



# Spectra Lux

2750 Sabourin, Saint-Laurent (Quebec) H4S 1M2 Canada  
Tel.: (514) 332-0082 Fax: (514) 332-3590 [www.spectralux.ca](http://www.spectralux.ca)



Lab Code: 200899-0

## Moving Mirror Goniophotometer Test Report

**Standard(s):** IES LM-63, IES LM-79, ANSI C82.77

**Customer** ANDlight, 1951 Franklin St., Vancouver, British Columbia , Canada, V5L 0C7

General Information		Lamp Details: CY4604		Driver Details: CY2108	
<b>DUT Lab ID</b>	SRIS 3068-2	<b>Seasoning</b>	0 Hour	<b>Type</b>	LED Power Supply
<b>Lamp Type</b>	LED/SSL	<b>Test Product</b>	PEB-P	<b>Manufacturer</b>	ERP
<b>Current Mode</b>	AC	<b>Manufacturer</b>	CREE	<b>Catalog No.</b>	ESS015W-0300-4Z
<b>Test Report</b>	S2012234-R1	<b>Lamp Catalog No.</b>	XD16	<b>Maximum Power</b>	15 Watts
<b>Test Date</b>	23 December 2020	<b>Drive Current</b>	300 mA	<b>Input Voltage</b>	120.00 V
<b>Report Date</b>	29 December 2020	<b>Nominal Color</b>	2700 K	<b>Operating Frequency</b>	60 Hz
<b>Ambient</b>	24.2 °C	<b>Burning Position</b>	Junction Axial	<b>Input Power</b>	13.16 W

### Luminaire Data

General Information		Optics		Aperture (feet)	
<b>Manufacturer</b>	ANDlight	<b>Reflector</b>	None	<b>X</b>	-0.4583
<b>Name</b>	Peeble	<b>Housing</b>	None	<b>Y</b>	-0.4583
<b>Catalog No.</b>	PEB-P	<b>Lens</b>	(2) Opalin Spherical Globe	<b>Z</b>	-0.4583

Stabilization Time: 45 minutes

**Approved Signatory: Chrisnel Blot**

**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
Power Supply	iRDC	CIF-3000A	974997	N.P.C.R.	N.P.C.R.
Input Power Meter	Yokogawa	WT210	27E116584	2020/07/22	2021/09/22
Output Power Meter	N/A	N/A	N/A	N.P.C.R.	N.P.C.R.

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### 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	2020/09/05	2021/09/05

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### Environment Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Temperature Humidity Sensor	Omega	HH311	120504176	2020/07/16	2021/07/16

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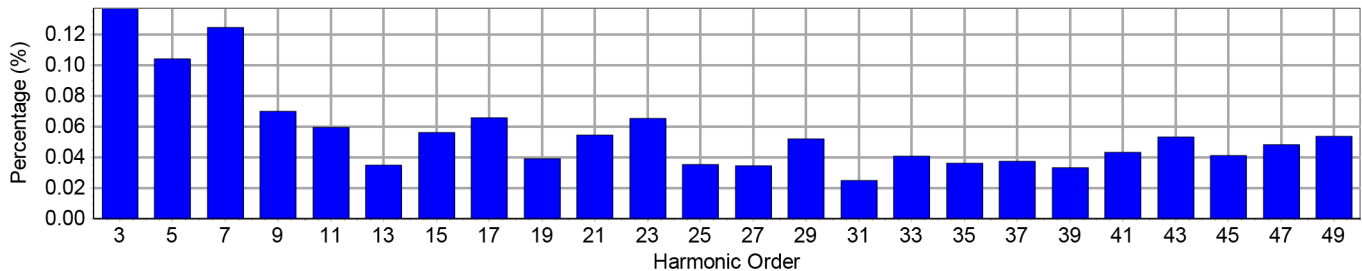


