



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 Artemide Canada Ltd., 11105 Renaude-Lapointe, Montreal, Québec, Canada, H1J2T4

General Information		SSL Details		Driver Details	
Test Report	S1707052-R1	Description	929000921706 LEDs	Type	Commercial
Test Date	5 July 2017	Serial Number	SRIS 2766-1	Description	60SSL-CY1311
Report Date	7 July 2017	Photometric Method	Absolute	Manufacturer	Advance
Ambient	24.8 °C	Lamp Lumens	-1	Catalog No.	XI036C100V054DSM5
Humidity	33.1 %	Test Position	Vertical Base Up	Voltage	120.00 V
Lamp Type	SSL	Nominal Color	3000K	Power Factor	0.9000

Luminaire Data

General Information		Optics		Aperture (feet)	
Manufacturer	Artemide	Reflector	Diffuse HO c/w Auxiliary Aluminum Optic	X	-1.9375
Name	TAGORA 570 LED	Housing	Cylindrical Aluminum Shape	Y	-1.9375
Catalog No.	MTA5_830DFH	Lens	Acrylic Diffuser	Z	0.0000

Lamp Stabilization Time: 55 minutes

Tested By: Jacques Dugas

Approved Signatory: Chrisnel Blot

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
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



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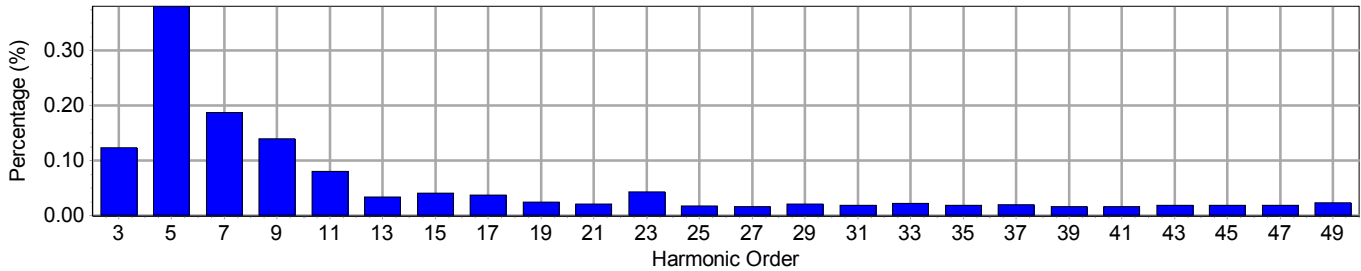
NVLAP LAB CODE: 200899-0

Electrical Measurements

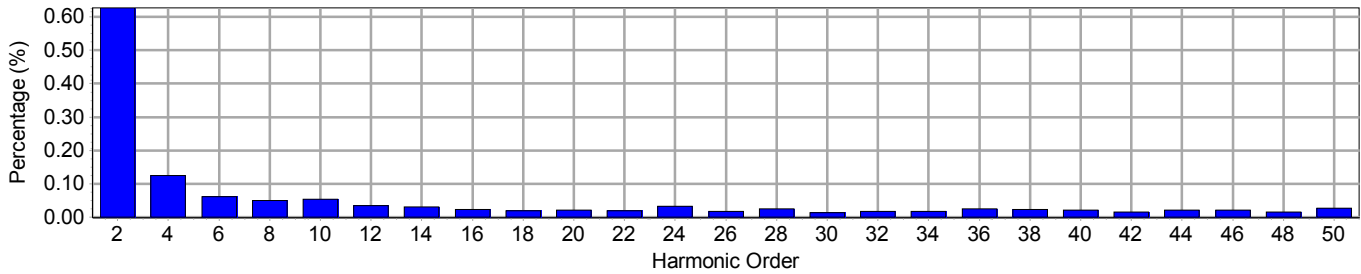
Input

Frequency	60 Hz	Active Power	56.53 W	THDV [ANSI]	0.81 %
Voltage	121.1 V(rms)	Apparent Power	56.83 VA	THDA [ANSI]	7.00 %
Current	0.4695 A(rms)	Power Factor	0.995	Max. Harmonic At	5th order

