = 1 W/m² By measuring the luminous intensity distribution of the luminaire on a mirror based photogoniometer, the maximum intensity I_{max} was determined. With the photometric square law the threshold distance d_{thr} with E_{thr} was calculated.
Test measurements	Sample at a distance of 200 mm:

	Emission limits for risk groups of continuous wave lamps								
Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt – RG0		Low risk – RG1		Mod risk – RG2	
				Limit	Result	Limit	Result	Limit	Result
Blue light	$B(\lambda)$	L_B	W•m^{-2}•sr^{-1}	**100**	**FAIL**	10000	**5,80E+03**	4000000	-
Blue light, small source	$B(\lambda)$	E_B	W•m^{-2}	**0,01***	**not applicable**	1,0	-	400	-
* Small source defined as one with α < 0,011 radian. Averaging field of view at 10000 s is 0,1 radian.									

The following table is applicable only if Blue light risk at 200 mm is > 1

$K_{B,v}$	I_{max} [cd]	E_{thr} [lx]	d_{thr} [m]
-	-	-	-

TEST RESULT	**RISK GROUP 200 mm: RISK GROUP 1** **RISK GROUP THRESHOLD DISTANCE: not applicable**

ANNEX II — Labeling in acc. with IEC 60598-1:2014+A1:2017

For complete and updated marking and labeling requirements please see IEC 60598-1:2014+A1:2017.

Example:

if Blue light risk at 200 mm is > 1:

For fixed luminaires the manufacturer's instructions provided with the luminaire shall give the following text:

The luminaire should be positioned so that prolonged staring into the luminaire at a distance of x m is not expected.

For portable and handheld luminaires and for fixed luminaires if the light source is directly visible during luminaire maintenance, the luminaire shall be marked with the following warning symbol:

Do not stare at the operating light source	

ANNEX III — Extension of results on derived versions

if Blue light risk at 200 mm is ≤ 1:
see IEC TR 62778:2014 Annex D

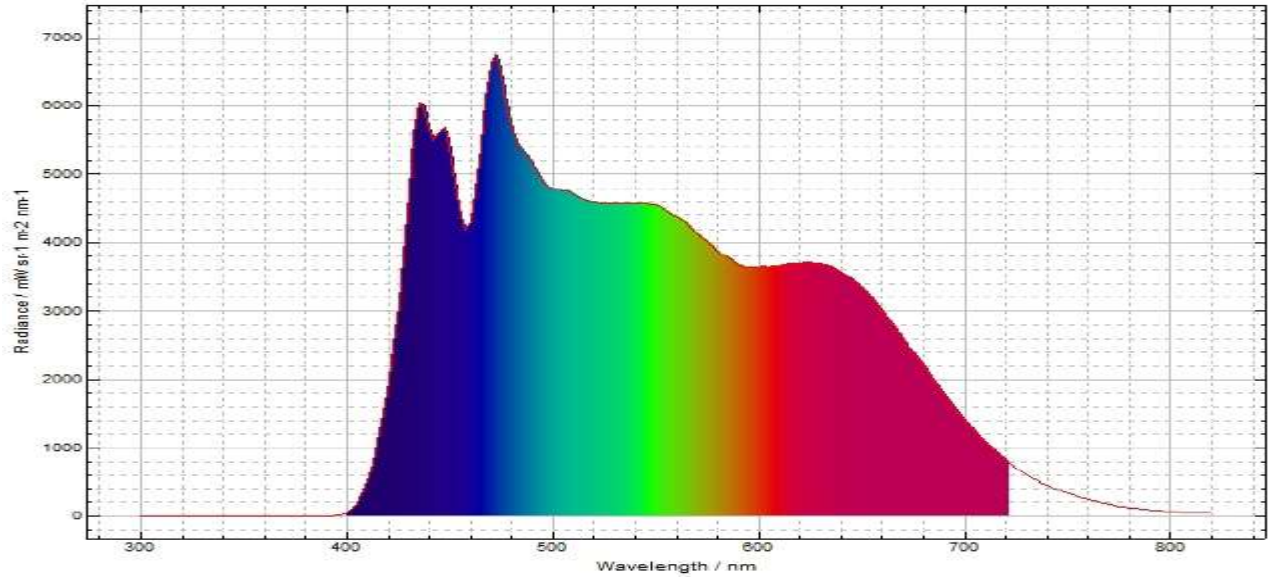
if Blue light risk at 200 mm is > 1:
applicable formula for derived versions

$$d_{thr}[m] = \sqrt{\frac{I_{d\_max}[cd]}{E_{thr}[lx]}}$$

where

I_{d_max} [cd]= Max luminous intensity in cd evaluated from the luminous intensity distribution of the derived version

ANNEX IV — Photograph



TEST REPORT
IEC 60598-2-3 & IEC 60598-2-5
Luminaires
Part 2: Particular requirements
Section 3: Luminaires for road and street lighting
Section 5: Luminaires for flood lighting

Report Number. ..... :	1081-QL21-R03 ver.0
Date of issue ..... :	2021-09-24
Total number of pages ..... :	112
Testing ..... :	—
Date of receipt of test item ..... :	2021-08-16
Date (s) of performance of tests .... :	2021-08-18 to 2021-09-09
Name of Testing Laboratory preparing the Report ..... :	QUALILAB S.r.l. Via Trento, 87 – 25020 – Capriano Del Colle (BS) - Italy
Tested by (name + signature) ..... :	Davide Porta
Approved by (+ signature) ..... :	Michele Peschiera
Applicant's name ..... :	Coemar Lighting S.r.l.
Address ..... :	Via Carpenedolo, 90 - 46043 - Castiglione delle Stiviere (MN) - Italy
Test specification:	
Standard ..... :	IEC 60598-2-3:2002, AMD1:2011 and IEC 60598-2-5:2015 used in conjunction with IEC 60598-1:2014, AMD1:2017
Test procedure ..... :	CE Marking
Non-standard test method ..... :	N/A
Test item description ..... :	Luminaires for road and street lighting and floodlights
Trade Mark ..... :	Coemar
Manufacturer ..... :	Coemar Lighting S.r.l.
Address ..... :	Via Carpenedolo, 90 - 46043 - Castiglione delle Stiviere (MN) - Italy
Name and address of factory……:	Coemar Lighting S.r.l. Via Carpenedolo, 90 - 46043 - Castiglione delle Stiviere (MN) - Italy
Model/Type reference ..... :	Series SunLite LED
Ratings ..... :	220-240 V~, 50/60 Hz, 225 W, Pf > 0,97 ta -25 + 40 °C, IP65, IK10 Class I

List of Attachments (including a total number of pages in each attachment):

Test results:	42 pages
CENELEC COMMON MODIFICATIONS (EN)	Attachment 1: 4 pages
Requirements of IEC 61347-2-11:2011 + AMD:2017	Attachment 2: 31pages
IK TEST according to IEC/TR 62696	Attachment 3: 2 pages
Photographs	Attachment 4: 8 pages
Instruction	Attachment 5: 25 pages

Summary of testing:

Tests performed (name of test and test clause):				**Testing location:**
3.5	Marking	Applicable	Pass	QUALILAB
3.6	Construction	Applicable	Pass	QUALILAB
3.7	Creepage distances and clearances	Applicable	Pass	QUALILAB
3.8	Provision for earthing	Applicable	Pass	QUALILAB
3.9	Terminals	Applicable	Pass	QUALILAB
3.10	External and internal wiring	Applicable	Pass	QUALILAB
3.11	Protection against electric shock	Applicable	Pass	QUALILAB
3.12	Endurance test and thermal tests	Applicable	Pass	QUALILAB
3.13	Resistance to dust and moisture	Applicable	Pass	QUALILAB
3.14	Insulation resistance and electric strength	Applicable	Pass	QUALILAB
3.15	Resistance to heat, fire, and tracking	Applicable	Pass	QUALILAB
	Testing location: QUALILAB S.r.l. Via Trento, 87 – 25020 – Capriano Del Colle (BS) Italy			

Summary of compliance with National Differences:

List of countries addressed

Group Differences are applicable for CENELEC member countries: Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom and CENELEC affiliate member countries: Turkey. published on IECEE website.

☒ The product fulfils the requirements of IEC 60598-2-3:2002, AMD1:2011 and IEC 60598-2-5:2015 used in conjunction with IEC 60598-1:2014, AMD1:2017
EN 60598-2-3-2003 including the corrigendum EC:2005 + EN 60598-2-3-2003/A1:2011 and EN 60598-2-5:2015 used in conjunction with EN 60598-1:2015 + AC:2015 +AC 2016 + EN 60598-1:2015/A1:2018

Luminaires have been also evaluated to check the Particular requirements for miscellaneous electronic circuits used with luminaires IEC 6124-2-11:2001+ AMD1:2019 used in conjunction with IEC 61347-1:2015, AMD1:2017 and EN 6124-2-11:2001+ A1:2019 used in conjunction with EN 61347-1:2015 see also attachment 2 of the test report.

Luminaires have been also evaluated to check the photobiological effects according to the standard IEC / TR 62778:2014 (Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires) and the results are shown in the following test report:

Test Report No. Qualilab, 1081-QL18-R02 ver.0 dated 23-08-2021
Bridgelux Gen 7 V13 BXRE-65S2001-C73 with current at 750 mA for each single branch of the COB Led and colour temperature 6500 K
COB Led was classified as Risk Group 1

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Representative label for all models, inside the luminaires

Trade marks

Models

Supplemetary information

Label

Test item particulars.....:	
Classification of installation and use.....:	Luminaire suitable for normally flammable surface, for normal use
Supply Connection .....:	Supply cord or waterproof connector (optional)
.....:	

General remarks:

"(See Attachment #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

The tested products also comply with the requirements of IEC / EN 62493:2015 without tests.
(See clause 4.2 of IEC / EN 62493:2015).

The measurements, if not differently stated, are carried out with a supply voltage of 220-240 Vac, 50 Hz instead of 220-240 Vac, 60Hz ; the results are deemed to be equivalent

Throughout this report a ☒ comma / ☐ point is used as the decimal separator.

Clause numbers between brackets refer to clauses in IEC 60598-1

General product information:

Series SunLite LED

Luminaires for road and street lighting or floodlight, designed for ceiling, or suspension installation.
The enclosure is made of cast aluminium. Optical compartment made up of 8 Cob LED, type Bridgelux Gen 7 V13
The fixture is equipped with a DMX circuit for adjusting the intensity of the light

Protection degree: IP65
Protective screen made of polycarbonate.
Insulation Class: I.
Dimension without the bracket: 400 x 200 x 90 mm. Weight 10,5 kg
Height with bracket 306 mm

The complete tests have been carried out on models 2021F073G101O00000034060133
which was considered as representative of the whole models series.

The differences among the models in the series consist in the number of LED used, and the electronic components mounted in each single version

These luminaires for road and street lighting are tested according to IEC/TR 62696:2011 “Luminaires – Application of the IK code according to the standard IEC 62262”.
Information for the Italian market: the IEC standard is considered equivalent to the Italian standard CEI 34-139 2012 –

Luminaires passed the test for IK10

Series / Models	Description	Supply voltage V	Hz	P max W	Protection class	N° Led	Iout max A	IP degree	t_a
SunLite LED F073G001H	Narrow Lenses, Black	220-240	50/60	225	Class I	8	5,3	IP65 IK10	40 °C
SunLite LED F073G001I	Medium Lenses, Black	220-240	50/60	225	Class I	8	5,3	IP65 IK10	40 °C
SunLite LED F073G001L	Wide Lenses, Black	220-240	50/60	225	Class I	8	5,3	IP65 IK10	40 °C
SunLite LED F073G001O	Ultrawide Lenses, Black	220-240	50/60	225	Class I	8	5,3	IP65 IK10	40 °C
SunLite LED F073G101H	Narrow Lenses, Silver	220-240	50/60	225	Class I	8	5,3	IP65 IK10	40 °C
SunLite LED F073G101I	Medium Lenses, Silver	220-240	50/60	225	Class I	8	5,3	IP65 IK10	40 °C
SunLite LED F073G101L	Wide Lenses, Silver	220-240	50/60	225	Class I	8	5,3	IP65 IK10	40 °C
SunLite LED F073G101O	Ultrawide Lenses, Silver	220-240	50/60	225	Class I	8	5,3	IP65 IK10	40 °C

LEGEND models

20xx	years
F073	Series SunLite
G001H	letter identifies in order: light source, case colour, type of fork, IP degree and optics mounted
* (10 digit)	Code for internal use of the manufacturer
0001	serial number

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

3.2 (0)	**GENERAL TEST REQUIREMENTS**		**Pass**
3.2 (0.3)	More sections applicable..... :	Yes ☒ No ☐ Section/s: IEC 61347-2-11:2001+ AMD1:2019	—
3.2 (0.5)	Components	(See Annex 1)	—
3.2 (0.7)	**Information for luminaire design in light sources standards**		—
3.2 (0.7.2)	Light source safety standard ..... :		—
	Luminaire design in the light source safety standard		Pass

3.4 (2)	**CLASSIFICATION OF LUMINAIRES**		**Pass**
3.4 (2.2)	Type of protection .....:	Class I	Pass
3.4 (2.3)	Degree of protection.....:	IP65	—
3.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces.....:	Yes ☒ No ☐	—
3.4 (2.5)	Luminaire for normal use .....:	Yes ☒ No ☐	—
	Luminaire for rough service .....:	Yes ☐ No ☒	—
3.4 (-)	Modes of installation of road or street lighting		—
	a) on a pipe	Yes ☐ No ☒	—
	b) on a mast arm	Yes ☒ No ☐	—
	c) on a post top	Yes ☐ No ☒	—
	d) on span or suspension wires	Yes ☐ No ☒	—
	e) on a wall	Yes ☒ No ☐	—

3.5 (3)	**MARKING**		**Pass**
3.5 (3.2)	Mandatory markings	coemar	Pass
	Position of the marking		Pass
	Format of symbols/text	Symbols > 5 mm. Letters > 2 mm.	Pass
3.5 (3.3)	Additional information	On Instruction sheet	Pass
	Language of instructions	Checked English, will be translated according to the destination market	Pass
3.5 (3.3.1)	Combination luminaires		N/A
3.5 (3.3.2)	Nominal frequency in Hz	On the label 50/60 Hz	Pass
3.5 (3.3.3)	Operating temperature		N/A

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
3.5 (3.3.5)	Wiring diagram		Pass
3.5 (3.3.6)	Special conditions		N/A
3.5 (3.3.7)	Metal halide lamp luminaire – warning	LED modules	N/A
3.5 (3.3.8)	Limitation for semi-luminaires		N/A
3.5 (3.3.9)	Power factor and supply current		Pass
3.5 (3.3.10)	Suitability for use indoors		Pass
3.5 (3.3.11)	Luminaires with remote control		N/A
3.5 (3.3.12)	Clip-mounted luminaire – warning		N/A
3.5 (3.3.13)	Specifications of protective shields		Pass
3.5 (3.3.14)	Symbol for nature of supply	220-240 V~	Pass
3.5 (3.3.15)	Rated current of socket outlet		N/A
3.5 (3.3.16)	Rough service luminaire		N/A
3.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments		N/A
3.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
3.5 (3.3.19)	Protective conductor current in instruction if applicable		N/A
3.5 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
3.5 (3.3.21)	Non-replaceable and non-user replaceable light sources information provided	Non-user replaceable light sources. Warning in instruction sheet	Pass
3.5 (3.3.22)	Controllable luminaires, classification of insulation provided	Warning in instruction sheet: "Insulation between supply mains and control line shall be at least basic".	Pass
3.5 (3.3.23)	Luminaire without control gear provided with necessary information for selection of appropriate component		N/A
3.5 (3.3.24)	If not supplied with terminal block, information on the packaging		N/A
3.5 (3.4)	Test with water	The label is adhesive polyester	Pass
	Test with hexane		Pass
	Legible after test		Pass
	Label attached		Pass
3.5 (-)	Additional information in instruction leaflet		Pass
	a) Design attitude	See instruction sheet	Pass
	b) Weight	10,5 Kg	Pass

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
	c) Overall dimensions	Optical reflector 400 x 200 x 90 mm Dimension with bracket 400 x 200 x 306 mm	Pass
	d) Maximum projected area if applicable	0,11 mm^2	Pass
	e) Cross-sectional area of wires if applicable		N/A
	f) Suitability for indoors use		Pass
	g) Dimensions of the compartment		N/A
	h) Torque setting to be applied to bolts or screws	See instruction sheet	Pass
	i) Maximum mounting height	< 15 m	Pass
5.5 (3)	**MARKING (IEC 60598-2-5:2015)**		**Pass**
5.5 (-)	Additional information if applicable		Pass
	a) Operation position	See instruction sheet	Pass
	b) Weight and dimensions	See instruction sheet	Pass
	c) Maximum protected area	0,11 mm^2	Pass
	d) Limitation of use indoors and/or outdoor	Indoors and outdoor	Pass
	e) Maximum mounting height if ≤ 5 m	Height > 5 m	N/A
3.6 (4)	**CONSTRUCTION**		**Pass**
3.6 (4.2)	Components replaceable without difficulty	Control gear can be replaced only by the manufacturer or the Assistance Service or authorized highly skilled personnel.	N/A
3.6 (4.3)	Wireways smooth and free from sharp edges	No sharp edges, burrs or similar hazards	Pass
3.6 (4.4)	**Lamp holders**		**N/A**
3.6 (4.4.1)	Integral lamp holder		N/A
3.6 (4.4.2)	Wiring connection		N/A
3.6 (4.4.3)	Lamp holder for end-to-end mounting		N/A
3.6 (4.4.4)	Positioning	LED modules used	N/A
	- pressure test (N) ..... :		—
	After test the lamp holder comply with relevant standard sheets and show no damage		N/A
	After test on single-capped lamp holder the lamp holder has not moved from its position and show no permanent deformation		N/A

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
	- bending test (N) ..... :		—
	After test the lamp holder have not moved from its position and show no permanent deformation		N/A
3.6 (4.4.5)	Peak pulse voltage	Ignitors not used	N/A
3.6 (4.4.6)	Centre contact		N/A
3.6 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
3.6 (4.4.8)	Lamp connectors		N/A
3.6 (4.4.9)	Caps and bases correctly used		N/A
3.6 (4.4.10)	Light source for lamp holder or connection according IEC 60061 not connected another way		N/A
3.6 (4.5)	**Starter holders**		**N/A**
	Starter holder in luminaires other than class II	Starter holder not used	N/A
	Starter holder class II construction		N/A
3.6 (4.6)	**Terminal blocks**		**N/A**
	Tails		N/A
	Unsecured blocks		N/A
3.6 (4.7)	**Terminals and supply connections**		**Pass**
3.6 (4.7.1)	Contact to metal parts	Not frequently adjusted	Pass
3.6 (4.7.2)	Test 8 mm live conductor	By mean of supply cord the controlgear or waterproof connector (Optional)	Pass
	Test 8 mm earth conductor		Pass
3.6 (4.7.3)	Terminals for supply conductors	Waterproof connector	Pass
3.6 (4.7.3.1)	Welded method and material		N/A
	- stranded or solid conductor		N/A
	- spot welding		N/A
	- welding between wires		N/A
	- Type Z attachment		N/A
	- mechanical test according to 15.6.2		N/A
	- electrical test according to 15.6.3		N/A
	- heat test according to 15.6.3.2.3 and 15.6.3.2.4		N/A
3.6 (4.7.4)	Terminals other than supply connection		N/A
3.6 (4.7.5)	Heat-resistant wiring/sleeves		N/A
3.6 (4.7.6)	Multi-pole plug	Waterproof connector Separately approved	Pass

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
	- test at 30 N		Pass
3.6 (4.8)	**Switches**		**N/A**
	- adequate rating	Switches not used.	N/A
	- adequate fixing		N/A
	- polarized supply		N/A
	- compliance with IEC 61058-1 for electronic switches		N/A
3.6 (4.9)	**Insulating lining and sleeves**		**N/A**
3.6 (4.9.1)	Retainment		N/A
	Method of fixing..... :	.	N/A
3.6 (4.9.2)	Insulated linings and sleeves:		N/A
	Resistant to a temperature > 20 °C to the wire temperature or		N/A
	a) & c) Insulation resistance and electric strength		N/A
	b) Ageing test. Temperature (°C)..... :		N/A
3.6 (4.10)	**Double or reinforced insulation**		**N/A**
3.6 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		N/A
	Safe installation fixed luminaires		N/A
	Capacitors and switches	Capacitors and switches not used	N/A
	Interference suppression capacitors according to IEC 60384-14	Capacitors not used	N/A
3.6 (4.10.2)	Assembly gaps:		N/A
	- not coincidental		N/A
	- no straight access with test probe		N/A
3.6 (4.10.3)	Retainment of insulation:		N/A
	- fixed		N/A
	- unable to be replaced; luminaire inoperative		N/A
	- sleeves retained in position		N/A
	- lining in lamp holder		N/A
3.6 (4.10.4)	Protective impedance device		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N/A
	Y1 or Y2 capacitors comply with IEC 60384-14		N/A

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
3.6 (4.11)	**Electrical connections and current-carrying parts**		**Pass**
3.6 (4.11.1)	Contact pressure		Pass
3.6 (4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
3.6 (4.11.3)	Screw locking:		Pass
	- spring washer		Pass
	- rivets		N/A
3.6 (4.11.4)	Material of current-carrying parts	Relevant components are separately approved.	Pass
3.6 (4.11.5)	No contact to wood or mounting surface		Pass
3.6 (4.11.6)	Electro-mechanical contact systems		N/A
3.6 (4.12)	**Screws and connections (mechanical) and glands**		**Pass**
3.6 (4.12.1)	Screws not made of soft metal	The screws are made of stainless steel.	Pass
	Screws of insulating material		N/A
	Torque test: torque (Nm); part ..... :	1,2 Nm; Ø 2,9 x 6 mm Metric screw fixing the holder.	Pass
	Torque test: torque (Nm); part ..... :	1,2 Nm; Ø 3,8 x 12 mm Metric screw for fixing the primary bracket to optical compartment.	Pass
	Torque test: torque (Nm); part ..... :	1,2 Nm; Ø 3,8 x 6 mm Metric screw with spring washer fixing the controlgear to the backet.	Pass
	Torque test: torque (Nm); part ..... :	1,2 Nm; Ø 3,9 x16 mm Metric screw fixing the protection screen.	Pass
	Torque test: torque (Nm); part ..... :	2,5 Nm; Ø 5,8 x 21 mm Metric screw fixing the cover of the electric compartment.	Pass
	Torque test: torque (Nm); part ..... :	2,5 Nm; Ø 5,8 x 16 mm Metric screw with nuts and washer fixing the bracket to optical compartment.	Pass

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
	Torque test: torque (Nm); part ..... :	8,0 Nm; Ø 7,8 x 20 mm Metric screw with nuts and washer fixing the bracket. Anti-rotation stop	Pass
	Torque test: torque (Nm); part ..... :		N/A
3.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
3.6 (4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm) ..... :		N/A
	- lamp holder; torque (Nm)..... :		N/A
	- push-button switches; torque 0,8 Nm ..... :		N/A
3.6 (4.12.5)	Screwed glands; force (Nm) ..... :	Plastic cable gland. M16 x 1,5 Fixing by the manufacturer	N/A
3.6 (4.13)	**Mechanical strength**		**Pass**
3.6 (4.13.1)	Impact tests:		Pass
	- fragile parts; energy (Nm)..... :		N/A
	- other parts; energy (Nm)..... :	Protection screen made of polycarbonate Body made of aluminium 0,70	Pass
	1) live parts		Pass
	2) linings		N/A
	3) protection		Pass
	4) covers		Pass
3.6 (4.13.2)	Metal parts have adequate mechanical strength		Pass
3.6 (4.13.3)	Straight test finger	30 N Body of the luminaire	Pass
3.6 (4.13.4)	Rough service luminaires		N/A
	- IP54 or higher		N/A
	a) fixed		N/A
	b) hand-held		N/A
	c) delivered with a stand		N/A
	d) for temporary installations and suitable for mounting on a stand		N/A
3.6 (4.13.6)	Tumbling barrel		N/A
3.6 (4.14)	**Suspensions, fixings and means of adjusting**		**Pass**
3.6 (4.14.1)	Mechanical load:		Pass
	A) four times the weight	Mounting on the ceiling Weight 10,5 kg, tested with additional 42 kg for one hour	Pass

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
	B) torque 2,5 Nm		N/A
	C) bracket arm; bending moment (Nm) ..... :		Pass
	D) load track-mounted luminaires		N/A
	E) clip-mounted luminaires glass-shelve. Thickness (mm) ..... :		N/A
	Metal rod. diameter (mm) ..... :		N/A
	Fixed luminaire or independent control gear without fixing devices		N/A
3.6 (4.14.2)	Load to flexible cables		N/A
	Mass (kg) ..... :		—
	Stress in conductors (N/mm²) ..... :		N/A
	Mass (kg) of semi-luminaire ..... :		N/A
	Bending moment (Nm) of semi-luminaire ..... :		N/A
3.6 (4.14.3)	Adjusting devices:		Pass
	- flexing test; number of cycles ..... :	45 cycles	Pass
	- strands broken ..... :		Pass
	- electric strength test afterwards	1480 V	Pass
3.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
3.6 (4.14.5)	Guide pulleys		N/A
3.6 (4.14.6)	Strain on socket-outlets		N/A
3.6 (4.15)	**Flammable materials**		**Pass**
	- glow-wire test 650 °C ..... :	See Test Table 3.15 (13.3.2)	Pass
	- spacing ≥30 mm		N/A
	- screen withstanding test of 13.3.1		N/A
	- screen dimensions		N/A
	- no fiercely burning material		Pass
	- thermal protection		N/A
	- electronic circuits exempted		N/A
3.6 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		N/A
	a) construction		N/A
	b) temperature sensing control		N/A
	c) surface temperature		N/A
3.6 (4.16)	**Luminaires for mounting on normally flammable surfaces**		**Pass**
	No lamp control gear ..... :	(Compliance with Section 12)	N/A

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
	Provided with adaptor for a track meet the requirements for direct mounting on normally flammable surfaces		Pass
3.6 (4.16.1)	Lamp control gear spacing:		N/A
	- spacing 35 mm		N/A
	- spacing 10 mm		N/A
3.6 (4.16.2)	Thermal protection:		Pass
	- in lamp control gear		N/A
	- external		N/A
	- fixed position		N/A
	- temperature marked lamp control gear	The luminaire uses control gear triangle marked from 110 °C	Pass
3.6 (4.16.3)	Design to satisfy the test of 12.6	(See clause 12.6)	N/A
3.6 (4.17)	**Drain holes**		**N/A**
	Clearance at least 5 mm		N/A
3.6 (4.18)	**Resistance to corrosion**		**Pass**
3.6 (4.18.1)	- rust-resistance		Pass
3.6 (4.18.2)	- season cracking in copper	Relevant components are separately approved	Pass
3.6 (4.18.3)	- corrosion of aluminium	Painted aluminium	Pass
3.6 (4.19)	Ignitors compatible with ballast	Not used	N/A
3.6 (4.20)	Rough service vibration		N/A
3.6 (4.21)	**Protective shield**		**N/A**
3.6 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N/A
	Shield of glass if tungsten halogen lamps		N/A
3.6 (4.21.2)	Particles from a shattering lamp does not impair safety		N/A
3.6 (4.21.3)	No direct path		N/A
3.6 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment ..... :	See Test Table 3.15 (13.3.2)	N/A
3.6 (4.22)	Attachments to lamps do not cause overheating or damage		N/A
3.6 (4.23)	Semi-luminaires comply Class II		N/A
3.6 (4.24)	**Photobiological hazards**		**N/A**
3.6 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N/A

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
3.6 (4.24.2)	Retinal blue light hazard		Pass
	Class of risk group assessed according to IEC/TR 62778 .....:	RISK GROUP 1	—
	Luminaires with E_{thr} :		N/A
	a) Fixed luminaires		N/A
	- distance x m, borderline between RG1 and RG2 .. :		N/A
	- marking and instruction according 3.2.23		N/A
	b) Portable and handheld luminaires		N/A
	- marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778		N/A
	Portable luminaires for children IEC 60598-2-10 and Mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200 mm according to IEC/62778		N/A
3.6 (4.25)	**Mechanical hazard**		**Pass**
	No sharp point or edges		Pass
3.6 (4.26)	**Short-circuit protection**		**N/A**
3.6 (4.26.1)	Adequate means of uninsulated accessible SELV parts	SELV parts are not accessible	N/A
3.6 (4.26.2)	Short-circuit test with test chain according 4.26.3		N/A
	Test chain does not melt through		N/A
	Test sample does not exceed values of Table 12.1 and 12.2		N/A
3.6 (4.27)	**Terminal blocks with integrated screwless earthing contacts**		**N/A**
	Test according Annex V		N/A
	Pull test of terminal fixing (20 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Pull test of mechanical connection (50 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Voltage drop test, resistance < 0,05 Ω		N/A
3.6 (4.28)	**Fixing of thermal sensing control**		**N/A**
	Not plug-in or easily replaceable type		N/A
	Reliably kept in position		N/A
	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N/A
	Not outside the luminaire enclosure		N/A
	Test of adhesive fixing:		N/A

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
	Max. temperature on adhesive material (°C) ..... :		—
	100 cycles between t min and t max		N/A
	Temperature sensing control still in position		N/A
3.6 (4.29)	**Luminaires with non-replaceable light source**		**N/A**
	Not possible to replace light source		N/A
	Live part not accessible after parts have been opened by hand or tools		N/A
3.6 (4.30)	**Luminaires with non-user replaceable light source**		**Pass**
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		N/A
	Minimum two fixing means	> 12 screws provided	Pass
3.6 (4.31)	**Insulation between circuits**		**Pass**
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		Pass
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3	Control terminals are basic insulated to LV Supply	Pass
3.6 (4.31.1)	SELV circuits		Pass
	Used SELV source	42 Vdc	Pass
	Voltage ≤ ELV		N/A
	Insulating of SELV circuits from LV supply		Pass
	Insulating of SELV circuits from other non SELV circuits		N/A
	Insulating of SELV circuits from FELV		N/A
	Insulating of SELV circuits from other SELV circuits	DMX	Pass
	SELV circuits insulated from accessible parts according Table X.1		Pass
	Plugs not able to enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Plugs and socket-outlets does not have protective conductor contact		N/A
3.6 (4.31.2)	FELV circuits		N/A
	Used FELV source		N/A
	Voltage ≤ ELV		N/A
	Insulating of FELV circuits from LV supply		N/A

