Les Industries Spectralux Inc.
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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: 200893-0

Moving Mirror Goniophotometer Test Report

Standard(s): IESNA LM-31-95, IES LM-79-08, IESNA TM-15-11, ANSI C82.77-2002

Customer: Philips Lumec, 640 Curé Boivin, Boisbriand, Québec, Canada, J7G 2A7

General Information		SSL Details		Driver Details	
Test Report	S1506044-R1	**Description**	68W White 3849K SSL	**Type**	Commercial
Test Date	4 June 2015	**Serial Number**	SRIS 2004	**Description**	68W
Report Date	6 June 2015	**Photometric Method**	Absolute	**Manufacturer**	Advance
Ambient	25.7 °C	**Lamp Lumens**	-1	**Catalog No.**	929000709003
Humidity	29.6 %	**Test Position**	Vertical Base Up	**Voltage**	120.00 V
Lamp Type	SSL	**Comments**	Luxeon T LED's	**Power Factor**	0.9900

Luminaire Data

General Information		Optics		Aperture (feet)	
Manufacturer	Philips Lumec	**Reflector**	White Painted Aluminum Top	**X**	-0.6667
Name	SleekVision	**Housing**	Die Cast Aluminum	**Y**	-0.6667
Catalog No.	VLC-3OL700NW-G1-5	**Lens**	Clear Cylindrical Glass Light Guide C/W Clear Arylic Vertical Cylinder	**Z**	1.6667

SKT Position: None
Lamp Stabilization Time: : 59 minutes, 6 seconds

Tested By: Jean-Paul Ojeil

Approved Signatory: Chrisnel Blot

Signature:

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).

Electrical Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibrataion Due Date
Power Supply	iRDC	CIF-3000A	974997	2013/04/22	2020/04/22
Input Power Meter	Yokogawa	WT210	27E116584	2014/10/30	2015/10/30
Output Power Meter	Spectralux	VirtualPowerMeter	1	2006/01/24	2099/12/31

Photometric Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibrataion Due Date
Photometer	Gigahertz-Optik	X11	4502	2014/05/06	2015/09/17
Photodetector	INPHORA	IPR-PDET 19	110802	2015/05/16	2016/05/16

Environment Equipment

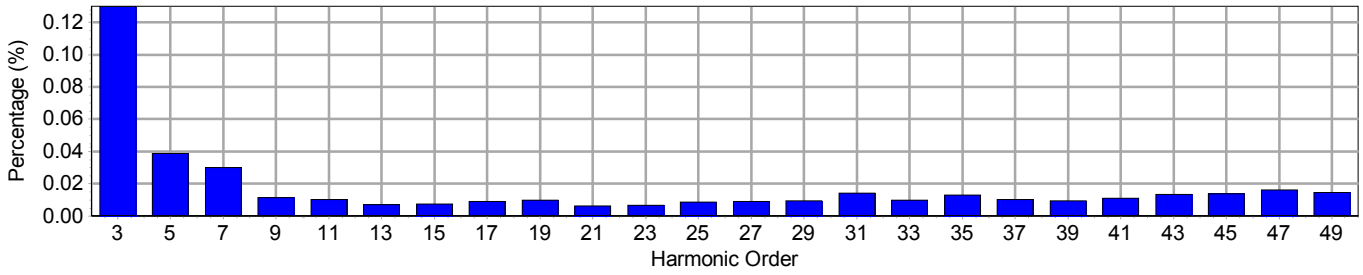
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibrataion Due Date
Temperature Humidity Sensor	Omega	HH311	120504178	2014/04/16	2016/04/16

Electrical Measurements

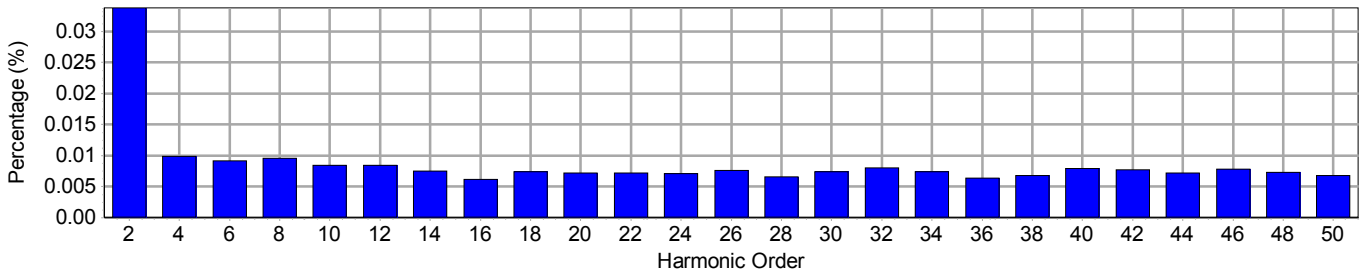
Input

Frequency	60 Hz	Active Power	66.67 W	THDV [ANSI]	0.15 %
Voltage	120.0 V(rms)	Apparent Power	67.50 VA	THDA [ANSI]	12.90 %
Current	0.5624 A(rms)	Power Factor	0.988	Max. Harmonic At	3rd order

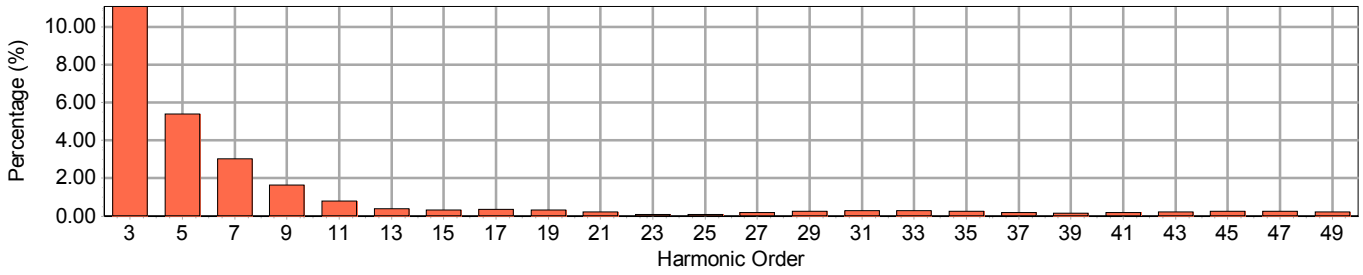
Input Voltage Harmonics (Odd)



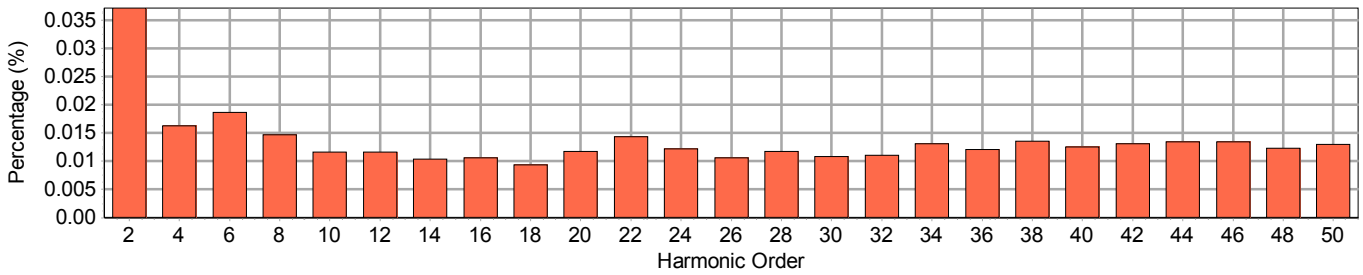
Input Voltage Harmonics (Even)



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	0.034	0.037
3	180	0.130	11.110	4	240	0.010	0.016
5	300	0.039	5.414	6	360	0.009	0.019
7	420	0.030	3.042	8	480	0.010	0.015
9	540	0.011	1.653	10	600	0.008	0.012
11	660	0.010	0.799	12	720	0.008	0.012
13	780	0.007	0.374	14	840	0.008	0.010
15	900	0.007	0.320	16	960	0.006	0.011
17	1020	0.009	0.358	18	1080	0.007	0.009
19	1140	0.010	0.311	20	1200	0.007	0.012
21	1260	0.006	0.206	22	1320	0.007	0.014
23	1380	0.007	0.083	24	1440	0.007	0.012
25	1500	0.009	0.085	26	1560	0.008	0.011
27	1620	0.009	0.185	28	1680	0.007	0.012
29	1740	0.009	0.268	30	1800	0.007	0.011
31	1860	0.014	0.301	32	1920	0.008	0.011
33	1980	0.010	0.289	34	2040	0.007	0.013
35	2100	0.013	0.258	36	2160	0.006	0.012
37	2220	0.010	0.196	38	2280	0.007	0.014
39	2340	0.009	0.169	40	2400	0.008	0.013
41	2460	0.011	0.182	42	2520	0.008	0.013
43	2580	0.013	0.205	44	2640	0.007	0.013
45	2700	0.014	0.238	46	2760	0.008	0.013
47	2820	0.016	0.247	48	2880	0.007	0.012
49	2940	0.014	0.226	50	3000	0.007	0.013

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Photometric Report: S1506044-R1

Prepared for: Philips Lumec · Test Date: 04 June 2015

Luminaire: SleekVision · Lumcat: VLC-3OL700NW-G1-5

Photometric Luminaire Characteristics as per IESNA RP-8-00

Nominal SSL Power	68.00 W
Luminaire Luminous Flux	7170
Measured Input Power	66.67 W
Luminaire Luminous Efficacy	107.5 lm/W
Maximum Candela Value	1607
Maximum Candela Location	160.0 °H, 62.5 °V
Maximum Candela at 90° Vertical	284
Maximum Candela at 80° Vertical	822
IES Classification	Type I, Short, Semicutoff
Downward Street Side Lumens	3347
Downward Street Side Efficiency	N/A
Downward House Side Lumens	3331
Downward House Side Efficiency	N/A
Downward Total Efficiency	N/A
Upward Street Side Lumens	249
Upward Street Side Efficiency	N/A
Upward House Side Lumens	243
Upward House Side Efficiency	N/A
Upward Total Efficiency	N/A
Total Luminaire Lumens	7170
Total Luminaire Efficiency	N/A

Notes

1) Luminaire tested in accordance to IES LM-31-95 and IES LM-79-08 at a distance great enough so that the inverse-square law applies.

