



# 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**  
NVLAP LAB CODE: 200899-0

## Moving Mirror Goniophotometer Test Report

**Standard(s):** IESNA LM-35-02, 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>	S1512114-R1	<b>Description</b>	61W White 3500K SSL	<b>Type</b> Commercial
<b>Test Date</b>	11 December 2015	<b>Serial Number</b>	SRIS 2217	<b>Description</b> 61SSL-CY963
<b>Report Date</b>	17 December 2015	<b>Photometric Method</b>	Absolute	<b>Manufacturer</b> Mean Well
<b>Ambient</b>	25.4°C	<b>Lamp Lumens</b>	-1	<b>Catalog No.</b> LPF-60-24
<b>Humidity</b>	28.5 %	<b>Test Position</b>	Axial	<b>Voltage Tap</b> 120.00 V
<b>Lamp Type</b>	SSL	<b>Comments</b>	Clusters of 48 Cree XPE2 LED's	<b>Power Factor</b> 0.9900

### Floodlight Data

General Information		Optics	Aperture (feet)	
<b>Manufacturer</b>	Lumenpulse	<b>Reflector</b>	48 Collimators	<b>X</b> 4.000
<b>Name</b>	LUMENFACADE	<b>Housing</b>	Extruded Aluminum	<b>Y</b> 0.1667
<b>Catalog No.</b>	LOG-HO-120-48-35K-60x60-SI-NO	<b>Lens</b>	Polycarbonate	<b>Z</b> 0.0000

Lamp Stabilization Time: 1 hour 15 minutes

**Tested By:** Marc Viwonou Sena

**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	Elgar	CW801	30527	N.P.C.R.	N.P.C.R.
Input Power Meter	Yokogawa	WT210	27E116584	2014/10/30	2016/10/30
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	N/A	N/A	N/A	N.P.C.R.	N.P.C.R.
Photodetector	INPHORA	IPR-PDET 19	110802	2015/10/05	2016/10/05

## 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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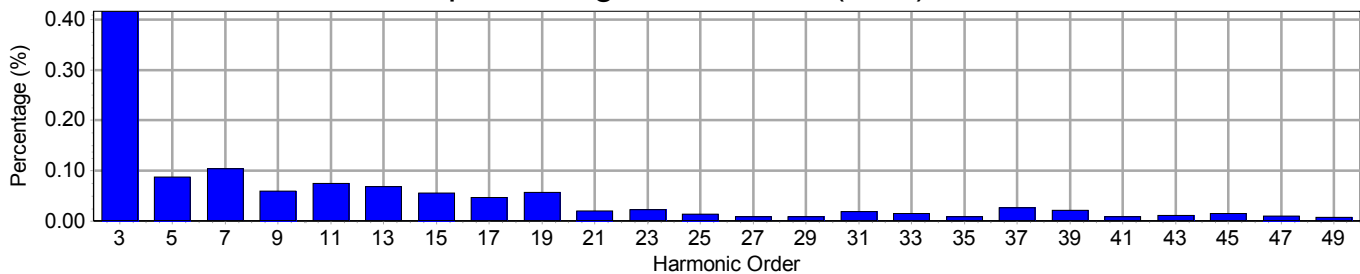
NVLAP LAB CODE: 200899-0

## Electrical Measurements

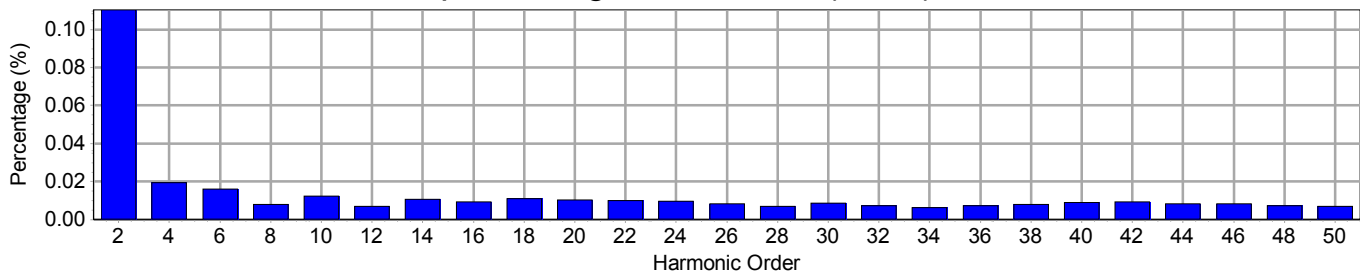
### Input

Frequency	60 Hz	Active Power	61.26 W	THDV [ANSI]	0.48 %
Voltage	120.1 V(rms)	Apparent Power	61.57 VA	THDA [ANSI]	5.35 %
Current	0.5129 A(rms)	Power Factor	0.995	Max. Harmonic At	5th order

