



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

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	
Test Report	S1512092-R1	Description	61W White 4000K SSL	Type Commercial
Test Date	9 December 2015	Serial Number	SRIS 2221	Description 61SSL-CY963
Report Date	17 December 2015	Photometric Method	Absolute	Manufacturer Mean Well
Ambient	25.4°C	Lamp Lumens	-1	Catalog No. LPF-60-24
Humidity	23.5 %	Test Position	Axial	Voltage Tap 120.00 V
Lamp Type	SSL	Comments	Clusters of 48 Cree XPE2 LED's	Power Factor 0.9900

Floodlight Data

General Information		Optics	Aperture (feet)	
Manufacturer	Lumenpulse	Reflector	48 Collimators	X 4.0000
Name	LUMENFACADE	Housing	Extruded Aluminum	Y 0.1667
Catalog No.	LOGI-HO-120/277-48-40K -10x60-SI-NO	Lens	Polycarbonate	Z 0.0000

Lamp Stabilization Time: 1 heure 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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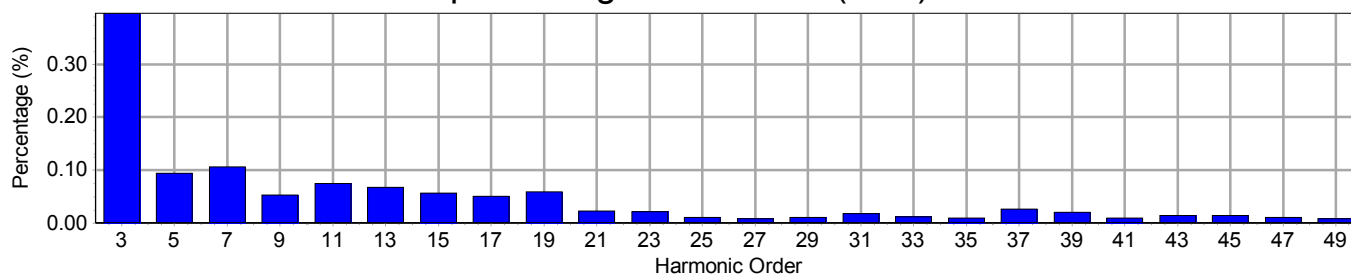
NVLAP LAB CODE: 200899-0

Electrical Measurements

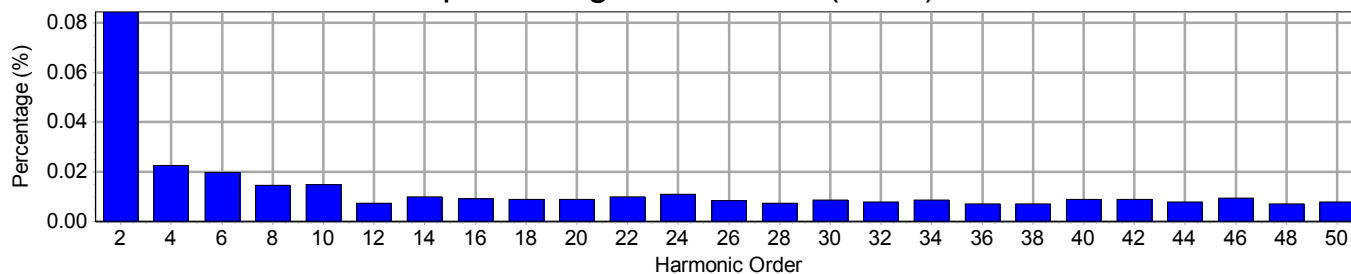
Input

Frequency	60 Hz	Active Power	61.75 W	THDV [ANSI]	0.46 %
Voltage	120.1 V(rms)	Apparent Power	62.05 VA	THDA [ANSI]	5.24 %
Current	0.5168 A(rms)	Power Factor	0.995	Max. Harmonic At	5th order