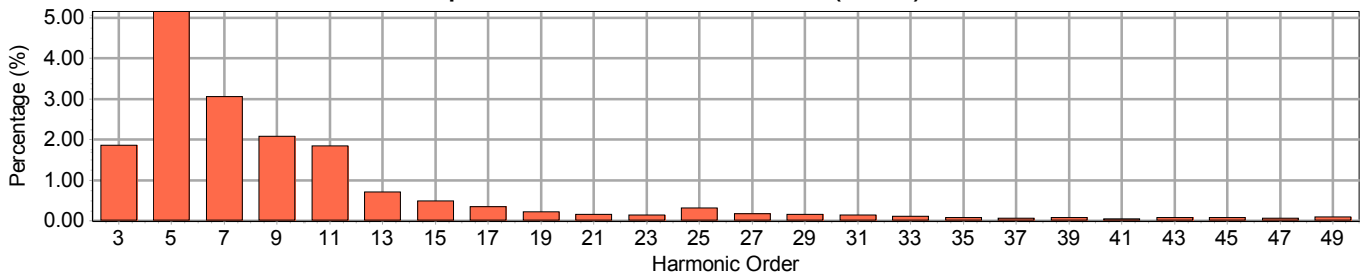
Input Voltage Harmonics (Odd)



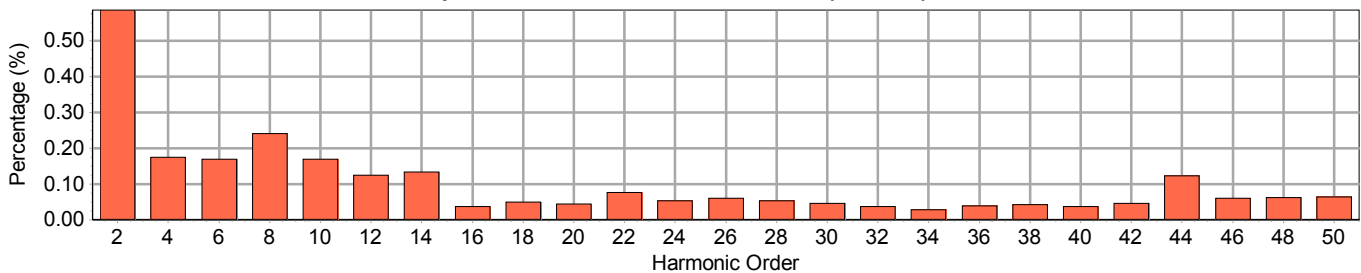
Input Voltage Harmonics (Even)



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	0.628	0.588
3	180	0.124	1.869	4	240	0.125	0.174
5	300	0.381	5.158	6	360	0.062	0.170
7	420	0.188	3.063	8	480	0.050	0.241
9	540	0.140	2.079	10	600	0.054	0.169
11	660	0.081	1.853	12	720	0.036	0.125
13	780	0.034	0.715	14	840	0.031	0.134
15	900	0.041	0.501	16	960	0.023	0.037
17	1020	0.038	0.352	18	1080	0.021	0.048
19	1140	0.025	0.229	20	1200	0.021	0.044
21	1260	0.021	0.160	22	1320	0.021	0.077
23	1380	0.044	0.152	24	1440	0.034	0.052
25	1500	0.018	0.321	26	1560	0.018	0.060
27	1620	0.017	0.175	28	1680	0.025	0.053
29	1740	0.021	0.165	30	1800	0.014	0.045
31	1860	0.019	0.156	32	1920	0.018	0.038
33	1980	0.023	0.122	34	2040	0.018	0.028
35	2100	0.019	0.093	36	2160	0.025	0.038
37	2220	0.021	0.068	38	2280	0.024	0.042
39	2340	0.017	0.084	40	2400	0.022	0.037
41	2460	0.017	0.059	42	2520	0.017	0.045
43	2580	0.020	0.093	44	2640	0.023	0.123
45	2700	0.019	0.093	46	2760	0.021	0.060
47	2820	0.019	0.075	48	2880	0.016	0.061
49	2940	0.024	0.107	50	3000	0.029	0.063



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Photometric Report: S1707052-R1