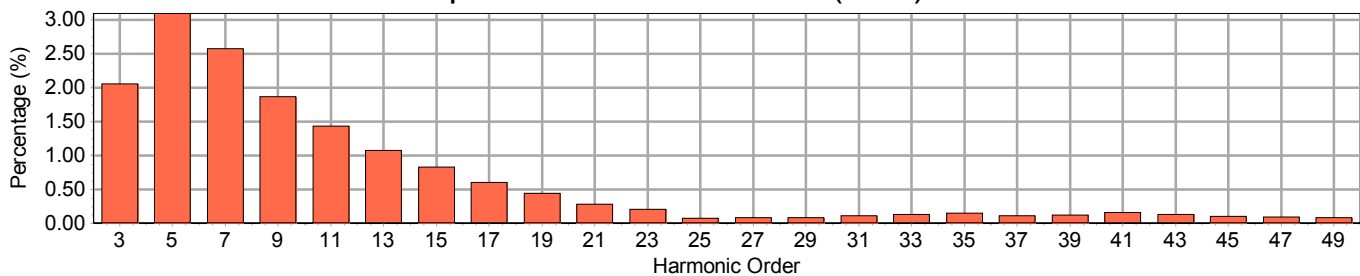
### Input Voltage Harmonics (Odd)



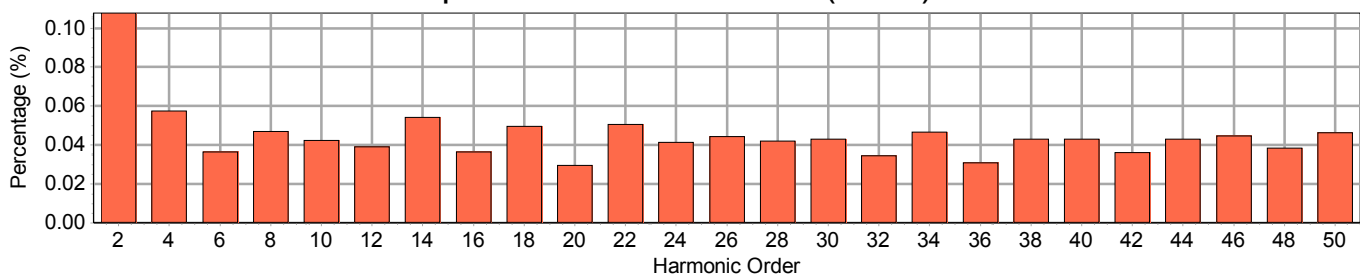
### Input Voltage Harmonics (Even)



### 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	0.110	0.108
3	180	0.417	2.055	4	240	0.019	0.057
5	300	0.087	3.097	6	360	0.016	0.036
7	420	0.104	2.570	8	480	0.008	0.047
9	540	0.060	1.868	10	600	0.012	0.042
11	660	0.075	1.427	12	720	0.007	0.039
13	780	0.068	1.074	14	840	0.011	0.054
15	900	0.055	0.829	16	960	0.009	0.036
17	1020	0.047	0.596	18	1080	0.011	0.050
19	1140	0.057	0.435	20	1200	0.010	0.030
21	1260	0.020	0.278	22	1320	0.010	0.050
23	1380	0.022	0.203	24	1440	0.010	0.041
25	1500	0.013	0.075	26	1560	0.008	0.044
27	1620	0.008	0.079	28	1680	0.007	0.042
29	1740	0.008	0.077	30	1800	0.009	0.043
31	1860	0.018	0.113	32	1920	0.007	0.034
33	1980	0.014	0.130	34	2040	0.006	0.047
35	2100	0.008	0.142	36	2160	0.007	0.031
37	2220	0.026	0.108	38	2280	0.008	0.043
39	2340	0.021	0.117	40	2400	0.009	0.043
41	2460	0.008	0.153	42	2520	0.009	0.036
43	2580	0.011	0.128	44	2640	0.008	0.043
45	2700	0.014	0.102	46	2760	0.008	0.045
47	2820	0.010	0.092	48	2880	0.007	0.038
49	2940	0.007	0.076	50	3000	0.007	0.046



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## Photometric Report: S1512114-R1

