



# Les Industries Spectralux Inc. Spectralux Industries Inc.

2750 Sabourin, Saint-Laurent (Quebec) H4S 1M2 Canada  
Tel.: (514) 332-0082 Fax: (514) 332-3590 [www.spectralux.ca](http://www.spectralux.ca)

ISO/IEC 17025



NVLAP LAB CODE: 200899-0

## Moving Mirror Goniophotometer Test Report

**Standard(s):** IESNA LM-15-03, IES LM-79-08, ANSI C82.77-2002

**Customer** Lumenpulse, 1751 Richardson, suite 1505, Montréal, Québec, Canada, H3K 1G6

General Information		SSL Details	Driver Details	
<b>Test Report</b>	S1507133-R1	<b>Description</b>	69W White SSL	<b>Type</b> Commercial
<b>Test Date</b>	13 July 2015	<b>Serial Number</b>	SRIS 2055	<b>Description</b> 69SSL-CY939
<b>Report Date</b>	22 July 2015	<b>Photometric Method</b>	Absolute	<b>Manufacturer</b> Mean Well
<b>Ambient</b>	24.2 °C	<b>Lamp Lumens</b>	-1	<b>Catalog No.</b> LPF-60-15
<b>Humidity</b>	38.3 %	<b>Test Position</b>	Vertical Base Down	<b>Voltage</b> 120.00 V
<b>Lamp Type</b>	SSL	<b>Comments</b>	CREE XPE2 LED's	<b>Power Factor</b> 0.9900

### Luminaire Data

General Information		Optics	Aperture (feet)	
<b>Manufacturer</b>	Lumenpulse	<b>Reflector</b>	None	<b>X</b> 0.2500
<b>Name</b>	LUMENFACADE INGROUND	<b>Housing</b>	Extruded Aluminum	<b>Y</b> 4.0000
<b>Catalog No.</b>	LOI-15V-48-RGB-10x60- TS2.5-DMX	<b>Lens</b>	Half Etched Flat Glass Lens	<b>Z</b> 0.0000

SKT Position: Fixed

Lamp Stabilization Time: 1 J A 3 ~ 0 • 26 seconds

**Tested By: Jean-Paul Ojeil**

**Approved Signatory: Chrisnel Blot**

**Signature:**



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## Luminaire Test Method

Precise installation and alignment of the luminaire to the rotation axis of the photometer is governed by a servomotor controlled via a microcontroller. A laser is used to validate the luminaire positioning. Before photometric measurements are taken, luminaire is operated long enough to reach stabilization and temperature equilibrium.

All movement commands issued to the photometer axes are mediated by the software to ensure the motion is within the limits of operation. The photometric detector used is a silicon detector corrected to closely match the spectral luminous efficiency photopic curve with a quality index less than 1.5%. Proper shielding is incorporated to the photometric test bench such that only the light from the unit under test is measured.

Luminous intensity measurements are performed at a distance great enough so that the inverse-square law applies. During each measurement the computer records the luminous intensity associated to the corresponding angles of radiation, as well as input electrical operational parameters and temperature measurements. Candela values are reported in IES format as per LM-63.

Equipment, reference standards are traceable to National Institute of Standards and Technology (NIST) and National Research Council of Canada (NRC).





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## Electrical Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Power Supply	iRDC	CIF-3000A	974997	N.P.C.R.	N.P.C.R.
Input Power Meter	Yokogawa	WT210	27E116584	2014/10/30	2015/10/30
Output Power Meter	N/A	N/A	N/A	N.P.C.R.	N.P.C.R.

## Photometric Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Photometer	Gigahertz-Optik	X11	4502	2014/05/06	2015/09/17
Photodetector	INPHORA	IPR-PDET 19	110802	2015/05/16	2016/05/16

## Environment Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Temperature Humidity Sensor	Omega	HH311	120504178	2014/04/16	2016/04/16



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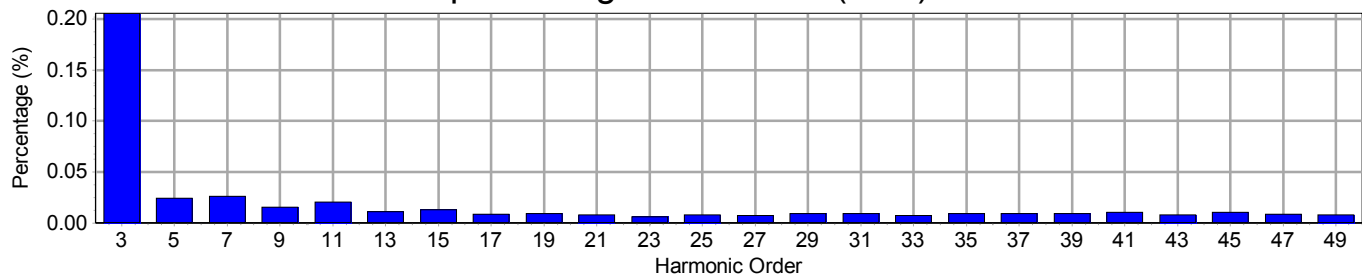
NVLAP LAB CODE: 200899-0