Prepared for: Artemide Canada Ltd. · Test Date: 05 July 2017

Luminaire: TAGORA 570 LED · Lumcat: MTA5_830DFH

Coefficients of Utilization - Zonal Cavity Method

RCR	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	100
1	112	107	102	98	109	105	100	97	106	102	99	95	98	95	92	91	89	87	85	85
2	102	93	86	80	99	91	85	79	97	89	83	78	86	81	76	80	76	73	71	71
3	93	82	73	66	91	80	72	66	88	79	71	65	76	69	64	70	66	62	60	60
4	85	72	63	56	83	71	62	56	81	70	61	55	67	60	54	63	57	53	51	51
5	78	64	55	48	76	63	54	48	74	62	54	47	60	53	47	56	51	46	44	44
6	72	58	48	42	70	57	48	42	68	56	48	41	54	47	41	51	45	40	38	38
7	67	52	43	37	65	52	43	37	63	51	42	36	49	42	36	46	40	36	34	34
8	62	48	39	33	61	47	38	33	59	46	38	32	45	38	32	43	36	32	30	30
9	58	44	35	29	57	43	35	29	55	42	35	29	41	34	29	39	33	29	27	27
10	54	40	32	27	53	40	32	26	52	39	32	26	38	31	26	36	30	26	24	24

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0 - 10	165	3.24	3.24
10 - 20	478	9.39	9.39
20 - 30	740	14.53	14.53
30 - 40	913	17.94	17.94
40 - 50	960	18.87	18.87
50 - 60	862	16.94	16.94
60 - 70	624	12.25	12.25
70 - 80	288	5.66	5.66
80 - 90	57	1.12	1.12
90 - 120	2	0.05	0.05
90 - 130	2	0.05	0.05
90 - 150	2	0.05	0.05
90 - 180	2	0.05	0.05
0 - 180	5090	100.00	100.00

Average Luminance (Cd/m²)

Angle	0 Degree	45 Degree	90 Degree
45.0	6453	6453	6453
55.0	6171	6171	6171
65.0	5477	5477	5477
75.0	3811	3811	3811
85.0	2008	2008	2008

Luminaire Luminous Flux: 5090

Measured Input Power: 56.53 W

Total Luminaire Efficiency: N/A

Luminaire Luminous Efficacy: 90.0 lm/W

Luminaire Spacing Criterion (0 Degree): 1.3193

Luminaire Spacing Criterion (90 Degree): 1.3193

CIE Type: Direct



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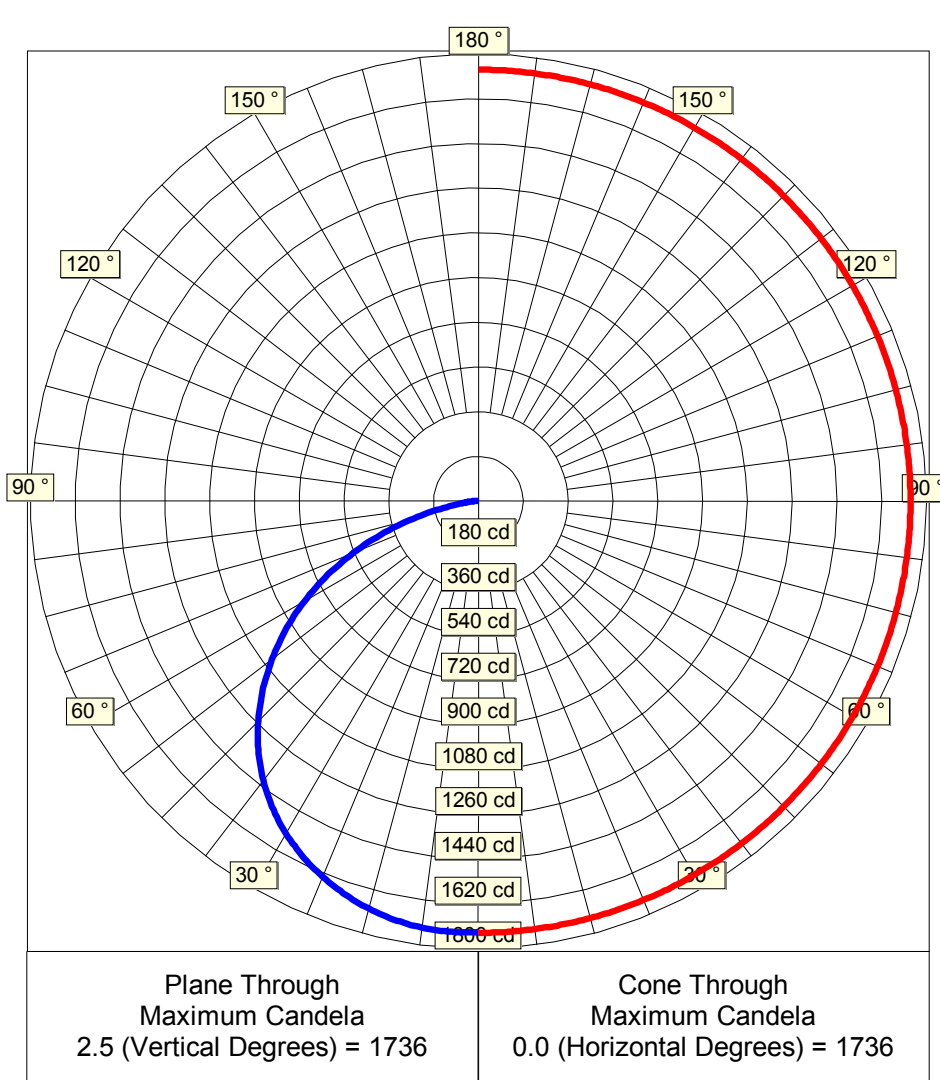
Photometric Report: S1707052-R1