## Electrical Measurements

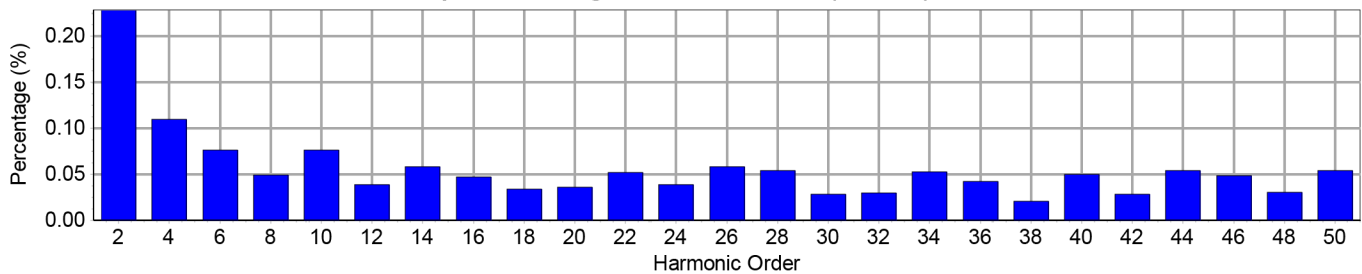
### Input

Frequency	60 Hz	Active Power	13.16 W	THDV [ANSI]	0.44 %
Voltage	120.1 V(rms)	Apparent Power	13.31 VA	THDA [ANSI]	10.27 %
Current	0.1108 A(rms)	Power Factor	0.988	Max. Harmonic At	3rd order

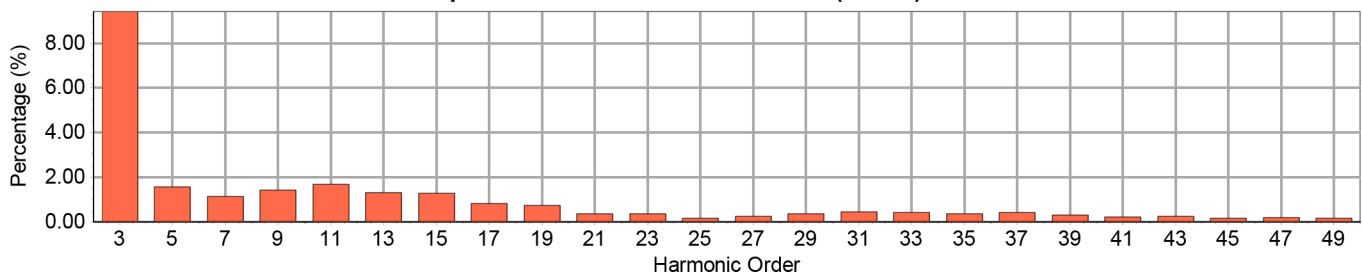
### Input Voltage Harmonics (Odd)



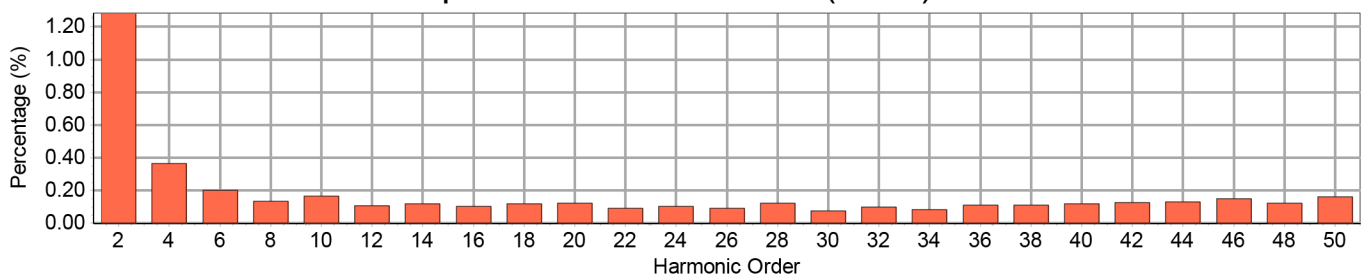
### Input Voltage Harmonics (Even)