## Electrical Measurements

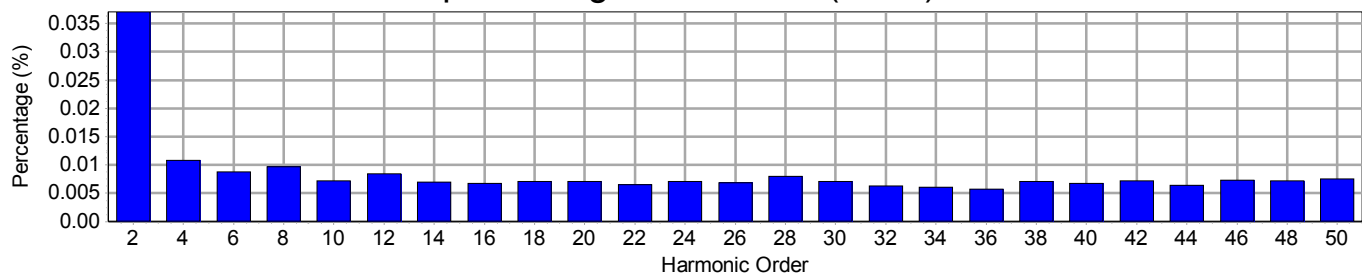
### Input

Frequency	60 Hz	Active Power	55.49 W	THDV [ANSI]	0.22 %
Voltage	120.6 V(rms)	Apparent Power	55.80 VA	THDA [ANSI]	5.28 %
Current	0.4628 A(rms)	Power Factor	0.994	Max. Harmonic At	5th order

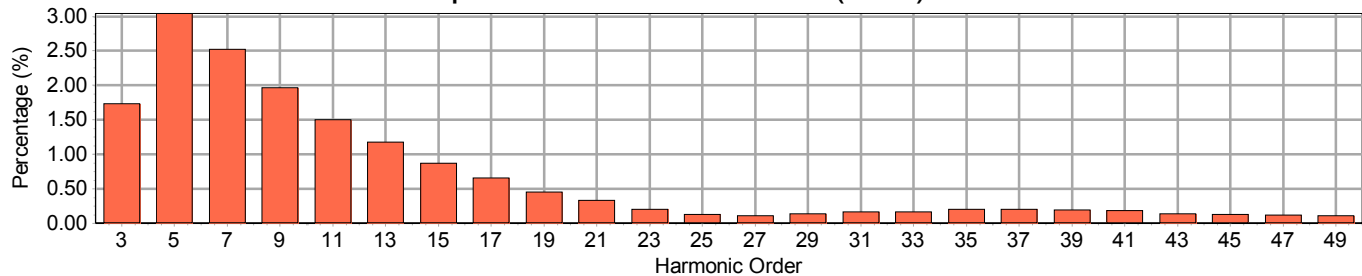
### Input Voltage Harmonics (Odd)



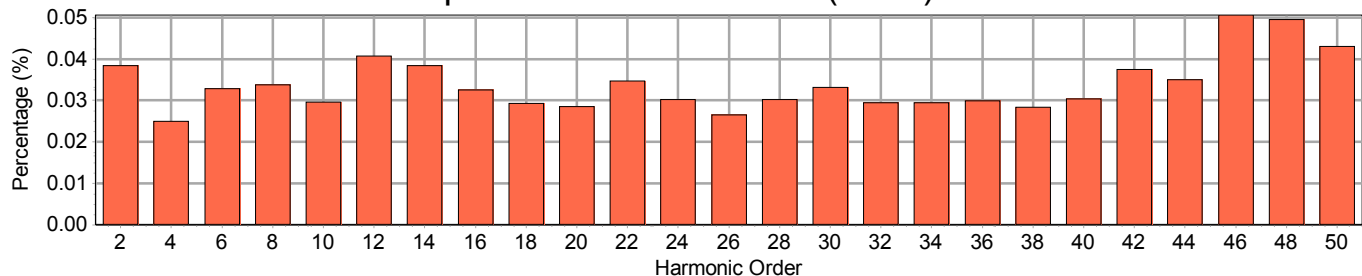
### Input Voltage Harmonics (Even)



### Input Current Harmonics (Odd)



### Input Current Harmonics (Even)





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**Harmonic Measurements**

Odd Harmonics				Even Harmonics			
Harmonic Order	Frequency (HZ)	Voltage Harmonics (%)	Current Harmonics (%)	Harmonic Order	Frequency (HZ)	Voltage Harmonics (%)	Current Harmonics (%)
1	60	100.000	100.000	2	120	0.037	0.038
3	180	0.206	1.730	4	240	0.011	0.025
5	300	0.024	3.047	6	360	0.009	0.033
7	420	0.026	2.522	8	480	0.010	0.034
9	540	0.015	1.962	10	600	0.007	0.030
11	660	0.020	1.498	12	720	0.008	0.041
13	780	0.011	1.173	14	840	0.007	0.038
15	900	0.013	0.872	16	960	0.007	0.032
17	1020	0.008	0.656	18	1080	0.007	0.029
19	1140	0.009	0.449	20	1200	0.007	0.029
21	1260	0.008	0.329	22	1320	0.006	0.035
23	1380	0.006	0.200	24	1440	0.007	0.030
25	1500	0.008	0.130	26	1560	0.007	0.026
27	1620	0.007	0.105	28	1680	0.008	0.030
29	1740	0.009	0.135	30	1800	0.007	0.033
31	1860	0.009	0.158	32	1920	0.006	0.029
33	1980	0.008	0.165	34	2040	0.006	0.029
35	2100	0.009	0.203	36	2160	0.006	0.030
37	2220	0.009	0.202	38	2280	0.007	0.028
39	2340	0.009	0.192	40	2400	0.007	0.030
41	2460	0.011	0.185	42	2520	0.007	0.038
43	2580	0.008	0.134	44	2640	0.006	0.035
45	2700	0.010	0.128	46	2760	0.007	0.051
47	2820	0.009	0.118	48	2880	0.007	0.050
49	2940	0.008	0.111	50	3000	0.008	0.043