Prepared for: Lumenpulse · Test Date: 11 December 2015

Floodlight: LUMENFACADE · Lumcat: LOG-HO-120-48-35K-60x60-SI-NO

### Photometric Floodlight Characteristics

Nominal SSL Power	61.00 W	
Measured Input Voltage	120.06 V	<b>Notes</b>
Test SSL Current	0.300 A	1) Floodlight tested in accordance to IES LM-35-1989 at a distance great enough so that the inverse-square law applies.
Floodlight Luminous Flux	3275	
Measured Input Power	61.26 W	
Floodlight Luminous Efficacy	53.5 lm/W	2) Field performance may differ from laboratory measurements.
Maximum Candela Value	2864	
Maximum Candela Location	0.0 H, 7.5 V	3) Results are valid for the tested material only.
Horizontal Beam Angle (50%)	67.0 °	
Vertical Beam Angle (50%)	63.5 °	4) All data published in this report are based on absolute photometry.
Horizontal Field Angle (10%)	101.0 °	
Vertical Field Angle (10%)	95.0 °	5) The original electronic file or paper report cannot be edited in whole or in part without written consent of Spectralux Industries Inc.
IES/NEMA Type Classification	6Hx5V	
Beam Lumens (50%)	2194	
Beam Efficiency (50%)	N/A	
Field Lumens (10%)	3051	
Field Efficiency (10%)	N/A	
Spill Lumens	223	
Total Floodlight Lumens	3275	
Total Floodlight Efficiency	N/A	



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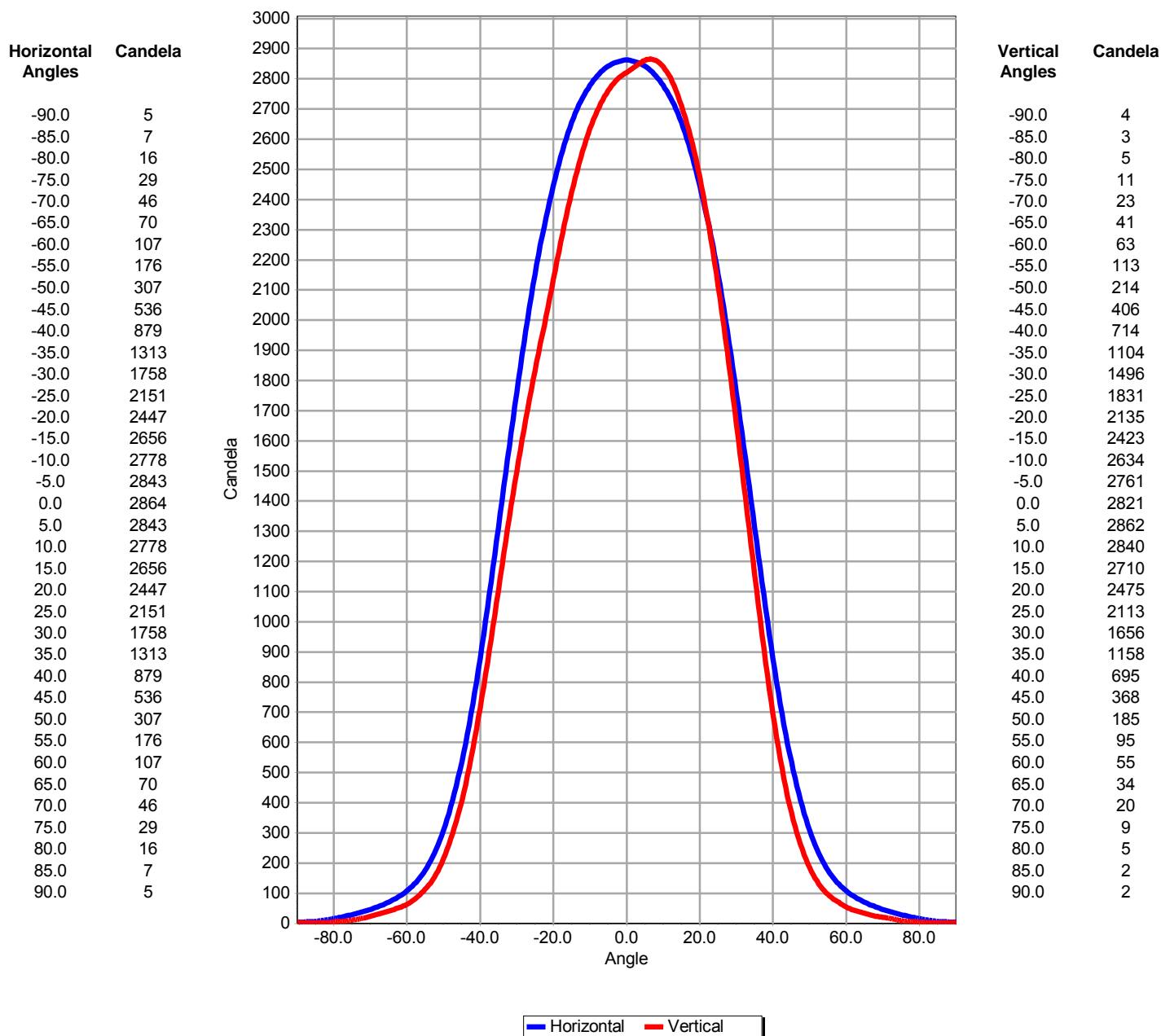
NVLAP LAB CODE: 200899-0