### 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	0.229	1.285
3	180	0.138	9.441	4	240	0.109	0.367
5	300	0.104	1.568	6	360	0.076	0.200
7	420	0.125	1.142	8	480	0.049	0.136
9	540	0.070	1.407	10	600	0.076	0.166
11	660	0.060	1.669	12	720	0.039	0.107
13	780	0.035	1.296	14	840	0.058	0.121
15	900	0.056	1.271	16	960	0.047	0.104
17	1020	0.066	0.832	18	1080	0.034	0.120
19	1140	0.039	0.733	20	1200	0.036	0.122
21	1260	0.055	0.350	22	1320	0.052	0.093
23	1380	0.066	0.352	24	1440	0.038	0.104
25	1500	0.035	0.163	26	1560	0.058	0.090
27	1620	0.034	0.242	28	1680	0.054	0.122
29	1740	0.052	0.350	30	1800	0.028	0.076
31	1860	0.025	0.456	32	1920	0.030	0.099
33	1980	0.041	0.413	34	2040	0.052	0.086
35	2100	0.036	0.365	36	2160	0.042	0.111
37	2220	0.038	0.420	38	2280	0.020	0.112
39	2340	0.033	0.315	40	2400	0.050	0.120
41	2460	0.043	0.214	42	2520	0.028	0.129
43	2580	0.053	0.238	44	2640	0.054	0.129
45	2700	0.041	0.167	46	2760	0.049	0.150
47	2820	0.048	0.188	48	2880	0.031	0.124
49	2940	0.054	0.152	50	3000	0.054	0.164



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## Photometric Report: S2012234-R1

Prepared for: ANDlight · Test Date: 23 December 2020

Luminaire: Peeble · Lumcat: PEB-P

### 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
0		116	116	116	116	107	107	107	107	99	99	99	99	83	83	83	56	56	56	50
1		102	96	90	84	94	88	83	78	86	81	76	72	67	64	61	44	42	40	34
2		92	81	73	66	84	75	67	61	77	69	62	56	57	52	47	36	34	31	26
3		83	70	61	53	76	65	56	49	69	59	52	45	49	43	38	31	28	25	21
4		76	62	51	44	69	57	48	41	63	52	44	38	43	37	32	27	24	21	17
5		69	54	44	37	63	50	41	34	57	46	38	32	38	32	27	24	20	17	14
6		63	48	38	31	58	45	36	29	53	41	33	27	34	28	23	22	18	15	12
7		58	43	34	27	53	40	31	25	49	37	29	23	31	24	20	20	16	13	10
8		54	39	30	24	49	36	28	22	45	33	26	20	28	22	17	18	14	11	9
9		50	35	27	21	46	33	25	19	42	30	23	18	25	20	15	17	13	10	8
10		47	32	24	18	43	30	22	17	39	28	21	16	23	18	14	15	12	9	7

### Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0 - 10	9	0.85	0.85
10 - 20	26	2.53	2.53
20 - 30	42	4.08	4.08
30 - 40	56	5.42	5.42
40 - 50	67	6.50	6.50
50 - 60	75	7.27	7.27
60 - 70	80	7.71	7.71
70 - 80	82	7.86	7.86
80 - 90	81	7.77	7.77
90 - 120	242	23.35	23.35
90 - 130	318	30.62	30.62
90 - 150	442	42.54	42.54
90 - 180	519	50.00	50.00
0 - 180	1038	100.00	100.00

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

Angle	0 Degree	45 Degree	90 Degree
45.0	976	1012	1033
55.0	1129	1211	1248
65.0	1399	1593	1658
75.0	2025	2519	2650
85.0	5101	7268	7685