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
	FELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Socket-outlets does not have protective conductor contact		N/A
3.6 (4.31.3)	Other circuits		N/A
	Other circuits insulated from accessible parts according Table X.1		N/A
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N/A
	- conductive parts are connected together		N/A
	- test according 7.2.3		N/A
	- conductive part does not cause an electric shock in case of an insulation fault		N/A
	- equipotential bonding in master/slave applications		N/A
	- master luminaire provided with terminal for accessible conductive parts of slave luminaires		N/A
	- slave luminaire constructed as class I		N/A
3.6 (4.32)	**Overvoltage protective devices**		**N/A**
	Comply with IEC 61643-11	SPD not used in the floodlight	N/A
	External to control gear and connected to earth:		N/A
	- only in fixed luminaires		N/A
	- only connected to protective earth		N/A
3.6.1 (-)	At least IP X3 or X5 respectively. IP .....:	IP65	Pass
	Column-integrated luminaires:		N/A
	- parts below 2,5 m. IP .....:		N/A
	- parts above 2,5 m. IP .....:		N/A
3.6.2 (-)	Suspension on span wires		Pass
3.6.3 (-)	Means for attaching the luminaire or external parts to its support appropriate to the weight		Pass
3.6.3.1 (-)	Static load test		Pass
	- drag coefficient.....:	1,2	Pass
	- loaded area (m²) .....:	0,11 m^2	Pass
	- used load (N) .....:	219 N	Pass

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
	- measured deformation (cm/m) .....:	< 0,5 cm/m Limit 2 cm/m	Pass
	- no rotation		Pass
3.6.4 (-)	Adjustable lamp holders	Cob LEDS	N/A
3.6.5 (-)	Luminaires installed above 5 m; glass covers shall be:		N/A
	a) glass that fractures into small pieces (test according to 3.6.5.1), or	Polycarbonate screen	N/A
	b) glass having a high impact shock resistance (test according to 3.6.5.2), or		N/A
	c) protected by any means to retain glass fragments		N/A
	For tunnel luminaires 3.6.5.1 apply		N/A
	Method of protection declared by the manufacturer		N/A
3.6.5.1 (-)	Protection by the use of glass that fractures into small pieces		N/A
	- number of particles is more than 40 .....:		N/A
3.6.5.2 (-)	Protection by the use of high impact resistant glass		N/A
3.6.5.2.1 (-)	Glass covers have high mechanical strength		N/A
	Test according IEC 62262 with test apparatus according IEC 60068-2-75 with impact energy of 5J on preconditioned sample		N/A
3.6.5.2.2 (-)	Glass covers not break into large pieces		N/A
	- test according 3.6.5.1, number of particles is more than 20 .....:		N/A
3.6.6 (-)	Connection compartment of column-integrated luminaire		N/A
	- provides adequate space		N/A
	- means for attachment		N/A
	- means for attachment of metal corrosion-resistant		N/A
3.6.7 (-)	Compliance with ISO standard or other.....:		N/A
3.6.8 (-)	Doors of column-integrated luminaires:		N/A
	- corrosion-resistant		N/A
	- opening only possible for an authorized person		N/A
	- impact test 5 Nm		N/A
	- sample show no damage		N/A
3.6.9 (-)	Column-integrated luminaire:		N/A
	- dimension of the cable entry slot (mm).....:		N/A
	- cable path from the slot to the connection compartment (mm) .....:		N/A

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
	- cable path free from obstruction that might cause abrasion of the cable		N/A

5.6 (4)	CONSTRUCTION (IEC 60598-2-5:2015)		Pass
5.6.1 (-)	At least IPX3 if for outdoor use	IP65	Pass
5.6.2 (-)	Lamp holder brackets and lamp supports		N/A
5.6.3 (-)	Adjusting means		N/A
5.6.4 (-)	Controlling components		N/A
5.6.5 (-)	Fixing device		Pass
	Wind force test	2400 N x 0,11 m^2 = 264 N	Pass
	Compliance		Pass
5.6.6 (-)	Locking of angular adjustment	Screws and nuts	Pass
5.6.7 (-)	Vibration resistance		N/A
5.6.8 (-)	Requirement on glass cover if mounting height > 5 m	Polycarbonate screen	N/A
	Compliance test		—
	Method of protection .....:		—

3.7 (11)	CREEPAGE DISTANCES AND CLEARANCES		Pass
3.7 (11.2.1)	Impulse withstand category (Normal category II)	Category II ☒ Category III ☐	—
	Category III according Annex U		N/A
	Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1		Pass
3.7 (11.2.2)	Creepage distances for frequency up to 30 kHz	See Test Table 3.7 (11.2) I	Pass
	Creepage distances for frequency over 30 kHz:		N/A
	- Control gear marked with $\hat{U}_{OUT}$ and f_{UOUT} according IEC 61347-1, clause 7.1, item w	See Test Table 3.7 (11.2) II	Pass
	- Requirements according IEC 60664-4 for control gear not covered by IEC 61347	See Test Table 3.7 (11.2) II	N/A
3.7 (11.2.3)	Clearances for frequency up to 30 kHz	See Test Table 3.7 (11.2) I	Pass
	Clearances distances for frequency over 30 kHz:		N/A
	- Control gear marked with U_P	See Test Table 3.7 (11.2) II	N/A
	- Requirements according IEC 60664-4 for control gear not covered by IEC 61347	See Test Table 3.7 (11.2) II	N/A

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

3.8 (7)	**PROVISION FOR EARTHING**		**Pass**
3.8 (7.2.1 + 7.2.3)	Accessible metal parts		Pass
	Metal parts in contact with supporting surface		Pass
	Resistance < 0,5 Ω..... :	0,07 Ω Between earth pole and enclosure of the luminaire.	Pass
	Self-tapping screws used		N/A
	Thread-forming screws		Pass
	Thread-forming screw used in a grove		N/A
	Earth makes contact first		N/A
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
	Protective earthing of the luminaire not via built-in control gear		N/A
3.8 (7.2.2 + 7.2.3)	Earth continuity in joints, etc.		N/A
3.8 (7.2.4)	Locking of clamping means		Pass
	Compliance with 4.7.3		Pass
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
3.8 (7.2.5)	Earth terminal integral part of connector socket		N/A
3.8 (7.2.6)	Earth terminal adjacent to mains terminals		Pass
3.8 (7.2.7)	Electrolytic corrosion of the earth terminal		Pass
3.8 (7.2.8)	Material of earth terminal		Pass
	Contact surface bare metal		Pass
3.8 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
3.8 (7.2.11)	Earthing core coloured green-yellow		Pass
	Length of earth conductor		Pass
3.8.1 (-)	Attachment prevented from rotation		Pass

3.9 (14)	**SCREW TERMINALS**		**N/A**
	Separately approved; component list	(See Annex 1)	N/A
	Part of the luminaire	(See Annex 3)	N/A

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
3.9 (15)	**SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS**		**Pass**
	Separately approved; component list..... :	(See Annex 1)	Pass
	Part of the luminaire ..... :	(See Annex 4)	N/A
3.10 (5)	**EXTERNAL AND INTERNAL WIRING**		**Pass**
3.10 (5.2)	**Supply connection and external wiring**		**Pass**
3.10 (5.2.1)	Means of connection ..... :	Supply cord or waterproof connector (Optional)	Pass
	Outdoor luminaire has not PVC insulated external wiring if not class III or SELV ≤ 25 V a.c./60 V d.c. or protected from outdoor environment		N/A
3.10 (5.2.2)	Type of cable..... :	H05RN-F supply of the control gear.	Pass
	Nominal cross-sectional area (mm²) ..... :	3 x 1,0 mm^2	Pass
	Cables equal to IEC 60227 or IEC 60245		Pass
3.10 (5.2.3)	Type of attachment, X, Y or Z	Type Z, supplied with the control gear.	Pass
3.10 (5.2.5)	Type Z not connected to screws		Pass
3.10 (5.2.6)	Cable entries:		Pass
	- suitable for introduction	By means of cable gland	Pass
	- adequate degree of protection		Pass
3.10 (5.2.7)	Cable entries through rigid material have rounded edges		Pass
3.10 (5.2.8)	Insulating bushings:		N/A
	- suitably fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- tubes or guards made of insulating material		N/A
3.10 (5.2.9)	Locking of screwed bushings		N/A
3.10 (5.2.10)	Cord anchorage:		Pass
	- covering protected from abrasion		Pass
	- clear how to be effective		Pass
	- no mechanical or thermal stress		Pass
	- no tying of cables into knots etc.		Pass
	- insulating material or lining		Pass

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
3.10 (5.2.10.1)	Cord anchorage for type X attachment:		N/A
	a) at least one part fixed		N/A
	b) types of cable		N/A
	c) no damaging of the cable		N/A
	d) whole cable can be mounted		N/A
	e) no touching of clamping screws		N/A
	f) metal screw not directly on cable		N/A
	g) replacement without special tool		N/A
	Glands not used as anchorage		N/A
	Labyrinth type anchorages		N/A
3.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment	Type Z (supply cord the controlgear)	Pass
3.10 (5.2.10.3)	Tests:		Pass
	- impossible to push cable; unsafe		Pass
	- pull test: 25 times; pull (N) ..... :	Output of the controlgear 60 N (2 x 1,0 mm^2) DMX Cable 60 N	Pass
	- torque test: torque (Nm)..... :	Output of the controlgear 0,25 Nm (2 x 1,0 mm^2) DMX Cable 60 N	Pass
	- displacement $\leq$ 2 mm	Displacement: 0,2 mm (2 x 1 mm^2) DMX Cable No displacement	Pass
	- no movement of conductors		Pass
	- no damage of cable or cord		Pass
	- function independent of electrical connection		Pass
3.10 (5.2.11)	External wiring passing into luminaire		N/A
3.10 (5.2.12)	Looping-in terminals		N/A
3.10 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
3.10 (5.2.14)	Mains plug same protection		N/A

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A
3.10 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Installation couplers (IEC 61535)		N/A
	Another appliance inlet or connector according relevant IEC standard		N/A
3.10 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
3.10 (5.2.18)	Used plug in accordance with		N/A
	- IEC 60083		N/A
	- another standard		N/A
3.10 (5.3)	**Internal wiring**		**Pass**
3.10 (5.3.1)	Internal wiring of suitable size and type	2 x 1 mm² H05RN-F wiring of the control gear. DMX wiring AWG 22	Pass
	Through wiring		N/A
	- not delivered/ mounting instruction		N/A
	- factory assembled		N/A
	- socket outlet loaded (A) ..... :		N/A
	- temperatures..... :	(See Annex 2)	N/A
	Green-yellow for earth only	Supply cable of the controlgear	Pass
3.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N/A
	Cross-sectional area (mm²) ..... :		N/A
	Insulation thickness (mm) .....:		N/A
	Extra insulation added where necessary		N/A
3.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		N/A
	Cross-sectional area (mm²) .....:		N/A
3.10 (5.3.1.3)	Double or reinforced insulation for class II		N/A
3.10 (5.3.1.4)	Conductors without insulation		N/A
3.10 (5.3.1.5)	SELV current-carrying parts		N/A

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
3.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
3.10 (5.3.2)	Sharp edges etc.		Pass
	No moving parts of switches etc.	Not used in the luminaire	N/A
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A
	No twisting over 360°		Pass
3.10 (5.3.3)	Insulating bushings:		N/A
	- suitable fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- cables with protective sheath		N/A
3.10 (5.3.4)	Joints and junctions effectively insulated		N/A
3.10 (5.3.5)	Strain on internal wiring	> 80 mm	Pass
3.10 (5.3.6)	Wire carriers		N/A
3.10 (5.3.7)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
3.10 (5.4)	**Test to determine suitability of conductors having a reduced cross-sectional area**		**N/A**
	Under test the temperature of the luminaire wiring insulation does not exceed the limits stated in Table 12.2	(See Annex 2)	N/A
	No damage to luminaire wiring after test		N/A
3.10.1 (-)	Cord anchorage if applicable		N/A
	- pull test: 25 times; pull (N) .....:		N/A
	- torque test: torque (Nm).....:		N/A

3.11 (8)	**PROTECTION AGAINST ELECTRIC SHOCK**		**Pass**
3.11 (8.2.1)	Live parts not accessible	Live parts are not accessible when the luminaire has been installed.	Pass
	Basic insulated parts not used on the outer surface without appropriate protection		Pass
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		N/A
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		Pass

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
	Lamp and starter holders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N/A
	Basic insulation only accessible under lamp or starter replacement		N/A
	Protection in any position	Not possible to remove the protection by a single action with one hand.	Pass
	Double-ended tungsten filament lamp		N/A
	Insulation lacquer not reliable		N/A
	Double-ended high-pressure discharge lamp		N/A
	Relevant warning according to 3.2.18 fitted to the luminaire		N/A
3.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
3.11 (8.2.3.a)	Class II luminaire:		N/A
	- basic insulated metal parts not accessible during starter or lamp replacement		N/A
	- basic insulation not accessible other than during starter or lamp replacement		N/A
	- glass protective shields not used as supplementary insulation		N/A
3.11 (8.2.3.b)	BC lamp holder of metal in class I luminaires shall be earthed		N/A
3.11 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load (V)..... :		N/A
	- no-load voltage (V)..... :		N/A
	- touch current if applicable (mA) ..... :		N/A
	One conductive part insulated if required		N/A
	Other than ordinary luminaire:		N/A
	- nominal voltage (V) ..... :		N/A
	Class III luminaire only for connection to SELV		N/A
	Class III luminaire not provided with means for protective earthing		N/A
3.11 (8.2.4)	Portable luminaire has protection independent of supporting surface		N/A

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
3.11 (8.2.5)	Compliance with the standard test finger or relevant probe	10 N, inspections by means of test finger.	Pass
3.11 (8.2.6)	Covers reliably secured	Enclosure of the luminaire (See 4.13)	Pass
3.11 (8.2.7)	Luminaire other than below with capacitor > 0,5 μF does not exceed 50 V 1 min after disconnection	Conformity of filter capacitors used on LED control gear already checked in accordance with EN 61347-2-13 (specifying same V/t limits). No additional capacitors in the luminaire.	N/A
	Portable luminaire with capacitor > 0,1 μF (0.25) not exceeds 34 V 1 s after disconnection		N/A
	Other luminaires with capacitor > 0,1 μF (0.25) with plug and track adaptors do not exceed 60 V 5 s after disconnection		N/A
3.12 (12)	**ENDURANCE TEST AND THERMAL TEST**		**Pass**
3.12.2 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 3.13		—
3.12 (12.2)	**Selection of lamps and ballasts**		—
	Lamp used according Annex B	LED modules	—
	Control gear if separate and not supplied	(Control gear used see Annex 2)	—
3.12 (12.3)	**Endurance test**		**Pass**
	a) mounting-position ..... :	Wall mounted with bracket in horizontal position	—
	b) test temperature (°C) ..... :	50 ºC	—
	c) total duration (h) ..... :	168 h	—
	d) supply voltage (V) ..... :	264 V Un factor 1,1 supply voltage	—
	d) if not equipped with control gear, constant voltage/current (V) or (A) ..... :	Equipped with control gear	—
	e) luminaire ceases to operate		—
3.12 (12.3.2)	After endurance test:		Pass
	- no part unserviceable		Pass
	- luminaire not unsafe		Pass
	- no damage to track system		N/A
	- marking legible		Pass
	- no cracks, deformation etc.		Pass

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
3.12 (12.4)	**Thermal test (normal operation)**	(See Annex 2)	**Pass**
3.12 (12.5)	**Thermal test (abnormal operation)**	(See Annex 2)	**Pass**
3.12 (12.6)	**Thermal test (failed lamp control gear condition):**		**N/A**
3.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A) ..... :		—
	- case of abnormal conditions ..... :		—
	- electronic lamp control gear		N/A
	- measured winding temperature (°C): at 1,1 Un .... :		—
	- measured mounting surface temperature (°C) at 1,1 Un ..... :		N/A
	- calculated mounting surface temperature (°C) ..... :		N/A
	- track-mounted luminaires		N/A
3.12 (12.6.2)	Temperature sensing control		N/A
	- case of abnormal conditions ..... :		—
	- thermal link		N/A
	- manual reset cut-out		N/A
	- auto reset cut-out		N/A
	- measured mounting surface temperature (°C) ..... :		N/A
	- track-mounted luminaires		N/A
3.12 (12.7)	**Thermal test (failed lamp control gear in plastic luminaires):**		**N/A**
3.12 (12.7.1)	Luminaire without temperature sensing control		N/A
3.12 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N/A
	Test method 12.7.1.1 or Annex W ..... :		—
	Test according to 12.7.1.1:		N/A
	- case of abnormal conditions ..... :		—
	- Ballast failure at supply voltage (V) ..... :		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
	Test according to Annex W:		N/A
	- case of abnormal conditions ..... :		—
	- measured winding temperature (°C): at 1,1 Un ..... :		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un ..... :		—

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
	- calculated temperature of fixing point/exposed part (°C) ..... :		—
	Ball-pressure test .....:	See Test Table 3.15 (13.2.1)	N/A
3.12 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N/A
	- case of abnormal conditions ..... :		—
	- measured winding temperature (°C): at 1,1 Un ..... :		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un ..... :		—
	- calculated temperature of fixing point/exposed part (°C) ..... :		—
	Ball-pressure test ..... :	See Test Table 3.15 (13.2.1)	N/A
3.12 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N/A
	- case of abnormal conditions ..... :		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
3.12 (12.7.2)	Luminaire with temperature sensing control		N/A
	- thermal link..... :	Yes ☐ No ☐	—
	- manual reset cut-out ..... :	Yes ☐ No ☐	—
	- auto reset cut-out ..... :	Yes ☐ No ☐	—
	- case of abnormal conditions ..... :		—
	- highest measured temperature of fixing point/ exposed part (°C): ..... :		—
	Ball-pressure test: ..... :	See Test Table 3.15 (13.2.1)	N/A
3.12.1 (-)	Temperature reduction if for outdoor use only		N/A
3.12.2 (-)	(See above)		—
3.12.3 (-)	Glass covers used within the thermal limits declared by the glass manufacturer		Pass

5.12 (12	**ENDURANCE TEST AND THERMAL TEST (IEC 60598-2-5:2015)**		**Pass**
5.12.1 (-)	Reduction 10 °C of measured temperatures if for outdoor use	Indoor and outdoor use	—
5.12.2 (-)	Glass covers used within the thermal limits		Pass

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

3.13 (9)	**RESISTANCE TO DUST AND MOISTURE**		**Pass**
3.13.1 (-)	If IP > IP 20 the order of tests as specified in clause 3.12		Pass
3.13 (9.2)	Tests for ingress of dust, solid objects, and moisture:		Pass
	- classification according to IP ..... :	IP65	—
	- mounting position during test..... :	Ceiling / Wall	—
	- fixing screws tightened; torque (Nm) ..... :	Screws and cable glands are fixed by the manufacturer Waterproof connector connected by the user (optional)	—
	- tests according to clauses ..... :	9.2.2; 9.2.6	—
	- electric strength test afterwards	(See 10.2.2)	Pass
	a) no deposit in dust-proof luminaire		N/A
	b) no talcum in dust-tight luminaire	No dust inside optical compartment and the DMX compartment	Pass
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard	No water inside optical compartment and the DMX compartment	Pass
	c.1) For luminaires without drain holes – no water entry		Pass
	c.2) For luminaires with drain holes – no hazardous water entry		N/A
	d) no water in watertight or pressure watertight luminaire		N/A
	e) no contact with live parts (IP 2X)		N/A
	e) no entry into enclosure (IP 3X and IP 4X)		N/A
	e) no contact with live parts through drain holes and ventilation slots (IP3X and IP4X)		N/A
	f) no trace of water on part of lamp requiring protection from splashing water		N/A
	g) no damage of protective shield or glass envelope		Pass
3.13 (9.3)	Humidity test 48 h	24 ºC; 94% Relative humidity	Pass

5.13 (9)	**RESISTANCE TO DUST AND MOISTURE (IEC 60598-2-15:2015)**	**Pass**
5.13 (-)	If IP > IP 20 the order of tests as specified in clause 5.12	Pass

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

3.14 (10)	**INSULATION RESISTANCE AND ELECTRIC STRENGTH**		**Pass**
3.14 (10.2.1)	Insulation resistance test		Pass
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø ..... :		—
	Insulation resistance (MΩ) ..... :		—
	SELV		Pass
	- between current-carrying parts of different polarity :	Optical compartment. (Min. required: 1 MΩ)	Pass
	- between current-carrying parts and mounting surface..... :	Optical compartment. (Min. required: 1 MΩ)	Pass
	- between current-carrying parts and metal parts of the luminaire..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :	Optical compartment. (Min. required: 1 MΩ)	Pass
	- Insulation bushings as described in Section 5 ..... :		N/A
	Other than SELV		Pass
	- between live parts of different polarity ..... :	>50 MΩ after removing the electronic control gear (Min. required: 2 MΩ)	Pass
	- between live parts and mounting surface ..... :	>50 MΩ (Min. required: 4 MΩ)	Pass
	- between live parts and metal parts ..... :	>50 MΩ (Min. required: 2 MΩ)	Pass
	- between live parts of different polarity through action of a switch..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :	>10 MΩ (Min. required: 2 MΩ)	Pass
	- Insulation bushings as described in Section 5 ..... :		N/A
3.14 (10.2.2)	Electric strength test		Pass
	Dummy lamp		N/A
	Luminaires with ignitors after 24 h test		N/A
	Luminaires with manual ignitors		N/A
	Test voltage (V)..... :		N/A
	SELV		Pass

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
	- between current-carrying parts of different polarity :	Optical compartment. 500 V	Pass
	- between current-carrying parts and mounting surface..... :	Optical compartment. 500 V	Pass
	- between current-carrying parts and metal parts of the luminaire..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :	Optical compartment. 500 V	Pass
	- Insulation bushings as described in Section 5 ..... :		N/A
	Other than SELV		Pass
	- between live parts of different polarity ..... :	1480 V After removing control gear	Pass
	- between live parts and mounting surface ..... :	1480 V between live parts (primary circuit) to enclosure.	Pass
	- between live parts and metal parts ..... :	1480 V between live parts (primary circuit) to enclosure.	Pass
	- between live parts of different polarity through action of a switch..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :	1480 V	Pass
	- Insulation bushings as described in Section 5 ..... :		N/A
3.14 (10.3)	Touch current or protective conductor current (mA) :	Supply voltage 240 V, 60 Hz. 0,1mA (Max limit 3,5 mA)	Pass

3.15 (13)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**Pass**
3.15 (13.2.1)	Ball-pressure test ..... :	See Test Table 3.15 (13.2.1)	N/A
3.15 (13.3.1)	Needle-flame test (10 s)..... :	See Test Table 3.15 (13.3.1)	N/A
3.15 (13.3.2)	Glow-wire test (650 °C)..... :	See Test Table 3.15 (13.3.2)	Pass
3.15 (13.4)	Proof tracking test (IEC 60112)..... :	See Test Table 3.15 (13.4)	N/A

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

3.7 (11.2)	TABLE I: Creepage distances and clearances							Pass
	Minimum distances (mm) for a.c. up to 30 kHz sinusoidal voltages							—
	Applicable part of IEC 60598-1 Table 11.1.A*, 11.1.B* and 11.2*							—
Distances	**Insulation type ****	**Measured clearance**	**Required**		**Measured creepage**	**Required**		
			clearance	***Table**		**creepage**	***Table**	
Distance 1:	**B**	> 3 mm	**1,5 mm**	**11.1.B**	> 5 mm	**2,5 mm**	**11.1.A**	
Working voltage (V) .....:					220–240 V~			—
PTI .....:					< 600 ☒ ≥ 600 ☐			—
Pulse voltage or U_P if applicable (kV) .....:					—			—
Supplementary information: between live parts of different polarity (waterproof connector)								
Distance 2:	**B**	1 mm	**0,2 mm**	**11.1.B**	1 mm	**0,6 mm**	**11.1.A**	
Working voltage (V) .....:					$V_{operting}$ Cob LED 35 Vdc (U_{out} = 44 Vdc) open circuit			—
PTI .....:					< 600 ☐ ≥ 600 ☒			—
Pulse voltage or U_P if applicable (kV) .....:					—			—
Supplementary information: between tracks of the Cob LED and heat sink								
Distance 3:	**B**	> 3 mm	**1,5 mm**	**11.1.B**	> 5 mm	**2,5 mm**	**11.1.A**	
Working voltage (V) .....:					220–240 V~			—
PTI .....:					< 600 ☒ ≥ 600 ☐			—
Pulse voltage or U_P if applicable (kV) .....:					—			—
Supplementary information: wiring under cable gland anchorage								
Distance 4:	**B**	> 3 mm	**1,5 mm**	**11.1.B**	> 5 mm	**2,5 mm**	**11.1.A**	
Working voltage (V) .....:					220–240 V~			—
PTI .....:					< 600 ☒ ≥ 600 ☐			—
Pulse voltage or U_P if applicable (kV) .....:					—			—
Supplementary information: between live parts and accessible metal parts / supporting surface								

** Insulation type: B – Basic; S – Supplementary; R – Reinforced. See also IEC 60598-1 Annex M

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

3.7 (11.2)	TABLE II: Creepage distances and clearances							N/A
Minimum distances (mm) for a.c. higher than 30 kHz sinusoidal voltages								
Applicable part of IEC 61347-1 Table 7 and 8* or IEC 60664-4 Table 1 and 2								
Distances	**Insulation type ****	**Measured clearance**	**Required**		**Measured creepage**	**Required**		
			clearance	***Table**		**creepage**	***Table**	
Distance 1:								
Working voltage (V) .....:								—
Frequency if applicable (kHz) .....:								—
PTI .....:					< 600 ☐	≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....:								—
Supplementary information:								
Distance 2:								
Working voltage (V) .....:								—
Frequency if applicable (kHz) .....:								—
PTI .....:					< 600 ☐	≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....:								—
Supplementary information:								
Distance 3:								
Working voltage (V) .....:								—
Frequency if applicable (kHz) .....:								—
PTI .....:					< 600 ☐	≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....:								—
Supplementary information:								

** Insulation type: B – Basic; S – Supplementary; R – Reinforced.

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

3.15 (13.2.1)	TABLE: Ball Pressure Test of Thermoplastics		N/A
Allowed impression diameter (mm) ..... :		2 mm	—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)
Supplementary information:			

3.15 (13.3.1)	TABLE: Needle-flame test (IEC 60695-11-5)				N/A
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Supplementary information:					

3.15 (13.3.2)	TABLE: Glow-wire test (IEC 60695-2-11)			Pass
Glow wire temperature ..... :		650 °C		—
Object/ Part No./ Material	Manufacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
LENS / PMMA	LEDiL CP17417, CP17418, CP17419, CP17421	No	No flame	Pass
Holder / PC balck	LEDiL C17398	No	No flame	Pass
Supplementary information:				

3.15 (13.4)	TABLE: Proof tracking test (IEC 60112)				N/A
Test voltage PTI ..... :		175 V			—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
Supplementary information:					

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 1	TABLE: Critical components information					
Object / part No.	**Code**	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1]**
Description:	**Control gear**					
Electronic control gear for LED modules (a.c.)	B	Mean Well	HLG-320H-42A	U_{in} 100 – 240 V~, 50/60 Hz, PF: 0,95, I_{out} 3,8 – 7,65 A V_{out} 21 - 42 Vdc U_{out} 44 Vdc P_{out} 321 W, SELV t_a 50 ºC, t_c 90 °C, Supply cable 3x1 mm² H05RN-F Independent, IP65 Class I, Triangle marked 110	EN 61347-2-13:2014 + A1:2017 EN 61347-1:2015 IEC 61347-2-13:2014 + A1:2017 IEC61347-1:2015	CE Declaration CB Certificate DE 2-024002-M1
Description:	**Miscellaneous lampholder**					
Connector four LED-modules	A	BJB	47.360	0,35 – 0,5 mm² 60 - 150 Vdc, 3 A T -30...+110 ºC	EN 60838-1:2017 + A1:2017	VDE 40047483
Description:	**Cob LED**					
LED Array	B	Bridgelux	Gen 7 V13 BXRE-27S2001-C73	630 – 1260 mA, Vf= 32,2 – 38,8 Vdc 2700 K, CRI 95, t_c 105 ºC, Tj 150 °C	EN 62031:2020	ENEC 15 02886-M2
LED Array	B	Bridgelux	Gen 7 V13 BXRE-65S2001-C73	630 – 1260 mA, Vf= 32,2 – 38,8 Vdc 6500 K, CRI 95, t_c 105 ºC, Tj 150 °C	EN 62031:2020	ENEC 15 02886-M2
Description:	**Internal wiring**					
Internal wiring for DMX	C	Dongguan Triumphcable	Style 2464	22 AWG 300 V, 80 °C PVC	IEC 60598-1:14 + AMD1:2017 UL 758	Tested with the luminaire Raw material is UL recognized (E249743)
Description:	**Connector**					
Connector	C	Shenzhen Lilutong Connector	LLT-16	3 x 15 mm2, 250 V, 15 A, T -40 ..+105 °C IP65	IEC 60598-1:14 + AMD1:2017	Tested with the luminaire Raw material is UL recognized (E481414)

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

Object / part No.	Code	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity[1]
Connector	C	Shenzhen Lilutong Connector	LLT-YS02-XX	Two cables 22AWG T -40 ..+105 °C IP65	IEC 60598-1:2014 + AMD1:2017	Tested with the luminaire
Description:	**Cable gland for electrical installation**					
Cable gland	A	U.I LAPP GmbH	SKINTOP ST-M	M16 x 1,5 T -40 ..+100 °C IP 65 /68 Polyamid 6	EN 62444:2013	VDE 40010604
Description:	**Plastic material**					
Protective screen	C	Sabic	Polycarbonate Lexan, Resin 295A-116	Glow wire 850 ° T -40 ..+100 °C	IEC 60598-1:2014 + AMD1:2017	Tested with the luminaire
Description:	**Lens**					
Lens	C	LEDiL	CP17417, CP17418, CP17419, CP17421	PMMA clear	IEC 60598-1:2014 + AMD1:2017	Tested with the luminaire
Holder of lens	C	LEDiL	C17398	Polycarbonate	IEC 60598-1:2014 + AMD1:2017	Tested with the luminaire
Description:	**DMX**					
DMX Circuit	C	Coemar	42210K07	15 - 60 Vdc, Four channels 4 x 1,5 A	IEC 61347-2-11: 2001 +AMD1:2019 IEC 61347-12015 +AMD1:2017	Tested with the luminaire

Supplementary information:

[1)] Provided evidence ensures the agreed level of compliance. See OD-CB2039.

