



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: CY4419		Driver Details: CY2018	
DUT Lab ID	SRIS 3021-7	Seasoning	NA	Type	LED Power Supply
Lamp Type	LED/SSL	Test Product	VAL-P-35	Manufacturer	Meanwell
Current Mode	AC	Manufacturer	EPISTAR	Catalog No.	IDLV-45-24
Test Report	S2008252-R1	Lamp Catalog No.	3500K	Maximum Power	45 W
Test Date	25 August 2020	Drive Current	18 mA	Input Voltage	120.00 V
Report Date	23 November 2020	Nominal Color	3500 K	Operating Frequency	60 Hz
Ambient	24.8 °C	Burning Position	Junction Horizontal	Input Power	22.48 W

Luminaire Data

General Information		Optics		Aperture (feet)	
Manufacturer	AndLight	Reflector	None	X	0.6875
Name	VALE	Housing	Aluminum Frame	Y	3.3333
Catalog No.	VAL-P-35	Lens	Up & Down Prismatic Acrylic Diffuser	Z	0.5000

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).





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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.

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

Environment Equipment

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

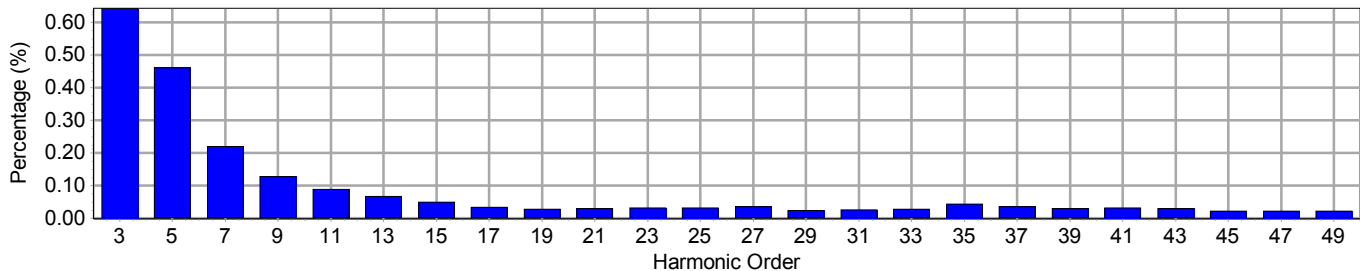


Electrical Measurements

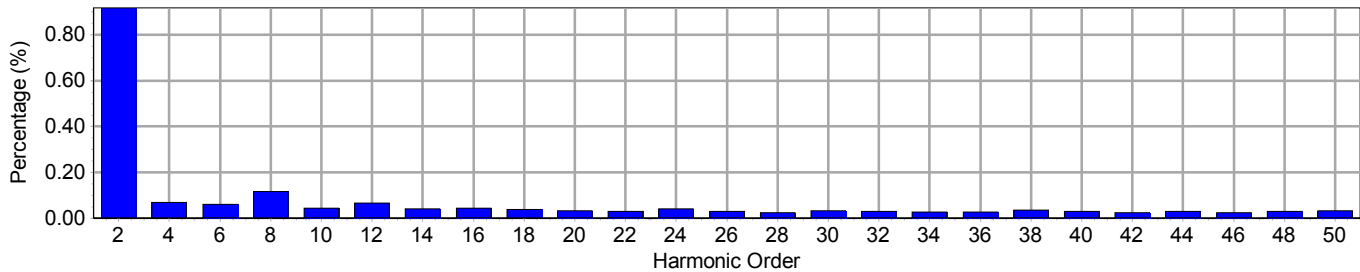
Input

Frequency	60 Hz	Active Power	22.48 W	THDV [ANSI]	1.27 %
Voltage	121.4 V(rms)	Apparent Power	23.56 VA	THDA [ANSI]	9.36 %
Current	0.1941 A(rms)	Power Factor	0.954	Max. Harmonic At	3rd order

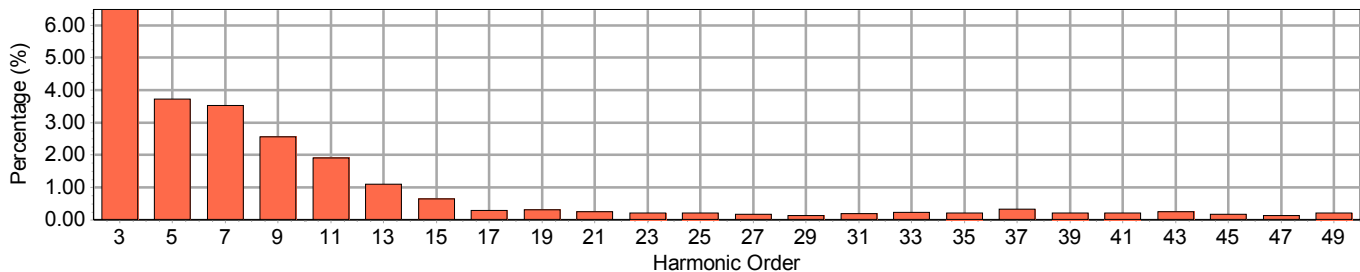
Input Voltage Harmonics (Odd)



