



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	S1607064-R1	Description	72W White 4000K SSL	Type Commercial
Test Date	6 July 2016	Serial Number	SRIS 2437	Description 71SSL-CY1101
Report Date	8 July 2016	Photometric Method	Absolute	Manufacturer Mean Well
Ambient	25.1 °C	Lamp Lumens	-1	Catalog No. LPF-60-24
Humidity	42.4 %	Test Position	Axial	Voltage Tap 120.00 V
Lamp Type	SSL	Comments	Clusters of CREE XPE2 LED's	Power Factor 0.9900

Floodlight Data

General Information		Optics	Aperture (feet)	
Manufacturer	Lumenpulse	Reflector	48 Collimators Acrylic	X 4.0000
Name	LUMENFACADE	Housing	Extruded Aluminum	Y 0.1667
Catalog No.	LOG-HO-120-48-40K- 30x30-SI-NO	Lens	Glass/Polycarbonate	Z 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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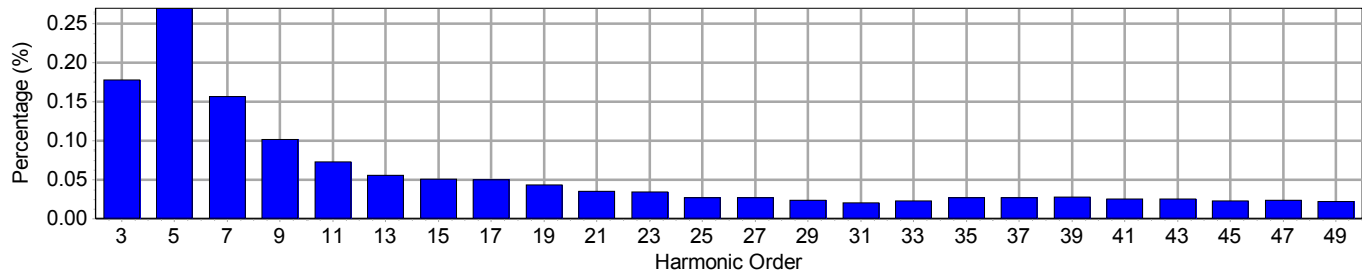
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Electrical Measurements

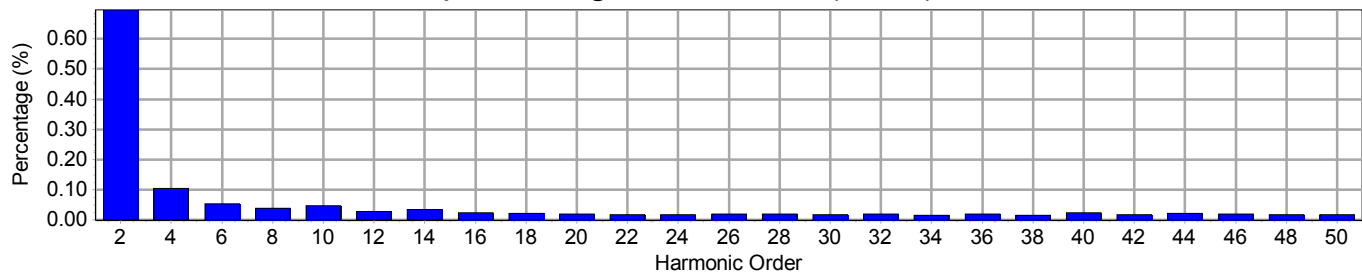
Input

Frequency	60 Hz	Active Power	62.12 W	THDV [ANSI]	0.82 %
Voltage	120.1 V(rms)	Apparent Power	62.55 VA	THDA [ANSI]	4.67 %
Current	0.5209 A(rms)	Power Factor	0.993	Max. Harmonic At	5th order

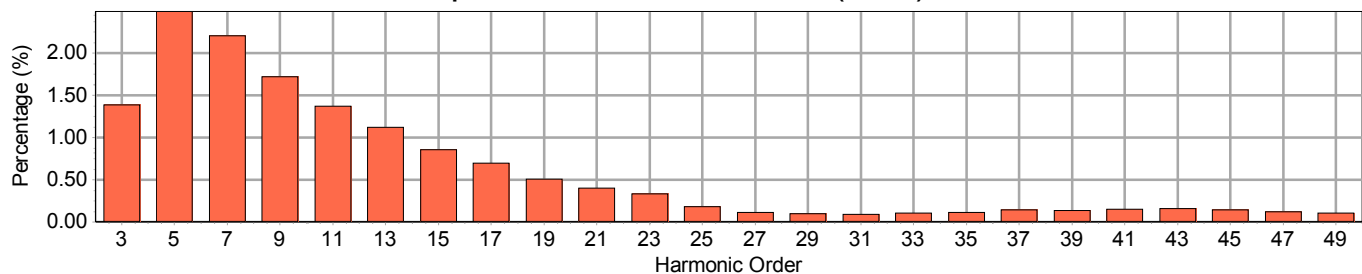
Input Voltage Harmonics (Odd)