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## Photometric Report: S1507133-R1

Prepared for: Lumenpulse · Test Date: 13 July 2015

Luminaire: LUMENFACADE INGROUND · Lumcat: LOI-15V-48-RGB-10x60-TS2.5-DMX

### Coefficients of Utilization - Zonal Cavity Method

RCR	RC RW	0.9				0.8				0.7				0.5			0.1			0
		0.7	0.5	0.3	0.1	0.7	0.5	0.3	0.1	0.7	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1	
0		110	110	110	110	95	95	95	95	82	82	82	82	56	56	56	11	11	11	0
1		100	95	91	87	87	83	79	76	74	71	68	65	49	47	45	9	9	9	0
2		91	83	76	70	79	72	66	62	67	62	57	53	42	40	37	8	8	7	0
3		83	73	64	58	72	63	57	51	61	54	49	44	37	34	31	7	7	6	0
4		76	64	55	49	65	56	48	43	56	48	42	37	33	29	26	6	6	5	0
5		69	56	48	41	60	49	42	36	51	42	36	32	29	25	22	6	5	5	0
6		64	50	41	35	55	44	36	31	47	38	32	27	26	22	19	5	4	4	0
7		58	45	36	30	50	39	32	27	43	34	28	23	23	20	17	5	4	3	0
8		54	40	32	26	47	35	28	23	40	30	25	20	21	17	15	4	3	3	0
9		50	36	28	23	43	32	25	20	37	28	22	18	19	15	13	4	3	3	0
10		46	33	25	20	40	29	22	18	34	25	19	16	17	14	11	3	3	2	0

### Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0 - 20	1	0.07	0.07
0 - 40	3	0.18	0.18
20 - 50	2	0.14	0.14
0 - 60	4	0.25	0.25
40 - 70	2	0.11	0.11
60 - 80	1	0.10	0.10
70 - 80	1	0.05	0.05
0 - 90	6	0.40	0.40
10 - 90	5	0.38	0.38
80 - 90	1	0.05	0.05
90 - 110	21	1.47	1.47
90 - 150	463	32.26	32.26
90 - 180	1430	99.60	99.60

### Average Luminance (Cd/m<sup>2</sup>)

Angle	0 Degree	45 Degree	90 Degree
	12	6	12
55.0	11	6	5
65.0	13	20	16
75.0	38	20	26
85.0	109	49	26