2) Field performance may differ from laboratory measurements.

3) Results are valid for the tested material only.

4) All data published in this report are based on absolute photometry.

5) The luminaire classification is based on IESNA RP-8-00.

6) The original electronic file or paper report cannot be edited in whole or in part without written consent of Spectralux Industries Inc.

7) This photometric file describes the performance of a single luminaire and does not necessarily represent the average performance of a group of the same SSL luminaires.

8) The previous IESNA cutoff classifications (Full Cutoff, Cutoff, Semi-Cutoff and Non-Cutoff) are superseded by the Luminaire Classification System (LCS) which defines the standard solid angles for evaluation and comparison of outdoor luminaires.

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Photometric Report: S1506044-R1

Prepared for: Philips Lumec · Test Date: 04 June 2015

Luminaire: SleekVision · Lumcat: VLC-3OL700NW-G1-5

Luminaire Classification System as per IESNA TM-15-11

Nominal SSL Power	68.00 W
Luminaire Luminous Flux	7170
Measured Input Power	66.67 W
Luminaire Luminous Efficacy	107.5 lm/W
Maximum Candela Value	1607
Maximum Candela Location	160.0 °H, 62.5 °V
IES Classification	Type I, Short
Downward Street Side Lumens	3347
Downward Street Side Efficiency	N/A
Downward House Side Lumens	3331
Downward House Side Efficiency	N/A
Downward Total Lumens	6678
Downward Total Efficiency	N/A
Upward Street Side Lumens	249
Upward Street Side Efficiency	N/A
Upward House Side Lumens	243
Upward House Side Efficiency	N/A
Upward Total Lumens	492
Upward Total Efficiency	N/A
Trapped Light Lumens	0
Total Luminaire Lumens	7170
Total Luminaire Efficiency	N/A

Notes

1) Luminaire tested in accordance to IES LM-31-95 and IES LM-79-08 at a distance great enough so that the inverse-square law applies.

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Prepared for: Philips Lumec · Test Date: 04 June 2015

Luminaire: SleekVision · Lumcat: VLC-3OL700NW-G1-5

Luminaire Lumens Distribution based on 7170 total luminaire lumens as per IESNA TM-15-11

Downward Forward Light	Lumens
Total	3347
Lumens Distribution	
Forward Light Low (0° - 30°)	275
Forward Light Mid (30° - 60°)	1512
Forward Light High (60° - 80°)	1293
Forward Light Very High (80° - 90°)	267

Downward Back Light	Lumens
Total	3331
Lumens Distribution	
Back Light Low (0° - 30°)	234
Back Light Mid (30° - 60°)	1507
Back Light High (60° - 80°)	1320
Back Light Very High (80° - 90°)	270

Uplight	Lumens
Total	492
Lumens Distribution	
Uplight Low (90° - 100°)	192
Uplight High (100° - 180°)	300

Trapped Light	Lumens
Total	0

Notes

1) Luminaire tested in accordance to IES LM-31-95 and IES LM-79-08 at a distance great enough so that the inverse-square law applies.

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IESNA TM-15-11 : Backlight, Uplight and Glare (BUG) Ratings

Table A-1 : Backlight Ratings (maximal zonal lumens)

Control of Backlight / Trespass

Backlight Rating

Zone	B0	B1	B2	B3	B4	B5
BH	110	500	1000	2500	5000	>5000
BM	220	1000	2500	5000	8500	>8500
BL	110	500	1000	2500	5000	>5000

Backlight Ratings

Zone	Lumens	Rating
BH	1320	B3
BM	1507	B2
BL	234	B1

The Backlight Rating is B3.

Table A-2 : Uplight Ratings (maximal zonal lumens)

Control of Uplight / Skyglow

Uplight Rating

Zone	U0	U1	U2	U3	U4	U5
UH	0	10	50	500	1000	>1000
UL	0	10	50	500	1000	>1000

Uplight Ratings

Zone	Lumens	Rating
UH	300	U3
UL	192	U3

The Uplight Rating is U3.

Table A-3 : Glare Ratings (maximum zonal lumens)

Control of Glare / Offensive Light

Glare Rating for Asymmetrical Luminaire Types (Type I, Type II, Type III, Type IV)

Zone	G0	G1	G2	G3	G4	G5
FVH	10	100	225	500	750	>750
BVH	10	100	225	500	750	>750
FH	660	1800	5000	7500	12000	>12000
BH	110	500	1000	2500	5000	>5000

Glare Ratings for Type I

Zone	Lumens	Rating
FVH	267	G3
BVH	270	G3
FH	1293	G1
BH	1320	G3

The Glare Rating is G3.

The BUG Rating is B3 U3 G3

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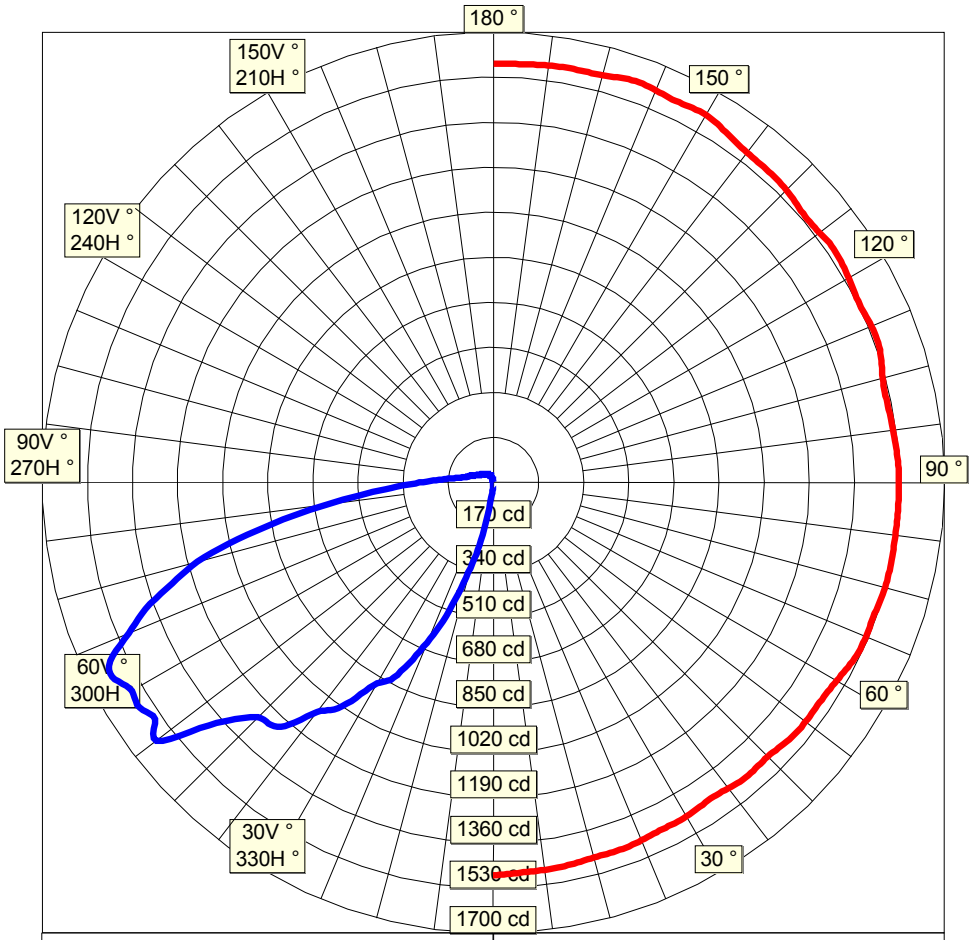
Prepared for: Philips Lumec · Test Date: 04 June 2015

Luminaire: SleekVision · Lumcat: VLC-3OL700NW-G1-5

Maximum Plane and Maximum Cone Plots of Candela (1)

Plane Angles	Candela Values
0.0	11
2.5	17
5.0	29
7.5	58
10.0	140
12.5	242
15.0	333
17.5	440
20.0	556
22.5	654
25.0	753
27.5	839
30.0	875
32.5	963
35.0	1046
37.5	1091
40.0	1191
42.5	1239
45.0	1253
47.5	1321
50.0	1442
52.5	1599
55.0	1557
57.5	1581
60.0	1572
62.5	1607
65.0	1594
67.5	1487
70.0	1395
72.5	1269
75.0	1154
77.5	986
80.0	803
82.5	633
85.0	483
87.5	365
90.0	278
92.5	215
95.0	169
97.5	138
100.0	115
102.5	102
105.0	94
107.5	86



