



# 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-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>	S1512104-R1	<b>Description</b>	61W White 2700K SSL	<b>Type</b> Commercial
<b>Test Date</b>	10 December 2015	<b>Serial Number</b>	SRIS 2227	<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>	27.3 %	<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> 4.0000
<b>Name</b>	LUMENFACADE	<b>Housing</b>	Extruded Aluminum	<b>Y</b> 0.1667
<b>Catalog No.</b>	LOGI-HO-120/277-48-27K -10x60-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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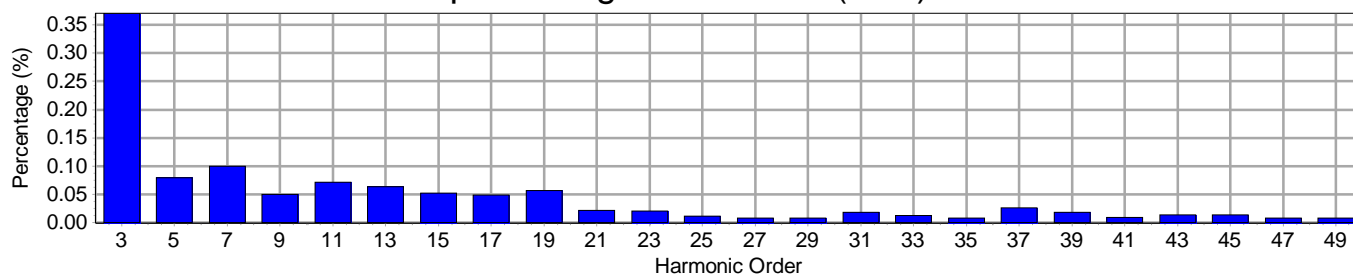
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## Electrical Measurements

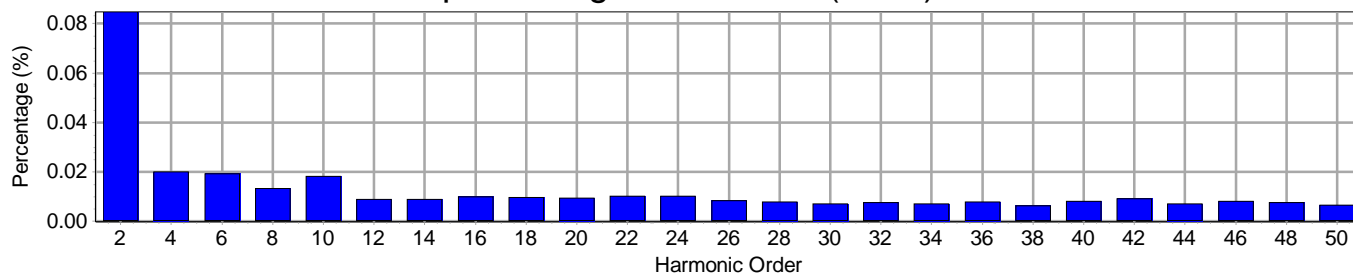
### Input

Frequency	60 Hz	Active Power	60.86 W	THDV [ANSI]	0.43 %
Voltage	120.0 V(rms)	Apparent Power	61.17 VA	THDA [ANSI]	5.26 %
Current	0.5096 A(rms)	Power Factor	0.995	Max. Harmonic At	5th order

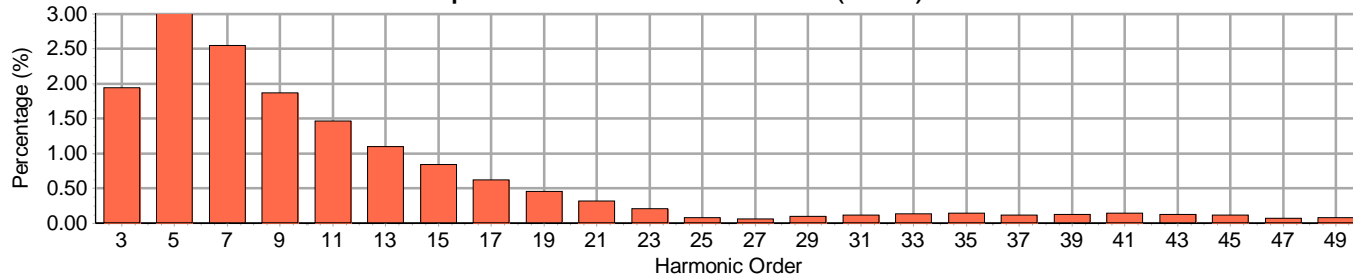
### Input Voltage Harmonics (Odd)