## Photometric Report: S1512114-R1

Prepared for: Lumenpulse · Test Date: 11 December 2015

Floodlight: LUMENFACADE · Lumcat: LOG-HO-120-48-35K-60x60-SI-NO

### Maximum Candela Trace (Max. Location: 0.0 H, 7.5 V)





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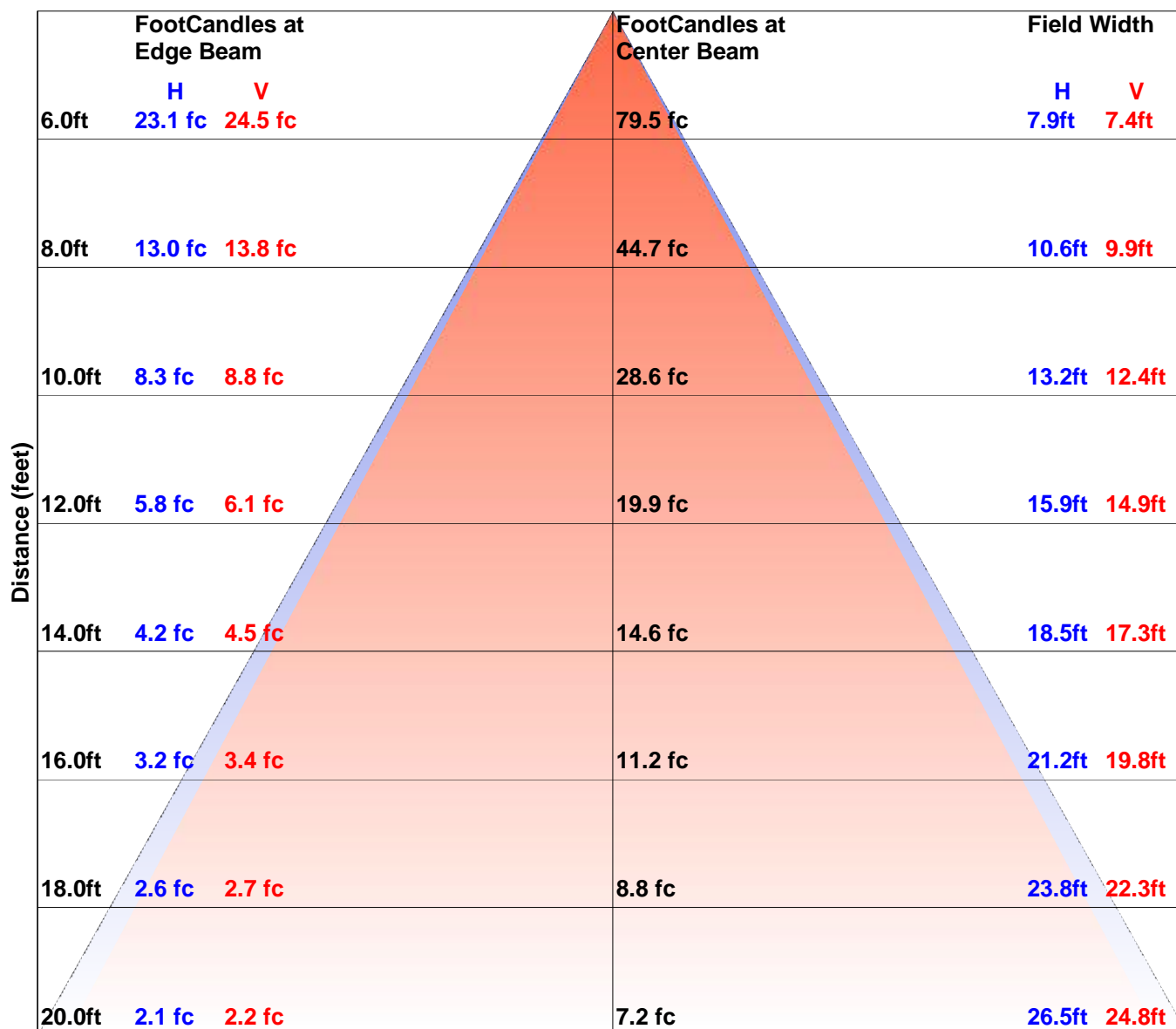
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## Photometric Report: S1512114-R1

Prepared for: Lumenpulse · Test Date: 11 December 2015

Floodlight: LUMENFACADE · Lumcat: LOG-HO-120-48-35K-60x60-SI-NO

### Downlight Beam



— Horizontal (67.0 °) — Vertical (63.5 °)





