



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, ANSI C82.77-2002

Customer Artemide Manufacturing N-A LTD, 11105 Renaude-Lapointe, Montreal, Québec, Canada, H1J2T4

General Information		Lamp Details		Ballast Details	
Test Report	S1410061-R1	Description	Coated 54W FLU T5	Type	Commercial
Test Date	6 October 2014	Base	Mini Bipin	Description	54FLU-CF213
Report Date	31 October 2014	Standard Designation	N/A	Manufacturer	Advance
Ambient	24.6 °C	Rated Lumens	5000	Catalog No.	ICN-2S54-N
Humidity	32.1 %	Test Position	Vertical Base Up	Voltage	120.00 V
Lamp Type	Fluorescent	Quantity	1	Power Factor	0.9900

Luminaire Data

General Information		Optics		Aperture (feet)	
Manufacturer	Artemide	Reflector	White Polymer Reflector	X	4.0000
Name	SQUARE	Housing	Extruded Aluminum	Y	0.2500
Catalog No.	USC-RA904B00HOC1A	Lens	Diffuse Flat Acrylic Top and Bottom	Z	0.0000

SKT Position:

Tested By: Jean-Paul Ojeil

Approved Signatory: Chrisnel Blot

Signature:



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

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).





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

Electrical Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Power Supply	iRDC	CIF-3000A	974998	N.P.C.R.	N.P.C.R.
Input Power Meter	Yokogawa	WT210	91L236541	2014/03/25	2015/04/16
Output Power Meter	Yokogawa	WT210	91L239798	2014/03/25	2015/04/15

Photometric Equipment

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

Environment Equipment

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



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



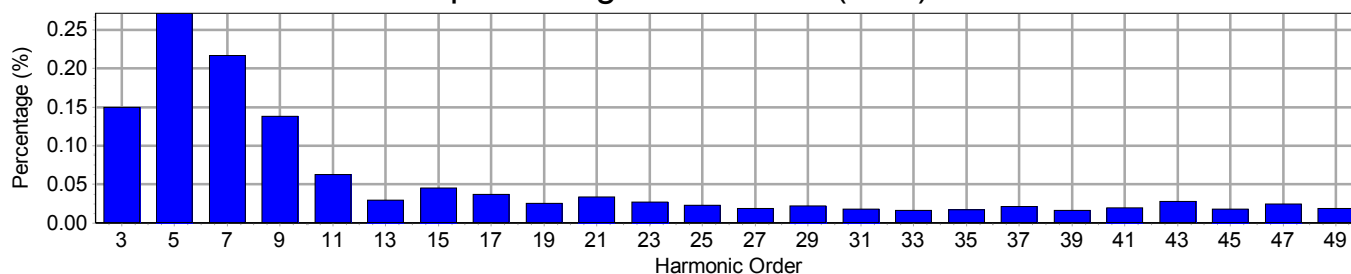
NVLAP LAB CODE: 200899-0

Electrical Measurements

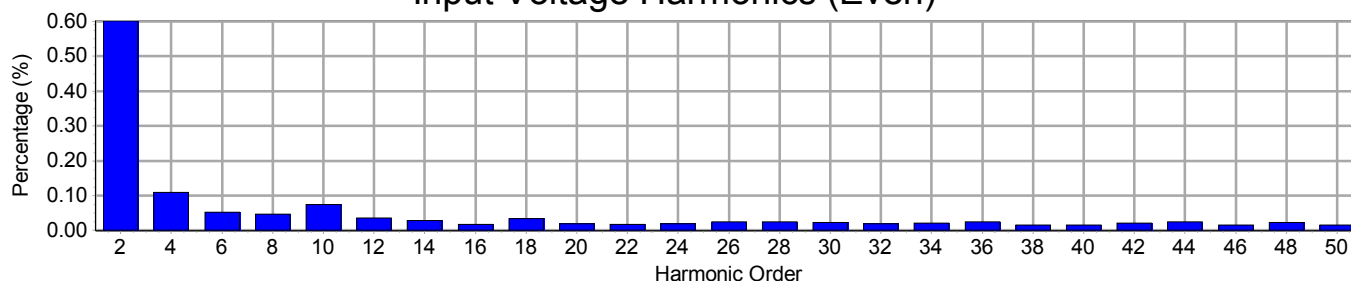
Input

Frequency	60 Hz	Active Power	56.91 W	THDV [ANSI]	0.75 %
Voltage	120.4 V(rms)	Apparent Power	57.11 VA	THDA [ANSI]	6.21 %
Current	0.4743 A(rms)	Power Factor	0.997	Max. Harmonic At	7th order