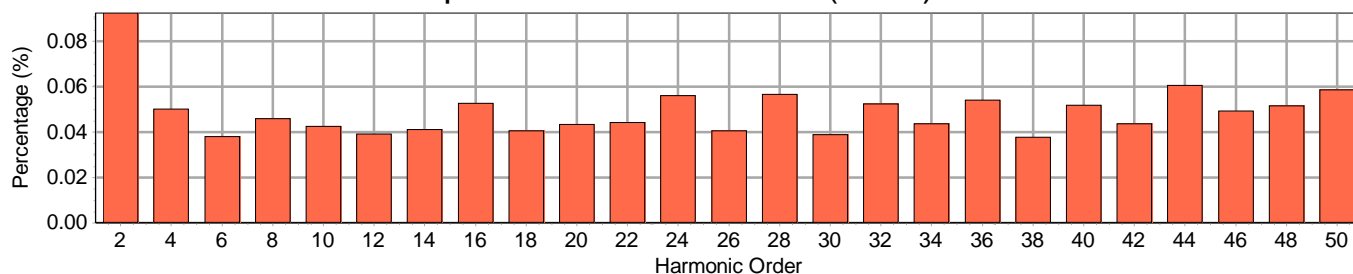
### Input Voltage Harmonics (Even)



### 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	0.085	0.093
3	180	0.371	1.937	4	240	0.020	0.050
5	300	0.080	3.010	6	360	0.019	0.038
7	420	0.100	2.542	8	480	0.013	0.046
9	540	0.050	1.866	10	600	0.018	0.042
11	660	0.072	1.463	12	720	0.009	0.039
13	780	0.064	1.092	14	840	0.009	0.041
15	900	0.053	0.842	16	960	0.010	0.053
17	1020	0.049	0.619	18	1080	0.010	0.040
19	1140	0.057	0.456	20	1200	0.009	0.043
21	1260	0.022	0.315	22	1320	0.010	0.044
23	1380	0.021	0.203	24	1440	0.010	0.056
25	1500	0.012	0.078	26	1560	0.008	0.041
27	1620	0.009	0.059	28	1680	0.008	0.057
29	1740	0.008	0.095	30	1800	0.007	0.039
31	1860	0.019	0.115	32	1920	0.008	0.052
33	1980	0.013	0.137	34	2040	0.007	0.043
35	2100	0.008	0.141	36	2160	0.008	0.054
37	2220	0.027	0.115	38	2280	0.006	0.038
39	2340	0.019	0.125	40	2400	0.008	0.052
41	2460	0.009	0.138	42	2520	0.009	0.044
43	2580	0.014	0.124	44	2640	0.007	0.061
45	2700	0.014	0.115	46	2760	0.008	0.049
47	2820	0.009	0.066	48	2880	0.008	0.052
49	2940	0.008	0.078	50	3000	0.007	0.058



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## Photometric Report: S1512104-R1

Prepared for: Lumenpulse · Test Date: 10 December 2015

Floodlight: LUMENFACADE · Lumcat: LOGI-HO-120/277-48-27K-10x60-SI-NO

### Photometric Floodlight Characteristics

Nominal SSL Power	61.00 W	
Measured Input Voltage	120.05 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	2966	
Measured Input Power	60.86 W	
Floodlight Luminous Efficacy	48.7 lm/W	2) Field performance may differ from laboratory measurements.
Maximum Candela Value	12178	
Maximum Candela Location	0.0 H, 0.0 V	3) Results are valid for the tested material only.
Horizontal Beam Angle (50%)	63.0 °	
Vertical Beam Angle (50%)	10.0 °	4) All data published in this report are based on absolute photometry.
Horizontal Field Angle (10%)	92.0 °	
Vertical Field Angle (10%)	23.5 °	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	5Hx2V	
Beam Lumens (50%)	1400	
Beam Efficiency (50%)	N/A	
Field Lumens (10%)	2391	
Field Efficiency (10%)	N/A	
Spill Lumens	575	
Total Floodlight Lumens	2966	
Total Floodlight Efficiency	N/A	



