



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, 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	S1708312-R1	Description	Cluster of Nichia LEDs	Alimentation	Direct DC
Test Date	31 August 2017	Serial Number	SRIS-2828	Power Supply	Amrel SPS 150-7
Report Date	1 September 2017	Photometric Method	Absolute	Operating Mode	Constant Voltage
Ambient	24.7°C	Lamp Lumens	-1	Input Voltage	24 VDC
Humidity	38.8 %	Test Position	Vertical Base Up	Input Current	0.20 ADC
Lamp Type	SSL	Nominal Color	2700K	Active Power	4.8W

Luminaire Data

General Information		Optics		Aperture (feet)	
Manufacturer	Andlight	Reflector	None	X	-0.1250
Name	PIPELINE Pendant Series	Housing	Polished Arm Body W Cooper Ends	Y	1.0000
Catalog No.	PIP-40-P-WW-PC-024	Lens	Cylindrical Acrylic Diffuser	Z	-0.1250

Lamp Stabilization Time: 1 hour 45 minutes

Approved Signatory: Chrisnel Bot

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).





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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	0.002003 V (DC)
Input Current	0.2000 A (DC)	Shunt Resistor	.01001673 Ω
Input Power	4.80W	Load Voltage	23.9998 V (DC)



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Photometric Report: S1708312-R1

Prepared for: Andlight · Test Date: 31 August 2017

Luminaire: PIPELINE Pendant Series · Lumcat: PIP-40-P-WW-PC-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	102	102	102	86	86	86	86	86	86	83
1		109	103	98	94	104	99	94	90	99	95	91	87	88	84	81	75	73	71	75	73	71	67
2		99	90	83	76	95	87	80	74	91	83	77	72	77	72	68	66	63	60	66	63	60	57
3		91	80	71	64	87	77	69	63	83	74	67	61	69	63	58	59	55	52	59	55	52	49
4		84	71	62	55	80	69	60	54	77	66	58	52	62	55	50	53	49	45	53	49	45	42
5		78	64	55	48	74	62	53	47	71	60	52	46	56	49	44	48	44	40	48	44	40	37
6		72	58	49	42	69	56	48	41	66	54	46	41	51	44	39	44	40	36	44	40	36	33
7		67	53	44	38	64	51	43	37	61	50	42	36	46	40	35	41	36	32	41	36	32	30
8		62	48	40	34	60	47	39	33	57	46	38	33	43	36	32	38	33	29	38	33	29	27
9		58	45	36	31	56	43	36	30	54	42	35	30	40	33	29	35	30	27	35	30	27	25
10		55	41	33	28	53	40	33	28	51	39	32	27	37	31	26	33	28	25	33	28	25	23

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0 - 10	7	3.84	3.84
10 - 20	19	10.35	10.35
20 - 30	25	13.57	13.57
30 - 40	25	13.81	13.81
40 - 50	22	12.23	12.23
50 - 60	18	9.97	9.97
60 - 70	14	7.80	7.80
70 - 80	11	6.15	6.15
80 - 90	9	5.09	5.09
90 - 120	21	11.54	11.54
90 - 130	26	14.10	14.10
90 - 150	31	17.08	17.08
90 - 180	31	17.18	17.18
0 - 180	183	100.00	100.00

Average Luminance (Cd/m²)

Angle	0 Degree	45 Degree	90 Degree
45.0	1428	978	830
55.0	1220	815	726
65.0	1077	853	803
75.0	1011	1100	1263
85.0	933	2828	2811