Luminaire Luminous Flux: 1435

Measured Input Power: 55.49 W

Total Luminaire Efficiency: N/A

Luminaire Luminous Efficacy: 25.9 lm/W

Luminaire Spacing Criterion (0 Degree): 0.8804

Luminaire Spacing Criterion (90 Degree): 0.8906

CIE Type: Qairect



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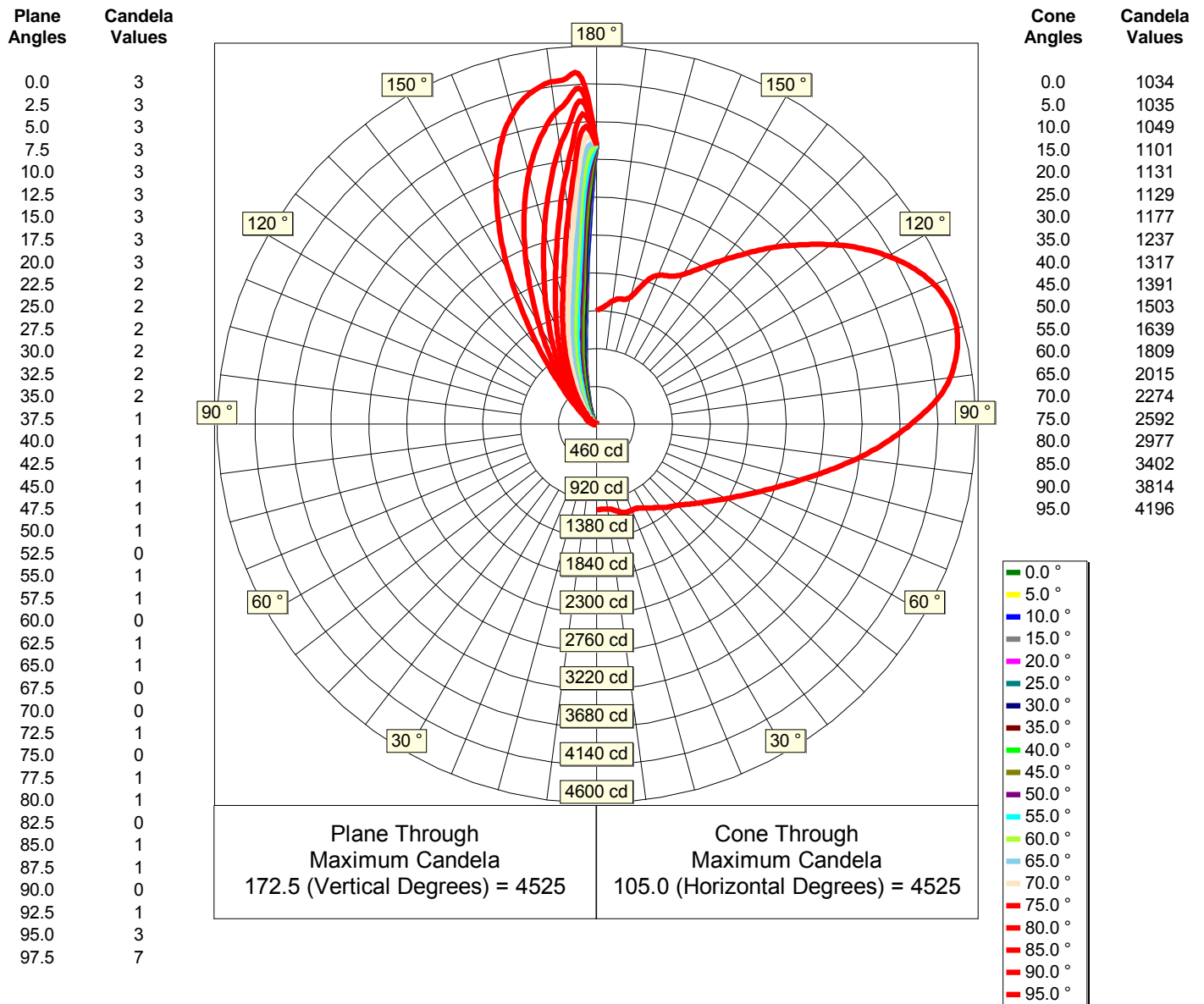
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## Photometric Report: S1507133-R1

Prepared for: Lumenpulse · Test Date: 13 July 2015

Luminaire: LUMENFACADE INGROUND · Lumcat: LOI-15V-48-RGB-10x60-TS2.5-DMX

### Luminous Intensity - Polar Curve for each Plane(1)





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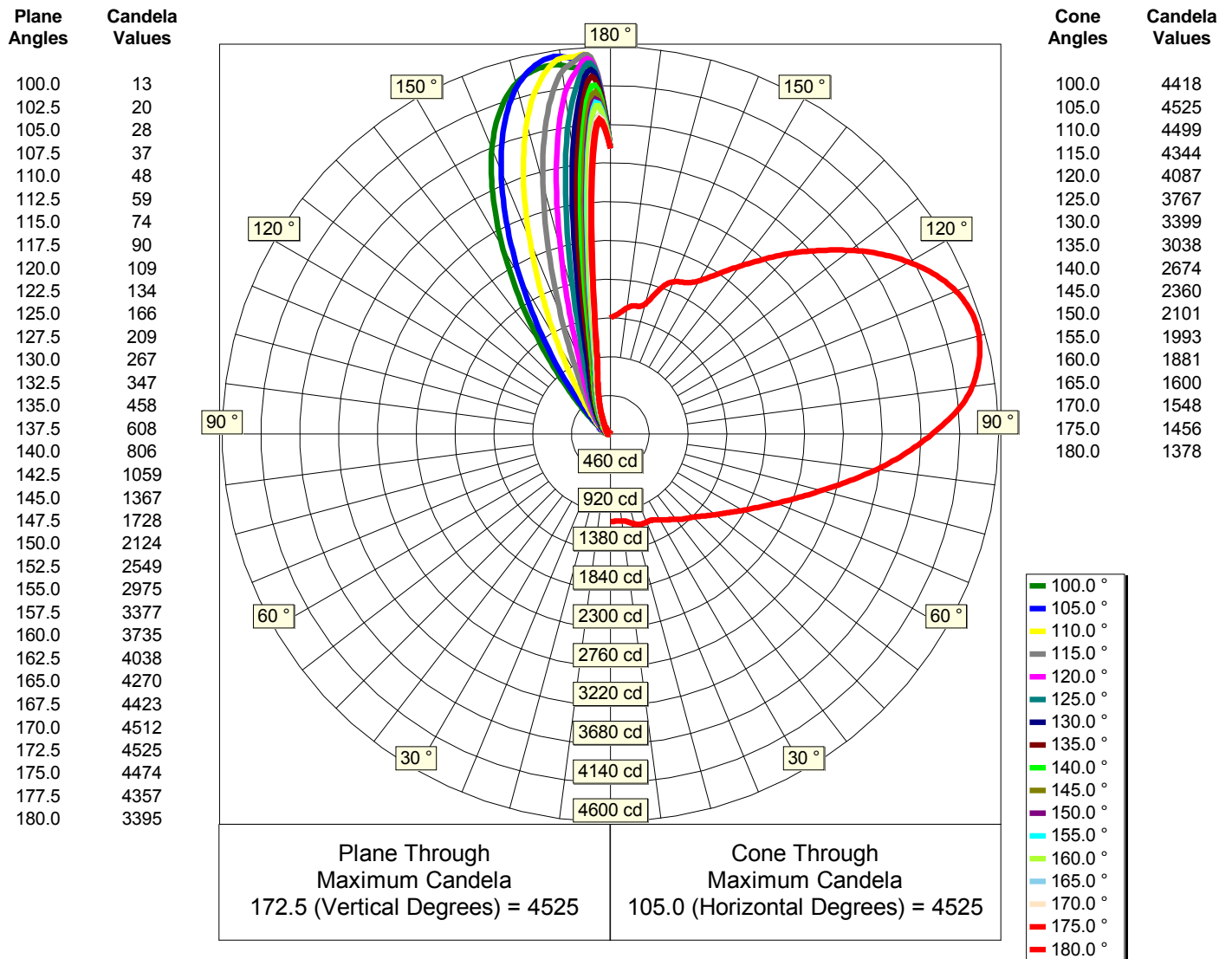
NVLAP LAB CODE: 200899-0

