



## Moving Mirror Goniophotometer Test Report

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

**Customer** ANDlight, 505B Railway Street, Vancouver, BC, Canada, V6A 1A7

General Information		Lamp Details: CY4427		Driver Details: CY2022	
<b>DUT Lab ID</b>	SRIS 2823-3	<b>Seasoning</b>	0 Hour	<b>Type</b>	LED Power Supply
<b>Lamp Type</b>	LED/SSL	<b>Test Product</b>	SPC-CW-B-VA-120	<b>Manufacturer</b>	Bulbrite
<b>Current Mode</b>	AC	<b>Manufacturer</b>	Bulbrite	<b>Catalog No.</b>	Integrated LED Driver
<b>Test Report</b>	S2008118-R1	<b>Lamp Catalog No.</b>	(1) A21 Frosted LED 16W	<b>Maximum Power</b>	16 W
<b>Test Date</b>	11 August 2020	<b>Drive Current</b>	133.3 mA	<b>Input Voltage</b>	120.00 V
<b>Report Date</b>	14 October 2020	<b>Nominal Color</b>	2700 K	<b>Operating Frequency</b>	60 Hz
<b>Ambient</b>	25.4 °C	<b>Burning Position</b>	Vertical Base Up	<b>Input Power</b>	15.77 W

### Luminaire Data

General Information		Optics		Aperture (feet)	
<b>Manufacturer</b>	ANDlight	<b>Reflector</b>	Vanilla Spun Aluminum	<b>X</b>	-1.1667
<b>Name</b>	SPOT LIGHT VOLUMES	<b>Housing</b>	Shade B - Aluminum Profile	<b>Y</b>	-1.1667
<b>Catalog No.</b>	SPC-CW-B-VA-120	<b>Lens</b>	None	<b>Z</b>	0.0000

Stabilization Time: 1 hour

**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).





## Spectra Lux

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Lab Code: 200899-0

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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	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	2019/09/05	2020/09/05

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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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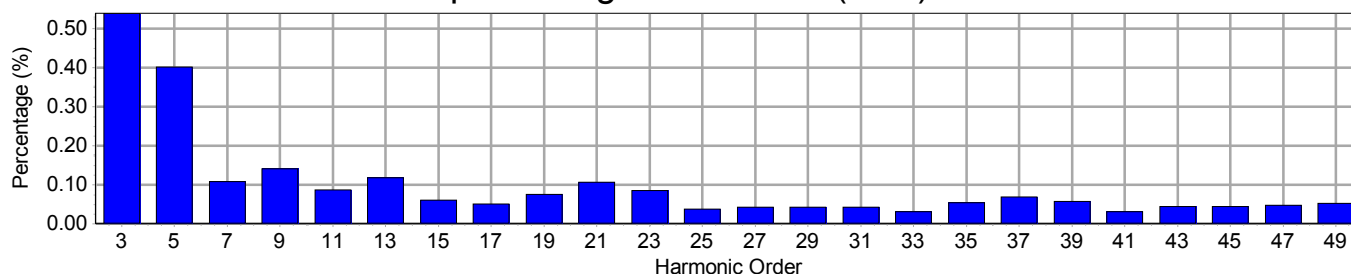


## Electrical Measurements

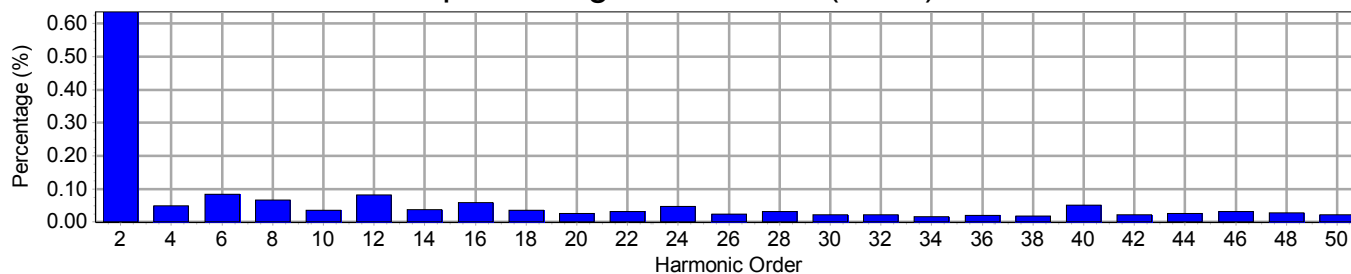
### Input

Frequency	60 Hz	Active Power	15.77 W	THDV [ANSI]	1.00 %
Voltage	120.0 V(rms)	Apparent Power	16.31 VA	THDA [ANSI]	12.62 %
Current	0.1359 A(rms)	Power Factor	0.967	Max. Harmonic At	3rd order