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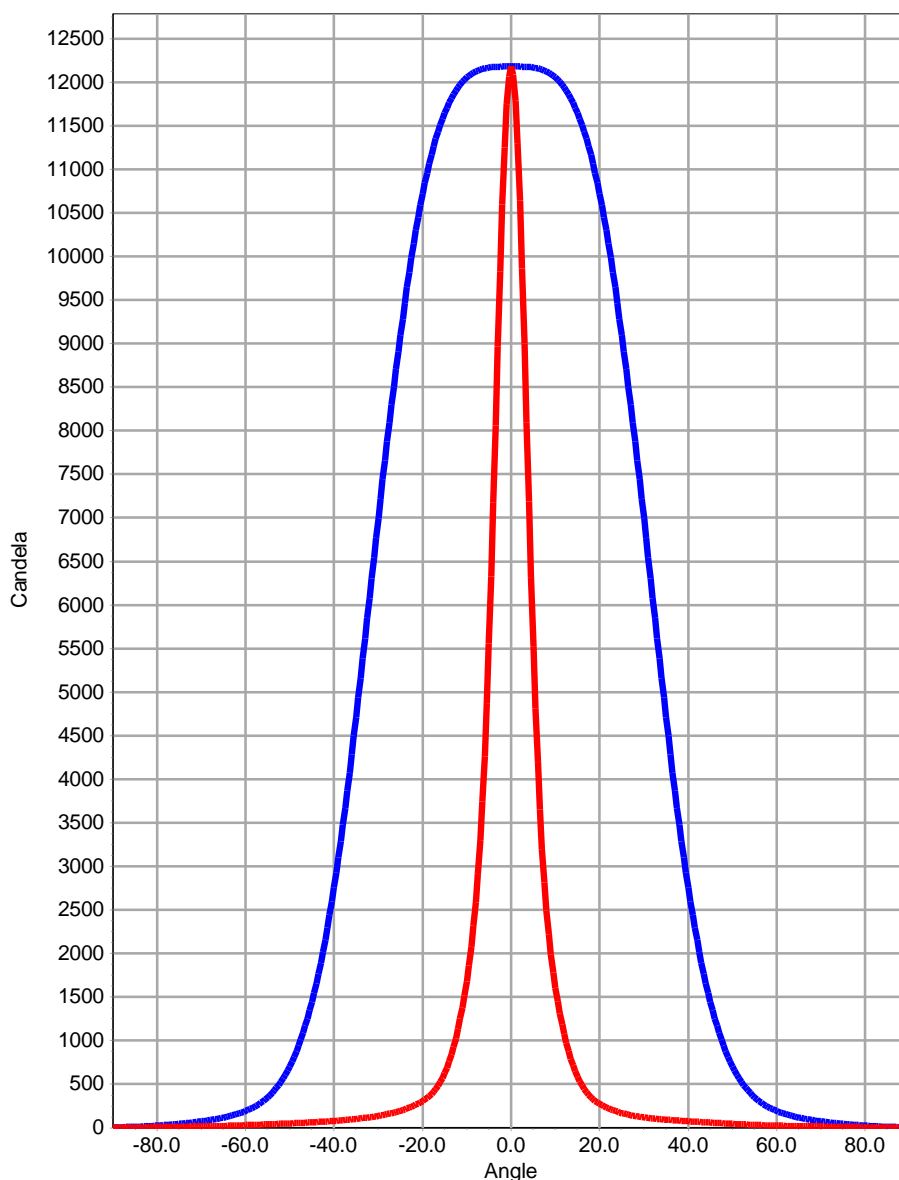
## Photometric Report: S1512104-R1

Prepared for: Lumenpulse · Test Date: 10 December 2015

Floodlight: LUMENFACADE · Lumcat: LOGI-HO-120/277-48-27K-10x60-SI-NO

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

Horizontal Angles	Candela
-90.0	5
-85.0	10
-80.0	25
-75.0	45
-70.0	73
-65.0	117
-60.0	192
-55.0	349
-50.0	704
-45.0	1443
-40.0	2759
-35.0	4715
-30.0	6995
-25.0	9095
-20.0	10718
-15.0	11645
-10.0	12053
-5.0	12167
0.0	12178
5.0	12167
10.0	12053
15.0	11645
20.0	10718
25.0	9095
30.0	6995
35.0	4715
40.0	2759
45.0	1443
50.0	704
55.0	349
60.0	192
65.0	117
70.0	73
75.0	45
80.0	25
85.0	10
90.0	5



Vertical Angles	Candela
-90.0	2
-85.0	5
-80.0	9
-75.0	13
-70.0	17
-65.0	21
-60.0	29
-55.0	40
-50.0	50
-45.0	62
-40.0	78
-35.0	101
-30.0	136
-25.0	196
-20.0	307
-15.0	627
-10.0	1680
-5.0	5560
0.0	12178
5.0	5528
10.0	1608
15.0	586
20.0	274
25.0	169
30.0	118
35.0	92
40.0	75
45.0	59
50.0	45
55.0	32
60.0	24
65.0	19
70.0	15
75.0	11
80.0	7
85.0	4
90.0	1