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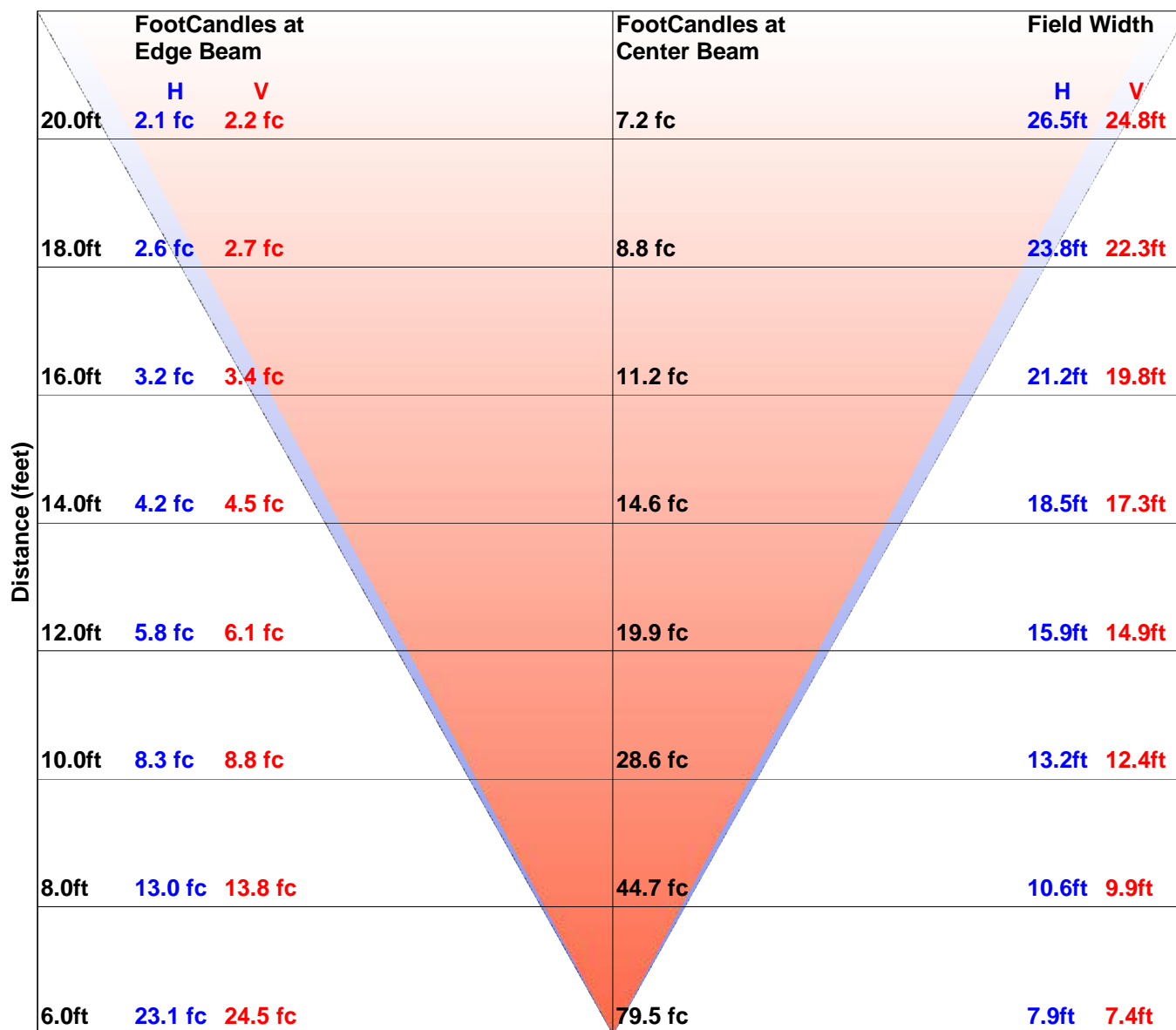
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## Photometric Report: S1512114-R1

Prepared for: Lumenpulse · Test Date: 11 December 2015

Floodlight: LUMENFACADE · Lumcat: LOG-HO-120-48-35K-60x60-SI-NO

### Uplight Beam



— Horizontal (67.0 °) — Vertical (63.5 °)