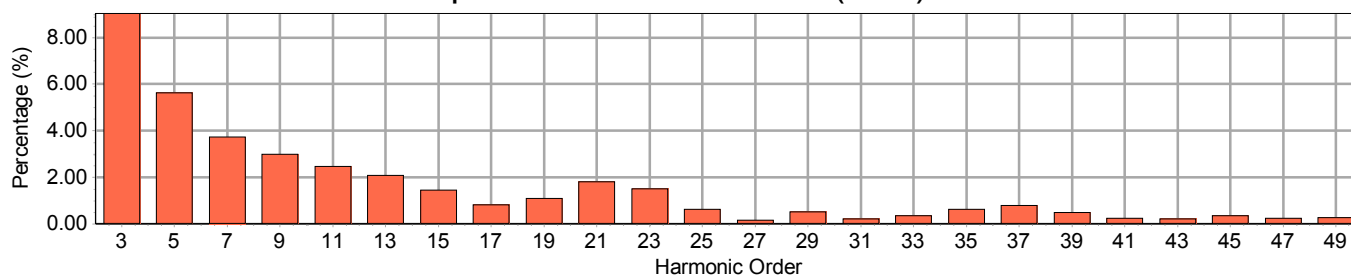
### Input Voltage Harmonics (Odd)



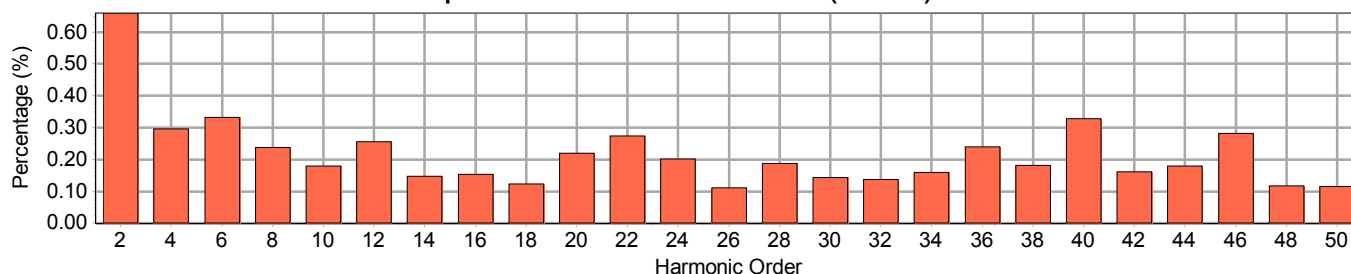
### Input Voltage Harmonics (Even)



### 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	0.636	0.661
3	180	0.540	9.046	4	240	0.049	0.296
5	300	0.402	5.624	6	360	0.083	0.333
7	420	0.108	3.724	8	480	0.067	0.238
9	540	0.140	2.973	10	600	0.035	0.180
11	660	0.086	2.460	12	720	0.083	0.257
13	780	0.117	2.073	14	840	0.037	0.147
15	900	0.060	1.442	16	960	0.059	0.154
17	1020	0.051	0.817	18	1080	0.036	0.124
19	1140	0.074	1.097	20	1200	0.027	0.220
21	1260	0.106	1.813	22	1320	0.032	0.275
23	1380	0.084	1.495	24	1440	0.048	0.201
25	1500	0.038	0.615	26	1560	0.024	0.111
27	1620	0.041	0.142	28	1680	0.032	0.187
29	1740	0.042	0.507	30	1800	0.022	0.143
31	1860	0.041	0.196	32	1920	0.023	0.138
33	1980	0.030	0.352	34	2040	0.016	0.160
35	2100	0.054	0.607	36	2160	0.021	0.240
37	2220	0.068	0.778	38	2280	0.018	0.182
39	2340	0.057	0.471	40	2400	0.051	0.329
41	2460	0.031	0.233	42	2520	0.021	0.162
43	2580	0.043	0.205	44	2640	0.026	0.179
45	2700	0.044	0.337	46	2760	0.032	0.281
47	2820	0.047	0.222	48	2880	0.027	0.117
49	2940	0.053	0.253	50	3000	0.021	0.115