## Photometric Report: S1507133-R1

Prepared for: Lumenpulse · Test Date: 13 July 2015

Luminaire: LUMENFACADE INGROUN · Lumcat: LOI-15V-48-RGB-10x60-TS2.5-DMX

### Luminous Intensity - Polar Curve for each Plane(2)







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## IES File Headers

IESNA:LM-63-2002  
[ISSUEDATE] 13 July 2015  
[TESTLAB] Spectra Lux Industries Inc.  
[TEST] S1507133-R1  
[MANUFAC] Lumenpulse  
[LUMCAT] LOI-15V-48-RGB-10x60-TS2.5-DMX  
[LUMINAIRE] LUMENFACADE INGROUND  
[LAMP] (CREE XPE2 LED's) White 69W SSL c/w Mean Well Driver LPF-60-15 @ 120.00V  
[\_LAMPDETAILS] AC Voltage=15V, Current=4.6A, CCT=N/K, CRI=N/K, x=N/K, y=N/K  
[\_BURNING] Vertical Base Down (1,435 Luminaire Lumens)  
[\_REFLECTOR] None  
[\_LENS] Half Etched Flat Glass Lens  
[\_HOUSING] Extruded Aluminum  
[\_SKTPOSITION] Fixed  
[DISTRIBUTION] Ø^direct Type - 0°light

## Candela Table

### Lateral Angles

	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0
V e r t i c a l	0.0	3	3	3	3	3	3	3	3	3
	2.5	3	2	2	3	3	3	2	3	2
	5.0	3	3	2	3	2	2	3	3	3
	7.5	3	3	3	3	3	3	3	3	3
	10.0	3	3	3	3	3	3	3	3	3
	12.5	3	3	3	3	2	2	3	3	3
	15.0	3	3	3	3	3	3	2	2	3
	17.5	2	2	2	3	3	2	2	3	2
	20.0	2	3	2	2	2	2	2	2	2
	22.5	2	2	2	2	2	2	2	2	2
	25.0	2	2	2	2	2	2	2	2	2
	27.5	1	2	1	1	1	1	1	1	1
	30.0	1	1	1	1	1	1	1	1	1
	32.5	1	1	1	1	1	1	1	1	1
	35.0	1	1	1	1	1	0	1	0	1
	37.5	1	1	1	1	1	1	0	1	1
	40.0	1	1	0	1	1	1	1	1	0
	42.5	0	1	1	0	1	0	1	0	1
A n g l e s	45.0	1	0	1	1	1	1	1	0	0
	47.5	0	1	0	1	1	1	1	1	0
	50.0	0	1	1	0	0	0	0	0	1
	52.5	1	0	1	1	1	1	0	0	0
	55.0	1	1	0	1	1	1	1	1	0
	57.5	0	1	1	0	0	0	1	0	1
	60.0	1	0	1	1	1	1	0	0	0
	62.5	1	1	1	1	1	1	1	1	0
	65.0	0	1	1	0	1	0	1	0	1
	67.5	1	0	1	1	1	1	0	0	0
	70.0	1	1	1	1	1	1	1	1	0
	72.5	1	1	1	0	1	0	1	0	1
	75.0	1	1	1	1	1	1	0	1	0
	77.5	1	1	0	1	1	1	1	1	0
	80.0	1	1	1	0	1	0	1	0	1
	82.5	1	1	1	1	1	1	0	1	0
	85.0	1	1	1	1	1	1	1	1	0
	87.5	1	1	1	0	0	0	1	0	1
	90.0	1	1	1	1	1	1	0	1	0



