



Spectra Lux

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



Lab Code: 200899-0

Moving Mirror Goniophotometer Test Report

Standard(s): IES LM-79:2019, ANSI C82.2:2002, ANSI C82.77-10:2021

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

General Information		Lamp Details: CY5454		Driver Details: CY2570	
DUT Lab ID	SRIS 3157-11	Seasoning	0 Hour	Type	LED Power Supply
Lamp Type	LED/SSL	Test Product	COL-175-5-P-V-30K	Manufacturer	Meanwell
Current Mode	AC	Manufacturer	Nichia	Catalog No.	PWM-90-24
Test Report	S2212061-R1	Lamp Catalog No.	N.K.	Maximum Power	90 W
Test Date	6 December 2022	Drive Current	N.K.	Input Voltage	120.00 V
Report Date	8 December 2022	Nominal Color	3000 K	Operating Frequency	60 Hz
Ambient	24.9 °C	Burning Position	Axial	Input Power	52.52 W

Luminaire Data

General Information		Optics		Aperture (feet)	
Manufacturer	ANDlight	Optics	None	X	-0.5833
Name	Column Series	Housing	(5) Facetted Vertical Cylinders	Y	-0.5833
Catalog No.	COL-175-5-P-V-30K	Lens	(5) Acrylic Diffusers	Z	4.3750

Stabilization Time: 1 hour 15 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	Inventfine	CHP-500	GZBXD010148	N.P.C.R.	N.P.C.R.
Input Power Meter	Yokogawa	WT210	27E116584	2022/09/22	2023/09/22
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	110803	2022/09/07	2023/09/07

Environment Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Temperature Humidity Sensor	Omega	HH311	120504176	2022/09/07	2023/09/07



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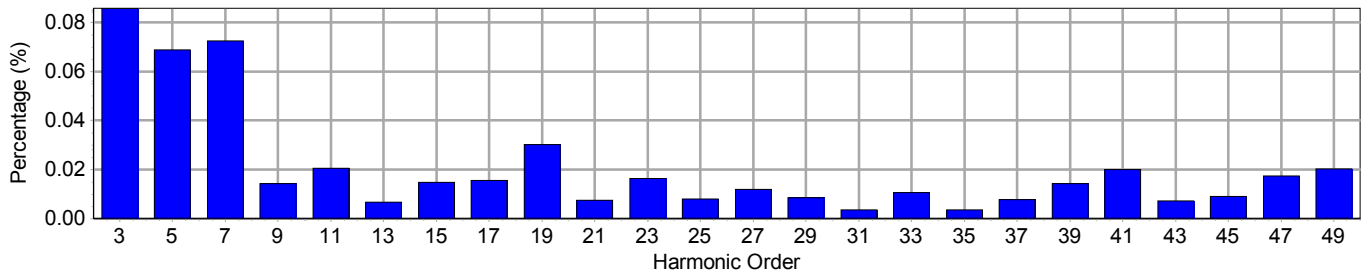
Lab Code: 200899-0

Electrical Measurements

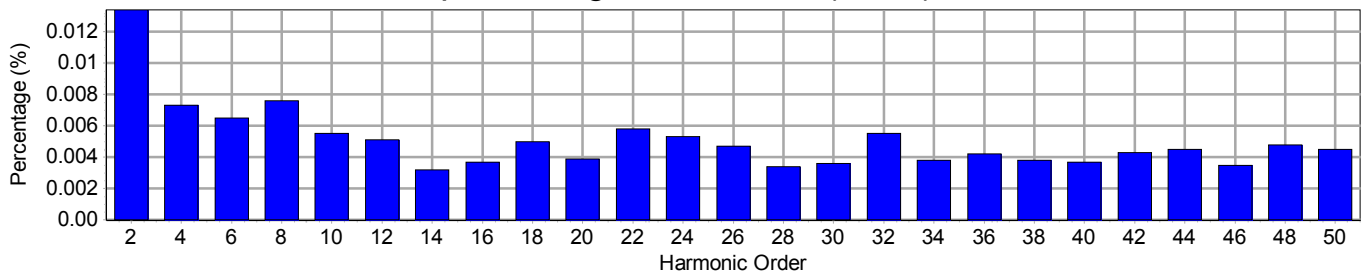
Input

Frequency	60 Hz	Active Power	52.52 W	THDV [ANSI]	0.15 %
Voltage	120.0 V(rms)	Apparent Power	52.97 VA	THDA [ANSI]	5.50 %
Current	0.4415 A(rms)	Power Factor	0.991	Max. Harmonic At	5th order

