



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Reference No..... : WTS18F05113599N
 Applicant..... : Interlight Enjoy Innovation B.V.
 Address..... : Molenvliet 2, 3961 MV Wijk bij Duurstede
 The Netherlands
 Manufacturer..... : Interlight Enjoy Innovation B.V.
 Address..... : Molenvliet 2, 3961 MV Wijk bij Duurstede
 The Netherlands
 Product Name..... : LED Module
 Model No..... : 4pcs IL-MO1385K4 with IL-D595O-1-10
 Ratings..... : 200-240VAC, 50Hz, 30W
 Standards..... : IES LM-79-08
 Electrical and Photometric Measurements of Solid-State Lighting
 Products
 Date of Receipt sample..... : 2018-05-31
 Date of Test..... : 2018-05-31 to 2018-06-06
 Date of Issue..... : 2018-06-07
 Test Report Form No..... : WPL-LM7908A-01A
 Test Result..... : See the attached sheets

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:


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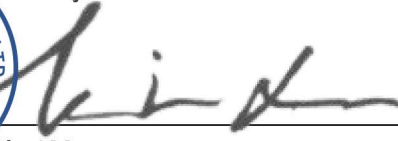
Compiled by:



 Finn Yu / Project Engineer

Approved by:





 Finn Xu / Manager

Trade Mark: CAMETA										
Measurement Point: N										
Characteristic data (not shown on the marking plate) N										
Purpose of the product (Description of intended use) LED Module for generally lighting purpose. Other information refers to photos in end page.										
<p>Possible test case verdicts:</p> <ul style="list-style-type: none"> - test case does not apply to the test object:: N(.A.) / not included in the order - test object does meet the requirement.....: P(ass) - test object does not meet the requirement:: F(ail) <p>Possible suffixes to the verdicts:</p> <ul style="list-style-type: none"> - suffix for detailed information for the client.....: - C(omment) - suffix for important information for factory inspection.....: - M(anufacturing) 										
<p>General remarks:</p> <p>"(See Attachment #)" refers to additional information appended to the report. "(See remark #)" refers to a remark appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a comma (point) is used as the decimal separator.</p> <p>Remark:</p> <ol style="list-style-type: none"> 1. Measurement was conducted at voltage 240VAC 50Hz and at a stable ambient temperature 25°C±1°C. 2. Detail information for models covered in this report as below: <table border="1" data-bbox="279 1317 1465 1487"> <thead> <tr> <th>Item</th> <th>Model</th> <th>Ratings</th> <th>CCT</th> <th>Driver</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>4pcs IL-MO1385K4 with IL-D595O-1-10</td> <td>200-240VAC, 50Hz, 30W</td> <td>4000K</td> <td>30W DRIVER DIMMABLE</td> </tr> </tbody> </table>	Item	Model	Ratings	CCT	Driver	1	4pcs IL-MO1385K4 with IL-D595O-1-10	200-240VAC, 50Hz, 30W	4000K	30W DRIVER DIMMABLE
Item	Model	Ratings	CCT	Driver						
1	4pcs IL-MO1385K4 with IL-D595O-1-10	200-240VAC, 50Hz, 30W	4000K	30W DRIVER DIMMABLE						

Test summary:

Testing is performed in accordance with the procedures outlined in IES LM-79-08. The sample is evaluated for photometric and electrical characteristics using an integrating sphere and a goniophotometer, located in an accredited, temperature and humidity-controlled, draft free photometric laboratory.

 Test No. 1 : Integrating Sphere Test

The sample was tested according to the IES LM-79-08.

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$.

The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The voltage of an AC power supply (RMS voltage) or DC power supply (instantaneous voltage) applied to the device under test shall be regulated to within ± 0.2 percent under load. The AC power supply, while operating the product, shall have a sinusoidal voltage waveshape at the prescribed frequency 50Hz or 60Hz such that the RMS summation of the harmonic components does not exceed 3 percent of the fundamental during operation of the test item. It was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.

 Test No. 2: Goniophotometer Test

The sample was tested according to the IES LM-79-08.

Photometric parameters were measured using a type C goniophotometer and software.

The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample.

The sample was operated at Rated Volts(see Table 1). It was stabilized before measurement. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 0.5° vertical intervals and 22.5° horizontal intervals.

