



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-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	S1410064-R1	Description	Coated 80W FLU T5	Type	Commercial
Test Date	6 October 2014	Base	Medium Bipin	Description	80FLU-CF214
Report Date	31 October 2014	Standard Designation	N/A	Manufacturer	Advance
Ambient	24.6 °C	Rated Lumens	7000	Catalog No.	ICN-SS80-T
Humidity	33.9 %	Test Position	Horizontal	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	5.0000
Name	SQUARE	Housing	Extruded Aluminum	Y	0.2500
Catalog No.	USC-RA905B00HOC1A	Lens	Diffuse Flat Acrylic Top and Bottom	Z	0.0000

SKT Position:

Tested By: Jean-Paul Ojeil

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	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



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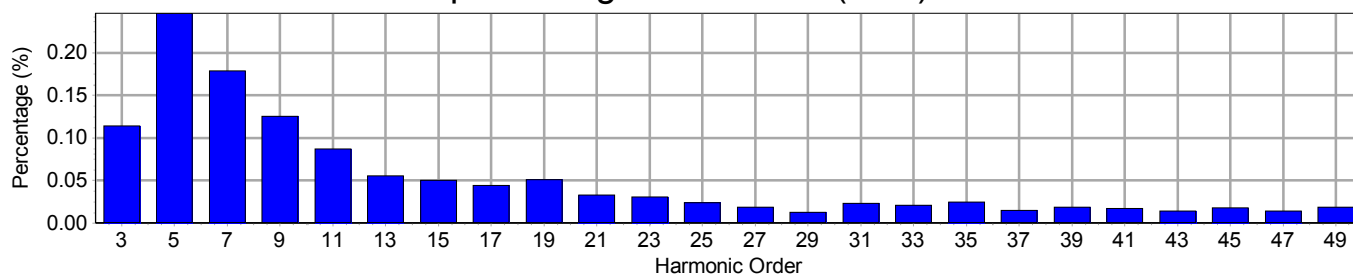
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Electrical Measurements

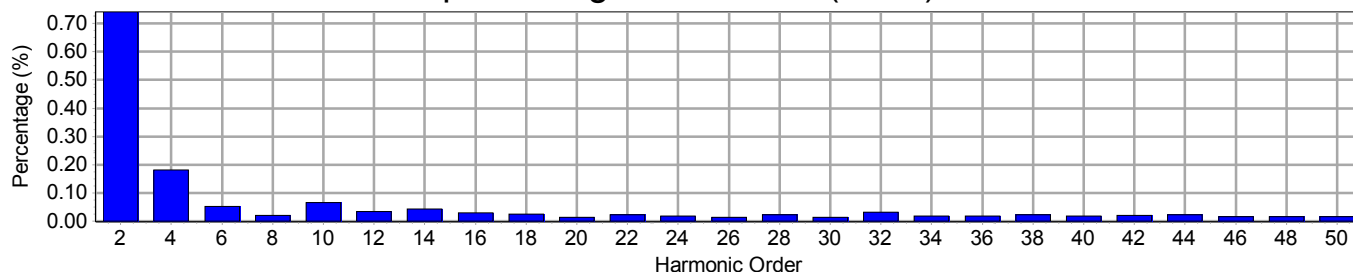
Input

Frequency	60 Hz	Active Power	70.81 W	THDV [ANSI]	0.86 %
Voltage	120.3 V(rms)	Apparent Power	70.93 VA	THDA [ANSI]	4.25 %
Current	0.5894 A(rms)	Power Factor	0.998	Max. Harmonic At	9th order

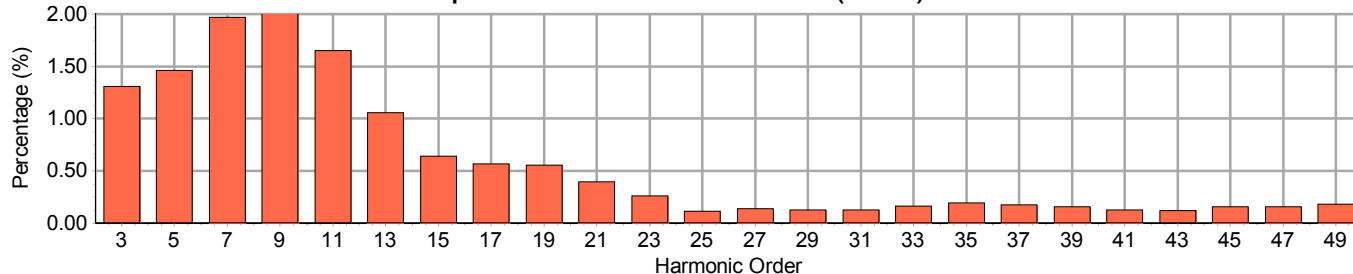
Input Voltage Harmonics (Odd)