Plane Through Maximum Candela	Cone Through Maximum Candela
62.5 (Vertical Degrees) = 1607	160.0 (Horizontal Degrees) = 1607

Cone Angles	Candela Values
0.0	1482
5.0	1475
10.0	1473
15.0	1465
20.0	1465
25.0	1455
30.0	1455
35.0	1447
40.0	1463
45.0	1462
50.0	1480
55.0	1483
60.0	1494
65.0	1518
70.0	1519
75.0	1528
80.0	1529
85.0	1528
90.0	1529
95.0	1524
100.0	1516
105.0	1519
110.0	1544
115.0	1536
120.0	1545
125.0	1556
130.0	1545
135.0	1562
140.0	1567
145.0	1578
150.0	1602
155.0	1596
160.0	1607
165.0	1592
170.0	1589
175.0	1584
180.0	1579

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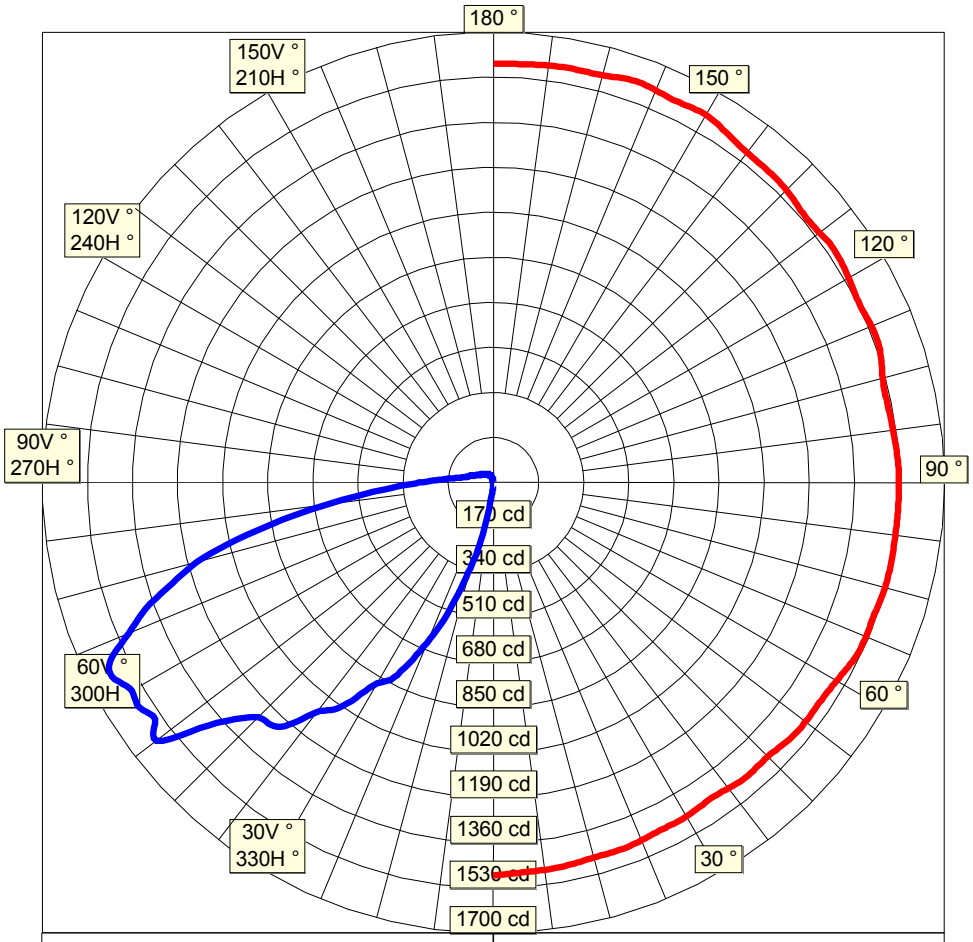
Prepared for: Philips Lumec · Test Date: 04 June 2015

Luminaire: SleekVision · Lumcat: VLC-3OL700NW-G1-5

Maximum Plane and Maximum Cone Plots of Candela (2)

Plane Angles	Candela Values
110.0	80
112.5	73
115.0	67
117.5	62
120.0	60
122.5	56
125.0	54
127.5	51
130.0	50
132.5	48
135.0	47
137.5	45
140.0	42
142.5	41
145.0	39
147.5	37
150.0	36
152.5	34
155.0	31
157.5	28
160.0	25
162.5	20
165.0	16
167.5	13
170.0	10
172.5	9
175.0	8
177.5	0
180.0	0



Cone Angles	Candela Values

Plane Through Maximum Candela	Cone Through Maximum Candela
62.5 (Vertical Degrees) = 1607	160.0 (Horizontal Degrees) = 1607

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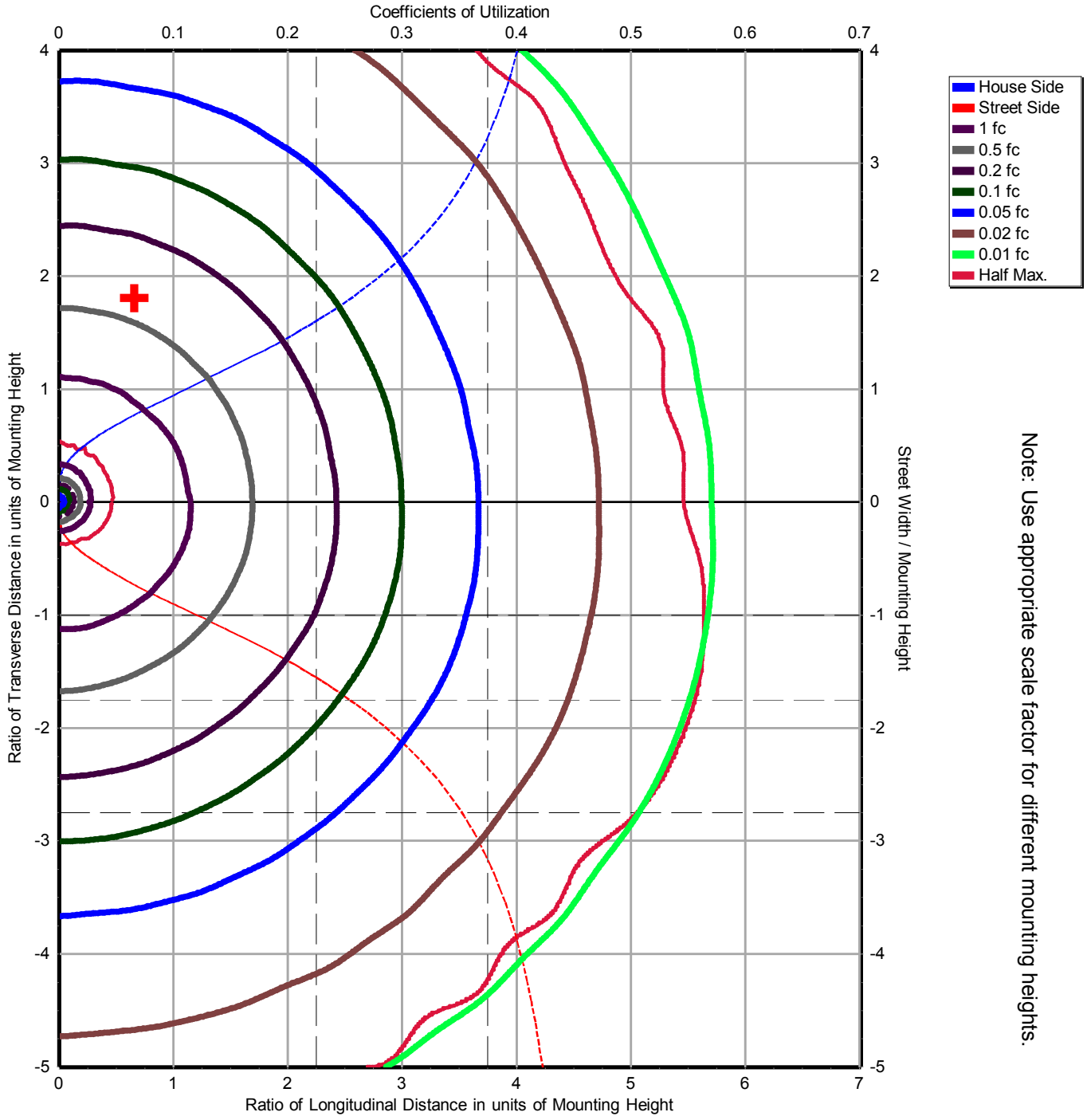
Isoilluminance based on 20 feet of Mounting Height and Coefficients of Utilization Diagram (Right Side)