The codes above have the following meaning:

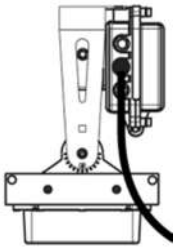
A - The component is replaceable with another one, also certified, with equivalent characteristics

B - The component is replaceable if authorised by the test house

C - Integrated component tested together with the appliance

D - Alternative component

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12		Pass
	Type reference ..... :	SunLite LED 2021F073G101O	—
	Lamp used..... :	Two BXRE-27S2001-C73 Six BXRE-65S2001-C73	—
	Lamp control gear used..... :	Mean Well HLG-320H-42A	—
	Mounting position of luminaire..... :	Ceiling, test position 	—
	Supply wattage (W) ..... :	227,8 W @ 220 V, 60 Hz 227,4 W @ 230 V, 60 Hz 226,8 W @ 240 V, 60 Hz	—
	Supply current (A)..... :	1,056 A @ 220 V, 60 Hz, 1,015 A @ 230 V, 60 Hz 0,974 A @ 240 V, 60 Hz	—
	Calculated power factor..... :	0,977 @ 220 V, 60 Hz, 0,973 @ 230 V, 60 Hz 0,969 @ 240 V, 60 Hz	—
	Table: measured temperatures corrected for t_a = 40 °C		Pass
	- abnormal operating mode ..... :	Short circuit output	—
	- test 1: rated voltage..... :	230 V, 60 Hz	—
	- test 2: 1,06 times rated voltage, or 1,05 times rated wattage..... :	243,8 V, 60 Hz	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage, or 1,05 times wattage ..... :	—	—
	- test 4: 1,1 times rated voltage, or 1,05 times rated wattage ..... :	253 V , 60 Hz	—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :	—	—

Temperature measurements, (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		Test 1	Test 2	Test 3	Limit	Test 4	Limit
t_c point control gear	40	67,4	—	—	**90**	55,7	**110** ●

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		Test 1	Test 2	Test 3	Limit	Test 4	Limit
t_c point Cob Led 1 (2700 K)	40	92,0	—	—	**105**	—	**—**
t_c point Cob Led 2 (6500 K)	40	91,7	—	—	**105**	—	**—**
t_c point Cob Led 2 (6500 K)	40	92,2	—	—	**105**	—	**—**
Holder Cob Led 3	40	—	94,9	—	**110**	—	**—**
Wiring of Cob Led 3	40	—	92,7	—	**90**	—	**—**
LEDiL Lens Cob LED 1	40	—	94,8	—	**100**	—	**—**
ta optical compartment	40	—	76,8	—	**—**	—	**—**
Gasket	40	—	86,0	—	**100**	—	**—**
Polycarbonate screen	40	—	92,7	—	**100**	—	**—**
Internal wiring under cable gland	40	—	77,8 **#**	—	**75**	—	**—**
Heat sink	40	—	87,2	—	**—**	—	**—**
Mounting surface	40	—	55,8	—	**90**	40,8	**—**
Lighted object 1 m	40	—	50,7	—	**90**	—	**—**
Capacitor	40	—	80,3	—	**100**	—	**—**
Inductor	40	—	87,9	—	**120**	—	**—**
Supply connector	40	—	77,6	—	**85**	—	**—**
ta DMX compartment	40	—	67,8	—	—	—	**—**
Gasket	40	—	68,7	—	**100**	—	**—**

Supplementary information:
- Triangle marked.

Accepted due to the 5 °C allowance

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 3	**Screw terminals (part of the luminaire)**		**N/A**
(14)	**SCREW TERMINALS**		**N/A**
(14.2)	Type of terminal.....:		—
	Rated current (A).....:		—
(14.3.2.1)	One or more conductors		N/A
(14.3.2.2)	Special preparation		N/A
(14.3.2.3)	Terminal size		N/A
	Cross-sectional area (mm²).....:		—
(14.3.3)	Conductor space (mm).....:		N/A
(14.4)	Mechanical tests		N/A
(14.4.1)	Minimum distance		N/A
(14.4.2)	Cannot slip out		N/A
(14.4.3)	Special preparation		N/A
(14.4.4)	Nominal diameter of thread (metric ISO thread).....:	M	N/A
	External wiring		N/A
	No soft metal		N/A
(14.4.5)	Corrosion		N/A
(14.4.6)	Nominal diameter of thread (mm) .....:		N/A
	Torque (Nm).....:		N/A
(14.4.7)	Between metal surfaces		N/A
	Lug terminal		N/A
	Mantle terminal		N/A
	Pull test; pull (N).....:		N/A
(14.4.8)	Without undue damage		N/A

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 4	**Screwless terminals (part of the luminaire)**		**N/A**
(15)	**SCREWLESS TERMINALS**		**N/A**
(15.2)	Type of terminal.....:		—
	Rated current (A).....:		—
(15.3.1)	Material		N/A
(15.3.2)	Clamping		N/A
(15.3.3)	Stop		N/A
(15.3.4)	Unprepared conductors		N/A
(15.3.5)	Pressure on insulating material		N/A
(15.3.6)	Clear connection method		N/A
(15.3.7)	Clamping independently		N/A
(15.3.8)	Fixed in position		N/A
(15.3.10)	Conductor size		N/A
	Type of conductor		N/A
(15.5)	Terminals and connections for internal wiring		N/A
(15.5.1)	Mechanical tests		N/A
(15.5.1.1.1)	Pull test spring-type terminals (4 N, 4 samples) .....:		N/A
(15.5.1.1.2)	Pull test pin or tab terminals (4 N, 4 samples) .....:		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N/A
(15.5.2)	Electrical tests		N/A
	Voltage drop (mV) after 1 h (4 samples).....:		N/A
	Voltage drop of two inseparable joints		N/A
	Number of cycles:		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples).....:		N/A
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples).....:		N/A
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples) .....:		N/A
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples) .....:		N/A
(15.6)	Terminals and connections for external wiring		N/A
(15.6.1)	Conductors		N/A
	Terminal size and rating		N/A

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

15.6.2	Mechanical tests		N/A
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) .....:		N/A
(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N) .....:		N/A
(15.6.3)	Electrical tests		N/A
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1		N/A

(15.6.3.1) (15.6.3.2)	**TABLE: Contact resistance test / Heating tests**									**N/A**
	Voltage drop (mV) after 1 h									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop of two inseparable joints									
	Voltage drop after 10th alt. 25th cycle									
	Max. allowed voltage drop (mV) ..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop after 50th alt. 100th cycle									
	Max. allowed voltage drop (mV) ..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 10th alt. 25th cycle									
	Max. allowed voltage drop (mV) ..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 50th alt. 100th cycle									
	Max. allowed voltage drop (mV) ..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
Supplementary information:										

IEC 60598-2-3 & IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

List of test equipment used:

A completed list of used test equipment shall be provided in the Test Reports when a Customer's Testing Facility according to CTF stage 1 or CTF stage 2 procedure has been used.
Other forms with a different layout but containing corresponding information are also acceptable.
Note: This page may be removed when CTF stage 1 CTF stage 2 are not used. See also clause 4.8 in OD 2020 for more details.

Clause	Measurement / testing	Testing / measuring equipment / material used, (Equipment ID)	Range used	Last Calibration date	Calibration due date
		See attachment 7			

Attachment 1	CENELEC COMMON MODIFICATIONS (EN)

IEC60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60598-2-3
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES

Luminaires
Part 2: Particular requirements
Section 3: Luminaires for road and street lighting

Differences according to.....: EN 60598-2-3:2003, AMD1:2011 used in conjunction with EN 60598-1:2015, AMD1:2018

Annex Form No.....: EU_GD_IEC60598_2_3L

Annex Form Originator .....: Intertek Semko AB

Master Annex Form .....: 2018-12-07

	CENELEC COMMON MODIFICATIONS (EN)		**Pass**
3.6 (4)	**CONSTRUCTION**		**N/A**
3.6 (4.11.6)	Electro-mechanical contact systems		N/A
3.10 (5)	**EXTERNAL AND INTERNAL WIRING**		**Pass**
3.10 (5.2.2)	Cables equal to EN 50525		Pass
	Replace table 5.1 – Supply cord		Pass
3.12 (12)	**ENDURANCE TESTS AND THERMAL TESTS**		**Pass**
3.12 (12.4.2c)	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring		Pass

ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		**N/A**
(3.3)	DK: power supply cords of class I luminaires with label		N/A
(4.5.1)	DK: socket-outlets		N/A
(5.2.1)	CY, DK, FI, GB: type of plug		N/A

Attachment 1	CENELEC COMMON MODIFICATIONS (EN)

IEC60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		Pass
(4 & 5)	FR: Shuttered socket-outlets 10/16A		N/A
	FR: Safety requirements for high buildings *(Decree of 30 December 2011 on safety regulations for the construction of high-rise buildings and their protection against fire and panic risks; Section VIII; Article GH 48, Lighting)* Glow-wire test for outer parts of luminaires:		N/A
	- 850 °C for luminaires in stairways and horizontal travel paths		N/A
	- 650 °C for indoor luminaires		Pass
	GB: Requirements according to United Kingdom Building Regulation		N/A

Attachment 1	CENELEC COMMON MODIFICATIONS (EN)

IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60598-2-5
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES
Luminaires
Part 2: Particular requirements
Section 5: Floodlights

Differences according to..... : EN 60598-2-5:2015 used in conjunction with EN 60598-1:2015 + A1:2018

Annex Form No...... **:** EU_GD_IEC60598_2_5F

Annex Form Originator..... **:** OVE

Master Annex Form..... **:** 2019-01-24

	CENELEC COMMON MODIFICATIONS (EN)	**Pass**

5.5 (3)	**MARKING**		**N/A**
5.5 (3.3.101)	For luminaires not supplied with terminal block: Adequate warning on the package		N/A

5.6 (4)	**CONSTRUCTION**		**N/A**
5.6 (4.11.6)	Electro-mechanical contact systems		N/A

5.10 (5)	**EXTERNAL AND INTERNAL WIRING**		**Pass**
5.10 (5.2.1)	Connecting leads		Pass
	- without a means for connection to the supply		Pass
	- terminal block specified		Pass
	- relevant information provided		Pass
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1		Pass
5.10 (5.2.2)	Cables equal to EN 50525		Pass
	Replace table 5.1 – Supply cord		Pass
5.12 (12)	**ENDURANCE TESTS AND THERMAL TESTS**		**Pass**
5.12 (12.4.2c)	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring		Pass

Attachment 1	CENELEC COMMON MODIFICATIONS (EN)

IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		**N/A**
(3.3)	DK: power supply cords of class I luminaires with label		N/A
(4.5.1)	DK: socket-outlets		N/A
(5.2.1)	CY, DK, FI, GB: type of plug		N/A

ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		**Pass**
(4 & 5)	FR: Shuttered socket-outlets 10/16A		N/A
	FR: Safety requirements for high buildings (Arrêté du 30 décembre 2011 portant règlement de sécurité pour la construction des immeubles de grande hauteur et leur protection contre les risques d'incendie et de panique; Section VIII; Article GH 48, Eclairage) Glow-wire test for outer parts of luminaires:		N/A
	- 850 °C for luminaires in stairways and horizontal travel paths		N/A
	- 650 °C for indoor luminaires		Pass
	GB: Requirements according to United Kingdom Building Regulation		N/A

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017

TEST REPORT
IEC 61347-2-11
Part 2: Particular requirements
Section 11: Miscellaneous electronic circuits used with luminaires

Report Number. ..... :	1081-QL21-R03 ver.0
Date of issue ..... :	2021-09-15
Total number of pages ..... :	31
Testing ..... :	—
Date of receipt of test item ..... :	2021-08-16
Date (s) of performance of tests .... :	2021-08-18 to 2021-09-09
Name of Testing Laboratory preparing the Report ..... :	QUALILAB S.r.l. Via Trento, 87 – 25020 – Capriano Del Colle (BS) - Italy
Tested by (name + signature) ..... :	Davide Porta
Approved by (+ signature) ..... :	Michele Peschiera
Applicant's name ..... :	Coemar Lighting S.r.l.
Address ..... :	Via Carpenedolo, 90 - 46043 - Castiglione delle Stiviere (MN) - Italy
Test specification:	
Standard ..... :	IEC 61347-2-11:2001, AMD1:2017 used in conjunction with IEC 61347-1:2015, AMD1:2017
Test procedure ..... :	CE Marking
Non-standard test method ..... :	N/A
Test item description ..... :	DMX electronic board
Model/Type reference ..... :	ECO 4LED 1A5 2FAN MASTER 4221020703
Ratings ..... :	15 -60 Vdc , 4 x 1,5 A

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
4 (4)	**GENERAL REQUIREMENTS**		**N/A**
- (4)	Insulation materials for double or reinforced insulation according requirements in Annex N of IEC 61347-1	(See Annex N)	N/A
- (4)	Compliance of independent control gear enclosure with IEC 60598-1		N/A
- (4)	Built-in magnetic ballast with double or reinforced insulation comply with Annex I of IEC 61347-1		N/A
- (4)	Built-in electronic control gear with double or reinforced insulation comply with Annex O of IEC 61347-1	(See Annex O)	N/A
- (4)	SELV control gear comply with Annex L of IEC 61347-1	(sSee Annex L)	N/A

6 (6)	**CLASSIFICATION**		**Pass**
	Built-in control gear ..... :	Yes ☐ No ☒	—
	Independent control gear ..... :	Yes ☐ No ☒	—
	Integral control gear ..... :	Yes ☒ No ☐ Miscellaneous electronic circuits used with luminaires	—

7 (7)	**MARKING**		**N/A**
7.1 (7.1)	**Mandatory markings**		**N/A**
	a) mark of origin		N/A
	b) model number or type reference		N/A
	d) correlation between interchangeable parts and control gear marked		N/A
	e) rated supply voltage (V)		N/A
	supply frequency (Hz)		N/A
	supply current (A)		N/A
	f) earthing symbol, if applicable		N/A
	k) wiring diagram		N/A
	l) value of t_c		N/A
	s) SELV symbol		N/A
7.1 (-)	- control terminals identified, if applicable		N/A
	- t_a alternative to t_c if independent		N/A
7.1 (7.2)	Marking durable and legible		N/A

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
	IEC 61347-2-11		
Clause	Requirement + Test	Result - Remark	Verdict
	Rubbing 15 s water, 15 s petroleum; marking legible		N/A
7.2 (7.1)	**Information to be provided, if applicable**		**N/A**
	h) declaration of protection against accidental contact		N/A
	i) cross-section of conductors (mm²)		N/A
	j) number, type and wattage of lamp(s)		N/A
7.1 (7.2)	Marking durable and legible		N/A
	Rubbing 15 s water, 15 s petroleum; marking legible		N/A
8 (10)	**PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS**		**N/A**
- (10.1)	Control gear protected against accidental contact with live parts		N/A
- (A2)	Voltage measured with 50 kΩ	(See Annex A)	N/A
- (A3)	Voltage > 35 V peak or > 60 V d.c.	(See Annex A)	N/A
- (10.1)	Lacquer or enamel not used for protection or insulation		N/A
	Adequate mechanical strength on parts providing protection		N/A
- (10.2)	Capacitors > 0,5 μF: voltage after 1 min (V): < 50 V ..... :		N/A
- (10.3)	**Control gear providing SELV**		**N/A**
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV control gear		N/A
	No connection between output circuit and the body or protective earthing circuit		N/A
	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		N/A
	SELV outputs separated by at least basic insulation		N/A
	ELV conductive parts insulated as live parts		N/A
	Tests according Annex L of IEC 61347-1	(See Annex L)	N/A
- (10.4)	**Accessible conductive parts in SELV circuits**		**N/A**
	Output voltage under load ≤ 25 V r.m.s. or ≤ 60 V d.c.		N/A
	If output voltage > 25 V r.m.s. or > 60 V d.c.; No load output ≤ 35 V peak or ≤ 60 V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c. ..... :		N/A

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N/A
	Y1 or Y2 capacitors comply with IEC 60384-14		N/A
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
9 (8)	**TERMINALS**		**Pass**
- (8.1)	Integral terminals		N/A
	Screw terminals according section 14 of IEC 60598-1	(See Annex 2)	N/A
	Screwless terminals according section 15 of IEC 60598-1	(See Annex 3)	N/A
- (8.2)	**Terminals other than integral terminals**		**Pass**
	Comply with relevant IEC standard	(See Annex 1)	Pass
	Suit the conditions		N/A
	Satisfy additional relevant requirements of this standard		N/A
10 (9)	**PROVISION FOR EARTHING**		**N/A**
- (9.1)	**Provisions for protective earthing**		**N/A**
	Terminal complying with clause 8		N/A
	Locked against loosening and not possible to loosen by hand		N/A
	Not possible to loosen clamping means unintentionally on screwless terminals		N/A
	All parts of material minimizing the danger of electrolytic corrosion		N/A
	Made of brass or equivalent material		N/A
	Contact surface bare metal		N/A
	Test according 7.2.3 of IEC 60598-1		N/A
- (9.2)	**Provision for functional earthing**		**N/A**
	Comply with clause 8 and 9.1		N/A
	Functional earth insulated from live parts by double or reinforced insulation		N/A

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
- (9.3)	**Lamp control gear with conductors for protective earthing by tracks on printed circuit board**		**N/A**
	Test with a current of 25 A between earthing terminal or earthing contact and each of the accessible metal parts; measured resistance (Ω) at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω ..... :		N/A
- (9.4)	**Earthing of built-in lamp control gear**		**N/A**
	Earth by means of fixing to earthed metal of luminaire in compliance of 7.2 of IEC 60598-1		N/A
	Earthing terminal only for earthing the built-in control gear		N/A
- (9.5)	**Earthing via independent control gear**		**N/A**
- (9.5.1)	Earth connection to other equipment		N/A
	Looping or through connection, conductor min. 1,5 mm² and of copper or equivalent		N/A
	Protective earthing wires in line with 5.3.1.1 and clause 7 of IEC 60598-1		N/A
- (9.5.2)	Earthing of the lamp compartments powered via the independent lamp control gear		N/A
	Test with a current of 25 A between input and output earth terminals; measured resistance (Ω) between earthing terminal or earthing contact and each of the accessible metal parts at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω ..... :		N/A
	Output earthing terminal marked as in 7.1 t) of IEC 61347-1		N/A

11 (11)	**MOISTURE RESISTANCE AND INSULATION**		**Pass**
- (11)	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance:		Pass
	For basic insulation ≥ 2 MΩ ..... :	Tested together with the luminaire at 25 °C and 94 % relative humidity: insulation resistance > 5 MΩ	Pass
	For double or reinforced insulation ≥ 4 MΩ ..... :		N/A
- (11)	Between primary and secondary circuits in control gear providing SELV, values in Annex L in IEC 61347-1		N/A

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
12 (12)	**ELECTRIC STRENGTH**		**Pass**
	Immediately after clause 11 electric strength test for 1 min		Pass
	Basic insulation for SELV, test voltage 500 V		Pass
	Working voltage ≤ 50 V, test voltage 500 V	Tested together with the luminaire	Pass
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		N/A
	Basic insulation, 2U + 1000 V		N/A
	Supplementary insulation, 2U + 1000 V		N/A
	Double or reinforced insulation, 4U + 2000 V		N/A
	No flashover or breakdown		Pass
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		N/A
14 (14)	**FAULT CONDITIONS**		**Pass**
- (14.1)	When operated under fault conditions the control gear:		Pass
	- does not emit flames or molten material	No flames	Pass
	- does not produce flammable gases	No flammable gases	Pass
	- protection against accidental contact not impaired		Pass
	Thermally protected control gear does not exceed the marked temperature value		N/A
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(See appended table)	N/A
- (14.2)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (after any reduction in 14.2 - 14.5)	(See appended table)	N/A
- (14.3)	Short-circuit or interruption of semiconductor devices	(See appended table)	N/A
- (14.4)	Short-circuit across insulation consisting of lacquer, enamel or textile	(See appended table)	N/A
- (14.5)	Short-circuit across electrolytic capacitors	(See appended table)	N/A
- (14.6)	After the tests has been carried out on three samples:		Pass
	The insulation resistance ≥ 1 MΩ ..... :	>5 MΩ (Min. required: 1 MΩ)	Pass
	No flammable gases	No flame	Pass

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
	No accessible parts have become live		Pass
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		Pass
- (14.7)	Relevant fault condition tests with high-power a.c. supply		—
15 (15)	**CONSTRUCTION**		**Pass**
- (15.1)	Wood, cotton, silk, paper and similar fibrous material		Pass
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		Pass
- (15.2)	**Printed circuits**		Pass
	Printed circuits used as internal connections complies with clause 14		Pass
- (15.3)	**Plugs and socket-outlets used in SELV or ELV circuits**		N/A
	No dangerous compatibility between output socket-outlet and a plug for socket-outlets for input circuit in relation to installation rules, voltages and frequencies		N/A
	Plugs and socket-outlets for SELV comply with IEC 60906-3 and IEC 60884-2-4		N/A
	Plugs and socket-outlets for SELV ≤ 3 A, ≤ 25 V r.m.s. or ≤ 60 V d.c. and ≤ 72 W comply with IEC 60906-3 and IEC 60884-2-4 or:		N/A
	- plugs not able to enter socket-outlets of other standardised system		N/A
	- socket-outlets not admit plugs of other standardised system		N/A
	- socket-outlets without protective earth		N/A
- (15.4)	**Insulation between circuits and accessible parts**		Pass
- (15.4.2)	SELV circuits		Pass
	Source used to supply SELV circuits:		Pass
	- safety isolating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- control gear providing SELV in accordance with relevant part 2 of IEC 61347		Pass
	- another source		N/A
	Voltage in the circuit not higher than ELV		N/A
	SELV circuits insulated from LV by double or reinforced insulation		N/A

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
	SELV circuits insulated from non SELV circuits by double or reinforced insulation		N/A
	SELV circuits insulated from FELV circuits by supplementary insulation		N/A
	SELV circuits insulated from other SELV circuits by basic insulation		N/A
	SELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		N/A
- (15.4.3)	FELV circuits		N/A
	Source used to supply FELV circuits:		N/A
	- separating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- separating control gear providing basic insulation between input and output circuits in accordance with relevant part 2 of IEC 61347		N/A
	- another source		N/A
	- source in circuits separated by the LV supply by basic insulation		N/A
	Voltage in the circuit not higher than ELV		N/A
	FELV circuits insulated from LV supply by at least basic insulation		N/A
	FELV circuits insulated from other FELV circuits if functional purpose		N/A
	FELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		N/A
	Plugs and socket-outlets for FELV system comply with:		N/A
	- plugs not able to enter socket-outlets of other voltage systems		N/A
	- socket-outlets not admit plugs of other voltage systems		N/A
	- socket-outlets have a protective conductor contact		N/A
- (15.4.4)	Other circuits		N/A
	Insulation between circuits other than SELV or FELV and accessible conductive parts in according Table 6 in 15.4.5.		N/A
- (15.4.5)	Insulation between circuits and accessible conductive parts		N/A
	Accessible conductive parts insulated from active parts of electric circuits by insulating according Table 6		N/A

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
	Requirements for Class II construction with equipotential bonding for protection against indirect contact with live parts:		N/A
	- all conductive parts are connected together		N/A
	- conductive parts are reliably connected together according test of IEC 60598-1 cl. 7.2.3		N/A
	- conductive parts comply with requirements of Annex A in case of insulation fault		N/A
16 (16)	**CREEPAGE DISTANCES AND CLEARANCES**		**N/A**
- (16)	Creepage distances and clearances according to 16.2 and 16.3	Distance not evaluated because the supply voltage is below 60 Vdc	N/A
	Control gears providing SELV comply with additional requirements in Annex L		N/A
	Insulating lining of metallic enclosures		N/A
	Control gear protected against pollution comply with Annex P		N/A
- (16.2)	**Creepage distances**		N/A
- (16.2.2)	Minimum creepage distances for working voltages		N/A
	Creepage distances according to Table 7		N/A
- (16.2.3)	Creepage distances for working voltages with frequencies above 30 kHz		N/A
	Creepage distances according to Table 8		N/A
- (16.3)	**Clearances**		N/A
- (16.3.2)	Clearances for working voltages		N/A
	Clearances distances according to Table 9		N/A
- (16.3.3)	Clearances for ignition voltages and working voltages with higher frequencies		N/A
	Clearances distances for basic or supplementary insulation according to Table 10		N/A
	Clearances distances for reinforced insulation according to Table 11		N/A
17 (17)	**SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS**		**Pass**
- (17)	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		Pass
(4.11)	**Electrical connections**		Pass
(4.11.1)	Contact pressure		Pass

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
	IEC 61347-2-11		
Clause	Requirement + Test	Result - Remark	Verdict
(4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
(4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
(4.11.4)	Material of current-carrying parts		Pass
(4.11.5)	No contact to wood or mounting surface		Pass
(4.11.6)	Electro-mechanical contact systems		N/A
(4.12)	**Mechanical connections and glands**		**Pass**
(4.12.1)	Screws not made of soft metal		Pass
	Screws of insulating material		N/A
	Torque test: torque (Nm); part ..... :	1,2; Ø 3,8 x 4 mm Metric screw, fixing the electronic board	Pass
	Torque test: torque (Nm); part ..... :		N/A
	Torque test: torque (Nm); part ..... :		N/A
(4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
(4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm ..... :		N/A
	- lampholder; torque (Nm)..... :		N/A
	- push-button switches; torque 0,8 Nm ..... :		N/A
(4.12.5)	Screwed glands; force (Nm) ..... :		N/A

18 (18)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**N/A**
- (18.1)	Ball-pressure test ..... :	See Test Table 18 (18.1)	N/A
- (18.2)	Test of printed boards ..... :	See Test Table 18 (18.2)	N/A
- (18.3)	Glow-wire test ..... :	See Test Table 18 (18.3)	N/A
- (18.4)	Needle flame test ..... :	See Test Table 18 (18.4)	N/A
- (18.5)	Tracking test..... :	See Test Table 18 (18.5)	N/A

19 (19)	**RESISTANCE TO CORROSION**		**Pass**
	- test according 4.18.1 of IEC 60598-1	Tested together with the luminaire.	Pass

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
	- adequate varnish on the outer surface		Pass
20 (-)	**ANNEXES**		**N/A**
	Comply with appropriate annexes of IEC 61347-1	(See Annexes)	N/A

14	**TABLE: tests of fault conditions**	**Pass**
Part	Simulated fault	Hazard
	Short circuit capacitor **C46**, Unit shuts off immediately. No damage after short circuit removal.	NO
	Short circuit diode **D10**, the output current increases by 2,32 A, is distributed over 2 COB LEDs The fault condition has been maintained for one hour No damage after short circuit removal.	NO
	Short circuit diode **D12**, the output current decreases by 1.43 A, 2 COB LEDs turn off No damage after short circuit removal.	NO
	Short circuit capacitor **C51**, an identical results as D10	NO
	Short circuit diode **D11**, an identical results as D10	NO
	Short circuit resistor **R57**, an identical results as D10	NO
	Short circuit capacitor **C45**, Unit shuts off immediately. No damage after short circuit removal.	
	Short circuit capacitor **C67**, Unit shuts off immediately. No damage after short circuit removal.	