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## Lateral Angles

	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	
V e r t i c a l	92.5	2	1	1	1	2	1	1	1	2	1
	95.0	2	3	3	2	2	2	2	3	2	3
	97.5	4	4	4	4	4	4	4	4	4	4
	100.0	6	6	6	6	6	6	6	6	7	6
	102.5	8	8	8	8	8	8	8	9	9	9
	105.0	10	10	10	11	10	11	11	11	11	12
	107.5	12	12	12	13	13	13	13	13	14	15
	110.0	14	15	15	14	15	15	15	16	17	18
	112.5	17	16	16	17	17	18	18	19	20	22
	115.0	19	19	19	20	20	20	21	22	24	25
	117.5	21	22	22	22	23	23	24	26	27	30
	120.0	24	24	24	26	26	27	28	29	32	34
	122.5	27	27	28	29	30	30	31	33	36	38
	125.0	31	31	32	32	33	33	35	37	39	43
	127.5	34	34	35	36	37	37	39	41	45	49
	130.0	38	38	38	40	41	41	43	46	51	55
	132.5	42	42	43	44	46	46	49	52	57	63
A n g l e s	135.0	47	46	47	50	52	52	55	59	65	71
	137.5	53	53	54	56	59	59	62	67	74	81
	140.0	59	60	61	64	67	67	71	77	84	93
	142.5	68	68	69	73	76	76	81	88	97	108
	145.0	78	78	80	84	89	88	94	102	113	124
	147.5	90	91	93	98	103	103	110	119	130	145
	150.0	106	106	109	115	120	120	128	139	153	171
	152.5	125	126	128	135	142	141	151	164	182	205
	155.0	148	149	152	161	169	169	182	199	223	251
	157.5	180	182	186	199	210	209	226	247	276	309
	160.0	227	230	235	251	265	265	284	310	344	385
	162.5	291	295	302	321	338	338	362	396	442	497
	165.0	384	387	397	426	449	447	481	525	588	655
	167.5	537	541	552	591	620	618	659	712	783	852
	170.0	757	759	772	817	846	845	888	944	1018	1088
	172.5	1034	1035	1049	1101	1131	1129	1177	1237	1317	1391
	175.0	1428	1428	1443	1522	1555	1550	1607	1683	1781	1858
177.5	2225	2220	2232	2367	2398	2391	2451	2532	2635	2690	
180.0	3395	3395	3395	3395	3395	3395	3395	3395	3395	3395	



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## Lateral Angles

	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0	90.0	95.0
V e r t i c a l  A n g l e s	0.0	3	3	3	3	3	3	3	3	3
	2.5	3	3	3	3	3	3	3	3	3
	5.0	3	3	3	3	3	3	3	3	3
	7.5	2	3	2	3	3	3	3	3	3
	10.0	3	2	3	2	3	3	3	3	3
	12.5	3	3	3	3	3	3	3	3	3
	15.0	2	3	2	3	3	3	3	3	3
	17.5	3	2	3	2	2	2	2	2	2
	20.0	2	2	2	2	2	2	2	3	3
	22.5	2	2	2	2	2	2	2	2	2
	25.0	2	1	2	1	2	2	2	2	2
	27.5	1	2	1	2	2	2	2	2	2
	30.0	1	1	1	1	2	2	1	2	2
	32.5	1	1	1	1	1	1	2	1	1
	35.0	1	1	1	1	1	1	1	1	2
	37.5	0	1	0	1	1	1	1	1	1
	40.0	1	0	1	0	0	1	1	1	1
	42.5	1	1	0	1	1	1	1	1	1
	45.0	0	0	0	1	1	1	1	1	1
	47.5	1	0	1	0	0	0	1	1	0
	50.0	1	1	0	1	1	0	0	1	1
	52.5	0	0	0	1	0	1	0	1	1
	55.0	1	0	1	0	0	0	1	0	0
	57.5	1	1	0	0	1	0	0	1	1
	60.0	0	0	0	0	0	1	0	1	1
	62.5	1	0	1	0	0	0	1	0	0
	65.0	1	1	0	1	1	1	0	1	1
	67.5	0	0	0	1	0	0	0	1	1
	70.0	1	0	1	0	0	1	1	0	0
	72.5	1	1	0	1	1	0	0	1	1
	75.0	0	0	0	1	0	0	0	1	1
	77.5	1	0	1	0	0	0	1	0	0
	80.0	1	1	0	1	1	0	0	1	1
	82.5	0	0	0	0	0	1	0	1	1
	85.0	1	0	1	0	1	1	1	0	0
	87.5	1	1	0	1	1	0	0	1	1
	90.0	0	0	0	1	0	1	1	1	1
	92.5	1	1	1	1	1	1	1	1	1
	95.0	3	3	3	3	3	4	4	5	4
	97.5	4	5	5	6	6	8	9	10	9
	100.0	7	8	8	9	11	12	14	15	14
	102.5	10	11	12	14	16	18	20	22	22
	105.0	12	14	16	18	21	24	27	30	31
	107.5	16	18	20	23	27	30	34	38	41
	110.0	20	22	25	29	32	37	41	47	53
	112.5	24	26	30	34	38	44	50	57	66
	115.0	28	31	35	40	46	52	60	69	80
	117.5	33	36	41	47	53	61	71	83	98
	120.0	37	41	47	54	62	72	84	99	119
	122.5	42	48	54	62	71	84	99	118	145
	125.0	48	54	62	71	82	98	117	141	178
	127.5	54	61	71	81	95	114	139	171	223
	130.0	62	70	80	93	111	133	165	207	284
	132.5	70	80	91	107	129	157	198	253	368