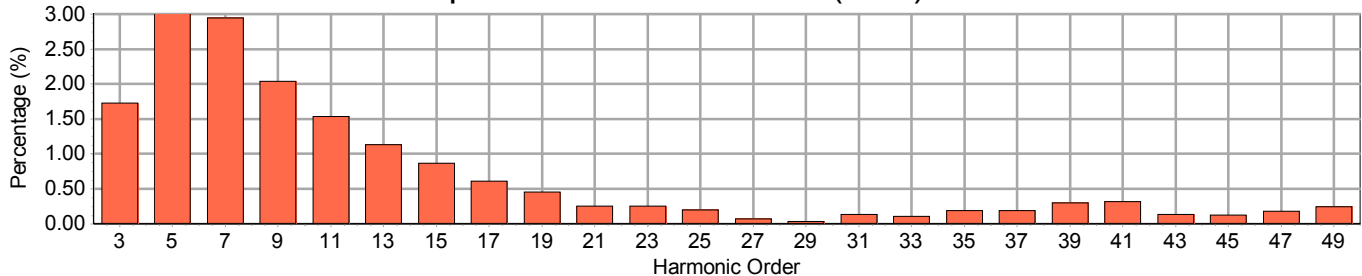
Input Voltage Harmonics (Odd)



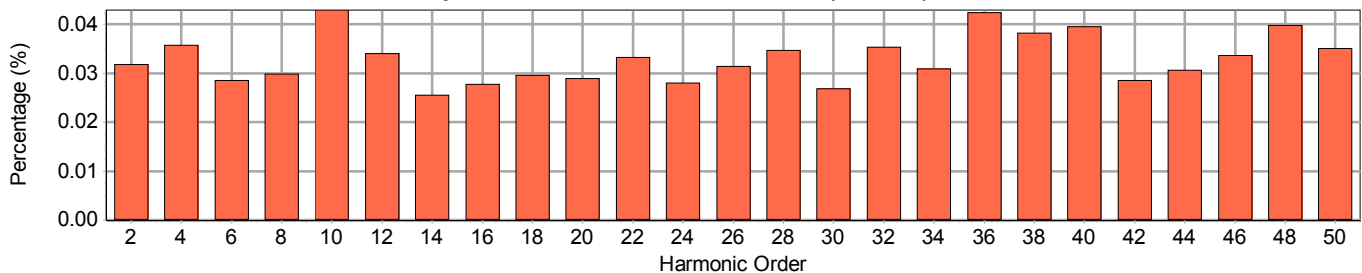
Input Voltage Harmonics (Even)



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	0.013	0.032
3	180	0.086	1.724	4	240	0.007	0.036
5	300	0.069	3.015	6	360	0.007	0.029
7	420	0.072	2.950	8	480	0.008	0.030
9	540	0.014	2.040	10	600	0.006	0.043
11	660	0.021	1.537	12	720	0.005	0.034
13	780	0.007	1.132	14	840	0.003	0.026
15	900	0.015	0.870	16	960	0.004	0.028
17	1020	0.016	0.608	18	1080	0.005	0.030
19	1140	0.030	0.456	20	1200	0.004	0.029
21	1260	0.008	0.257	22	1320	0.006	0.033
23	1380	0.016	0.254	24	1440	0.005	0.028
25	1500	0.008	0.195	26	1560	0.005	0.031
27	1620	0.012	0.066	28	1680	0.003	0.035
29	1740	0.008	0.034	30	1800	0.004	0.027
31	1860	0.004	0.132	32	1920	0.006	0.035
33	1980	0.011	0.105	34	2040	0.004	0.031
35	2100	0.004	0.186	36	2160	0.004	0.042
37	2220	0.008	0.189	38	2280	0.004	0.038
39	2340	0.014	0.299	40	2400	0.004	0.040
41	2460	0.020	0.313	42	2520	0.004	0.029
43	2580	0.007	0.135	44	2640	0.005	0.031
45	2700	0.009	0.127	46	2760	0.004	0.034
47	2820	0.017	0.178	48	2880	0.005	0.040
49	2940	0.020	0.247	50	3000	0.005	0.035



