



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
NVLAP LAB CODE: 200899-0

Moving Mirror Goniophotometer Test Report

Standard(s): IESNA LM-15-03, 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	S1608255-R1	Description	34.5W RGB SSL	Type Commercial
Test Date	25 August 2016	Serial Number	SRIS 2544	Description 35SSL-CY1144
Report Date	30 August 2016	Photometric Method	Absolute	Manufacturer Mean Well
Ambient	24.4 °C	Lamp Lumens	-1	Catalog No. LPF-40-12
Humidity	48.9 %	Test Position	Vertical Base Down	Voltage 120.00 V
Lamp Type	SSL	Comments	Cluster of XPE-2 LED's	Power Factor 0.9900

Luminaire Data

General Information		Optics	Aperture (feet)	
Manufacturer	Lumenpulse	Reflector	None	X 2.0000
Name	LUMENFACADE INGROUND	Housing	Extruded Aluminum	Y 0.1875
Catalog No.	LOI-120/277-24-RGBA-10x60-TS0-DMX/RDM	Lens	Half Etched Flat Glass, Polycarbonate Diffuser	Z 0.0000

Lamp Stabilization Time: 1 hour 10 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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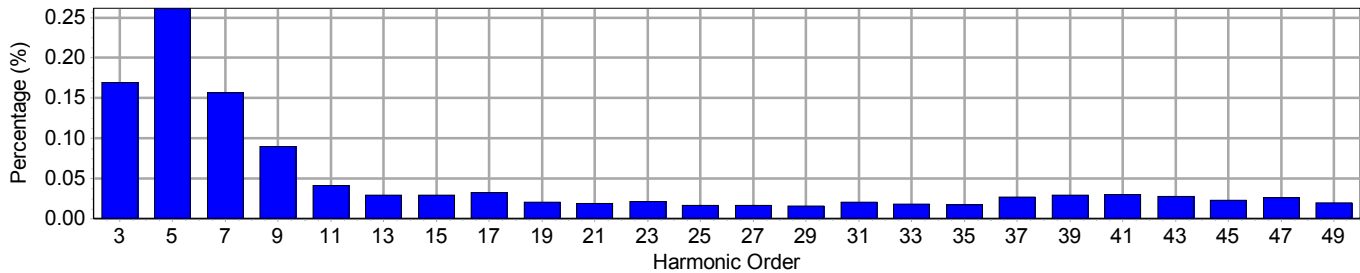
NVLAP LAB CODE: 200899-0

Electrical Measurements

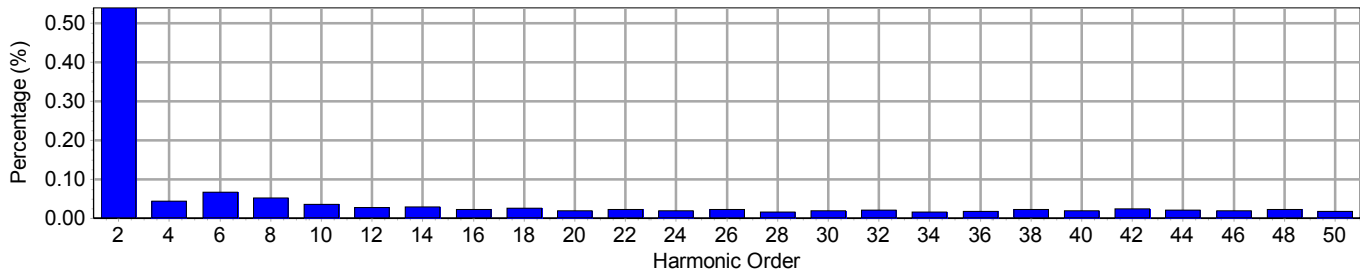
Input

Frequency	60 Hz	Active Power	32.52 W	THDV [ANSI]	0.67 %
Voltage	120.1 V(rms)	Apparent Power	33.15 VA	THDA [ANSI]	8.50 %
Current	0.2761 A(rms)	Power Factor	0.981	Max. Harmonic At	3rd order