Luminaire Luminous Flux: 1038

Measured Input Power: 13.16 W

Total Luminaire Efficiency: N/A

Luminaire Luminous Efficacy: 78.9 lm/W

Luminaire Spacing Criterion (0 Degree): 1.4611

Luminaire Spacing Criterion (90 Degree): 1.5022

Category: Up and Down

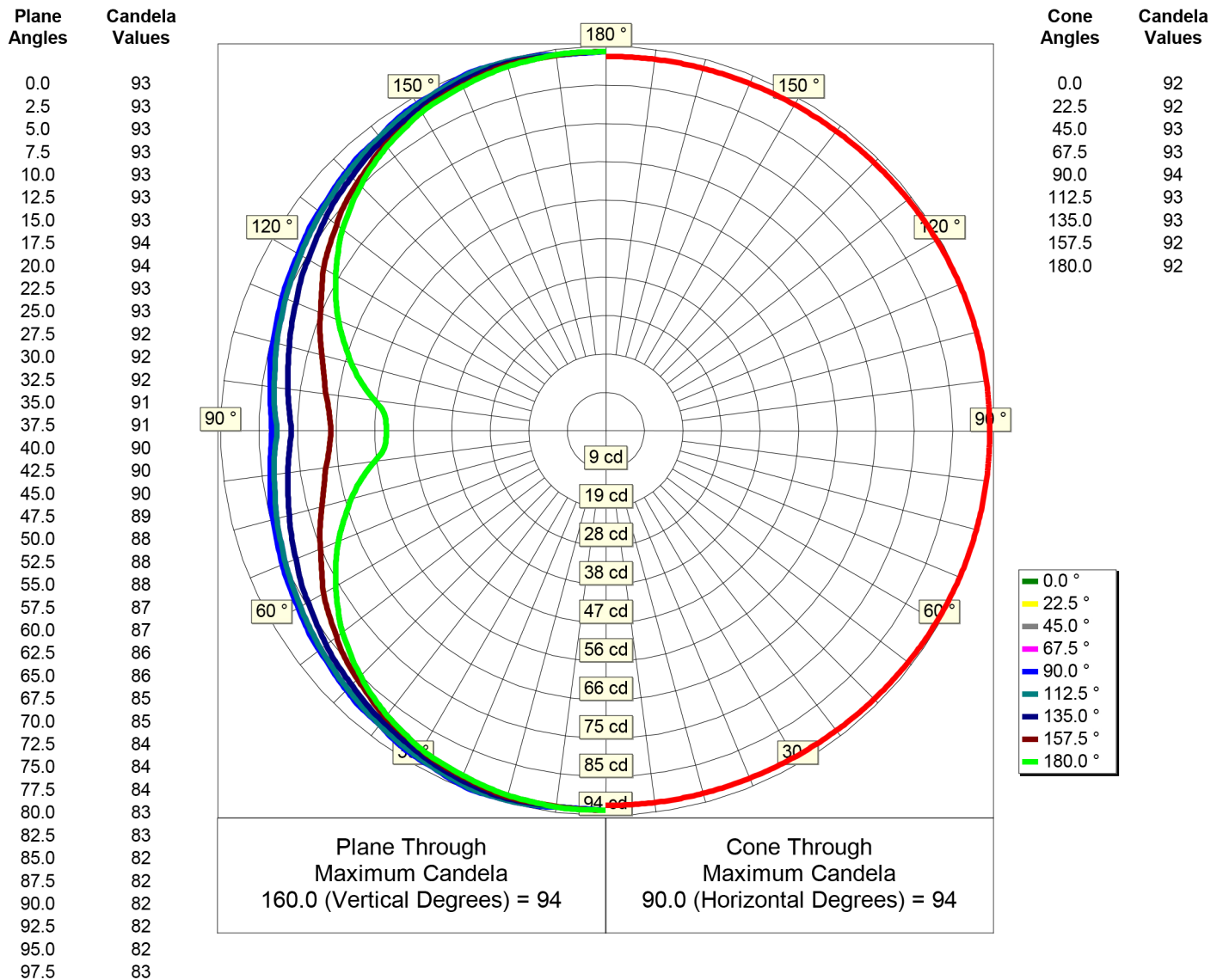


## Photometric Report: S2012234-R1

Prepared for: ANDlight · Test Date: 23 December 2020

Luminaire: Peeble · Lumcat: PEB-P

### Luminous Intensity - Polar Curve for each Plane(1)



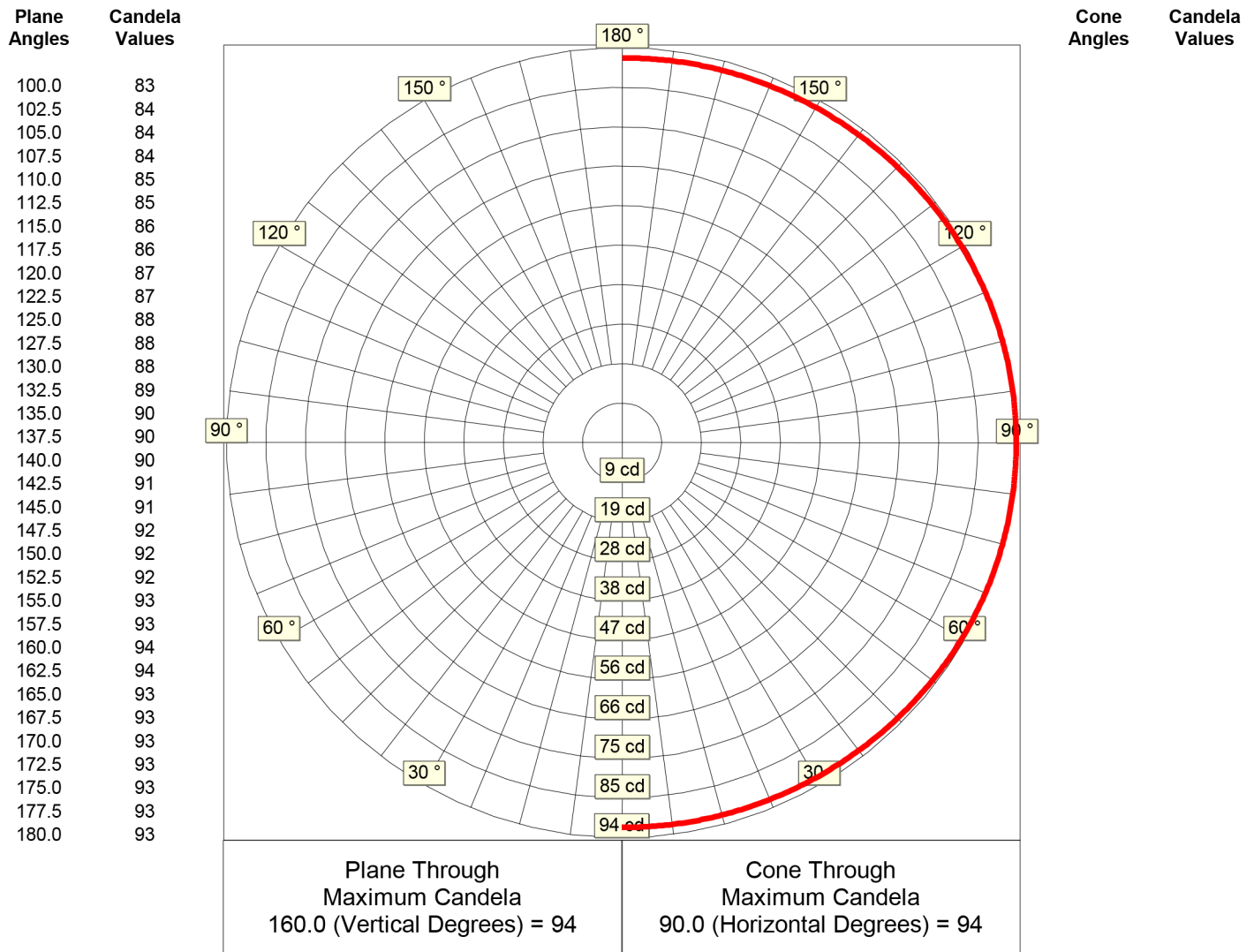


## Photometric Report: S2012234-R1

Prepared for: ANDlight · Test Date: 23 December 2020

Luminaire: Peeble · Lumcat: PEB-P

### Luminous Intensity - Polar Curve for each Plane(2)





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## IES File Headers

```
IESNA:LM-63
[ISSUEDATE]      23 December 2020
[TESTLAB]        Spectra Lux
[TEST]           S2012234-R1
[MANUFAC]        ANDlight
[LUMCAT]          PEB-P
[LUMINAIRE]       Peeble
[LAMP]           Clusters of CREE XD16 LEDs c/w ERP Driver ESS015W-0300-4Z @ 120.00V
[_BURNING]        Axial (1,038 Luminaire Lumens)
[_REFLECTOR]      None
[_LENS]           (2) Opalin Spherical Globe
[_HOUSING]        None
[_NOMINAL COLOR]  2700 K
[_DRIVE CURRENT]  300 mA
```