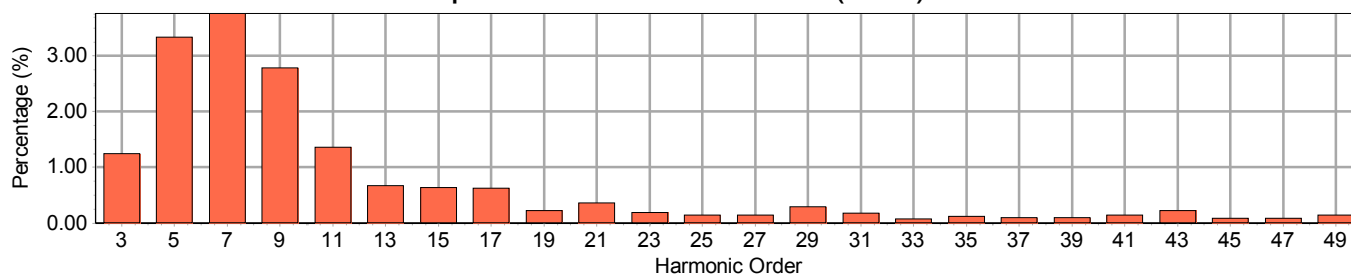
Input Voltage Harmonics (Odd)



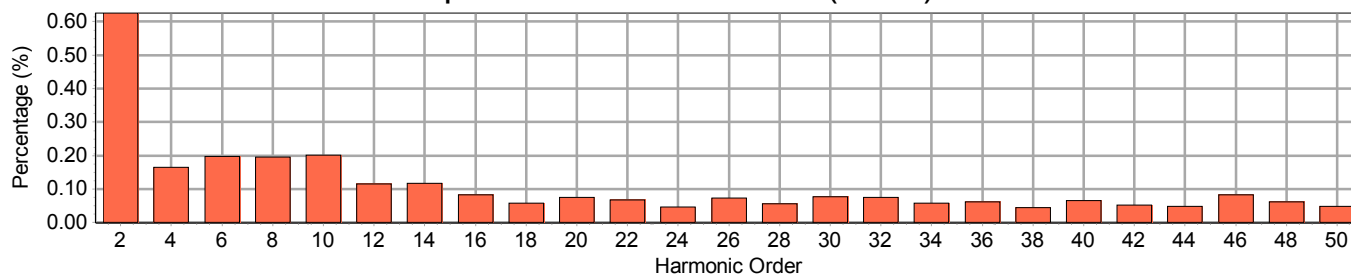
Input Voltage Harmonics (Even)



Input Current Harmonics (Odd)



Input Current Harmonics (Even)





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

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	0.602	0.626
3	180	0.149	1.246	4	240	0.110	0.165
5	300	0.272	3.325	6	360	0.053	0.197
7	420	0.217	3.758	8	480	0.048	0.196
9	540	0.138	2.776	10	600	0.075	0.202
11	660	0.062	1.353	12	720	0.035	0.115
13	780	0.030	0.666	14	840	0.028	0.117
15	900	0.045	0.637	16	960	0.017	0.082
17	1020	0.037	0.628	18	1080	0.033	0.059
19	1140	0.026	0.228	20	1200	0.018	0.075
21	1260	0.034	0.359	22	1320	0.017	0.068
23	1380	0.027	0.188	24	1440	0.019	0.047
25	1500	0.023	0.143	26	1560	0.025	0.073
27	1620	0.019	0.147	28	1680	0.025	0.056
29	1740	0.022	0.290	30	1800	0.023	0.077
31	1860	0.018	0.177	32	1920	0.020	0.075
33	1980	0.016	0.078	34	2040	0.022	0.058
35	2100	0.017	0.115	36	2160	0.024	0.062
37	2220	0.021	0.093	38	2280	0.015	0.045
39	2340	0.016	0.103	40	2400	0.017	0.066
41	2460	0.020	0.149	42	2520	0.021	0.053
43	2580	0.028	0.220	44	2640	0.026	0.049
45	2700	0.018	0.087	46	2760	0.015	0.082
47	2820	0.024	0.082	48	2880	0.023	0.061
49	2940	0.018	0.138	50	3000	0.016	0.048