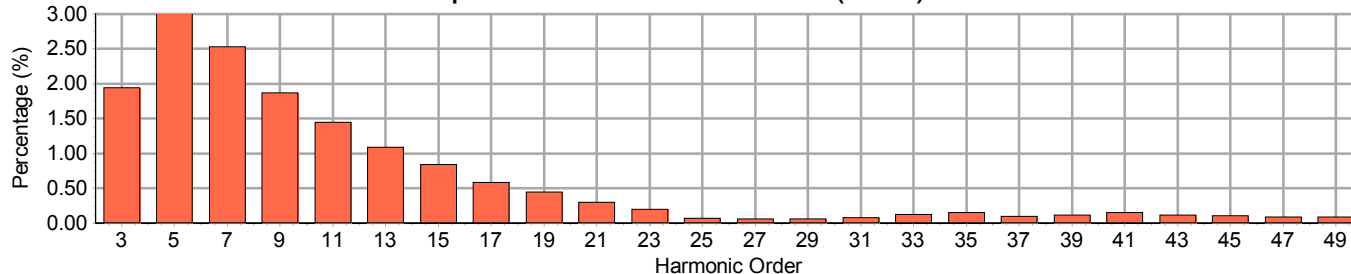
Input Voltage Harmonics (Odd)



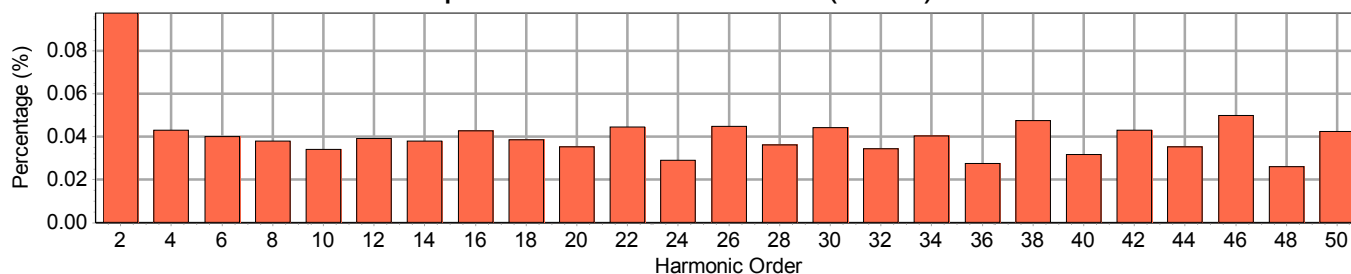
Input Voltage Harmonics (Even)



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	0.098
3	180	0.397	1.941	4	240	0.023	0.043
5	300	0.094	3.014	6	360	0.020	0.040
7	420	0.106	2.529	8	480	0.015	0.038
9	540	0.052	1.867	10	600	0.015	0.034
11	660	0.075	1.450	12	720	0.007	0.039
13	780	0.067	1.086	14	840	0.010	0.038
15	900	0.056	0.836	16	960	0.009	0.043
17	1020	0.051	0.588	18	1080	0.009	0.039
19	1140	0.058	0.448	20	1200	0.009	0.035
21	1260	0.022	0.295	22	1320	0.010	0.044
23	1380	0.021	0.194	24	1440	0.011	0.029
25	1500	0.011	0.073	26	1560	0.008	0.045
27	1620	0.008	0.057	28	1680	0.007	0.036
29	1740	0.010	0.059	30	1800	0.009	0.044
31	1860	0.018	0.080	32	1920	0.008	0.034
33	1980	0.012	0.122	34	2040	0.009	0.040
35	2100	0.009	0.147	36	2160	0.007	0.027
37	2220	0.026	0.094	38	2280	0.007	0.047
39	2340	0.020	0.118	40	2400	0.009	0.032
41	2460	0.009	0.155	42	2520	0.009	0.043
43	2580	0.014	0.117	44	2640	0.008	0.035
45	2700	0.014	0.105	46	2760	0.010	0.050
47	2820	0.011	0.086	48	2880	0.007	0.026
49	2940	0.008	0.087	50	3000	0.008	0.042



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Photometric Report: S1512092-R1

Prepared for: Lumenpulse · Test Date: 09 December 2015

Floodlight: LUMENFACADE · Lumcat: LOGI-HO-120/277-48-40K-10x60-SI-NO

Photometric Floodlight Characteristics

Nominal SSL Power	61.00 W	
Measured Input Voltage	120.06 V	Notes
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	3459	
Measured Input Power	61.75 W	
Floodlight Luminous Efficacy	56.0 lm/W	2) Field performance may differ from laboratory measurements.
Maximum Candela Value	13078	
Maximum Candela Location	0.0 H, 0.0 V	3) Results are valid for the tested material only.
Horizontal Beam Angle (50%)	65.0 °	
Vertical Beam Angle (50%)	11.0 °	4) All data published in this report are based on absolute photometry.
Horizontal Field Angle (10%)	95.0 °	
Vertical Field Angle (10%)	24.5 °	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%)	1718	
Beam Efficiency (50%)	N/A	
Field Lumens (10%)	2858	
Field Efficiency (10%)	N/A	
Spill Lumens	601	
Total Floodlight Lumens	3459	
Total Floodlight Efficiency	N/A	



