



# 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](http://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** Arancia Lighting Inc, 6048 Route 132 , Ste-Catherine , Québec, Canada, J5C2B1

General Information		SSL Details	Driver Details	
<b>Test Report</b>	S1709082-R1	<b>Description</b>	Cluster of Osram Sylvania LEDs	<b>Type</b> Commercial
<b>Test Date</b>	8 September 2017	<b>Serial Number</b>	2849-1	<b>Description</b> 60SSL-CY1374
<b>Report Date</b>	8 September 2017	<b>Photometric Method</b>	Absolute	<b>Manufacturer</b> HATCH
<b>Ambient</b>	24.5°C	<b>Lamp Lumens</b>	-1	<b>Catalog No.</b> (2) XAC34-1050P-UNV-1
<b>Humidity</b>	39.1 %	<b>Test Position</b>	Vertical Base Up	<b>Voltage</b> 120.00 V
<b>Lamp Type</b>	SSL	<b>Nominal Color</b>	4000K	<b>Power Factor</b> 0.9000

### Luminaire Data

General Information		Optics	Aperture (feet)	
<b>Manufacturer</b>	Arancia Lighting Inc	<b>Reflector</b>	None	<b>X</b> 0.1667
<b>Name</b>	Mini Jack	<b>Housing</b>	Aluminum Sheet Metal	<b>Y</b> 3.8333
<b>Catalog No.</b>	P90-D-04	<b>Lens</b>	Frosted Acrylic	<b>Z</b> 0.0000

Lamp Stabilization Time: 1 hour 15 minutes

**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](http://www.spectralux.ca)

ISO/IEC 17025  
**NVLAP**<sup>®</sup>  
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](http://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	KIKUSUI	SPEC 77766A	1450001	N.P.C.R.	N.P.C.R.
Input Power Meter	Yokogawa	WT210	91L236539	2017/05/05	2018/05/05
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	2016/10/05	2017/10/05

## Environment Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Temperature Humidity Sensor	Omega	HH311	051202970	2016/10/20	2017/10/20



# 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](http://www.spectralux.ca)

ISO/IEC 17025



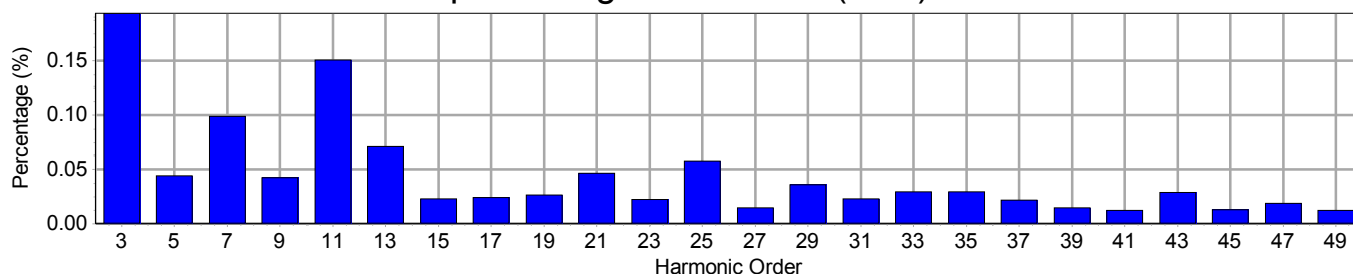
NVLAP LAB CODE: 200899-0

## Electrical Measurements

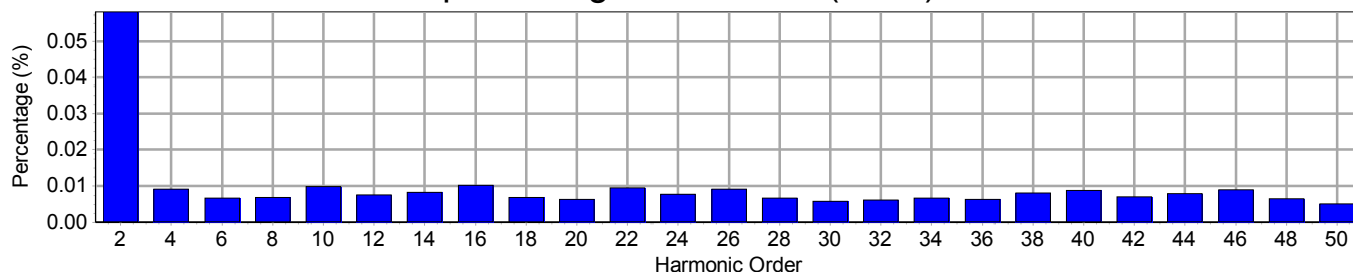
### Input

Frequency	60 Hz	Active Power	58.83 W	THDV [ANSI]	0.31 %
Voltage	120.1 V(rms)	Apparent Power	59.01 VA	THDA [ANSI]	7.06 %
Current	0.4912 A(rms)	Power Factor	0.997	Max. Harmonic At	7th order