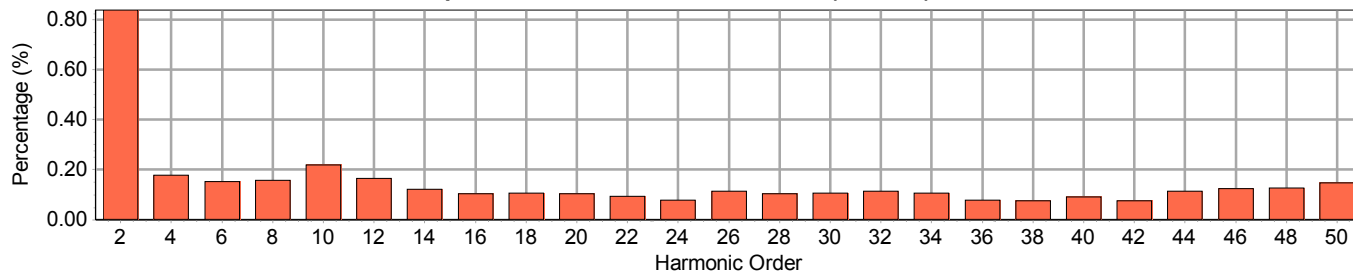
Input Voltage Harmonics (Even)



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	0.742	0.841
3	180	0.114	1.307	4	240	0.183	0.179
5	300	0.247	1.461	6	360	0.052	0.154
7	420	0.179	1.969	8	480	0.022	0.159
9	540	0.125	2.010	10	600	0.066	0.220
11	660	0.087	1.650	12	720	0.036	0.166
13	780	0.056	1.055	14	840	0.045	0.122
15	900	0.050	0.641	16	960	0.030	0.104
17	1020	0.044	0.568	18	1080	0.027	0.108
19	1140	0.051	0.557	20	1200	0.014	0.105
21	1260	0.033	0.397	22	1320	0.024	0.094
23	1380	0.030	0.262	24	1440	0.018	0.079
25	1500	0.024	0.115	26	1560	0.014	0.113
27	1620	0.019	0.138	28	1680	0.024	0.104
29	1740	0.013	0.128	30	1800	0.016	0.106
31	1860	0.023	0.128	32	1920	0.034	0.115
33	1980	0.021	0.165	34	2040	0.018	0.107
35	2100	0.024	0.196	36	2160	0.019	0.078
37	2220	0.015	0.176	38	2280	0.024	0.075
39	2340	0.019	0.154	40	2400	0.019	0.091
41	2460	0.017	0.126	42	2520	0.022	0.075
43	2580	0.014	0.122	44	2640	0.024	0.114
45	2700	0.018	0.155	46	2760	0.017	0.123
47	2820	0.014	0.155	48	2880	0.016	0.126
49	2940	0.019	0.181	50	3000	0.018	0.146



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NVLAP LAB CODE: 200899-0

Photometric Report: S1410064-R1

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

Luminaire: SQUARE · Lumcat: USC-RA905B00HOC1A

Coefficients of Utilization - Zonal Cavity Method

RCR	RC RW	0.9				0.8				0.7				0.5			0.1			0
		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
0		59	59	59	59	58	58	58	58	56	56	56	56	54	54	54	49	49	49	48
1		54	52	49	47	53	50	48	47	51	49	47	46	47	46	44	44	43	42	41
2		49	45	42	39	48	44	41	38	47	43	40	38	42	39	37	39	37	35	34
3		45	40	36	32	44	39	35	32	43	38	35	32	37	34	31	34	32	30	29
4		42	35	31	28	40	35	31	27	39	34	30	27	33	30	27	31	28	26	25
5		38	32	27	24	37	31	27	24	36	31	27	24	30	26	23	28	25	23	22
6		35	29	24	21	34	28	24	21	34	28	24	21	27	23	21	25	22	20	19
7		33	26	22	19	32	26	21	19	31	25	21	19	25	21	18	23	20	18	17
8		31	24	20	17	30	23	19	17	29	23	19	17	22	19	17	21	18	16	15
9		29	22	18	15	28	22	18	15	27	21	18	15	21	17	15	20	17	15	14
10		27	20	16	14	26	20	16	14	26	20	16	14	19	16	14	18	16	13	13