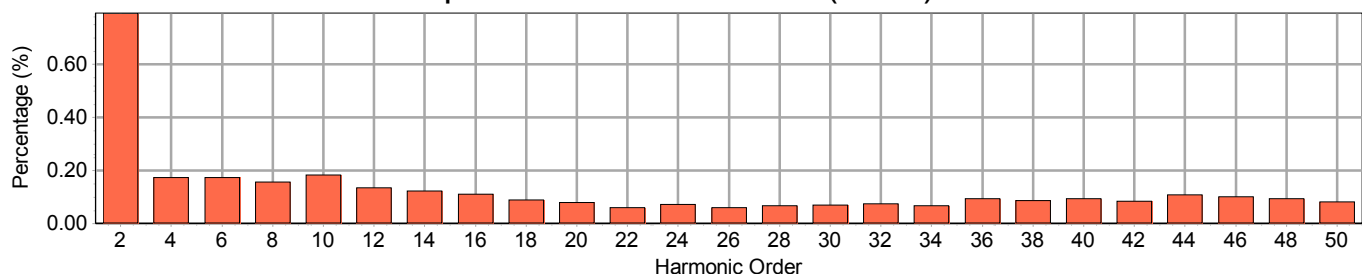
Input Voltage Harmonics (Even)



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	0.795
3	180	0.178	1.383	4	240	0.106	0.172
5	300	0.270	2.499	6	360	0.055	0.174
7	420	0.156	2.205	8	480	0.039	0.157
9	540	0.102	1.722	10	600	0.048	0.183
11	660	0.073	1.374	12	720	0.029	0.134
13	780	0.055	1.118	14	840	0.034	0.122
15	900	0.050	0.853	16	960	0.024	0.111
17	1020	0.050	0.693	18	1080	0.023	0.088
19	1140	0.043	0.507	20	1200	0.021	0.077
21	1260	0.035	0.395	22	1320	0.019	0.060
23	1380	0.034	0.330	24	1440	0.019	0.070
25	1500	0.027	0.180	26	1560	0.021	0.058
27	1620	0.026	0.107	28	1680	0.019	0.067
29	1740	0.023	0.095	30	1800	0.017	0.068
31	1860	0.020	0.088	32	1920	0.020	0.074
33	1980	0.023	0.104	34	2040	0.016	0.066
35	2100	0.027	0.109	36	2160	0.020	0.093
37	2220	0.027	0.138	38	2280	0.015	0.086
39	2340	0.027	0.132	40	2400	0.024	0.093
41	2460	0.025	0.145	42	2520	0.017	0.084
43	2580	0.025	0.153	44	2640	0.023	0.107
45	2700	0.022	0.143	46	2760	0.020	0.101
47	2820	0.023	0.116	48	2880	0.019	0.093
49	2940	0.022	0.101	50	3000	0.018	0.082



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Photometric Report: S1607064-R1

Prepared for: Lumenpulse · Test Date: 06 July 2016

Floodlight: LUMENFACADE · Lumcat: LOG-HO-120-48-40K-30x30-SI-NO

Photometric Floodlight Characteristics

Nominal SSL Power	72.00 W	
Measured Input Voltage	120.07 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	3765	
Measured Input Power	62.12 W	
Floodlight Luminous Efficacy	60.6 lm/W	2) Field performance may differ from laboratory measurements.
Maximum Candela Value	14726	
Maximum Candela Location	0.0 H, -4.0 V	3) Results are valid for the tested material only.
Horizontal Beam Angle (50%)	28.0 °	
Vertical Beam Angle (50%)	25.5 °	4) All data published in this report are based on absolute photometry.
Horizontal Field Angle (10%)	51.0 °	
Vertical Field Angle (10%)	46.0 °	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	4Hx4V	
Beam Lumens (50%)	1856	
Beam Efficiency (50%)	N/A	
Field Lumens (10%)	3240	
Field Efficiency (10%)	N/A	
Spill Lumens	526	
Total Floodlight Lumens	3765	
Total Floodlight Efficiency	N/A	



