



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 Andlight, 505B Railway Street, Vancouver, BC, Canada, V6A 1A7

General Information		SSL Details		Electrical Details	
Test Report	S1708311-R1	Description	Cluster of Nichia LEDs	Alimentation	Direct DC
Test Date	31 August 2017	Serial Number	SRIS-2829	Power Supply	Amrel SPS 150-7
Report Date	1 September 2017	Photometric Method	Absolute	Operating Mode	Constant Voltage
Ambient	24.5°C	Lamp Lumens	-1	Input Voltage	24 VDC
Humidity	38.8 %	Test Position	Vertical Base Up	Input Current	0.60 ADC
Lamp Type	SSL	Nominal Color	2700K	Active Power	14.4W

Luminaire Data

General Information		Optics		Aperture (feet)	
Manufacturer	Andlight	Reflector	None	X	-0.1250
Name	PIPELINE Pendant Series	Housing	Black Body cw Black End Caps	Y	3.2917
Catalog No.	PIP-125-P-WW-BK-024	Lens	Cylindrical Acrylic Diffuser	Z	-0.1250

Lamp Stabilization Time: 1 hour 45 minutes

Approved Signatory: Chrisnel Bot

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
Test Power Supply	American Reliance	SPS150-7	B10155	N.P.C.R.	N.P.C.R.
Shunt Resistor	Fluke	Y5020	5675013	2017/05/10	2018/05/10
Current Multimeter	HP Agilent	HP34401A	US36106747	2017/05/16	2018/05/16
Voltage Multimeter	HP Agilent	HP34401A	US36112752	2017/05/10	2018/05/10

Photometric Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Photodetector	Inphora	IPR-PDET19	110803	2016/10/05	2017/10/05

Environment Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Temperature Humidity Sensor	Omega	HH311	120504178	2016/04/20	2018/04/20



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Electrical Measurements

Input Voltage	24.00 V (DC)	Shunt Voltage	0.0601 V (DC)
Input Current	0.6000 A (DC)	Shunt Resistor	.01001673 Ω
Input Power	14.40W	Load Voltage	23.9399 V (DC)



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Photometric Report: S1708311-R1

Prepared for: Andlight · Test Date: 31 August 2017

Luminaire: PIPELINE Pendant Series · Lumcat: PIP-125-P-WW-BK-024

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		120	120	120	120	115	115	115	115	110	110	110	110	101	101	101	85	85	85	81			
1		108	102	97	93	103	98	93	89	99	94	90	86	86	83	80	73	71	69	65			
2		99	89	82	75	94	86	79	73	90	82	76	71	76	71	66	64	61	58	55			
3		90	79	70	63	86	76	68	61	82	73	65	59	67	61	56	57	53	50	47			
4		83	70	61	54	79	67	59	52	75	65	57	51	60	54	48	51	47	43	40			
5		77	63	54	47	73	61	52	46	70	58	50	44	54	47	42	47	42	38	36			
6		71	57	48	41	68	55	46	40	65	53	45	39	49	43	37	43	38	34	32			
7		66	52	43	37	63	50	42	36	60	48	41	35	45	38	34	39	34	31	28			
8		62	47	39	33	59	46	38	32	56	44	37	32	42	35	30	36	31	28	26			
9		58	44	35	30	55	42	34	29	53	41	34	29	38	32	27	34	29	25	23			
10		54	40	32	27	52	39	32	27	50	38	31	26	36	29	25	32	27	23	21			

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0 - 10	25	3.59	3.59
10 - 20	67	9.62	9.62
20 - 30	88	12.69	12.69
30 - 40	91	13.16	13.16
40 - 50	83	11.97	11.97
50 - 60	70	10.04	10.04
60 - 70	57	8.16	8.16
70 - 80	46	6.64	6.64
80 - 90	38	5.43	5.43
90 - 120	84	12.09	12.09
90 - 130	103	14.77	14.77
90 - 150	124	17.91	17.91
90 - 180	130	18.70	18.70
0 - 180	694	100.00	100.00

Average Luminance (Cd/m²)

Angle	0 Degree	45 Degree	90 Degree
45.0	1748	1139	949
55.0	1556	1009	915
65.0	1368	1031	1045
75.0	1193	1439	1450
85.0	1297	3661	4107