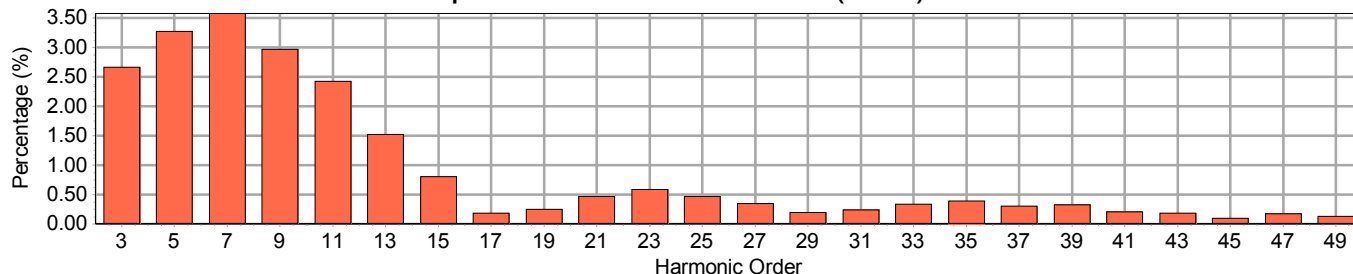
### Input Voltage Harmonics (Odd)



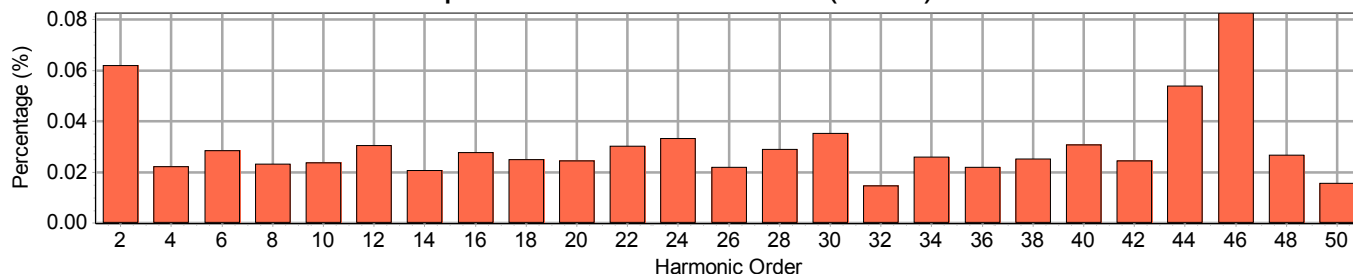
### Input Voltage Harmonics (Even)



### 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](http://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	0.058	0.062
3	180	0.194	2.667	4	240	0.009	0.022
5	300	0.044	3.271	6	360	0.007	0.029
7	420	0.099	3.585	8	480	0.007	0.023
9	540	0.042	2.974	10	600	0.010	0.024
11	660	0.151	2.428	12	720	0.008	0.030
13	780	0.071	1.515	14	840	0.008	0.021
15	900	0.023	0.805	16	960	0.010	0.028
17	1020	0.024	0.183	18	1080	0.007	0.025
19	1140	0.026	0.250	20	1200	0.006	0.024
21	1260	0.047	0.459	22	1320	0.009	0.030
23	1380	0.022	0.582	24	1440	0.008	0.033
25	1500	0.057	0.467	26	1560	0.009	0.022
27	1620	0.015	0.338	28	1680	0.007	0.029
29	1740	0.036	0.186	30	1800	0.006	0.035
31	1860	0.023	0.237	32	1920	0.006	0.015
33	1980	0.029	0.333	34	2040	0.007	0.026
35	2100	0.029	0.391	36	2160	0.006	0.022
37	2220	0.022	0.301	38	2280	0.008	0.025
39	2340	0.014	0.325	40	2400	0.009	0.031
41	2460	0.012	0.203	42	2520	0.007	0.025
43	2580	0.029	0.176	44	2640	0.008	0.054
45	2700	0.013	0.098	46	2760	0.009	0.083
47	2820	0.019	0.172	48	2880	0.006	0.027
49	2940	0.012	0.121	50	3000	0.005	0.016