— Horizontal — Vertical



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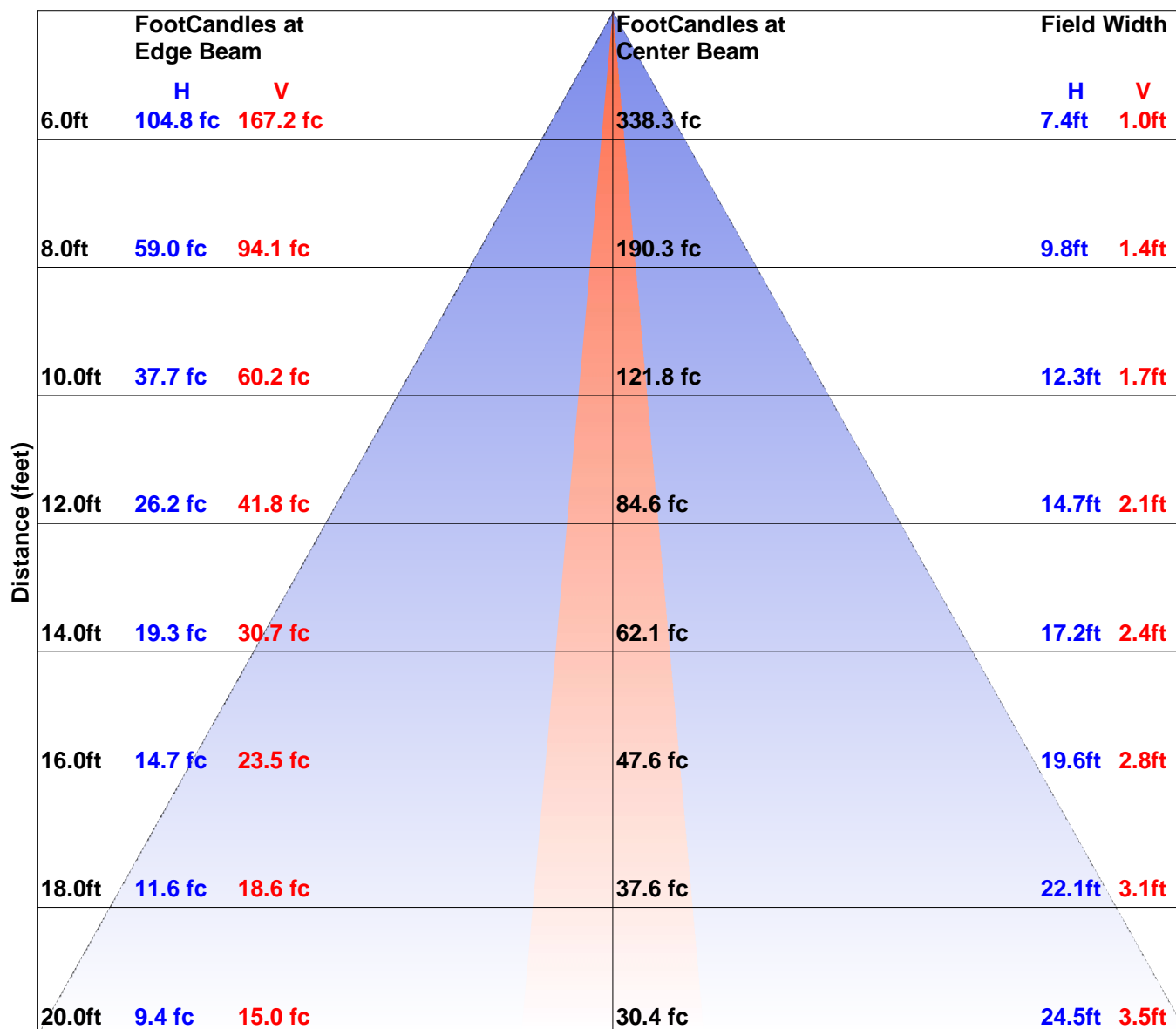
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## Photometric Report: S1512104-R1

Prepared for: Lumenpulse · Test Date: 10 December 2015

Floodlight: LUMENFACADE · Lumcat: LOGI-HO-120/277-48-27K-10x60-SI-NO

### Downlight Beam



— Horizontal (63.0 °) — Vertical (10.0 °)