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

Photometric Report: S1410061-R1

Prepared for: Artemide Manufacturing N-A LTD · Test Date: 06 October 2014

Luminaire: SQUARE · Lumcat: USC-RA904B00HOC1A

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		80	80	80	80	78	78	78	78	76	76	76	76	73	73	73	67	67	67	67	67	67	65
1		73	70	67	64	71	68	66	63	70	67	64	62	64	62	60	59	58	57	59	58	57	55
2		67	61	57	53	65	60	56	52	64	59	55	52	57	53	50	52	50	48	52	50	48	47
3		61	54	49	44	60	53	48	44	58	52	47	43	50	46	43	47	44	41	47	44	41	40
4		56	48	42	38	55	47	42	38	53	46	41	37	45	40	37	42	39	36	42	39	36	34
5		52	43	37	33	51	43	37	33	49	42	36	32	40	36	32	38	34	31	38	34	31	30
6		48	39	33	29	47	38	33	29	46	38	32	29	37	32	28	35	31	28	35	31	28	27
7		45	36	30	26	44	35	29	26	42	34	29	25	33	29	25	32	28	25	32	28	25	24
8		42	33	27	23	41	32	27	23	40	32	26	23	31	26	23	29	25	22	29	25	22	21
9		39	30	24	21	38	30	24	21	37	29	24	21	28	24	21	27	23	20	27	23	20	19
10		37	28	22	19	36	27	22	19	35	27	22	19	26	22	19	25	21	19	25	21	19	17

Zonal Lumen Summary

Average Luminance (Cd/m²)

Zone	Lumens	% Lamp	% Luminaire	Angle	0 Degree	45 Degree	90 Degree
0 - 10	128	2.56	3.92				
10 - 20	361	7.22	11.06	0.0	14841	14841	14841
20 - 30	530	10.60	16.22				
30 - 40	603	12.07	18.47	45.0	12812	11363	10294
40 - 50	577	11.54	17.66				
50 - 60	477	9.54	14.60	55.0	11303	9936	9084
60 - 70	336	6.71	10.28				
70 - 80	190	3.80	5.82	65.0	9742	8568	7785
80 - 90	64	1.28	1.97				
90 - 120	0	0.00	0.01	75.0	8231	7394	6864
90 - 130	0	0.00	0.01				
90 - 150	0	0.00	0.01	85.0	7079	7340	7665
90 - 180	0	0.00	0.01				
0 - 180	3266	65.32	100.00				