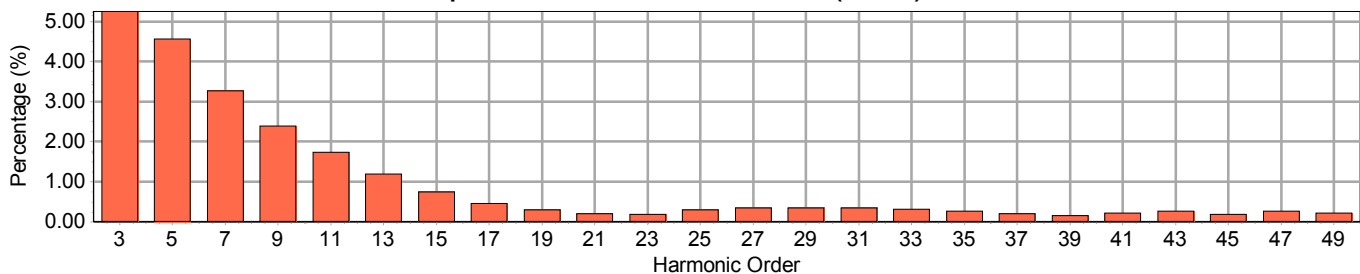
Input Voltage Harmonics (Odd)



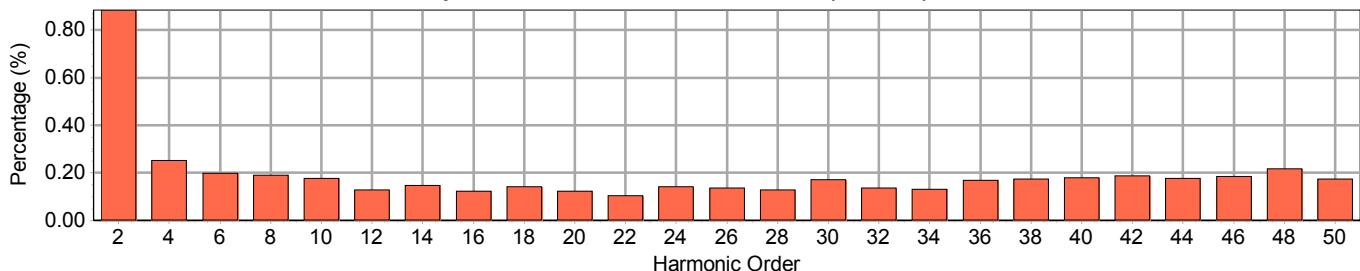
Input Voltage Harmonics (Even)



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	0.541	0.886
3	180	0.169	5.262	4	240	0.044	0.253
5	300	0.262	4.572	6	360	0.066	0.198
7	420	0.156	3.271	8	480	0.052	0.190
9	540	0.090	2.394	10	600	0.036	0.176
11	660	0.041	1.735	12	720	0.027	0.127
13	780	0.029	1.199	14	840	0.029	0.147
15	900	0.029	0.742	16	960	0.022	0.122
17	1020	0.033	0.460	18	1080	0.026	0.140
19	1140	0.020	0.297	20	1200	0.019	0.122
21	1260	0.019	0.197	22	1320	0.022	0.103
23	1380	0.021	0.181	24	1440	0.020	0.140
25	1500	0.017	0.301	26	1560	0.022	0.137
27	1620	0.016	0.337	28	1680	0.015	0.127
29	1740	0.015	0.337	30	1800	0.019	0.171
31	1860	0.020	0.351	32	1920	0.021	0.135
33	1980	0.018	0.308	34	2040	0.015	0.131
35	2100	0.017	0.260	36	2160	0.018	0.168
37	2220	0.027	0.207	38	2280	0.023	0.175
39	2340	0.029	0.157	40	2400	0.019	0.179
41	2460	0.030	0.222	42	2520	0.023	0.186
43	2580	0.028	0.268	44	2640	0.020	0.177
45	2700	0.023	0.182	46	2760	0.018	0.184
47	2820	0.026	0.270	48	2880	0.022	0.217
49	2940	0.020	0.221	50	3000	0.017	0.174



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Photometric Report: S1608255-R1