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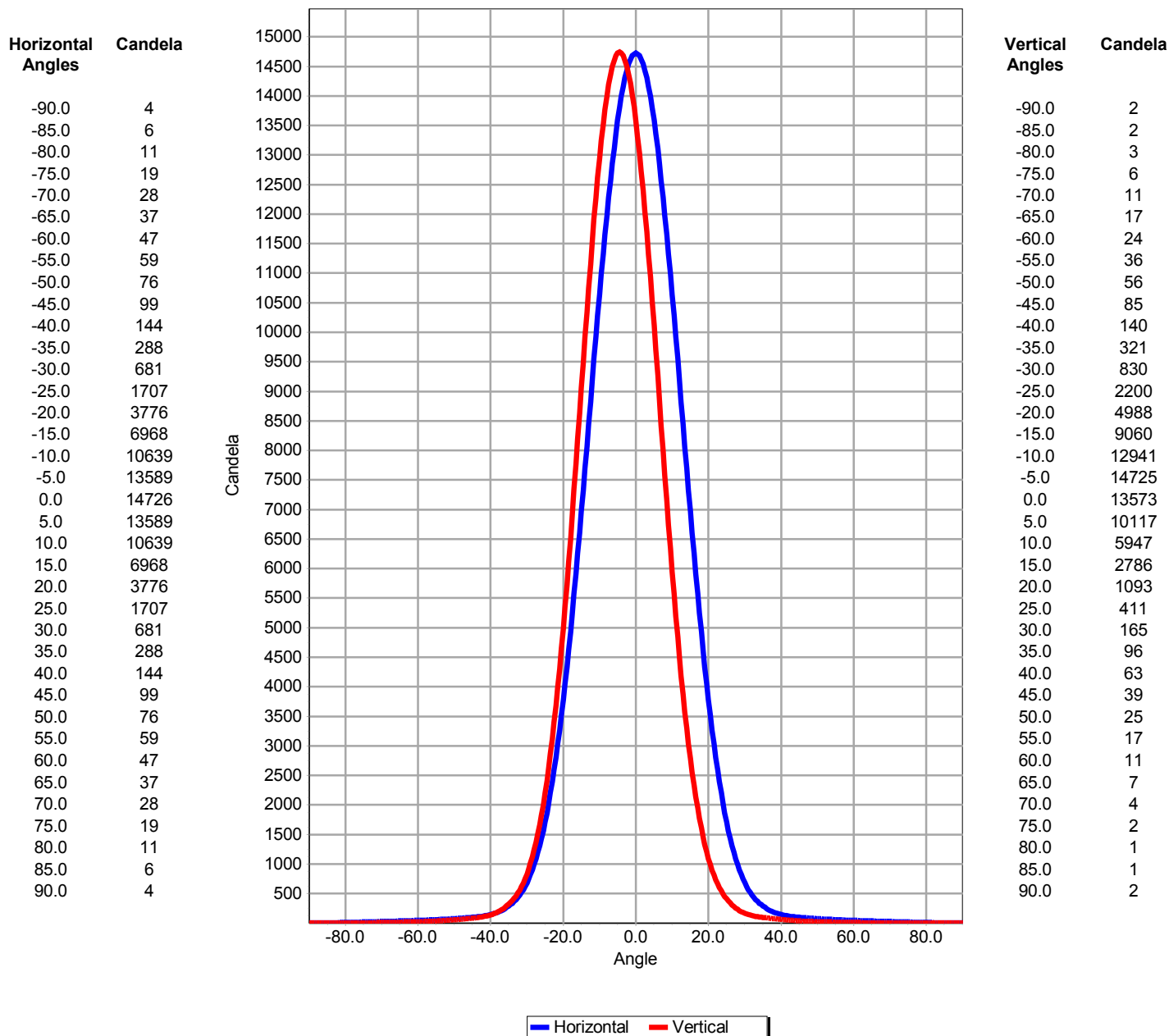
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Maximum Candela Trace (Max. Location: 0.0 H, -4.0 V)