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict

16 (16)	**TABLE: creepage distance and clearance (mm)**							**Pass**
Applicable part of IEC 61347-1 Table 7 – 11*								
Distances	**Insulation type ****	**Measured clearance**	**Required**		**Measured creepage**	**Required**		
			clearance	***Table**		**creepage**	***Table**	
Distance 1:	**B**	**#**	—	**9**	**#**	—	**7**	
Working voltage (V) ..... :					40 Vdc			—
Frequency if applicable (kHz) ..... :					—			—
PTI ..... :					< 600 ☒ ≥ 600 ☐			—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :					U_{out} = 44 Vdc			—
Pulse voltage if applicable (kV) ..... :					—			—
Supplementary information: Measured between live parts of different polarity								
Distance 2:	—	—	—	—	—	—	—	
Working voltage (V) ..... :								—
Frequency if applicable (kHz) ..... :								—
PTI ..... :								—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :								—
Pulse voltage if applicable (kV) ..... :								—
Supplementary information:								

** Insulation type: B – Basic; S – Supplementary; R – Reinforced

 # The distance not evaluated because the supply voltage is below 60 Vdc. Tested according to clause 12

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict

18 (18.1)	**TABLE: Ball Pressure Test of Thermoplastics**		**N/A**
Allowed impression diameter (mm) .....:		2 mm	—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)
Supplementary information:			

18 (18.2)	**TABLE: Test of printed boards**				**N/A**
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (s)	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
Supplementary information:					

18 (18.3)	**TABLE: Glow-wire test**				**N/A**
Glow wire temperature .....:		650 °C			—
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Supplementary information:					

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict

18 (18.4)	**TABLE: Needle-flame test**				**N/A**
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Supplementary information:					

18 (18.5)	**TABLE: Proof tracking test**				**N/A**
Test voltage PTI .....:		175 V			—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
Supplementary information:					

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
(A)	**ANNEX A - TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK**		**N/A**
(A.1)	Comply with A.2 or A.3		N/A
(A.2)	Voltage ≤ 35 V peak or ≤ 60 V d.c ..... :		N/A
(A.3)	If voltage measured according Clause A.2 exceeds the limit value; touch current does not exceed 0,7 mA (peak) or 2 mA d.c. .....:		N/A
(C)	**ANNEX C – PARTICULAR REQUIREMENTS FOR ELECTRONIC LAMP CONTROL GEAR WITH MEANS OF PROTECTION AGAINST OVERHEATING**		**N/A**
(C3)	**GENERAL REQUIREMENTS**		**N/A**
(C3.1)	Thermal protection means integral with the convertor, protected against mechanical damage		N/A
	Renewable only by means of a tool		N/A
	If function depending on polarity, for cord-connected equipment protection means in both leads		N/A
	Thermal links comply with IEC 60691		N/A
	Electrical controls comply with IEC 60730-2-3		N/A
(C3.2)	No risk of fire by breaking (clause C7)		N/A
(C5)	**CLASSIFICATION**		N/A
	a) automatic resetting type		—
	b) manual resetting type		—
	c) non-renewable, non-resetting type		—
	d) renewable, non-resetting type		—
	e) other type of thermal protection; description ..... :		—
(C6)	**MARKING**		**N/A**
(C6.1)	Symbol for temperature declared thermally protected ballasts		N/A
(C6.2)	Declaration of the type of protection provided		N/A
(C7)	**LIMITATION OF HEATING**		**N/A**
(C7.1)	**Preselection test:**		**N/A**
	Test sample placed for at least 12 h in an oven having temperature (t_c - 5) K		N/A
	No operation of the protection device		N/A

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
(C7.2)	**Functioning of protection means:**		**N/A**
	Normal operation of the sample in a test enclosure according to Annex D at an ambient temperature such that (t_c +0; -5) °C is obtained		N/A
	No operation of the protection device		N/A
	Introducing of the most onerous test condition determined during test of clause 14.2 to 14.5		N/A
	Output of windings connected to the mains supply short-circuited, and other part of the control gear operated under normal conditions		N/A
	Increasing of the current through the windings continuously until operation of the protection means		N/A
	Continuous measuring of the highest surface temperature		N/A
	Ballasts according to C5 a) or C5 e) operated until stable conditions are achieved		N/A
	Automatic-resetting thermal protectors working 3 times		N/A
	Ballasts according to C5 b) working 6 times		N/A
	Ballasts according to C5 c) and C5) d) working once		N/A
	Highest temperature does not exceed the marked value		N/A
	Any overshoot of 10% over the marked value within 15 min		N/A
	After 15 min value not exceed marked value		N/A
(D)	**ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROL GEAR**		**N/A**
	Tests in C7 performed in accordance with Annex D, if applicable		N/A
(F)	**ANNEX F - DRAUGHT-PROOF ENCLOSURE**		**N/A**
	Draught-proof enclosure in accordance with the description		N/A
	Dimensions of the enclosure		N/A
	Other design; description		N/A

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
(H)	**ANNEX H - TESTS**		**N/A**
	All tests performed in accordance with the advice given in Annex H, if applicable		N/A
(I)	**ANNEX I – ADDITIONAL REQUIREMENTS FOR BUILT-IN MAGNETIC BALLASTS WITH DOUBLE OR REINFORCED INSULATION**		**N/A**
(I.6)	Symbol on ballasts with double or reinforced insulation		N/A
	Symbol explained in manufacturers catalogue		N/A
(I.9)	No protective earthing terminal		N/A
(I.12)	Devices for limiting the temperature bridged		—
	After the test according clause 13		N/A
	At least six of seven ballast start the lamp and the current not exceed 115%		N/A
	Insulation resistance not less than 4 MΩ between winding and case for all ballasts		N/A
	All ballasts withstand electric strength test reduced to 35% of values in Table 1 of IEC 61347-1		N/A
(I.15)	Built-in ballasts with double or reinforced insulation comply with corresponding values of creepage and clearances in IEC 60598-1		N/A
(L)	**ANNEX L - PARTICULAR ADDITIONAL REQUIREMENTS FOR CONTROLGEARS PROVIDING SELV**		**N/A**
(L.3)	**Classification**		**N/A**
	Class I	Yes ☐ No ☐	—
	Class II	Yes ☐ No ☐	—
	Class III	Yes ☐ No ☐	—
	non-inherently short circuit proof controlgear	Yes ☐ No ☐	—
	inherently short circuit proof controlgear	Yes ☐ No ☐	—
	fail safe controlgear	Yes ☐ No ☐	—
	non-short-circuit proof controlgear	Yes ☐ No ☐	—
(L.4)	**Marking**		**N/A**
	Adequate symbols are used		N/A
(L.5)	**Protection against electric shock**		**N/A**
	Comply with clause 9.2 of IEC 61558-1		N/A

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
(L.6)	**Heating**		**N/A**
	No excessive temperatures in normal use		N/A
	Value if capacitor t_c marked ..... :		—
	Winding insulation classified as Class ..... :		—
	Comply with tests of clause 14 of IEC 61558-1 with adjustments		N/A
(L.7)	**Short-circuit and overload protection**		**N/A**
	Comply with tests of clause 15 of IEC 61558-1 with adjustments		N/A
(L.8)	**Insulation resistance and electric strength**		**N/A**
(L.8.1)	Conditioned 48 h between 91 % and 95 %		N/A
(L.8.2)	Insulation resistance		N/A
	Between input- and output circuits not less than 5 MΩ ..... :		N/A
	Between metal parts of class II convertors which are separated from live parts by basic insulation only and the body not less than 5 MΩ ..... :		N/A
	Between metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ ..... :		N/A
(L.8.3)	Electric strength		N/A
	1) Between live parts of input circuits and live parts of output circuits ..... :		N/A
	2) Over basic or supplementary insulation between:		N/A
	a) live parts having different polarity ..... :		N/A
	b) live parts and body if intended to be connected to protective earth ..... :		N/A
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord ..... :		N/A
	d) live parts and an intermediate metal part ..... :		N/A
	e) intermediate metal parts and the body ..... :		N/A
	f) each input circuit and all other input circuits ..... :		N/A
	3) Over reinforced insulation between the body and live parts ..... :		N/A

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
(L.9)	**Construction**		**N/A**
(L.9.1)	Transformer comply with 19.12 of IEC 61558-1 and 19 of IEC 61558-2-6		N/A
	HF transformer comply with 19 of IEC 61558-2-16		N/A
(L.10)	**Components**		**N/A**
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		N/A
(L.11)	**Creepage distances, clearances and distances through insulation**		**N/A**
	Creepage distances and clearances not less than in Clause 16		N/A
	Distance through insulation according Table L.5 in IEC 61347-1		N/A
	1) Basic distance through insulation		N/A
	Required distance (mm) ..... :		—
	Measured (mm) ..... :		N/A
	Supplementary information		—
	2) Supplementary distance through insulation		N/A
	Required distance (mm) ..... :		—
	Measured (mm) ..... :		N/A
	Supplementary information		—
	3) Reinforced distance through insulation		N/A
	Required distance (mm) ..... :		—
	Measured (mm) ..... :		N/A
	Supplementary information		—

(N)	**ANNEX N - REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION**		**N/A**
(N.4)	**General requirements**		**N/A**
(N.4.1)	Material comply with IEC 60085 and IEC 60216 series		N/A
(N.4.2)	**Solid insulation**		**N/A**
	Electric strength test at least 5 kV or 1,35 x test voltage in Table N.1		N/A
	If not classified according IEC 60085 and IEC 60216 series: Electric strength test increased 10 % to 5,5 kV or 1,5 x test voltage in Table N.1		N/A

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
(N.4.3)	**Thin sheet insulation**		**N/A**
(N.4.3.1)	Thickness and composition of thin sheet insulation		N/A
	- Inside the ballast and not subjected to handling or abrasion during the production and during maintenance		N/A
	- Non-separated layers: Min. 3 layers and fulfil mandrel test of 150N		N/A
	- Separated layers: Min. 2 layers and each layer fulfil mandrel test of 50N		N/A
	- Separated layers (alternative): Min. 3 layers and 2/3 of the layers fulfil mandrel test of 100N		N/A
(N.4.3.2)	Mandrel test (electric strength test during mechanical stress)		N/A
	Electric strength test after mandrel test:		N/A
	- Non-separated layers: min. 5 kV or 1,35 x test voltage in Table N.1		N/A
	- 2/3 of min. 3 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		N/A
	- one of 2 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		N/A
	No flashover or breakdown occurred		N/A
(O)	**ANNEX O - ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION**		**N/A**
(O.6)	**Marking**		**N/A**
	Marking according clause 7 (7)	See clause 7	N/A
	Special symbol		N/A
	Meaning of the special symbol explained in catalogue		N/A
(O.7)	**Protection against accidental contact with live parts**		**N/A**
	Requirements of clause 8 (10)	See clause 8	N/A
	Test finger not possible to make contact with basic insulated metal parts		N/A
(O.8)	**Terminals**		**N/A**
	Clause 9 (8)	See clause 9	N/A
(O.9)	**Provision for earthing**		**N/A**
	Functional earthing terminals comply with clause 9 of part 1		N/A
	No protective earthing terminal		N/A

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
(O.10)	**Moisture resistance and insulation**		**N/A**
	Clause 11 (11)	See clause 11	N/A
(O.11)	**Electric strength**		**N/A**
	Clause 12 (12)	See clause 12	N/A
(O.13)	**Fault conditions**		**N/A**
	Clause - (14)	See clause 14	N/A
	End of test, between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface comply with dielectric strength test reduced to 35 % of values according Table 3 in part 1		N/A
	Insulation resistance according to Cl.10 between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface not less than 4 MΩ		N/A
(O.14)	**Construction**		**N/A**
	Clause 17 (15)		N/A
	Accessible metal parts insulated from live parts by double or reinforced insulation		N/A
	Live part insulated from supporting surface in contact with external faces by double or reinforced insulation		N/A
(O.15)	**Creepage distances and clearances**		**N/A**
	Clause 18 (16)	See clause 18	N/A
	Comply with corresponding values for luminaries in IEC 60598-1		N/A
(O.16)	**Screws, current-carrying parts and connections**		**N/A**
	Clause 19 (17)	See clause 19	N/A
(O.17)	**Resistance to heat and fire**		**N/A**
	Clause 20 (18)	See clause 20	N/A
(O.18)	**Resistance to corrosion**		**N/A**
	Clause 21 (19)	See clause 21	N/A

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
(P)	**ANNEX P - Creepage distances and clearances and distance through isolation (DTI) for lamp controlgear which are protected against pollution by the use of coating or potting**		**N/A**
(P.1)	**General**		**N/A**
	P.2 applies if creepage distances less than the minimum in Table 7 and 8		N/A
	P.3 applies if clearance less than the minimum in Table 9, 10 and 11		N/A
(P.2)	**Creepage distances**		**N/A**
(P.2.2)	Minimum creepage distances for working voltages and rated voltages with frequencies up to 30 kHz (Table P.1)		N/A
	Basic or supplementary insulation:		N/A
	Required creepage..... :		—
	Measured ..... :		N/A
	Supplementary information		—
	Reinforced insulation:		N/A
	Required creepage..... :		—
	Measured ..... :		N/A
	Supplementary information		—
(P.2.3)	Creepage distances for working voltages with frequencies above 30 kHz (Table P.2)		N/A
	Voltage $\hat{U}_{out}$ kV ..... :		—
	Frequency ..... :		—
	Required distance ..... :		—
	Measured ..... :		N/A
	Supplementary information		—
(P.2.4)	Compliance with the required creepage distances		N/A
(P.2.4.1)	Compliance in accordance with 16.3.3 and test according P.2.4.2		N/A
(P.2.4.3)	Electrical tests after conditioning		N/A
(P.2.4.3.1)	Insulation resistance and electric strength according Clause 11 and 12		N/A
(P.3)	**Distance through isolation**		N/A
(P.3.4)	Electrical tests after conditioning		N/A
(P.3.4.1)	Insulation resistance and electric strength according Clause 11 and 12		N/A

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
(P.3.4.2)	Impulse voltage dielectrical test		N/A
	Basic or supplementary insulation:		N/A
	Working/rated voltage ..... :		—
	Impulse voltage ..... :		N/A
	Supplementary information		—
	Reinforced insulation:		N/A
	Working/rated voltage ..... :		—
	Impulse voltage ..... :		N/A
	Supplementary information		—

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017

ANNEX 2	**TABLE: Critical components information**					
Object / part No.	**Code**	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1)]**
Description:	**Printed circuit board**					
Printed circuit board	B	Tecnomaster	130LF	FR4, 1,6 mm 130 °C, 94V-0	IEC 61347-1:2015 + AMD1:2017 IEC 61347-2-11:2001 + AMD1:2017	Tested with the device also UL certif. (E175172)
Description:	**Connecting devices**					
Screw terminal block (J12)	A	Switchlab Inc / DECA	MB310-500M	0,5-4 mm², 16 A, 300 V, T 105 °C pitch 5 mm Two poles	EN 60998-1:04 EN 60998-2-1:04	DEKRA (2188127.01)
Description:	**Capacitors**					
Safety capacitor	A	Murata	KY	Y2, 2,2 nF, 250 V T -40 + 125 °C Pitch 10 mm	IEC 60384-14:13 + AMD1:2016 EN 60384-14:13 +A1:2016	ENEC 10 (40006273)
Description:	**Ceramic construction SMD fuses**					
Fuse link (F1)	C	Multicomp	MCCFB2410TFF/10	T, 10 A, 63V	IEC 61347-1:2015 IEC 61347-2-11:2001 + AMD1:2017	Tested with the device

Supplementary information:

The codes above have the following meaning:

A - The component is replaceable with another one, also certified, with equivalent characteristics

B - The component is replaceable if authorised by the test house

C - Integrated component tested together with the appliance

D - Alternative component

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017

ODICE DOCUMENTO:	42210D0703
ESCRIZIONE:	Scheda ECO 4LED 1A5 2FAN MASTER 4221020703
ATA:	10/05/2021

Code	Catalogo	Part Type	Designator	Footprint	Description
BOB.00530		744775222 (WE-PD2) PCD0705MT221 (Viking) SDR75-221K-LF (Coilmaster)	L8	IND_SMD_7_7.8_5	Bobina 220uH 490mA in SMD
~~BOB.00610~~		~~7447709151 (Wurth WE-PD)~~	L1, L2, L3, L4	IND_SMD_744770168	~~Bobina 150µH 2.1A smd 1210~~
BOB.00900		7447707151 (Wurth WE-PD Performance)			Bobina 150µH 1.65A smd 1280
BOB.00850		74404043100A (WE-LQS) SDIA0430MT100 (viking)	L7	IND_4025_SMD	Bobina 10uH 1A in SMD
BOB.00870	Farnell	74404084331 (WE-LQS) SDIA0840MT331 (Viking)	L5, L6	IND_8040_SMD	Bobina 330uH 0.66A in SMD
COND.01480		22uF 35V	C63, C71	0605	Cond. elettrolitico vert.smd
COND.01621		47uF 16V	C82, C87	0505	Cond. elettrolitico vert. smd
COND.01770		100n 16V	C1, C2, C3, C4, C5, C6, C7, C8, C9, C17, C28, C31, C39, C41, C42, C51, C55, C56, C65, C85, C86	0603	Cond. in SMD X7R 16V
COND.01910		10nF 16V	C61, C69, C79, C80	0603	Cond. in SMD X7R 16V
COND.01930		1nF	C62, C70	0603	Cond. in SMD-X7R 25V
COND.01950		470pF	C21	0603	Cond. in SMD-NP0 25V
COND.02140		100nF 100V	C20, C30, C40, C53	1206	Cond. in SMD-X7R
COND.02510		2n2F-Y2	C73	RAD0.3	Condensatore Y2 ceramico 250Vac
COND.02920		100n 100V	C60, C64, C68, C72, C78	0805	Cond. in SMD X7R 100V
COND.03150		10nF-50V	C49, C52, C54	0603	Cond. in SMD-X7R ±10%
COND.03250		22uF 25V	C81	1206	Cond. in SMD-25V--X5R
COND.03260		1uF 16V	C10, C22, C32, C43, C57, C66, C74, C75	0603	Cond. in SMD-X7R 16V
COND.03270		560pF 25V NP0 0603	C18, C29, C38, C50	0603	Cond. in SMD NP0 25V
COND.03740		22uF 10V	C83, C84	0603	Cond. in SMD-10V--X5R
COND.03840		2u2 100V	C11, C12, C23, C24, C33, C34, C44, C45, C59, C67, C76, C77	1206	Cond. ceramico 2u2 100V 1206 X7R
COND.03850		100pF	C58	0603	Cond. in SMD-NP0 50V
COND.03920		18pF	C16, C19	0603	Cond. in SMD-NP0
COND.04260	Farnell	47uF 100V 105°	C13, C25, C35, C46	1010	Cond. elettrolitico smd
COND.04300	Farnell	22uF 10V X6S	C14, C26, C36, C47	0805	Cond. in SMD-10V--X6S
CONN.00010		MAMM2_P5	J12	MAMM2_P5	Mammout 2 vie passo 5
CONN.04090		DF1_3_M	J1, J10, J11	DF1_3_VERT	Connettore Hirose DF1 3 vie maschio vert
CONN.04100		DF1_4_M	J4	DF1_4_VERT	Connettore Hirose DF1 4 vie maschio vert
CONN.04110		DF1_6_M	J3	DF1_6_VERT	Connettore Hirose DF1 6 vie maschio vert
CONN.05160		DF1_8_M	J5	DF1_8_VERT	Connettore Hirose DF1 8 vie maschio vert
CONN.05470		DF1_2_M	J7, J13	DF1_2_VERT	Connettore Hirose DF1 2 vie maschio vert
CONN.05480		DF1_5_M	J8, J9	DF1_5_VERT	Connettore Hirose DF1 5 vie maschio vert
CONN.05990		8-338069-0	J6	M_MATCH_10_SMALL_LOCK	Connettore M_Match 10 vie femmina vert Lock in SMD
CONN.06360		STRIP2X5_VERT_M_SMD_P1.27	J2	STRIP_2X5_VERT_SMD_P1.27	Strip maschio 2x5 vie vert p.1.27
CONN.06770		8-338069-8	J14	M_MATCH_18_VERT_LOCK_S	Conn M_Match 18 vie femmina vert SMD Lock
DIOD.00380		BAV99	DD1, DD2, DD6, DD7, DD9, DD10, DD16, DD17	SOT23	Doppio Diodo in SMD
DIOD.00540		10MQ100N	D1, D3, D4, D6, D7, D9, D10, D12	SMA	Diodo shottky 100V 2.1A in SMD
DIOD.00740		BZX84-C5V1	DZ1, DZ2	SOT23_DIODE	Diodo zener da 5.1V 0.25W ±5% in SOT23
DIOD.01250		DF3A6.8	DD3, DD4, DD5, DD8, DD11, DD13, DD14, DD15	SOT323	Doppio Zener ESD protect anodo comune 6,8V
DIOD.01830		PMEG6010ER	D15, D16	SOD-123	Diodo shottky in SMD 60V 1A
DIOD.02140		SDM1U100S1F	D14	SOD-123	Diodo shottky in SMD 100V 1A
DIOD.02160		DRTR5V0U2SR	DD12	SOT143	Dual ESD protection 5V low cap
DIOD.02170	Farnell	SDT5H100P5	D2, D5, D8, D11	PowerDI5	Diodo shottky 100V 5A smd
DIOD.02180	Farnell	SMAJ60A	D13	SMA	Transil unidirez 60V 400W in SMA
DIP.00060		418121270802 (Wurth) DMR-02-T-V (DIPTRONICS) DMR02T (APEM) 219-2MST (CTS)	DSW1	DIP4_SW_SMD	Dip_switch a 2 vie in SMD p.2.54
FUS.00490	Farnell Farnell	MCCFB2410TFF/10 (Multicomp) 0679L9100-01 (belfuse)	F1	FUSE_2410	Fusibile SMD 10A 63Vdc
IC.04070		SN65LBC182P	IC3	ZOCCOLO_8	RS485 - HD - 5V - ESD - 250Kb - 128 nodi
ICS.02910		ADM3483EARZ	IC5	SO-8	Interfaccia RS485 Half_Duplex - 3V3
ICS.03060		AT25256B-SSHL-B M95256-WMN6	IC10	SO-8	EEPROM 256Kbit SPI
ICS.03360		74AC14	IC6	TSSOP14	Hex Schmitt trigger inverter in SMD
ICS.03380		LM3409HV	IC2, IC4, IC7, IC8	MSOP-10_TH	buck controller high power led
ICS.03540		LM5017MR	IC9, IC11, IC12	HSOP8	100V step-down adj regulator 600mA
ICS.03560	Farnell	TLV1117-33IDCY	IC13	SOT223	Regolatore LDO 3V3 800mA in SOT223
ICS.03700		LPC1519JBD100	IC1	LQFP100	Micro serie Cortex-M3 NXP
MOSF.00570	Farnell Mouser	SiSS71DN	TR1, TR3, TR7, TR8	PowerPAK_1212	P_Channel MOS 100V
NTC.00080		B57330V2103F260 (Epcos) 10K 1% B25/100 =3455K	NTC1, NTC2	0805	NTC da 10K 1% in SMD
QRZ.00520	Farnell	12 MHz	XT1	XTAL_SMD_3.2_2.5	Quarzo da 12 MHz smd CL=18pF 30ppm
RESS.00860		10R	R9, R12	0805	R1/8W_10R_5%_(0805)_SMD
RESS.00980		0R	R84, R95	0805	R1/8W_0R_5%_(0805)_SMD
RESS.03060		10K	R13, R14, R15, R16, R37, R38, R52, R60, R63, R108, R109	0603	R1/10W_10K_5%_(0603)_SMD
RESS.03330		12K	R83, R94	0603	R1/10W_12K_5%_(0603)_SMD
RESS.03360		1K	R53, R62, R66	0603	R1/10W_1K_5%_(0603)_SMD
RESS.03370		3K3 1%	R96, R97, R4, R21, R36, R54	0603	R1/10W_3K3_1%_(0603)_SMD
RESS.06950		22R	R8, R26, R42, R59	0603	R1/10W_22R_5%_(0603)_SMD
RESS.03390		100R	R35, R74, R75	0603	R1/10W_100R_5%_(0603)_SMD
RESS.03400		10R	R72, R73, R76	0603	R1/10W_10R_5%_(0603)_SMD
RESS.03410		1K 1%	R32, R103	0603	R1/10W_1K_1%_(0603)_SMD
RESS.03500		4K7 1%	R3, R20, R34, R51	0603	R1/10W_4K7_1%_(0603)_SMD
RESS.03540		4K7	R5, R10, R11, R17, R22, R23, R27, R28, R29, R39, R55, R67, R68, R69, R70, R71, R87, R120	0603	R1/10W_4K7_5%_(0603)_SMD
RESS.03550		220K	R99	0603	R1/10W_220K_5%_(0603)_SMD
RESS.03560		22K	R30	0603	R1/10W_22K_5%_(0603)_SMD
RESS.03790		100K 1%	R44, R47, R48, R106, R107	0603	R1/10W_100K_1%_(0603)_SMD
RESS.03910		8K2	R2, R19, R33, R50, R80, R91, R102	0603	R1/10W_8K2_5%_(0603)_SMD
RESS.04210		49K9 1%	R6, R24, R40, R56	0805	R1/8W_49K9_1%_(0805)_SMD
RESS.04240		1R 1%	R101	0805	R1/8W_1R_1%_(0805)_SMD
RESS.04290		1K5 1%	R61	0603	R1/10W_1K5_1%_(0603)_SMD
RESS.04880		5K6	R64, R65, R81, R82, R92, R93	0603	R1/10W_5K6_5%_(0603)_SMD
RESS.05290		68K	R79, R90	0603	R1/10W_68K_5%_(0603)_SMD
RESS.05670		3K 1%	R100	0603	R1/10W_3K_1%_(0603)_SMD
RESS.05770		560K	R78, R89	0603	R1/10W_560K_5%_(0603)_SMD
RESS.05780		1K8 1%	R43, R45, R46, R104, R105	0603	R1/10W_1K8_1%_(0603)_SMD
RESS.06510		56K	R1, R18, R31, R49, R98	0603	R1/10W_56K_5%_(0603)_SMD
RESS.06590		120K	R77, R88	0603	R1/10W_120K_5%_(0603)_SMD
RESS.07050		27K 1%	R58, R85, R96	0603	R1/10W_27K_1%_(0603)_SMD
RESS.07650	Farnell	0R13 1% 2W antinduttiva	R7, R25, R41, R57	2512	SHUNT antinduttivo 2W 0R13 1% (2512) SMD
TR.00170		BC807	TR6	SOT23_TR	Transistor PNP
TR.00400		PDTC143ZT	TR2, TR4, TR5	SOT23_TR	Transistor NPN in SMD + BIAS 4k7
ZOCC.00140					Zoccolo 8 pin tradizionale
4221010704					Circuito stampato 2 strati FR4 1.6mm

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 2	**Screw terminals (part of the control gear)**		**N/A**
(14)	**SCREW TERMINALS** (IEC 60598-1)		**N/A**
(14.2)	Type of terminal ..... :		—
	Rated current (A)..... :		—
(14.3.2.1)	One or more conductors		N/A
(14.3.2.2)	Special preparation		N/A
(14.3.2.3)	Terminal size		N/A
	Cross-sectional area (mm²) ..... :		—
(14.3.3)	Conductor space (mm)..... :		N/A
(14.4)	Mechanical tests		N/A
(14.4.1)	Minimum distance		N/A
(14.4.2)	Cannot slip out		N/A
(14.4.3)	Special preparation		N/A
(14.4.4)	Nominal diameter of thread (metric ISO thread)..... :	M	N/A
	External wiring		N/A
	No soft metal		N/A
(14.4.5)	Corrosion		N/A
(14.4.6)	Nominal diameter of thread (mm) ..... :		N/A
	Torque (Nm)..... :		N/A
(14.4.7)	Between metal surfaces		N/A
	Lug terminal		N/A
	Mantle terminal		N/A
	Pull test; pull (N)..... :		N/A
(14.4.8)	Without undue damage		N/A

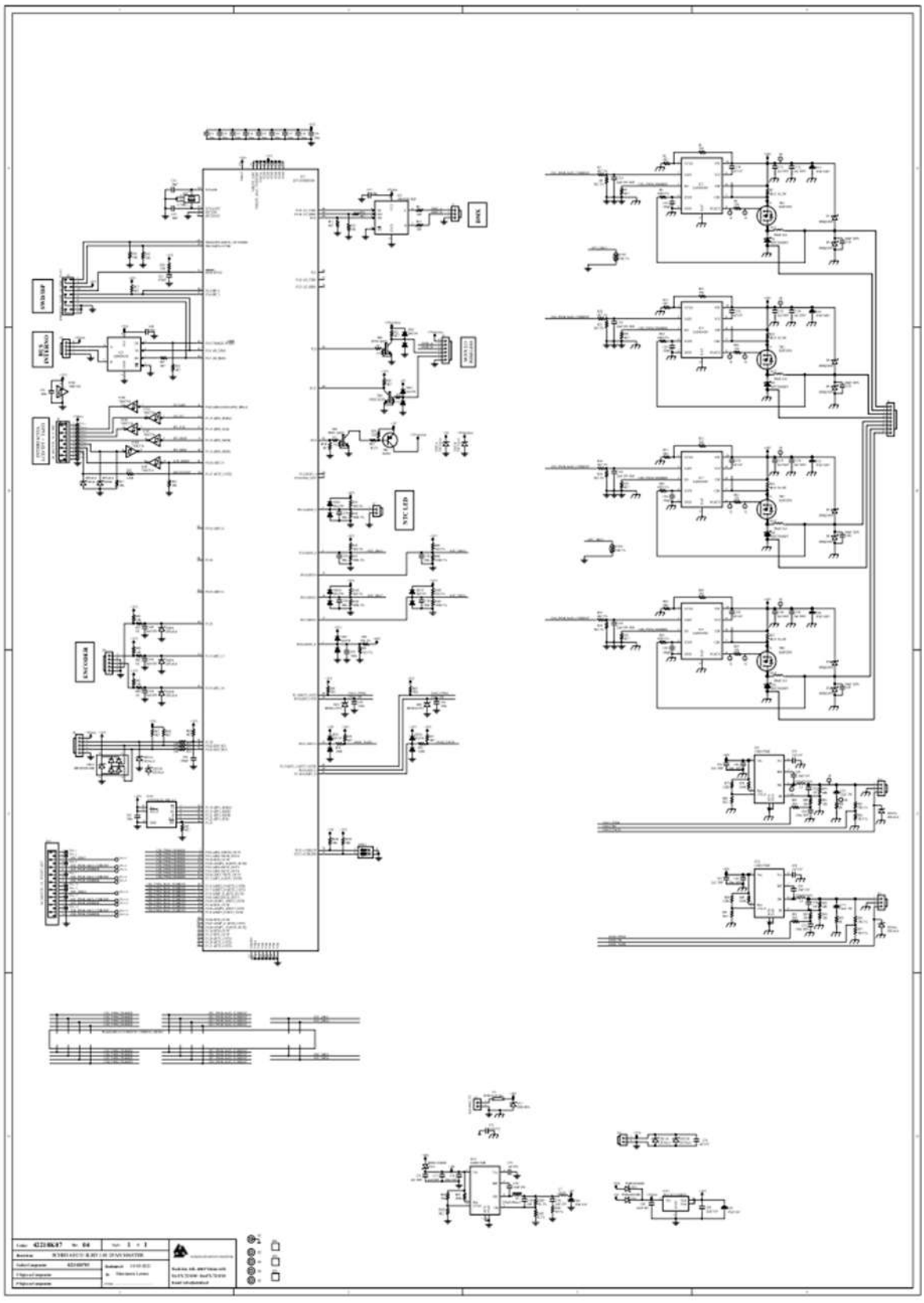
Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 3	**Screwless terminals (part of the control gear)**		**N/A**
(15)	**SCREWLESS TERMINALS** (IEC 60598-1)		**N/A**
(15.2)	Type of terminal ..... :		—
	Rated current (A)..... :		—
(15.3.1)	Material		N/A
(15.3.2)	Clamping		N/A
(15.3.3)	Stop		N/A
(15.3.4)	Unprepared conductors		N/A
(15.3.5)	Pressure on insulating material		N/A
(15.3.6)	Clear connection method		N/A
(15.3.7)	Clamping independently		N/A
(15.3.8)	Fixed in position		N/A
(15.3.10)	Conductor size		N/A
	Type of conductor		N/A
(15.5)	Terminals and connections for internal wiring		N/A
(15.5.1)	Mechanical tests		N/A
(15.5.1.1.1)	Pull test spring-type terminals (4 N, 4 samples) ..... :		N/A
(15.5.1.1.2)	Pull test pin or tab terminals (4 N, 4 samples) ..... :		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N/A
(15.5.2)	Electrical tests		N/A
	Voltage drop (mV) after 1 h (4 samples)..... :		N/A
	Voltage drop of two inseparable joints		N/A
	Number of cycles:		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples) ..... :		N/A
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples) ..... :		N/A
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples) ..... :		N/A
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples) ..... :		N/A
(15.6)	Terminals and connections for external wiring		N/A
(15.6.1)	Conductors		N/A

Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017		
IEC 61347-2-11			
Clause	Requirement + Test	Result - Remark	Verdict
	Terminal size and rating		N/A
15.6.2	Mechanical tests		
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) ..... :		N/A
(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N) ..... :		N/A
(15.6.3)	Electrical tests		N/A
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1		N/A

(15.6.3.1) (15.6.3.2)	**TABLE: Contact resistance test / Heating tests**									**N/A**
	Voltage drop (mV) after 1 h									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop of two inseparable joints									N/A
	Voltage drop after 10th alt. 25th cycle									N/A
	Max. allowed voltage drop (mV)..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop after 50th alt. 100th cycle									N/A
	Max. allowed voltage drop (mV)..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 10th alt. 25th cycle									N/A
	Max. allowed voltage drop (mV)..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 50th alt. 100th cycle									N/A
	Max. allowed voltage drop (mV)..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
Supplementary information:										

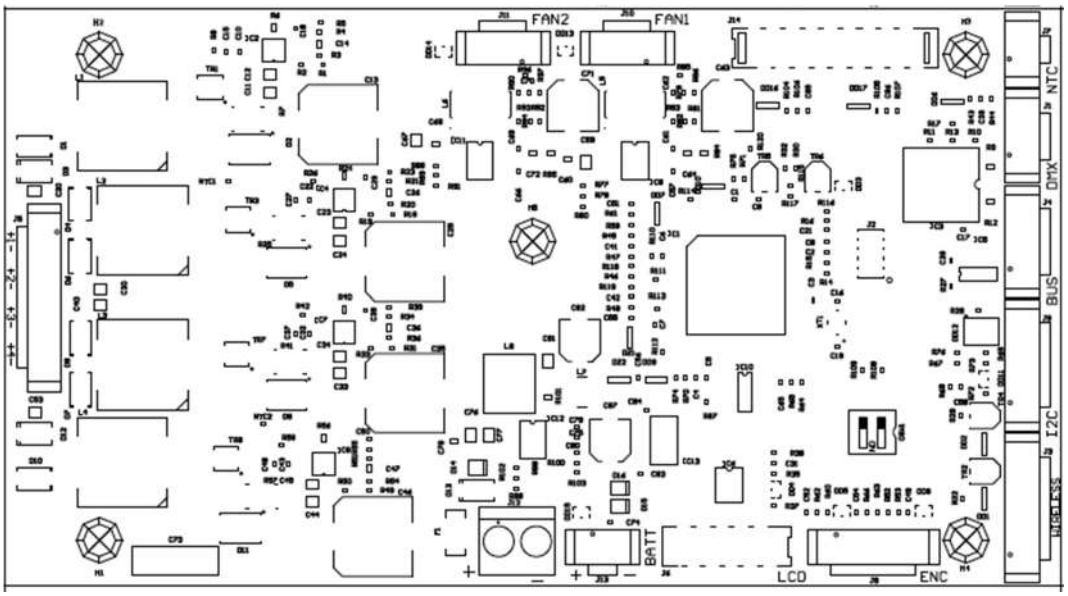
Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017