Prepared for: Lumenpulse · Test Date: 25 August 2016

Luminaire: LUMENFACADE INGROUND · Lumcat: LOI-120/277-24-RGBA-10x60-TS0-DMX/RDM

Coefficients of Utilization - Zonal Cavity Method

RCR	RC				0.9				0.8				0.7				0.5			0.1			0
	RW	0.7	0.5	0.3	0.1	0.7	0.5	0.3	0.1	0.7	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1	0
0		110	110	110	110	95	95	95	95	82	82	82	82	56	56	56	10	10	10				0
1		100	95	91	87	87	83	79	76	74	71	68	65	48	47	45	9	9	9				0
2		91	83	76	70	79	72	66	62	67	62	57	53	42	40	37	8	8	7				0
3		83	73	65	58	72	63	57	51	61	54	49	44	37	34	31	7	7	6				0
4		76	64	55	49	65	56	48	43	56	48	42	37	33	29	26	6	6	5				0
5		69	56	48	41	60	49	42	36	51	42	36	32	29	25	22	6	5	4				0
6		64	50	41	35	55	44	36	31	47	38	32	27	26	22	19	5	4	4				0
7		58	45	36	30	50	39	32	27	43	34	28	23	23	19	17	5	4	3				0
8		54	40	32	26	47	35	28	23	40	30	25	20	21	17	15	4	3	3				0
9		50	36	28	23	43	32	25	20	37	28	22	18	19	15	13	4	3	3				0
10		46	33	25	20	40	29	22	18	34	25	19	16	17	14	11	3	3	2				0

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0 - 10	0	0.02	0.02
10 - 20	0	0.05	0.05
20 - 30	0	0.05	0.05
30 - 40	0	0.03	0.03
40 - 50	0	0.03	0.03
50 - 60	0	0.03	0.03
60 - 70	0	0.04	0.04
70 - 80	0	0.05	0.05
80 - 90	0	0.02	0.02
90 - 120	33	4.13	4.13
90 - 130	71	8.84	8.84
90 - 150	269	33.60	33.60
90 - 180	798	99.69	99.69
0 - 180	800	100.00	100.00

Average Luminance (Cd/m²)

Angle	0 Degree	45 Degree	90 Degree
55.0	6	20	23
65.0	28	15	2
75.0	46	1	37
85.0	0	0	4
85.0	0	0	4