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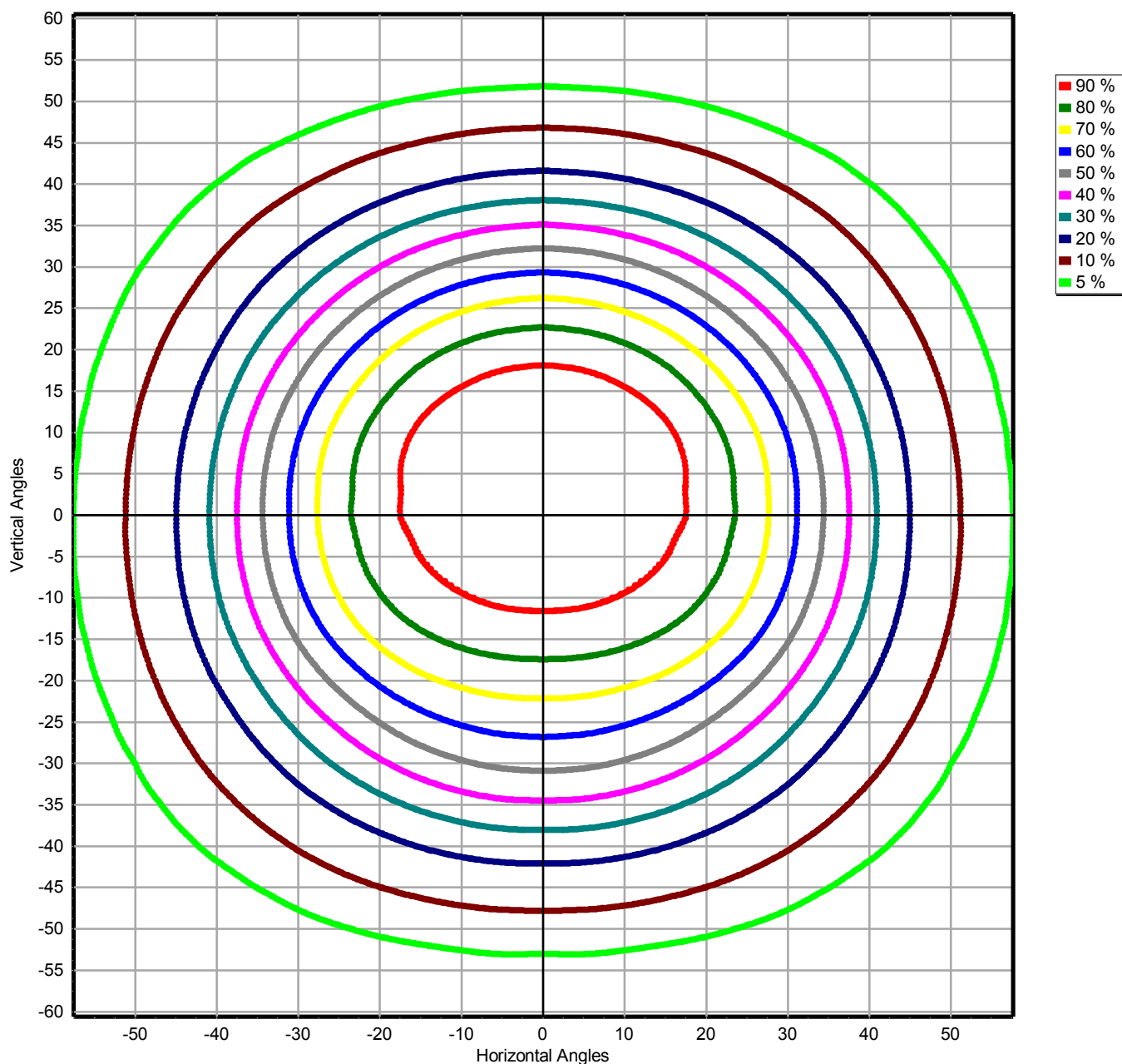
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## Photometric Report: S1512114-R1

Prepared for: Lumenpulse · Test Date: 11 December 2015

Floodlight: LUMENFACADE · Lumcat: LOG-HO-120-48-35K-60x60-SI-NO

### ISO Candela Diagram





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## IES File Headers

IESNA:LM-63-2002  
[ISSUEDATE] 11 December 2015  
[TESTLAB] Spectra Lux Industries Inc.  
[TEST] S1512114-R1  
[MANUFAC] Lumenpulse  
[LUMCAT] LOG-HO-120-48-35K-60x60-SI-NO  
[LUMINAIRE] LUMENFACADE  
[LAMP] (Clusters of 48 Cree XPE2 LED's) 61W SSL c/w Driver LPF-60-24 @ 120.00V  
[\_BURNING] Axial (3,275 Luminaire Lumens)  
[\_REFLECTOR] 48 Collimators  
[\_LENS] Polycarbonate  
[\_HOUSING] Extruded Aluminum  
[\_SKTPOSITION] None  
[DISTRIBUTION] NEMA 6Hx5V (Max. CP at 0.0H,7.5V)  
[MORE] (Based on IES LM-35-1989)