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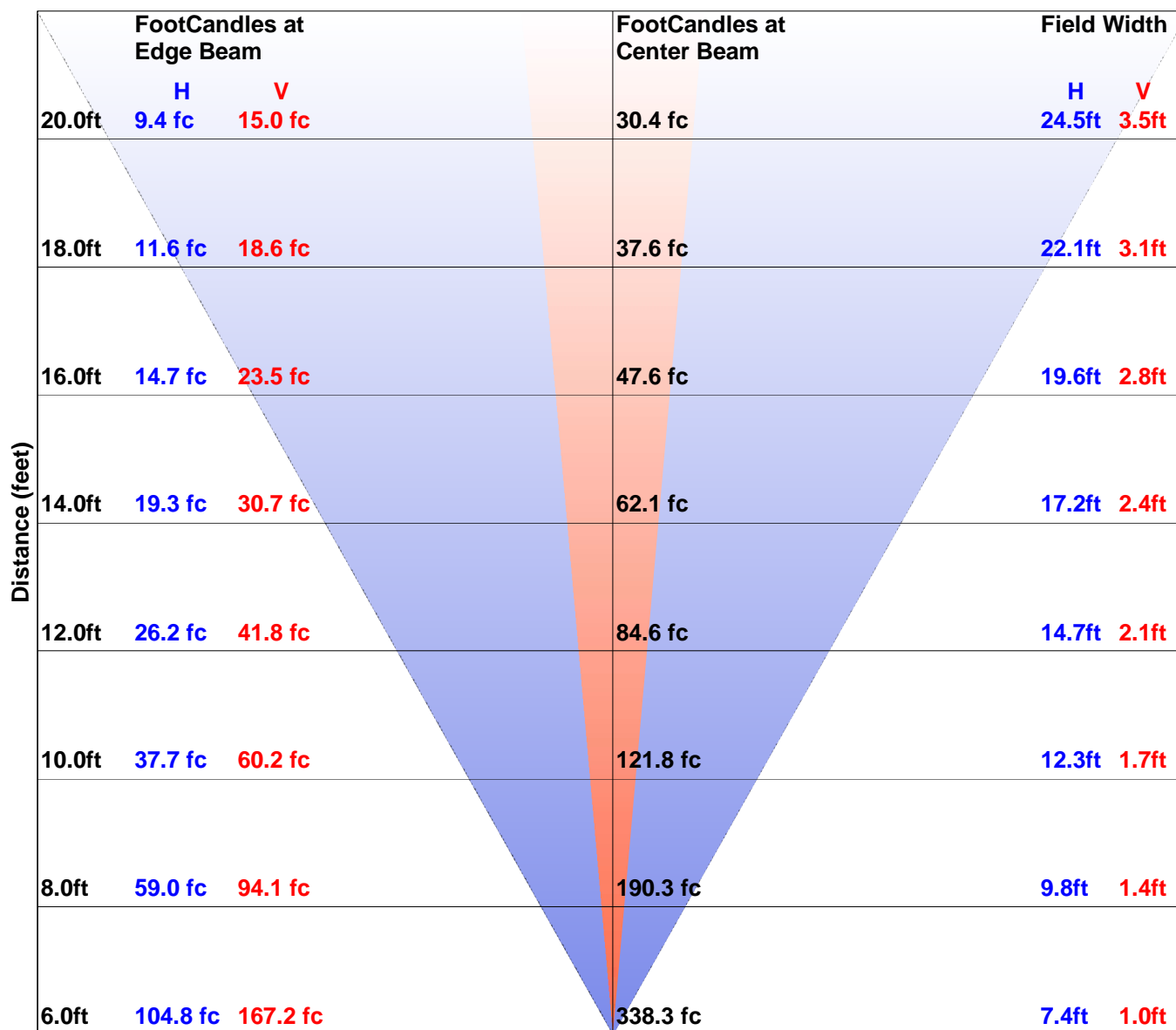
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## Photometric Report: S1512104-R1

Prepared for: Lumenpulse · Test Date: 10 December 2015

Floodlight: LUMENFACADE · Lumcat: LOGI-HO-120/277-48-27K-10x60-SI-NO

### Uplight Beam



— Horizontal (63.0 °) — Vertical (10.0 °)