Luminaire Luminous Flux: 800

Measured Input Power: 32.52 W

Total Luminaire Efficiency: N/A

Luminaire Luminous Efficacy: 24.6 lm/W

Luminaire Spacing Criterion (0 Degree): 0.5564

Luminaire Spacing Criterion (90 Degree): 0.8463

CIE Type: Indirect



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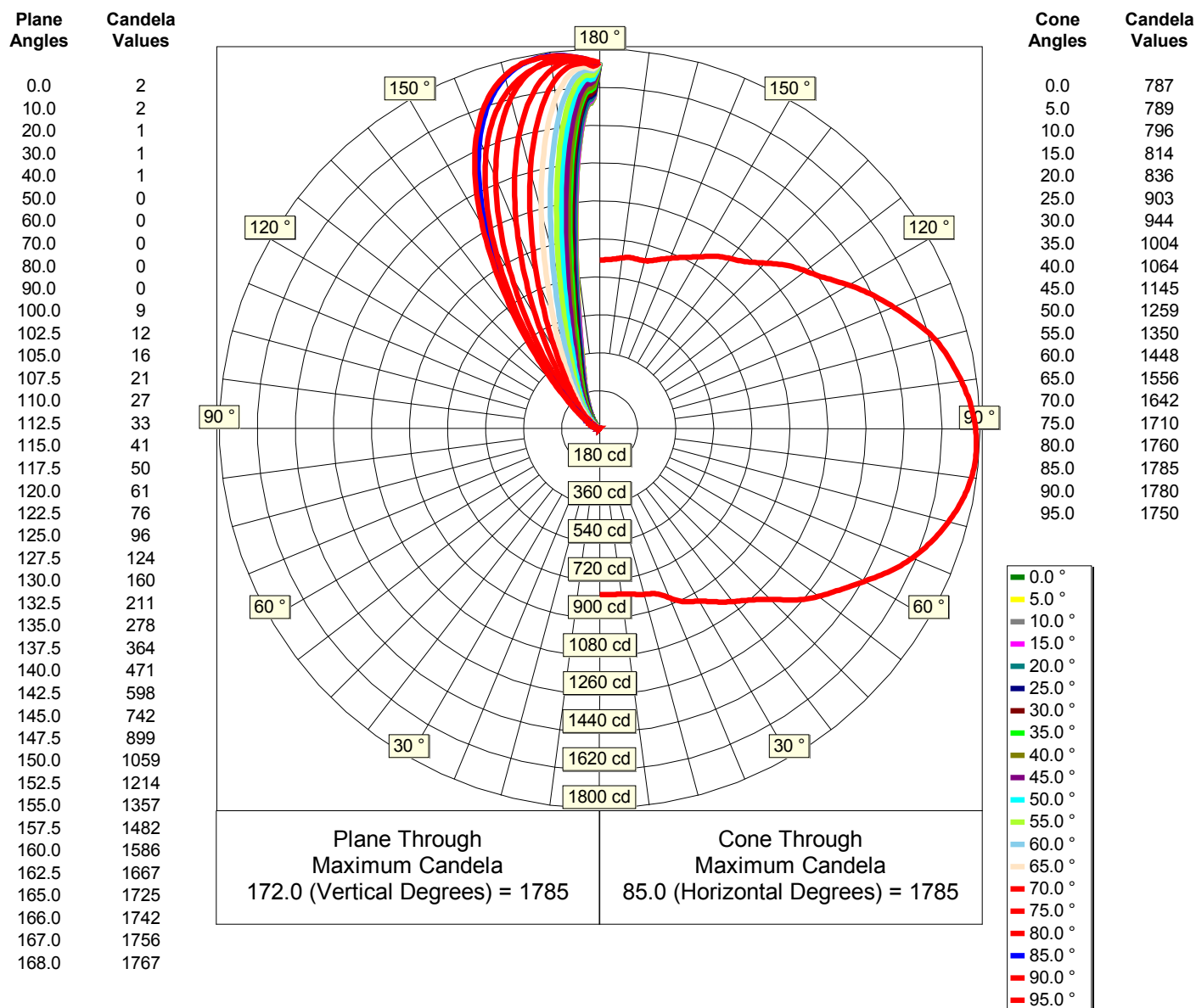
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Photometric Report: S1608255-R1

Prepared for: Lumenpulse · Test Date: 25 August 2016

Luminaire: LUMENFACADE INGROUND · Lumcat: LOI-120/277-24-RGBA-10x60-TS0-DMX/RDM

Luminous Intensity - Polar Curve for each Plane(1)