Luminaire Luminous Flux: 183

Measured Input Power: 4.80 W

Total Luminaire Efficiency: N/A

Luminaire Luminous Efficacy: 38.1 lm/W

Luminaire Spacing Criterion (0 Degree): 1.1556

Luminaire Spacing Criterion (90 Degree): 0.8743

CIE Type: Direct/Indirect



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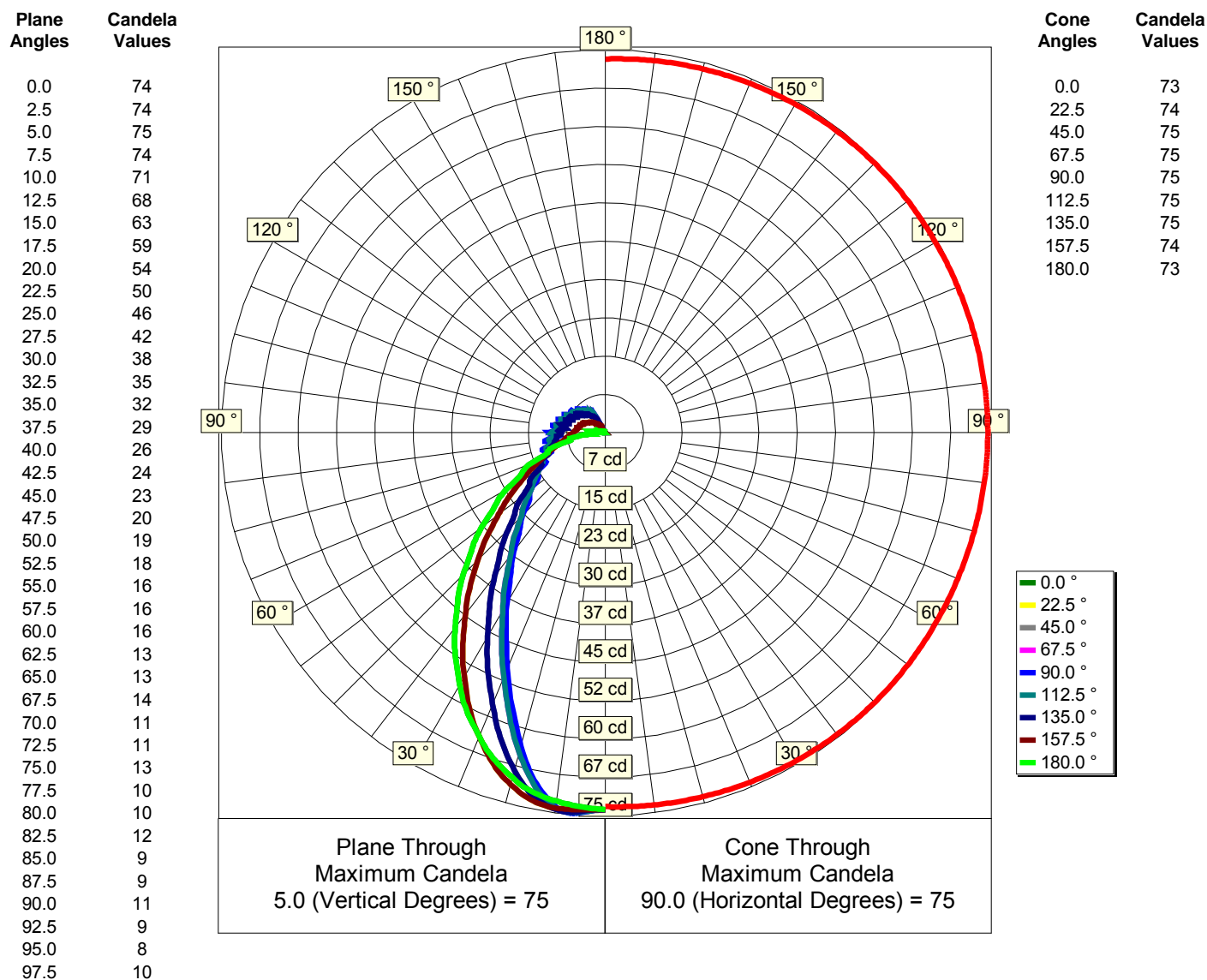
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Luminaire: PIPELINE Pendant Series · Lumcat: PIP-40-P-WW-PC-024

Luminous Intensity - Polar Curve for each Plane(1)