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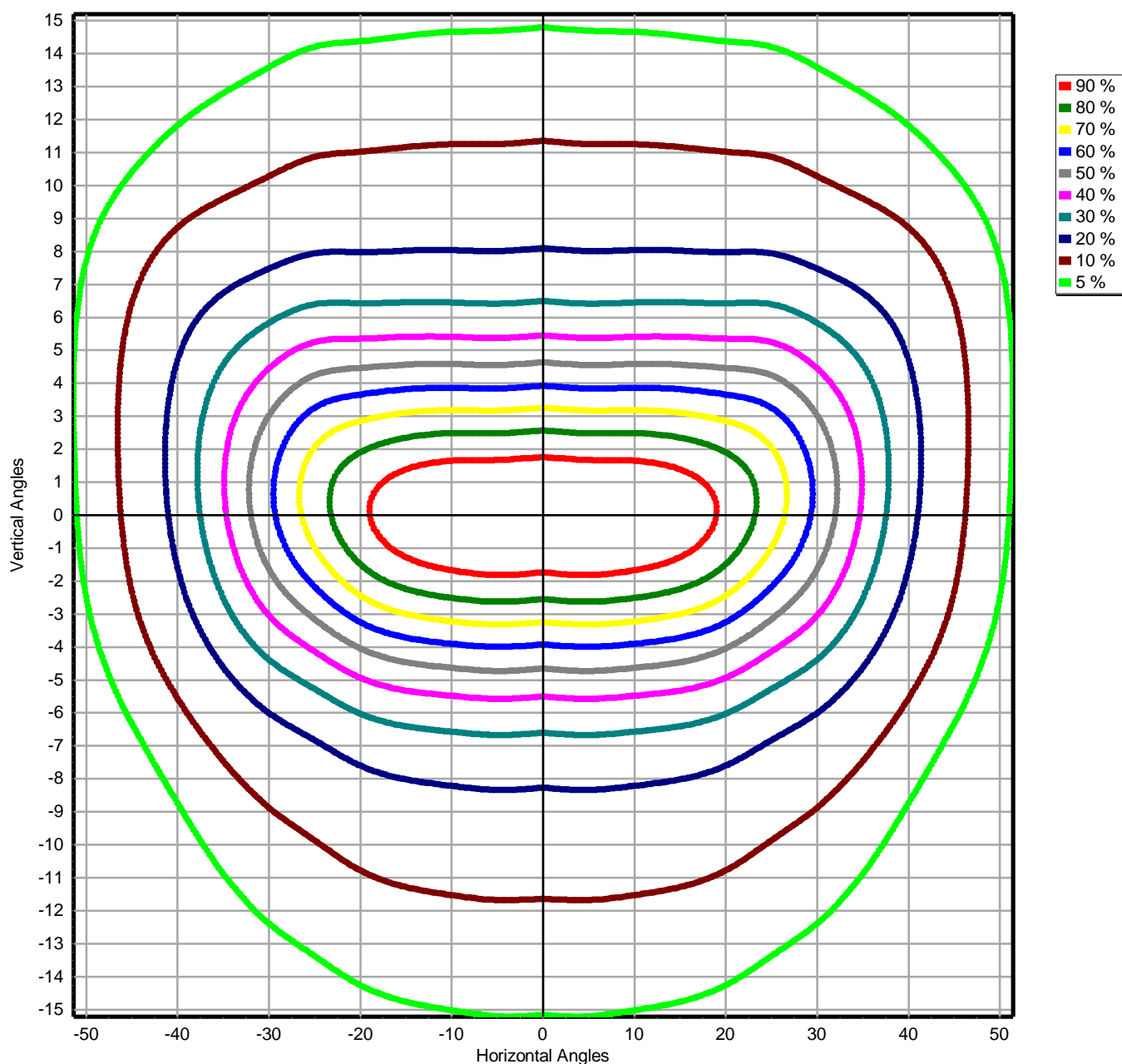
NVLAP LAB CODE: 200899-0

## Photometric Report: S1512104-R1

Prepared for: Lumenpulse · Test Date: 10 December 2015

Floodlight: LUMENFACADE · Lumcat: LOGI-HO-120/277-48-27K-10x60-SI-NO

### ISO Candela Diagram





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## IES File Headers

IESNA:LM-63-2002  
[ISSUEDATE] 10 December 2015  
[TESTLAB] Spectra Lux Industries Inc.  
[TEST] S1512104-R1  
[MANUFAC] Lumenpulse  
[LUMCAT] LOGI-HO-120/277-48-27K-10x60-SI-NO  
[LUMINAIRE] LUMENFACADE  
[LAMP] (Clusters of 48 Cree XPE2 LED's) White 61W SSL c/w Mean Well Driver LPF-60-24 @ 120.00V  
[\_BURNING] Axial (2,966 Luminaire Lumens)  
[\_REFLECTOR] 48 Collimators  
[\_LENS] Polycarbonate  
[\_HOUSING] Extruded Aluminum  
[DISTRIBUTION] NEMA 5Hx2V (Max. CP at 0.0H,0.0V)  
[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  A n g l e s	-90.0	2	2	2	3	3	4	4	5
	-85.0	5	4	5	5	6	7	6	6
	-75.0	13	12	13	12	11	13	13	14
	-65.0	21	21	20	22	21	20	21	19
	-55.0	40	40	40	40	40	37	37	33
	-45.0	62	62	61	60	59	58	55	53
	-35.0	101	102	100	100	96	91	87	79
	-25.0	196	197	194	189	179	166	153	137
	-20.0	307	308	302	294	278	253	228	199
	-15.0	627	632	611	582	531	455	387	315
	-12.5	1025	1036	1005	955	863	722	596	458
	-12.0	1132	1144	1110	1056	955	797	656	499
	-11.5	1250	1262	1225	1167	1054	880	721	543
	-11.0	1376	1391	1351	1288	1164	971	794	596
	-10.5	1519	1536	1492	1421	1287	1072	874	653
	-10.0	1680	1700	1652	1575	1425	1185	964	715
	-9.5	1863	1887	1835	1750	1583	1314	1067	787
	-9.0	2073	2101	2042	1950	1763	1461	1187	870
	-8.5	2314	2347	2282	2179	1971	1630	1321	964
	-8.0	2587	2629	2559	2447	2212	1826	1478	1076
	-7.5	2915	2964	2885	2760	2495	2057	1663	1205
	-7.0	3299	3357	3271	3133	2833	2329	1881	1357
	-6.5	3744	3817	3719	3566	3226	2653	2141	1537
	-6.0	4264	4347	4237	4062	3675	3020	2436	1741
	-5.5	4870	4969	4846	4646	4199	3445	2771	1971
	-5.0	5560	5669	5532	5299	4787	3925	3144	2225
	-4.5	6327	6450	6299	6030	5441	4456	3555	2500
	-4.0	7170	7301	7138	6827	6155	5033	3990	2787
	-3.5	8062	8199	8027	7675	6916	5651	4449	3085
	-3.0	8964	9094	8912	8523	7685	6286	4913	3379
	-2.5	9823	9946	9762	9344	8436	6914	5367	3661
	-2.0	10597	10703	10523	10085	9127	7510	5797	3929
	-1.5	11252	11335	11165	10717	9733	8051	6192	4175
	-1.0	11750	11804	11651	11206	10215	8510	6532	4391
	-0.5	12062	12084	11950	11518	10548	8862	6804	4575