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Photometric Report: S2212061-R1

Prepared for: ANDlight · Test Date: 06 December 2022

Luminaire: Column Series · Lumcat: COL-175-5-P-V-30K

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		116	116	116	116	107	107	107	107	99	99	99	99	83	83	83	56	56	56				50
1		101	93	87	81	92	86	80	75	84	79	73	69	65	61	57	41	39	37				31
2		90	79	69	61	82	72	64	57	75	66	58	52	54	48	43	33	30	27				22
3		81	67	57	48	74	62	52	45	67	56	48	41	46	39	34	28	24	21				16
4		73	58	47	39	67	53	44	36	60	49	40	33	40	33	28	24	20	16				12
5		67	51	40	33	61	47	37	30	55	43	34	28	35	28	23	21	17	13				10
6		61	45	35	27	55	41	32	25	50	38	29	23	31	24	19	19	14	11				8
7		56	40	30	23	51	37	28	22	46	34	26	20	28	21	16	17	13	9				7
8		52	36	27	20	47	33	25	19	43	30	23	17	25	19	14	15	11	8				5
9		48	33	24	18	44	30	22	16	40	28	20	15	23	17	12	14	10	7				5
10		45	30	21	15	41	27	19	14	37	25	18	13	21	15	11	13	9	6				4

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0 - 10	5	0.16	0.16
10 - 20	27	0.93	0.93
20 - 30	65	2.27	2.27
30 - 40	114	3.98	3.98
40 - 50	167	5.82	5.82
50 - 60	217	7.54	7.54
60 - 70	257	8.95	8.95
70 - 80	285	9.92	9.92
80 - 90	300	10.42	10.42
90 - 120	842	29.29	29.29
90 - 130	1058	36.83	36.83
90 - 150	1340	46.64	46.64
90 - 180	1437	50.00	50.00
0 - 180	2873	100.00	100.00

Average Luminance (Cd/m²)

Angle	0 Degree	45 Degree	90 Degree
0.0	35	35	35
45.0	415	410	410
55.0	575	566	565
65.0	840	827	821
75.0	1431	1403	1391
85.0	4350	4264	4205