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## Photometric Report: S2008118-R1

Prepared for: ANDlight · Test Date: 11 August 2020

Luminaire: SPOT LIGHT VOLUMES · Lumcat: SPC-CW-B-VA-120

### 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		122	122	122	122	119	119	119	119	116	116	116	116	111	111	111	102	102	102	100
1		112	106	101	97	109	104	99	96	106	102	98	94	97	94	91	90	88	86	83
2		101	92	84	78	98	90	83	77	96	88	81	76	84	79	74	78	74	71	68
3		92	80	70	63	89	78	69	63	86	76	68	62	73	67	61	68	63	59	57
4		83	70	60	53	81	68	59	52	78	67	58	52	64	57	51	60	54	50	47
5		76	62	52	44	74	60	51	44	72	59	50	44	57	49	43	53	47	42	40
6		70	55	45	38	68	54	45	38	66	53	44	38	51	43	37	48	42	37	34
7		65	49	40	33	63	49	39	33	61	48	39	33	46	38	33	43	37	32	30
8		60	45	35	29	58	44	35	29	56	43	35	29	42	34	29	39	33	28	26
9		56	41	32	26	54	40	32	26	53	40	31	26	38	31	26	36	30	25	23
10		52	37	29	23	51	37	29	23	49	36	29	23	35	28	23	34	27	23	21

### Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0 - 10	30	2.66	2.66
10 - 20	87	7.82	7.82
20 - 30	137	12.25	12.25
30 - 40	174	15.61	15.61
40 - 50	208	18.62	18.62
50 - 60	225	20.14	20.14
60 - 70	180	16.13	16.13
70 - 80	63	5.64	5.64
80 - 90	13	1.14	1.14
90 - 120	0	0.00	0.00
90 - 130	0	0.00	0.00
90 - 150	0	0.00	0.00
90 - 180	0	0.00	0.00
0 - 180	1116	100.00	100.00

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

Angle	0 Degree	45 Degree	90 Degree
45.0	3695	3695	3695
55.0	4282	4282	4282
65.0	4733	4733	4733
75.0	1943	1943	1943
85.0	1224	1224	1224

