



# 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>	S1607052-R1	<b>Description</b>	72W White 4000K SSL	<b>Type</b> Commercial
<b>Test Date</b>	5 July 2016	<b>Serial Number</b>	SRIS 2435	<b>Description</b> 71SSL-CY1101
<b>Report Date</b>	8 July 2016	<b>Photometric Method</b>	Absolute	<b>Manufacturer</b> Mean Well
<b>Ambient</b>	24.9 °C	<b>Lamp Lumens</b>	-1	<b>Catalog No.</b> LPF-60-24
<b>Humidity</b>	40.2 %	<b>Test Position</b>	Axial	<b>Voltage Tap</b> 120.00 V
<b>Lamp Type</b>	SSL	<b>Comments</b>	Clusters of 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 Acrylic	<b>X</b> 4.0000
<b>Name</b>	LUMENFACADE	<b>Housing</b>	Extruded Aluminum	<b>Y</b> 0.1667
<b>Catalog No.</b>	LOG-HO-120-48-40K-10x90-SI-NO	<b>Lens</b>	Glass/Polycarbonate	<b>Z</b> 0.0000

Lamp Stabilization Time: 55 minutes

**Tested By:** George Hedrei

**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	91L236539	2016/05/05	2017/05/05
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	051202970	2014/10/24	2016/10/24



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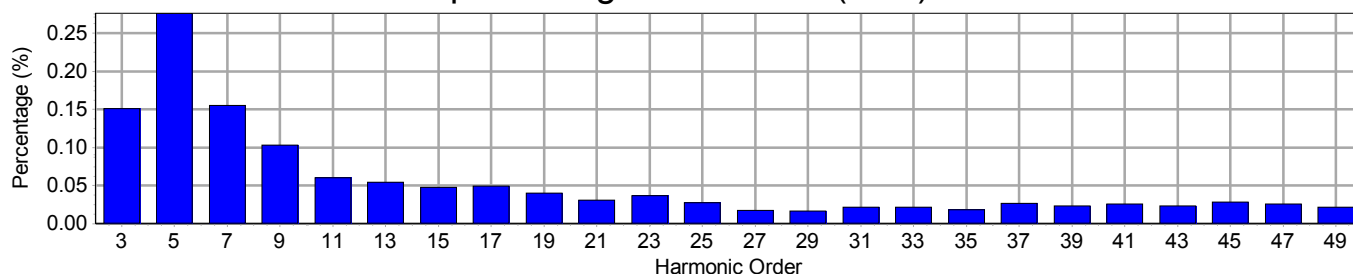
NVLAP LAB CODE: 200899-0

## Electrical Measurements

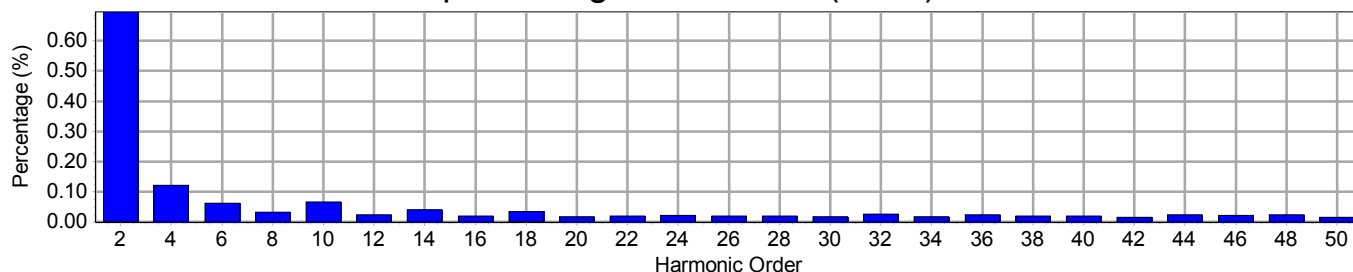
### Input

Frequency	60 Hz	Active Power	62.10 W	THDV [ANSI]	0.82 %
Voltage	120.1 V(rms)	Apparent Power	62.51 VA	THDA [ANSI]	4.50 %
Current	0.5205 A(rms)	Power Factor	0.993	Max. Harmonic At	5th order