Prepared for: Artemide Canada Ltd. · Test Date: 05 July 2017

Luminaire: TAGORA 570 LED · Lumcat: MTA5_830DFH

Luminous Intensity - Polar Curve for each Plane(1)

Plane Angles	Candela Values
0.0	1735
2.5	1736
5.0	1735
7.5	1730
10.0	1722
12.5	1711
15.0	1697
17.5	1680
20.0	1659
22.5	1635
25.0	1608
27.5	1578
30.0	1544
32.5	1507
35.0	1465
37.5	1418
40.0	1366
42.5	1310
45.0	1250
47.5	1185
50.0	1117
52.5	1045
55.0	969
57.5	890
60.0	807
62.5	722
65.0	634
67.5	543
70.0	451
72.5	359
75.0	270
77.5	187
80.0	116
82.5	66
85.0	48
87.5	33
90.0	19
92.5	0
95.0	0
97.5	0



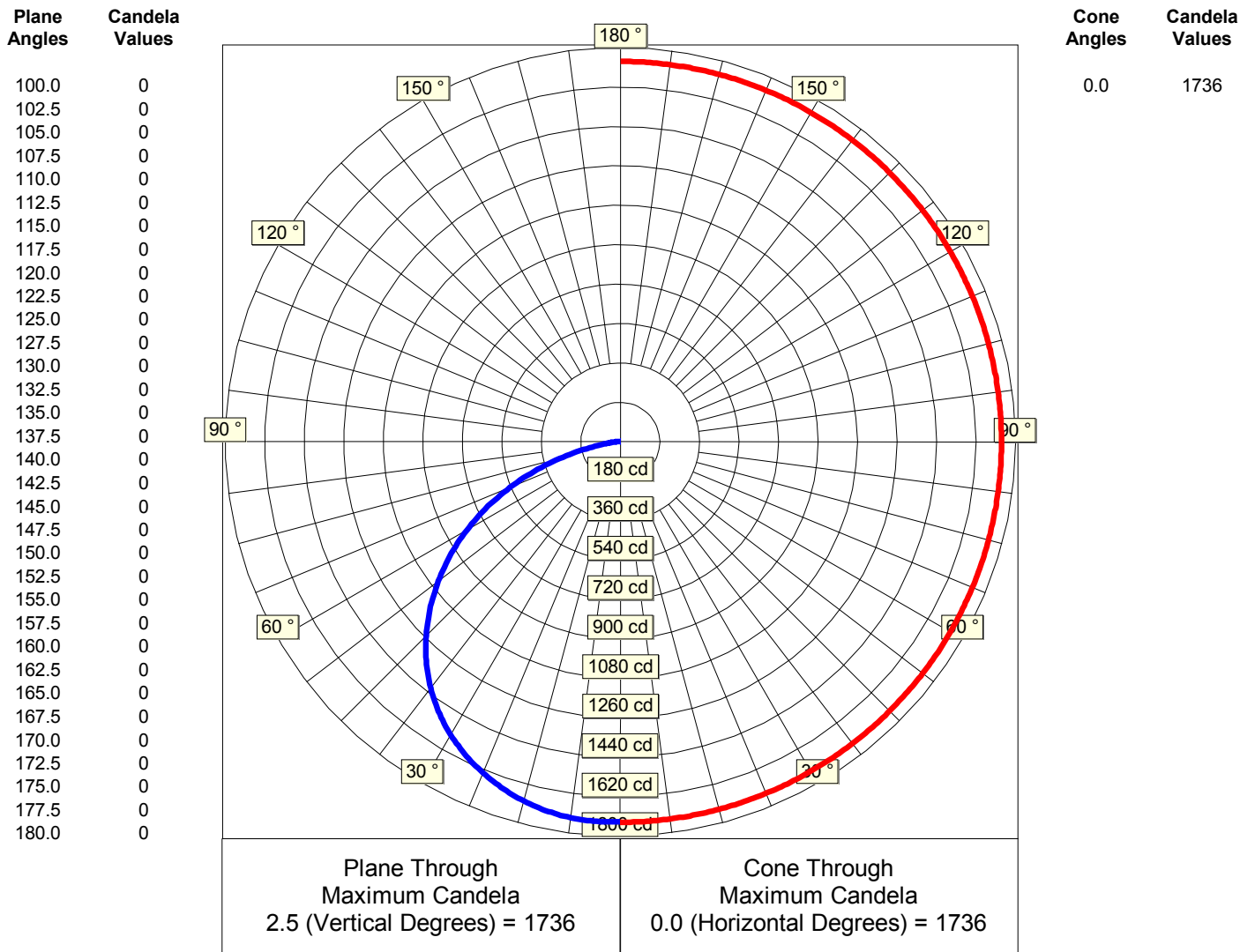


Photometric Report: S1707052-R1

Prepared for: Artemide Canada Ltd. · Test Date: 05 July 2017

Luminaire: TAGORA 570 LED · Lumcat: MTA5_830DFH

Luminous Intensity - Polar Curve for each Plane(2)





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IES File Headers

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IESNA:LM-63-2002
[ISSUEDATE] 05 July 2017
[TESTLAB] Spectra Lux Industries Inc.
[TEST] S1707052-R1
[MANUFAC] Artemide
[LUMCAT] MTA5_830DFH