IES LM-79-08			
Clause	Requirement – Test	Measuring result – Remark	Verdict
2.0	Ambient Conditions		P
2.1	General		P
2.2	Air Temperature		P
2.3	Thermal Condition for Mounting SSL Products		P
2.4	Air Movement		P
3.0	Power Supply Characteristics		P
3.1	Waveshape of AC power supply		P
3.2	Voltage regulation		P
4.0	Seasoning of SSL Product		N
	No seasoning of SSL product		N
5.0	Stabilisation of SSL Product		P
	SSL product has sufficiently stabilized before measurement	Stabilized 30 minute	P
6.0	Operation Orientation		P
	SSL product shall be stabilized and measured in intended operating orientation	As normal working	P
7.0	Electrical Settings		P
	SSL product shall be operated at rated voltage		P
	SSL product with dimming capability are tested at maximum input power condition		N
	SSL product with different modes are measured in all relevant modes		N
8.0	Electrical Instrumentations		P
8.1	Circuits		P
8.2	Uncertainties		P
9.0	Test Methodes for Luminous Flux measurement		P
9.1	Integrating sphere with a spectroradiometer (Sphere-spectroradiometer system)		P
9.2	Integrating sphere with a photometer head (Sphere-photometer system)		N
9.3	Goniophotometer		P
10.0	Luminous Intensity Distribution		P
	Reporting acc. to IES LM-63		P
11.0	Luminous Efficay		P
	Calculation	See table 1	P
12.0	Test Methodes for Color Characteristics of SSL Products		P
	Measurements	See table 1	P
13.0	Uncertainty statement		N

Table 1	Test data		
Model:	4pcs IL-MO1385K4 with IL-D595O-1-10		
Rated Voltage:	200-240VAC	Rated Power (W):	30
Rated luminous flux (lm):	N	Ambient temperature 25 ±1 (°C):	25.0
Test item	Measured Value		
	Integrating Sphere		Goniophotometer
Key Photometric Results			
Luminous Efficacy (Lumens/Watt)	---		125.07
Total Luminous Flux (Lumens)	---		3570.8
Peak Intensity (cd)	---		2089
Total Radiant Flux (Watts)	10.898	---	
Correlated Color Temperature (CCT)	3894	---	
Color Rendering Index (CRI)	83.8	---	
Chromaticity (Chroma x / Chroma y)	0.3848 / 0.3780		---
Chromaticity (Chroma u' / Chroma v')	0.2275 / 0.5028		---
Duv Value	-6.59e-04		---
Stabilization Time (Light and Power) (Minutes)	30	30	
Total Run Time (Minutes)	60	90	
Electrical Input Results			
Input Power (Watts)	---		28.55
Input Voltage (Volts AC)	---		240.3
Input Current (Amps)	---		0.1281
Input Frequency (Hertz)	---		50.0
Power Factor	---		0.9276
Additional Information			
Test Geometry Configuration	4π	Type C	
Ambient Temperature (°C):	25.0	25.0	
ISTMT (In-Situ Temperature Measurement) (°C):	N		
Supplementary Information:			
<ul style="list-style-type: none"> - Absorbion Correction used: Yes - Stabilisation was considered reached by: the variation (maximum-minimum) of at least 3 readings of the light output and electrical power over a period of 30 minutes is less than 0.5%. 			