Luminaire Luminous Flux: 2873

Measured Input Power: 52.52 W

Total Luminaire Efficiency: N/A

Luminaire Luminous Efficacy: 54.7 lm/W

Luminaire Spacing Criterion (0 Degree): 5.1055

Luminaire Spacing Criterion (90 Degree): 5.0527

Category: Up and Down

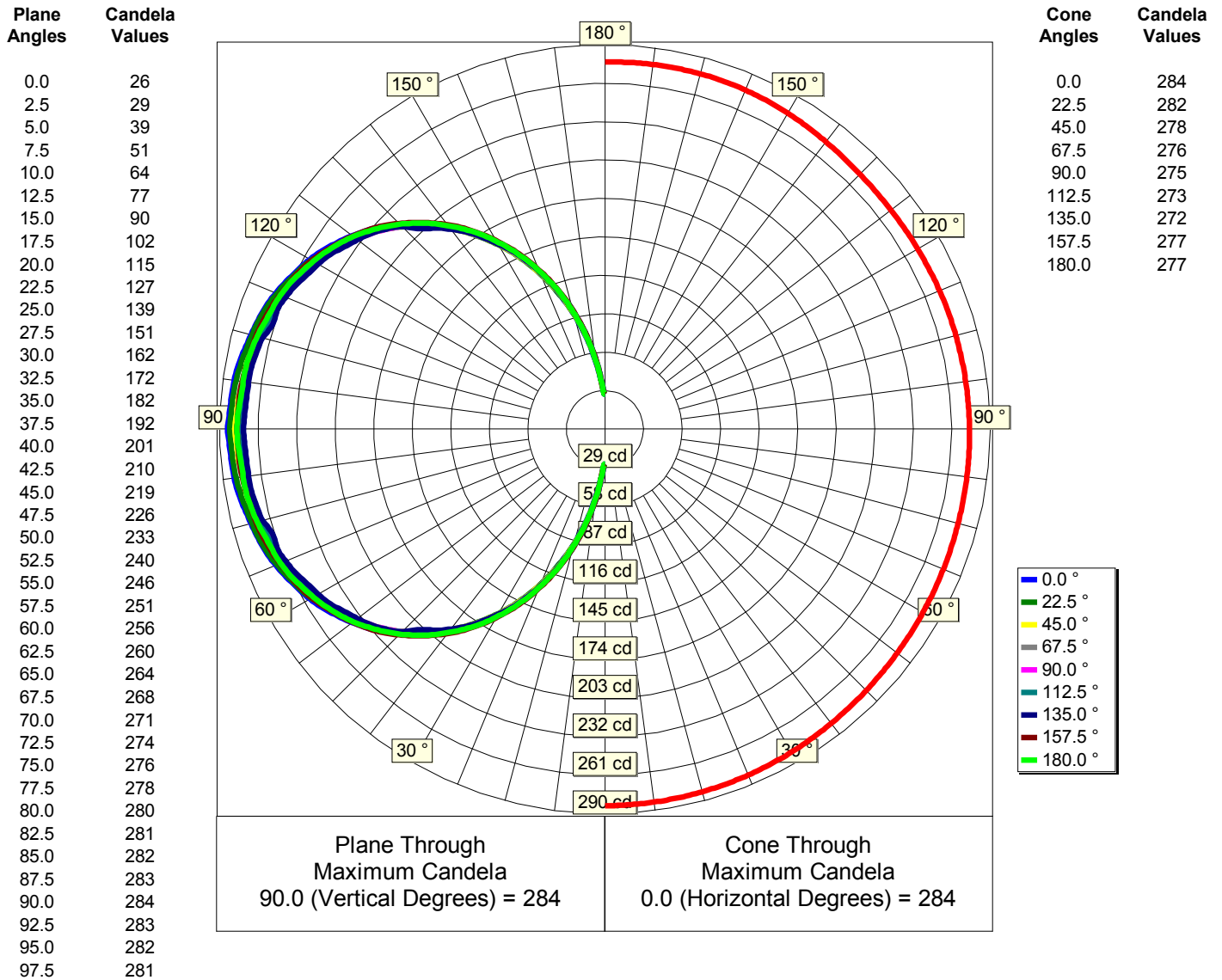


Photometric Report: S2212061-R1

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Luminaire: Column Series · Lumcat: COL-175-5-P-V-30K

Luminous Intensity - Polar Curve for each Plane(1)





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Luminaire: Column Series · Lumcat: COL-175-5-P-V-30K