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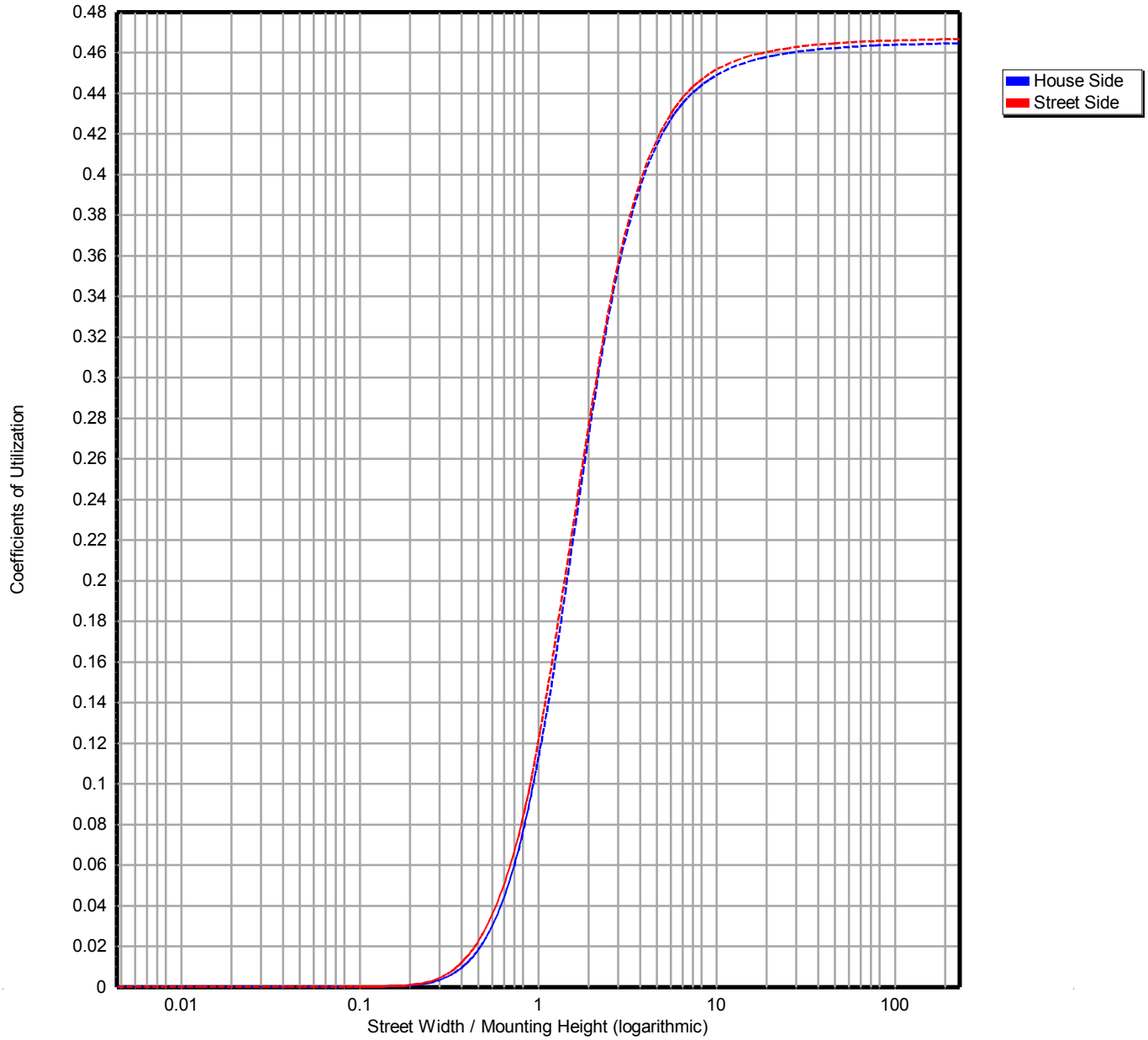
Luminaire: SleekVision · Lumcat: VLC-3OL700NW-G1-5