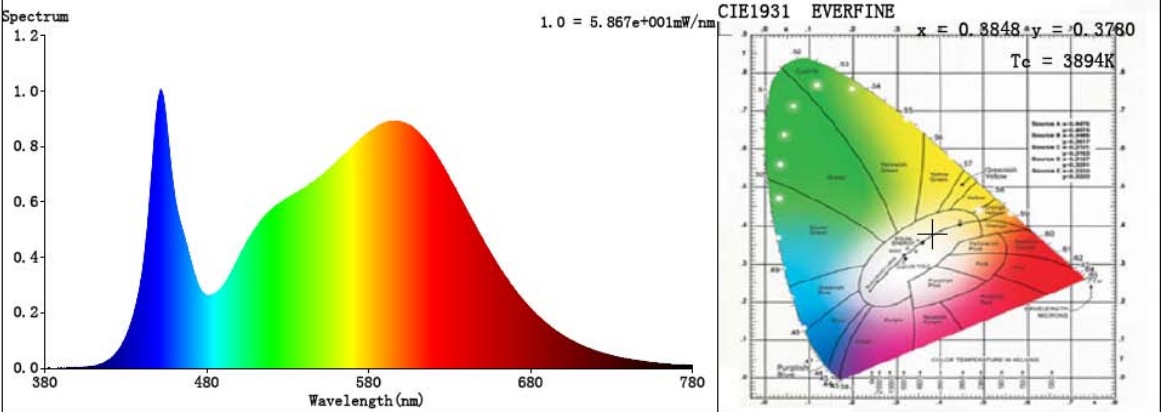
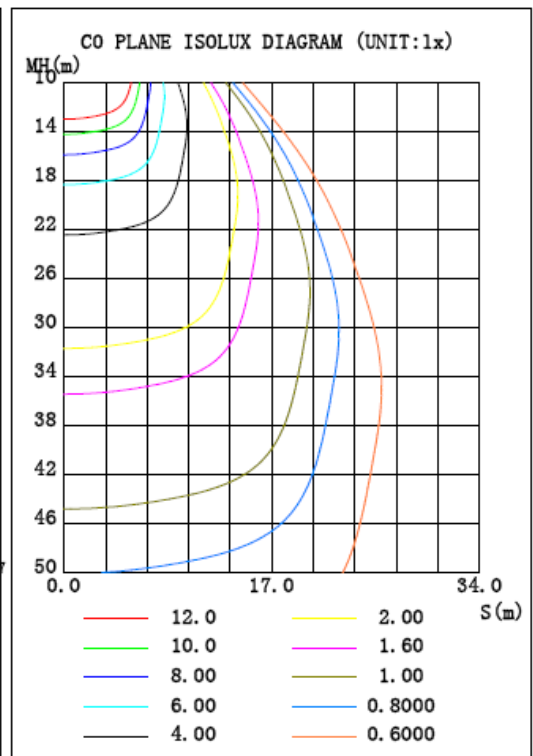
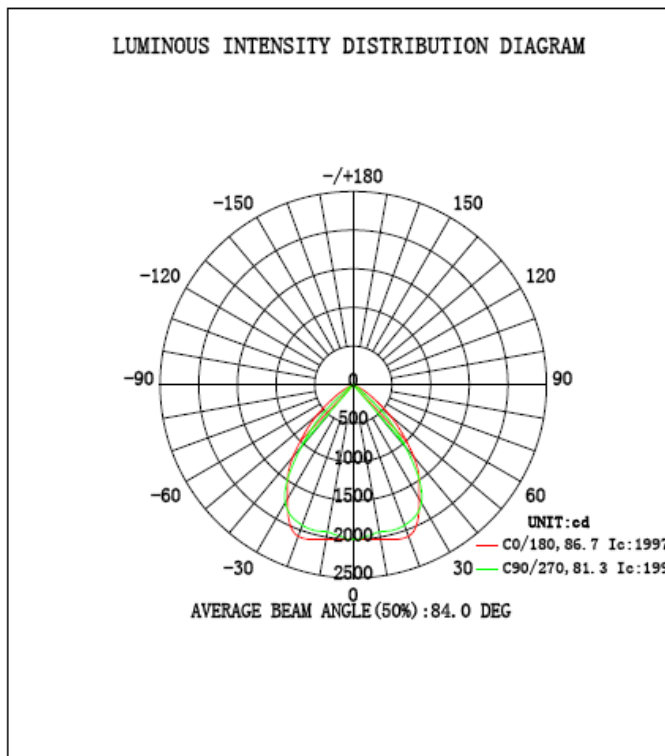
Table 2	Spectrum Test															
Model:	4pcs IL-MO1385K4 with IL-D595O-1-10															
<p data-bbox="268 353 416 389">Spectrum</p> <div data-bbox="268 398 1433 808">  </div> <p data-bbox="268 813 564 842">Spectral Distribution</p> <p data-bbox="1038 813 1433 842">CIE1931 Chromaticity Diagram</p> <p data-bbox="268 869 679 902">Colorimetric Quantities</p> <p data-bbox="268 902 1493 931">Chromaticity Coordinate: $x = 0.3848$ $y = 0.3780$ / $u' = 0.2275$ $v' = 0.5028$ ($duv = -6.59e-04$)</p> <p data-bbox="268 936 1094 965">Tc = 3894K Precp WL: $\lambda_d = 579.8\text{nm}$ Purity = 28.9%</p> <p data-bbox="268 969 1302 999">Peak WL: $\lambda_p = 451\text{nm}$ Half Width: $\Delta\lambda_p = 21.6\text{nm}$ Ratio: R=20.4% G=76.3% B=3.3%</p> <p data-bbox="268 1039 592 1068">Render Index: Ra = 83.8</p> <table data-bbox="268 1072 1246 1137"> <tr> <td>R1 =82</td> <td>R2 =91</td> <td>R3 =96</td> <td>R4 =82</td> <td>R5 =82</td> <td>R6 =86</td> <td>R7 =86</td> </tr> <tr> <td>R8 =65</td> <td>R9 =12</td> <td>R10=77</td> <td>R11=81</td> <td>R12=63</td> <td>R13=85</td> <td>R14=98</td> <td>R15=77</td> </tr> </table>		R1 =82	R2 =91	R3 =96	R4 =82	R5 =82	R6 =86	R7 =86	R8 =65	R9 =12	R10=77	R11=81	R12=63	R13=85	R14=98	R15=77
R1 =82	R2 =91	R3 =96	R4 =82	R5 =82	R6 =86	R7 =86										
R8 =65	R9 =12	R10=77	R11=81	R12=63	R13=85	R14=98	R15=77									

Table 3 Luminous intensity distribution diagram and C0 Plane Isolux Diagram
Model: 4pcs IL-MO1385K4 with IL-D595O-1-10

DATA OF LAMP		PHOTOMETRIC DATA				Eff: 125.07 lm/W
MODEL	4000K-4	I _{max} (cd)	2089	S/MH (C0/180)		1.23
NOMINAL POWER (W)	30	LOR (%)	100.0	S/MH (C90/270)		1.17
RATED VOLTAGE (V)	240	TOTAL FLUX (lm)	3570.8	η UP, DN (C0-180)		0.1, 49.9
NOMINAL FLUX (lm)	3570.76	CIE CLASS	DIRECT	η UP, DN (C180-360)		0.1, 49.9
LAMPS INSIDE	1	η up (%)	0.1	CIBSE SHR NOM		1.25
TEST VOLTAGE (V)	240	η down (%)	99.9	CIBSE SHR MAX		1.35