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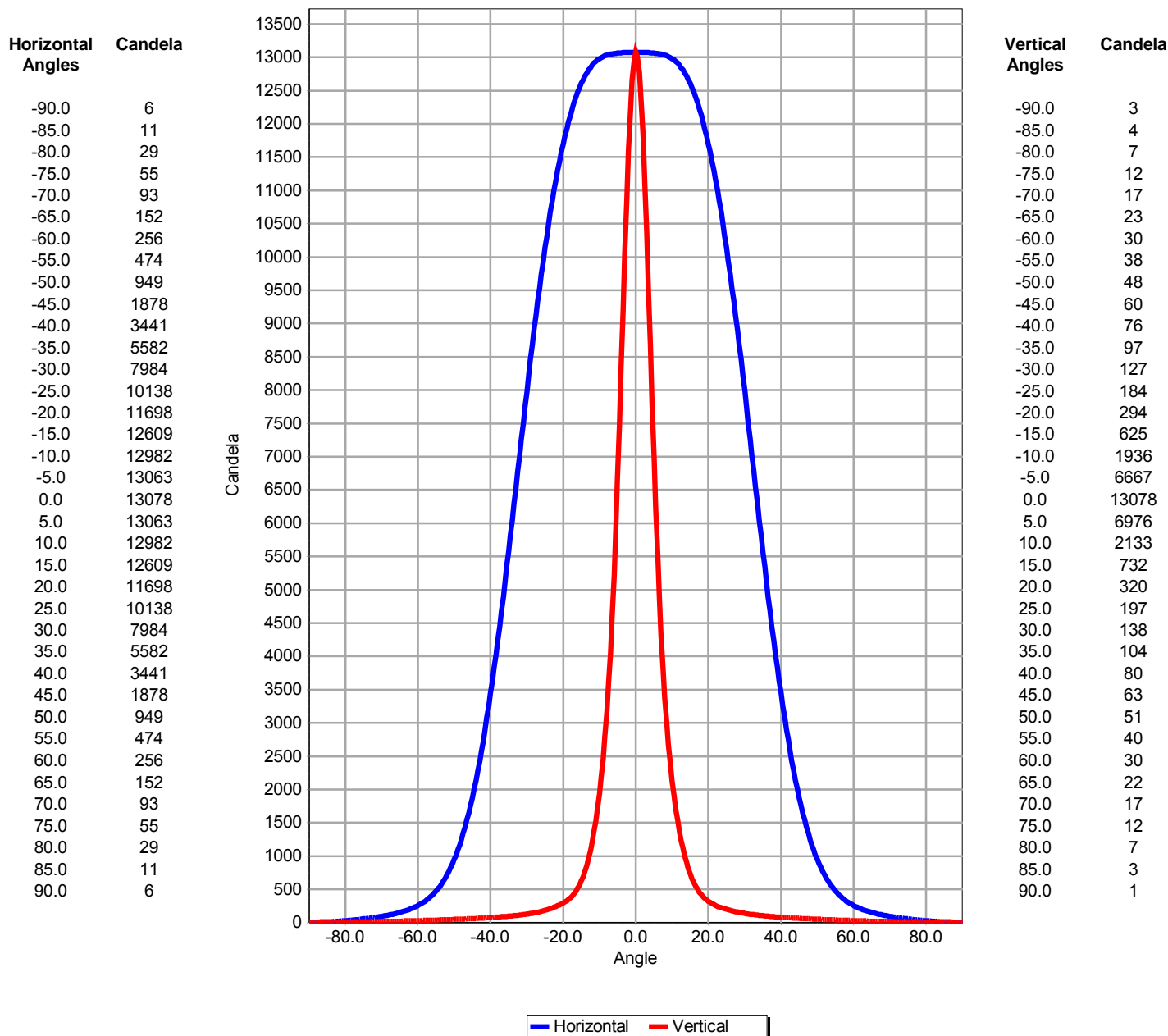
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Maximum Candela Trace (Max. Location: 0.0 H, 0.0 V)