Electrical scheme

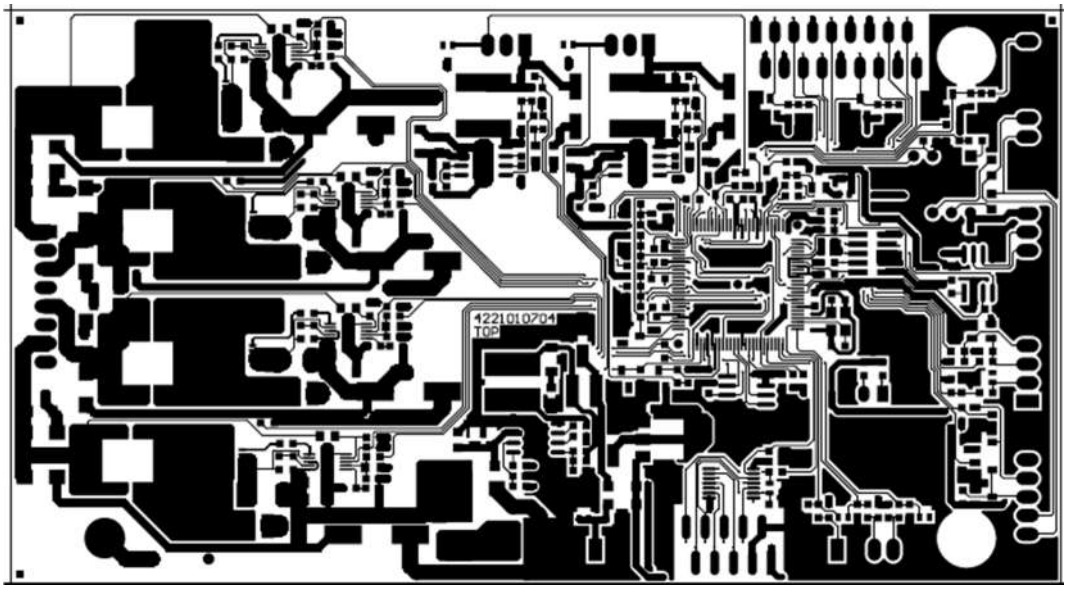


Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017

Component side

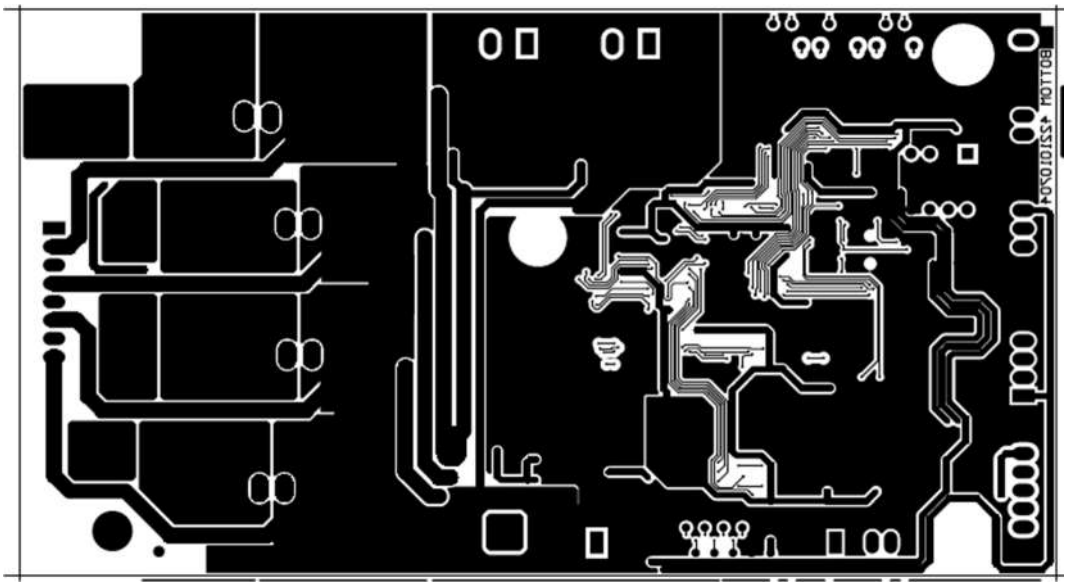


Top side



Attachment 2	REQUIREMENTS OF IEC 61347-2-11:2011 + AMD:2017

Solder side



Attachment 3	IK TEST according to IEC/TR 62696

3 impacts were conducted on different places of the housing and on the translucent cover.
The Striking element may hit the surface only once.

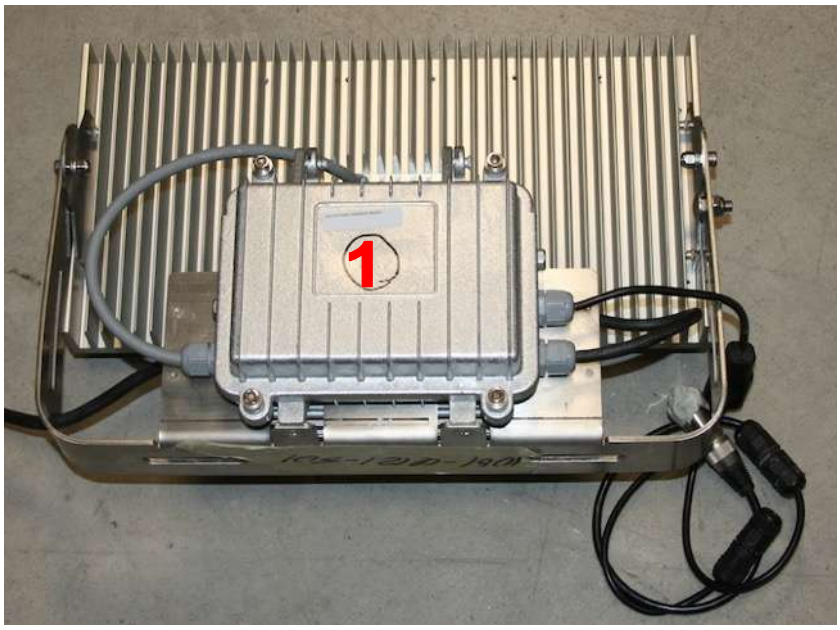
The luminaire was installed on the pole

MEASURE VALUES IK10			
Striking element characteristics		Energy in Joule (of impact)	Height of fall (mm)
Mass	5 kg	**20**	**400**
Diameter	100 mm		
Radius	50 mm		
f =	20 mm		
Length	67 mm		
Material	Steel		

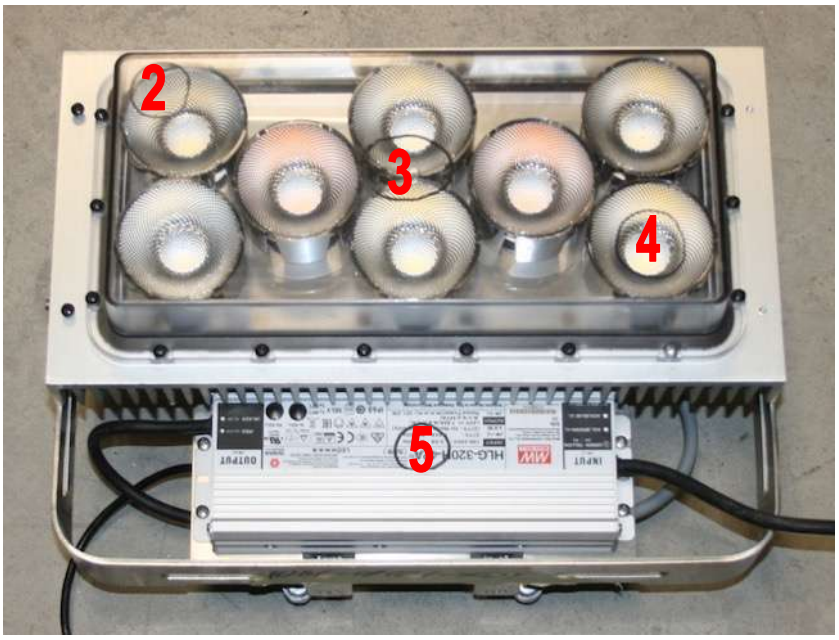
Location of impacts		**Results**
Aluminium housing		
Photograph No. 1	DMX electric compartment point1	No cracks
Photograph No. e	Enclosure of the controlgear point 5	No cracks
Protective screen made of polycarbonate		
Photograph No. 2	point 2	No cracks
Photograph No. 2	point 3	No cracks
Photograph No. 2	point 4	No cracks

Attachment 3	IK TEST according to IEC/TR 62696

Photograph No. 1



Photograph No.2



Attachment 4	PHOTOGRAPHS

Photograph No. 1 SunLite LED optical view

Photograph No. 2 Bottom view DMX compartment

Attachment 4	PHOTOGRAPHS

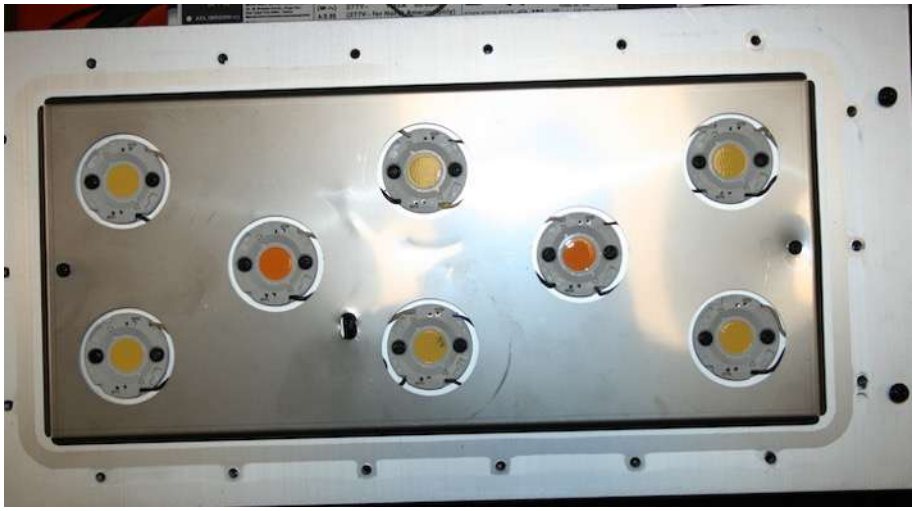
Photograph No. 3 Control gear view

Photograph No. 4 Mounting brackets.

Attachment 4	PHOTOGRAPHS

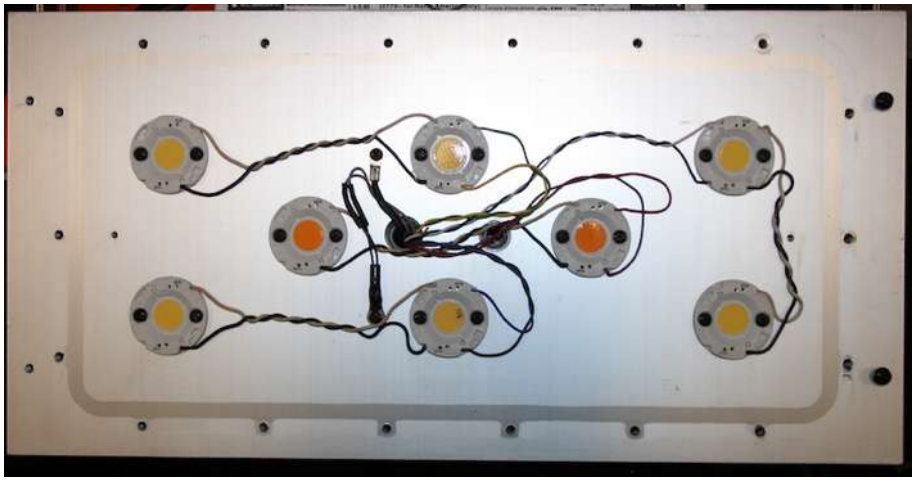
Photograph No. 5 Cob LEDs with the lenses

Photograph No. 6 Cob LEDs after removed the lenses



Attachment 4	PHOTOGRAPHS

Photograph No. 7 Lay out of the Cob LEDs

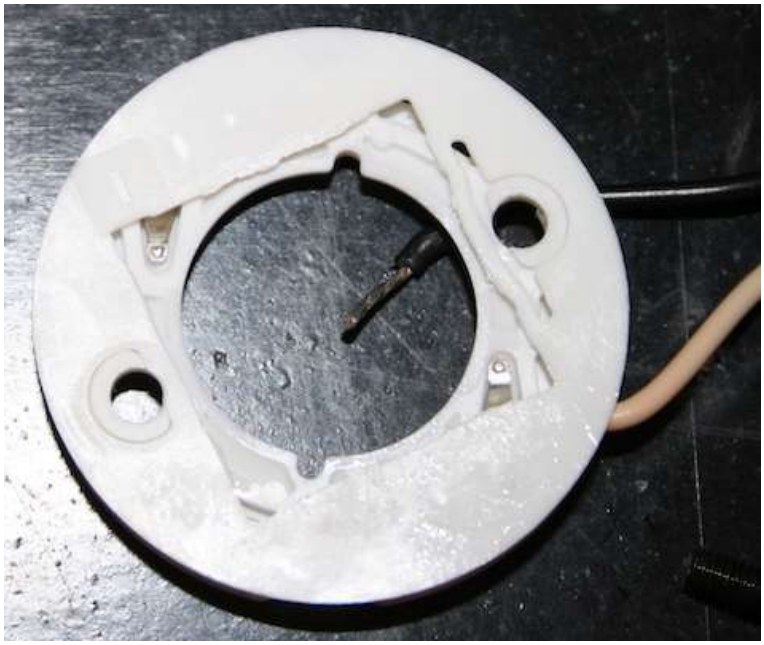


Photograph No. 8 Internal wiring

Attachment 4	PHOTOGRAPHS

Photograph No. 9 Bridgelux BXRE-65S2001-C73

Photograph No. 10 BJB Holder model 47.360



Attachment 4	PHOTOGRAPHS

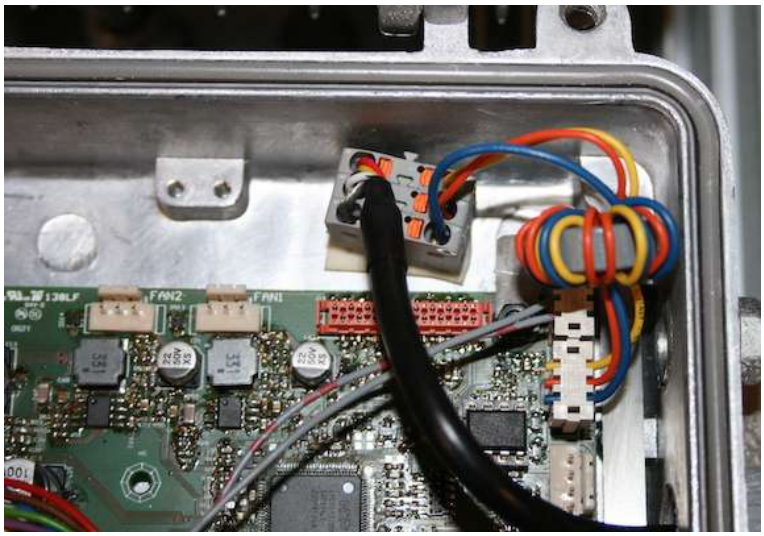
Photograph No. 11 LEDiL Lens

Photograph No. 12 Holder of the lens

Attachment 4	PHOTOGRAPHS

Photograph No. 13 DMX electronic board, mounted in the compartment.

Photograph No. 14 MDX wiring



Attachment 4	PHOTOGRAPHS

Photograph No. 15 Component view

Photograph No. 16 Solder view

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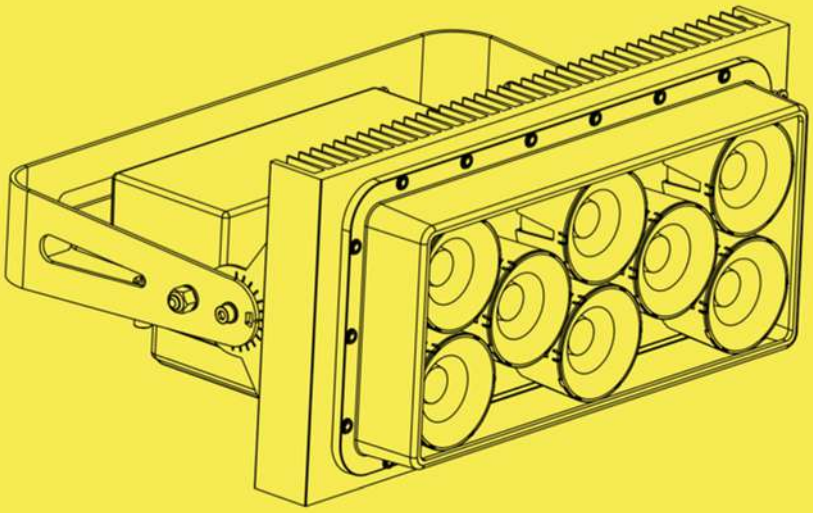
coemar
LIGHT EMOTION

SunLite LED
User Manual



User Manual version 1.0
Edition September 2021

Attachment 5	INSTRUCTIONS

SunLite LED
User Manual

Serial Number: .....

Purchase date: .....

Dealer: .....

Address: .....

Suburb: .....

Country: .....

Phone / Fax: .....

Please note in the space provided above the relative service information of the model and the retailer from whom you purchased your **SunLite LED Series**: this information will assist us in providing spare parts, repairs or in answering any technical enquiries with the utmost speed and accuracy.

WARNING: the security of the fixture is granted only if these instructions are strictly followed; therefore it is absolutely necessary to keep this manual.

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Attachment 5	INSTRUCTIONS

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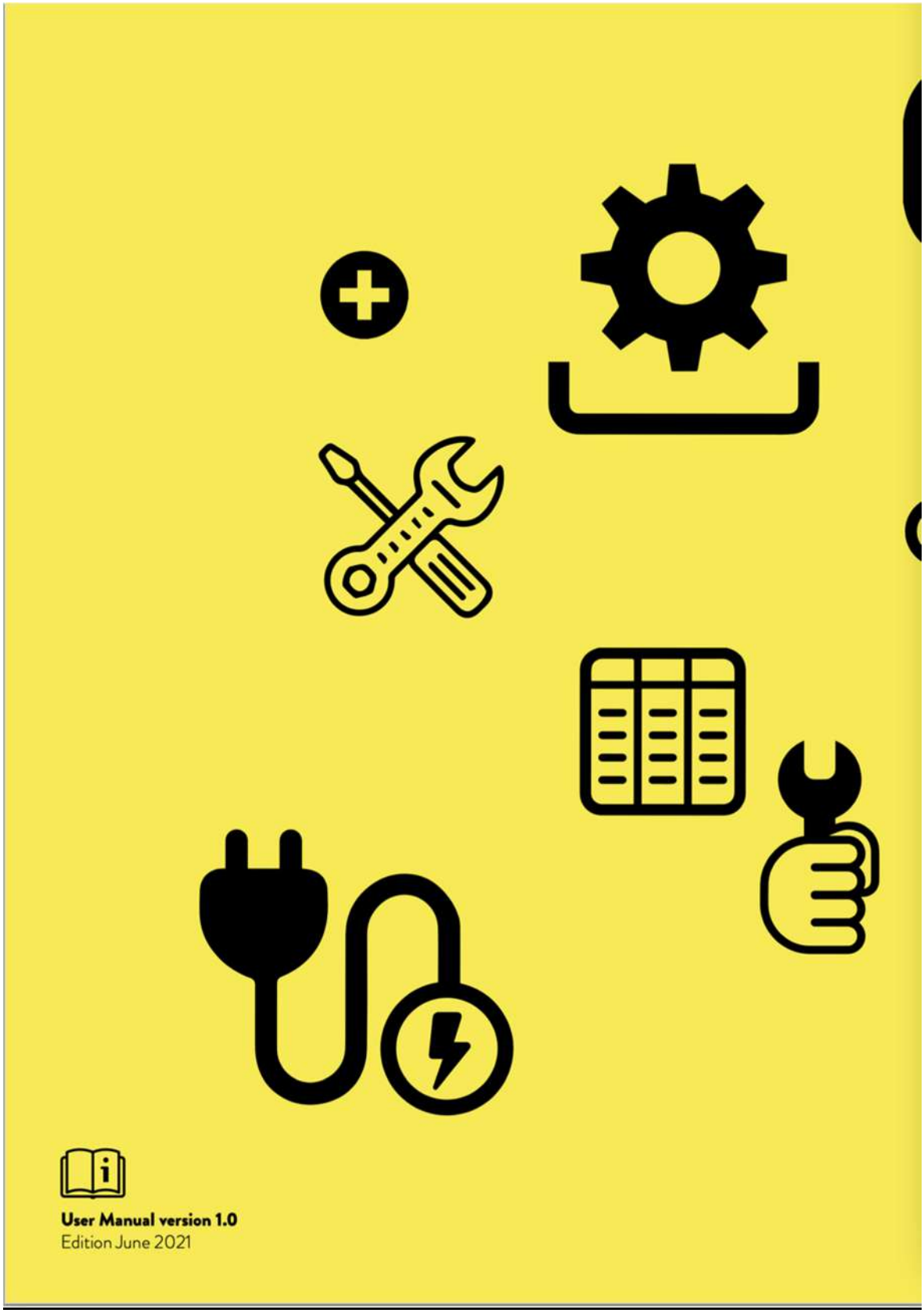
Attachment 5	INSTRUCTIONS



Attachment 5	INSTRUCTIONS

Attachment 5	INSTRUCTIONS

Congratulations on having purchased a **Coemar** product. You have assured yourself of a fixture of the highest quality, both in componentry and in the technology used. We renew our invitation to you to complete the service information on the previous page, to expedite any request for service information or spares (in case of problems encountered either during, or subsequent to, installation). This information will assist in providing prompt and accurate advice from your **Coemar** service centre. Following the instructions and procedures outlined in this manual will ensure the maximum efficiency of this product for years to come.

1. Packaging and transportation

1.1 Packaging

Open the packaging and make sure that no part of the equipment has suffered any damage during the transportation. In case of damage to the fixture, contact your currier and your supplier immediately by telephone, fax or email, and inform them you will formally notify them in writing through registered letter.

Packing list

Ensure the packaging contains:

1 SunLite LED

1 Instruction manual

1.2 Transportation

The **SunLite LED** should be transported in either its original packaging or in an appropriate flight case.

2. General information

2.1 Safety informations

Fire prevention:

1. Never locate the fixture on any flammable surface.
2. Minimum distance from flammable materials: 0,5 m.
3. Minimum distance from the closet illuminable surface: 0,5 m.
4. Connect the projector to mains power protected by a thermal magnetic circuit breaker.
5. Install only in a well-ventilated space.
6. Install only in accordance with applicable building codes.
7. Do not paint, cover, or modify the device, and do not filter or mask the light.
8. Allow the device to cool for 15 minutes after operation before touching it.

Protection rating of the body against liquids and solids:

1. This projector has an **IP 65** protection rating; this indicates that it is protected against dust and significant showers of water. This protection rating allows the fixture to be installed in an exposed location in inclement weather.

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Prevention from electric shock:

1. Presence of high voltage inside of the fixture. Insulate the projector from mains supply before opening or performing any function which involves touching the inside of the fixture, including lamp replacement.
2. For the connection to the mains, adhere strictly to the guidelines outlined in this manual.
3. The level of technology of **SunLite LED** requires the use of specialised personnel for all service applications; refer all work to your authorised **Coemar** service centre.
4. A good earth connection is essential for the proper functioning of the projector.
5. Never connect the fixture if there is no earth connection.

6. Mains cables must not come into contact with other cables.
7. Do not operate the projector with wet hands or in an area where water is present.
8. The fixture must never be located in an exposed position, or in areas of extreme humidity.
9. Do not immerse the fixture in water or liquid.
10. Do not apply power if the device or mains cable is in any way damaged.

Safety:

1. The projector must always be installed with bolts, clamps, or other fixing devices which are suitably rated to support the weight of the projector.
2. Always use a secondary safety fixing device with chain or steel wire of a suitable rating to sustain the weight of the unit in case of failure of the principal fixing point.
3. Devices and accessories must be secured against fall when mounted above floor level. Always observe common and local safety regulations.
4. The stirrup must be mounted hanging or standing vertically. Lateral load can cause deformation or breaking of the spigot and the stirrup.

5. The external surfaces of the unit, at various points, may reach 80°C. Never handle the unit until at least 10 minutes have elapsed since the LED was turned off.
6. Never install the fixture in an enclosed area lacking sufficient air flow; the room temperature must not exceed 40°C.
7. The projector contains electronic and electrical components which must under no circumstances be in contact with water, oil or any other liquid. Failure to do so will compromise the proper functioning of the projector.
8. Do not operate the fixture with missing or damaged covers, shields or any optical component.

9. Do not attempt to bypass thermostatic switches or fuses.
10. For elevated installations, secure the fixture with suitable safety cables, and always comply with relevant load dimensioning, safety standards, and requirements.
11. Caution! High intensity light emission. Risk of eye injury.
12. Take precautions when working at height to prevent injury due to falls.
13. Do not look directly at the light source from close range.
14. Provide well-lit conditions to reduce the pupil diameter of anyone working on or near the fixture.
15. Wear protective glasses and other PPE (personal protective equipment) when working on or near the fixture.
16. Ensure that persons are not looking directly into the front of the fixture when the product lights up suddenly. This can happen when power is applied, when the product receives a DMX signal, or when certain control menu items are selected.

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DANGER! Risk of injury or death through epileptic seizure.
Do not use the effect near stairways, in corridors or near public exits.
Provide advance notice that strobe lighting is in use. Display advisory notices on the set, at the point of ticket sales, on tickets if possible, in the program, and at the entrance(s) to the venue or studio.
Avoid extended periods of continuous flashing, particularly at frequencies of 10 to 20 flashes per second. At flash rates below 5 flashes per second, it is estimated that only 5% of flicker-sensitive persons will be at risk of seizure.
Make sure that personnel at the venue are trained in the care of a person who is having an epileptic seizure and able to provide care if necessary.
If strobes are in use and a person has a seizure, switch the strobes off immediately.
Mount strobes as high above head height as practicable.

2.2 Warranty conditions

1. The fixture is under warranty for 36 months from the purchase date against factory defections.
2. Damage ought to unskillfulness, inappropriate use, or lack of suggested maintenance are excluded from the warranty.
3. Warranty expires when the projector is opened by unauthorized personnel.
4. Warranty doesn't include the replacement of the fixture.
5. Serial number and model of the fixture are necessary to retrieve informations and assistance from the dealer.

2.3 EC Norms

The projector meets all fundamental applicable EC requirements.

Attachment 5	INSTRUCTIONS

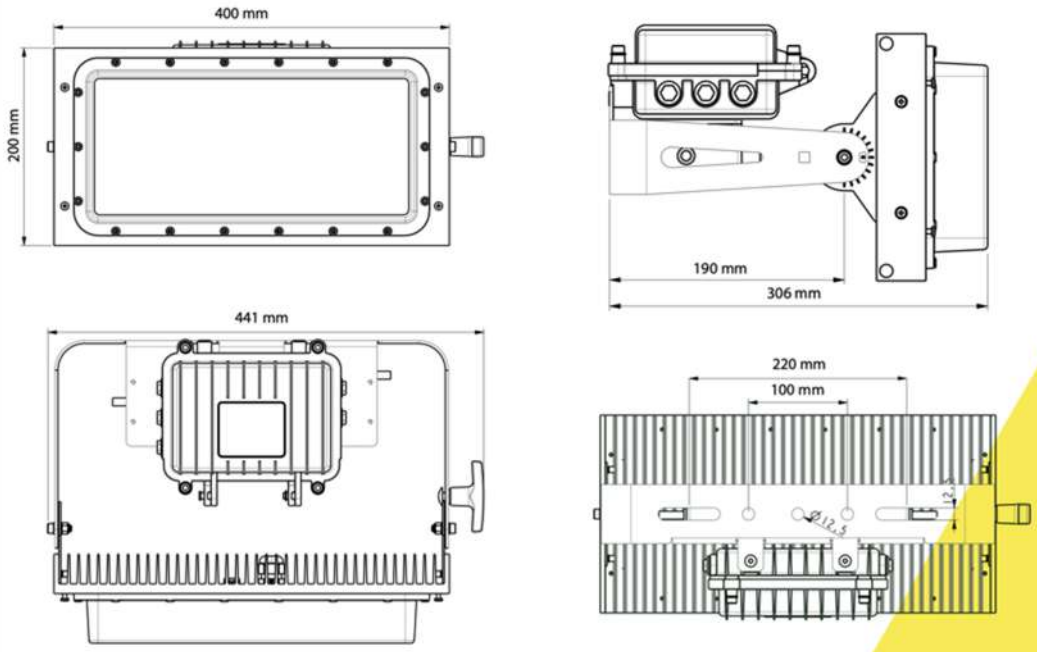
3. Product specifications

3.1 Technical characteristics

Power supply	AC 100-277 V , 50-60 Hz, auto-sensing
Maximum current	1.0 A at 230 V, 2.0 A at 115 V
Power factor	Cosφ = 0.97 at 230V, Cosφ = 0.99 at 115V
Max power consumption	225 W
Color temperature	VariWhite LEDs from 2.700 to 6.500 K
Led source	*8 Bridgelux COB Thrive Series (2 x 2700K + 6 x 6500K)
Weight	10.5 Kg / 23.14 lbs (incl.PSU)
Storage temperature	from - 40° C / -40° F to + 80° C / +176° F
Working temperature	from - 25° C / -13° F to + 40° C / +104° F
IP/IK Rating	IP65 - IK10 (when using a protection grid) - Anti-Corrosion treatment for marine ambient
Installation parameters	Maximum installation height: <15m Maximum wind exposure: 90° (0.06M² front- 0.04M² side) EPA 0.11M² Suitable for indoor / outdoor use

*The COB LED are not replaceable by the user.