Luminaire Luminous Flux: 694

Measured Input Power: 14.4W

Total Luminaire Efficiency: N/A

Luminaire Luminous Efficacy: 48.2 lm/W

Luminaire Spacing Criterion (0 Degree): 1.2009

Luminaire Spacing Criterion (90 Degree): 0.8746

CIE Type: Direct/Indirect



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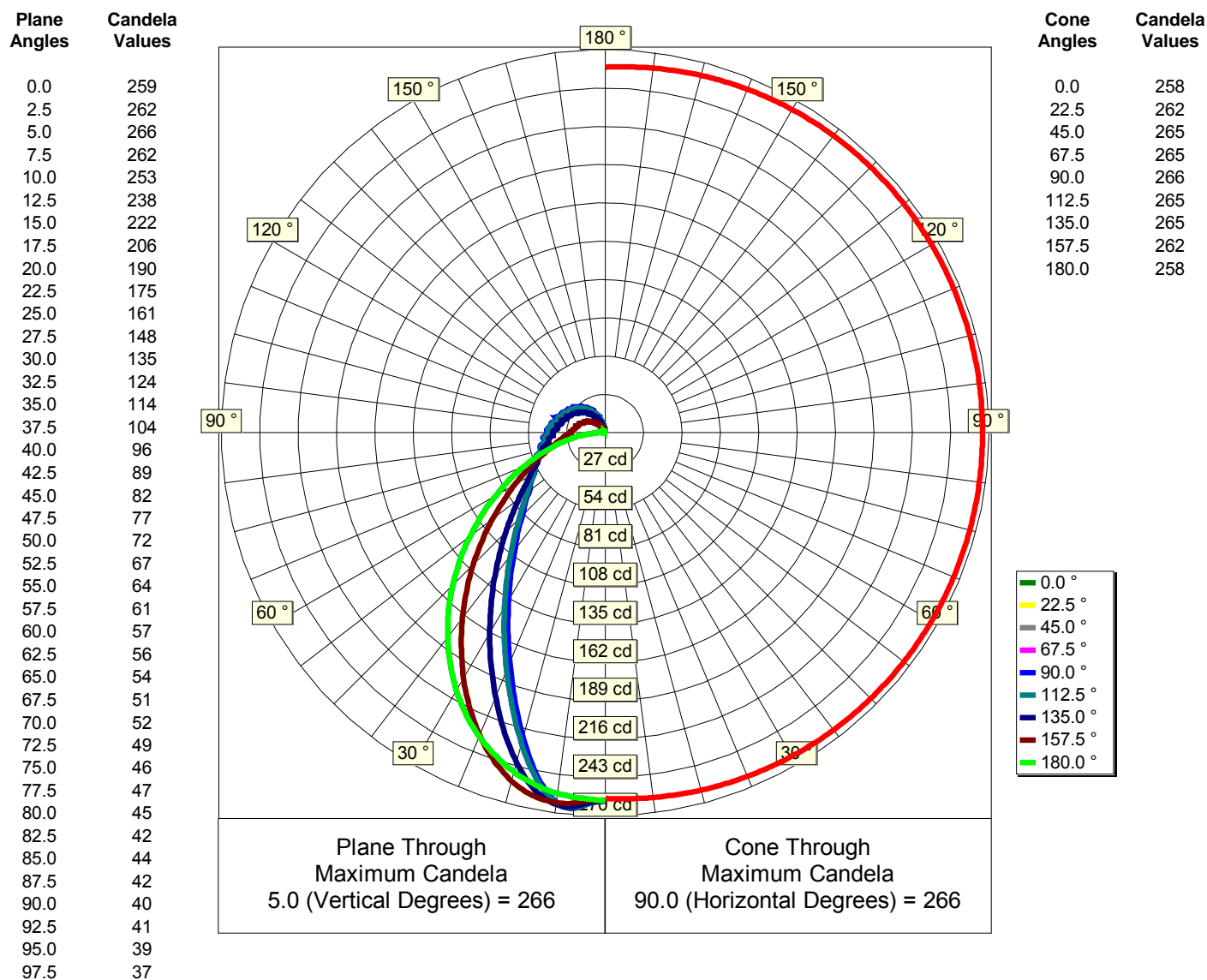
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Photometric Report: S1708311-R1

Prepared for: Andlight · Test Date: 31 August 2017

Luminaire: PIPELINE Pendant Series · Lumcat: PIP-125-P-WW-BK-024

Luminous Intensity - Polar Curve for each Plane(1)