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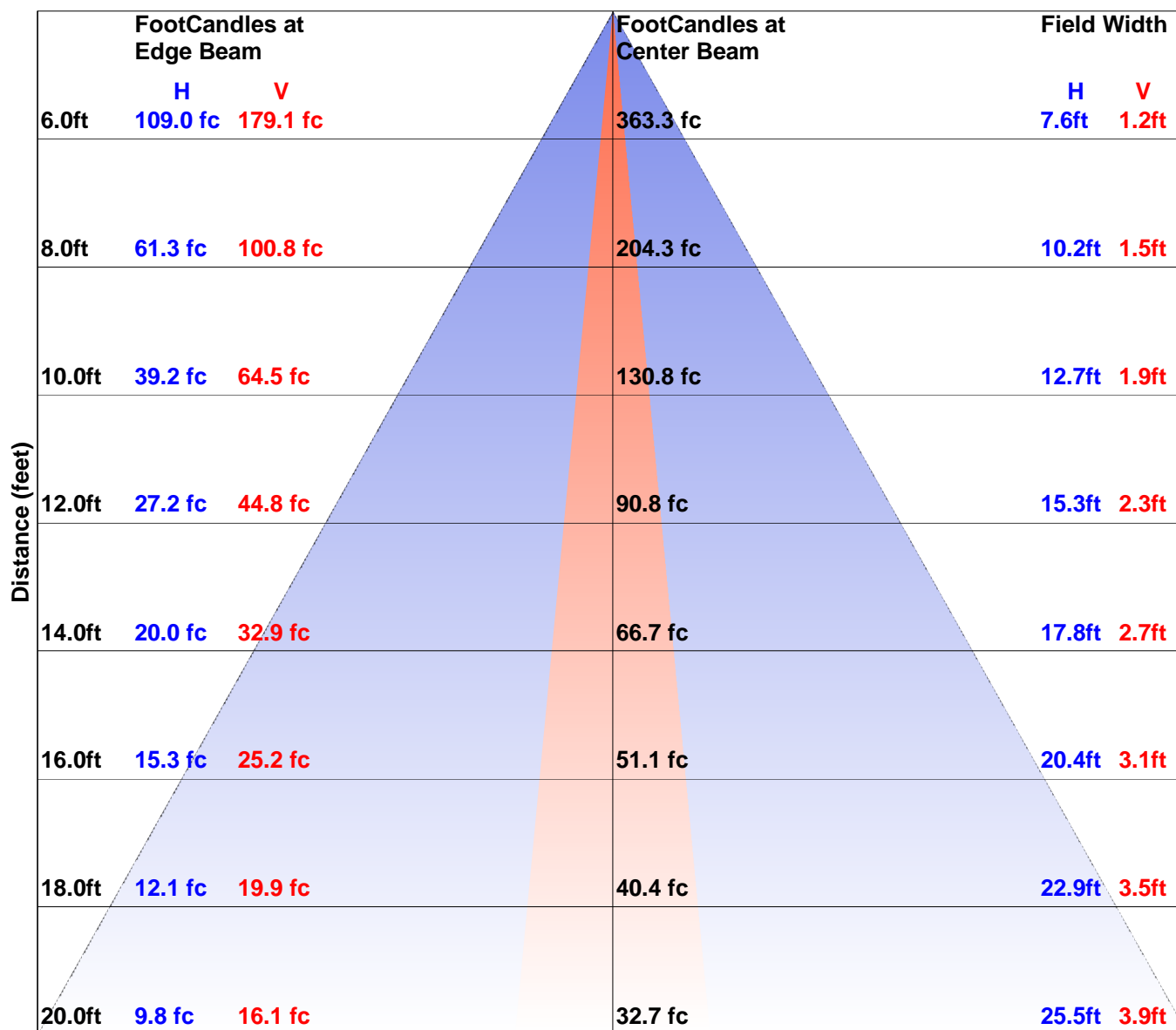
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Photometric Report: S1512092-R1

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Floodlight: LUMENFACADE · Lumcat: LOGI-HO-120/277-48-40K-10x60-SI-NO

Downlight Beam



— Horizontal (65.0 °) — Vertical (11.0 °)