Zonal Lumen Summary

Average Luminance (Cd/m²)

Zone	Lumens	% Lamp	% Luminaire	Angle	0 Degree	45 Degree	90 Degree
0 - 10	129	1.84	3.80				
10 - 20	364	5.20	10.75	0.0	11943	11943	11943
20 - 30	537	7.67	15.87				
30 - 40	616	8.81	18.22	45.0	11086	9293	7980
40 - 50	596	8.52	17.62				
50 - 60	500	7.14	14.77	55.0	9926	8248	7142
60 - 70	358	5.11	10.57				
70 - 80	208	2.97	6.15	65.0	8668	7248	6243
80 - 90	76	1.08	2.24				
90 - 120	0	0.00	0.01	75.0	7452	6435	5679
90 - 130	0	0.00	0.01				
90 - 150	0	0.00	0.01	85.0	6772	6969	6861
90 - 180	0	0.00	0.01				
0 - 180	3383	48.33	100.00				

Total Lamp Lumens: 7000

Total Luminaire Efficiency: 48.33%

Luminaire Spacing Criterion (0 Degree): 1.3143

Luminaire Spacing Criterion (90 Degree): 1.0333

CIE Type: Direct



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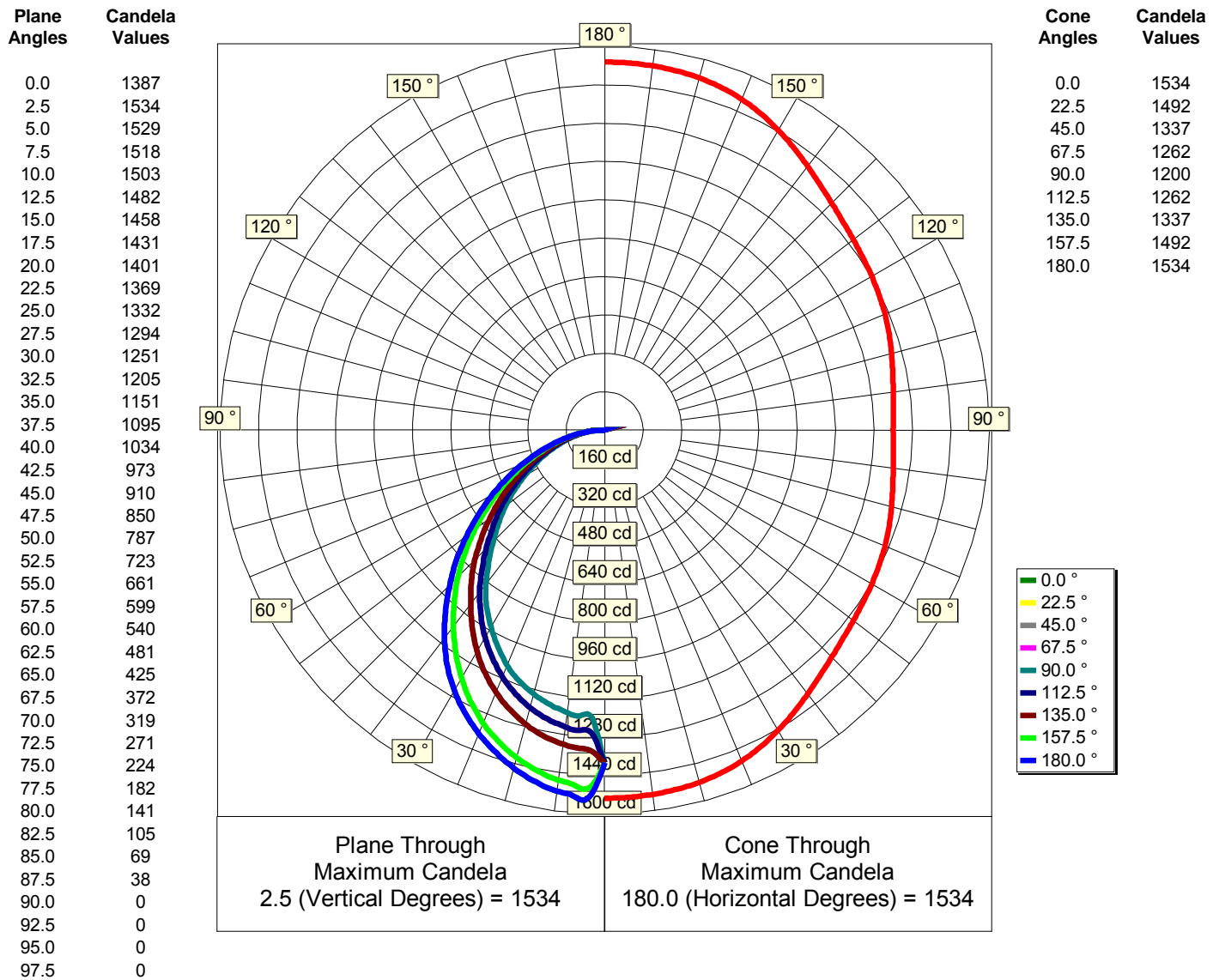
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Photometric Report: S1410064-R1