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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	0.0	12178	12167	12053	11645	10718	9095	6995	4715	2759
	0.5	12088	12043	11951	11574	10706	9182	7085	4798	2819
	1.0	11786	11707	11638	11302	10509	9118	7068	4826	2855
	1.5	11297	11191	11144	10849	10149	8913	6953	4797	2869
	2.0	10638	10511	10486	10240	9637	8573	6745	4714	2861
	2.5	9862	9720	9718	9520	9019	8134	6459	4584	2828
	3.0	9002	8847	8857	8707	8311	7604	6106	4406	2773
	3.5	8093	7938	7966	7860	7556	7015	5704	4190	2695
	4.0	7185	7033	7074	7007	6786	6394	5267	3947	2598
	4.5	6324	6184	6230	6194	6045	5772	4824	3688	2485
	5.0	5528	5402	5453	5440	5342	5169	4379	3414	2358
	5.5	4816	4706	4756	4756	4694	4590	3937	3131	2216
	6.0	4195	4098	4140	4145	4107	4053	3516	2846	2066
	6.5	3656	3574	3610	3616	3587	3558	3118	2565	1907
	7.0	3202	3132	3162	3163	3138	3122	2753	2300	1748
	7.5	2819	2760	2780	2776	2751	2736	2423	2044	1586
	8.0	2497	2445	2461	2453	2421	2402	2131	1811	1430
	8.5	2221	2175	2185	2171	2137	2114	1873	1600	1281
	9.0	1989	1950	1953	1935	1900	1867	1654	1415	1143
A n g l e s	9.5	1784	1749	1751	1732	1693	1655	1462	1250	1015
	10.0	1608	1575	1575	1553	1513	1474	1298	1109	904
	10.5	1451	1420	1417	1395	1357	1319	1161	990	807
	11.0	1309	1284	1281	1261	1225	1184	1042	886	723
	11.5	1186	1161	1158	1137	1103	1066	935	795	651
	12.0	1074	1052	1047	1026	996	962	844	718	587
	12.5	970	951	947	927	898	866	761	648	531
	15.0	586	574	569	556	538	522	464	403	339
	20.0	274	272	270	264	258	249	231	207	183
	25.0	169	165	166	163	159	156	146	137	126
	35.0	92	92	90	89	88	86	85	80	77
	45.0	59	58	58	56	55	53	51	49	46
	55.0	32	33	33	34	32	32	31	30	28
	65.0	19	18	18	18	18	17	16	16	15
	75.0	11	10	11	10	10	10	10	10	10
	85.0	4	3	4	4	3	4	6	5	6
	90.0	1	2	3	3	3	5	4	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  A n g l e s	-90.0	5	6	6	6	5	6	5	6
	-85.0	7	6	7	7	7	6	7	7
	-75.0	12	12	9	11	9	9	7	7
	-65.0	18	17	16	14	13	10	10	5
	-55.0	29	25	23	19	18	15	13	6
	-45.0	47	42	36	32	25	19	15	7
	-35.0	66	61	53	44	37	27	19	8
	-25.0	103	88	74	61	50	39	29	15
	-20.0	136	111	89	72	56	42	31	19
	-15.0	190	146	111	86	65	48	34	20
	-12.5	236	172	126	95	71	51	35	20
	-12.0	252	179	130	97	71	52	35	20
	-11.5	266	188	134	99	74	53	35	20
	-11.0	283	196	139	102	73	53	35	20
	-10.5	303	205	143	104	75	54	37	21
	-10.0	324	217	149	107	78	55	37	21
	-9.5	348	229	154	110	79	56	36	21
	-9.0	376	243	162	113	80	57	37	22
	-8.5	406	257	168	116	82	58	38	21
	-8.0	441	275	176	120	85	58	38	21
	-7.5	484	296	186	125	85	60	39	22
	-7.0	531	318	196	128	89	61	39	22
	-6.5	586	344	207	133	91	62	39	22
	-6.0	652	373	219	139	93	64	41	23
	-5.5	722	406	232	144	96	64	41	22
	-5.0	796	439	246	150	98	65	41	23
	-4.5	878	473	260	155	100	66	43	24
	-4.0	961	509	275	161	103	67	42	22
	-3.5	1042	544	287	166	105	68	42	22
	-3.0	1120	577	301	172	107	70	43	25
	-2.5	1192	607	312	176	110	71	44	23
	-2.0	1256	634	321	180	112	71	43	23
	-1.5	1315	656	331	185	113	73	44	25
	-1.0	1365	676	338	186	115	73	45	24
	-0.5	1406	691	343	188	116	73	44	23
	0.0	1443	704	349	192	117	73	45	25
	0.5	1470	714	353	193	119	75	45	24
	1.0	1489	724	356	194	118	74	44	24
	1.5	1505	730	360	197	120	75	46	25
	2.0	1511	736	362	197	121	75	46	24
	2.5	1511	740	365	198	120	76	45	24
	3.0	1505	743	367	199	121	76	46	25
	3.5	1487	744	369	199	122	76	46	24
	4.0	1461	741	368	200	120	75	44	24
	4.5	1429	736	370	201	121	75	46	25
	5.0	1387	726	369	201	122	76	46	24
	5.5	1335	714	367	200	120	75	45	23
	6.0	1276	697	365	201	120	76	44	25
	6.5	1207	675	359	199	121	76	46	24
	7.0	1133	652	352	197	119	76	45	23
	7.5	1056	622	344	197	119	75	45	25
	8.0	974	590	335	193	119	74	45	23
	8.5	892	556	322	189	116	74	43	23
	9.0	811	519	310	186	115	74	45	24