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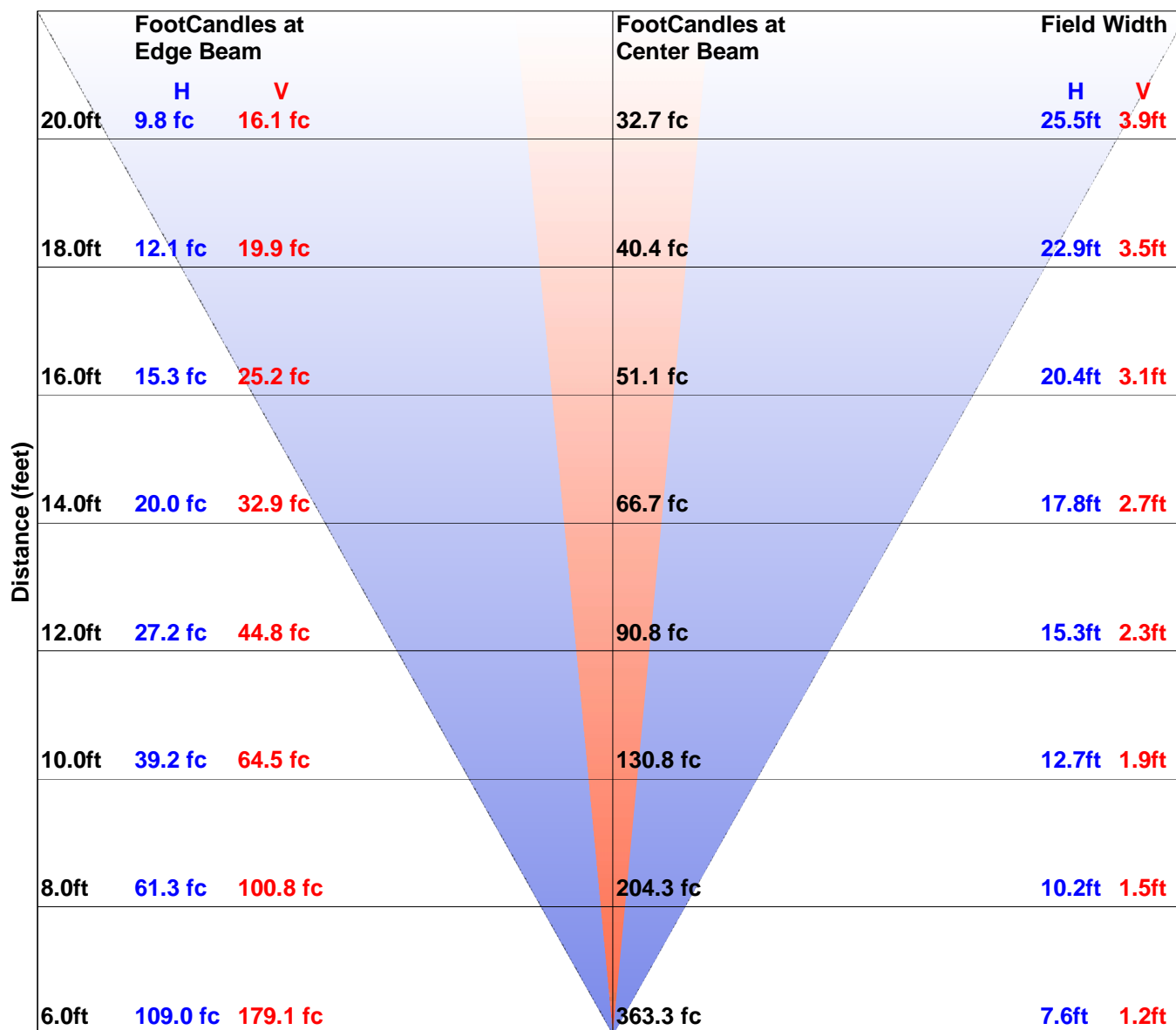
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Photometric Report: S1512092-R1

Prepared for: Lumenpulse · Test Date: 09 December 2015

Floodlight: LUMENFACADE · Lumcat: LOGI-HO-120/277-48-40K-10x60-SI-NO

Uplight Beam



— Horizontal (65.0 °) — Vertical (11.0 °)