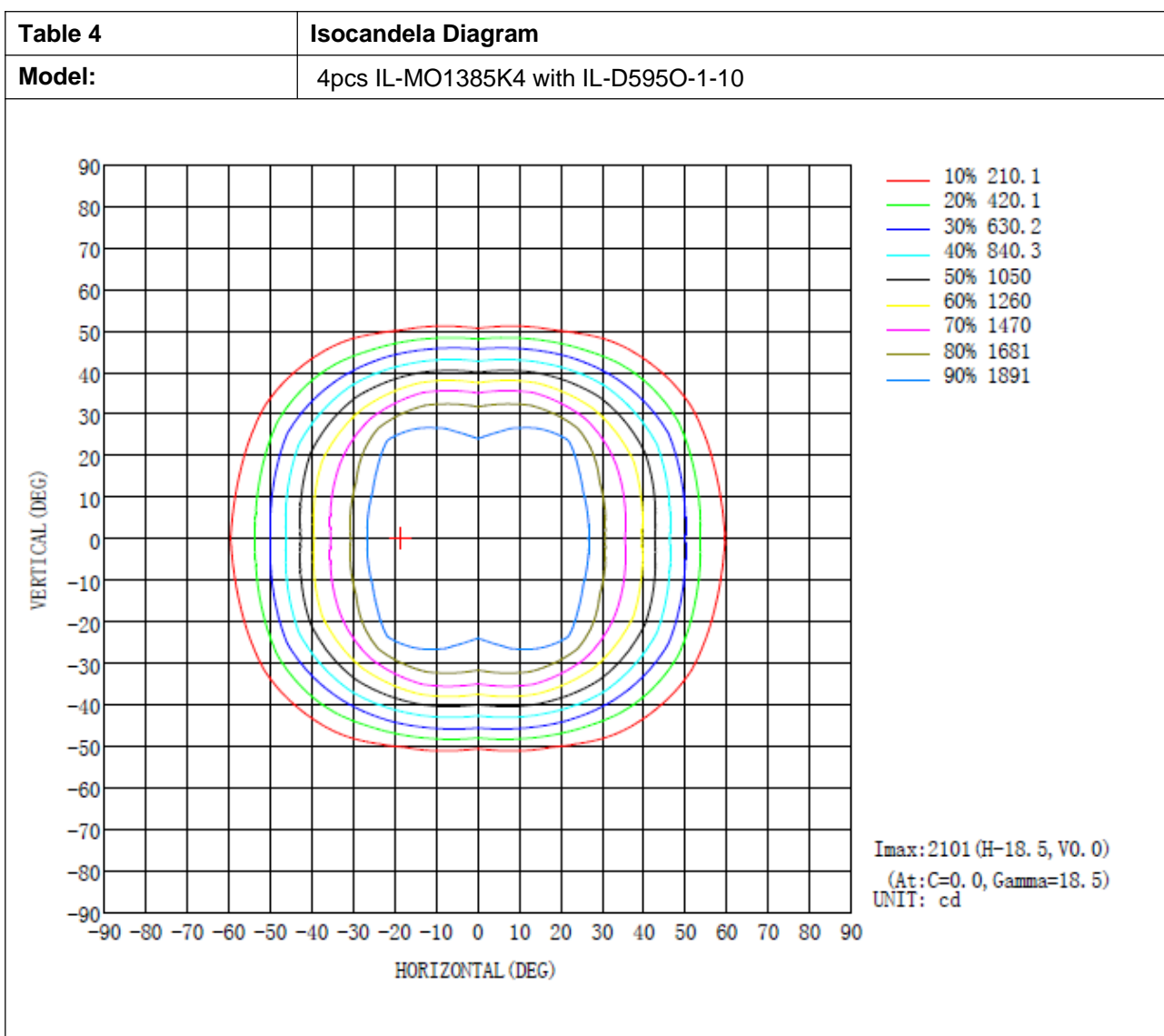


Table 5		AAI Figure	
Model:		4pcs IL-MO1385K4 with IL-D595O-1-10	
Flux out:2724 lm			
1m	1147, 2007lx		172.77cm
2m	286.8, 501.9lx		345.54cm
3m	127.5, 223.0lx		518.31cm
4m	71.71, 125.5lx		691.08cm
5m	45.89, 80.30lx		863.85cm
6m	31.87, 55.76lx		1036.62cm
7m	23.42, 40.97lx		1209.40cm
8m	17.93, 31.37lx		1382.17cm
9m	14.16, 24.78lx		1554.94cm
10m	11.47, 20.07lx		1727.71cm
Height	Eavg, Emax	Angle:81.64deg	Diameter
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.			