# 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](http://www.spectralux.ca)

ISO/IEC 17025



NVLAP LAB CODE: 200899-0

## Photometric Report: S1709082-R1

Prepared for: Arancia Lighting Inc · Test Date: 08 September 2017

Luminaire: Mini Jack · Lumcat: P90-D-04

### 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		122	122	122	122	119	119	119	119	116	116	116	116	111	111	111	102	102	102				100
1		113	108	103	100	110	105	101	98	107	103	100	96	99	96	93	91	90	88				86
2		103	95	88	82	101	93	87	81	98	91	85	80	88	83	79	81	78	75				73
3		95	84	76	70	92	83	75	69	90	81	74	68	78	72	67	73	69	65				63
4		87	75	66	60	85	74	66	59	83	73	65	59	70	63	58	66	61	57				55
5		81	68	59	52	79	67	58	52	77	65	57	52	63	56	51	60	54	50				48
6		75	61	52	46	73	60	52	46	71	59	51	46	58	50	45	54	49	44				42
7		70	56	47	41	68	55	47	41	66	54	46	41	53	46	40	50	44	40				38
8		65	51	43	37	63	50	42	37	62	50	42	37	48	41	36	46	40	36				34
9		61	47	39	33	59	47	39	33	58	46	38	33	45	38	33	43	37	33				31
10		57	44	36	30	56	43	35	30	55	43	35	30	42	35	30	40	34	30				28

### Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0 - 10	122	4.30	4.30
10 - 20	342	12.02	12.02
20 - 30	487	17.13	17.13
30 - 40	537	18.90	18.90
40 - 50	501	17.64	17.64
50 - 60	402	14.16	14.16
60 - 70	272	9.58	9.58
70 - 80	141	4.96	4.96
80 - 90	36	1.28	1.28
90 - 120	1	0.03	0.03
90 - 130	1	0.03	0.03
90 - 150	1	0.03	0.03
90 - 180	1	0.03	0.03
0 - 180	2842	100.00	100.00

### Average Luminance (Cd/m<sup>2</sup>)

Angle	0 Degree	45 Degree	90 Degree
45.0	18802	15405	12521
55.0	17019	13084	9736
65.0	15111	10580	7296
75.0	13396	7832	5094
85.0	13844	4239	2099

Luminaire Luminous Flux: 2842

Measured Input Power: 58.83 W

Total Luminaire Efficiency: N/A

Luminaire Luminous Efficacy: 48.3 lm/W

Luminaire Spacing Criterion (0 Degree): 1.2237

Luminaire Spacing Criterion (90 Degree): 1.0399

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](http://www.spectralux.ca)