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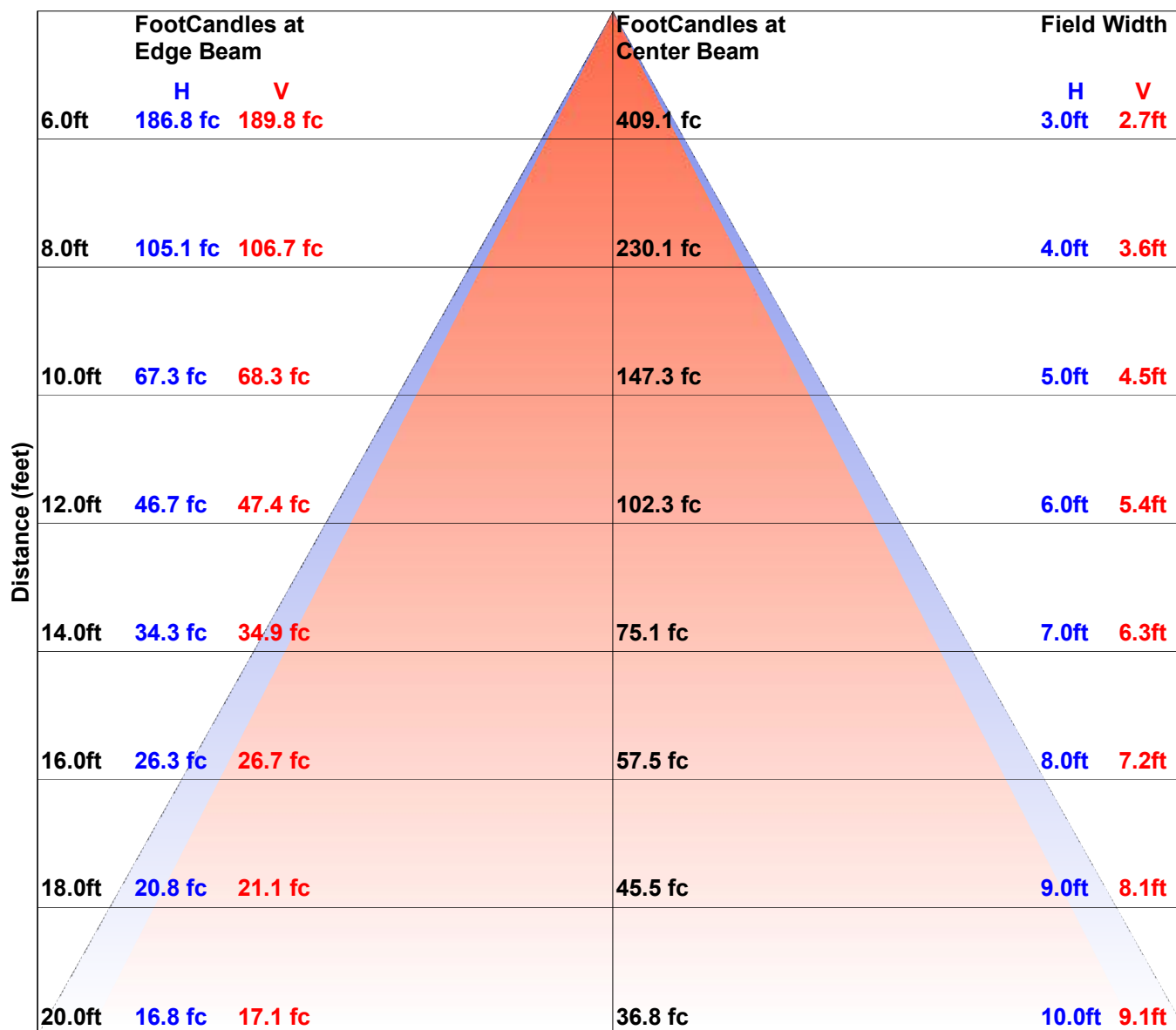
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Prepared for: Lumenpulse · Test Date: 06 July 2016

Floodlight: LUMENFACADE · Lumcat: LOG-HO-120-48-40K-30x30-SI-NO

Downlight Beam



— Horizontal (28.0 °) — Vertical (25.5 °)



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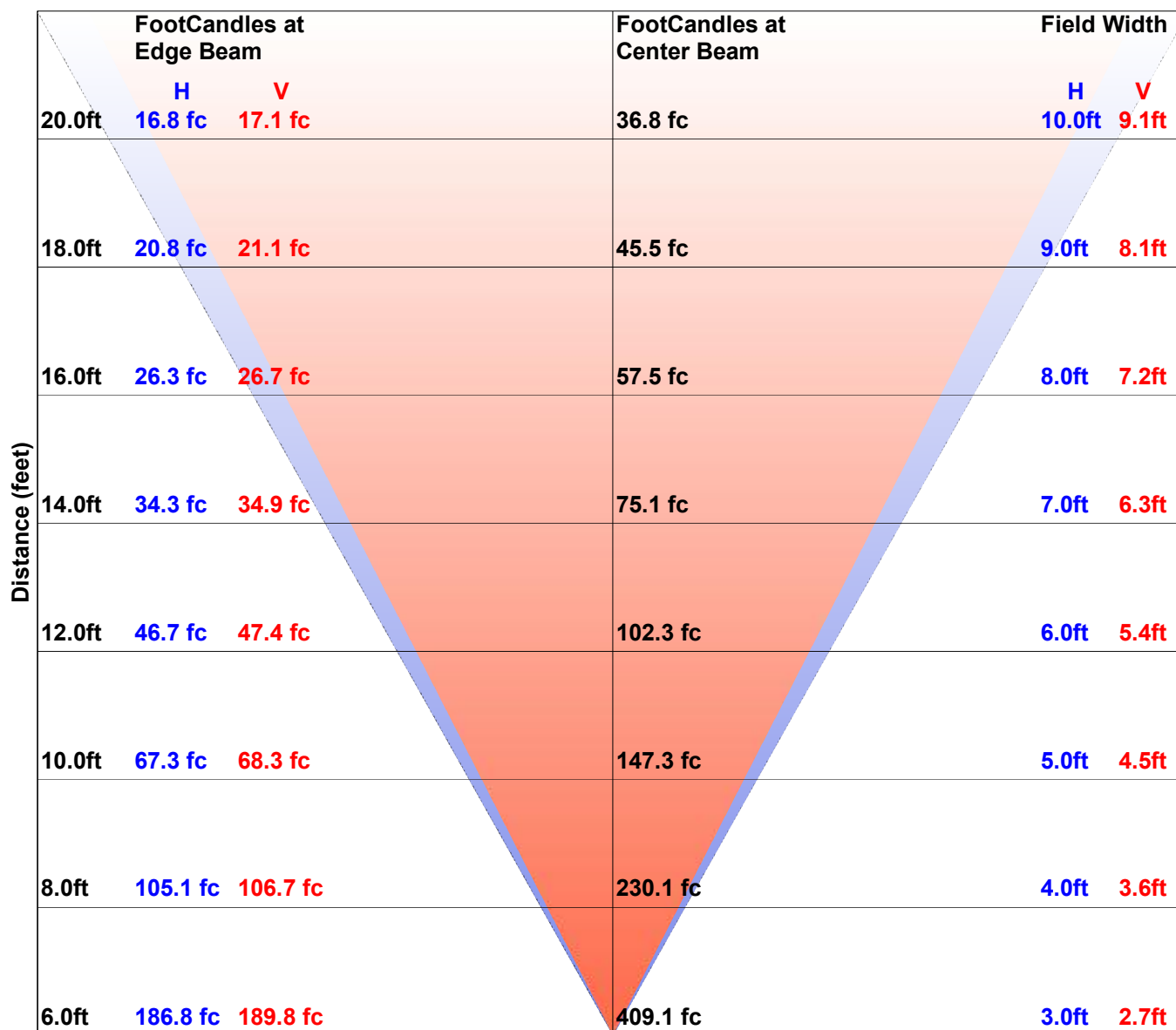
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Photometric Report: S1607064-R1