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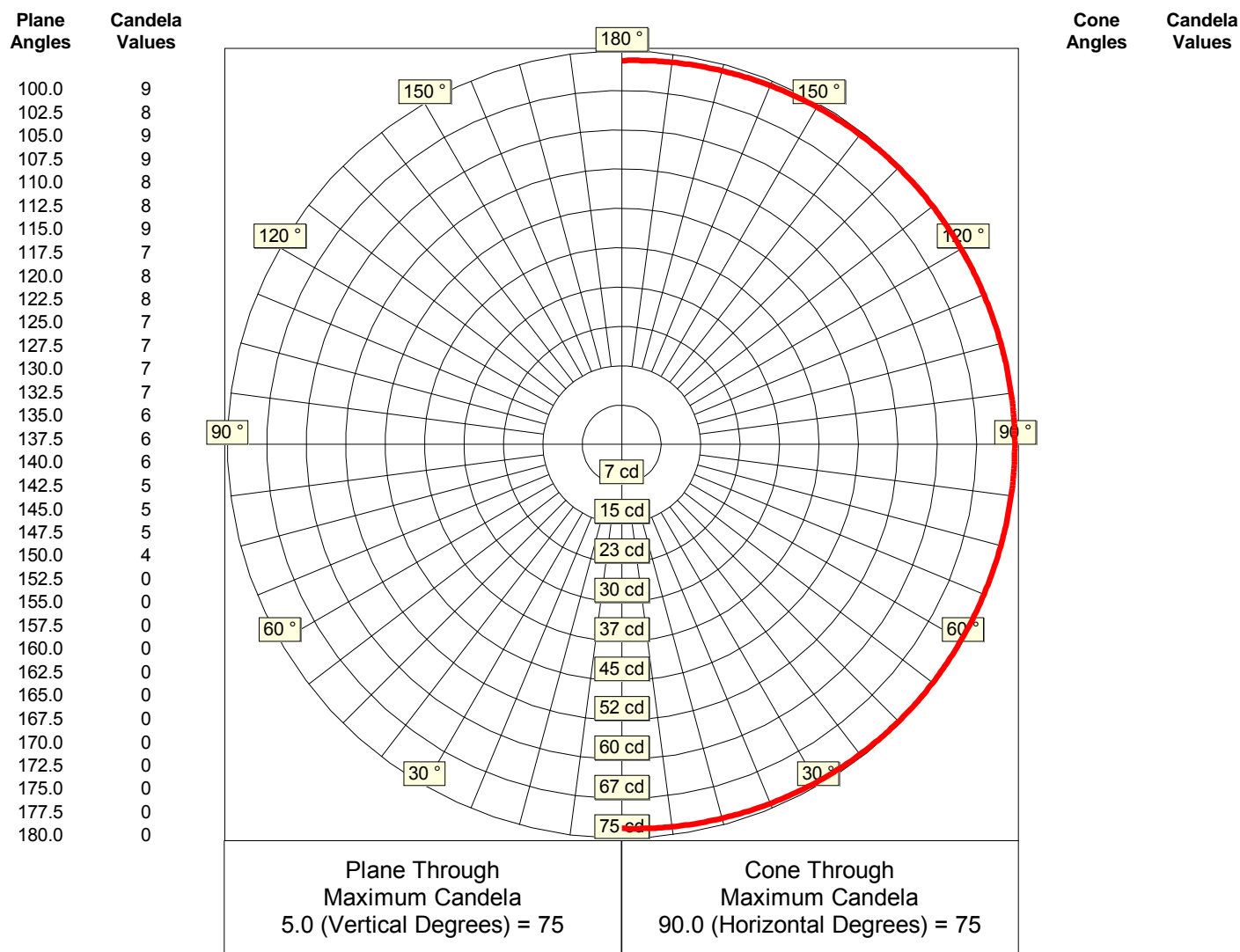
NVLAP LAB CODE: 200899-0