ISO/IEC 17025



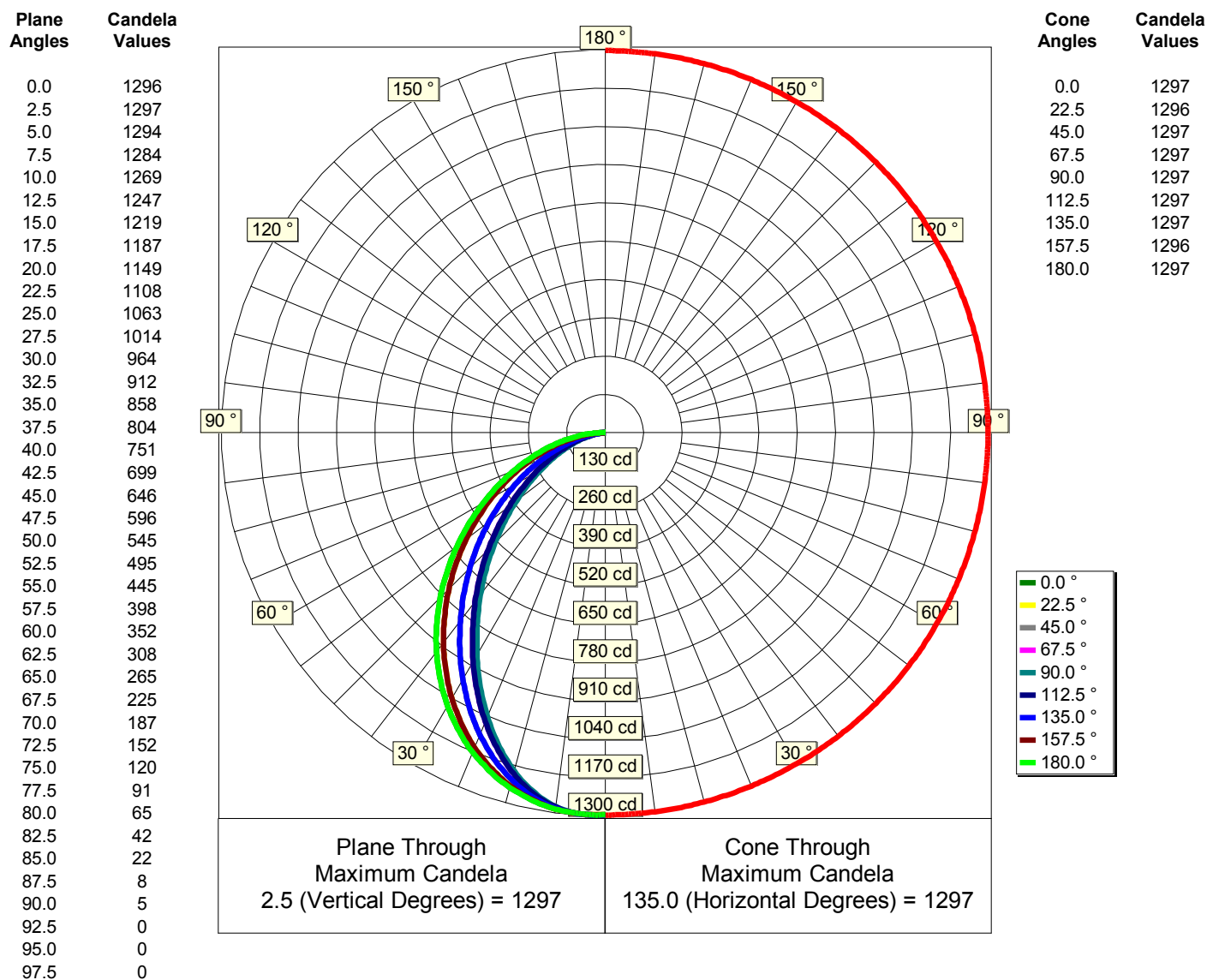
NVLAP LAB CODE: 200899-0

## Photometric Report: S1709082-R1

Prepared for: Arancia Lighting Inc · Test Date: 08 September 2017

Luminaire: Mini Jack · Lumcat: P90-D-04

### 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](http://www.spectralux.ca)

ISO/IEC 17025



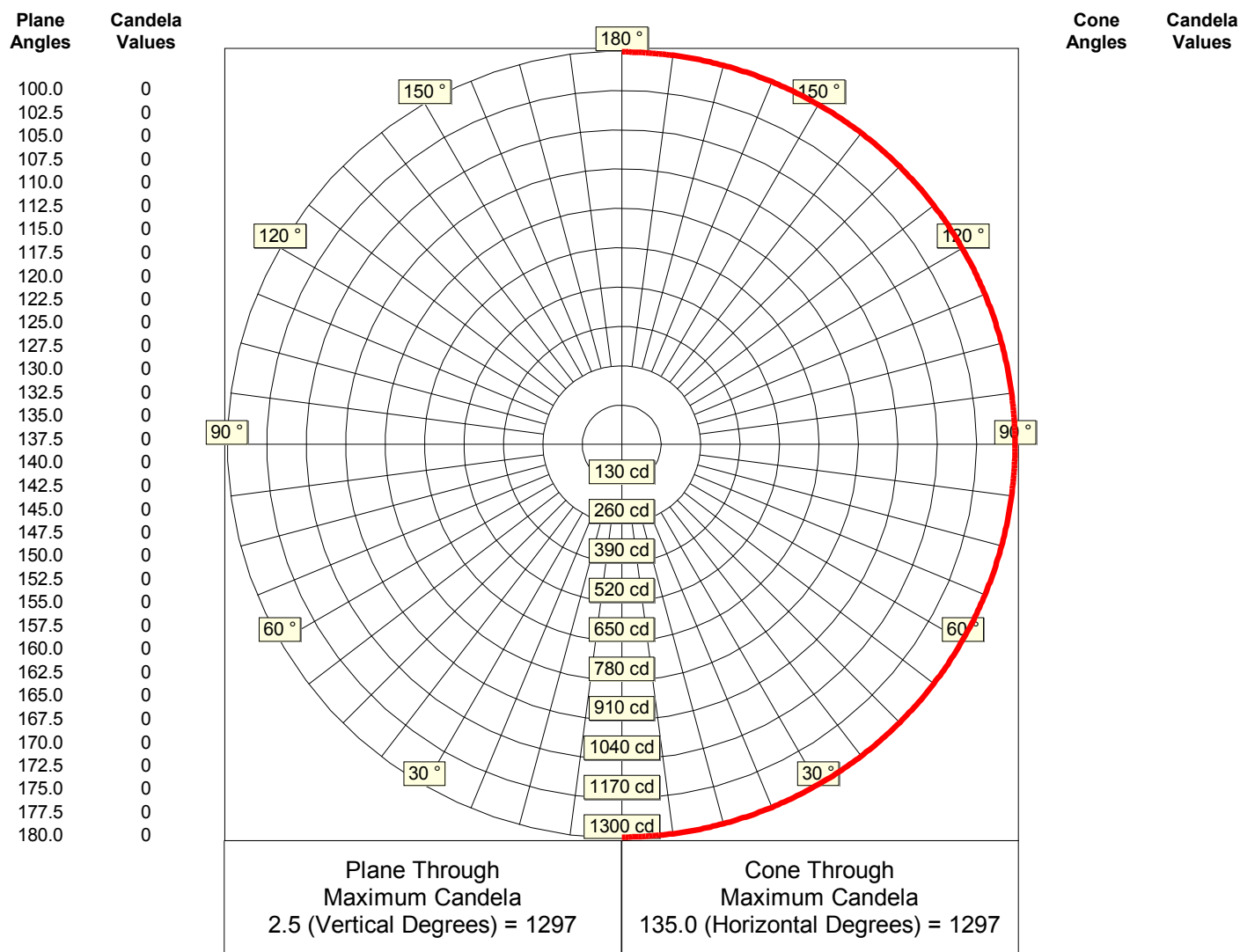
NVLAP LAB CODE: 200899-0

## Photometric Report: S1709082-R1

Prepared for: Arancia Lighting Inc · Test Date: 08 September 2017

Luminaire: Mini Jack · Lumcat: P90-D-04

### 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](http://www.spectralux.ca)

ISO/IEC 17025  
**NVLAP**<sup>®</sup>  
NVLAP LAB CODE: 200899-0

## IES File Headers

```
IESNA:LM-63-2002
[ISSUEDATE] 08 September 2017
[TESTLAB] Spectra Lux Industries Inc.
[TEST] S1709082-R1
[MANUFAC] Arancia Lighting Inc
[LUMCAT] P90-D-04
[LUMINAIRE] Mini Jack
[LAMP] Cluster of Osram Sylvania LEDs () c/w (2) HATCH Driver XAC34-1050P-UNV-1 @ 120.00V
[_BURNING] Vertical Base Up (2,842 Luminaire Lumens)
[_REFLECTOR] Nione
[_LENS] Frosted Acrylic
[_HOUSING] Aluminum Sheet Metal
[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	1296	1296	1296	1296	1296	1296	1296	1296
	2.5	1297	1296	1297	1297	1297	1297	1296	1297
	5.0	1293	1294	1294	1293	1292	1293	1294	1293
	7.5	1287	1287	1284	1280	1279	1280	1284	1287
	10.0	1277	1275	1269	1260	1256	1260	1269	1277