3.2 Dimensions



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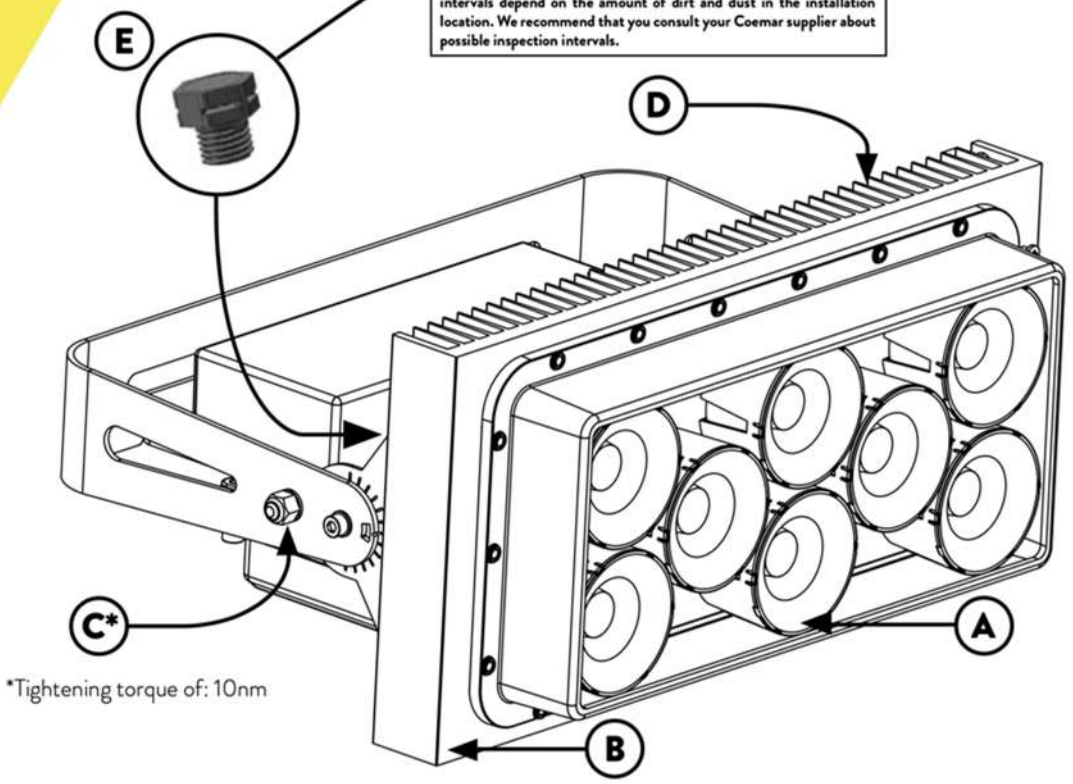
3.3 Unit's main components

Pressure equalization valves in the housing equalizes pressure by allowing air to pass through it when the fixture heats up and cools down, but at the same time it acts as a barrier to water in liquid form. The expulsion of warm air (with a slightly higher water vapor content) and intake of cool air (with a slightly lower water vapor content) prevents humidity buildup over time, provided that the valve works correctly and that the fixture is correctly sealed. Valves cannot be cleaned and must be replaced if they become blocked. Valve replacement intervals depend on the amount of dirt and dust in the installation location. We recommend that you consult your Coemar supplier about possible inspection intervals.



*Tightening torque of: 10nm

Components description	
A	Optical holder tube
B	Yoke with mounting holes
C	Locking screw for yoke
D	Cooling unit
E	Screw Vent

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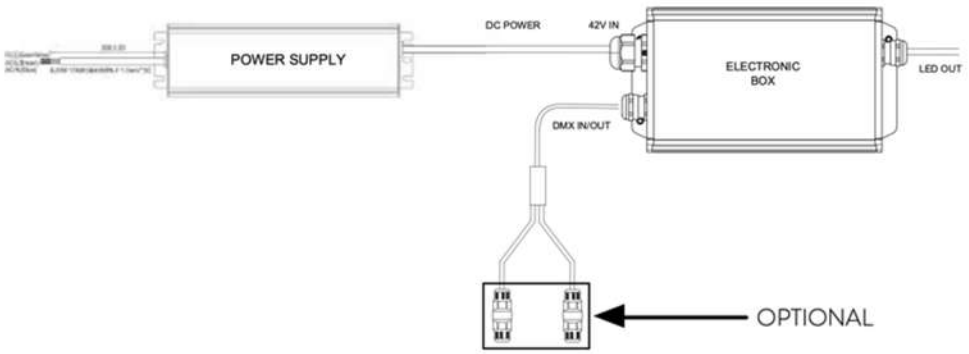
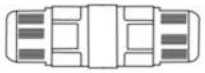
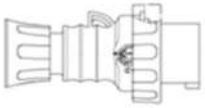
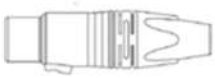
3.4 Back panel description



Recommended Power Plug Connector (optional)

SYMBOL	USE	CONNECTION
	**Power Junction Connector for AC** Cod Art. RCN 72	**E - Green/Yellow** **AC/L - Brown** **AC/N - Blue**
	**Power Connector for AC CEE 16A** Cod Art. RME 641/1	**Pin 1 = Earth** ⏚ **Pin 2 = L-Brown** **Pin 3 = N-Blue** 

Recommended Signal Plug Connector (optional)

SYMBOL	USE	CONNECTION
	**DMX Signal Connector XLR 5** **MALE (IN)** Cod Art. RME 35/2 **FEMALE (OUT)** Cod Art. RME 34/2	**Pin 1 = Ground (Shield)** **Pin 2 = Data - (Black)** **Pin 3 = Data + (Red)** **Pin 4 = Not connected** **Pin 5 = Not connected** 
	**DMX Signal Junction Connector** Cod Art. RCN 73	**DMX 512 STANDARD:** **Pin 1 = Shield** **Pin 2 = Data + (Red)** **Pin 3 = Data - (Black)**

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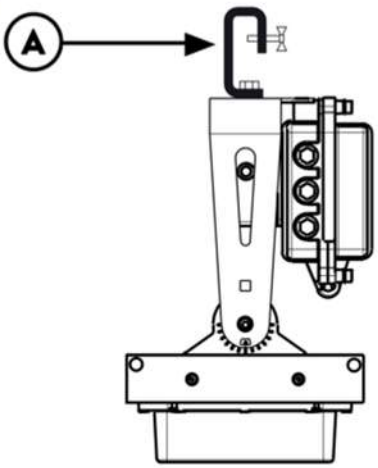
4. Installation

4.1 Mechanical installation

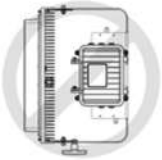
SunLite LED Series may be hung from an appropriate structure in any position or on tripod. If hanging the fixture from a lighting truss or similar, we recommend the use of an appropriate clamp "**A**", as shown in the following diagram.



Warning!!
Always ensure that your support structure and fixing (bolts, clamps, etc...) are rated to support the weight of the fixture.

Warning!!
Do not mount the product with the light source facing upwards.

Warning!!
Do not mount the product in a vertical position.



4.2 Safety chain

When hanging **SunLite LED Series** it is recommended to use a safety chain, as required by current legislation. The safety chain must pass through the handles of the unit and then attached to the structure.
If using steel cables and chains not **Coemar**'s production, make sure they are suitable to support the weight of the unit according to normative UL/ETL.

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5. Powering up

5.1 Operating voltage and frequency

The unit may operates at voltages ranges from 100V to 277V at a frequency of 50 or 60 Hz. It is not needed to effect any setup procedures: **SunLite LED Series** will automatically adjust its operation to suit any frequency or voltage within this range.
Power supply protections: **Over current** (Constant current limiting, recovers automatically after fault condition is removed), **Short circuit** (Hiccup mode, recovers automatically after fault condition is removed), **Over Voltage** (Shut down and latch off o/p voltage, re-power on to recover).

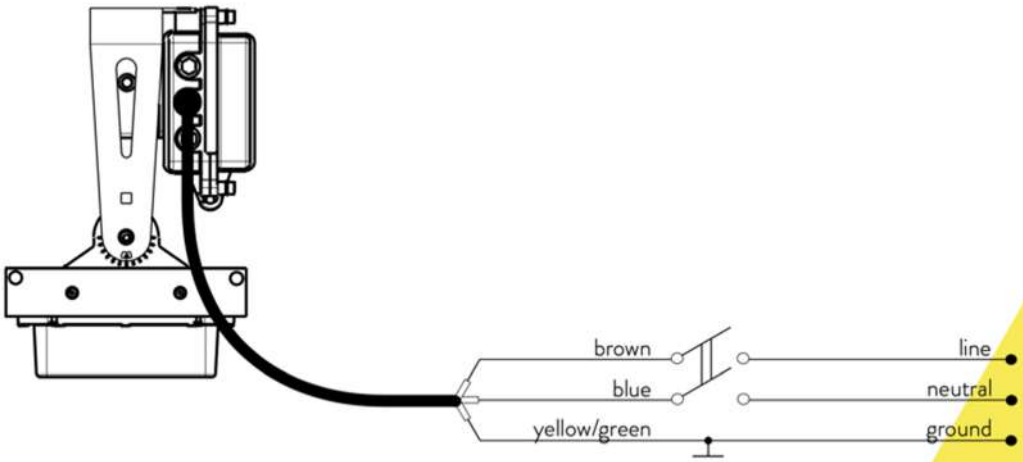
5.2 Connection to mains power

Mains cable characteristics

The mains cable provided is thermally resistant, complying to the most recent International standards.
Note: in case of cable replacement, similar cable with comparable thermal resistant qualities must be used exclusively (cable 3 X 1,5 ø external 10 mm, rated 300/500 V, tested to 2 KV, operating temperature -40°C + 180°C, Coemar cod. CV5311).

Connection to mains power

SunLite LED Series is equipped with an internal cable without power plug.
The max absorption of **SunLite LED Series** is reported in the following table:
- 230V - 1.0A constant during normal exercise.
- 115V - 2.0A constant during normal exercise.



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Warning!!
The use of a thermal/magnetic circuit breaker is recommended. Strict adherence to regulatory norms is strongly recommended.

SunLite LED Series should not be powered through a dimmer as this may damage the internal switching power supply.

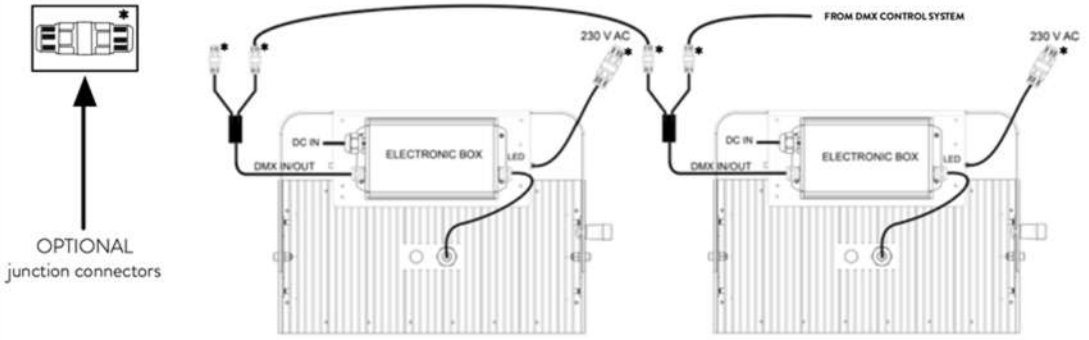
Prior to connecting the device to mains power, ensure that the mains characteristics are within the recommended range for the use of **SunLite LED Series**.

All cabling and connections should be carried out by a suitably qualified personnel.

6. Control signal connections

6.1 Control signal connection by XLR5 plugs

The digital control signal is transmitted to the projector via a two pole cable screened as per International standards for the transmission of DMX 512 data. The connection must be serial, using connectors XLR5 male and female located on the back of **SunLite LED Series** labelled DMX512 IN e OUT (see diagram).
Connectors equipped on **SunLite LED Series** are IP rated, which ensures protection against water and dust. In order to keep this rating they must be connected exclusively to other IP rated connectors.



Warning!
Make sure that screening and conductors are not in contact one another or with the metal housing of the connector.
Pin#1 and housing never must be connected to the power supply unit.

Attachment 5	INSTRUCTIONS

7. Turning the projector on

!The factory setting at the first start up will be in "SUNRISE MODE" at 2000Hz.
After having followed the preceding steps described, proceed with the power supply and turn on the projector connecting it to the mains power.

8. Setup via RDM

8.1 Quick guide to menu

The **SunLite LED Series** required RDM (Remote Device Management) to set up fixtures. Using an RDM-compliant DMX controller, you can communicate with all the fixtures on a data link without needing to connect to each fixture individually. RDM lets you set the DMX addresses of all the fixtures on the link, carry out fixture configuration and retrieve fixture data including details of any error that has been logged.
If two or more identical fixtures are set up with the same DMX address and in the same DMX mode, they will receive the same instructions and behave identically. Setting up identical fixtures with the same address is a good tool for troubleshooting unexpected behavior and an easy way to achieve synchronized action.
Setting DMX addresses via RDM involves running a scan to identify the fixtures that are present on the data link and then allocating addresses either automatically or manually.
To use RDM:
1. Obtain an RDM-compatible controller such as the RDM UPGRADE INTERFACE B (cod. AC10011A001) application running on a Windows PC.
2. Use a USB cable to connect the PC to a USB/DMX interface box
3. Connect the interface box to the data link.
4. Power the fixture on and carry out an RDM discovery / scan in your RDM-compatible controller.
5. You can then configure or retrieve data from the fixtures on the data link.

8.2 RDM Chart

PARAMETER	DESCRIPTION
DMX ADDRESS	Set Dmx Address: (1-512)
CURVE	Set Dimming Curve: Linear, Logarithmic, Exponential, Halogen
FREQUENCY	Set Pwm Frequency: 600Hz-1500Hz-2000Hz-5000Hz-20.000Hz
LOCK PIN	Set Lock Pin
LOCK STATE	Set Screen Lock
FACTORY DEFAULT	Factory Reset
PERSONALITY	Set Personality: 5Ch, 2Ch, 4Ch, Sunrise Mode
SENSOR	Visualize Sensor
LED HOURS	Visualize Led Life Hours
DEVICE HOURS	Visualize Device Life Hours

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Attachment 5	INSTRUCTIONS

8.3 RDM Error Chart

ERROR	DESCRIPTION	SOLUTION
MEMORY	Memory Reading Error	Perform A "Factory Reset"
HW MEMORY	Memory Hardware Error	Contact Coemar
DMX ADDR	Dmx Addressing Error	The Personality Dimension Exceeds 512 Channels
NTC ERROR	Temperature Sensor Disconnected	Check Wiring Ntc Led
SHORT NTC	Short-Circuited Temperature Sensor	Check Wiring Ntc Led
OVER TEMP	Electronic Board Overtemperature	Ambient temperature too high, place the projector in an environment with temperature below 40 °C

Attachment 5	INSTRUCTIONS

9. DMX chart

9.1 DMX Chart 5 channels

channel	function	type of control	effect	decimal	percentage
1	master dimmer	proportional	adjust luminous output intensity from 0 to 100%	0 - 255	0% - 100%
2	dimmer fine	proportional	fine dimmer control 16 bit	0 - 255	0% - 100%
3	white tone	step	2.700 K	0 - 6	0% - 2%
		proportional	proportional value from 2.700 K to 3.200 K	7 - 33	3% - 13%
		step	3.200 K	34 - 60	13% - 24%
		proportional	proportional value from 3.200 K to 4.000 K	61 - 87	24% - 34%
		step	4.000 K	88 - 114	35% - 45%
		proportional	proportional value from 4.000 K to 5.000 K	115 - 141	45% - 55%
		step	5.000 K	142 - 168	56% - 66%
		proportional	proportional value from 5.000 K to 5.600 K	169 - 195	66% - 76%
		step	5.600 K	196 - 222	77% - 87%
		proportional	proportional value from 5.600 K to 6.500 K	223 - 249	87% - 98%
		step	6.500 K	250 - 255	98% - 100%
4	strobe effect	step	no effect	0 - 9	0% - 4%
		proportional	variable speed strobing effect, from slow to fast	10 - 57	4% - 22%
		step	stop strobe	58 - 59	23% - 23%
		proportional	sequenced pulse effect, slow closing, fast opening (variable speed pulsing, from slow to fast)	60 - 108	24% - 42%
		step	stop strobe	109 - 110	43% - 43%
		proportional	sequenced pulse effect, fast closing, slow opening (variable speed pulsing, from slow to fast)	111 - 159	44% - 62%
		step	stop strobe	160 - 161	63% - 63%
		proportional	random strobe effect with variable speed from slow to fast	162 - 207	64% - 81%
		step	stop strobe	208 - 209	82% - 82%
		proportional	random strobe effect with variable speed from slow to fast	210 - 255	82% - 100%
5	special functions	step	park	0 - 9	0% - 4%
			600 Hz	10 - 22	4% - 9%
			no effect	23 - 199	9% - 78%
			LED control frequency tuning 1.500 Hz	200 - 205	78% - 80%
			LED control frequency tuning 2.000 Hz	206 - 211	81% - 83%
			LED control frequency tuning 5.000 Hz	212 - 217	83% - 85%
			no effect	218 - 240	85% - 94%
			LED control frequency tuning 20.000 Hz	241 - 255	95% - 100%

Projector: SunLite LED Series | **Chart name:** DMX512 function | **software version:** 0.039
Edition: 1 | **Date:** 07.09.2021

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9.2 DMX Chart (2/1 ch)

channel 2	channel 1	function	type of control	effect	decimal	percentage
1	1	master dimmer	proportional	adjust luminous output intensity from 0 to 100%	0 - 255	0% - 100%
2	-	white tone	proportional	proportional value from 2.700 K to 6.500 K	0 - 255	0% - 100%

Projector: SunLite LED Series
Edition: 1
Chart name: DMX512 function
Date: 07.09.2021
software version: 0.039

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9.3 DMX Chart (SUNRISE mode)

channel	function	type of control	effect	decimal	percentage
1	master dimmer	proportional	adjust luminous output intensity from 0 to 100%	0 - 255	0% - 100%
2	dimmer fine	proportional	fine dimmer control 16 bit	0 - 255	0% - 100%
3	proportional cct	proportional	2.700 K	0	0%
			proportional value from 2.700 K to 4000 K	1 - 86	0% - 34%
			4.000 K	87	34%
			proportional value from 4.000 to 5.000 K	88 - 152	35% - 60%
			5.000K	153	60%
			proportional value from 5.000 to 5.600 K	154 - 192	60% - 75%
			5.600K	193	76%
			proportional value from 5.600 K to 6.500 K	194 - 254	76% - 100%
			6.500 K	255	100%
4	step cct	step	no effect	0 - 9	0% - 4%
			2.700 K	10 - 50	4% - 20%
			3.200K	51 - 91	20% - 36%
			4.000K	92 - 132	36% - 52%
			5.000K	133 - 173	52% - 68%
			5.600K	174 - 213	68% - 84%
			6.500K	214 - 255	84% - 100%
5	special functions	step	park	0 - 9	0% - 4%
			600 Hz	10 - 22	4% - 9%
			no effect	23 - 199	9% - 78%
			LED control frequency tuning 1.500 Hz	200 - 205	78% - 80%
			LED control frequency tuning 2.000 Hz	206 - 211	81% - 83%
			LED control frequency tuning 5.000 Hz	212 - 217	83% - 85%
			no effect	218 - 240	85% 94%
			LED control frequency tuning 20.000 Hz	241 - 255	95% - 100%

Note 1: If channels 3 and 4 are used simultaneously, channel 4 prevails.

Projector: SunLite LED Series	**Chart name:** DMX512 function	**software version:** 0.039
Edition: 1	**Date:** 07.09.2021	

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Attachment 5	INSTRUCTIONS

9.4 DMX Chart (RAW mode)

channel	function	type of control	effect	decimal	percentage
1	warm white led	proportional	adjust luminous output intensity of warm white led from 0 to 100%	0 - 255	0% - 100%
2	warm white led fine	proportional	warm white led fine control 16 bit	0 - 255	0% - 100%
3	cold white led	proportional	adjust luminous output intensity of cold white led from 0 to 100%	0 - 255	0% - 100%
4	cold white led fine	proportional	cold white led fine control 16 bit	0 - 255	0% - 100%

Projector: SunLite LED Series	**Chart name:** DMX512 function	**software version:** 0.039
Edition: 1	**Date:** 07.09.2021	

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Attachment 5	INSTRUCTIONS

10. Accessories and spare parts

All the components of **SunLite LED Series** are available as spare parts from your **Coemar** dealer or Service. Accurate description of the fixture, model number and type will assist us in providing for your requirements in an efficient and effective manner.

Code	Description	Code	Description
F073G001H	Narrow Lenses, Black	RCN 72	Power Junction Connector for AC
F073G001I	Medium Lenses, Black	RME 641/1	Power Plug CEE 16A
F073G001L	Wide Lenses, Black	RME 34/2	DMX Signal Connector XLR5 Female (OUT)
F073G001O	Ultrawide Lenses, Black	RME 35/2	DMX Signal Connector XLR5 Male (IN)
F073G101H	Narrow Lenses, Silver	RCN 73	DMX Signal Junction Connector
F073G101I	Medium Lenses, Silver		
F073G101L	Wide Lenses, Silver		
F073G101O	Ultrawide Lenses, Silver		
O336.045	Louver (Protection Grid)		

11. Maintenance

11.1 Firmware update

The firmware of **SunLite LED Series** can be updates through the RDM protocol (ANSI E1.20). Contact **Coemar** assistance to receive the software and the device updater.

11.2 Periodic cleaning

!Regular cleaning is essential for fixture life and performance.
Buildup of dust and dirt degrades the fixture's light output and cooling ability.

!To clean the housing and front cover Isolate the fixture from AC power and allow the fixture to cool for 20 minutes.

!Before closing the cover after each cleaning, remember to heat the LEDs for at least 20 minutes, so as to eliminate all traces of humidity.

Lenses

Even a thin layer of dust can reduce the luminous output and alter the consistency of the beam. Regularly clean all filters and lenses using a soft cotton cloth, dampened with a special lens cleaning solution.

Cleaning of the unit

Use a soft brush or a common vacuum cleaner or a source of compressed air for removing dust.
For the cleaning of the housing use a soft cloth and a non-aggressive cleaner, Lukewarm Water or Mild Soap.
FORBIDDEN: (Abrasive Cleaners, Highly Alkaline Cleaners, Aromatic Solvents, Halogenated Solvents, Brushes, Steel Wood).
Check that the internal fans (if provided in the product) and heat exchanger must be perfectly clean.
Don't use pressure washer or water jet, do not leave cleaners on plastic parts for a long period and do not apply cleaners in direct sunlight or at elevated temperatures.

Attachment 5	INSTRUCTIONS

11.3 Periodic controls

Mechanical components

Check the correct working of the mechanical parts and, if needed, replace them. Make sure the projector is not mechanically damaged. If necessary, replace the worn parts.

Electrical components

Check all electrical connections, in particular for correct grounding and correct attachment of all extractable connectors. Press the connectors if necessary and reposition as before.

11.4 Fuses

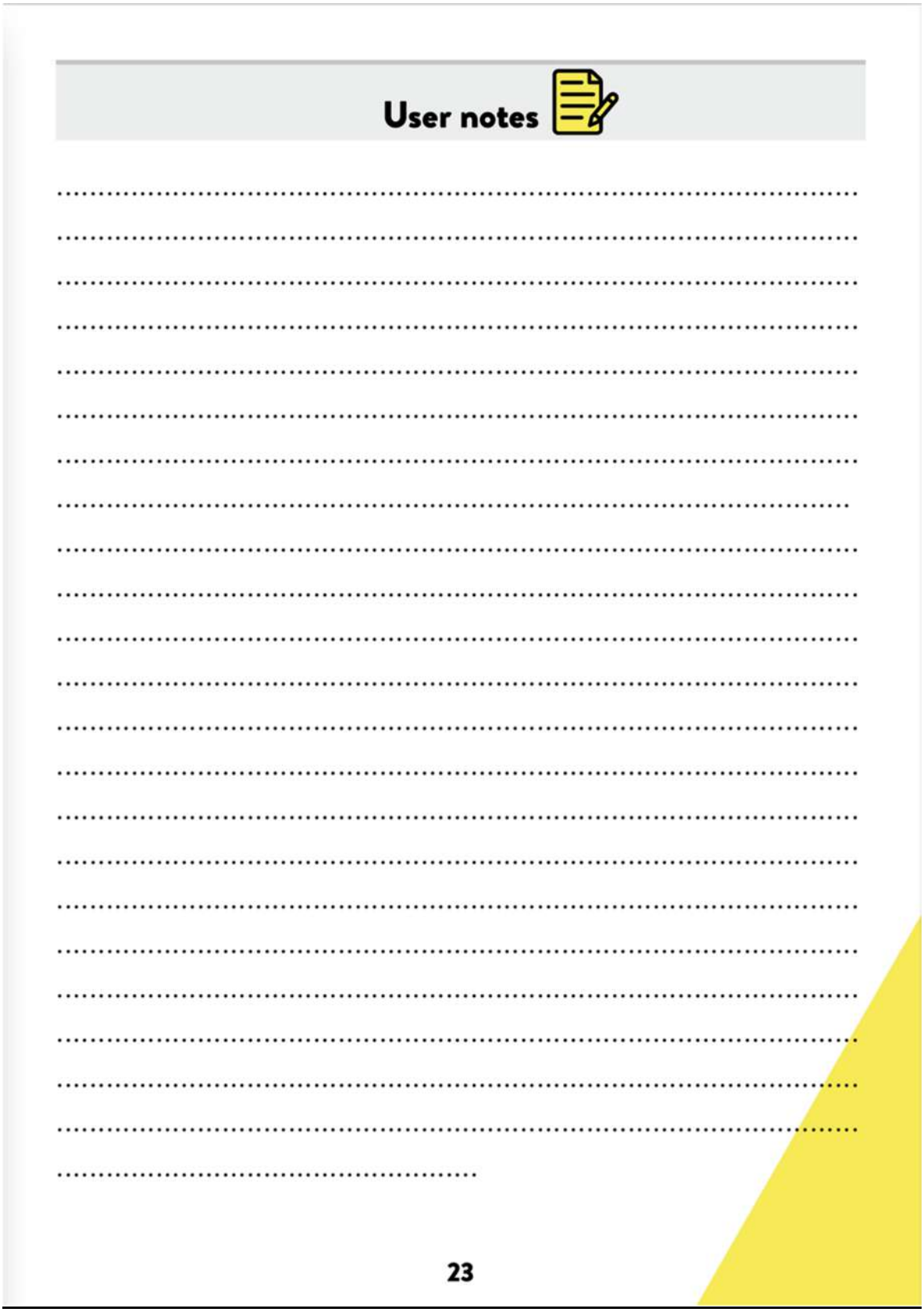
SunLite LED Series has an automatic fuse that in most cases does not need to be replaced.

12. F.A.Q. and answers

The following list shows common issues that may be simply solved. If issues persist, the unit must be repaired by a qualified personnel or just contact your **Coemar** service.

Question	Possible solution
SunLite LED Series does not emit light	**Projector not powered on:** • Make sure the power cable is plugged in or test the input voltage; **Wrong DMX address:** • Check the DMX Address setting and the output signal of the controller;
SunLite LED Series is not responding to DMX signal	**DMX signal may not reach SunLite LED Series:** • Inspect the cable connection, correct poor connections or inefficient repair or replace damaged cables; • Check DMX address of the unit;

Attachment 5	INSTRUCTIONS



Attachment 5	INSTRUCTIONS

Information on disposal of the equipment

The equipment at the end of its useful life must be disposed of at an appropriate recycling center for waste electrical and electronic equipment. The treatment and disposal of environmentally friendly, helps prevent potential negative environmental and health and promote the reuse and / or recycling of materials making up the equipment. Illegal disposal by the user includes the application of administrative sanctions provided by law.