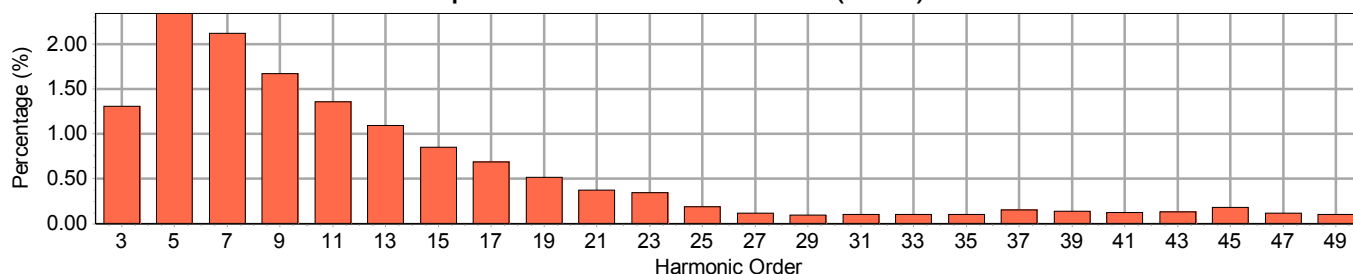
### Input Voltage Harmonics (Odd)



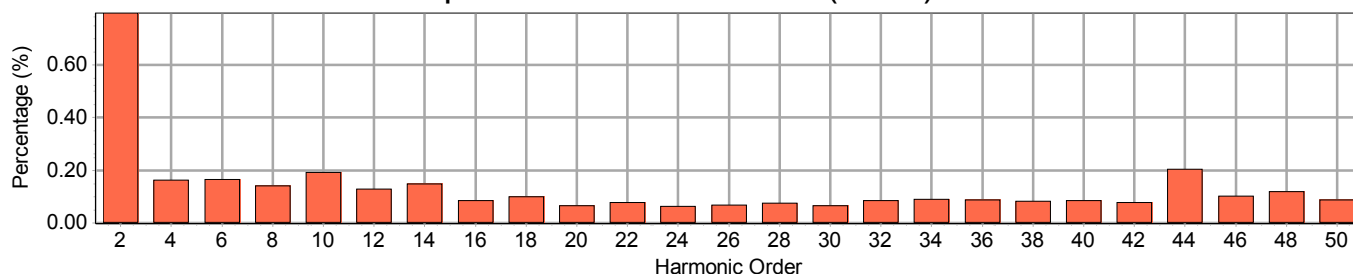
### Input Voltage Harmonics (Even)



### 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	0.697	0.797
3	180	0.151	1.308	4	240	0.121	0.164
5	300	0.277	2.343	6	360	0.063	0.167
7	420	0.156	2.116	8	480	0.032	0.141
9	540	0.103	1.667	10	600	0.066	0.193
11	660	0.060	1.356	12	720	0.024	0.130
13	780	0.054	1.094	14	840	0.040	0.149
15	900	0.048	0.853	16	960	0.019	0.087
17	1020	0.049	0.690	18	1080	0.034	0.101
19	1140	0.040	0.520	20	1200	0.018	0.068
21	1260	0.031	0.376	22	1320	0.020	0.079
23	1380	0.036	0.347	24	1440	0.021	0.063
25	1500	0.027	0.188	26	1560	0.020	0.069
27	1620	0.017	0.116	28	1680	0.020	0.076
29	1740	0.017	0.099	30	1800	0.018	0.067
31	1860	0.021	0.104	32	1920	0.026	0.087
33	1980	0.022	0.105	34	2040	0.018	0.092
35	2100	0.018	0.100	36	2160	0.025	0.089
37	2220	0.027	0.155	38	2280	0.020	0.084
39	2340	0.023	0.138	40	2400	0.020	0.086
41	2460	0.026	0.122	42	2520	0.016	0.079
43	2580	0.023	0.132	44	2640	0.025	0.205
45	2700	0.028	0.180	46	2760	0.022	0.102
47	2820	0.025	0.118	48	2880	0.025	0.119
49	2940	0.022	0.104	50	3000	0.016	0.089



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## Photometric Report: S1607052-R1

Prepared for: Lumenpulse · Test Date: 05 July 2016

Floodlight: LUMENFACADE · Lumcat: LOG-HO-120-48-40K-10x90-SI-NO

### Photometric Floodlight Characteristics

Nominal SSL Power	72.00 W	
Measured Input Voltage	120.11 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	3576	
Measured Input Power	62.10 W	
Floodlight Luminous Efficacy	57.6 lm/W	2) Field performance may differ from laboratory measurements.
Maximum Candela Value	7897	
Maximum Candela Location	25.0 H, 0.5 V	3) Results are valid for the tested material only.
Horizontal Beam Angle (50%)	98.0 °	
Vertical Beam Angle (50%)	15.0 °	
Horizontal Field Angle (10%)	125.0 °	4) All data published in this report are based on absolute photometry.
Vertical Field Angle (10%)	30.5 °	
IES/NEMA Type Classification	6Hx3V	
Beam Lumens (50%)	2198	5) The original electronic file or paper report cannot be edited in whole or in part without written consent of Spectralux Industries Inc.
Beam Efficiency (50%)	N/A	
Field Lumens (10%)	3169	
Field Efficiency (10%)	N/A	
Spill Lumens	407	
Total Floodlight Lumens	3576	
Total Floodlight Efficiency	N/A	