Prepared for: Lumenpulse · Test Date: 06 July 2016

Floodlight: LUMENFACADE · Lumcat: LOG-HO-120-48-40K-30x30-SI-NO

Uplight Beam



— Horizontal (28.0 °) — Vertical (25.5 °)



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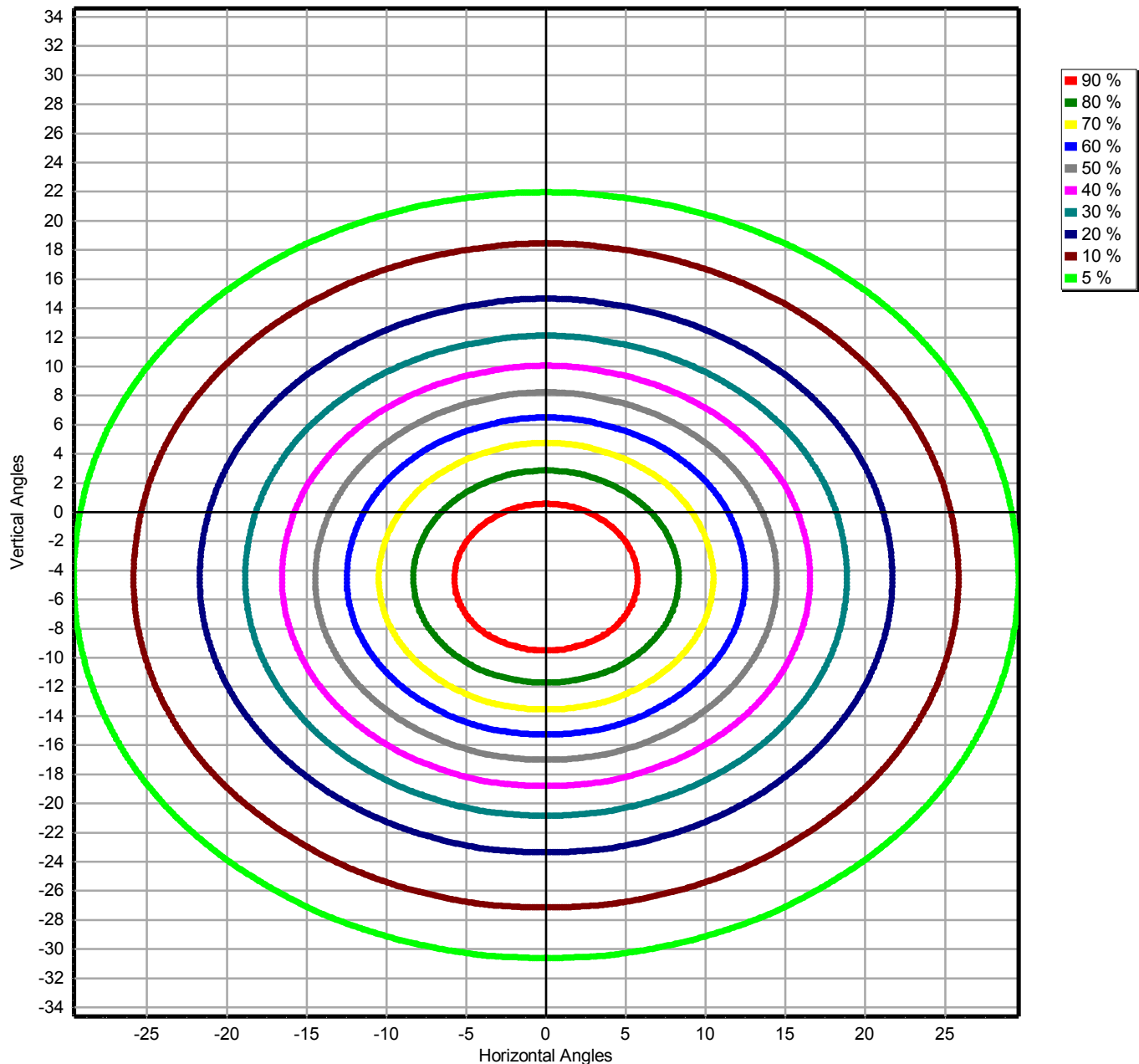
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Prepared for: Lumenpulse · Test Date: 06 July 2016