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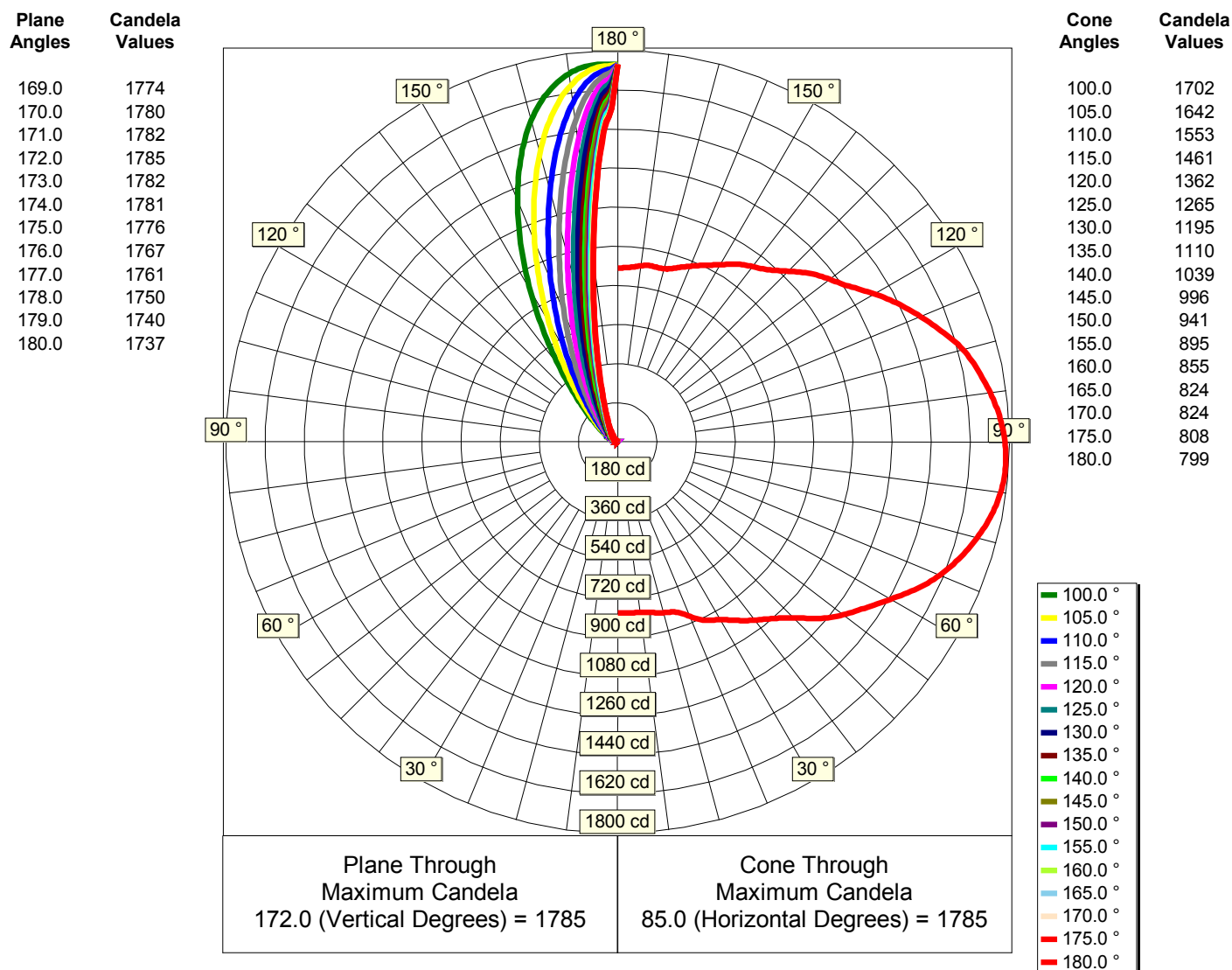
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Photometric Report: S1608255-R1

Prepared for: Lumenpulse · Test Date: 25 August 2016

Luminaire: LUMENFACADE INGROUND · Lumcat: LOI-120/277-24-RGBA-10x60-TS0-DMX/RDM

Luminous Intensity - Polar Curve for each Plane(2)





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IES File Headers

IESNA:LM-63-2002
[ISSUEDATE] 25 August 2016
[TESTLAB] Spectra Lux Industries Inc.
[TEST] S1608255-R1
[MANUFAC] Lumenpulse
[LUMCAT] LOI-120/277-24-RGBA-10x60-TS0-DMX/RDM
[LUMINAIRE] LUMENFACADE INGROUND
[LAMP] Cluster of XPE-2 (RGB) LED's c/w Mean Well Driver LPF-40-12 @ 120.00V
[_BURNING] Vertical Base Down (800 Luminaire Lumens)
[_REFLECTOR] None
[_LENS] Half Etched Flat Glass, Polycarbonate Diffuser
[_HOUSING] Extruded Aluminum
[DISTRIBUTION] Indirect Type - Uplight