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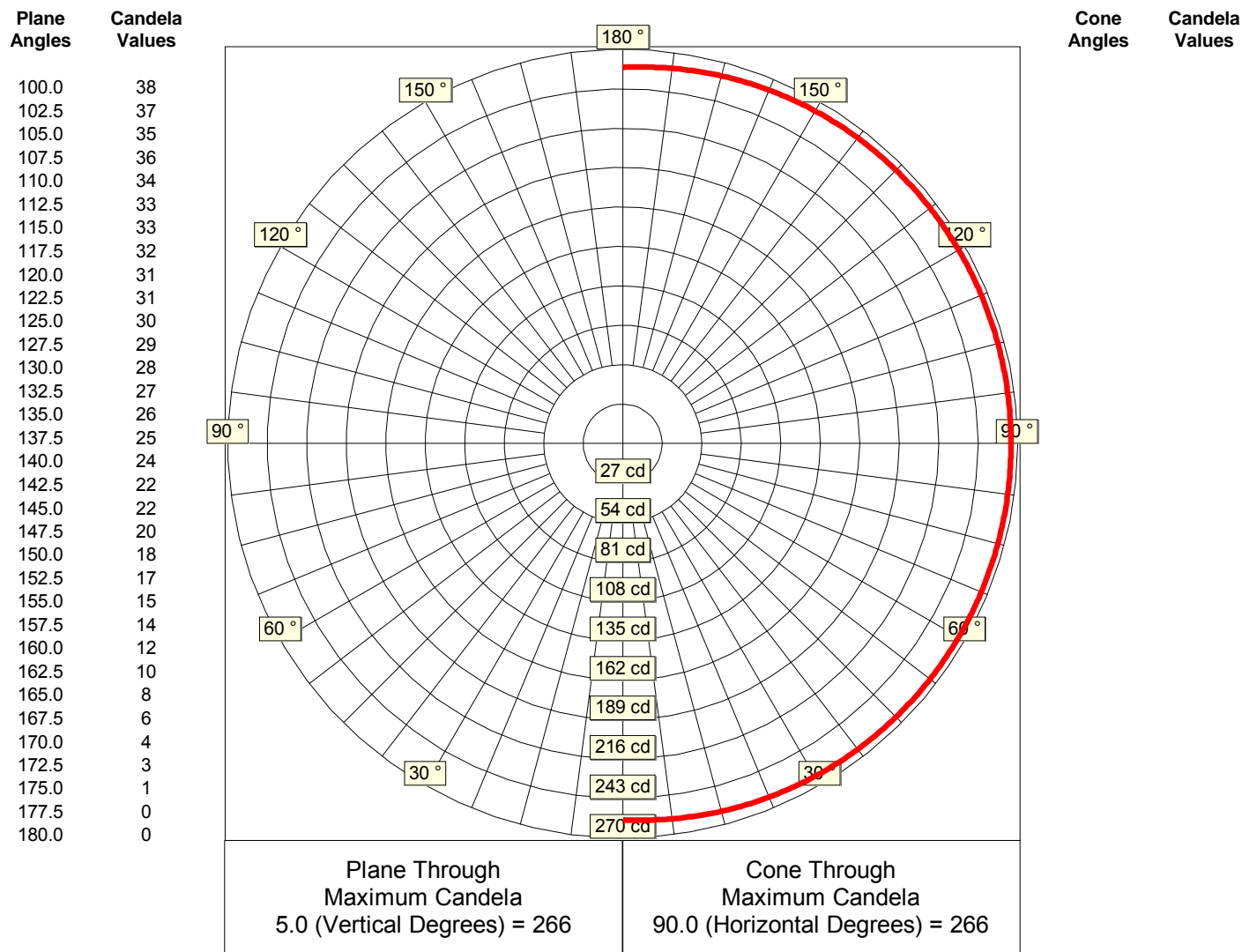
NVLAP LAB CODE: 200899-0

Photometric Report: S1708311-R1

Prepared for: Andlight · Test Date: 31 August 2017

Luminaire: PIPELINE Pendant Series · Lumcat: PIP-125-P-WW-BK-024

Luminous Intensity - Polar Curve for each Plane(2)





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IES File Headers

IESNA:LM-63-2002
[ISSUEDATE] 31 August 2017
[TESTLAB] Spectra Lux Industries Inc.
[TEST] S1708311-R1
[MANUFAC] Andlight
[LUMCAT] PIP-125-P-WW-BK-024
[LUMINAIRE] PIPELINE Pendant Series
[LAMP] Cluster of 2700K Nichia LEDs Operating at 24 Volts DC
[_BURNING] Vertical Base Up (694 Luminaire Lumens)
[_REFLECTOR] None
[_LENS] Cylindrical Acrylic Diffuser
[_HOUSING] Black Body c/w Black End Caps
[DISTRIBUTION] Direct/Indirect