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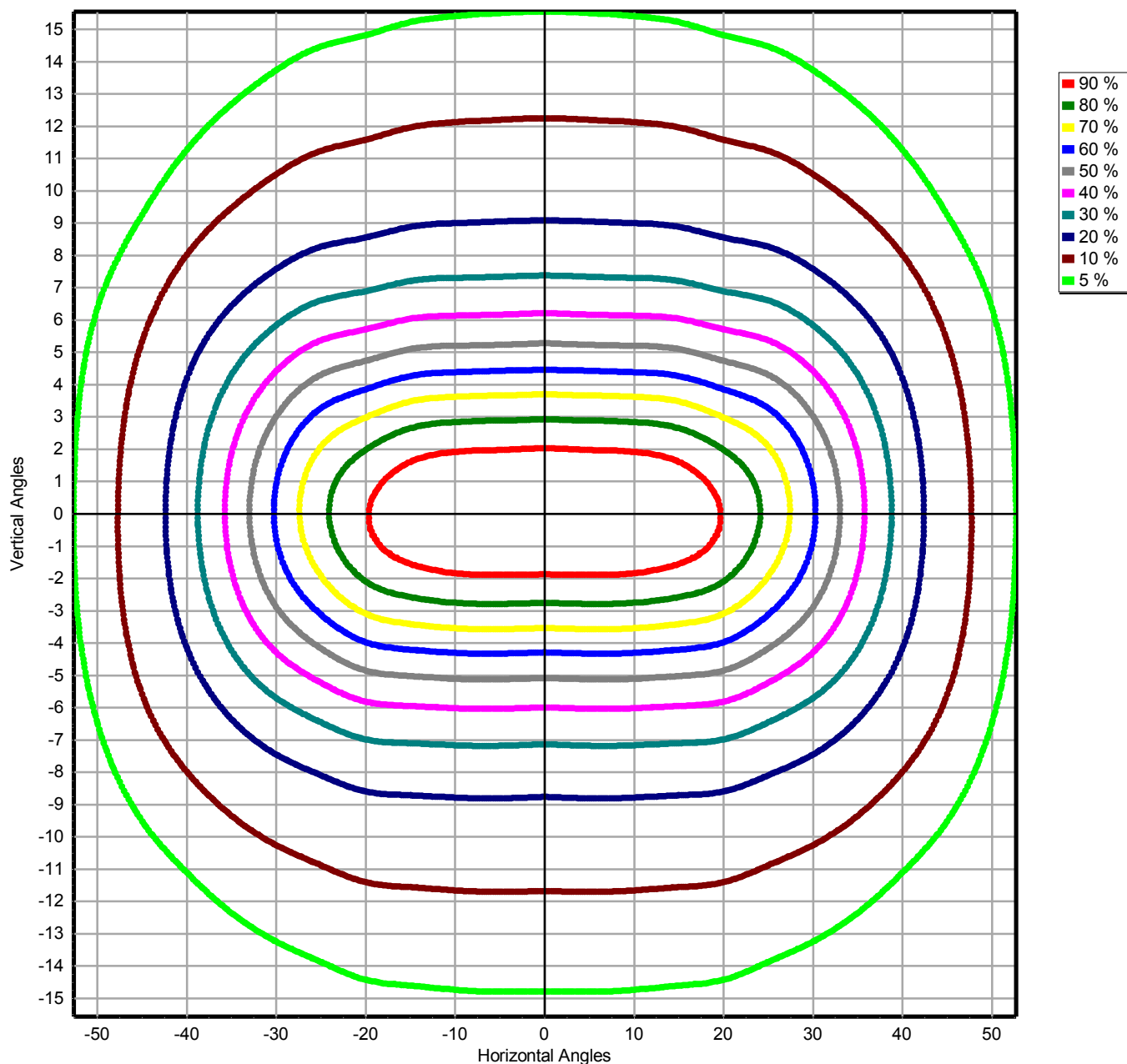
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ISO Candela Diagram