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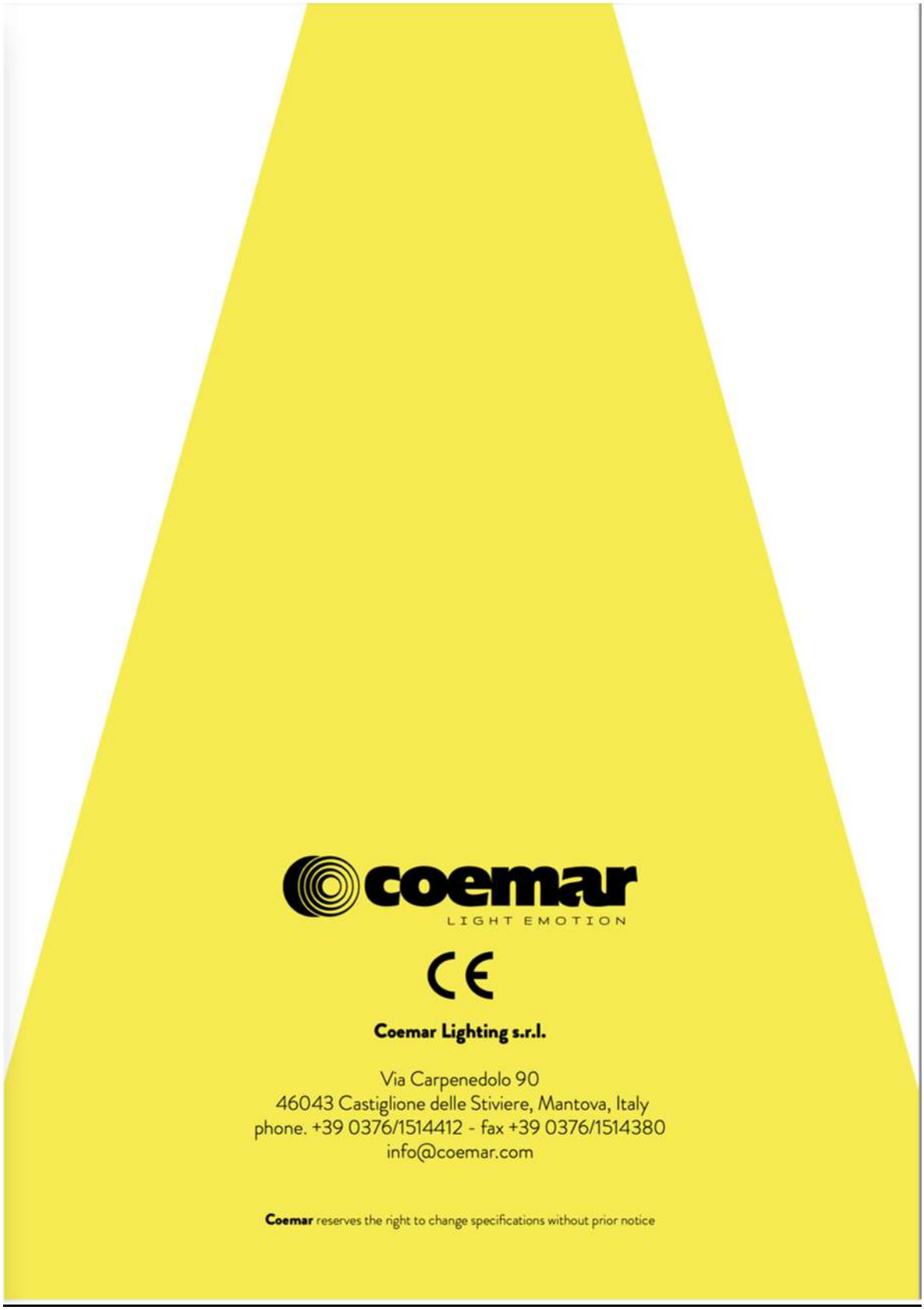
Attachment 5	INSTRUCTIONS



Test Report issued under the responsibility of:

TEST REPORT
IEC 62717
LED modules for general lighting
Performance requirements

Report Number, ... :	**4788975418-1**
Date of issue ..... :	2019-11-26
Total number of pages ..... :	**28 including attachments**
Name of Testing Laboratory preparing the Report ..... :	**UL International Italia S.r.l.**
Applicant's name ..... :	**BRIDGELUX INC**
Address ..... :	46430 FREMONT BOULEVARD, FREMONT, CA 94538 USA
Test specification:	
Standard ..... :	IEC 62717:2014, AMD1:2015
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
Test Report Form No, ... :	IEC62717D
Test Report Form(s) Originator .... :	DEKRA Certification B,V,
Master TRF ..... :	Dated 2018-01-23

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed,

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02,

General disclaimer:

The test results presented in this report relate only to the object tested,
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory, The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report,

Test item description.....:	Built-in LED Module
Trade Mark.....:	bridgelux.
Manufacturer .....:	Same as applicant
Model/Type reference.....:	BXRC-abcdefg-h-ij Series and BXRE-abcdefg-h-ij Series (See GPI for Product Key explanation)
Ratings.....:	Imax: 3420 mA ⎓ t_c: 105 °C Max (See GPI for additional details and Ratings)

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):

☒	**CB Testing Laboratory:**	UL International Italia S,r,l,	
Testing location/ address.....:		Via Delle Industrie 5&6 – 20061 Carugate (MI) - Italy	
Tested by (name, function, signature).....:		Giovanni Di Martino *Project Handler*	
Approved by (name, function, signature)...:		Walter Parmiani *Reviewer*	
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address.....:			
Tested by (name, function, signature).....:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: CTF Stage 2:**		
Testing location/ address.....:			
Tested by (name + signature).....:			
Witnessed by (name, function, signature) .:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: CTF Stage 3:**		
☐	**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):

This report consists of:	
Test results including Annexes	16 pages
Optical Tests	(Enclosure 1): 1 pages
LED Module Life	(Enclosure 2): 3 pages
Photographs	(Enclosure 3): 3 pages
Manufacturer's Instructions	(Enclosure 4): 5 pages

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
7 – Module Power 8 – Light Output 9 - Chromaticity Co-ordinates, Correlated Colour Temperature And Colour Rendering 10 – LED Module Life	UL International Italia S,r,l, Via Delle Industrie 5&6 – 20061 Carugate (MI) - Italy

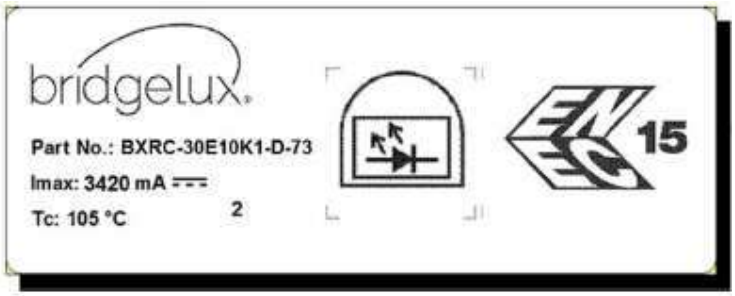
Summary of compliance with National Differences (List of countries addressed):

No National Differences,

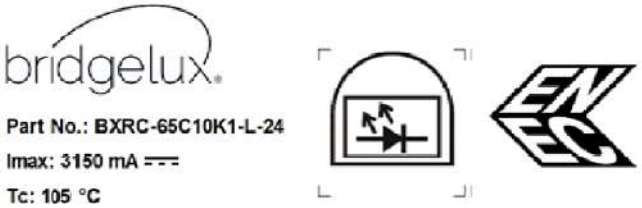
Copy of marking plate:

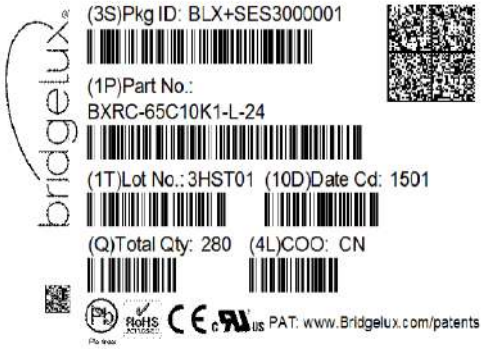
The artwork below may be only a draft, The use of certification marks on a product must be authorized by the respective NCBs that own these marks,

Example of marking BXRC-30E10K1-D-73:



Example of marking BXRC-65C10K1-L-24:





Test item particulars.....:	
Classification of installation and use.....:	Built-in LED module,
Supply Connection.....:	Screwless terminals,
.....:	
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 .....:	2019-06-24 and 2019-10-08
Date (s) of performance of tests.....:	2019-07-03 to 2019-08-30 and 2019-10-08

General remarks:

"(See Enclosure #)" refers to additional information appended to the report,
"(See appended table)" refers to a table appended to the report,

The tests results presented in this report relate only to the object tested,
This report shall not be reproduced except in full without the written approval of the testing laboratory,

List of test equipment must be kept on file and available for review,

Throughout this report a ☒ comma / ☐ point is used as the decimal separator,

Manufacturer's Declaration per sub-clause 4,2,5 of IECEE 02:

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 ..... :	☐ **Yes** ☒ **Not applicable**

When differences exist; they shall be identified in the General product information section,

Name and address of factory (ies) ..... :	**KAISTAR LIGHTING (XIAMEN) CO,, LTD** 1F, No 99 and No 101 Xiang Xing Road; Industrial Development Zone (Xiang'an), Xiamen Torch Hightech, Xiamen City, Fujian Province, P,R, China,

General product information and other remarks:

The product under test is a constant current Built-in LED module with Correlated Colour Temperature in the range 1700 K - 6500 K for spotlights and downlight applications,

The module is mainly composed by a LED COB (Chip on Board), and Vero series additionally use a LED holder. The LED modules have been evaluated for use with a dedicated isolated SELV control gear,

The module consists of individual dies connected in series and parallel,

The series can be a combination of LED dies noted in the table below and mounted to a base covered with optic lens, The optic lens incorporates various phosphor loadings to vary the Colour Temperature, The LED package is mounted to a metal base PCB,

The form factors from the BXRC family are Vero 10, Vero 13, Vero 18 and Vero 29, Vero 10 SE, Vero 13 SE, Vero 18 SE and Vero 29 SE.

The form factors from the BXRE family are V6, V8, V10; V13, V15, V18, V22,

The product was additionally evaluated according to IEC 62717:2014+AMD1:2015 +AMD2:2019.

Rating for Vero Series:

LED COB Model Nomenclature p/n	Series	Max numbers of diodes	Max Current (mA)	Max operating voltage VDC	Max Power (W)	Max CCT (K)
Generation 6						
BXRC-abcdefg-h-ij	Vero 29	156	3150	50	120	6500
BXRC-abcdefg-h-ij	Vero 18	60	2100	50	65	6500
BXRC-abcdefg-h-ij	Vero 13	33	1050	50	36	6500
BXRC-abcdefg-h-ij	Vero 10	18	700	50	20	6500
Generation 7						
BXRC-abcdefg-h-ij	Vero 29/ Vero 29 SE	456	3420	80	237	6500
BXRC-abcdefg-h-ij	Vero 18/ Vero 18 SE	156	2340	60	81	6500
BXRC-abcdefg-h-ij	Vero 13/ Vero 13 SE	84	1050	60	36	6500
BXRC-abcdefg-h-ij	Vero 10/ Vero 10 SE	48	700	60	20	6500

Product Key explanation:

BXRC: designated product family
ab : designates the nominal ANSI color temperature (not exceeding 6500K)
c: designates minimum CRI
defg: designates model type where the first three suffixes are as follows and G can be any alphanumeric character:

- **10Kg, or 1Kfg** – Vero 29 Series
- **40fg** – Vero 18 Series
- **20fg** – Vero 13 Series
- **10fg** – Vero 10 Series

h: designates array configuration (specify the Current and Typical Voltage and Typical Power)
ij: designates CCT bin options where i = 0 or 2 for Generation 6, and i = 7 for Generation 7
SE: suffix designates 'SE' holder, when used
Generation 7 may only use tails or the Vero SE holder for current above 3150 mA. The connector option (Non-Vero SE) is suitable only for maximum 3150 mA,

Rating for V Series:

LED COB Model Nomenclature p/n	Series	Max numbers of diodes	Max Current (mA)	Max operating voltage VDC	Max Power (W)	Max CCT (K)
Generation 6						
BXRE-abcdefg-h-ij	V22	96	2100	50	78	6500
BXRE-abcdefg-h-ij	V18	60	2100	50	65	6500
BXRE-abcdefg-h-ij	V15	48	1400	50	56	6500
BXRE-abcdefg-h-ij	V13	33	1050	50	36	6500
BXRE-abcdefg-h-ij	V10	18	700	50	20,6	6500
BXRE-abcdefg-h-ij	V8	12	700	50	13,8	6500
BXRE-abcdefg-h-ij	V8	12	350	50	13,8	6500
BXRE-abcdefg-h-ij	V6	6	700	50	6,9	6500
BXRE-abcdefg-h-ij	V6	6	350	50	6,9	6500
Generation 7						
BXRE-abcdefg-h-ij	V22	288	2340	60	121	6500
BXRE-abcdefg-h-ij	V18	156	2340	60	81	6500
BXRE-abcdefg-h-ij	V15	96	1400	60	51	6500
BXRE-abcdefg-h-ij	V13	84	1260	60	25	6500
BXRE-abcdefg-h-ij	V10	48	720	60	25	6500
BXRE-abcdefg-h-ij	V8	28	700	60	14,3	6500

Product Key explanation:

BXRE: designated product family
ab : designates the nominal ANSI colour temperature (not exceeding 6500K)
c: designates minimum CRI
defg: designates model type where the first three suffixes are as follows and G can be any alphanumeric character:

- **65fg** – V22 Series
- **40fg** – V18 Series
- **30fg** – V15 Series
- **20fg** – V13 Series
- **10fg** – V10 Series
- **08fg** – V8 Series

h: designates array configuration (specify the Current and Typical Voltage and Typical Power)
ij: designates CCT bin options where i is 0,or 2 for Generation 6 and i is 7 for Generation 7

Models used for the tests:

Model/Type reference	Tp	CCT / CRI
BXRC-17E10K0C7	105 °C	1700 K / CRI 80
BXRC-27H10K0D7		2700 K / CRI 95
BXRC-30E10K0C7		3000 K / CRI 80
BXRC-35E10K0C7		3500 K / CRI 80
BXRC-40E10K0C7		4000 K / CRI 80
BXRC-50C10K0C7		5000 K / CRI 70
BXRC-57C10K0C7		5700 K / CRI 70
BXRC-65C10K0C7		6500 K / CRI 70

Performance ratings:

Max Luminous Flux [lm]	$T_{p\ Max}$ [°C]	CCT [K]	CRI	Max Efficacy [lm/W]
33758	105	1700 - 6500	>70 >80 >90	138
Ambient Temperature Range: -10 °C ÷ 50 °C				

IEC 62717			
Clause	Requirement + Test	Result - Remark	Verdict

1	GENERAL REQUIREMENTS		
	Type of LED modules	Type 1 ☐ Type 2 ☐ Type 3 ☒	P
	The LED module shall be so designed and constructed that it can start and operate satisfactorily at voltages between 92% and 106% of rated supply voltage or with specified control gear		N/A

4	PRODUCT INFORMATION		
	- rated luminous flux (lm) ..... :	See table 7, 8,1 & 8,3	P
	- photometric code ..... :	x*yy*/339 Where *x* may be: 7 or 8 or 9 *y* may be: 17 or 27 or 30 or 35 or 40 or 50 or 57 or 65.	P
	- rated life (h) and the associated rated lumen maintenance(x) ..... :	55,000 hrs L80 At Tc 105 °C, If = 3960 mA	P
	- abrupt failure value (%) ..... :	3	P
	- lumen maintenance code ..... :	9	P
	- rated chromaticity co-ordinate values initial; maintained ..... :	See table 9,1	P
	- rated correlated colour temperature (K) ..... :	See table 9,2 & 9,3	P
	- rated Colour Rendering Index ..... :	See table 9,2 & 9,3	P
	- $t_{p\ rated}$ of LED module ..... :		P
	- t_p-point		P
	- ageing time ..... :	0 hrs	P
	- ambient temperature range ..... :	-10 °C ÷ 50 °C	P
	- rated efficacy (lm/W) ..... :	See table 7, 8,1 & 8,3	P
	- dimensions		P
	- availability of a heat sink		P
	- displacement factor ..... :		N/A
	- temperature ramping		P
	- relations between t_p and estimated life		P
	- luminous intensity distribution		P
	- beam angle ..... :		N/A
	- Peak intensity		N/A

IEC 62717			
Clause	Requirement + Test	Result - Remark	Verdict
	Location of the marking		P

6	**TEST CONDITIONS**		
6,1	Safety requirement of LED module considered	Standard 62031 Yes ☒ No ☐	P
	Test conditions for testing electrical and photometric characteristics, lumen maintenance and life comply with annex A		P
	Sample size .....:	36	P
	Test duration: 25% of rated life up to a maximum of 6000 h		N/A
	Use of IES LM-80 data according Annex I	cl. I.2.2 considered	P
	LED modules with dimming control		N/A
	LED modules with adjustable CCT		N/A
	LED modules of geometry and variable length		N/A
6,2	**Creation of module families to reduce test effort**		**P**
6,2,2	Variations within family		P
6,2,3	Compliance testing of family members		P

7	**Electrical LED module input (See table 7, 8,1 & 8,3)**		
7,1	Initial power consumed by LED module not exceeds rated power by more than 10 %.....:	See table 7, 8,1 & 8,3	P
7,2	Displacement factor	Under consideration	N/A

8	**Light Output (See table)**		
8,1	**Luminous flux (See table 7, 8,1 & 8,3)**		P
	Initial luminous flux not less than rated luminous flux by more than 10 % .....:	See table 7, 8,1 & 8,3	P
8,2	**Luminous intensity distribution, peak intensity and beam angle (See table 8,2)**		P
8,2,3	Luminous intensity distribution	Under consideration	P
8,2,4	Initial peak intensity of LED module (directional type only) not less than 75% of rated intensity.....:		N/A
8,2,5	Beam angle value of LED module (directional type only) not deviates by more than 25% of rated value.:		N/A
8,3	**Luminous efficacy (See table 7, 8,1 & 8,3)**		P
	Efficacy of LED module not less than 80% of rated efficacy.....:	See table 7, 8,1 & 8,3	P

IEC 62717			
Clause	Requirement + Test	Result - Remark	Verdict

9	**CHROMATICITY CO-ORDINATES, CORRELATED COLOUR TEMPERATURE AND COLOUR RENDERING**		
9,1	Measured chromaticity co-ordinate values of a LED module (the initial value and maintained value) are within the chromaticity co-ordinate tolerance category	See table 9,1	P
9,2	Measured CCT within the value as declared	See table 9,2 & 9,3	P
9,3	Measured CRI not decreased by more than 3 points from rated CRI value for initial CRI values	See table 9,2 & 9,3	P
	Measured CRI not decreased by more than 4 points from rated CRI value for maintained CRI values	See table 9,2 & 9,3	P

10	**LED MODULE LIFE**		
10,2	Measured flux value at 25% of rated life (with a maximum duration of 6000 h) not less than the maximum lumen maintenance value related to the rated life	See table 10,2 Annex I considered,	P
	Measured lumen maintenance corresponds with “lumen maintenance code”	>90 %	P
	90% of the LED modules comply	100 %	P
10,3,2	**Temperature cycling test**		P
	Alternative test used	☐ Alternative test 1 (10K/min) ☒ Alternative test 2 (1K/min)	-
	LED module operates and luminous flux stays within the claimed lumen maintenance code for a period of at least 15 minutes		P
	LED module show no physical effects		P
10,3,3	**Supply switching test**		P
	LED module operates and luminous flux stays within the claimed lumen maintenance code for a period of at least 15 minutes		P
10,3,4	**Accelerated operation life test**		P
	LED module remains alight for at least 15 minutes after cooling down to room temperature	Maintenance >80%	P

IEC 62717			
Clause	Requirement + Test	Result - Remark	Verdict

7, 8,1 & 8,3	TABLE: LED Module Power & Light Output					P
Sample	**Measured power (W)**	**Rated power (W)**	**Measured luminous flux (lm)**	**Rated luminous flux (lm)**	**Calculated efficacy (lm/W)**	**Rated efficacy (lm/W)**
BXRC-27H10K0D7	167,6	168	15213	14095	91	84
BXRC-27H10K0D7	167,6		15570		93	
BXRC-27H10K0D7	165,7		15321		92	
BXRC-27H10K0D7	165,9		15289		92	
BXRC-27H10K0D7	165,5		14885		90	
BXRC-27H10K0D7	165,9		14526		88	
BXRC-27H10K0D7	164,6		14193		86	
BXRC-27H10K0D7	164,6		13586		83	
BXRC-27H10K0D7	165,6		13983		84	
BXRC-27H10K0D7	165,1		13467		82	
BXRC-17E10K0C7	240,9	245,5	14704	16989	61	69
BXRC-17E10K0C7	237,7		13681		58	
BXRC-17E10K0C7	239,4		14121		59	
BXRC-30E10K0C7	246,6	245,5	31590	31393	128	128
BXRC-30E10K0C7	248,0		32120		130	
BXRC-30E10K0C7	247,5		32168		130	
BXRC-35E10K0C7	243.5	245,5	30852	31923	127	130
BXRC-35E10K0C7	243.2		31005		128	
BXRC-35E10K0C7	243.8		31619		130	
BXRC-40E10K0C7	246,9	245,5	34389	32107	139	131
BXRC-40E10K0C7	248,6		34100		137	
BXRC-40E10K0C7	248,0		33825		136	
BXRC-50C10K0C7	243,2	245,5	32403	33758	133	138
BXRC-50C10K0C7	244,5		31730		130	
BXRC-50C10K0C7	243,5		31843		131	
BXRC-57C10K0C7	242,8	245,5	29806	32840	123	134
BXRC-57C10K0C7	243,5		29350		121	
BXRC-57C10K0C7	243,5		29739		122	
BXRC-65C10K0C7	243,8	245,5	35316	32840	145	134
BXRC-65C10K0C7	243,8		31669		130	
BXRC-65C10K0C7	243,5		32890		135	

Supplementary information:

Tests carried out at Tp 105 °C – 3420mA module current except for model BXRC-27H10K0D7 tested at Tp 105 °C – 4200mA module current,

IEC 62717			
Clause	Requirement + Test	Result - Remark	Verdict

8,2	TABLE: Peak Intensity and Beam Angle				N/A
Sample	**Measured peak intensity**	**Rated peak intensity**	**Measured beam angle (°)**	**Rated beam angle (°)**	**Comments**
Supplementary information: Non directional LED module, Requirements for peak intensity and beam angle do not apply as per clause 8,2,1,					

9,1	TABLE: Chromaticity Co-ordinates				P
Sample	**Initial chromaticity co-ordinates**		**Maintained chromaticity co-ordinates**		**Comments**
	x	**y**	**x**	**y**	
BXRC-27H10K0D7	0,4545	0,4058	*	*	LED module covered by LM-80 Report. Annex I, cl. I.2.2 considered
BXRC-27H10K0D7	0,4521	0,4056	*	*	
BXRC-27H10K0D7	0,4528	0,4047	*	*	
BXRC-27H10K0D7	0,4525	0,4062	*	*	
BXRC-27H10K0D7	0,4525	0,4046	*	*	
BXRC-27H10K0D7	0,4520	0,4046	*	*	
BXRC-27H10K0D7	0,4517	0,4041	*	*	
BXRC-27H10K0D7	0,4499	0,4036	*	*	
BXRC-27H10K0D7	0,4523	0,4045	*	*	
BXRC-27H10K0D7	0,4505	0,4038	*	*	
BXRC-17E10K0C7	0,5046	0,3564	*	*	
BXRC-17E10K0C7	0,5058	0,3566	*	*	
BXRC-17E10K0C7	0,5104	0,3603	*	*	
BXRC-30E10K0C7	0,4147	0,3907	*	*	
BXRC-30E10K0C7	0,4227	0,3961	*	*	
BXRC-30E10K0C7	0,4226	0,3961	*	*	
BXRC-35E10K0C7	0,3930	0,3808	*	*	
BXRC-35E10K0C7	0,3927	0,3801	*	*	
BXRC-35E10K0C7	0,3936	0,3820	*	*	
BXRC-40E10K0C7	0,3676	0,3636	*	*	
BXRC-40E10K0C7	0,3709	0,3677	*	*	
BXRC-40E10K0C7	0,3683	0,3652	*	*	
BXRC-50C10K0C7	0,3419	0,3490	*	*	

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Clause	Requirement + Test	Result - Remark	Verdict

BXRC-50C10K0C7	0,3410	0,3476	*	*	
BXRC-50C10K0C7	0,3410	0,3477	*	*	
BXRC-57C10K0C7	0,3274	0,3357	*	*	
BXRC-57C10K0C7	0,3247	0,3315	*	*	
BXRC-57C10K0C7	0,3253	0,3327	*	*	
BXRC-65C10K0C7	0,3150	0,3291	*	*	
BXRC-65C10K0C7	0,3102	0,3227	*	*	
BXRC-65C10K0C7	0,3124	0,3264	*	*	

Supplementary information: Tests carried out at Tp 105 °C – 3420mA module current except for model BXRC-27H10K0D7 tested at Tp 105 °C – 4200mA module current,

*Covered by LM-80 report # BL-LM80-Vero29-7G-2X

9,2 & 9,3	TABLE: CCT and CRI				P
Sample	**Measured CCT (K)**	**Rated CCT (K)**	**Initial CRI**	**Maintained CRI**	**Rated CRI**
BXRC-27H10K0D7	2738	2700	97,9	-	95
BXRC-27H10K0D7	2773	2700	97,9	-	95
BXRC-27H10K0D7	2755	2700	97,6	-	95
BXRC-27H10K0D7	2772	2700	97,8	-	95
BXRC-27H10K0D7	2759	2700	97,7	-	95
BXRC-27H10K0D7	2766	2700	97,1	-	95
BXRC-27H10K0D7	2766	2700	96,5	-	95
BXRC-27H10K0D7	2789	2700	95,9	-	95
BXRC-27H10K0D7	2760	2700	96,9	-	95
BXRC-27H10K0D7	2782	2700	96,1	-	95
BXRC-17E10K0C7	1819	1700	85,8	-	80
BXRC-17E10K0C7	1811	1700	85,1	-	80
BXRC-17E10K0C7	1798	1700	85,3	-	80
BXRC-30E10K0C7	3301	3000	81,1	-	80
BXRC-30E10K0C7	3189	3000	81,8	-	80
BXRC-30E10K0C7	3190	3000	81,3	-	80
BXRC-35E10K0C7	3707	3500	82,9	-	80
BXRC-35E10K0C7	3707	3500	83,2	-	80
BXRC-35E10K0C7	3701	3500	82,6	-	80
BXRC-40E10K0C7	4281	4000	82,7	-	80
BXRC-40E10K0C7	4210	4000	82,8	-	80
BXRC-40E10K0C7	4271	4000	82,9	-	80
BXRC-50C10K0C7	5119	5000	71,1	-	70

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Clause	Requirement + Test	Result - Remark	Verdict

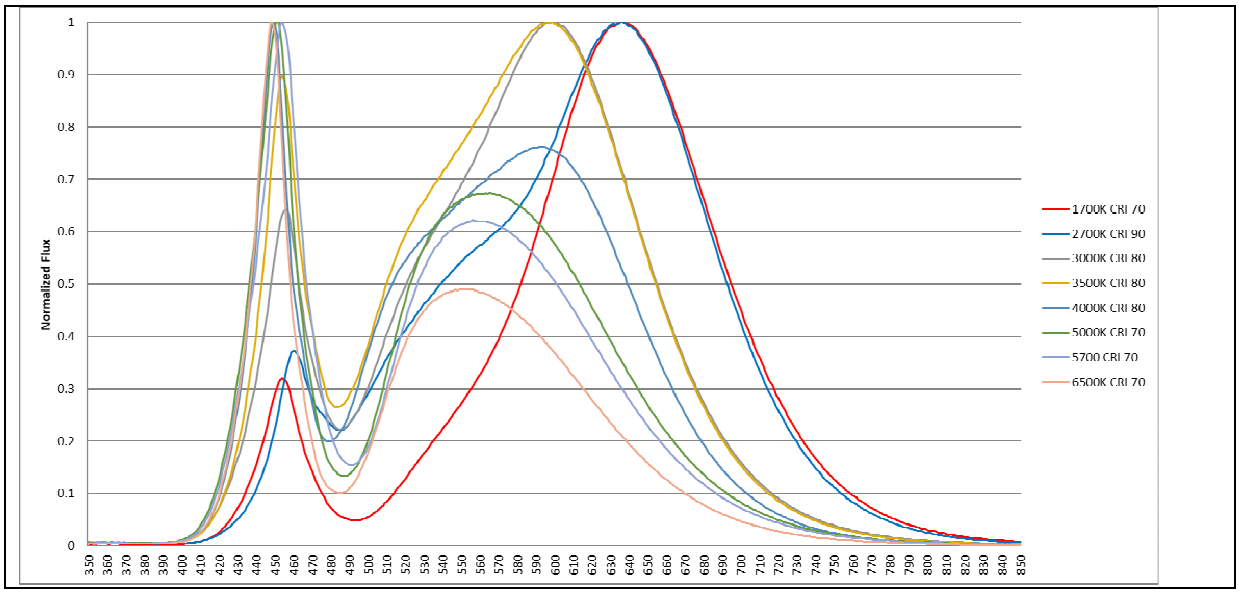
BXRC-50C10K0C7	5151	5000	71,5	-	70
BXRC-50C10K0C7	5149	5000	71,2	-	70
BXRC-57C10K0C7	5734	5700	71,0	-	70
BXRC-57C10K0C7	5870	5700	71,2	-	70
BXRC-57C10K0C7	5838	5700	71,2	-	70
BXRC-65C10K0C7	6381	6500	71,3	-	70
BXRC-65C10K0C7	6700	6500	71,3	-	70
BXRC-65C10K0C7	6539	6500	71,2	-	70
Supplementary information: Tests carried out at Tp 105 °C – 3420mA module current except for model BXRC-27H10K0D7 tested at Tp 105 °C – 4200mA module current,					

10,2	**TABLE: Lumen Maintenance**		**P**
	Test voltage (V) .....:	78,4	**—**
	Test current (A) .....:	3,960	**—**
	LED Module temperature (t_p) (ºC) .....:	105	**—**

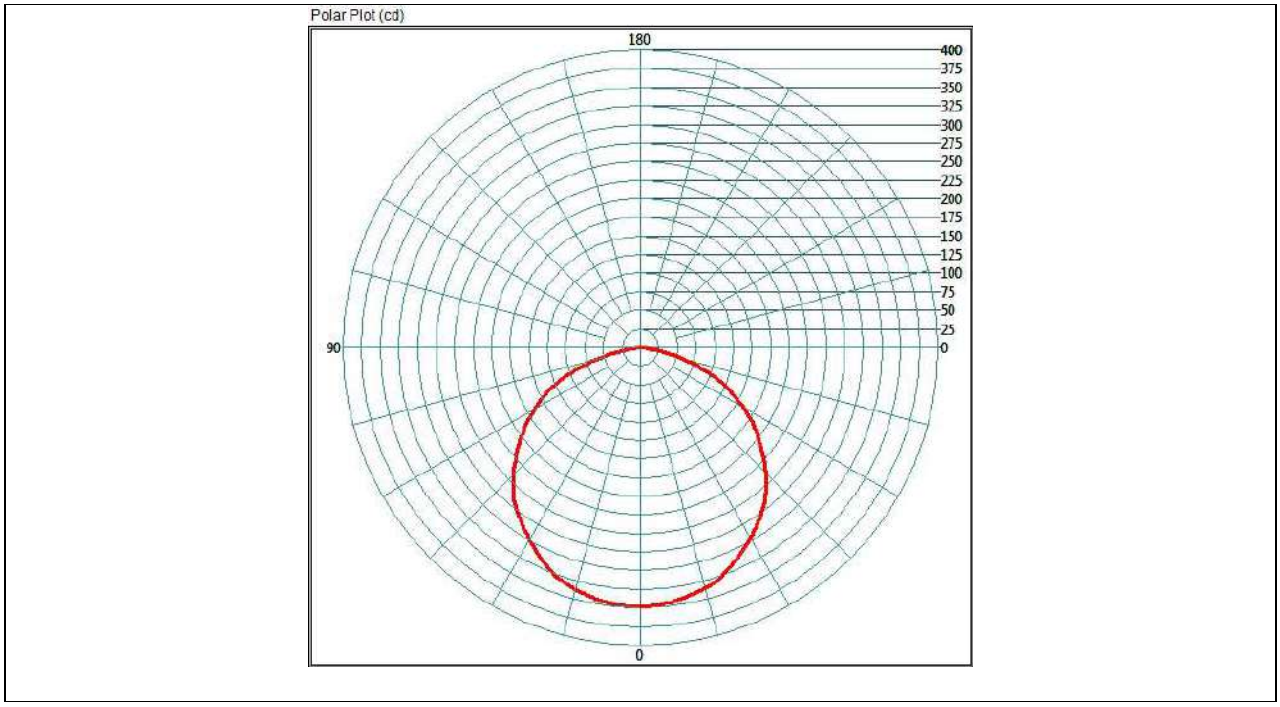
Sample	Lumen 0hr	Lumen 1000hr	Lumen 2000hr	Lumen 3000hr	Lumen 4000hr	Lumen 5000hr	Lumen 6000hr
27H10K0D7-01	100 %	97,70 %	97,47 %	97,31 %	96,85 %	97,19 %	97,33 %
27H10K0D7-02	100 %	97,70 %	97,47 %	97,31 %	96,85 %	97,19 %	97,33 %
27H10K0D7-03	100 %	97,70 %	97,47 %	97,31 %	96,85 %	97,19 %	97,33 %
27H10K0D7-04	100 %	97,70 %	97,47 %	97,31 %	96,85 %	97,19 %	97,33 %
27H10K0D7-05	100 %	97,70 %	97,47 %	97,31 %	96,85 %	97,19 %	97,33 %
27H10K0D7-06	100 %	97,70 %	97,47 %	97,31 %	96,85 %	97,19 %	97,33 %
27H10K0D7-07	100 %	97,70 %	97,47 %	97,31 %	96,85 %	97,19 %	97,33 %
27H10K0D7-08	100 %	97,70 %	97,47 %	97,31 %	96,85 %	97,19 %	97,33 %
27H10K0D7-09	100 %	97,70 %	97,47 %	97,31 %	96,85 %	97,19 %	97,33 %
27H10K0D7-10	100 %	97,70 %	97,47 %	97,31 %	96,85 %	97,19 %	97,33 %
Supplementary information: IES LM-80 Test report BL-LM80-Vero29-7G-2x issued on 2017-07-17							