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ISO/IEC 17025



NVLAP LAB CODE: 200899-0

## Lateral Angles

	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0	90.0	95.0
V e r t i c a l	135.0	80	91	105	124	151	186	240	310	483
	137.5	91	104	120	145	178	221	292	382	637
	140.0	105	120	141	171	209	266	358	470	839
	142.5	121	139	166	202	247	322	438	576	1091
	145.0	141	164	196	238	295	393	532	700	1393
	147.5	165	194	232	282	356	482	643	843	1733
	150.0	196	231	276	337	437	587	770	1005	2103
	152.5	237	278	331	413	541	710	915	1184	2477
	155.0	288	337	407	516	666	850	1076	1382	2839
	157.5	353	418	512	645	808	1005	1250	1602	3178
	160.0	445	531	648	794	964	1173	1441	1849	2565
	162.5	577	682	810	960	1137	1358	1654	2127	2873
	165.0	746	859	992	1146	1333	1571	1909	2433	3159
	167.5	949	1064	1200	1363	1563	1829	2214	2759	3416
	170.0	1190	1311	1458	1635	1862	2164	2571	3083	3631
	172.5	1503	1639	1809	2015	2274	2592	2977	3402	3814
	175.0	1997	2159	2352	2571	2821	3090	3388	3686	3955
	177.5	2819	2960	3116	3276	3443	3601	3770	3930	4062
	180.0	3395	3395	3395	3395	3395	3395	3395	3395	3395
A n g l e s										



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## Lateral Angles

	100.0	105.0	110.0	115.0	120.0	125.0	130.0	135.0	140.0	145.0
<b>V e r t i c a l</b>	0.0	3	3	3	3	3	3	3	3	3
	2.5	3	3	3	3	3	3	3	3	3
	5.0	3	3	3	3	3	3	3	3	3
	7.5	3	3	3	3	3	3	3	3	3
	10.0	3	3	3	3	3	3	3	3	3
	12.5	3	3	3	3	3	3	3	3	3
	15.0	3	3	3	3	3	3	3	3	3
	17.5	3	3	3	3	3	3	3	3	3
	20.0	3	3	3	3	3	3	3	3	3
	22.5	2	2	2	3	2	3	3	3	3
	25.0	2	2	3	2	2	2	2	2	2
	27.5	2	2	2	2	2	2	2	2	2
	30.0	2	2	2	2	2	2	2	2	2
	32.5	2	2	2	2	1	1	1	1	1
	35.0	1	2	1	2	1	1	1	1	1
	37.5	1	1	1	1	1	1	1	1	1
	40.0	1	1	1	1	1	1	1	0	1
	42.5	1	1	1	1	1	1	1	1	0
	45.0	1	1	1	1	0	0	0	1	1
	47.5	1	1	1	1	0	0	0	0	1
<b>A n g l e s</b>	50.0	1	1	0	1	0	1	1	1	0
	52.5	0	0	1	0	1	0	0	1	1
	55.0	1	1	1	0	0	0	0	0	1
	57.5	1	1	0	1	0	1	1	1	0
	60.0	0	0	1	0	1	0	1	1	1
	62.5	1	1	1	1	0	1	1	0	1
	65.0	1	1	0	1	0	1	1	1	1
	67.5	0	0	1	0	1	0	1	1	1
	70.0	1	0	1	1	0	1	1	1	1
	72.5	1	1	0	1	0	1	1	1	1
	75.0	0	0	1	0	1	1	1	1	1
	77.5	1	1	1	1	0	1	1	1	1
	80.0	1	1	0	1	0	1	1	1	1
	82.5	0	0	1	0	1	1	1	1	1
	85.0	1	1	1	1	1	1	1	1	1
	87.5	1	1	0	1	0	1	1	1	1
	90.0	0	0	1	0	1	1	1	1	1
	92.5	1	1	1	1	1	1	1	1	1
	95.0	4	3	3	3	2	3	2	2	2
	97.5	7	7	7	6	6	5	4	4	4
	100.0	14	13	12	11	10	8	8	7	7
	102.5	21	20	18	16	14	13	12	10	9
	105.0	30	28	25	22	19	17	15	14	12
	107.5	40	37	33	28	26	22	20	18	15
	110.0	52	48	41	36	32	28	25	22	19
	112.5	65	59	51	45	39	34	30	27	23
	115.0	80	74	63	54	48	41	36	32	27
	117.5	99	90	77	66	57	49	43	38	31
	120.0	121	109	93	79	68	58	51	45	40
	122.5	150	134	112	95	81	69	60	52	46
	125.0	189	166	134	115	97	82	70	61	53
	127.5	243	209	161	136	115	96	82	71	62
	130.0	321	267	194	162	137	114	96	83	72
	132.5	432	347	235	194	162	136	113	96	83