Photometric Report: S1708312-R1

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Luminaire: PIPELINE Pendant Series · Lumcat: PIP-40-P-WW-PC-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] S1708312-R1
[MANUFAC] Andlight
[LUMCAT] PIP-40-P-WW-PC-024
[LUMINAIRE] PIPELINE Pendant Series
[LAMP] Cluster of Nichia LEDs c/w Meanwell Driver PWM-60-24 @ 12.00V
[_BURNING] Vertical Base Up (183 Luminaire Lumens)
[_REFLECTOR] None
[_LENS] Cylindrical Acrylic Diffuser
[_HOUSING] Polished Arm Body W Cooper Ends
[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
V e r t i c a l	0.0	74	74	74	74	74	74	74	74
	2.5	74	74	74	74	74	74	74	74
	5.0	73	74	75	75	75	75	74	73
	7.5	73	74	74	74	74	74	74	73
	10.0	72	74	73	72	71	72	74	72
	12.5	71	73	71	69	68	69	71	71
	15.0	70	71	68	65	63	65	68	70
	17.5	68	69	65	61	59	61	65	68
	20.0	67	67	61	56	54	56	61	67
	22.5	64	64	57	52	50	52	57	64
	25.0	62	62	54	48	46	48	54	62
	27.5	60	58	50	44	42	44	50	60
	30.0	57	55	46	40	38	40	46	57
	32.5	54	52	42	37	35	37	42	54
	35.0	51	48	39	33	32	33	39	51
	37.5	48	45	35	30	29	30	35	48
	40.0	45	42	32	28	26	28	32	45
	42.5	42	38	30	26	24	26	30	42
A n g l e s	45.0	39	35	27	23	23	23	27	39
	47.5	36	32	24	22	20	22	24	36
	50.0	33	29	23	20	19	20	23	33
	52.5	30	26	20	18	18	18	20	30
	55.0	27	24	18	17	16	17	18	27
	57.5	25	21	17	16	16	16	17	25
	60.0	22	19	16	15	16	15	16	22
	62.5	19	17	14	14	13	14	14	19
	65.0	18	15	14	13	13	13	14	18
	67.5	16	14	13	13	14	13	14	16
	70.0	12	12	12	12	11	12	12	12
	72.5	12	11	12	12	11	12	12	12
	75.0	10	10	11	12	13	12	11	10
	77.5	7	9	10	11	10	11	10	7
	80.0	7	8	10	10	10	10	10	7
	82.5	6	8	10	11	12	11	10	6
	85.0	3	7	10	10	9	10	10	3
	87.5	4	7	9	9	9	9	7	4
	90.0	3	6	9	10	11	10	6	3



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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	1	6	9	10	9	10	9	6	1
	95.0	2	6	8	9	8	9	8	6	2
	97.5	2	5	8	10	10	10	8	5	2
	100.0	1	6	9	9	9	9	9	6	1
	102.5	2	5	8	8	8	8	8	5	2
	105.0	1	5	7	9	9	9	7	5	1
	107.5	0	5	8	9	9	9	8	5	0
	110.0	1	5	7	8	8	8	7	5	1
	112.5	1	5	7	8	8	8	7	5	1
	115.0	0	5	8	8	9	8	8	5	0
	117.5	0	4	7	8	7	8	7	4	0
	120.0	0	4	6	7	8	7	6	4	0
	122.5	0	4	7	8	8	8	7	4	0
	125.0	0	4	6	7	7	7	6	4	0
	127.5	0	3	6	7	7	7	6	3	0
	130.0	0	3	6	7	7	7	6	3	0
	132.5	0	3	5	6	7	6	5	3	0
	135.0	0	3	5	6	6	6	5	3	0
	137.5	0	2	5	6	6	6	5	2	0
	140.0	0	2	4	5	6	5	4	2	0
A n g l e s	142.5	0	2	4	5	5	5	4	2	0
	145.0	0	2	4	5	5	5	4	2	0
	147.5	0	1	3	4	5	4	3	1	0
	150.0	0	1	3	4	4	4	3	1	0
	152.5	0	0	0	0	0	0	0	0	0
	155.0	0	0	0	0	0	0	0	0	0
	157.5	0	0	0	0	0	0	0	0	0
	160.0	0	0	0	0	0	0	0	0	0
	162.5	0	0	0	0	0	0	0	0	0
	165.0	0	0	0	0	0	0	0	0	0
	167.5	0	0	0	0	0	0	0	0	0
	170.0	0	0	0	0	0	0	0	0	0
	172.5	0	0	0	0	0	0	0	0	0
	175.0	0	0	0	0	0	0	0	0	0
	177.5	0	0	0	0	0	0	0	0	0
	180.0	0	0	0	0	0	0	0	0	0