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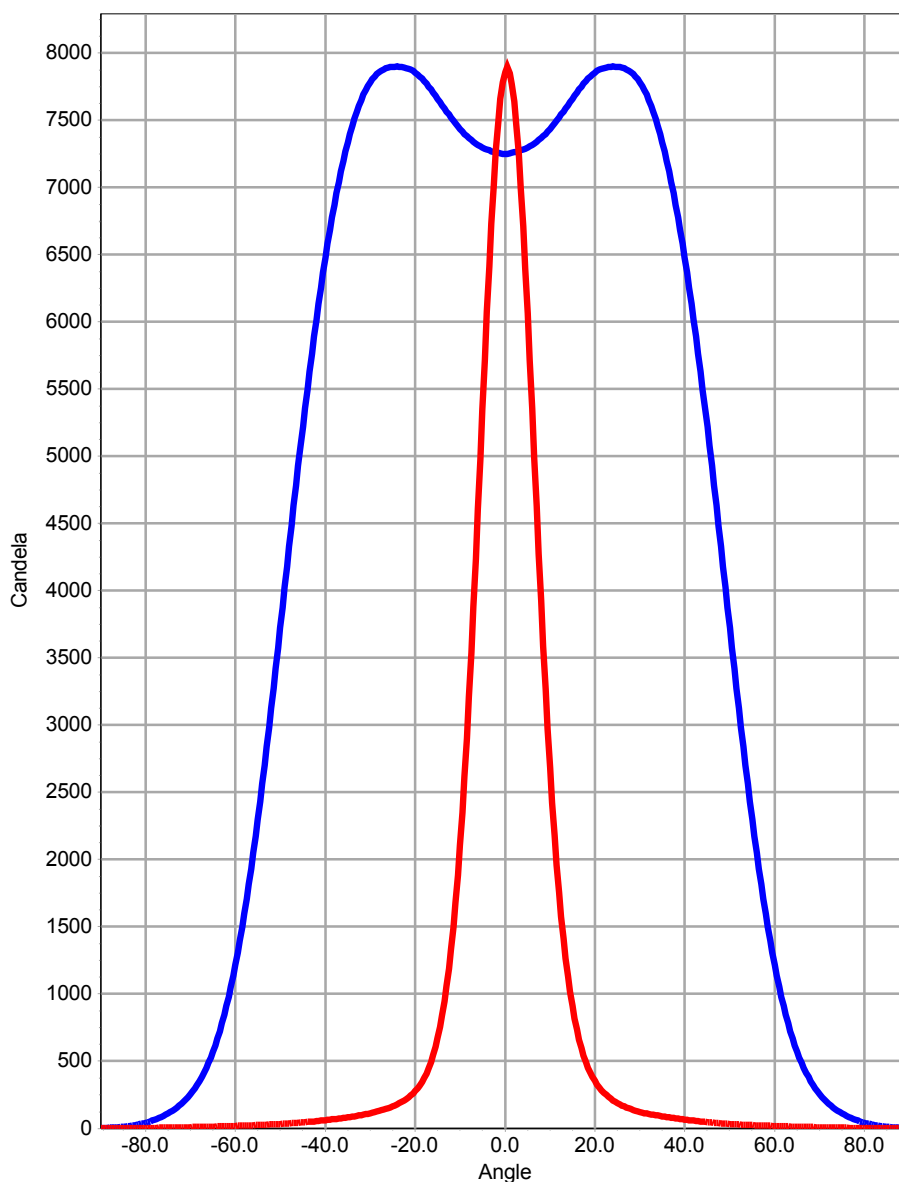
## Photometric Report: S1607052-R1

Prepared for: Lumenpulse · Test Date: 05 July 2016

Floodlight: LUMENFACADE · Lumcat: LOG-HO-120-48-40K-10x90-SI-NO

### Maximum Candela Trace (Max. Location: 25.0 H, 0.5 V)

Horizontal Angles	Candela
-90.0	3
-85.0	12
-80.0	42
-75.0	110
-70.0	253
-65.0	571
-60.0	1218
-55.0	2299
-50.0	3724
-45.0	5220
-40.0	6476
-35.0	7335
-30.0	7783
-25.0	7897
-20.0	7855
-15.0	7661
-10.0	7435
-5.0	7297
0.0	7248
5.0	7297
10.0	7435
15.0	7661
20.0	7855
25.0	7897
30.0	7783
35.0	7335
40.0	6476
45.0	5220
50.0	3724
55.0	2299
60.0	1218
65.0	571
70.0	253
75.0	110
80.0	42
85.0	12
90.0	3