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

Luminaire: SQUARE · Lumcat: USC-RA905B00HOC1A

Luminous Intensity - Polar Curve for each Plane(1)





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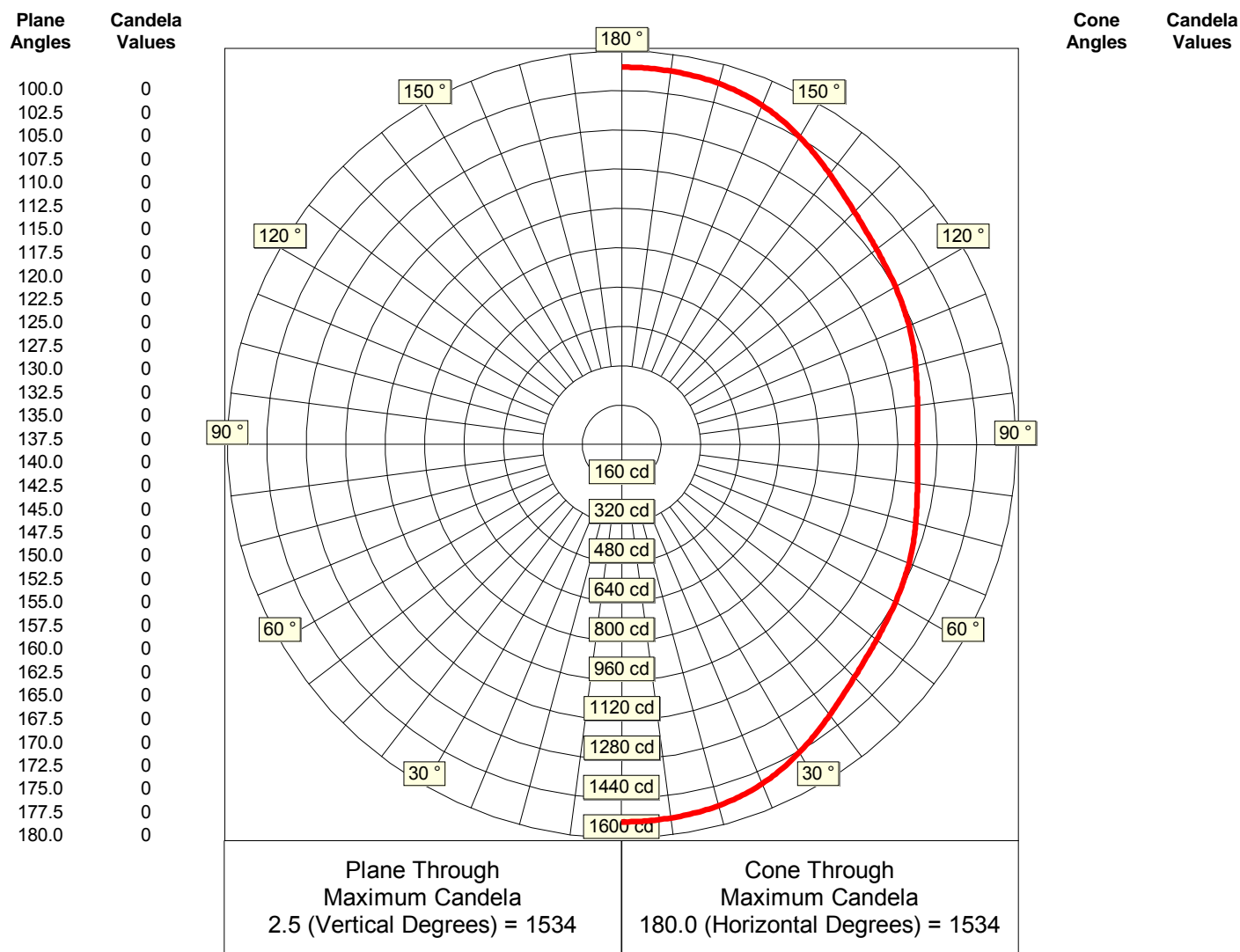
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Photometric Report: S1410064-R1