[LUMINAIRE] TAGORA 570 LED
[LAMP] Clusters of 929000921706 LEDs c/w Advance Driver XI036C100V054DSM5 @ 120.00V
[_BURNING] Vertical Base Up (5,090 Luminaire Lumens)
[_REFLECTOR] Diffuse HO c/w Auxiliary Aluminum Optic
[_LENS] Acrylic Diffuser
[_HOUSING] Cylindrical Aluminum Shape
[DISTRIBUTION] Direct Type - Downlight

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Candela Table Lateral Angles

	0.0
	0.0
	2.5
	5.0
	7.5
	10.0
	12.5
	15.0
	17.5
	20.0
V	22.5
e	25.0
r	27.5
t	30.0
i	32.5
c	35.0
a	37.5
i	40.0
l	42.5
	45.0
	47.5
A	50.0
n	52.5
g	55.0
l	57.5
e	60.0
s	62.5
	65.0
	67.5
	70.0
	72.5
	75.0
	77.5
	80.0
	82.5
	85.0
	87.5
	90.0



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Lateral Angles

	0.0	
	92.5	0
	95.0	0
	97.5	0
	100.0	0
	102.5	0
	105.0	0
	107.5	0
	110.0	0
	112.5	0
V e r t i c a l	115.0	0
	117.5	0
	120.0	0
	122.5	0
	125.0	0
	127.5	0
	130.0	0
	132.5	0
	135.0	0
	137.5	0
A n g l e s	140.0	0
	142.5	0
	145.0	0
	147.5	0
	150.0	0
	152.5	0
	155.0	0
	157.5	0
	160.0	0
	162.5	0
	165.0	0
	167.5	0
	170.0	0
	172.5	0
	175.0	0
	177.5	0
	180.0	0