## Candela Table

### Horizontal Angles

	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	
V e r t i c a l	-90.0	4	2	3	2	4	4	3	4	5
	-87.5	3	2	3	3	4	4	4	3	5
	-85.0	3	2	4	4	3	4	4	5	6
	-82.5	2	3	3	3	4	4	5	5	5
	-80.0	5	5	4	5	6	4	5	4	6
	-77.5	7	5	7	7	6	6	6	7	7
	-75.0	11	11	11	10	10	9	9	8	7
	-72.5	16	17	16	15	15	15	14	11	10
	-70.0	23	23	24	24	21	20	19	17	15
	-67.5	31	31	31	29	28	25	24	22	19
	-65.0	41	40	39	38	37	35	31	27	25
	-62.5	50	51	51	49	46	42	39	34	32
	-60.0	63	66	63	60	58	53	48	43	38
	-57.5	84	86	82	77	72	67	58	51	45
	-55.0	113	113	109	101	91	82	73	62	55
A n g l e s	-52.5	152	153	144	133	120	104	91	77	65
	-50.0	214	211	199	180	159	136	114	93	78
	-47.5	297	293	275	246	212	178	146	115	94
	-45.0	406	400	374	333	284	233	185	144	112
	-42.5	548	539	502	445	376	304	236	178	135
	-40.0	714	702	656	582	488	392	301	221	164
	-37.5	903	887	830	738	622	499	379	275	197
	-35.0	1104	1087	1019	912	774	621	469	338	236
	-32.5	1307	1285	1214	1096	937	758	575	409	282
	-30.0	1496	1476	1402	1279	1107	902	688	489	333
	-27.5	1671	1651	1579	1456	1275	1052	809	578	391
	-25.0	1831	1811	1745	1624	1439	1203	936	669	452
	-22.5	1982	1966	1901	1786	1602	1356	1067	769	516
	-20.0	2135	2120	2058	1945	1762	1508	1197	871	587
	-17.5	2287	2268	2208	2098	1914	1654	1328	972	657
-15.0	2423	2406	2344	2235	2054	1790	1450	1070	721	
-12.5	2539	2524	2461	2353	2174	1907	1557	1160	784	
-10.0	2634	2616	2556	2450	2271	2004	1648	1233	837	
-7.5	2706	2689	2629	2523	2348	2082	1719	1293	877	
-5.0	2761	2743	2685	2580	2405	2137	1772	1338	908	



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## Horizontal Angles

	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	
V e r t i c a l	-2.5	2798	2780	2724	2619	2439	2173	1803	1363	925
	0.0	2821	2806	2749	2654	2479	2198	1817	1373	930
	2.5	2842	2828	2770	2660	2471	2194	1815	1370	925
	5.0	2862	2842	2783	2667	2469	2183	1797	1350	909
	7.5	2864	2843	2778	2656	2447	2151	1758	1313	879
	10.0	2840	2819	2748	2618	2398	2091	1695	1258	837
	12.5	2791	2766	2688	2548	2317	2002	1609	1183	783
	15.0	2710	2683	2600	2450	2210	1890	1502	1093	719
	17.5	2609	2578	2486	2328	2080	1756	1378	995	651
	20.0	2475	2440	2344	2175	1923	1605	1246	890	578
	22.5	2308	2270	2168	1996	1745	1438	1101	779	505
	25.0	2113	2074	1969	1796	1552	1262	953	670	436
	27.5	1895	1853	1750	1579	1351	1083	811	567	369
	30.0	1656	1617	1517	1356	1146	908	673	471	311
	32.5	1408	1371	1277	1132	946	743	548	386	258
	35.0	1158	1121	1040	913	759	592	439	312	212
	37.5	913	884	816	715	590	461	344	248	175
	40.0	695	673	620	541	448	352	266	197	145
	42.5	513	495	457	400	334	265	205	159	117
A n g l e s	45.0	368	357	330	291	245	199	158	125	98
	47.5	261	253	236	210	180	150	122	101	81
	50.0	185	178	169	152	134	113	97	82	67
	52.5	131	127	122	111	100	87	77	66	56
	55.0	95	94	89	83	76	69	61	54	47
	57.5	73	70	67	64	60	54	49	45	37
	60.0	55	53	52	50	46	42	41	36	30
	62.5	42	42	40	39	38	35	31	26	24
	65.0	34	33	32	32	30	27	25	22	18
	67.5	25	26	26	24	23	20	19	16	14
	70.0	20	19	19	18	18	15	13	11	11
	72.5	16	14	14	13	12	10	9	9	8
	75.0	9	9	9	8	8	6	7	7	6
	77.5	6	6	5	5	4	6	6	6	5
	80.0	5	4	4	4	4	4	4	6	5
	82.5	3	4	3	3	3	3	5	4	5
	85.0	2	2	3	4	3	4	3	5	4
	87.5	3	3	2	2	3	4	4	4	4
	90.0	2	3	3	2	3	3	5	4	4