Total Lamp Lumens: 5000

Total Luminaire Efficiency: 65.32%

Luminaire Spacing Criterion (0 Degree): 1.2493

Luminaire Spacing Criterion (90 Degree): 1.0801

CIE Type: Direct



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



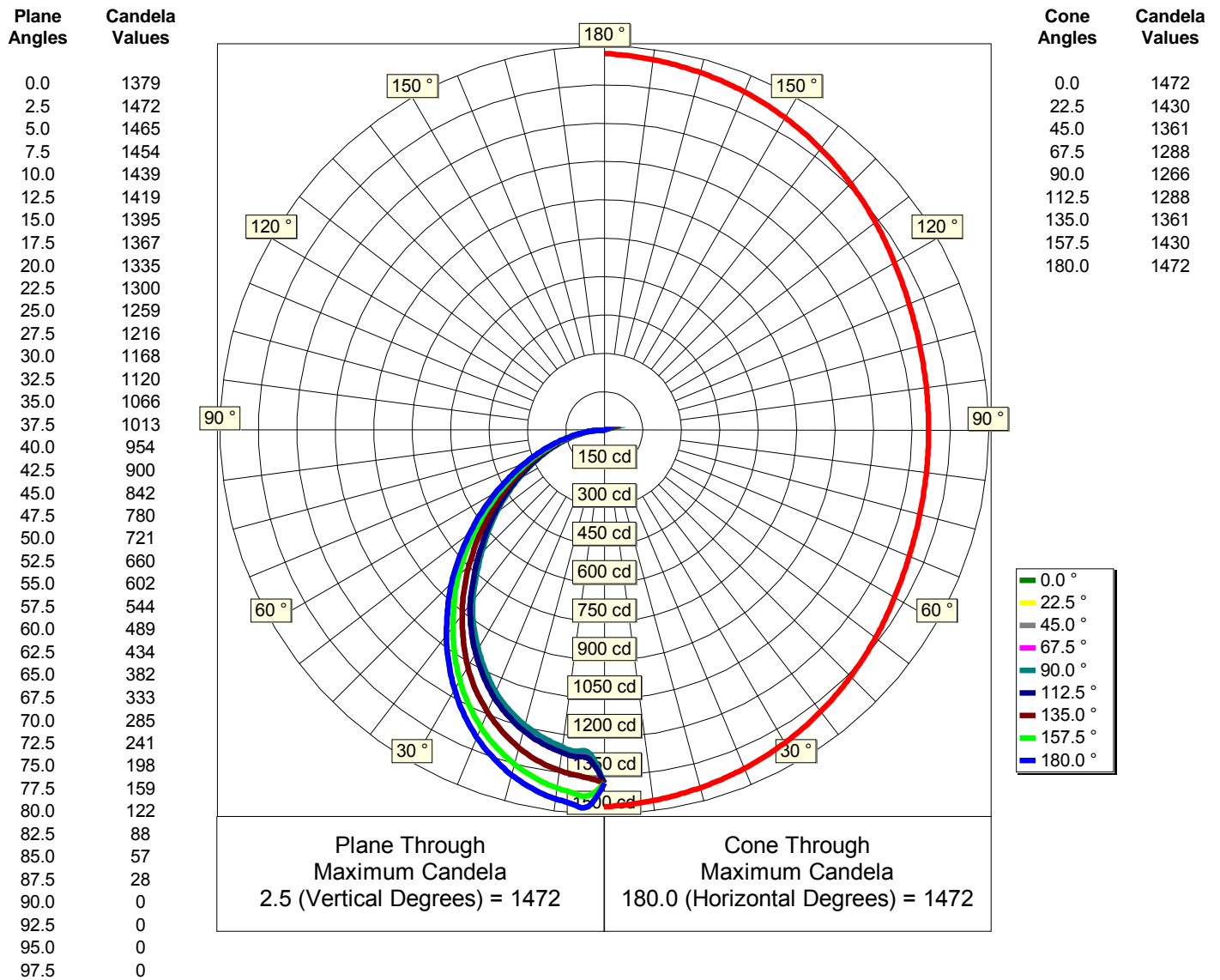
NVLAP LAB CODE: 200899-0

Photometric Report: S1410061-R1

Prepared for: Artemide Manufacturing N-A LTD · Test Date: 06 October 2014

Luminaire: SQUARE · Lumcat: USC-RA904B00HOC1A

Luminous Intensity - Polar Curve for each Plane(1)