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## Lateral Angles

	100.0	105.0	110.0	115.0	120.0	125.0	130.0	135.0	140.0	145.0
135.0	585	458	287	231	192	160	134	113	97	85
137.5	787	608	354	274	228	190	159	134	114	100
140.0	1046	806	444	326	270	225	189	159	134	117
142.5	1360	1059	567	387	318	266	224	191	161	138
145.0	1725	1367	735	462	375	314	266	227	193	166
147.5	2124	1728	959	563	441	370	314	270	233	201
150.0	2537	2124	1246	698	519	435	371	321	280	245
152.5	2946	2549	1604	890	617	511	438	381	334	296
155.0	3325	2975	2027	1164	754	600	515	451	398	355
157.5	3663	3377	2490	1529	958	715	604	533	474	425
160.0	3941	3735	2964	1989	1267	888	716	626	561	507
162.5	4159	4038	3419	2524	1712	1176	891	749	665	605
165.0	4308	4270	3825	3082	2283	1635	1204	959	817	733
167.5	4399	4423	4148	3610	2939	2286	1748	1371	1115	956
170.0	4434	4512	4377	4048	3581	3055	2535	2092	1722	1452
172.5	4418	4525	4499	4344	4087	3767	3399	3038	2674	2360
175.0	4373	4474	4506	4469	4366	4236	4058	3869	3648	3435
177.5	4289	4357	4394	4406	4380	4354	4299	4235	4149	4066
180.0	3395	3395	3395	3395	3395	3395	3395	3395	3395	3395

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## Lateral Angles

	150.0	155.0	160.0	165.0	170.0	175.0	180.0
V e r t i c a l  A n g l e s	0.0	3	3	3	3	3	3
	2.5	3	3	4	3	3	3
	5.0	3	3	3	3	3	3
	7.5	3	3	3	4	3	3
	10.0	3	4	4	4	3	3
	12.5	4	3	3	3	3	3
	15.0	3	3	3	3	3	3
	17.5	3	3	3	3	3	2
	20.0	3	3	3	2	3	2
	22.5	2	3	2	3	2	2
	25.0	2	3	2	2	2	2
	27.5	2	2	2	1	2	1
	30.0	1	1	1	1	1	1
	32.5	1	1	1	1	1	1
	35.0	1	1	1	1	1	1
	37.5	0	0	1	1	0	0
	40.0	1	1	1	1	0	1
	42.5	1	1	1	0	1	1
	45.0	0	0	1	1	0	0
	47.5	1	1	1	1	1	1
	50.0	1	1	1	0	1	1
	52.5	0	0	0	1	0	0
	55.0	1	1	1	1	1	1
	57.5	1	1	1	1	1	1
	60.0	1	1	1	1	1	1
	62.5	1	1	1	1	1	1
	65.0	1	1	1	1	1	1
	67.5	1	1	1	1	1	1
	70.0	1	1	1	1	1	1
	72.5	1	1	1	1	1	1
	75.0	1	1	1	1	1	1
	77.5	1	1	1	2	1	1
	80.0	1	1	1	1	1	1
	82.5	1	1	1	2	1	1
	85.0	1	1	1	2	1	1
	87.5	1	1	2	1	1	1
	90.0	1	1	1	1	1	1
	92.5	1	1	1	2	1	1
	95.0	2	2	3	2	2	2
	97.5	4	4	4	4	3	3
	100.0	6	6	6	6	5	5
	102.5	9	9	9	8	8	7
	105.0	11	11	11	11	10	9
	107.5	15	14	14	13	12	12
	110.0	18	18	17	16	15	15
	112.5	21	21	20	19	18	17
	115.0	25	25	23	22	21	20
	117.5	29	29	28	25	24	23
	120.0	33	33	32	30	28	27
	122.5	39	38	36	33	32	31
	125.0	44	44	41	38	37	34
	127.5	50	49	47	43	41	38
	130.0	57	57	53	49	46	44
	132.5	66	65	61	55	53	49



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## Lateral Angles

	150.0	155.0	160.0	165.0	170.0	175.0	180.0
<b>135.0</b>	76	75	70	64	60	58	55
<b>137.5</b>	88	87	80	73	69	66	64
<b>140.0</b>	104	102	94	84	80	76	73
<b>142.5</b>	122	120	110	99	94	89	85
<b>145.0</b>	146	143	131	117	111	105	101
<b>147.5</b>	176	173	158	141	134	127	121
<b>150.0</b>	215	211	193	172	162	154	147
<b>152.5</b>	264	259	237	211	199	189	180
<b>155.0</b>	320	314	292	261	248	234	223
<b>157.5</b>	385	379	355	321	307	292	280
<b>160.0</b>	464	456	429	392	377	362	349
<b>162.5</b>	559	549	522	479	465	450	435
<b>165.0</b>	677	664	636	589	574	557	542
<b>167.5</b>	857	833	792	726	710	689	672
<b>170.0</b>	1259	1200	1120	975	944	902	868
<b>172.5</b>	2101	1993	1881	1600	1548	1456	1378
<b>175.0</b>	3238	3124	3046	2737	2707	2601	2503
<b>177.5</b>	3985	3940	3903	3756	3747	3702	3649
<b>180.0</b>	3395	3395	3395	3395	3395	3395	3395

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