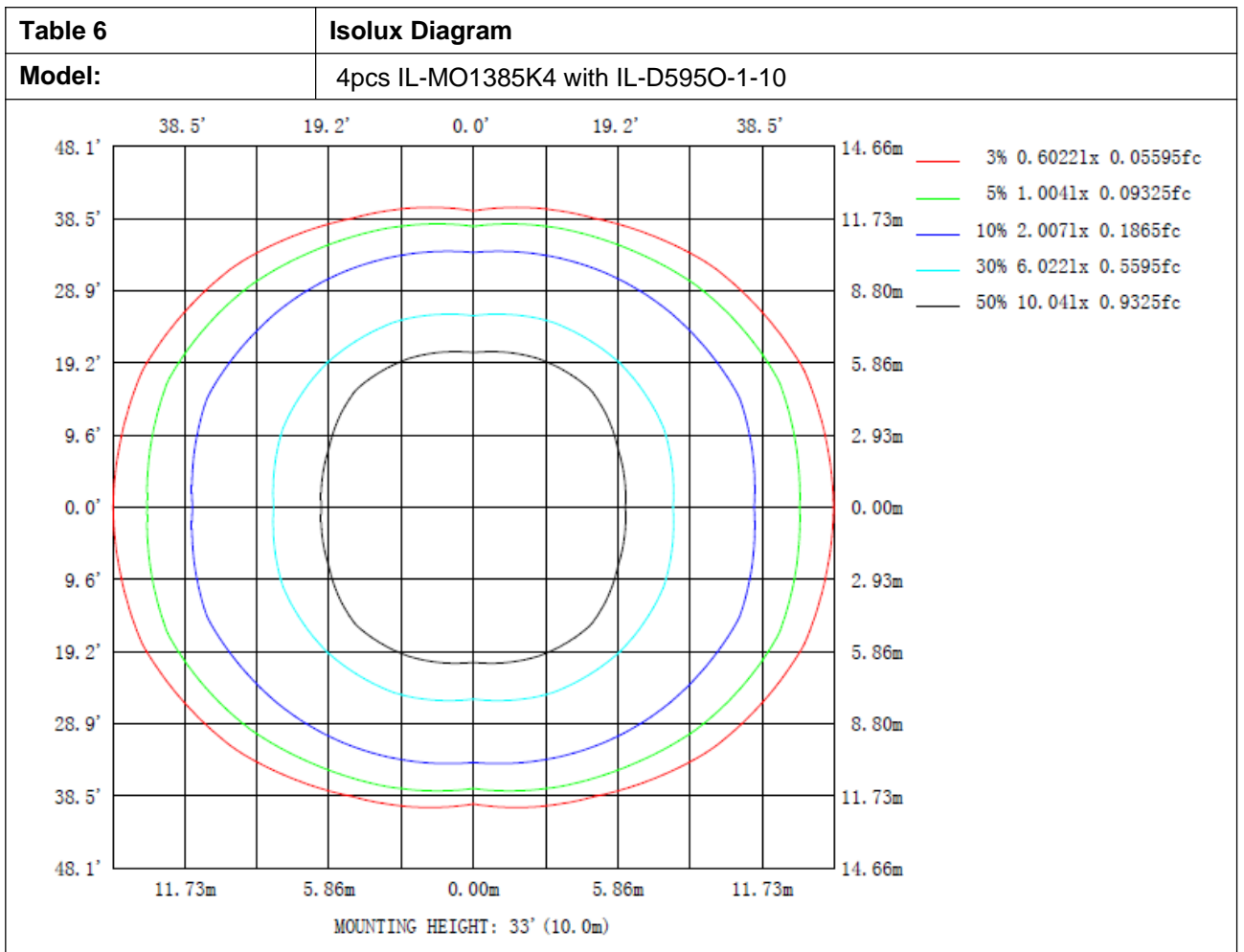




Table 7		Zonal Flux Diagram											
Model:		4pcs IL-MO1385K4 with IL-D595O-1-10											
y	C0	C45	C90	C135	C180	C225	C270	C315	y	φ zone	φ total	%lum.lamp	
5	2005	1986	1962	1986	2005	1986	1962	1986	0- 5	47.65	47.65	1.33,1.33	
10	2029	1973	1933	1973	2029	1973	1933	1973	5- 10	141.6	189.2	5.3,5.3	
15	2071	1972	1951	1972	2071	1972	1951	1972	10- 15	235.0	424.2	11.9,11.9	
20	2085	2022	1934	2022	2085	2022	1934	2022	15- 20	330.4	754.5	21.1,21.1	
25	1951	2036	1884	2036	1951	2036	1884	2036	20- 25	418.1	1173	32.8,32.8	
30	1702	1960	1763	1960	1702	1960	1763	1960	25- 30	482.5	1655	46.4,46.4	
35	1481	1698	1478	1698	1481	1698	1478	1698	30- 35	505.6	2161	60.5,60.5	
40	1219	1323	1051	1323	1219	1323	1051	1323	35- 40	476.1	2637	73.8,73.8	
45	904.1	954.8	677.2	954.8	904.1	954.8	677.2	954.8	40- 45	396.2	3033	84.9,84.9	
50	626.1	560.9	251.8	560.9	626.1	560.9	251.8	560.9	45- 50	285.5	3319	92.9,92.9	
55	359.3	243.9	100.9	243.9	359.3	243.9	100.9	243.9	50- 55	158.5	3477	97.4,97.4	
60	197.1	43.42	17.82	43.42	197.1	43.42	17.82	43.42	55- 60	67.93	3545	99.3,99.3	
65	53.91	3.879	0.6710	3.879	53.91	3.879	0.6710	3.879	60- 65	19.23	3564	99.8,99.8	
70	1.600	0.5487	0.1101	0.5487	1.600	0.5487	0.1101	0.5487	65- 70	1.997	3566	99.9,99.9	
75	0.5741	0.0722	0.0893	0.0722	0.5741	0.0722	0.0893	0.0722	70- 75	0.2280	3566	99.9,99.9	
80	0.1524	0.0539	0.0720	0.0539	0.1524	0.0539	0.0720	0.0539	75- 80	0.0745	3567	99.9,99.9	
85	0.0570	0.0356	0.0467	0.0356	0.0570	0.0356	0.0467	0.0356	80- 85	0.0303	3567	99.9,99.9	
90	0.0302	0.0261	0.0209	0.0261	0.0302	0.0261	0.0209	0.0261	85- 90	0.0154	3567	99.9,99.9	