Coefficients of Utilization



IES File Headers

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IESNA:LM-63-2002
[ISSUEDATE]     04 June 2015
[TESTLAB]       Spectra Lux Industries Inc.
[TEST]          S1506044-R1
[MANUFAC]       Philips Lumec
[LUMCAT]        VLC-3OL700NW-G1-5
[LUMINAIRE]     SleekVision
[LAMP]          (Luxeon T LED's) White 68W SSL c/w Advance Driver 929000709003 @ 120.00V
[_LAMPDETAILS] DC Voltage=97.14V, Current=0.7A, CCT=3849K, CRI=72, x=0.3889, y=0.3862
[_BURNING]      Vertical Base Up (7,170 Luminaire Lumens)
[_REFLECTOR]    White Painted Aluminum Top
[_LENS]         Clear Cylindrical Glass Light Guide C/W Clear Arylic Vertical Cylinder
[_HOUSING]      Die Cast Aluminum
[_SKTPOSITION] None
[DISTRIBUTION] Type I, Short
```

Candela Table

Lateral Angles

Vertical Angles	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	11	11	11	11	11	11	11	11	11
2.5	19	20	20	21	21	22	22	22	22
5.0	34	38	36	40	39	41	43	45	46
7.5	98	108	92	104	97	93	100	97	102
10.0	207	215	209	218	223	236	220	231	214
12.5	319	322	316	328	319	316	312	328	311
15.0	479	500	478	506	485	489	480	489	475
17.5	668	688	671	671	664	695	672	645	634
20.0	792	798	787	791	790	786	788	765	753
22.5	845	845	830	843	828	831	830	819	803
25.0	908	899	896	901	902	904	891	893	883
27.5	951	952	952	955	955	953	949	950	941
30.0	963	965	963	968	966	958	959	954	952
32.5	1015	1017	1007	1017	1018	1018	1017	1019	1020
35.0	1059	1063	1066	1056	1066	1060	1057	1062	1057
37.5	1134	1134	1136	1136	1132	1136	1130	1141	1144
40.0	1217	1215	1223	1215	1213	1211	1205	1212	1208
42.5	1309	1314	1319	1317	1322	1323	1318	1323	1319
45.0	1356	1356	1368	1358	1365	1360	1362	1352	1356
47.5	1341	1344	1350	1343	1341	1338	1339	1338	1339
50.0	1424	1427	1430	1440	1429	1429	1428	1428	1439
52.5	1436	1442	1443	1459	1449	1450	1452	1454	1464
55.0	1446	1446	1449	1453	1450	1455	1448	1455	1451
57.5	1479	1477	1479	1473	1475	1467	1466	1471	1475
60.0	1480	1478	1466	1462	1457	1455	1454	1465	1475
62.5	1482	1475	1473	1465	1465	1455	1455	1447	1463
65.0	1473	1460	1461	1453	1450	1442	1443	1443	1444
67.5	1461	1454	1446	1447	1442	1433	1437	1427	1432
70.0	1358	1353	1349	1341	1337	1333	1333	1323	1329
72.5	1221	1218	1221	1212	1214	1205	1210	1206	1211
75.0	1084	1068	1079	1076	1084	1074	1085	1079	1083
77.5	936	923	927	930	933	928	947	936	949
80.0	799	787	801	793	804	790	810	793	804
82.5	634	620	626	617	622	612	621	612	627
85.0	461	454	456	449	452	448	457	449	464

Lateral Angles

Vertical Angles	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
87.5	345	338	342	330	331	326	335	333	341
90.0	263	257	257	247	247	245	253	247	258
92.5	210	209	207	201	201	199	203	203	207
95.0	173	172	171	167	165	165	167	167	170
97.5	147	146	145	140	139	140	142	140	143
100.0	127	127	126	122	121	120	122	122	124
102.5	112	112	111	108	106	106	108	107	108
105.0	100	99	99	96	95	95	96	95	97
107.5	89	89	89	86	85	85	86	86	87
110.0	81	81	81	80	78	79	79	79	80
112.5	74	73	74	72	71	71	72	71	72
115.0	68	68	68	67	66	66	66	66	67
117.5	63	64	64	63	62	62	63	62	63
120.0	61	60	60	59	59	59	59	59	59
122.5	58	57	57	57	57	56	56	56	57
125.0	55	56	55	55	54	55	55	55	54
127.5	54	53	54	53	52	52	53	52	53
130.0	52	51	51	51	52	52	51	51	52
132.5	50	51	51	51	51	51	50	50	50
135.0	50	49	50	49	50	50	50	48	48
137.5	48	48	48	48	48	48	48	48	48
140.0	47	47	47	46	46	46	46	47	46
142.5	46	45	45	44	45	45	46	45	44
145.0	42	42	42	42	42	42	42	42	42
147.5	40	40	40	40	40	40	40	40	40
150.0	38	37	38	37	38	38	39	38	38
152.5	36	35	36	35	37	36	36	36	37
155.0	33	33	33	33	33	34	33	33	33
157.5	30	30	30	30	30	29	30	30	29
160.0	27	27	27	26	26	26	26	25	26
162.5	19	20	19	19	19	19	19	19	20
165.0	16	15	15	15	15	14	15	15	15
167.5	12	11	12	11	12	12	12	11	12
170.0	9	10	10	10	9	10	9	10	10
172.5	8	8	8	8	8	8	8	8	8
175.0	8	8	8	8	8	8	8	8	8
177.5	0	0	0	0	0	0	0	0	0
180.0	0	0	0	0	0	0	0	0	0

Lateral Angles

Vertical Angles	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	11	11	11	11	11	11	11	11	11
2.5	22	22	21	21	20	20	19	19	19
5.0	51	47	45	49	48	45	47	43	42
7.5	100	99	99	96	98	93	87	84	90
10.0	213	217	208	199	190	187	189	180	189
12.5	317	312	315	299	285	301	277	275	276
15.0	476	457	458	447	449	430	436	423	417
17.5	630	617	618	603	591	597	598	578	578
20.0	750	733	726	714	699	701	682	687	662
22.5	804	790	777	766	758	751	736	737	720
25.0	879	867	857	849	843	831	825	815	813
27.5	944	934	919	913	908	891	890	882	878
30.0	950	939	942	926	925	913	915	909	897
32.5	1014	1010	1008	995	999	991	991	980	977
35.0	1065	1053	1054	1042	1038	1043	1040	1037	1029
37.5	1145	1139	1139	1136	1133	1128	1129	1120	1118
40.0	1218	1203	1205	1207	1197	1194	1191	1192	1192
42.5	1326	1313	1315	1306	1298	1294	1289	1286	1286
45.0	1358	1355	1348	1342	1344	1334	1334	1329	1326
47.5	1345	1342	1348	1350	1346	1351	1351	1355	1348
50.0	1448	1444	1455	1461	1471	1470	1479	1478	1474
52.5	1478	1480	1492	1494	1507	1503	1521	1527	1524
55.0	1463	1467	1477	1478	1481	1476	1477	1479	1480
57.5	1483	1485	1500	1507	1515	1525	1525	1525	1522
60.0	1475	1486	1490	1500	1509	1514	1525	1518	1520
62.5	1462	1480	1483	1494	1518	1519	1528	1529	1528
65.0	1455	1458	1470	1493	1496	1518	1508	1521	1510
67.5	1428	1437	1445	1459	1478	1477	1477	1477	1463
70.0	1333	1337	1340	1353	1373	1367	1377	1369	1362
72.5	1211	1219	1226	1239	1251	1252	1246	1246	1225
75.0	1081	1094	1098	1112	1126	1124	1116	1113	1096
77.5	931	948	949	962	975	970	960	956	944
80.0	790	800	790	808	820	822	819	810	798
82.5	622	628	613	625	641	639	644	641	637
85.0	458	468	466	473	482	482	488	492	485
87.5	342	349	347	352	360	361	361	368	371
90.0	253	263	261	270	273	269	272	276	278
92.5	208	210	210	212	214	211	212	215	213
95.0	171	172	173	172	173	168	169	173	173
97.5	143	145	145	145	143	140	142	142	142
100.0	123	124	124	124	122	120	120	120	120
102.5	108	109	109	108	107	105	106	106	105
105.0	97	98	98	98	96	95	96	95	96
107.5	88	88	88	88	88	87	87	87	87
110.0	81	81	81	81	80	80	80	81	80
112.5	73	74	74	74	73	73	73	73	73
115.0	67	68	67	68	68	67	67	67	67
117.5	63	63	64	63	64	63	63	63	63
120.0	59	60	61	61	60	60	60	59	59
122.5	57	57	57	58	58	57	57	57	56
125.0	55	55	55	55	56	55	55	55	54
127.5	53	54	54	54	54	54	54	53	53
130.0	51	51	51	52	52	52	52	51	50
132.5	50	50	50	50	51	50	50	50	49

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NVLAP