Vertical Angles	Candela
-90.0	3
-85.0	3
-80.0	4
-75.0	6
-70.0	9
-65.0	14
-60.0	19
-55.0	25
-50.0	33
-45.0	45
-40.0	61
-35.0	83
-30.0	112
-25.0	164
-20.0	277
-15.0	676
-10.0	2105
-5.0	5352
0.0	7857
5.0	6066
10.0	2683
15.0	910
20.0	353
25.0	189
30.0	122
35.0	90
40.0	66
45.0	47
50.0	33
55.0	24
60.0	18
65.0	13
70.0	9
75.0	5
80.0	3
85.0	3
90.0	3

— Horizontal — Vertical



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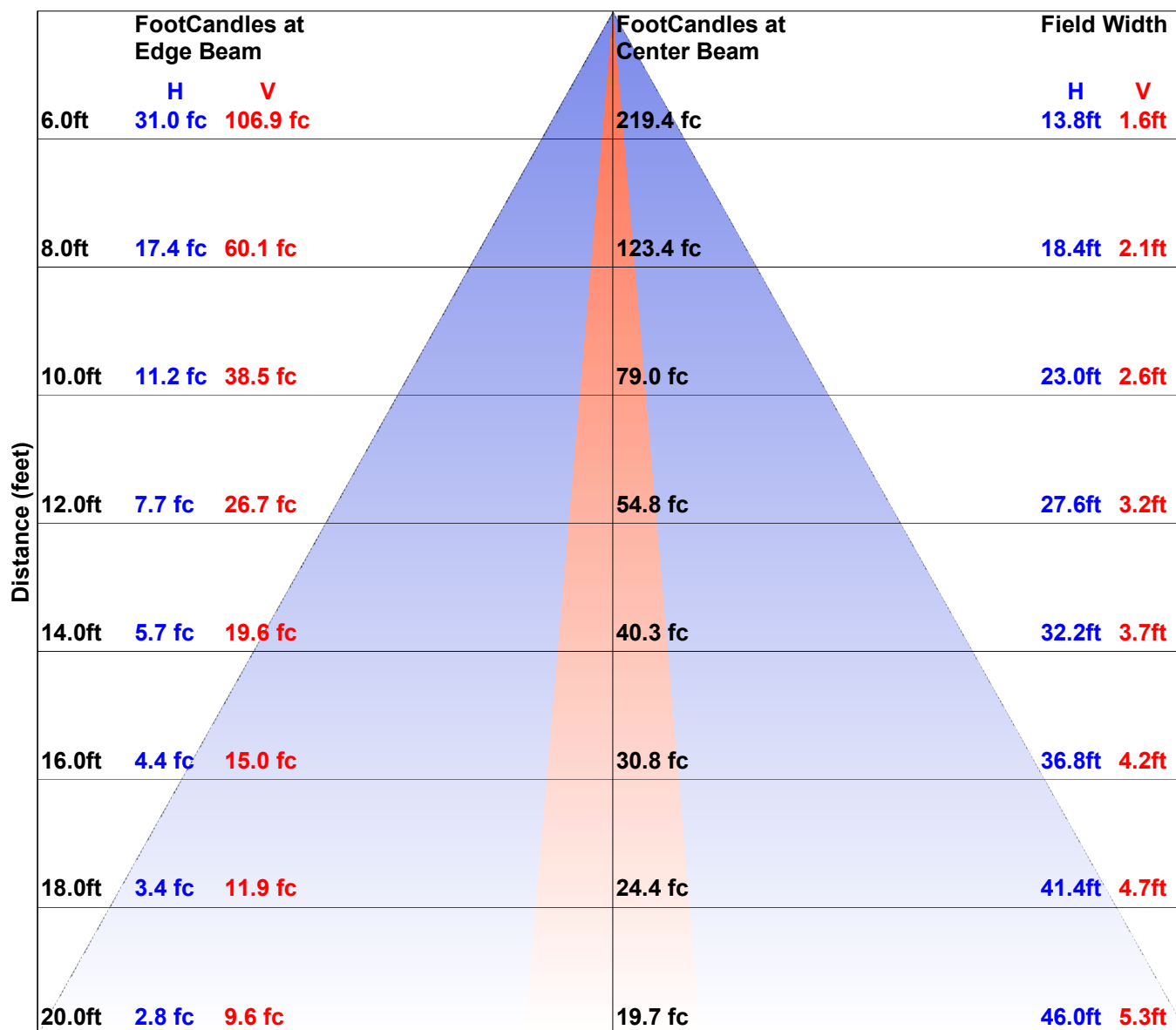
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## Photometric Report: S1607052-R1