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



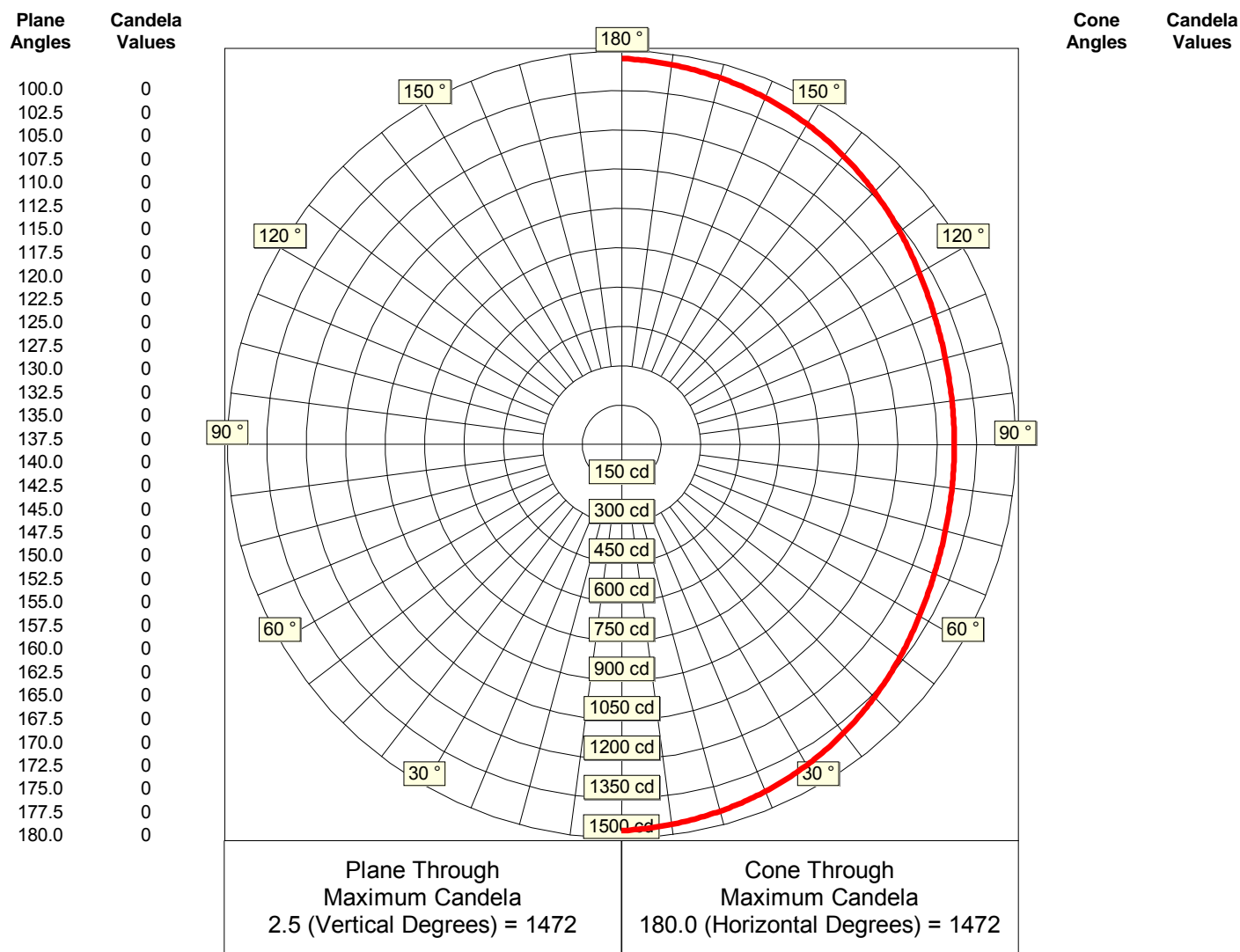
NVLAP LAB CODE: 200899-0

Photometric Report: S1410061-R1

Prepared for: Artemide Manufacturing N-A LTD · Test Date: 06 October 2014

Luminaire: SQUARE · Lumcat: USC-RA904B00HOC1A

Luminous Intensity - Polar Curve for each Plane(2)





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

IES File Headers

```
IESNA:LM-63-2002
[ISSUEDATE]      06 October 2014
[TESTLAB]        Spectra Lux Industries Inc.
[TEST]           S1410061-R1
[MANUFAC]        Artemide
[LUMCAT]          USC-RA904B00HOC1A
[LUMINAIRE]       SQUARE
[LAMP]           (1) 54W FLU T5 Coated c/w Advance Ballast ICN-2S54-N @ 120.00V
[_LAMPDETAILS]    Standard: N/A Voltage=0V LCL=N/A
[_BURNING]        Vertical Base Up (5,000 Lumens)
[_REFLECTOR]      White Polymer Reflector
[_LENS]           Diffuse Flat Acrylic Top and Bottom
[_HOUSING]        Extruded Aluminum
[_SKTPOSITION]
[DISTRIBUTION]    Direct Type - Downlight
```