NVLAP LAB CODE: 200893-0

Lateral Angles

Vertical Angles	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
135.0	48	49	50	50	50	50	50	49	48
137.5	48	48	48	49	49	48	48	47	47
140.0	46	47	46	47	47	46	46	46	45
142.5	44	44	45	46	44	44	46	44	44
145.0	42	42	42	42	42	43	42	41	40
147.5	40	40	39	40	40	40	39	40	39
150.0	38	38	38	38	38	37	38	37	37
152.5	36	36	35	35	35	36	35	34	34
155.0	33	33	32	33	33	32	32	32	32
157.5	29	30	30	30	29	29	29	29	29
160.0	25	25	25	26	26	27	27	26	26
162.5	19	19	19	19	20	19	19	19	19
165.0	15	15	15	15	15	15	15	15	15
167.5	12	12	12	12	12	12	12	12	12
170.0	10	9	9	10	10	10	9	10	10
172.5	8	9	8	9	8	8	9	9	9
175.0	8	8	8	8	8	8	8	8	8
177.5	0	0	0	0	0	0	0	0	0
180.0	0	0	0	0	0	0	0	0	0

Lateral Angles

Vertical Angles	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	11	11	11	11	11	11	11	11	11
2.5	20	19	19	19	19	19	19	19	18
5.0	43	39	41	37	41	37	36	35	33
7.5	85	79	84	74	80	74	72	68	62
10.0	189	192	191	182	188	182	180	167	162
12.5	282	270	276	264	269	259	263	258	262
15.0	450	399	412	395	383	396	380	376	361
17.5	574	546	542	536	518	532	512	517	498
20.0	655	648	631	623	616	623	602	609	592
22.5	706	693	690	684	685	694	686	686	668
25.0	812	788	794	787	778	787	781	780	764
27.5	868	853	855	847	860	861	845	848	831
30.0	898	884	890	888	892	895	883	876	860
32.5	982	966	973	966	980	992	972	981	951
35.0	1033	1026	1034	1027	1040	1050	1037	1049	1031
37.5	1127	1113	1116	1110	1126	1129	1117	1119	1106
40.0	1199	1194	1202	1201	1203	1207	1209	1211	1193
42.5	1281	1278	1264	1274	1271	1259	1265	1260	1255
45.0	1319	1305	1302	1285	1281	1284	1273	1273	1257
47.5	1345	1333	1332	1329	1329	1332	1334	1326	1323
50.0	1472	1458	1452	1454	1461	1461	1448	1447	1427
52.5	1526	1517	1510	1514	1535	1540	1542	1552	1545
55.0	1475	1468	1455	1463	1474	1478	1488	1493	1493
57.5	1523	1522	1507	1516	1527	1525	1534	1533	1539
60.0	1513	1514	1510	1511	1521	1519	1527	1527	1542
62.5	1529	1524	1516	1519	1544	1536	1545	1556	1545
65.0	1504	1510	1492	1505	1515	1511	1524	1533	1539
67.5	1447	1443	1420	1432	1429	1428	1425	1437	1448
70.0	1342	1334	1322	1333	1332	1324	1327	1335	1344
72.5	1211	1207	1194	1203	1195	1193	1193	1213	1221
75.0	1083	1081	1061	1069	1064	1060	1071	1083	1095
77.5	931	929	920	925	914	909	915	929	941
80.0	781	782	770	779	763	757	762	767	781
82.5	626	622	611	614	605	601	603	608	619
85.0	479	482	474	478	462	462	465	471	479
87.5	362	364	358	361	351	352	354	360	370
90.0	274	279	271	276	267	264	265	268	274
92.5	212	214	208	209	205	205	206	209	211
95.0	171	170	166	167	163	164	161	165	168
97.5	140	140	137	136	133	132	132	133	136
100.0	119	118	115	114	112	112	112	112	113
102.5	105	104	102	101	100	100	99	99	101
105.0	95	95	94	92	91	91	91	92	92
107.5	87	87	86	85	84	84	84	84	86
110.0	81	80	79	78	78	78	77	78	79
112.5	72	72	72	71	71	71	71	71	71
115.0	66	67	65	65	64	64	65	65	66
117.5	63	62	62	61	61	61	60	61	61
120.0	59	58	59	57	58	57	57	58	58
122.5	56	56	55	55	54	54	55	54	55
125.0	54	54	53	53	52	52	52	52	53
127.5	52	51	51	50	51	50	50	50	50
130.0	50	50	49	49	48	48	48	48	49
132.5	49	48	47	47	47	47	46	46	47

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Lateral Angles

Vertical Angles	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
135.0	47	47	47	45	46	45	45	46	45
137.5	46	46	45	45	44	44	44	44	45
140.0	45	44	43	43	43	43	42	42	43
142.5	43	42	42	41	42	41	41	41	40
145.0	40	40	40	39	39	39	39	39	39
147.5	38	38	38	37	37	37	37	37	37
150.0	36	36	36	35	36	35	36	36	35
152.5	34	34	34	34	33	33	34	34	34
155.0	32	32	31	31	31	31	30	31	31
157.5	28	28	28	28	28	27	28	28	28
160.0	25	25	24	25	24	24	24	24	25
162.5	19	19	19	19	19	19	19	19	20
165.0	15	15	15	15	15	15	15	16	15
167.5	12	12	12	12	12	12	12	12	12
170.0	10	10	10	10	10	10	10	10	10
172.5	8	8	9	8	9	8	9	9	8
175.0	8	8	8	8	8	8	8	8	8
177.5	0	0	0	0	0	0	0	0	0
180.0	0	0	0	0	0	0	0	0	0

Lateral Angles

Vertical Angles	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	11	11	11	11	11	11	11	11	11
2.5	18	18	17	18	17	17	16	17	16
5.0	34	32	31	31	28	29	28	28	27
7.5	64	61	58	60	57	58	54	56	51
10.0	168	160	150	153	140	140	137	140	128
12.5	259	263	247	247	241	242	238	244	234
15.0	364	348	335	330	327	333	318	328	319
17.5	494	477	453	468	444	440	432	430	432
20.0	577	571	553	559	550	556	544	539	519
22.5	664	654	639	641	638	654	645	636	636
25.0	765	756	743	756	745	753	749	740	741
27.5	837	816	820	847	797	839	807	819	807
30.0	857	862	849	869	842	875	853	845	855
32.5	967	961	949	969	927	963	931	949	937
35.0	1036	1025	1024	1051	1036	1046	1038	1043	1037
37.5	1090	1091	1072	1095	1071	1091	1072	1094	1077
40.0	1195	1190	1177	1199	1176	1191	1182	1197	1197
42.5	1237	1237	1229	1241	1239	1239	1237	1243	1240
45.0	1248	1238	1241	1258	1242	1253	1239	1254	1248
47.5	1310	1311	1309	1325	1318	1321	1310	1314	1310
50.0	1427	1425	1416	1431	1425	1442	1421	1433	1414
52.5	1558	1563	1561	1583	1585	1599	1581	1582	1583
55.0	1498	1504	1518	1537	1553	1557	1559	1555	1555
57.5	1539	1542	1552	1566	1576	1581	1577	1571	1570
60.0	1530	1547	1557	1566	1575	1572	1578	1564	1575
62.5	1562	1567	1578	1602	1596	1607	1592	1589	1584
65.0	1545	1558	1569	1581	1587	1594	1592	1576	1587
67.5	1444	1461	1471	1483	1491	1487	1505	1479	1499
70.0	1342	1353	1376	1381	1393	1395	1393	1381	1395
72.5	1214	1228	1249	1254	1268	1269	1286	1262	1277
75.0	1096	1107	1128	1134	1157	1154	1159	1143	1157
77.5	934	947	968	971	987	986	1001	982	1004
80.0	774	779	797	794	812	803	820	798	822
82.5	612	610	629	624	638	633	646	630	647
85.0	474	476	485	478	492	483	496	485	495
87.5	361	363	370	367	370	365	371	366	374
90.0	272	272	276	275	284	278	277	276	278
92.5	209	210	214	212	216	215	219	216	220
95.0	166	167	169	168	171	169	173	171	173
97.5	134	135	136	136	139	138	140	138	141
100.0	113	114	115	114	116	115	116	116	117
102.5	101	101	102	101	102	102	103	102	104
105.0	93	93	93	93	94	94	94	94	94
107.5	86	86	87	86	87	86	87	87	88
110.0	79	79	80	79	80	80	80	80	81
112.5	71	72	73	73	74	73	74	73	74
115.0	66	66	67	67	68	67	67	68	68
117.5	62	62	62	62	62	62	63	63	63
120.0	58	58	59	59	60	60	60	60	60
122.5	55	55	56	56	56	56	57	57	57
125.0	53	53	53	53	54	54	54	54	54
127.5	50	50	51	51	52	51	52	51	51
130.0	49	49	50	50	50	50	50	50	50
132.5	47	47	47	47	47	48	47	47	47

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Lateral Angles