Prepared for: Lumenpulse · Test Date: 05 July 2016

Floodlight: LUMENFACADE · Lumcat: LOG-HO-120-48-40K-10x90-SI-NO

### Downlight Beam



Horizontal (98.0 °) Vertical (15.0 °)





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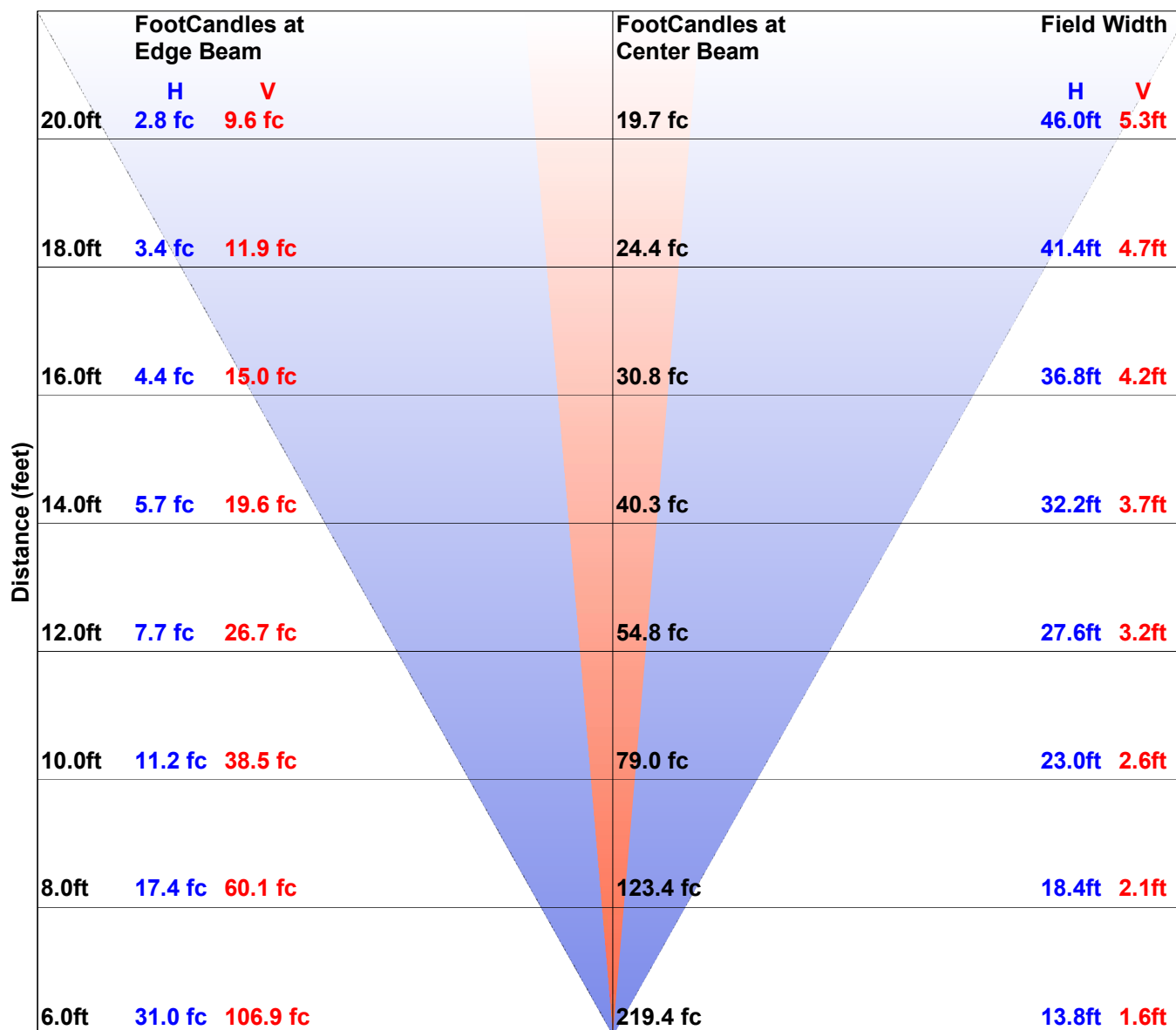
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Prepared for: Lumenpulse · Test Date: 05 July 2016

Floodlight: LUMENFACADE · Lumcat: LOG-HO-120-48-40K-10x90-SI-NO

### Uplight Beam



— Horizontal (98.0 °) — Vertical (15.0 °)