Enclosure 1	Optical Tests

Spectral Power Distribution



Light Distribution (cd/Klm)

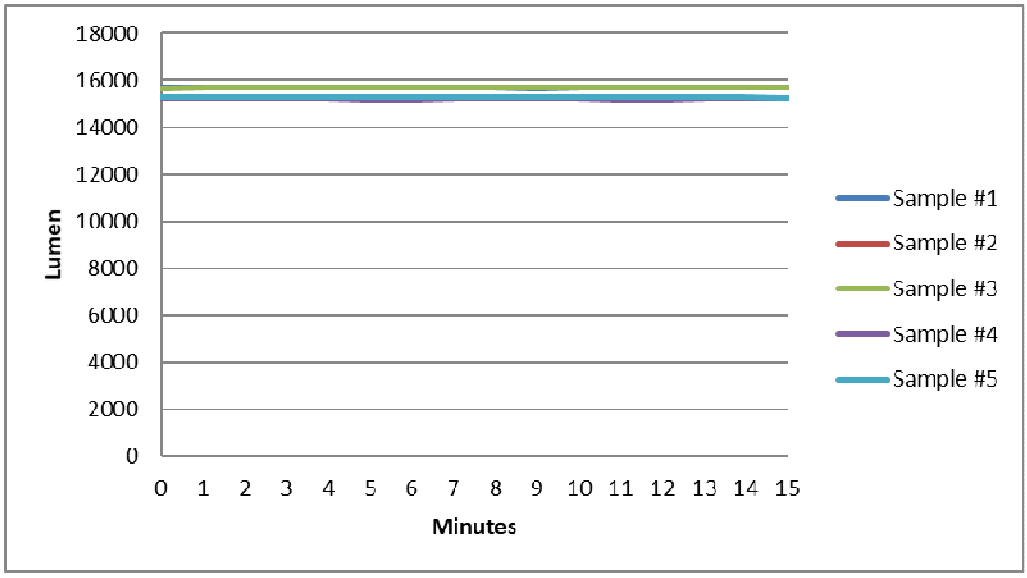


Enclosure 2	LED Module Life

Temperature cycling test

Test performed according clause 10,3,2,3 with 1K/min, At the end of the test all LED modules still operate for at least 15 minutes and show no physical effects of temperature cycling,

Light output vs Elapsed time after endurance:



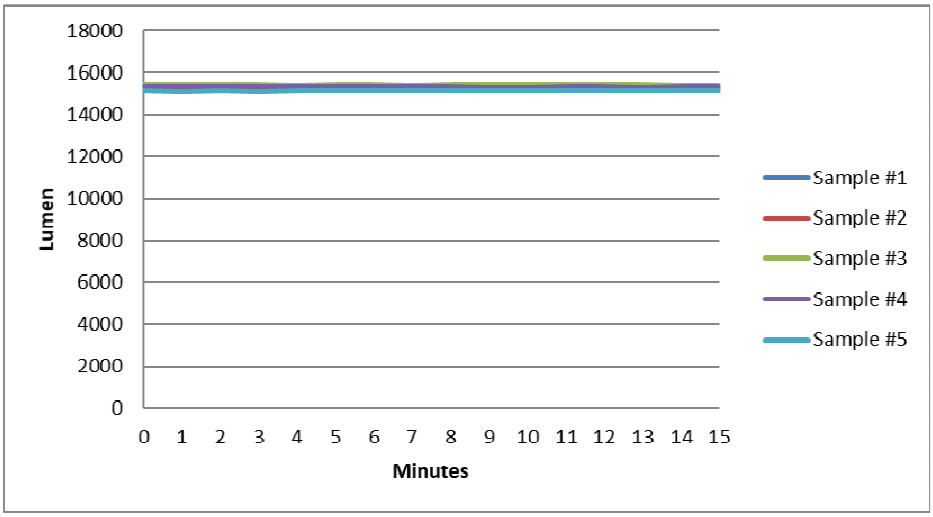
Sample #	Initial Lumen (lm)	End-Test Lumen (lm)	Lumen Maintenance (%)
1	15721	15703	> 90
2	15375	15281	> 90
3	15725	15655	> 90
4	15543	15241	> 90
5	15721	15308	> 90

Enclosure 2	LED Module Life

Supply switching test

At the end of the test all LED modules still operate for at least 15 minutes after 25,000 cycles,

Light output vs Elapsed time after endurance:



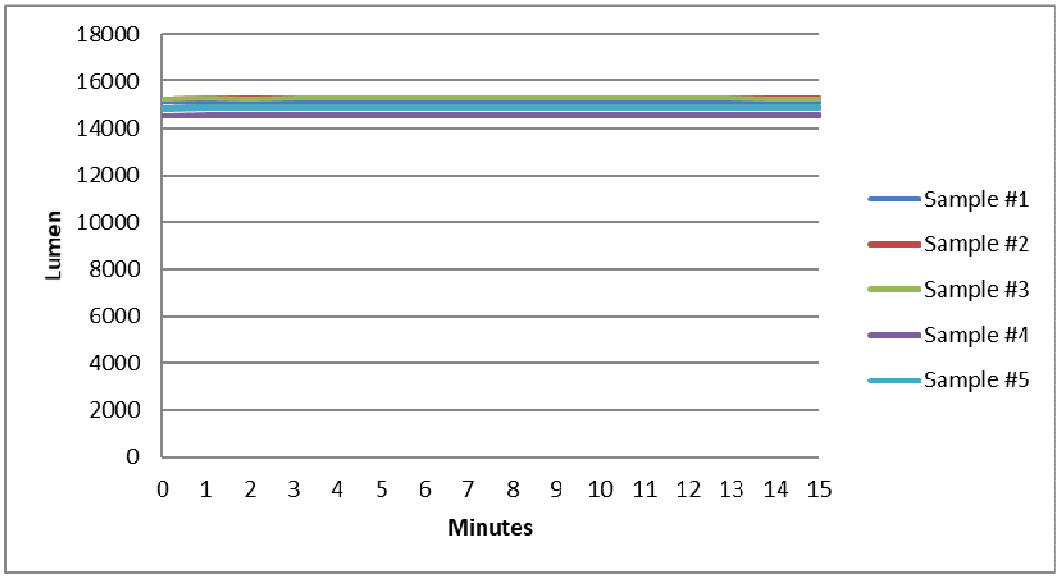
Sample #	Initial Lumen (lm)	End-Test Lumen (lm)	Lumen Maintenance (%)
1	15380	15193	> 90
2	15403	15206	> 90
3	15680	15397	> 90
4	15261	15279	> 90
5	15175	15117	> 90

Enclosure 2	LED Module Life

Accelerated operation life test

LED modules operated continuously for 1000 hrs at max Tp rated + 10 K (115 °C)

Light output vs Elapsed time after endurance:



Sample #	Initial Lumen (lm)	1000 hrs Lumen (lm)	Lumen Maintenance (%)
1	15308	15123	> 80
2	15566	15297	> 80
3	15495	15267	> 80
4	14653	14550	> 80
5	14950	14859	> 80

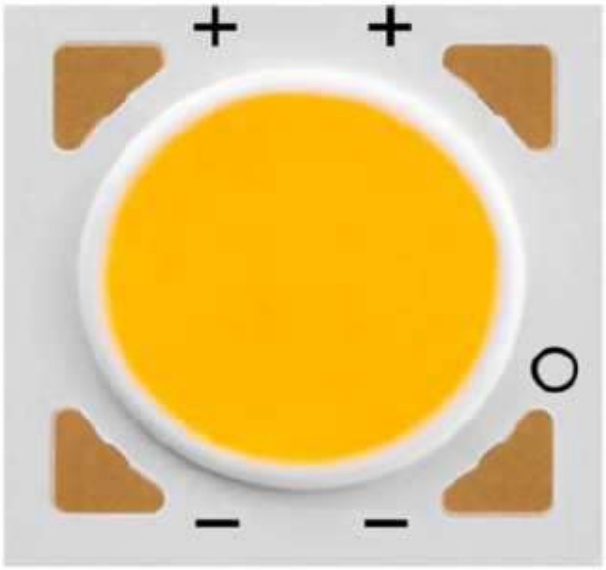
Enclosure 3	Photographs

Photograph No, 1 – General view of the module – Vero 29

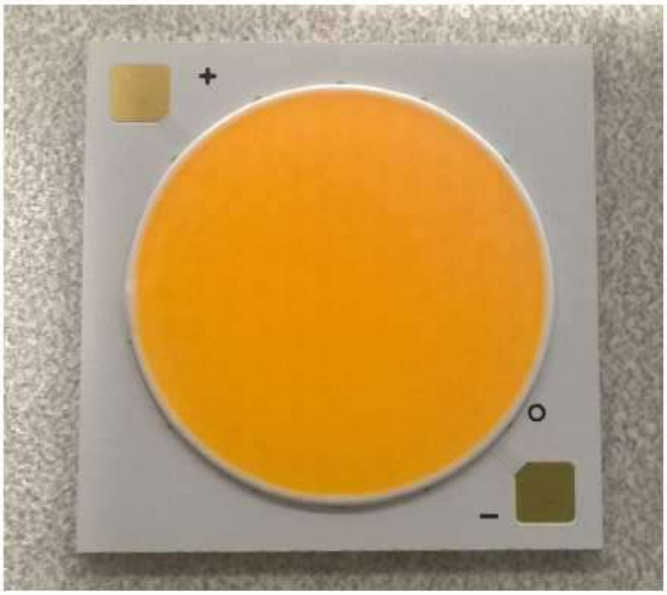
Photograph No, 2 – General view of the module – Vero 13

Enclosure 3	Photographs

Photograph No, 3 – General view of the module - BXRE

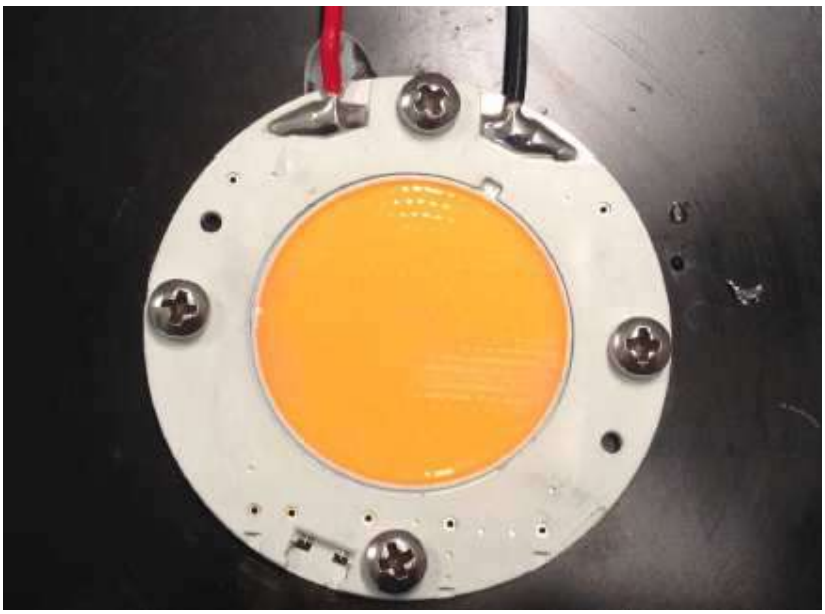


Photograph No, 4 – General view of the module – V22



Enclosure 3	Photographs

Photograph No, 5 – General view of the module – Vero 29C Gen 7



Photograph No, 6 – General view of the module – Vero 10 SE

Enclosure 4	Manufacturer's instructions

Tp Point position (Same as Tc Point)

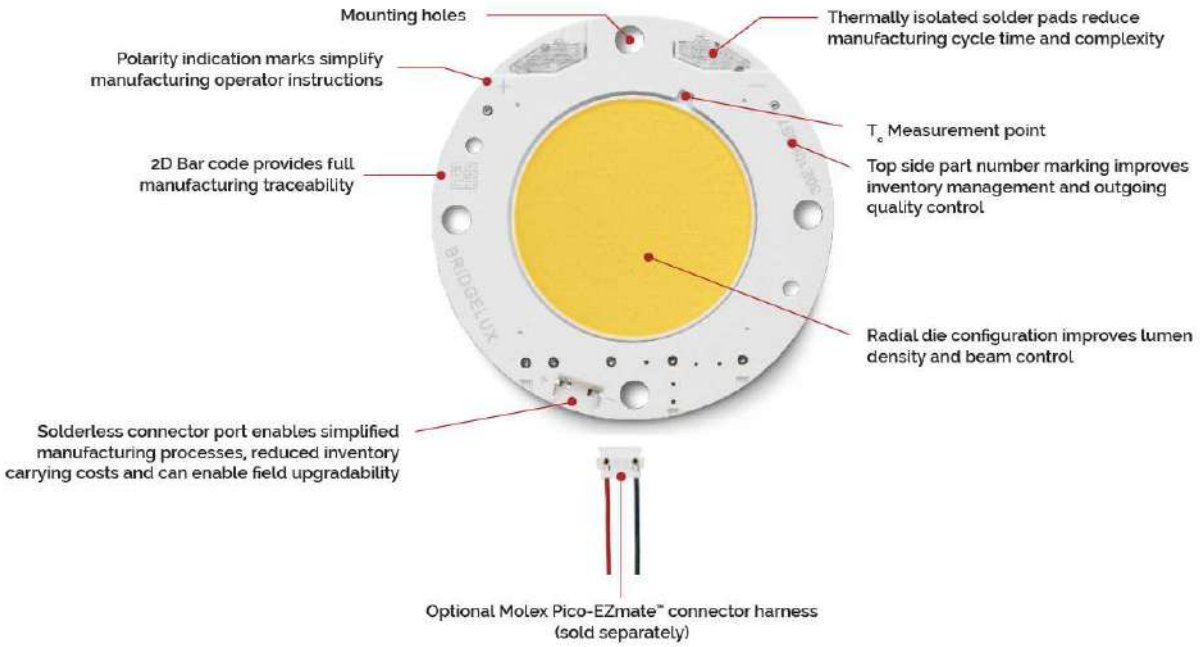
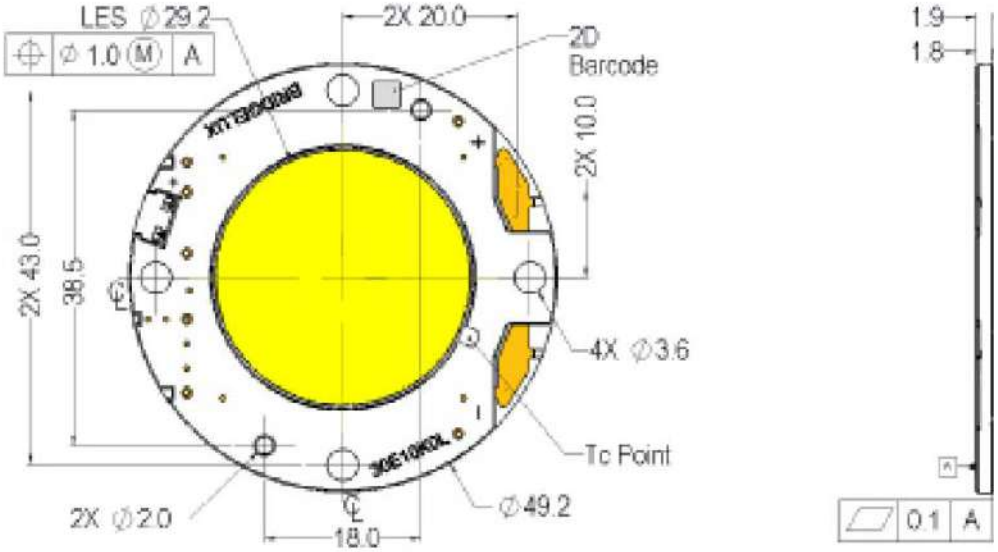


Figure 22: Drawing for Vero 29 LED Array



Enclosure 4	Manufacturer's instructions

Figure 19: Typical Polar Radiation Pattern

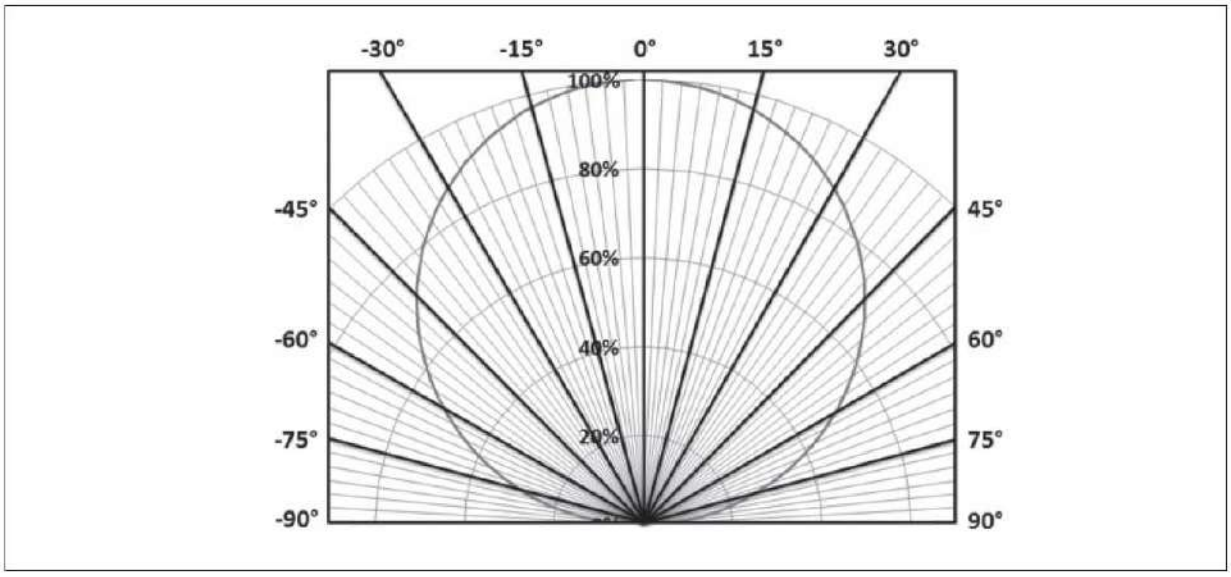
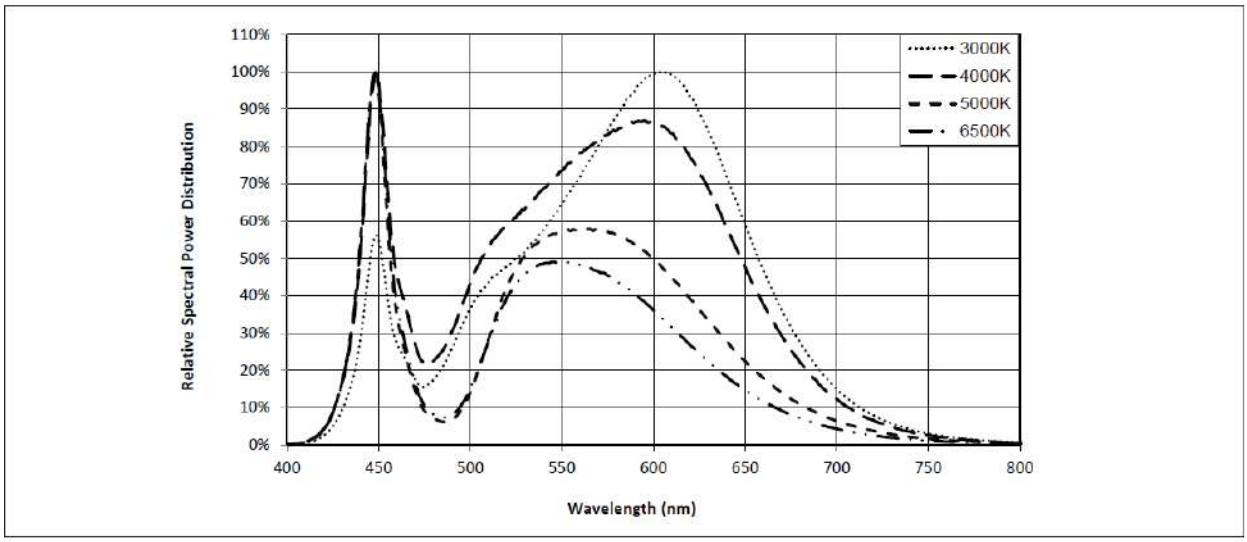
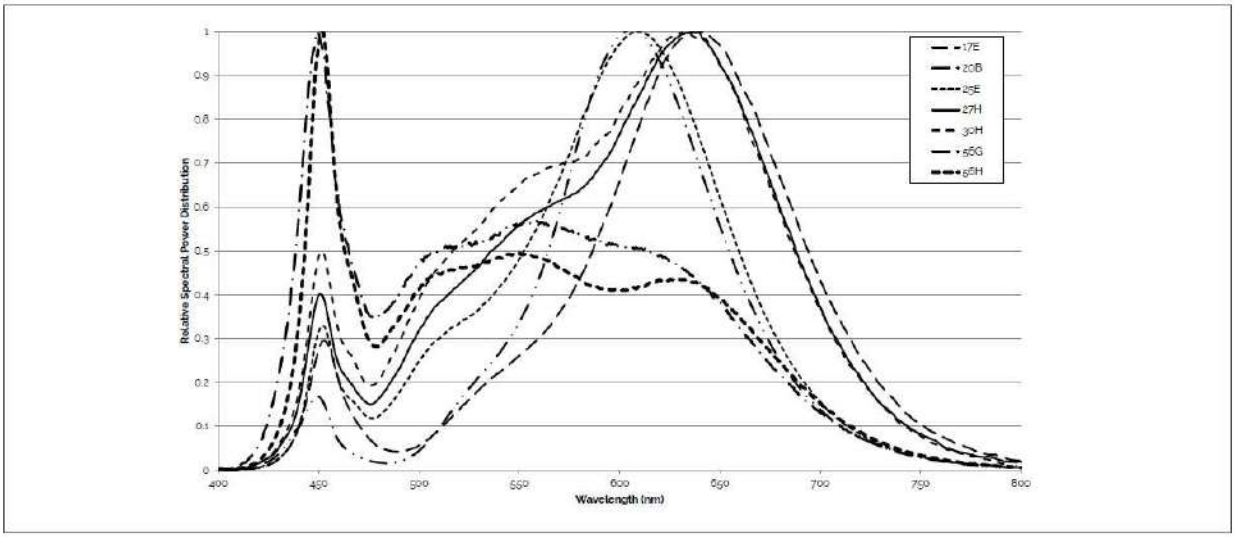


Figure 20: Typical Color Spectrum



Enclosure 4	Manufacturer's instructions

Figure 21: Typical Color Spectrum for Vero 29 with Décor Series



Enclosure 4	Manufacturer's instructions

IES LM-80 Data

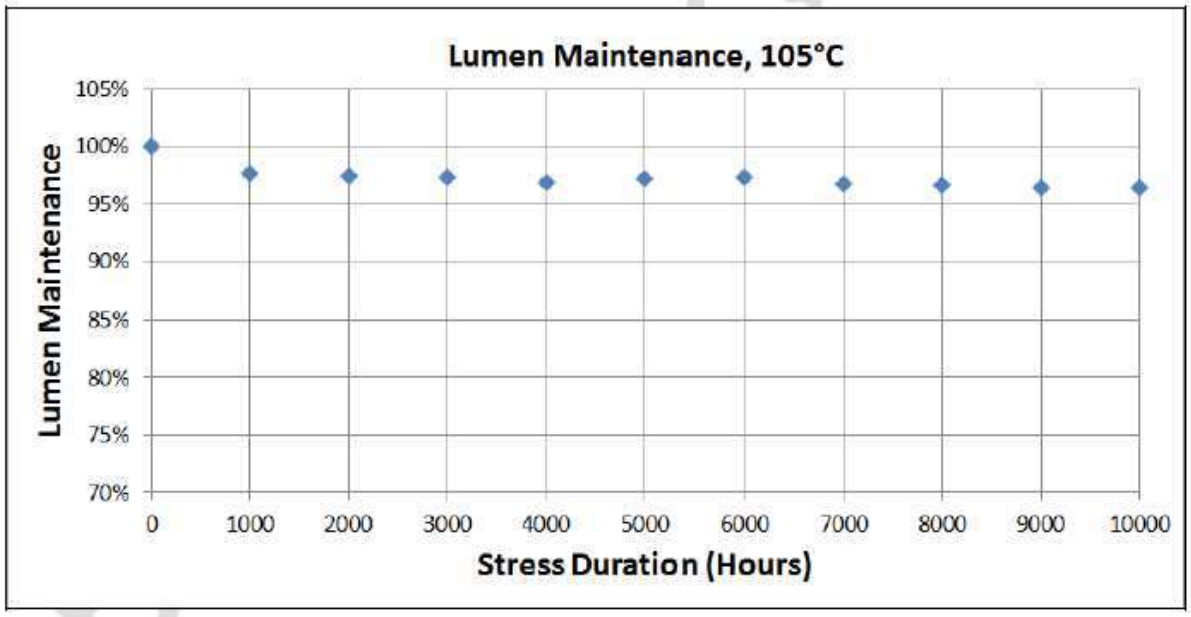
bridgelux

Bridgelux Reliability
Report Number: BL-LM80-Vero29-7G-2X

Table 4: Lumen maintenance at actual case temperature 105ºC

Hours	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8	Sample 9	Sample 10	Average	Median	Standard Deviation	Max	Min
0	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.00%	100.0%	0.0%	100.0%	100.0%
1000	97.7%	97.8%	97.5%	96.6%	98.0%	97.6%	97.6%	98.0%	98.2%	98.1%	97.70%	97.8%	0.5%	98.2%	96.6%
2000	97.8%	97.6%	97.0%	96.6%	98.2%	97.2%	97.3%	97.6%	97.8%	97.6%	97.47%	97.6%	0.4%	98.2%	96.6%
3000	97.1%	97.1%	97.1%	96.9%	97.9%	97.2%	97.5%	97.3%	97.7%	97.3%	97.31%	97.2%	0.3%	97.9%	96.9%
4000	96.6%	97.4%	96.8%	97.0%	97.4%	96.7%	96.3%	96.7%	96.9%	96.9%	96.85%	96.8%	0.4%	97.4%	96.3%
5000	96.7%	97.4%	97.1%	97.0%	98.1%	97.2%	96.8%	97.2%	97.2%	97.1%	97.19%	97.2%	0.4%	98.1%	96.7%
6000	96.6%	97.5%	97.5%	97.5%	97.9%	97.0%	96.8%	97.9%	97.3%	97.3%	97.33%	97.4%	0.4%	97.9%	96.6%
7000	96.3%	97.5%	97.5%	97.6%	96.9%	96.3%	96.1%	96.8%	96.5%	96.8%	96.82%	96.8%	0.5%	97.6%	96.1%
8000	96.4%	97.9%	97.9%	97.9%	96.5%	96.1%	95.1%	96.4%	96.1%	96.3%	96.67%	96.4%	0.9%	97.9%	95.1%
9000	96.5%	98.0%	97.6%	97.7%	95.9%	95.4%	95.2%	96.4%	95.9%	96.4%	96.49%	96.4%	1.0%	98.0%	95.2%
10000	96.9%	97.6%	97.4%	97.4%	96.0%	95.5%	94.9%	96.4%	96.1%	96.2%	96.44%	96.3%	0.9%	97.6%	94.9%

Figure 3: Lumen maintenance at actual case temperature 105ºC



Enclosure 4	Manufacturer's instructions

Bridgelux Reliability

Report Number: BL-LM80-Vero29-7G-2X

Table 6: Chromaticity shift (Delta u'v') at actual case temperature 105ºC

Hours	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8	Sample 9	Sample 10	Average	Median	Standard Deviation	Max	Min
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1000	0.0016	0.0014	0.0018	0.0018	0.0014	0.0014	0.0015	0.0016	0.0015	0.0015	0.0016	0.0015	0.0001	0.0018	0.0014
2000	0.0017	0.0015	0.0017	0.0017	0.0014	0.0012	0.0015	0.0014	0.0014	0.0013	0.0015	0.0015	0.0002	0.0017	0.0012
3000	0.0012	0.0012	0.0014	0.0015	0.0013	0.0014	0.0016	0.0016	0.0014	0.0014	0.0014	0.0014	0.0001	0.0016	0.0012
4000	0.0016	0.0016	0.0018	0.0020	0.0013	0.0013	0.0014	0.0013	0.0013	0.0013	0.0015	0.0014	0.0003	0.0020	0.0013
5000	0.0014	0.0014	0.0016	0.0020	0.0016	0.0016	0.0017	0.0017	0.0015	0.0016	0.0016	0.0016	0.0002	0.0020	0.0014
6000	0.0021	0.0022	0.0026	0.0029	0.0012	0.0013	0.0014	0.0016	0.0012	0.0014	0.0018	0.0015	0.0006	0.0029	0.0012
7000	0.0020	0.0021	0.0023	0.0026	0.0013	0.0013	0.0014	0.0017	0.0011	0.0014	0.0017	0.0015	0.0005	0.0026	0.0011
8000	0.0018	0.0020	0.0024	0.0025	0.0012	0.0012	0.0016	0.0018	0.0014	0.0014	0.0017	0.0017	0.0005	0.0025	0.0012
9000	0.0018	0.0018	0.0021	0.0024	0.0012	0.0012	0.0017	0.0018	0.0014	0.0015	0.0017	0.0017	0.0004	0.0024	0.0012
10000	0.0019	0.0020	0.0021	0.0025	0.0011	0.0012	0.0015	0.0017	0.0015	0.0016	0.0017	0.0016	0.0004	0.0025	0.0011

Figure 5: Chromaticity shift (Delta u'v') at actual case temperature 105ºC