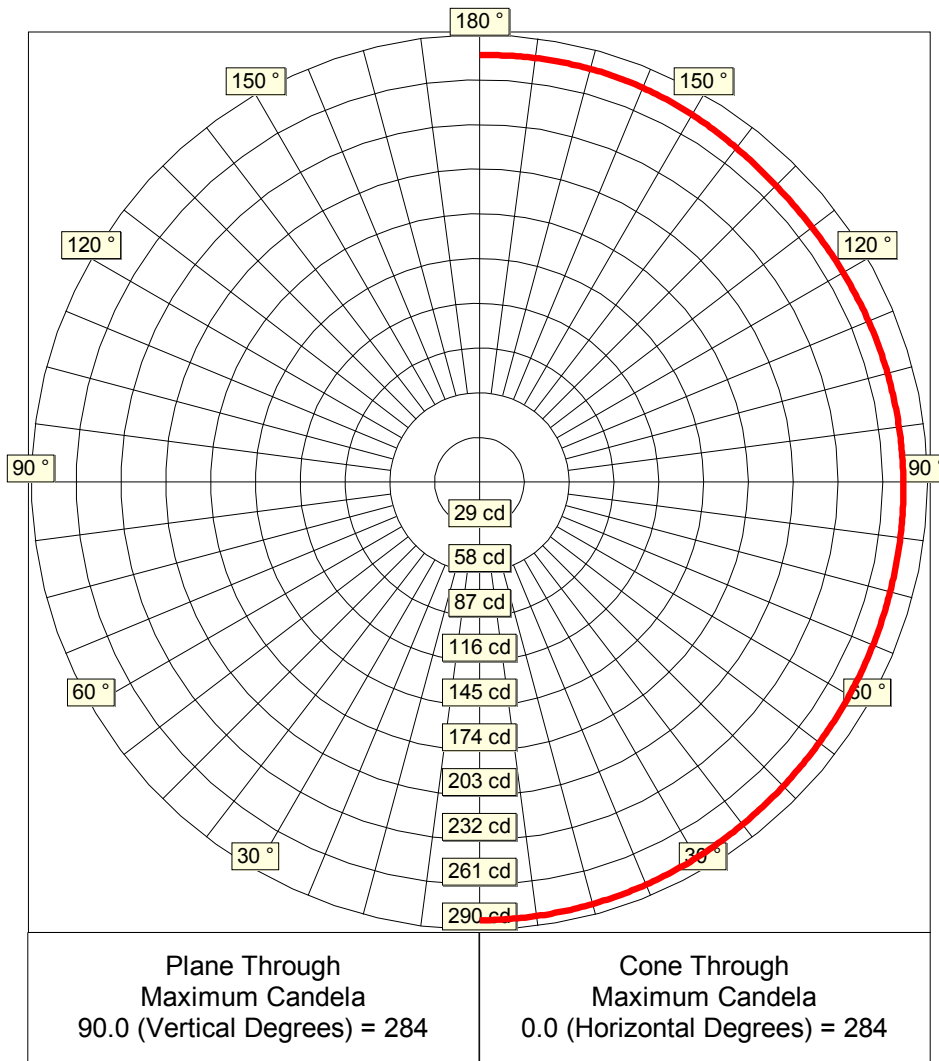
Luminous Intensity - Polar Curve for each Plane(2)

Plane
Angles

Plane Angles	Candela Values
100.0	280
102.5	278
105.0	276
107.5	274
110.0	271
112.5	268
115.0	264
117.5	260
120.0	256
122.5	251
125.0	246
127.5	240
130.0	233
132.5	226
135.0	219
137.5	210
140.0	201
142.5	192
145.0	182
147.5	172
150.0	162
152.5	151
155.0	139
157.5	127
160.0	115
162.5	102
165.0	90
167.5	77
170.0	64
172.5	51
175.0	39
177.5	29
180.0	26