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ISO Candela Diagram





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IES File Headers

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IESNA:LM-63-2002
[ISSUEDATE]      06 July 2016
[TESTLAB]        Spectra Lux Industries Inc.
[TEST]           S1607064-R1
[MANUFAC]        Lumenpulse
[LUMCAT]          LOG-HO-120-48-40K-30x30-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 (3,765 Luminaire Lumens)
[_REFLECTOR]      48 Collimators Acrylic
[_LENS]           Glass/Polycarbonate
[_HOUSING]        Extruded Aluminum
[DISTRIBUTION]    NEMA 4Hx4V (Max. CP at 0.0H,-4.0V)
[MORE]           (Based on IES LM-35-1989)
```

Candela Table

Horizontal Angles

	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
V e r t i c a l	-90.0	2	2	2	2	2	2	2	2
	-85.0	2	2	2	3	3	3	3	2
	-75.0	6	7	7	7	7	6	7	7
	-65.0	17	17	18	17	17	17	17	17
	-55.0	36	37	36	36	36	36	36	36
	-45.0	85	86	86	85	85	84	83	82
	-35.0	321	321	319	317	313	307	300	291
	-25.0	2200	2201	2178	2150	2107	2037	1966	1873
	-22.5	3395	3394	3357	3313	3245	3136	3024	2878
	-20.0	4988	4985	4931	4864	4763	4604	4439	4227
A n g l e s	-19.0	5729	5726	5665	5587	5469	5288	5099	4857
	-18.0	6516	6514	6444	6354	6220	6016	5801	5528
	-17.0	7348	7343	7265	7163	7012	6784	6543	6238
	-16.0	8198	8194	8106	7990	7823	7571	7303	6967
	-15.0	9060	9050	8956	8827	8641	8368	8071	7704
	-14.0	9920	9907	9802	9661	9457	9160	8838	8439
	-13.0	10748	10732	10621	10467	10244	9927	9577	9153
	-12.0	11538	11519	11401	11232	10995	10659	10285	9834
	-11.0	12277	12253	12129	11949	11697	11342	10944	10469
	-10.0	12941	12914	12784	12593	12325	11956	11537	11040
	-9.0	13518	13487	13353	13151	12871	12489	12053	11537
	-8.0	13997	13961	13824	13613	13321	12930	12479	11951
	-7.0	14360	14321	14182	13962	13661	13263	12800	12263
	-6.0	14605	14564	14423	14196	13888	13486	13015	12473
	-5.0	14725	14683	14541	14311	13998	13595	13119	12577
	-4.0	14726	14679	14539	14306	13990	13589	13113	12572
	-3.0	14604	14555	14417	14184	13866	13472	12998	12464
	-2.0	14368	14317	14182	13950	13634	13248	12780	12256
	-1.0	14023	13969	13839	13609	13298	12922	12464	11954
	0.0	13573	13518	13392	13166	12861	12498	12054	11562
	1.0	13028	12974	12851	12631	12334	11986	11559	11088
	2.0	12400	12346	12230	12017	11730	11400	10991	10543
	3.0	11694	11641	11531	11327	11051	10743	10352	9931
	4.0	10931	10877	10775	10580	10319	10031	9665	9270
	5.0	10117	10067	9972	9788	9540	9276	8936	8571
									8141



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Horizontal Angles

	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
V e r t i c a l	6.0	9272	9224	9138	8967	8733	8493	8179	7450
	7.0	8421	8376	8296	8138	7920	7706	7418	6753
	8.0	7571	7529	7457	7313	7114	6921	6660	6062
	9.0	6740	6701	6638	6507	6326	6157	5924	5390
	10.0	5947	5912	5857	5738	5574	5427	5220	4749
	11.0	5197	5166	5117	5013	4869	4741	4560	4147
	12.0	4503	4477	4436	4343	4217	4106	3950	3592
	13.0	3871	3848	3812	3732	3622	3529	3395	3088
	14.0	3298	3277	3248	3178	3084	3005	2891	2632
	15.0	2786	2769	2744	2686	2606	2540	2444	2227
	16.0	2336	2322	2302	2254	2186	2132	2052	1873
	17.0	1948	1935	1918	1878	1822	1778	1712	1565
	18.0	1612	1602	1589	1556	1510	1475	1421	1301
	19.0	1330	1322	1311	1284	1248	1218	1176	1079