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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

## 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	9.5	733	481	295	180	114	72	44	23	8
	10.0	662	446	279	175	111	71	43	22	10
	10.5	598	410	265	167	108	70	43	24	9
	11.0	540	377	248	161	106	68	43	22	10
	11.5	488	346	232	154	103	68	42	21	10
	12.0	445	318	219	148	101	66	42	22	9
	12.5	404	292	205	141	98	65	41	22	11
	15.0	270	204	152	112	82	57	38	21	9
	20.0	154	127	103	80	62	45	30	18	9
	25.0	111	97	81	65	52	38	26	17	8
	35.0	70	63	54	46	37	27	19	13	7
	45.0	44	41	36	30	25	21	16	10	8
	55.0	25	23	21	18	16	13	11	8	7
	65.0	14	13	13	13	11	10	9	7	6
	75.0	9	9	10	9	9	9	7	4	5
	85.0	6	6	6	5	6	6	5	5	5
	90.0	4	5	5	6	5	6	5	4	5

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## Horizontal Angles

	90.0
V e r t i c a l	-90.0 5
	-85.0 6
	-75.0 5
	-65.0 6
	-55.0 5
	-45.0 4
	-35.0 5
	-25.0 5
	-20.0 5
	-15.0 4
	-12.5 5
	-12.0 5
	-11.5 4
	-11.0 5
	-10.5 4
	-10.0 4
	-9.5 6
	-9.0 4
	-8.5 3
	-8.0 5
A n g l e s	-7.5 4
	-7.0 4
	-6.5 5
	-6.0 4
	-5.5 4
	-5.0 6
	-4.5 4
	-4.0 4
	-3.5 5
	-3.0 5
	-2.5 4
	-2.0 5
	-1.5 4
	-1.0 3
	-0.5 5
	0.0 5
	0.5 3
	1.0 5
	1.5 4
	2.0 4
	2.5 5
	3.0 4
	3.5 4
	4.0 5
	4.5 5
	5.0 4
	5.5 5
	6.0 4
	6.5 3
	7.0 5
	7.5 5
	8.0 3
	8.5 6
	9.0 4



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Horizontal Angles

	90.0
	9.5
	10.0
	10.5
	11.0
	11.5
	12.0
	12.5
	15.0
	20.0
	25.0
	35.0
	45.0
	55.0
	65.0
	75.0
	85.0
	90.0
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