## Candela Table

### Lateral Angles

		0.0	22.5	45.0	67.5	90.0	112.5	135.0	157.5	180.0
<b>V e r t i c a l</b>	<b>0.0</b>	93	93	93	93	93	93	93	93	93
	<b>2.5</b>	93	93	93	93	93	93	93	93	93
	<b>5.0</b>	93	93	93	93	93	93	93	93	93
	<b>7.5</b>	93	93	93	93	93	93	93	93	93
	<b>10.0</b>	93	93	93	93	93	93	93	93	93
	<b>12.5</b>	92	93	93	93	93	93	93	93	92
	<b>15.0</b>	92	93	93	93	93	93	93	93	92
	<b>17.5</b>	92	92	93	93	94	93	93	92	92
	<b>20.0</b>	92	92	93	93	94	93	93	92	92
	<b>22.5</b>	91	91	92	93	93	93	92	91	91
	<b>25.0</b>	91	91	92	93	93	93	92	91	91
	<b>27.5</b>	90	91	92	92	92	92	92	91	90
	<b>30.0</b>	90	90	91	92	92	92	91	90	90
	<b>32.5</b>	89	89	90	91	92	91	90	89	89
	<b>35.0</b>	88	89	90	91	91	91	90	89	88
	<b>37.5</b>	88	88	89	91	91	91	89	88	88
	<b>40.0</b>	87	87	89	90	90	90	89	87	87
	<b>42.5</b>	86	87	88	90	90	90	88	87	86
	<b>45.0</b>	85	86	88	89	90	89	88	86	85
	<b>47.5</b>	83	85	87	89	89	89	87	85	83
<b>A n g l e s</b>	<b>50.0</b>	82	84	87	88	88	88	87	84	82
	<b>52.5</b>	81	83	86	88	88	88	86	83	81
	<b>55.0</b>	79	82	85	87	88	87	85	82	79
	<b>57.5</b>	78	81	84	87	87	87	84	81	78
	<b>60.0</b>	76	79	84	86	87	86	84	79	76
	<b>62.5</b>	74	78	83	86	86	86	83	78	74
	<b>65.0</b>	73	77	83	85	86	85	83	77	73
	<b>67.5</b>	71	75	82	85	85	85	82	75	71
	<b>70.0</b>	68	74	81	84	85	84	81	74	68
	<b>72.5</b>	66	73	81	84	84	84	81	73	66
	<b>75.0</b>	64	72	80	83	84	83	80	72	64
	<b>77.5</b>	62	71	79	83	84	83	79	71	62
	<b>80.0</b>	60	70	79	82	83	82	79	70	60
	<b>82.5</b>	57	69	78	82	83	82	78	69	57
	<b>85.0</b>	55	68	78	81	82	81	78	68	55
	<b>87.5</b>	54	67	77	81	82	81	77	67	54
	<b>90.0</b>	53	67	77	80	82	80	77	67	53





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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	54	67	77	81	82	81	77	67	54
	95.0	55	68	78	81	82	81	78	68	55
	97.5	57	69	78	82	83	82	78	69	57
	100.0	60	70	79	82	83	82	79	70	60
	102.5	62	71	79	83	84	83	79	71	62
	105.0	64	72	80	83	84	83	80	72	64
	107.5	66	73	81	84	84	84	81	73	66
	110.0	68	74	81	84	85	84	81	74	68
	112.5	71	75	82	85	85	85	82	75	71
	115.0	73	77	83	85	86	85	83	77	73
	117.5	74	78	83	86	86	86	83	78	74
	120.0	76	79	84	86	87	86	84	79	76
	122.5	78	81	84	87	87	87	84	81	78
	125.0	79	82	85	87	88	87	85	82	79
	127.5	81	83	86	88	88	88	86	83	81
	130.0	82	84	87	88	88	88	87	84	82
	132.5	83	85	87	89	89	89	87	85	83
	135.0	85	86	88	89	90	89	88	86	85
A n g l e s	137.5	86	87	88	90	90	90	88	87	86
	140.0	87	87	89	90	90	90	89	87	87
	142.5	88	88	89	91	91	91	89	88	88
	145.0	88	89	90	91	91	91	90	89	88
	147.5	89	89	90	91	92	91	90	89	89
	150.0	90	90	91	92	92	92	91	90	90
	152.5	90	91	92	92	92	92	92	91	90
	155.0	91	91	92	93	93	93	92	91	91
	157.5	91	91	92	93	93	93	92	91	91
	160.0	92	92	93	93	94	93	93	92	92
	162.5	92	92	93	93	94	93	93	92	92
	165.0	92	93	93	93	93	93	93	93	92
	167.5	92	93	93	93	93	93	93	93	92
	170.0	93	93	93	93	93	93	93	93	93
	172.5	93	93	93	93	93	93	93	93	93
	175.0	93	93	93	93	93	93	93	93	93
	177.5	93	93	93	93	93	93	93	93	93
	180.0	93	93	93	93	93	93	93	93	93