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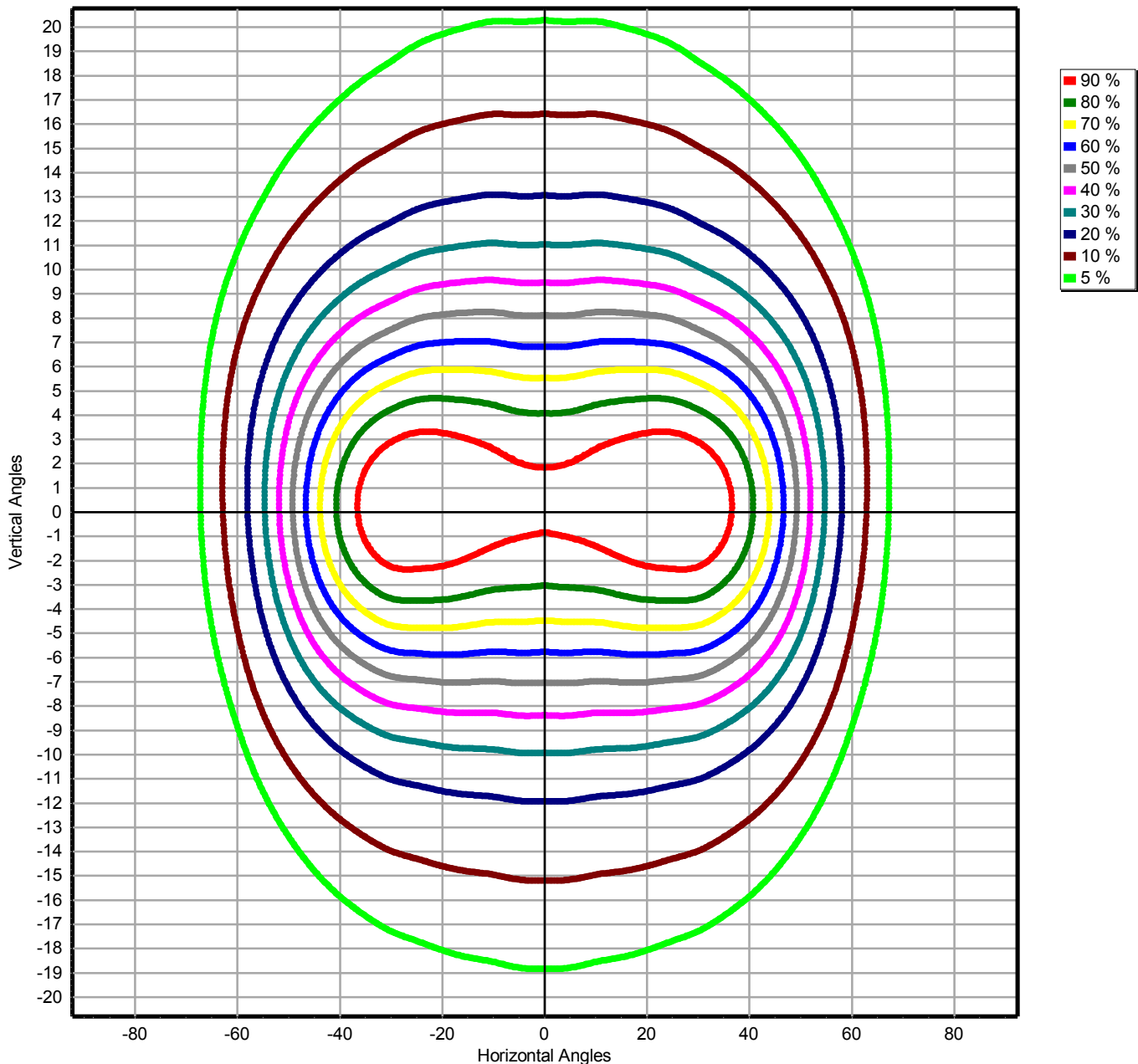
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**Photometric Report: S1607052-R1**