95	0.0493	0.0498	0.0333	0.0498	0.0493	0.0498	0.0333	0.0498	90- 95	0.0217	3567	99.9,99.9	
100	0.1273	0.0652	0.0433	0.0652	0.1273	0.0652	0.0433	0.0652	95-100	0.0355	3567	99.9,99.9	
105	0.1456	0.0876	0.0548	0.0876	0.1456	0.0876	0.0548	0.0876	100-105	0.0482	3567	99.9,99.9	
110	0.1799	0.1271	0.0892	0.1271	0.1799	0.1271	0.0892	0.1271	105-110	0.0606	3567	99.9,99.9	
115	0.1590	0.1959	0.1600	0.1959	0.1590	0.1959	0.1600	0.1959	110-115	0.0826	3567	99.9,99.9	
120	0.3190	0.2891	0.2664	0.2891	0.3190	0.2891	0.2664	0.2891	115-120	0.1162	3567	99.9,99.9	
125	0.3830	0.4042	0.4042	0.4042	0.3830	0.4042	0.4042	0.4042	120-125	0.1595	3567	99.9,99.9	
130	0.6151	0.5453	0.5659	0.5453	0.6151	0.5453	0.5659	0.5453	125-130	0.2114	3567	99.9,99.9	
135	0.8896	0.8015	0.8472	0.8015	0.8896	0.8015	0.8472	0.8015	130-135	0.2757	3568	99.9,99.9	
140	1.174	1.152	1.191	1.152	1.174	1.152	1.191	1.152	135-140	0.3710	3568	99.9,99.9	
145	1.404	1.506	1.534	1.506	1.404	1.506	1.534	1.506	140-145	0.4430	3568	99.9,99.9	
150	1.680	1.783	1.809	1.783	1.680	1.783	1.809	1.783	145-150	0.4865	3569	99.9,99.9	
155	1.930	2.086	2.035	2.086	1.930	2.086	2.035	2.086	150-155	0.4860	3569	100,100	
160	2.215	2.338	2.232	2.338	2.215	2.338	2.232	2.338	155-160	0.4879	3570	100,100	
165	2.352	2.421	2.306	2.421	2.352	2.421	2.306	2.421	160-165	0.3854	3570	100,100	
170	2.544	2.559	2.402	2.559	2.544	2.559	2.402	2.559	165-170	0.2908	3571	100,100	
175	2.833	2.847	2.504	2.847	2.833	2.847	2.504	2.847	170-175	0.1865	3571	100,100	
180	3.318	3.254	3.112	3.254	3.318	3.254	3.112	3.254	175-180	0.0706	3571	100,100	
DRG	LUMINOUS INTENSITY:cd										UNIT:lm		