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IES File Headers

IESNA:LM-63-2002
[ISSUEDATE] 09 December 2015
[TESTLAB] Spectra Lux Industries Inc.
[TEST] S1512092-R1
[MANUFAC] Lumenpulse
[LUMCAT] LOGI-HO-120/277-48-40K-10x60-SI-NO
[LUMINAIRE] LUMENFACADE
[LAMP] (Clusters of 48 Cree XPE2 LED's) 61W SSL c/w Driver LPF-60-24 @ 120.00V
[_BURNING] Axial (3,459 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	3	3	3	3	4	5	5	5
	-85.0	4	5	5	4	6	6	6	6
	-75.0	12	13	13	14	12	13	12	13
	-65.0	23	22	22	21	23	21	22	19
	-55.0	38	38	39	39	38	37	36	31
	-45.0	60	62	61	60	59	58	55	50
	-35.0	97	95	94	93	92	89	86	76
	-25.0	184	185	183	180	174	165	155	128
	-20.0	294	295	291	286	278	258	240	185
	-15.0	625	628	620	603	583	522	462	320
	-12.5	1081	1084	1072	1046	1007	889	771	492
	-12.0	1213	1220	1206	1177	1135	1001	864	543
	-11.5	1361	1369	1357	1326	1278	1128	970	602
	-11.0	1528	1537	1525	1492	1440	1271	1094	669
	-10.5	1718	1731	1717	1680	1624	1434	1234	746
	-10.0	1936	1950	1937	1898	1837	1621	1392	833
	-9.5	2184	2202	2189	2147	2080	1835	1574	932
	-9.0	2469	2491	2478	2432	2361	2081	1782	1042
	-8.5	2795	2820	2808	2760	2679	2363	2018	1166
	-8.0	3166	3195	3184	3130	3042	2679	2286	1302
	-7.5	3585	3620	3607	3548	3448	3038	2585	1449
	-7.0	4062	4101	4089	4022	3905	3434	2911	1606
	-6.5	4609	4652	4638	4559	4423	3881	3276	1772
	-6.0	5220	5269	5253	5162	4998	4372	3671	1947
	-5.5	5916	5967	5948	5840	5639	4919	4101	2128
	-5.0	6667	6722	6703	6570	6323	5499	4556	2309
	-4.5	7491	7546	7519	7361	7059	6115	5031	2491
	-4.0	8347	8401	8369	8181	7809	6752	5512	2665
	-3.5	9215	9267	9225	9008	8561	7384	5984	2830
	-3.0	10065	10113	10065	9814	9287	7995	6435	2980
	-2.5	10873	10911	10858	10575	9968	8571	6853	3113
	-2.0	11595	11625	11563	11251	10563	9084	7225	3226
	-1.5	12197	12220	12152	11817	11054	9511	7536	3318
	-1.0	12662	12671	12596	12245	11418	9841	7771	3386
	-0.5	12958	12955	12878	12512	11635	10054	7923	3426