Candela Table

Lateral Angles

	0.0	22.5	45.0	67.5	90.0	112.5	135.0	157.5	180.0
0.0	259	259	259	259	259	259	259	259	259
2.5	258	260	261	262	262	262	261	260	258
5.0	258	262	265	265	266	265	265	262	258
7.5	256	263	264	263	262	263	264	263	256
10.0	254	262	260	254	253	254	260	262	254
12.5	251	259	251	242	238	242	251	259	251
15.0	247	254	240	227	222	227	240	254	247
17.5	243	247	228	211	206	211	228	247	243
20.0	237	240	215	196	190	196	215	240	237
22.5	231	231	201	181	175	181	201	231	231
25.0	225	221	188	167	161	167	188	221	225
27.5	217	210	175	154	148	154	175	210	217
30.0	209	199	162	141	135	141	162	199	209
32.5	200	188	150	130	124	130	150	188	200
35.0	191	176	138	119	114	119	138	176	191
37.5	182	165	127	109	104	109	127	165	182
40.0	172	153	117	101	96	101	117	153	172
42.5	162	142	107	93	89	93	107	142	162
45.0	151	131	99	85	82	85	99	131	151
47.5	141	120	90	79	77	79	90	120	141
50.0	131	110	83	74	72	74	83	110	131
52.5	119	100	77	69	67	69	77	100	119
55.0	109	90	71	65	64	65	71	90	109
57.5	100	82	65	62	61	62	65	82	100
60.0	89	74	61	58	57	58	61	74	89
62.5	80	66	57	56	56	56	57	66	80
65.0	71	59	53	53	54	53	53	59	71
67.5	61	54	51	51	51	51	51	54	61
70.0	53	48	49	51	52	51	49	48	53
72.5	45	43	46	49	49	49	46	43	45
75.0	38	39	46	46	46	46	46	39	38
77.5	31	36	44	46	47	46	44	36	31
80.0	25	33	40	44	45	44	40	33	25
82.5	19	30	40	42	42	42	40	30	19
85.0	14	29	39	43	44	43	39	29	14
87.5	9	27	36	41	42	41	36	27	9
90.0	6	24	37	39	40	39	37	24	6



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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	92.5	3	24	36	40	41	40	36	24	3
	95.0	3	23	34	38	39	38	34	23	3
	97.5	3	21	34	37	37	37	34	21	3
	100.0	1	21	33	38	38	38	33	21	1
	102.5	1	21	31	36	37	36	31	21	1
	105.0	1	19	32	34	35	34	32	19	1
	107.5	0	19	31	35	36	35	31	19	0
	110.0	1	19	29	33	34	33	29	19	1
	112.5	1	18	29	32	33	32	29	18	1
	115.0	0	17	28	33	33	33	28	17	0
	117.5	1	17	27	31	32	31	27	17	1
	120.0	1	15	27	30	31	30	27	15	1
	122.5	0	15	25	30	31	30	25	15	0
	125.0	1	14	24	29	30	29	24	14	1
	127.5	1	13	24	27	29	27	24	13	1
	130.0	1	12	22	27	28	27	22	12	1
	132.5	1	11	21	26	27	26	21	11	1
	135.0	1	10	20	24	26	24	20	10	1
	137.5	1	9	19	24	25	24	19	9	1
	140.0	1	9	18	22	24	22	18	9	1
A n g l e s	142.5	1	7	17	21	22	21	17	7	1
	145.0	1	6	15	20	22	20	15	6	1
	147.5	1	6	14	18	20	18	14	6	1
	150.0	1	5	13	17	18	17	13	5	1
	152.5	1	4	11	16	17	16	11	4	1
	155.0	1	3	10	14	15	14	10	3	1
	157.5	1	3	8	12	14	12	8	3	1
	160.0	1	2	7	11	12	11	7	2	1
	162.5	1	2	5	9	10	9	5	2	1
	165.0	1	1	4	7	8	7	4	1	1
	167.5	1	1	3	5	6	5	3	1	1
	170.0	1	1	2	3	4	3	2	1	1
	172.5	1	1	1	2	3	2	1	1	1
	175.0	1	1	1	1	1	1	1	1	1
	177.5	0	0	0	0	0	0	0	0	0
	180.0	0	0	0	0	0	0	0	0	0