Candela Table

Lateral Angles

	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0
0.0	2	2	2	2	2	2	2	2	2	2
10.0	1	1	2	1	1	1	1	1	1	2
20.0	1	1	1	1	1	1	1	1	1	1
30.0	1	1	1	1	0	1	1	0	1	1
40.0	0	0	0	0	0	0	0	0	0	0
50.0	0	0	0	0	0	0	0	0	0	0
60.0	0	0	1	0	0	0	1	0	0	0
70.0	0	0	0	0	0	0	0	0	0	0
80.0	0	0	0	0	0	0	0	0	0	0
90.0	0	1	1	1	0	0	1	0	0	1
100.0	4	4	4	4	4	4	4	4	4	5
102.5	5	5	5	5	5	5	5	6	6	6
105.0	6	6	6	6	6	6	7	7	8	8
107.5	7	7	7	7	8	8	8	9	9	10
110.0	9	8	8	9	9	9	10	11	11	11
112.5	10	10	10	10	10	11	12	12	13	14
115.0	12	12	12	12	12	13	13	14	15	17
117.5	14	13	13	14	14	15	16	17	18	19
120.0	15	15	16	16	16	17	18	19	21	22
122.5	17	18	18	18	18	20	20	22	23	26
125.0	20	19	20	20	21	22	24	25	27	29
127.5	22	22	22	23	23	25	26	29	31	34
130.0	25	25	25	26	26	29	30	32	35	39
132.5	28	28	28	29	30	32	34	37	40	45
135.0	31	31	32	33	34	37	39	43	47	52
137.5	36	36	37	38	39	43	45	49	54	61
140.0	41	41	42	44	46	49	53	58	64	72
142.5	48	48	49	51	54	58	62	68	76	86
145.0	57	57	58	60	63	68	73	81	90	103
147.5	67	67	68	71	75	81	87	97	108	123
150.0	80	81	82	85	90	98	105	117	131	148
152.5	98	99	100	104	109	120	129	142	158	177
155.0	121	122	124	129	136	147	158	173	190	213
157.5	151	152	155	160	167	181	193	210	230	257
160.0	188	190	193	198	207	223	237	257	280	314
162.5	235	237	240	247	257	275	292	317	348	392
165.0	298	299	304	312	324	349	372	406	449	510



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Lateral Angles

	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0
166.0	331	333	337	347	360	390	416	456	504	573
167.0	371	373	378	389	404	440	470	515	570	645
168.0	422	424	430	443	459	502	537	587	647	728
169.0	487	489	495	510	529	579	617	672	735	821
170.0	568	570	577	593	614	671	712	770	835	923
171.0	668	670	676	695	717	780	821	882	947	1031
172.0	787	789	796	814	836	903	944	1004	1064	1145
173.0	922	925	929	948	970	1038	1074	1130	1186	1257
174.0	1067	1071	1076	1092	1112	1176	1209	1257	1304	1365
175.0	1217	1220	1224	1237	1253	1310	1334	1376	1413	1461
176.0	1353	1356	1359	1369	1381	1427	1445	1476	1504	1543
177.0	1465	1465	1469	1477	1484	1517	1531	1555	1573	1602
178.0	1538	1539	1542	1549	1555	1574	1585	1602	1615	1636
179.0	1567	1566	1571	1577	1583	1589	1601	1617	1626	1647
180.0	1737	1737	1737	1737	1737	1737	1737	1737	1737	1737