Luminaire Luminous Flux: 1116

Measured Input Power: 15.77 W

Total Luminaire Efficiency: N/A

Luminaire Luminous Efficacy: 70.7 lm/W

Luminaire Spacing Criterion (0 Degree): 1.4439

Luminaire Spacing Criterion (90 Degree): 1.4439

Category: Downlight



## Photometric Report: S2008118-R1

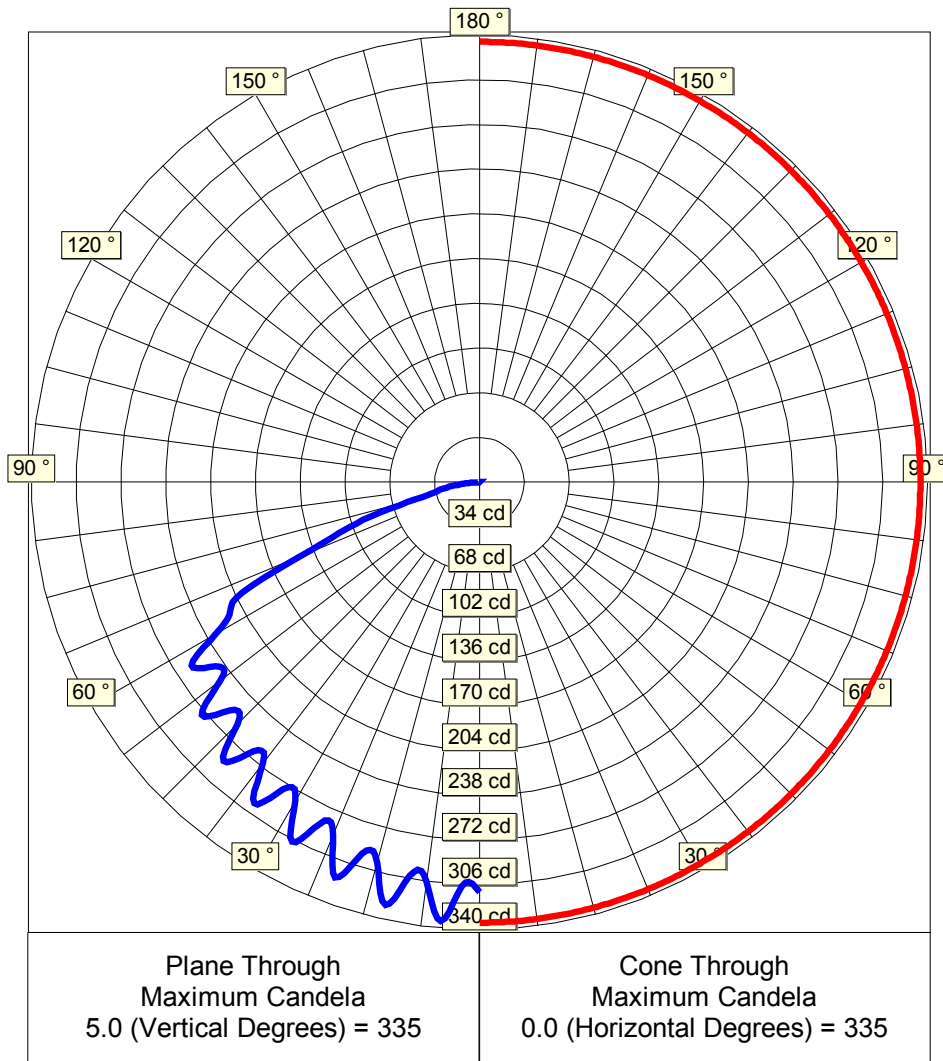
Prepared for: ANDlight · Test Date: 11 August 2020

Luminaire: SPOT LIGHT VOLUMES · Lumcat: SPC-CW-B-VA-120

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

Plane  
Angles

Plane Angles	Candela Values
0.0	311
2.5	307
5.0	335
7.5	306
10.0	304
12.5	329
15.0	300
17.5	296
20.0	320
22.5	290
25.0	286
27.5	308
30.0	279
32.5	277
35.0	298
37.5	270
40.0	267
42.5	288
45.0	259
47.5	257
50.0	275
52.5	247
55.0	244
57.5	259
60.0	231
62.5	213
65.0	199
67.5	147
70.0	113
72.5	86
75.0	50
77.5	34
80.0	29
82.5	18
85.0	11
87.5	4
90.0	0
92.5	0
95.0	0
97.5	0