Vertical Angles	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
135.0	45	45	46	46	46	47	46	46	46
137.5	44	44	45	45	45	45	45	45	45
140.0	43	43	43	43	43	42	43	43	43
142.5	40	41	41	41	41	41	42	42	41
145.0	39	39	39	40	40	39	39	40	40
147.5	37	37	37	37	37	37	37	37	37
150.0	35	35	35	35	35	36	36	36	35
152.5	34	33	34	34	34	34	34	34	34
155.0	31	31	31	31	31	31	31	31	31
157.5	28	28	28	28	28	28	29	28	29
160.0	25	25	25	25	25	25	25	25	25
162.5	20	20	20	20	20	20	21	21	22
165.0	15	16	16	16	16	16	17	16	17
167.5	12	12	13	13	13	13	13	13	13
170.0	10	10	10	10	10	10	10	10	10
172.5	8	9	9	8	9	9	9	9	9
175.0	8	8	8	8	8	8	8	8	8
177.5	0	0	0	0	0	0	0	0	0
180.0	0	0	0	0	0	0	0	0	0

Lateral Angles

Vertical Angles	180.0
0.0	11
2.5	17
5.0	27
7.5	52
10.0	135
12.5	239
15.0	326
17.5	438
20.0	523
22.5	629
25.0	741
27.5	788
30.0	838
32.5	917
35.0	1035
37.5	1084
40.0	1194
42.5	1240
45.0	1240
47.5	1315
50.0	1424
52.5	1588
55.0	1556
57.5	1569
60.0	1569
62.5	1579
65.0	1576
67.5	1484
70.0	1386
72.5	1258
75.0	1145
77.5	988
80.0	798
82.5	633
85.0	488
87.5	368
90.0	277
92.5	219
95.0	172
97.5	140
100.0	117
102.5	103
105.0	94
107.5	88
110.0	81
112.5	73
115.0	68
117.5	63
120.0	59
122.5	57
125.0	54
127.5	51
130.0	50
132.5	48

Lateral Angles

Vertical Angles	180.0
135.0	46
137.5	45
140.0	43
142.5	41
145.0	40
147.5	37
150.0	35
152.5	34
155.0	31
157.5	28
160.0	26
162.5	22
165.0	16
167.5	13
170.0	10
172.5	9
175.0	8
177.5	0
180.0	0

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NVLAP LAB CODE: 200899-0

Sphere Test Report

Standard(s) CIE 84-1989, IESNA LM-16-93, IESNA LM-58-94, IES LM-79-08, ANSI C82.77-2002

Customer Philips Lumec, 640 Curé Boivin, Boisbriand, Québec, Canada, J7G 2A7

General Information		Lamp Details: CY2117		Driver Details: CY887	
Test Report	L1506053-C1	**Description**	Luxeon T LED's	**Type**	Commercial
Test Date	5 June 2015	**Manufacturer**	Philips	**Description**	68W
Report Date	6 June 2015	**Catalog No.**	VLC-3OL700NW-G1-5	**Manufacturer**	Advance
Sphere Temperature	25.9 °C	**Serial No.**	SRIS 2004	**Catalog No.**	929000709003
Humidity	40.0 %	**Diameter**	N/A mm	**Voltage**	120.00 V
Lamp Type	SSL	**Color**	White	**Power Factor**	0.9900

Stabilization Time: 60 minutes

Tested By: Jean-Paul Ojeil

Approved Signatory: Chrisnel Blot

Signature:

Notes

1) Field performance may differ from laboratory measurements. Results are valid for tested material only.

2) The original electronic file or paper report cannot be edited in whole or in part without written consent of Spectra Lux Industries Inc.

3) This test report describes the performance of a single product and does not necessarily represent the average performance of a group of the same SSL product.

Realization of Sphere Test

A 4π sphere-spectroradiometer equipped with auxiliary lamp to correct self-absorption was used during the measurements of electrical, photometric and colorimetric properties of the sample under test. The size of the integrating sphere used is large enough to ensure that the measurement errors due to effects of baffle and self-absorption by the sample test are not significant.

During the test, a commercial driver was used and adjusted to nominal electrical characteristics specified by the driver manufacturer or the client. Good electrical contacts have been used to ensure the control of electrical parameters of the commercial driver and an adequate stabilization period prior to collecting data. The self-absorbance was measured and a geometrical correction factor was applied to the luminous flux value to take into account the sphere configuration.

Results of the measurements are traceable to reference standards developed and maintained by the National Institute of Standards and Technology (NIST) and National Research Council of Canada (NRC).

Electrical Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Auxiliary Power Supply	American Reliance	SPS150-7	B10155	N.P.C.R.	N.P.C.R.
Test Power Supply	Elgar	CW801	30527	N.P.C.R.	N.P.C.R.
Input Power Meter	Yokogawa	WT210	91L236540	2014/10/22	2015/10/22
Output Power Meter	N/A	N/A	N/A	N.P.C.R.	N.P.C.R.
Shunt Resistor	Fluke	Y5020	5675014	2014/08/06	2015/08/06
Current Multimeter	HP Agilent	HP34401A	US36121202	2014/08/06	2015/08/06
Voltage Multimeter	Fluke	Fluke8842A	5750288	2015/04/16	2016/04/16

Spectrometer Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Spectrometer	Ocean Optics	USB2000N	USB2E3864	2014/08/24	2015/08/24

Environment Equipment

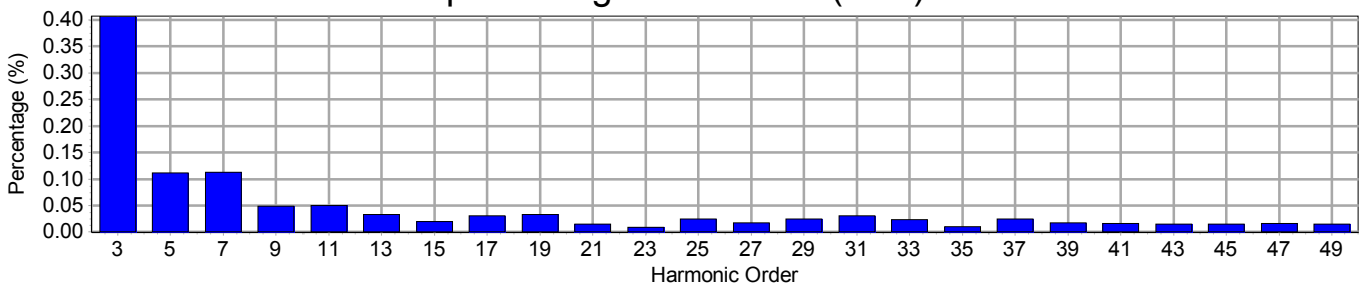
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Temperature Humidity Sensor	Omega	HH311	120504176	2014/04/16	2016/04/16

Electrical Measurements

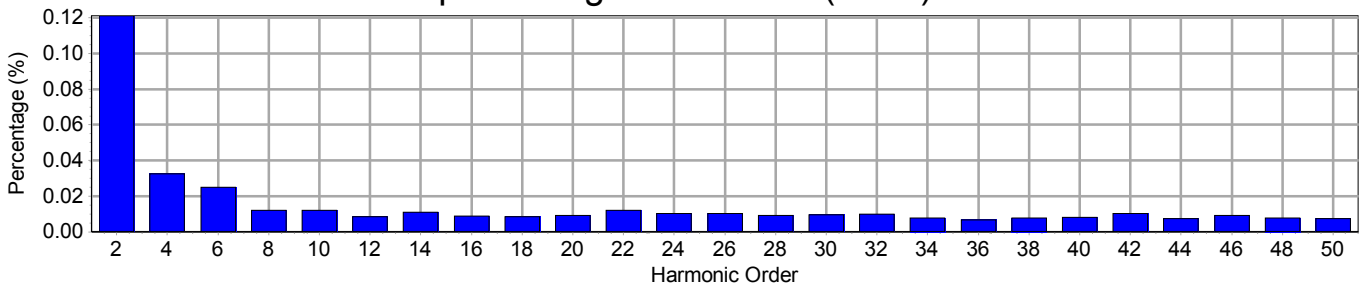
Input

Frequency	60 Hz	Active Power	66.81 W	THDV [ANSI]	0.47 %
Voltage	120.3 V(rms)	Apparent Power	67.65 VA	THDA [ANSI]	13.40 %
Current	0.5624 A(rms)	Power Factor	0.988	Max. Harmonic At	3rd order

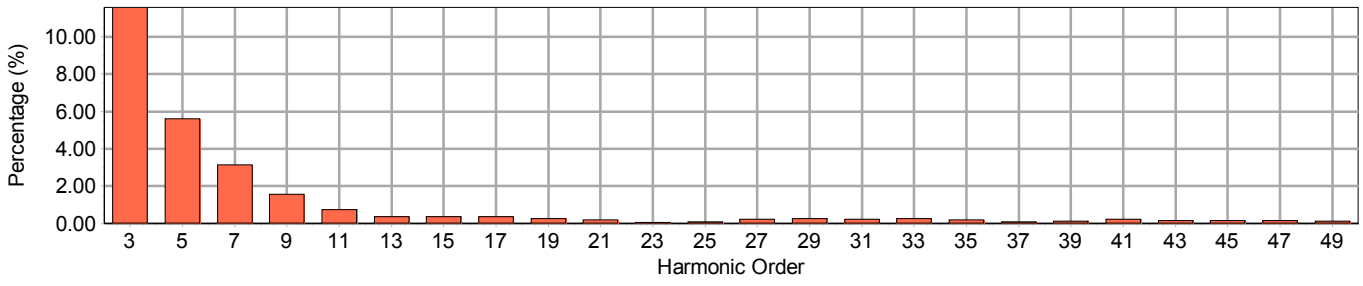
Input Voltage Harmonics (Odd)



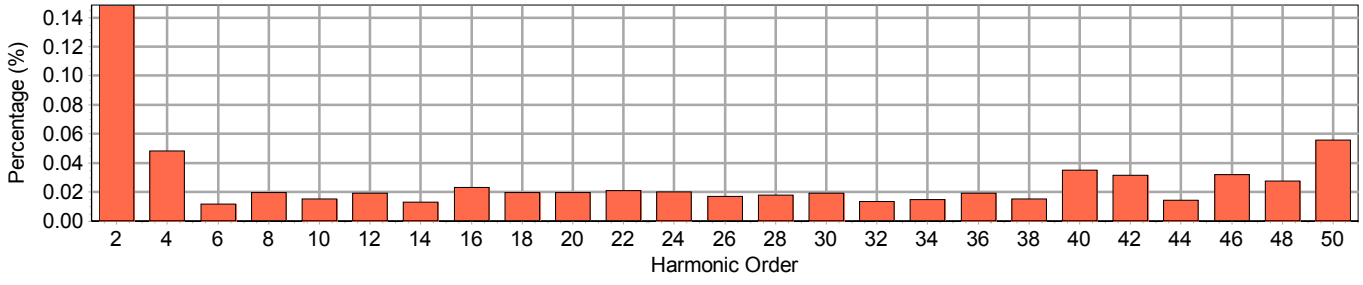
Input Voltage Harmonics (Even)



Input Current Harmonics (Odd)



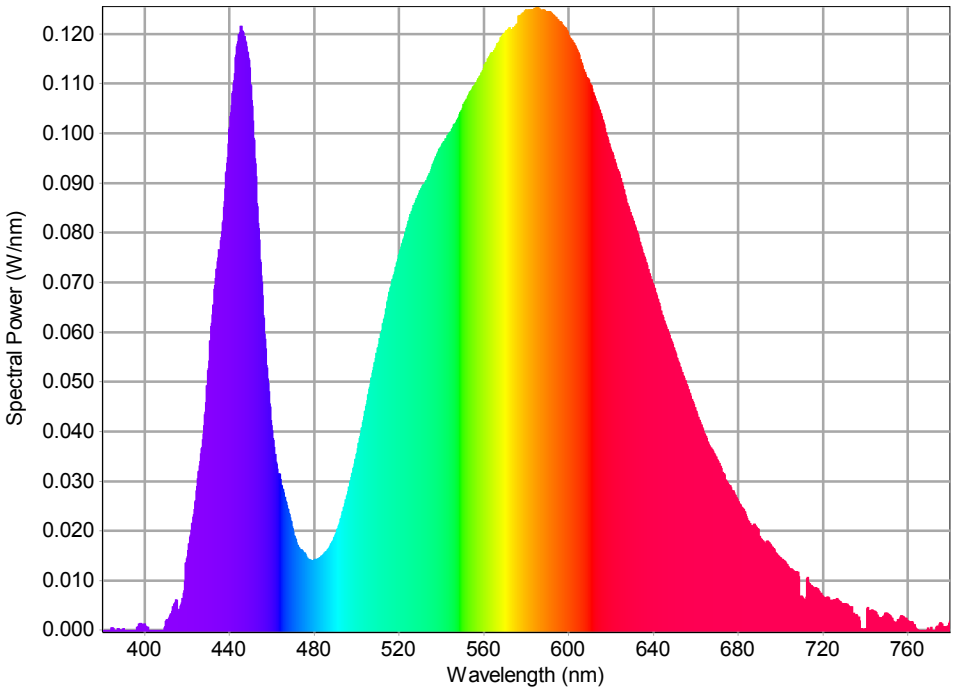
Input Current Harmonics (Even)



Harmonic Measurements

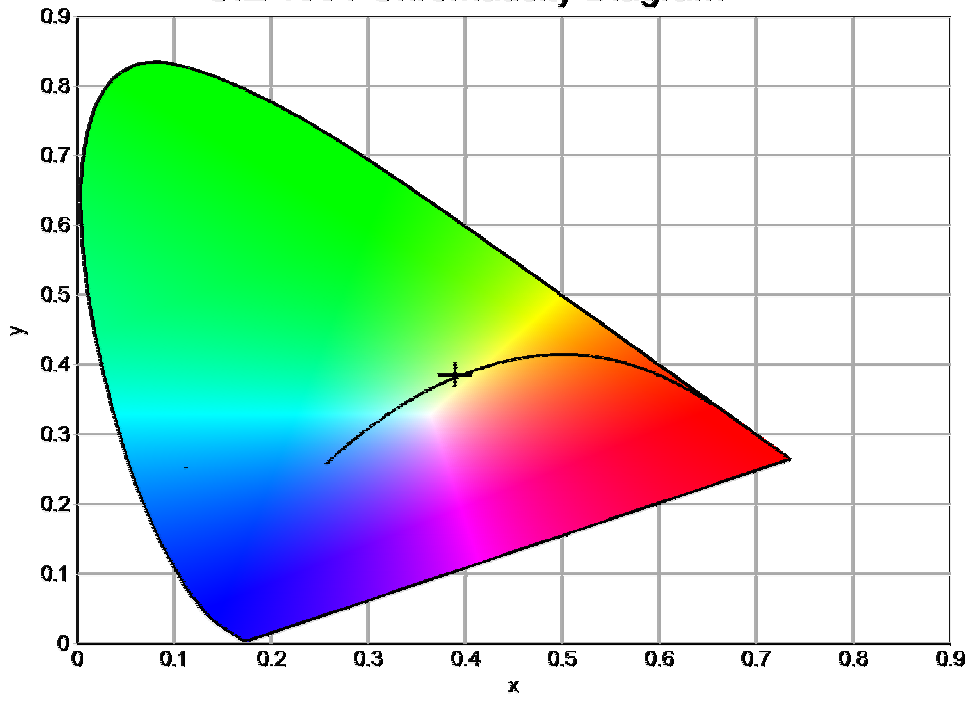
Odd Harmonics				Even Harmonics			
Harmonic Order	Frequency (HZ)	Voltage Harmonics (%)	Current Harmonics (%)	Harmonic Order	Frequency (HZ)	Voltage Harmonics (%)	Current Harmonics (%)
1	60	100.000	100.000	2	120	0.121	0.149
3	180	0.407	11.602	4	240	0.032	0.048
5	300	0.112	5.603	6	360	0.025	0.011
7	420	0.112	3.137	8	480	0.012	0.020
9	540	0.048	1.570	10	600	0.012	0.015
11	660	0.050	0.749	12	720	0.008	0.019
13	780	0.033	0.358	14	840	0.011	0.013
15	900	0.020	0.348	16	960	0.009	0.023
17	1020	0.031	0.360	18	1080	0.008	0.020
19	1140	0.033	0.250	20	1200	0.009	0.020
21	1260	0.015	0.182	22	1320	0.012	0.021
23	1380	0.009	0.036	24	1440	0.010	0.020
25	1500	0.024	0.089	26	1560	0.010	0.017
27	1620	0.018	0.207	28	1680	0.009	0.018
29	1740	0.025	0.269	30	1800	0.010	0.019
31	1860	0.030	0.239	32	1920	0.010	0.013
33	1980	0.023	0.242	34	2040	0.008	0.015
35	2100	0.010	0.196	36	2160	0.007	0.019
37	2220	0.025	0.101	38	2280	0.008	0.015
39	2340	0.017	0.111	40	2400	0.008	0.035