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Lateral Angles

	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0	90.0	95.0
V e r t i c a l	0.0	2	2	2	2	2	2	2	2	2
	10.0	1	2	2	1	2	2	2	1	2
	20.0	1	1	1	1	1	1	1	1	1
	30.0	1	0	1	1	1	1	1	1	1
	40.0	0	0	0	0	1	0	1	0	1
	50.0	0	0	0	0	0	0	0	1	0
	60.0	0	0	0	0	0	0	0	0	0
	70.0	0	0	0	0	0	0	0	0	0
	80.0	0	0	0	0	0	0	0	0	0
	90.0	0	0	0	0	0	0	0	0	0
	100.0	5	5	6	6	7	7	9	9	10
	102.5	7	7	8	9	9	10	11	12	13
	105.0	8	9	10	11	12	13	14	16	17
	107.5	10	11	13	14	15	16	18	21	23
	110.0	13	14	15	17	19	21	23	27	29
	112.5	15	16	18	20	23	25	29	33	36
	115.0	18	20	22	25	28	31	35	41	44
	117.5	22	24	26	30	33	38	43	50	54
	120.0	25	27	30	35	40	45	53	61	66
	122.5	28	32	36	41	48	55	64	76	82
A n g l e s	125.0	33	37	42	49	57	66	79	96	104
	127.5	38	43	49	58	68	80	99	124	134
	130.0	44	50	58	69	81	98	125	160	174
	132.5	51	59	69	82	98	121	159	211	229
	135.0	61	69	81	98	118	149	206	278	301
	137.5	71	83	97	117	143	186	266	364	392
	140.0	85	99	116	141	174	235	343	471	506
	142.5	101	118	138	168	212	297	439	598	639
	145.0	121	141	165	202	261	375	554	742	787
	147.5	144	167	197	245	324	472	686	899	947
	150.0	172	198	235	298	404	587	833	1059	1107
	152.5	206	238	284	367	505	720	986	1214	1260
	155.0	246	286	347	457	627	867	1139	1357	1398
	157.5	298	349	431	572	768	1021	1285	1482	1516
	160.0	368	436	544	713	927	1176	1417	1586	1611
	162.5	467	559	690	880	1096	1325	1528	1667	1684
	165.0	610	722	869	1065	1263	1459	1621	1725	1732
	166.0	682	800	950	1141	1329	1507	1653	1742	1748
	167.0	763	884	1033	1217	1391	1552	1678	1756	1759
	168.0	851	973	1118	1292	1449	1592	1703	1767	1769
	169.0	949	1066	1204	1364	1506	1628	1723	1774	1775
	170.0	1050	1163	1290	1434	1555	1660	1738	1780	1778
	171.0	1154	1256	1372	1497	1602	1686	1751	1782	1782
	172.0	1259	1350	1448	1556	1642	1710	1760	1785	1780
	173.0	1359	1437	1520	1607	1675	1726	1766	1782	1780
	174.0	1451	1513	1579	1646	1701	1740	1768	1781	1777
	175.0	1530	1579	1631	1681	1720	1748	1769	1776	1772
	176.0	1593	1629	1668	1701	1732	1751	1764	1767	1767
	177.0	1636	1663	1692	1714	1734	1749	1760	1761	1761
	178.0	1660	1678	1702	1716	1733	1742	1751	1750	1753
	179.0	1660	1679	1698	1706	1720	1731	1739	1740	1744
	180.0	1737	1737	1737	1737	1737	1737	1737	1737	1737



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Lateral Angles

	100.0	105.0	110.0	115.0	120.0	125.0	130.0	135.0	140.0	145.0
V e r t i c a l	0.0	2	2	2	2	2	2	2	2	2
	10.0	2	1	2	1	2	1	1	2	2
	20.0	1	1	1	1	1	1	1	1	1
	30.0	1	1	1	1	1	1	1	0	0
	40.0	0	0	1	0	1	0	0	0	0
	50.0	1	0	0	0	0	0	0	0	0
	60.0	0	0	0	0	0	1	0	0	0
	70.0	0	0	0	0	0	0	0	1	0
	80.0	0	0	0	0	0	0	0	1	1
	90.0	0	0	0	1	0	1	0	0	0
	100.0	10	9	8	6	5	4	4	3	4
	102.5	14	13	11	9	8	6	5	5	5
	105.0	18	16	14	13	10	9	7	6	6
	107.5	23	21	18	15	13	11	9	8	7
	110.0	28	25	22	19	17	14	11	10	9
	112.5	34	31	27	23	20	17	13	12	10
	115.0	41	37	32	27	23	20	16	14	13
	117.5	51	44	38	32	28	24	19	17	16
	120.0	61	53	45	38	33	28	22	20	18
	122.5	74	64	53	45	38	29	25	23	21
A n g l e s	125.0	91	78	64	53	45	38	30	26	24
	127.5	113	95	76	63	52	44	39	30	27
	130.0	141	117	92	74	61	52	45	34	31
	132.5	178	145	112	88	72	60	52	40	36
	135.0	225	181	138	107	85	70	60	46	41
	137.5	285	226	169	129	101	82	70	52	48
	140.0	359	281	210	157	121	97	82	61	55
	142.5	448	349	260	193	146	116	97	71	64
	145.0	552	430	321	238	179	140	116	84	75
	147.5	670	523	394	294	221	171	141	100	89
	150.0	799	629	480	363	274	211	172	121	107
	152.5	934	743	575	443	338	262	213	147	131
	155.0	1069	866	682	536	417	328	268	184	162
	157.5	1201	995	800	642	511	410	339	234	206
	160.0	1324	1126	925	761	621	510	430	304	269
	162.5	1436	1255	1060	892	748	629	543	399	357
	165.0	1532	1378	1199	1036	891	769	680	522	475
	166.0	1565	1423	1254	1095	952	830	741	579	532
	167.0	1594	1467	1308	1157	1017	896	807	643	594
	168.0	1622	1508	1363	1219	1084	965	876	711	661
	169.0	1645	1547	1414	1283	1152	1036	950	784	736
	170.0	1668	1582	1465	1344	1223	1111	1029	937	863
	171.0	1687	1614	1512	1404	1292	1188	1109	1022	948
	172.0	1702	1642	1553	1461	1362	1265	1195	1110	1039
	173.0	1715	1665	1594	1514	1428	1343	1280	1202	1134
	174.0	1725	1688	1627	1563	1491	1416	1361	1293	1233
	175.0	1732	1703	1657	1604	1546	1485	1441	1381	1329
	176.0	1735	1717	1681	1641	1594	1546	1510	1463	1420
	177.0	1740	1726	1699	1668	1634	1597	1570	1531	1500
	178.0	1738	1729	1710	1689	1661	1635	1615	1586	1562
	179.0	1737	1732	1717	1701	1681	1660	1643	1620	1605
	180.0	1737	1737	1737	1737	1737	1737	1737	1737	1737