Cone  
Angles

Cone Angles	Candela Values
0.0	335



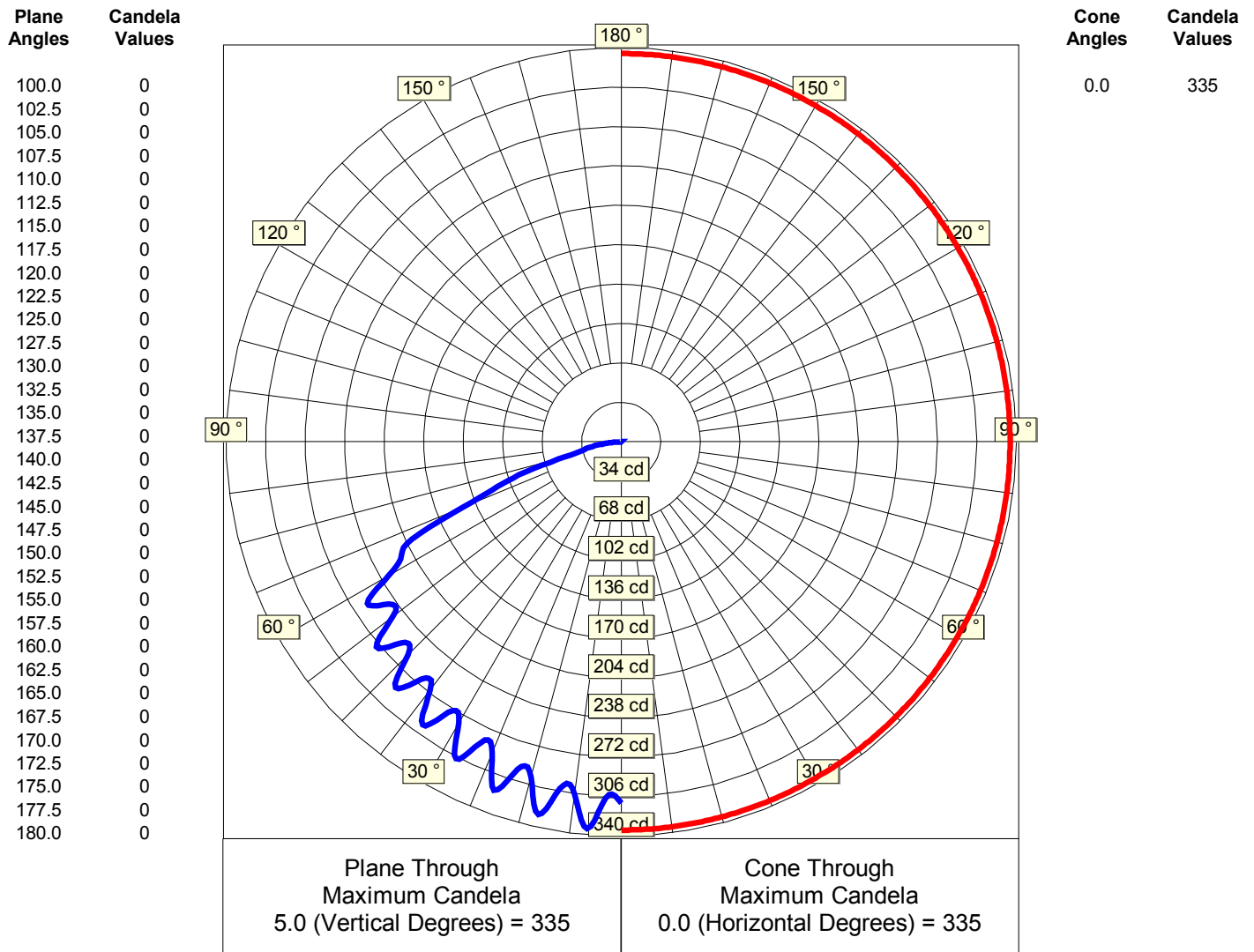


## Photometric Report: S2008118-R1

Prepared for: ANDlight · Test Date: 11 August 2020

Luminaire: SPOT LIGHT VOLUMES · Lumcat: SPC-CW-B-VA-120

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







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## IES File Headers

IESNA:LM-63  
[ISSUEDATE] 11 August 2020  
[TESTLAB] Spectra Lux  
[TEST] S2008118-R1  
[MANUFAC] ANDlight  
[LUMCAT] SPC-CW-B-VA-120  
[LUMINAIRE] SPOT LIGHT VOLUMES  
[LAMP] (1)BulBrite A21 Frosted LED 16W Bulb c/w Integrated LED Driver @ 120.00V  
[\_BURNING] Vertical Base Up (1,116 Luminaire Lumens)  
[\_REFLECTOR] Vanilla Spun Aluminum  
[\_LENS] None  
[\_HOUSING] Shade B - Aluminum Profile  
[\_NOMINAL COLOR] 2700 K  
[\_DRIVE CURRENT] 133.3 mA

## Candela Table

### Lateral Angles

	0.0
V e r t i c a l	0.0 311
	2.5 307
	5.0 335
	7.5 306
	10.0 304
	12.5 329
	15.0 300
	17.5 296
	20.0 320
	22.5 290
	25.0 286
	27.5 308
	30.0 279
	32.5 277
	35.0 298
	37.5 270
	40.0 267
	42.5 288
A n g l e s	45.0 259
	47.5 257
	50.0 275
	52.5 247
	55.0 244
	57.5 259
	60.0 231
	62.5 213
	65.0 199
	67.5 147
	70.0 113
	72.5 86
	75.0 50
	77.5 34
	80.0 29
	82.5 18
	85.0 11
	87.5 4
	90.0 0



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## Lateral Angles

	0.0
	92.5
	95.0
	97.5
	100.0
	102.5
	105.0
	107.5
	110.0
	112.5
V e r t i c a l	115.0
	117.5
	120.0
	122.5
	125.0
	127.5
	130.0
	132.5
	135.0
	137.5
A n g l e s	140.0
	142.5
	145.0
	147.5
	150.0
	152.5
	155.0
	157.5
	160.0
	162.5
	165.0
	167.5
	170.0
	172.5
	175.0
	177.5
	180.0