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## Horizontal Angles

	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
V e r t i c a l	-90.0	4	4	4	6	6	6	7	6
	-87.5	5	5	5	6	5	6	6	6
	-85.0	6	5	5	5	5	5	6	6
	-82.5	5	4	6	6	6	6	6	6
	-80.0	5	6	6	7	5	5	6	6
	-77.5	6	6	5	6	5	6	5	5
	-75.0	7	5	7	7	6	5	5	5
	-72.5	9	8	7	7	5	6	5	4
	-70.0	12	11	7	6	4	6	6	6
	-67.5	17	13	10	9	8	7	6	5
	-65.0	21	19	14	11	7	6	6	4
	-62.5	26	22	16	12	10	6	6	5
	-60.0	33	26	21	16	12	7	6	5
	-57.5	39	33	25	19	14	8	5	5
	-55.0	46	38	29	22	16	9	6	5
	-52.5	55	43	35	27	19	12	8	5
	-50.0	63	52	40	30	21	13	9	4
	-47.5	75	59	46	35	24	16	7	5
	-45.0	88	67	53	39	29	18	11	5
	-42.5	102	78	58	45	32	20	10	5
A n g l e s	-40.0	119	88	66	49	35	23	13	5
	-37.5	141	100	73	55	39	25	15	5
	-35.0	163	114	82	60	43	26	16	4
	-32.5	191	130	90	65	46	30	17	5
	-30.0	221	144	98	71	49	33	20	6
	-27.5	253	163	109	76	54	34	20	7
	-25.0	289	181	118	81	56	37	23	6
	-22.5	329	202	128	87	59	39	23	6
	-20.0	368	224	139	92	62	40	25	7
	-17.5	408	245	149	96	63	42	26	6
	-15.0	450	265	159	101	68	45	27	7
	-12.5	484	284	169	106	70	44	28	7
	-10.0	515	299	175	108	70	46	29	8
	-7.5	541	312	181	112	72	48	28	8
	-5.0	558	321	186	113	72	47	29	8
	-2.5	567	328	187	113	72	47	29	7
	0.0	571	327	186	114	73	48	30	8
	2.5	566	325	186	113	73	46	28	9
	5.0	554	319	182	110	70	47	29	8
	7.5	536	307	176	107	70	46	29	7
	10.0	508	293	171	105	69	44	28	7
	12.5	474	276	162	101	67	44	28	7
	15.0	438	255	152	96	64	43	27	6
	17.5	395	235	144	92	62	40	25	6
	20.0	353	214	132	87	60	40	25	6
	22.5	313	191	122	81	57	37	23	7
	25.0	272	171	113	77	53	34	21	5
	27.5	234	153	102	72	50	34	19	5
	30.0	203	135	93	66	46	31	18	6
	32.5	173	118	84	60	43	27	17	6
	35.0	147	105	76	57	40	27	15	6
	37.5	127	92	68	50	36	23	14	7
	40.0	106	80	61	45	33	20	12	6
	42.5	90	71	55	42	29	20	10	5



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ISO/IEC 17025



NVLAP LAB CODE: 200899-0

## Horizontal Angles

	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
45.0	78	62	49	36	25	16	10	6	6
47.5	67	53	43	31	23	14	8	7	6
50.0	56	46	36	28	19	13	7	5	6
52.5	47	40	31	22	15	10	7	6	6
55.0	39	31	26	18	13	8	6	6	5
57.5	32	26	21	15	11	9	5	5	4
60.0	26	21	16	12	8	7	7	5	6
62.5	20	16	14	9	7	5	5	5	6
65.0	16	13	11	9	7	7	6	6	5
67.5	13	10	8	6	5	6	6	5	5
70.0	9	8	7	5	5	5	4	6	7
72.5	7	7	6	6	6	6	5	5	4
75.0	7	5	5	5	4	5	6	4	4
77.5	5	5	5	6	5	4	5	5	6
80.0	5	4	4	6	6	5	5	5	4
82.5	5	6	4	5	4	5	5	4	6
85.0	4	4	5	5	6	3	5	5	6
87.5	4	5	4	6	4	6	4	5	4
90.0	5	5	4	5	4	5	4	5	5

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## Horizontal Angles

	90.0
V e r t i c a l	-90.0 6
	-87.5 7
	-85.0 6
	-82.5 5
	-80.0 6
	-77.5 6
	-75.0 6
	-72.5 7
	-70.0 6
	-67.5 5
	-65.0 5
	-62.5 5
	-60.0 6
	-57.5 6
	-55.0 5
	-52.5 5
	-50.0 5
	-47.5 4
	-45.0 5
	-42.5 5
A n g l e s	-40.0 4
	-37.5 5
	-35.0 6
	-32.5 5
	-30.0 5
	-27.5 6
	-25.0 5
	-22.5 6
	-20.0 6
	-17.5 6
	-15.0 6
	-12.5 7
	-10.0 6
	-7.5 6
	-5.0 6
	-2.5 5
	0.0 5
	2.5 7
	5.0 6
	7.5 5
	10.0 7
	12.5 6
	15.0 5
	17.5 6
	20.0 5
	22.5 5
	25.0 5
	27.5 5
	30.0 6
	32.5 6
	35.0 7
	37.5 5
	40.0 6
	42.5 6



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Horizontal Angles

	90.0
	45.0
	47.5
	50.0
	52.5
	55.0
	57.5
	60.0
	62.5
	65.0
V	67.5
e	70.0
r	72.5
t	75.0
i	77.5
c	80.0
a	82.5
l	85.0
	87.5
	90.0
A	
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s	