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

Luminaire: SQUARE · Lumcat: USC-RA905B00HOC1A

Luminous Intensity - Polar Curve for each Plane(2)





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NVLAP
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IES File Headers

IESNA:LM-63-2002
[ISSUEDATE] 06 October 2014
[TESTLAB] Spectra Lux Industries Inc.
[TEST] S1410064-R1
[MANUFAC] Artemide
[LUMCAT] USC-RA905B00HOC1A
[LUMINAIRE] SQUARE
[LAMP] (1) 80W FLU T5 Coated c/w Advance Ballast ICN-SS80-T @ 120.00V
[_LAMPDETAILS] Standard: N/A Voltage=0V LCL=N/A
[_BURNING] Horizontal (7,000 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	1387	1387	1387	1387	1387	1387	1387	1387
	2.5	1534	1492	1337	1262	1200	1262	1337	1492
	5.0	1529	1484	1329	1257	1196	1257	1329	1484
	7.5	1518	1472	1320	1247	1187	1247	1320	1472
	10.0	1503	1456	1308	1235	1174	1235	1308	1456
	12.5	1482	1436	1291	1218	1158	1218	1291	1436
	15.0	1458	1413	1270	1197	1139	1197	1270	1413
	17.5	1431	1386	1243	1172	1117	1172	1243	1386
	20.0	1401	1356	1214	1144	1091	1144	1214	1356
	22.5	1369	1321	1182	1112	1061	1112	1182	1321
	25.0	1332	1281	1146	1076	1023	1076	1146	1281
	27.5	1294	1239	1107	1037	986	1037	1107	1239
	30.0	1251	1190	1062	995	946	995	1062	1190
	32.5	1205	1140	1015	951	905	951	1015	1140
	35.0	1151	1087	965	901	861	901	965	1087
	37.5	1095	1034	916	855	811	855	916	1034
	40.0	1034	977	866	800	757	800	866	977
	42.5	973	920	816	748	705	748	816	920
	45.0	910	863	763	696	655	696	763	863
A n g l e s	47.5	850	802	707	645	608	645	707	802
	50.0	787	742	655	598	564	598	655	742
	52.5	723	680	601	551	520	551	601	680
	55.0	661	622	549	505	476	505	549	622
	57.5	599	563	498	457	430	457	498	563
	60.0	540	508	450	411	387	411	450	508
	62.5	481	452	401	366	345	366	401	452
	65.0	425	400	356	325	306	325	356	400
	67.5	372	350	312	286	270	286	312	350
	70.0	319	301	270	248	235	248	270	301
	72.5	271	257	231	213	202	213	231	257
	75.0	224	214	193	180	171	180	193	214
	77.5	182	175	159	149	142	149	159	175
	80.0	141	137	127	120	115	120	127	137
	82.5	105	104	98	94	91	94	98	104
	85.0	69	71	71	71	69	71	71	69
	87.5	38	43	48	51	51	48	43	38
	90.0	0	0	0	0	0	0	0	0



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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
	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
	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