Prepared for: Lumenpulse · Test Date: 05 July 2016

Floodlight: LUMENFACADE · Lumcat: LOG-HO-120-48-40K-10x90-SI-NO

**ISO Candela Diagram**





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## IES File Headers

```
IESNA:LM-63-2002
[ISSUEDATE]      05 July 2016
[TESTLAB]        Spectra Lux Industries Inc.
[TEST]           S1607052-R1
[MANUFAC]        Lumenpulse
[LUMCAT]          LOG-HO-120-48-40K-10x90-SI-NO
[LUMINAIRE]       LUMENFACADE
[LAMP]           Clusters of CREE XPE2 LED's - 72W SSL c/w Mean Well Driver LPF-60-24 @ 120.00V
[_BURNING]        Axial (3,576 Luminaire Lumens)
[_REFLECTOR]      48 Collimators Acrylic
[_LENS]           Glass/Polycarbonate
[_HOUSING]        Extruded Aluminum
[DISTRIBUTION]    NEMA 6Hx3V (Max. CP at 25.0H,0.5V)
[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	3	3	3	3	3	3	3	3
	-85.0	2	2	2	3	3	3	3	3
	-75.0	6	6	6	6	6	6	6	5
	-65.0	15	15	15	15	14	14	13	11
	-55.0	28	28	28	27	26	25	24	20
	-45.0	52	51	50	49	47	45	42	35
	-35.0	94	94	92	90	87	83	79	67
	-25.0	186	186	181	177	171	164	156	133
	-20.0	330	328	316	308	295	277	261	211
	-15.0	819	815	781	758	724	676	628	468
	-12.5	1393	1390	1338	1309	1261	1186	1112	821
	-12.0	1549	1546	1491	1461	1411	1332	1252	926
	-11.5	1721	1718	1660	1631	1580	1497	1410	1046
	-11.0	1908	1906	1846	1818	1766	1679	1588	1182
	-10.5	2112	2111	2049	2023	1973	1882	1786	1337
	-10.0	2331	2332	2269	2246	2198	2105	2005	1509
	-9.5	2568	2571	2507	2489	2444	2350	2248	1702
	-9.0	2820	2824	2762	2749	2709	2616	2512	1915
A n g l e s	-8.5	3088	3095	3034	3028	2995	2904	2800	2152
	-8.0	3368	3377	3321	3324	3299	3212	3109	2407
	-7.5	3662	3674	3621	3634	3619	3539	3438	2683
	-7.0	3963	3978	3932	3957	3954	3882	3784	2975
	-6.5	4272	4291	4251	4288	4300	4238	4146	3284
	-6.0	4585	4607	4578	4629	4655	4605	4518	3606
	-5.5	4899	4924	4904	4971	5013	4977	4898	3935
	-5.0	5209	5239	5231	5314	5373	5352	5278	4269
	-4.5	5511	5543	5549	5647	5724	5718	5652	4599
	-4.0	5802	5837	5857	5971	6067	6076	6016	4922
	-3.5	6074	6114	6148	6277	6389	6414	6360	5227
	-3.0	6330	6372	6421	6564	6693	6732	6683	5515



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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	7226	7276	7406	7601	7776	7857	7777	7332	6477
	0.5	7248	7297	7435	7661	7855	7897	7783	7335	6476
	1.0	7230	7277	7424	7610	7777	7848	7736	7285	6428
	1.5	7173	7218	7370	7550	7707	7769	7637	7182	6331
	2.0	7078	7121	7275	7447	7593	7642	7488	7030	6190
	2.5	6946	6986	7143	7303	7434	7468	7292	6832	6007
	3.0	6781	6817	6973	7119	7234	7253	7055	6595	5788
	3.5	6581	6614	6769	6900	6997	6997	6778	6319	5535
	4.0	6357	6386	6536	6651	6729	6712	6472	6016	5259
	4.5	6107	6132	6276	6375	6433	6399	6140	5689	4962
A n g l e s	5.0	5838	5860	5997	6079	6118	6066	5791	5349	4653
	5.5	5551	5568	5698	5764	5784	5715	5429	4996	4334
	6.0	5253	5267	5388	5438	5440	5356	5060	4640	4015
	6.5	4946	4956	5068	5102	5089	4992	4689	4284	3696
	7.0	4636	4643	4746	4766	4738	4629	4326	3936	3386
	7.5	4326	4329	4423	4430	4388	4271	3969	3598	3086
	8.0	4019	4020	4104	4099	4048	3924	3626	3275	2801
	8.5	3717	3716	3792	3777	3717	3588	3298	2968	2530
	9.0	3425	3422	3488	3464	3398	3269	2989	2679	2278
	9.5	3144	3139	3198	3168	3097	2967	2699	2411	2045
	10.0	2877	2871	2920	2885	2811	2683	2430	2164	1831
	10.5	2625	2616	2660	2622	2546	2422	2183	1937	1636
	11.0	2386	2378	2416	2374	2299	2180	1957	1732	1459
	11.5	2166	2157	2190	2147	2073	1959	1752	1547	1302
	12.0	1961	1950	1979	1935	1864	1756	1566	1379	1159
	12.5	1773	1763	1787	1743	1675	1574	1399	1231	1034