	20.0	1093	1086	1077	1056	1027	1003	968	892
	22.5	664	660	656	644	628	615	595	554
	25.0	411	409	406	400	392	385	374	352
	35.0	96	96	96	95	95	94	92	91
A n g l e s	45.0	39	38	39	38	38	38	38	38
	55.0	17	16	17	16	16	16	16	16
	65.0	7	7	7	7	7	7	7	7
	75.0	2	2	2	2	2	3	2	2
	85.0	1	1	1	1	1	1	2	2
	90.0	2	2	2	2	2	2	2	2



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Horizontal Angles

	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
V e r t i c a l	-90.0	2	2	2	2	2	2	2	2
	-85.0	2	2	2	2	2	2	2	2
	-75.0	7	6	6	7	6	7	6	7
	-65.0	17	17	16	16	16	17	16	16
	-55.0	36	35	35	35	34	34	34	33
	-45.0	81	81	79	78	77	76	73	72
	-35.0	274	263	253	243	232	222	211	200
	-25.0	1689	1582	1475	1370	1263	1159	1052	953
	-22.5	2587	2421	2252	2084	1916	1750	1581	1425
	-20.0	3797	3551	3301	3050	2799	2551	2299	2066
	-19.0	4362	4080	3794	3504	3214	2926	2637	2369
	-18.0	4966	4643	4320	3990	3658	3330	3001	2693
	-17.0	5604	5243	4876	4504	4131	3759	3388	3039
	-16.0	6260	5857	5450	5036	4617	4202	3787	3397
	-15.0	6926	6483	6033	5576	5112	4655	4196	3762
	-14.0	7589	7108	6617	6117	5610	5108	4605	4130
	-13.0	8231	7714	7185	6643	6093	5549	5006	4490
	-12.0	8848	8294	7728	7146	6558	5975	5392	4836
	-11.0	9423	8838	8237	7618	6993	6373	5754	5162
	-10.0	9940	9327	8696	8045	7385	6733	6081	5457
A n g l e s	-9.0	10391	9753	9096	8416	7728	7046	6366	5714
	-8.0	10762	10106	9426	8723	8012	7306	6605	5929
	-7.0	11045	10375	9677	8957	8227	7503	6786	6092
	-6.0	11234	10554	9847	9114	8373	7635	6908	6203
	-5.0	11326	10642	9930	9191	8444	7699	6968	6258
	-4.0	11323	10639	9927	9187	8441	7695	6968	6257
	-3.0	11223	10545	9839	9105	8366	7625	6908	6202
	-2.0	11035	10367	9672	8950	8223	7493	6789	6096
	-1.0	10758	10107	9429	8723	8014	7300	6617	5941
	0.0	10400	9771	9113	8429	7742	7052	6393	5740
	1.0	9970	9364	8731	8075	7416	6753	6122	5496
	2.0	9474	8898	8294	7668	7042	6410	5813	5218
	3.0	8920	8375	7804	7213	6622	6027	5466	4906
	4.0	8322	7811	7276	6723	6173	5615	5094	4571
	5.0	7688	7214	6718	6206	5696	5181	4700	4218
	6.0	7033	6598	6143	5673	5207	4734	4295	3855
	7.0	6376	5979	5565	5138	4715	4286	3890	3491
	8.0	5722	5364	4991	4608	4229	3844	3490	3134
	9.0	5087	4767	4434	4094	3756	3416	3102	2787
	10.0	4482	4201	3907	3607	3311	3010	2737	2459
	11.0	3915	3669	3412	3151	2893	2630	2394	2153
	12.0	3391	3178	2957	2731	2508	2282	2080	1872
	13.0	2915	2733	2543	2351	2160	1967	1795	1618
	14.0	2486	2332	2170	2007	1847	1685	1540	1390
	15.0	2103	1975	1840	1704	1570	1433	1312	1187
	16.0	1770	1663	1551	1438	1327	1215	1114	1010
	17.0	1479	1392	1301	1208	1117	1024	942	857
	18.0	1232	1161	1086	1010	936	861	794	724
	19.0	1022	966	906	844	785	723	669	613
	20.0	845	800	752	703	655	606	564	518
	22.5	528	503	477	449	423	396	371	347
	25.0	338	325	310	296	281	266	253	239
	35.0	90	89	87	86	85	83	82	80
	45.0	38	37	37	37	36	36	35	34



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Horizontal Angles

	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
55.0	16	16	16	16	15	16	16	15	16
65.0	6	6	7	6	7	7	7	7	7
75.0	2	2	2	2	2	3	2	2	2
85.0	1	1	1	1	1	1	1	1	2
90.0	2	2	2	2	2	2	2	2	2

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2750 Sabourin, Saint-Laurent (Quebec) H4S 1M2 Canada
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ISO/IEC 17025



NVLAP LAB CODE: 200899-0

Horizontal Angles