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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	13078	13063	12982	12609	11698	10138	7984	5582	3441
	0.5	13014	12986	12904	12534	11600	10094	7951	5560	3429
	1.0	12773	12732	12648	12285	11350	9920	7826	5481	3390
	1.5	12372	12323	12238	11885	10963	9631	7617	5353	3326
	2.0	11817	11754	11673	11341	10447	9229	7325	5173	3236
	2.5	11139	11071	10991	10683	9832	8741	6970	4953	3124
	3.0	10356	10285	10210	9926	9132	8173	6557	4696	2991
	3.5	9520	9443	9374	9122	8391	7563	6105	4411	2841
	4.0	8648	8575	8511	8289	7630	6928	5630	4107	2678
	4.5	7792	7725	7665	7473	6887	6293	5153	3796	2506
	5.0	6976	6909	6860	6693	6172	5676	4678	3482	2327
	5.5	6213	6151	6105	5961	5504	5086	4220	3169	2146
	6.0	5511	5456	5415	5287	4885	4536	3785	2868	1966
	6.5	4878	4827	4790	4678	4323	4027	3377	2579	1788
	7.0	4316	4271	4235	4136	3824	3569	3006	2311	1619
	7.5	3816	3777	3744	3654	3381	3157	2667	2064	1461
	8.0	3386	3349	3319	3237	2992	2797	2366	1841	1314
	8.5	3006	2975	2943	2870	2651	2473	2097	1637	1177
	9.0	2675	2649	2618	2547	2353	2194	1861	1459	1057
	9.5	2386	2357	2330	2267	2089	1946	1651	1300	947
A n g l e s	10.0	2133	2109	2080	2021	1863	1733	1472	1160	851
	10.5	1905	1887	1860	1804	1661	1545	1313	1038	766
	11.0	1711	1690	1667	1614	1485	1380	1173	931	691
	11.5	1534	1517	1494	1447	1332	1235	1051	835	624
	12.0	1380	1365	1344	1299	1195	1108	943	753	567
	12.5	1241	1227	1208	1166	1071	994	847	679	514
	15.0	732	725	711	685	631	588	510	421	335
	20.0	320	318	314	305	289	277	252	223	190
	25.0	197	197	193	189	180	175	163	149	133
	35.0	104	102	102	100	97	95	90	86	80
	45.0	63	63	65	63	61	61	59	57	54
	55.0	40	40	39	40	38	37	36	33	33
	65.0	22	23	23	21	22	21	20	20	19
	75.0	12	12	12	11	10	10	9	12	11
	85.0	3	3	3	3	5	5	6	5	5
	90.0	1	3	2	3	2	4	4	3	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	5	6	4	6	5	6	5	6	6
	-85.0	7	7	6	6	6	7	6	7	7
	-75.0	11	12	10	10	10	8	7	7	7
	-65.0	20	18	16	15	13	12	10	8	6
	-55.0	30	26	23	22	19	17	14	10	8
	-45.0	46	43	38	33	26	22	17	11	7
	-35.0	71	63	56	49	40	30	21	15	9
	-25.0	114	99	83	69	55	43	30	19	10
	-20.0	160	130	106	85	67	50	35	21	10
	-15.0	256	194	148	112	82	61	40	22	11
	-12.5	373	263	185	132	96	67	43	24	11
	-12.0	406	281	196	138	98	68	43	24	11
	-11.5	445	303	208	145	101	69	44	26	11
	-11.0	489	327	220	150	105	72	45	25	11
	-10.5	537	354	234	158	107	73	46	24	12
	-10.0	593	384	248	165	111	75	46	26	11
	-9.5	655	416	264	171	114	76	47	26	11
	-9.0	722	450	281	178	117	78	48	26	12
	-8.5	796	490	298	186	121	79	49	27	12
	A n g l e s	-8.0	877	528	314	193	126	80	49	26
-7.5		961	567	333	201	127	81	50	26	12
-7.0		1050	609	350	208	130	83	50	28	12
-6.5		1141	651	367	215	134	85	51	28	12
-6.0		1231	691	384	221	136	86	52	27	12
-5.5		1323	731	397	227	139	88	52	28	13
-5.0		1412	769	412	232	143	89	53	28	11
-4.5		1497	802	425	238	144	89	53	28	12
-4.0		1576	835	437	242	145	90	53	29	12
-3.5		1650	865	447	245	147	91	53	28	12
-3.0		1711	887	455	249	148	91	54	28	12
-2.5		1766	908	461	250	150	93	54	29	14
-2.0		1810	924	466	253	151	93	54	29	11
-1.5		1842	936	471	255	151	92	54	28	13
-1.0		1866	945	474	255	150	93	55	28	13
-0.5		1879	948	475	256	152	93	55	29	12
0.0		1878	949	474	256	152	93	55	29	11
0.5		1870	946	473	255	151	93	55	29	13
1.0		1852	939	471	254	151	93	55	28	12
1.5		1822	930	467	253	150	91	54	28	12
2.0	1782	917	462	251	149	91	54	28	13	
2.5	1734	900	457	248	148	91	54	29	11	
3.0	1674	879	449	245	146	90	54	29	12	
3.5	1608	855	441	241	144	90	53	28	13	
4.0	1533	826	431	238	143	89	53	28	11	
4.5	1453	794	419	233	140	88	52	28	12	
5.0	1367	760	407	229	139	87	53	28	13	
5.5	1278	722	392	224	138	87	52	28	11	
6.0	1184	682	377	218	133	85	51	28	12	
6.5	1093	642	361	211	131	84	51	27	12	
7.0	1004	600	344	204	129	82	50	27	10	
7.5	915	559	325	197	124	80	49	27	12	
8.0	833	519	309	190	122	78	49	26	12	
8.5	757	479	291	182	119	79	48	26	10	
9.0	687	442	273	175	113	75	47	26	12	



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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	
V e r t i c a l	9.5	623	410	259	167	111	75	47	25	11
	10.0	567	377	243	161	108	73	46	24	10
	10.5	515	350	229	154	104	70	45	26	11
	11.0	472	324	217	147	101	69	45	25	11
	11.5	431	301	205	141	99	68	44	24	10
	12.0	395	279	192	135	94	66	43	25	11
	12.5	364	262	184	130	92	64	43	23	12
	15.0	252	194	145	109	80	58	39	23	11
	20.0	158	132	107	84	64	50	33	20	10
	25.0	117	101	85	71	56	43	30	19	9
	35.0	73	66	60	50	41	31	23	15	9
	45.0	50	45	39	34	29	22	18	12	9
	55.0	30	27	24	22	19	15	13	10	6
	65.0	16	16	14	13	12	11	10	8	6
	75.0	11	9	9	9	9	8	8	6	5
	85.0	5	5	6	5	6	5	4	6	6
	90.0	6	4	5	4	4	6	6	6	5

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Horizontal Angles

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



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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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