	15.0	1059	1050	1060	1026	977	910	804	705	594
	20.0	413	410	411	396	377	353	317	284	248
	25.0	215	213	212	207	199	189	175	162	147
	35.0	101	101	100	98	94	90	84	78	72
	45.0	52	52	52	51	49	47	44	40	37
	55.0	27	27	27	26	26	24	23	21	20
	65.0	14	14	14	14	13	13	12	11	10
	75.0	6	6	6	6	5	5	5	5	5
	85.0	2	2	2	2	2	3	2	3	3
	90.0	3	3	3	3	3	3	3	3	3



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## Horizontal Angles

	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
<b>V e r t i c a l</b>	-90.0	3	3	3	3	3	3	3	3
	-85.0	3	3	4	4	4	4	4	4
	-75.0	5	5	5	5	4	4	4	5
	-65.0	10	9	8	7	6	5	5	5
	-55.0	18	16	14	11	9	7	5	4
	-45.0	32	27	23	19	14	10	5	4
	-35.0	60	52	43	34	25	18	11	6
	-25.0	119	104	88	70	52	35	21	10
	-20.0	183	155	126	98	72	48	28	13
	-15.0	379	291	214	150	103	67	39	18
	-12.5	648	476	326	207	132	81	46	21
	-12.0	730	532	359	225	140	85	48	22
	-11.5	823	597	398	244	149	89	50	23
	-11.0	929	670	441	265	159	94	52	24
	-10.5	1050	753	491	291	171	99	54	25
	-10.0	1185	847	547	318	184	104	56	26
	-9.5	1338	953	610	349	198	110	59	27
	-9.0	1507	1071	681	385	213	117	61	28
	-8.5	1695	1202	758	423	231	124	65	29
	-8.0	1898	1344	843	465	249	132	67	30
<b>A n g l e s</b>	-7.5	2120	1499	935	510	269	140	70	31
	-7.0	2355	1664	1032	559	290	148	74	32
	-6.5	2604	1839	1136	610	312	157	77	33
	-6.0	2864	2022	1244	664	336	167	80	34
	-5.5	3132	2211	1356	719	360	176	84	35
	-5.0	3403	2402	1470	776	384	185	87	36
	-4.5	3672	2592	1583	833	408	194	90	37
	-4.0	3936	2779	1695	888	432	203	94	38
	-3.5	4185	2957	1802	942	454	212	96	39
	-3.0	4422	3126	1905	995	476	220	99	40
	-2.5	4634	3279	1998	1043	497	227	102	40
	-2.0	4820	3414	2082	1087	515	234	104	41
	-1.5	4974	3527	2154	1127	531	240	105	41
	-1.0	5094	3616	2213	1159	545	244	107	42
	-0.5	5176	3680	2257	1186	557	248	108	42
	0.0	5218	3716	2286	1206	565	251	109	42
	0.5	5220	3724	2299	1218	571	253	110	42
	1.0	5181	3704	2295	1222	574	254	110	42
	1.5	5104	3656	2275	1218	574	254	109	42
	2.0	4990	3582	2239	1207	571	253	109	42
	2.5	4842	3483	2187	1187	565	251	108	42
	3.0	4663	3362	2122	1161	556	248	107	42
	3.5	4458	3221	2043	1127	544	244	106	41
	4.0	4233	3065	1954	1088	529	240	105	41
	4.5	3991	2896	1855	1043	513	234	103	40
	5.0	3740	2719	1751	993	494	228	101	39
	5.5	3480	2535	1641	940	473	220	98	39
	6.0	3220	2350	1529	885	450	213	96	38
	6.5	2961	2165	1416	827	427	204	93	37
	7.0	2710	1985	1305	770	402	195	90	36
	7.5	2467	1810	1196	713	377	186	86	35
	8.0	2236	1644	1091	656	352	176	83	34
	8.5	2018	1486	991	602	328	166	79	33
	9.0	1815	1339	898	551	304	157	76	32



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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  A n g l e s	9.5	1628	1203	811	502	281	147	72	30	8
	10.0	1456	1078	730	457	259	138	69	29	8
	10.5	1301	965	658	416	239	130	66	28	8
	11.0	1161	863	591	377	220	121	62	27	8
	11.5	1035	772	532	343	203	114	59	26	7
	12.0	923	690	479	312	188	107	56	25	7
	12.5	824	619	432	285	174	101	54	24	7
	15.0	479	370	270	189	125	78	43	19	6
	20.0	212	177	142	110	80	53	31	14	5
	25.0	130	113	95	76	57	39	23	11	4
	35.0	64	56	47	38	29	20	12	7	5
	45.0	32	28	24	19	15	11	8	6	5
	55.0	18	15	13	11	9	7	6	5	5
	65.0	9	8	7	6	5	5	5	5	4
	75.0	4	4	4	4	4	5	4	4	5
	85.0	3	3	3	3	3	4	4	4	4
	90.0	3	3	3	3	3	3	3	3	3



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## Horizontal Angles

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



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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
V e r t i c a l	25.0
	35.0
	45.0
	55.0
	65.0
	75.0
	85.0
	90.0
A n g l e s	