	18.0	19.0	20.0	22.5	25.0	35.0	45.0	55.0	65.0
V e r t i c a l A n g l e s	-90.0	2	2	2	2	2	2	2	2
	-85.0	3	2	3	2	3	4	6	7
	-75.0	7	7	7	7	6	7	8	8
	-65.0	16	16	16	16	16	14	14	12
	-55.0	33	32	33	32	31	27	23	18
	-45.0	71	69	68	65	62	48	38	27
	-35.0	180	171	163	143	126	81	56	40
	-25.0	773	695	622	467	349	132	76	50
	-22.5	1141	1016	900	655	472	151	80	52
	-20.0	1638	1452	1278	910	635	173	84	55
	-19.0	1874	1656	1456	1028	712	182	86	56
	-18.0	2126	1877	1647	1158	794	193	88	56
	-17.0	2396	2112	1850	1295	882	202	90	57
	-16.0	2676	2357	2062	1437	972	213	91	57
	-15.0	2962	2606	2279	1583	1065	223	93	58
	-14.0	3250	2859	2498	1729	1158	233	94	58
	-13.0	3533	3106	2712	1874	1251	243	94	59
	-12.0	3805	3345	2918	2014	1340	252	96	59
	-11.0	4062	3568	3114	2146	1424	261	97	59
	-10.0	4296	3773	3291	2266	1500	268	97	60
	-9.0	4499	3952	3447	2372	1567	275	98	59
	-8.0	4669	4101	3577	2459	1623	281	99	60
	-7.0	4799	4214	3676	2526	1665	285	99	60
	-6.0	4887	4291	3743	2572	1693	288	99	60
	-5.0	4931	4329	3777	2595	1709	289	98	59
	-4.0	4932	4329	3776	2594	1707	288	99	59
	-3.0	4888	4290	3743	2571	1692	288	99	60
	-2.0	4803	4217	3678	2527	1663	284	98	60
	-1.0	4682	4109	3585	2464	1624	281	98	59
	0.0	4522	3968	3462	2382	1571	276	98	59
	1.0	4330	3800	3316	2283	1508	269	96	59
	2.0	4110	3607	3148	2169	1436	263	96	59
	3.0	3865	3391	2961	2042	1356	254	95	59
	4.0	3601	3161	2761	1907	1270	246	94	58
	5.0	3324	2918	2551	1766	1179	236	93	58
	6.0	3040	2669	2335	1619	1086	226	92	57
	7.0	2756	2420	2118	1475	994	216	91	56
	8.0	2475	2176	1906	1331	903	206	89	56
	9.0	2205	1939	1701	1194	816	196	88	56
	10.0	1949	1717	1509	1065	733	186	86	55
	11.0	1710	1508	1329	943	656	176	85	54
	12.0	1492	1318	1162	832	584	167	83	54
	13.0	1294	1145	1014	732	520	159	82	53
	14.0	1115	990	880	641	461	150	80	52
	15.0	958	853	761	560	410	142	77	51
	16.0	820	733	656	489	363	135	76	51
	17.0	700	628	564	428	322	129	74	50
	18.0	597	538	486	374	287	122	73	49
	19.0	510	462	420	327	256	116	71	47
	20.0	435	396	363	288	229	110	68	46
	22.5	298	276	257	212	176	97	64	43
	25.0	212	199	187	161	140	86	59	40
	35.0	77	75	73	69	65	51	39	27
	45.0	35	34	34	32	32	27	22	18



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Horizontal Angles

	18.0	19.0	20.0	22.5	25.0	35.0	45.0	55.0	65.0
55.0	15	14	15	15	15	13	12	11	8
65.0	6	7	7	6	6	6	8	8	7
75.0	2	2	3	2	3	4	6	7	6
85.0	2	1	2	2	2	4	5	6	6
90.0	2	2	2	2	2	2	2	2	2

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Horizontal Angles

	75.0	85.0	90.0
V e r t i c a l	-90.0	2	2
	-85.0	5	4
	-75.0	6	4
	-65.0	6	4
	-55.0	7	5
	-45.0	8	4
	-35.0	11	4
	-25.0	15	5
	-22.5	15	5
	-20.0	16	5
	-19.0	16	5
	-18.0	17	5
	-17.0	18	5
	-16.0	17	5
	-15.0	18	6
	-14.0	18	5
	-13.0	18	5
	-12.0	18	5
	-11.0	18	5
	-10.0	18	6
A n g l e s	-9.0	18	6
	-8.0	18	6
	-7.0	19	6
	-6.0	18	6
	-5.0	18	6
	-4.0	19	6
	-3.0	18	6
	-2.0	18	5
	-1.0	18	6
	0.0	18	6
	1.0	18	6
	2.0	18	6
	3.0	18	6
	4.0	17	6
	5.0	18	5
	6.0	17	5
	7.0	17	5
	8.0	17	6
	9.0	17	5
	10.0	16	5
	11.0	16	5
	12.0	16	5
	13.0	15	5
	14.0	15	5
	15.0	15	4
	16.0	14	5
	17.0	13	4
	18.0	13	5
	19.0	13	5
	20.0	13	5
	22.5	11	5
	25.0	10	4
	35.0	8	5
	45.0	6	4



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Horizontal Angles

	75.0	85.0	90.0
55.0	6	4	4
65.0	5	4	4
75.0	4	4	4
85.0	4	4	3
90.0	2	2	2

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