Table 8		Luminous Distribution Intensity Data																	
Model:		4pcs IL-MO1385K4 with IL-D595O-1-10																	
Table-1		UNIT: cd																	
γ (DEG)	C (DEG)																		
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997			
5	2005	2002	1986	1969	1962	1969	1986	2002	2005	2002	1986	1969	1962	1969	1986	2002			
10	2029	2005	1973	1940	1933	1940	1973	2005	2029	2005	1973	1940	1933	1940	1973	2005			
15	2071	2025	1972	1958	1951	1958	1972	2025	2071	2025	1972	1958	1951	1958	1972	2025			
20	2085	2047	2022	1961	1934	1961	2022	2047	2085	2047	2022	1961	1934	1961	2022	2047			
25	1961	1973	2036	1934	1884	1934	2036	1973	1961	1973	2036	1934	1884	1934	2036	1973			
30	1702	1777	1960	1857	1763	1857	1960	1777	1702	1777	1960	1857	1763	1857	1960	1777			
35	1481	1551	1698	1634	1478	1634	1698	1551	1481	1551	1698	1634	1478	1634	1698	1551			
40	1219	1332	1323	1234	1051	1234	1323	1332	1219	1332	1323	1234	1051	1234	1323	1332			
45	904	1010	955	805	677	805	955	1010	904	1010	955	805	677	805	955	1010			
50	626	698	561	401	252	401	561	698	626	698	561	401	252	401	561	698			
55	359	360	244	100	101	100	244	360	359	360	244	100	101	100	244	360			
60	197	133	43.4	27.9	17.8	27.9	43.4	133	197	133	43.4	27.9	17.8	27.9	43.4	133			
65	53.9	22.6	3.88	1.24	0.67	1.24	3.88	22.6	53.9	22.6	3.88	1.24	0.67	1.24	3.88	22.6			
70	1.60	1.34	0.55	0.17	0.11	0.17	0.55	1.34	1.60	1.34	0.55	0.17	0.11	0.17	0.55	1.34			
75	0.57	0.44	0.07	0.07	0.09	0.07	0.07	0.44	0.57	0.44	0.07	0.07	0.09	0.07	0.07	0.44			
80	0.15	0.09	0.05	0.07	0.07	0.07	0.05	0.09	0.15	0.09	0.05	0.07	0.07	0.07	0.05	0.09			
85	0.06	0.04	0.04	0.04	0.05	0.04	0.04	0.04	0.06	0.04	0.04	0.04	0.05	0.04	0.04	0.04			
90	0.03	0.03	0.03	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.03	0.03			
95	0.05	0.07	0.05	0.04	0.03	0.04	0.05	0.07	0.05	0.07	0.05	0.04	0.03	0.04	0.05	0.07			
100	0.13	0.12	0.07	0.05	0.04	0.05	0.07	0.12	0.13	0.12	0.07	0.05	0.04	0.05	0.07	0.12			
105	0.15	0.14	0.09	0.07	0.05	0.07	0.09	0.14	0.15	0.14	0.09	0.07	0.05	0.07	0.09	0.14			
110	0.18	0.18	0.13	0.11	0.09	0.11	0.13	0.18	0.18	0.18	0.13	0.11	0.09	0.11	0.13	0.18			
115	0.16	0.23	0.20	0.17	0.16	0.17	0.20	0.23	0.16	0.23	0.20	0.17	0.16	0.17	0.20	0.23			
120	0.32	0.30	0.29	0.28	0.27	0.28	0.29	0.30	0.32	0.30	0.29	0.28	0.27	0.28	0.29	0.30			
125	0.38	0.41	0.40	0.42	0.40	0.42	0.40	0.41	0.38	0.41	0.40	0.42	0.40	0.42	0.40	0.41			
130	0.62	0.57	0.55	0.57	0.57	0.57	0.55	0.57	0.62	0.57	0.55	0.57	0.57	0.57	0.55	0.57			
135	0.89	0.83	0.80	0.84	0.85	0.84	0.80	0.83	0.89	0.83	0.80	0.84	0.85	0.84	0.80	0.83			
140	1.17	1.14	1.15	1.18	1.19	1.18	1.15	1.14	1.17	1.14	1.15	1.18	1.19	1.18	1.15	1.14			
145	1.40	1.48	1.51	1.56	1.53	1.56	1.51	1.48	1.40	1.48	1.51	1.56	1.53	1.56	1.51	1.48			
150	1.68	1.78	1.78	1.82	1.81	1.82	1.78	1.78	1.68	1.78	1.78	1.82	1.81	1.82	1.78	1.78			
155	1.93	2.07	2.09	2.10	2.03	2.10	2.09	2.07	1.93	2.07	2.09	2.10	2.03	2.10	2.09	2.07			
160	2.21	2.31	2.34	2.29	2.23	2.29	2.34	2.31	2.21	2.31	2.34	2.29	2.23	2.29	2.34	2.31			
165	2.35	2.47	2.42	2.34	2.31	2.34	2.42	2.47	2.35	2.47	2.42	2.34	2.31	2.34	2.42	2.47			
170	2.54	2.63	2.56	2.42	2.40	2.42	2.56	2.63	2.54	2.63	2.56	2.42	2.40	2.42	2.56	2.63			
175	2.83	2.94	2.85	2.70	2.50	2.70	2.85	2.94	2.83	2.94	2.85	2.70	2.50	2.70	2.85	2.94			
180	3.32	3.34	3.25	3.15	3.11	3.15	3.25	3.34	3.32	3.34	3.25	3.15	3.11	3.15	3.25	3.34			