41	2460	0.016	0.228	42	2520	0.010	0.032
43	2580	0.015	0.144	44	2640	0.007	0.014
45	2700	0.015	0.165	46	2760	0.009	0.032
47	2820	0.016	0.145	48	2880	0.008	0.028
49	2940	0.015	0.112	50	3000	0.007	0.056

Spectral Power Distribution



Peak Wavelength	585 nm
Luminous Flux	7015 lm
Input Power	66.81 W
Lumens/Watt	105.0
Full Width/Half Maximum	131.64
Center Wavelength	579 nm
Centroid Wavelength	366 nm
Dominant Wavelength	489 nm
Excitation Purity	0.1483
Colorimeric Purity	0.1015

CIE 1931 Chromaticity Diagram



x	0.3889	CCT	3849 K
y	0.3862	CRI	72
u	0.2269	L*	25.67
v	0.3380	a*	-5.13
u'	0.2269	b*	-12.81
v'	0.5069	Duv	0.0020

R1	69.2	R9	-25.8
R2	77.6	R10	47.4
R3	84.7	R11	68.4
R4	72.2	R12	44.1
R5	68.9	R13	70.1
R6	68.7	R14	91.1
R7	80.5		
R8	53.6		

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ISO/IEC 17025
NVLAP
NVLAP LAB CODE: 200899-0

Spectral Power Distribution Table (1/4)

Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)
380	0.00000	405	0.00000	430	0.05230	455	0.07138
381	0.00000	406	0.00000	431	0.05826	456	0.06347
382	0.00000	407	0.00000	432	0.06353	457	0.05680
383	0.00001	408	0.00003	433	0.06877	458	0.05073
384	0.00010	409	-0.00001	434	0.07268	459	0.04567
385	0.00063	410	0.00182	435	0.07676	460	0.04031
386	0.00004	411	0.00216	436	0.07848	461	0.03689
387	0.00003	412	0.00313	437	0.08216	462	0.03391
388	0.00022	413	0.00395	438	0.08897	463	0.03124
389	0.00000	414	0.00540	439	0.09403	464	0.03047
390	0.00039	415	0.00619	440	0.10086	465	0.02858
391	0.00001	416	0.00387	441	0.10563	466	0.02689
392	0.00000	417	0.00501	442	0.11003	467	0.02514
393	0.00000	418	0.00649	443	0.11531	468	0.02368
394	0.00000	419	0.01001	444	0.11859	469	0.02207
395	0.00000	420	0.01451	445	0.12032	470	0.01993
396	-0.00007	421	0.01743	446	0.12076	471	0.01867
397	0.00088	422	0.02015	447	0.11964	472	0.01722
398	0.00147	423	0.02283	448	0.11753	473	0.01647
399	0.00121	424	0.02597	449	0.11519	474	0.01630
400	0.00135	425	0.03065	450	0.10993	475	0.01560
401	0.00064	426	0.03314	451	0.10258	476	0.01500
402	-0.00008	427	0.03666	452	0.09497	477	0.01441
403	0.00000	428	0.04131	453	0.08593	478	0.01425
404	0.00000	429	0.04592	454	0.07865	479	0.01408

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Spectral Power Distribution Table (2/4)

Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)
480	0.01425	505	0.04625	530	0.08852	555	0.10943
481	0.01439	506	0.04857	531	0.08940	556	0.11003
482	0.01448	507	0.05078	532	0.08982	557	0.11066
483	0.01481	508	0.05305	533	0.09062	558	0.11148
484	0.01515	509	0.05483	534	0.09168	559	0.11221
485	0.01560	510	0.05680	535	0.09248	560	0.11320
486	0.01608	511	0.05876	536	0.09385	561	0.11427
487	0.01660	512	0.06044	537	0.09499	562	0.11504
488	0.01746	513	0.06271	538	0.09590	563	0.11586
489	0.01826	514	0.06470	539	0.09692	564	0.11639
490	0.01927	515	0.06714	540	0.09754	565	0.11675
491	0.02038	516	0.06900	541	0.09835	566	0.11763
492	0.02172	517	0.07069	542	0.09894	567	0.11835
493	0.02314	518	0.07224	543	0.09961	568	0.11927
494	0.02474	519	0.07400	544	0.10022	569	0.12002
495	0.02637	520	0.07560	545	0.10090	570	0.12030
496	0.02804	521	0.07717	546	0.10188	571	0.12073
497	0.02993	522	0.07867	547	0.10239	572	0.12136
498	0.03164	523	0.08007	548	0.10309	573	0.12058
499	0.03354	524	0.08167	549	0.10432	574	0.12133
500	0.03546	525	0.08309	550	0.10513	575	0.12168
501	0.03762	526	0.08427	551	0.10635	576	0.12221
502	0.03973	527	0.08553	552	0.10695	577	0.12380
503	0.04195	528	0.08658	553	0.10796	578	0.12408
504	0.04412	529	0.08747	554	0.10868	579	0.12429

Spectral Power Distribution Table (3/4)

Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)
580	0.12498	605	0.11581	630	0.08295	655	0.05032
581	0.12493	606	0.11430	631	0.08176	656	0.04910
582	0.12487	607	0.11286	632	0.08048	657	0.04781
583	0.12496	608	0.11188	633	0.07901	658	0.04662
584	0.12523	609	0.11112	634	0.07751	659	0.04559
585	0.12558	610	0.11015	635	0.07602	660	0.04427
586	0.12515	611	0.10906	636	0.07471	661	0.04297
587	0.12486	612	0.10771	637	0.07352	662	0.04191
588	0.12501	613	0.10657	638	0.07196	663	0.04094
589	0.12454	614	0.10545	639	0.07067	664	0.03965
590	0.12467	615	0.10418	640	0.06949	665	0.03873
591	0.12467	616	0.10285	641	0.06805	666	0.03753
592	0.12422	617	0.10106	642	0.06676	667	0.03680
593	0.12383	618	0.09954	643	0.06527	668	0.03612
594	0.12343	619	0.09808	644	0.06362	669	0.03539
595	0.12289	620	0.09649	645	0.06239	670	0.03448
596	0.12259	621	0.09559	646	0.06112	671	0.03367
597	0.12192	622	0.09419	647	0.06006	672	0.03265
598	0.12143	623	0.09282	648	0.05879	673	0.03159
599	0.12092	624	0.09175	649	0.05765	674	0.03038
600	0.11982	625	0.09027	650	0.05631	675	0.02968
601	0.11902	626	0.08878	651	0.05496	676	0.02920
602	0.11842	627	0.08685	652	0.05371	677	0.02822
603	0.11773	628	0.08548	653	0.05254	678	0.02778
604	0.11681	629	0.08421	654	0.05135	679	0.02683

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Spectral Power Distribution Table (4/4)

Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)
680	0.02599	706	0.01204	732	0.00492	758	0.00282
681	0.02529	707	0.01179	733	0.00475	759	0.00254
682	0.02463	708	0.01169	734	0.00339	760	0.00198
683	0.02403	709	0.00675	735	0.00289	761	0.00177
684	0.02256	710	0.00685	736	0.00296	762	0.00181
685	0.02196	711	0.00625	737	0.00273	763	0.00120
686	0.02118	712	0.00622	738	-0.00001	764	0.00037
687	0.02107	713	0.00974	739	0.00019	765	0.00002
688	0.02119	714	0.00916	740	0.00047	766	0.00000
689	0.02055	715	0.00885	741	0.00445	767	0.00000
690	0.01903	716	0.00840	742	0.00391	768	0.00000
691	0.01839	717	0.00848	743	0.00414	769	-0.00003
692	0.01788	718	0.00810	744	0.00394	770	0.00016
693	0.01729	719	0.00752	745	0.00367	771	0.00073
694	0.01795	720	0.00683	746	0.00273	772	0.00000
695	0.01746	721	0.00667	747	0.00254	773	0.00001
696	0.01681	722	0.00675	748	0.00268	774	0.00091
697	0.01635	723	0.00617	749	0.00315	775	0.00140
698	0.01554	724	0.00613	750	0.00355	776	0.00141
699	0.01498	725	0.00617	751	0.00329	777	0.00088
700	0.01462	726	0.00601	752	0.00271	778	0.00081
701	0.01436	727	0.00620	753	0.00199	779	0.00091
702	0.01395	728	0.00588	754	0.00157	780	0.00194
703	0.01334	729	0.00544	755	0.00175		
704	0.01258	730	0.00537	756	0.00230		
705	0.01245	731	0.00540	757	0.00307		