	12.5	1262	1260	1247	1232	1226	1232	1247	1260
	15.0	1246	1240	1219	1197	1188	1197	1219	1240
	17.5	1225	1215	1187	1156	1144	1156	1187	1215
	20.0	1199	1187	1149	1110	1095	1110	1149	1187
	22.5	1172	1155	1108	1060	1041	1060	1108	1155
	25.0	1141	1119	1063	1007	984	1007	1063	1119
	27.5	1105	1080	1014	951	927	951	1014	1080
	30.0	1068	1039	964	894	867	894	964	1039
	32.5	1027	993	912	836	807	836	912	993
	35.0	983	947	858	779	750	779	858	947
	37.5	937	899	804	723	693	723	804	899
	40.0	890	849	751	668	636	668	751	849
	42.5	840	798	699	613	580	613	699	798
A n g l e s	45.0	789	747	646	559	525	559	646	747
	47.5	737	696	596	506	473	506	596	696
	50.0	685	644	545	455	424	455	545	644
	52.5	632	593	495	407	377	407	495	593
	55.0	579	543	445	361	331	361	445	543
	57.5	527	493	398	316	290	316	398	493
	60.0	476	445	352	275	250	275	352	445
	62.5	427	399	308	236	214	236	308	399
	65.0	379	352	265	201	183	201	265	352
	67.5	333	308	225	170	152	170	225	308
	70.0	288	265	187	139	125	139	187	265
	72.5	246	222	152	112	102	112	152	222
	75.0	206	182	120	89	78	89	120	182
	77.5	169	144	91	65	57	65	91	144
	80.0	133	105	65	45	41	45	105	133
	82.5	101	74	42	28	24	28	74	101
	85.0	72	45	22	12	11	12	45	72
	87.5	43	18	8	8	9	8	18	43
	90.0	17	5	5	6	5	6	5	17



# 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](http://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
	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