Attachment 1: Equipment List

Equipment	Model	calibration date	Calibration due date
Goniophotometer	EVERFINE GO R5000-2M2D	2018-03-08	2019-03-07
Temperature & Humidity Datalogger	Testo 608-H1	2018-03-08	2019-03-07
Digital power meter	EVERFINE PF2010A-V1-CAN	2018-03-08	2019-03-07
AC power source	EVERFINE DPS1060	2018-03-08	2019-03-07
DC power source	EVERFINE WY12010	2018-03-08	2019-03-07
Luminance meter	EVERFINE CX-2B	2018-03-08	2019-03-07
Standard lamp	EVERFINE 28V/10A/500cd	2018-03-08	2019-03-07
Standard lamp	EVERFINE D908	2018-03-08	2019-03-07
Integrating Sphere and High accuracy array spectroradio meter system	EVERFINE HAAS-2000	2018-03-08	2019-03-07
Standard lamp	EVERFINE D204	2018-03-08	2019-03-07

Attachment 2: Photo document

Model: 4pcs IL-MO1385K4 with IL-D595O-1-10

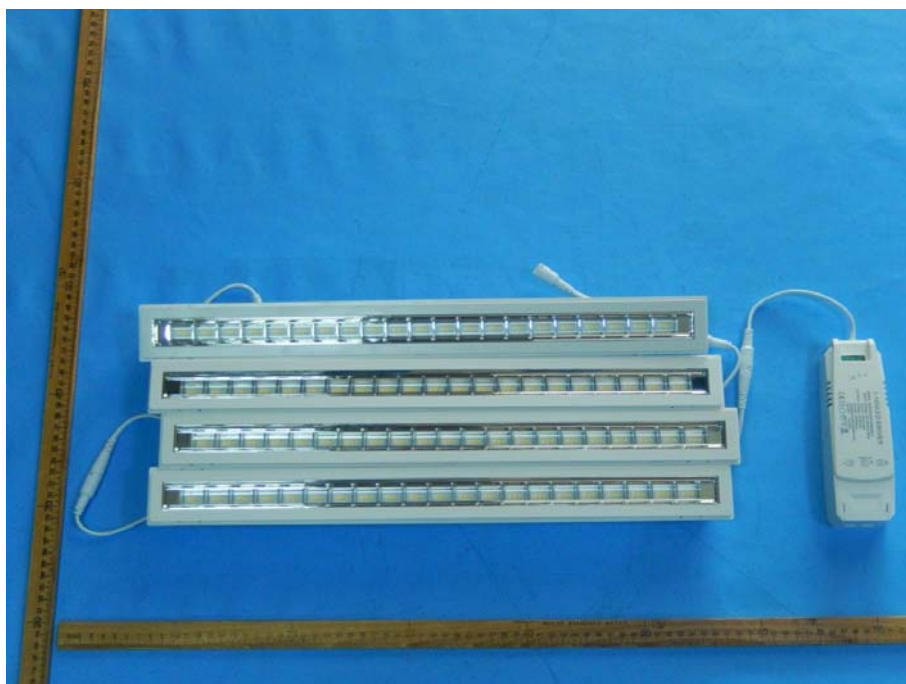


Photo 1



Photo 2

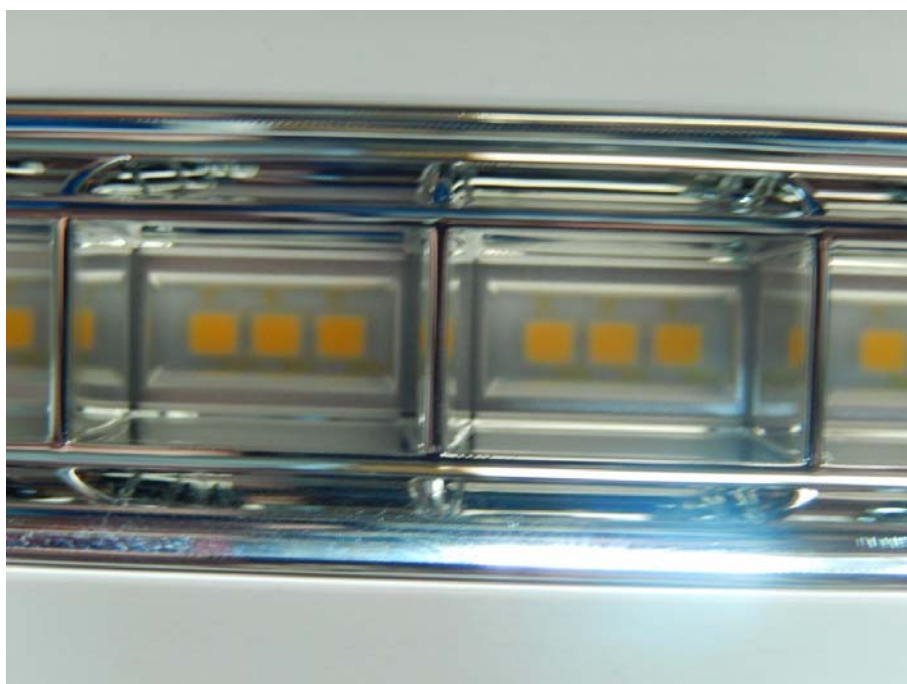


Photo 3



Photo 4

===== End of Report =====