Candela Table

Lateral Angles

	0.0	22.5	45.0	67.5	90.0	112.5	135.0	157.5	180.0
V e r t i c a l	0.0	1379	1379	1379	1379	1379	1379	1379	1379
	2.5	1472	1430	1361	1288	1266	1288	1361	1472
	5.0	1465	1423	1352	1281	1260	1281	1352	1465
	7.5	1454	1411	1341	1270	1248	1270	1341	1454
	10.0	1439	1395	1327	1256	1233	1256	1327	1439
	12.5	1419	1375	1308	1238	1214	1238	1308	1419
	15.0	1395	1352	1285	1216	1193	1216	1285	1395
	17.5	1367	1323	1257	1190	1168	1190	1257	1367
	20.0	1335	1292	1226	1161	1140	1161	1226	1335
	22.5	1300	1257	1192	1127	1107	1127	1192	1300
	25.0	1259	1217	1153	1089	1067	1089	1153	1259
	27.5	1216	1174	1112	1049	1027	1049	1112	1216
	30.0	1168	1127	1065	1005	984	1005	1065	1168
	32.5	1120	1077	1016	959	940	959	1016	1120
	35.0	1066	1024	963	910	894	910	963	1066
	37.5	1013	971	911	860	842	860	911	1013
	40.0	954	914	857	803	785	803	857	954
	42.5	900	862	802	748	729	748	802	900
	45.0	842	806	746	694	676	694	746	842
A n g l e s	47.5	780	745	689	640	625	640	689	780
	50.0	721	688	635	592	578	592	635	721
	52.5	660	629	581	543	530	543	581	660
	55.0	602	573	529	496	484	496	529	602
	57.5	544	517	479	447	437	447	479	544
	60.0	489	465	430	401	392	401	430	489
	62.5	434	412	381	355	347	355	381	434
	65.0	382	363	336	313	306	313	336	382
	67.5	333	316	294	274	268	274	294	333
	70.0	285	270	252	236	231	236	252	285
	72.5	241	229	214	201	197	201	229	241
	75.0	198	189	178	168	165	168	189	198
	77.5	159	153	145	138	136	138	153	159
	80.0	122	118	113	109	108	109	113	122
	82.5	88	86	84	83	83	84	86	88
	85.0	57	57	59	61	62	59	57	57
	87.5	28	31	38	42	44	38	31	28
	90.0	0	0	0	0	0	0	0	0



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

Lateral Angles

	0.0	22.5	45.0	67.5	90.0	112.5	135.0	157.5	180.0
V e r t i c a l A n g l e s	92.5	0	0	0	0	0	0	0	0
	95.0	0	0	0	0	0	0	0	0
	97.5	0	0	0	0	0	0	0	0
	100.0	0	0	0	0	0	0	0	0
	102.5	0	0	0	0	0	0	0	0
	105.0	0	0	0	0	0	0	0	0
	107.5	0	0	0	0	0	0	0	0
	110.0	0	0	0	0	0	0	0	0
	112.5	0	0	0	0	0	0	0	0
	115.0	0	0	0	0	0	0	0	0
	117.5	0	0	0	0	0	0	0	0
	120.0	0	0	0	0	0	0	0	0
	122.5	0	0	0	0	0	0	0	0
	125.0	0	0	0	0	0	0	0	0
	127.5	0	0	0	0	0	0	0	0
	130.0	0	0	0	0	0	0	0	0
	132.5	0	0	0	0	0	0	0	0
	135.0	0	0	0	0	0	0	0	0
	137.5	0	0	0	0	0	0	0	0
	140.0	0	0	0	0	0	0	0	0
A n g l e s	142.5	0	0	0	0	0	0	0	0
	145.0	0	0	0	0	0	0	0	0
	147.5	0	0	0	0	0	0	0	0
	150.0	0	0	0	0	0	0	0	0
	152.5	0	0	0	0	0	0	0	0
	155.0	0	0	0	0	0	0	0	0
	157.5	0	0	0	0	0	0	0	0
	160.0	0	0	0	0	0	0	0	0
	162.5	0	0	0	0	0	0	0	0
	165.0	0	0	0	0	0	0	0	0
A n g l e s	167.5	0	0	0	0	0	0	0	0
	170.0	0	0	0	0	0	0	0	0
	172.5	0	0	0	0	0	0	0	0
	175.0	0	0	0	0	0	0	0	0
	177.5	0	0	0	0	0	0	0	0
	180.0	0	0	0	0	0	0	0	0