Cone
Angles

Candela
Values





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IES File Headers

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IESNA:LM-63
[ISSUEDATE]      06 December 2022
[TESTLAB]        Spectra Lux
[TEST]           S2212061-R1
[MANUFAC]        ANDlight
[LUMCAT]          COL-175-5-P-V-30K
[LUMINAIRE]       Column Series
[LAMP]           Clusters of Nichia LEDs c/w Meanwell Driver PWM-90-24 @ 120.00V
[_BURNING]        Axial (2,873 Luminaire Lumens)
[_OPTICS]         None
[_LENS]           (5) Acrylic Diffusers
[_HOUSING]        (5) Facetted Vertical Cylinders
[_NOMINAL COLOR] 3000 K
[_DRIVE CURRENT] N.K.
```

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	26	26	26	26	26	26	26	26
	2.5	29	30	31	31	31	31	30	29
	5.0	39	40	41	42	42	42	40	40
	7.5	51	52	53	54	54	54	53	52
	10.0	64	64	65	66	67	66	66	65
	12.5	77	77	78	79	79	79	80	78
	15.0	90	90	91	92	92	93	93	91
	17.5	102	102	103	104	105	105	106	104
	20.0	115	114	115	116	117	117	118	117
	22.5	127	127	127	128	129	129	130	129
	25.0	139	138	139	140	140	141	140	141
	27.5	151	150	150	151	152	152	154	153
	30.0	162	161	161	162	162	161	165	164
	32.5	172	171	171	172	173	172	175	174
	35.0	182	181	181	181	182	181	185	184
	37.5	192	191	190	191	192	190	194	193
	40.0	201	200	199	199	200	198	203	202
	42.5	210	208	208	208	208	205	211	211
	45.0	219	216	216	216	216	216	219	219
A n g l e s	47.5	226	224	223	223	223	224	227	226
	50.0	233	231	230	230	230	230	234	232
	52.5	240	237	236	236	236	235	239	239
	55.0	246	243	242	242	241	240	245	244
	57.5	251	249	247	247	246	245	250	249
	60.0	256	255	252	252	251	249	255	253
	62.5	260	260	256	255	255	253	259	257
	65.0	264	263	260	259	258	257	262	261
	67.5	268	267	263	262	261	260	265	264
	70.0	271	270	266	265	264	262	267	266
	72.5	274	273	268	268	266	262	270	268
	75.0	276	275	270	270	268	266	272	271
	77.5	278	277	272	271	270	269	273	273
	80.0	280	278	274	273	271	270	274	274
	82.5	281	280	275	274	272	270	275	275
	85.0	282	281	277	275	273	272	276	275
	87.5	283	281	277	275	274	273	276	276
	90.0	284	282	278	276	275	273	277	277



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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	283	281	277	275	274	273	271	276
	95.0	282	281	277	275	273	272	271	276
	97.5	281	280	275	274	272	272	270	275
	100.0	280	278	274	273	271	270	270	274
	102.5	278	277	272	271	270	269	268	273
	105.0	276	275	270	270	268	268	266	272
	107.5	274	273	268	268	266	266	262	270
	110.0	271	270	266	265	264	264	262	267
	112.5	268	267	263	262	261	261	260	265
	115.0	264	263	260	259	258	258	257	262
	117.5	260	260	256	255	255	255	253	259
	120.0	256	255	252	252	251	251	249	255
	122.5	251	249	247	247	246	246	245	250
	125.0	246	243	242	242	241	241	240	245
	127.5	240	237	236	236	236	236	235	239
	130.0	233	231	230	230	230	230	230	234
	132.5	226	224	223	223	223	223	224	227
	135.0	219	216	216	216	216	216	216	219
A n g l e s	137.5	210	208	208	208	208	208	205	211
	140.0	201	200	199	199	200	200	198	203
	142.5	192	191	190	191	191	192	190	194
	145.0	182	181	181	181	182	182	181	185
	147.5	172	171	171	172	172	173	172	175
	150.0	162	161	161	162	162	162	161	165
	152.5	151	150	150	151	152	152	152	154
	155.0	139	138	139	140	140	141	140	142
	157.5	127	127	127	128	129	129	129	130
	160.0	115	114	115	116	117	117	117	118
	162.5	102	102	103	104	105	105	105	106
	165.0	90	90	91	92	92	93	92	93
	167.5	77	77	78	79	79	80	79	80
	170.0	64	64	65	66	67	67	66	66
	172.5	51	52	53	54	54	54	54	53
	175.0	39	40	41	42	42	42	40	41
	177.5	29	30	31	31	31	31	30	30
	180.0	26	26	26	26	26	26	26	26