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ISO/IEC 17025



NVLAP LAB CODE: 200899-0

Lateral Angles

	150.0	155.0	160.0	165.0	170.0	175.0	180.0
V e r t i c a l	0.0	2	2	2	2	2	2
	10.0	2	2	2	2	2	2
	20.0	1	1	1	1	1	1
	30.0	0	1	0	1	0	0
	40.0	0	0	0	0	0	0
	50.0	0	0	0	1	0	0
	60.0	0	0	0	0	0	0
	70.0	1	1	1	0	1	1
	80.0	0	1	0	1	1	0
	90.0	0	1	0	0	0	0
	100.0	3	3	3	3	3	3
	102.5	5	4	4	4	4	4
	105.0	6	6	5	5	5	5
	107.5	7	7	6	6	6	6
	110.0	8	8	7	7	7	7
	112.5	10	9	9	8	9	8
	115.0	12	11	11	10	10	10
	117.5	14	13	12	12	12	11
	120.0	17	15	14	13	13	13
	122.5	19	18	17	15	15	15
A n g l e s	125.0	22	20	19	18	18	17
	127.5	25	24	22	21	20	20
	130.0	29	27	25	24	23	23
	132.5	32	30	28	27	26	26
	135.0	37	34	32	30	29	28
	137.5	43	39	36	34	33	32
	140.0	49	45	42	40	39	37
	142.5	57	53	49	46	45	43
	145.0	68	62	57	54	52	50
	147.5	80	73	67	64	62	59
	150.0	96	87	80	76	73	70
	152.5	116	106	97	91	88	85
	155.0	143	130	119	112	109	104
	157.5	181	164	150	140	136	130
	160.0	237	213	195	181	177	169
	162.5	317	286	262	244	239	227
	165.0	428	390	359	338	331	315
	166.0	482	443	409	385	379	361
	167.0	543	500	466	439	434	415
	168.0	609	565	528	501	496	475
	169.0	681	638	599	570	566	544
	170.0	761	715	676	647	644	621
	171.0	847	802	761	732	729	705
	172.0	941	895	855	824	824	799
	173.0	1042	998	956	927	928	904
	174.0	1149	1107	1067	1038	1042	1018
	175.0	1257	1219	1182	1156	1161	1139
	176.0	1359	1329	1297	1273	1283	1263
	177.0	1454	1429	1403	1385	1393	1375
	178.0	1528	1509	1489	1475	1481	1472
	179.0	1579	1560	1548	1538	1540	1534
	180.0	1737	1737	1737	1737	1737	1737