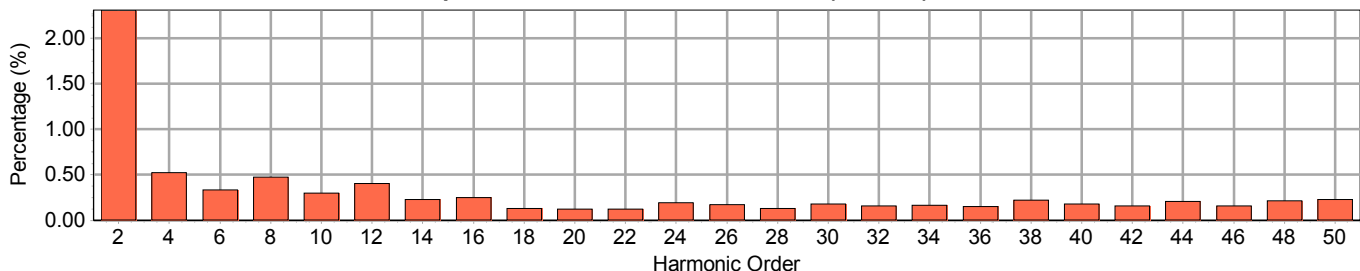
Input Voltage Harmonics (Even)



Input Current Harmonics (Odd)



Input Current Harmonics (Even)





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Lab Code: 200899-0

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	0.919	2.309
3	180	0.645	6.495	4	240	0.069	0.525
5	300	0.461	3.718	6	360	0.061	0.334
7	420	0.221	3.530	8	480	0.116	0.477
9	540	0.128	2.562	10	600	0.044	0.299
11	660	0.089	1.914	12	720	0.066	0.404
13	780	0.067	1.090	14	840	0.040	0.227
15	900	0.049	0.649	16	960	0.042	0.251
17	1020	0.035	0.295	18	1080	0.038	0.132
19	1140	0.028	0.304	20	1200	0.033	0.123
21	1260	0.030	0.252	22	1320	0.030	0.121
23	1380	0.033	0.207	24	1440	0.042	0.194
25	1500	0.032	0.201	26	1560	0.029	0.175
27	1620	0.035	0.164	28	1680	0.024	0.131
29	1740	0.025	0.120	30	1800	0.032	0.181
31	1860	0.027	0.187	32	1920	0.030	0.157
33	1980	0.028	0.233	34	2040	0.025	0.166
35	2100	0.043	0.207	36	2160	0.028	0.149
37	2220	0.036	0.323	38	2280	0.034	0.224
39	2340	0.030	0.202	40	2400	0.030	0.176
41	2460	0.033	0.206	42	2520	0.024	0.156
43	2580	0.031	0.252	44	2640	0.029	0.204
45	2700	0.023	0.161	46	2760	0.025	0.158
47	2820	0.022	0.136	48	2880	0.030	0.216
49	2940	0.022	0.201	50	3000	0.032	0.230



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Photometric Report: S2008252-R1

Prepared for: ANDlight · Test Date: 25 August 2020

Luminaire: VALE · Lumcat: VAL-P-35

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	50	50	50
1		105	99	94	90	97	92	87	83	89	85	81	77	71	68	66	48	46	45	40	40	40	40
2		95	86	78	72	87	79	73	67	80	73	68	63	62	57	54	41	39	37	32	32	32	32
3		87	75	66	59	80	69	62	55	73	64	57	52	54	49	45	36	33	31	27	27	27	27
4		79	66	57	50	73	61	53	47	66	57	49	44	48	42	38	32	29	26	23	23	23	23
5		72	59	49	42	67	54	46	40	61	50	43	37	43	37	32	29	26	23	20	20	20	20
6		67	52	43	36	61	49	40	34	56	45	38	32	38	32	28	26	23	20	17	17	17	17
7		61	47	38	32	57	44	36	30	52	41	33	28	35	29	25	24	20	18	15	15	15	15
8		57	43	34	28	52	40	32	26	48	37	30	25	32	26	22	22	18	16	13	13	13	13
9		53	39	30	25	49	36	29	23	45	34	27	22	29	23	19	20	17	14	12	12	12	12
10		49	36	27	22	46	33	26	21	42	31	24	20	27	21	17	19	15	13	11	11	11	11

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0 - 10	18	1.50	1.50
10 - 20	52	4.25	4.25
20 - 30	78	6.42	6.42
30 - 40	95	7.79	7.79
40 - 50	100	8.24	8.24
50 - 60	93	7.67	7.67
60 - 70	77	6.33	6.33
70 - 80	55	4.55	4.55
80 - 90	40	3.24	3.24
90 - 120	172	14.12	14.12
90 - 130	265	21.80	21.80
90 - 150	461	37.83	37.83
90 - 180	609	50.00	50.00
0 - 180	1218	100.00	100.00

Average Luminance (Cd/m²)

Angle	0 Degree	45 Degree	90 Degree
45.0	235	225	235
55.0	253	215	222
65.0	283	212	217
75.0	284	228	251
85.0	257	517	578

Luminaire Luminous Flux: 1218

Measured Input Power: 22.48 W

Total Luminaire Efficiency: N/A

Luminaire Luminous Efficacy: 54.2 lm/W

Luminaire Spacing Criterion (0 Degree): 1.2257

Luminaire Spacing Criterion (90 Degree): 1.2570

Category: Up and Down

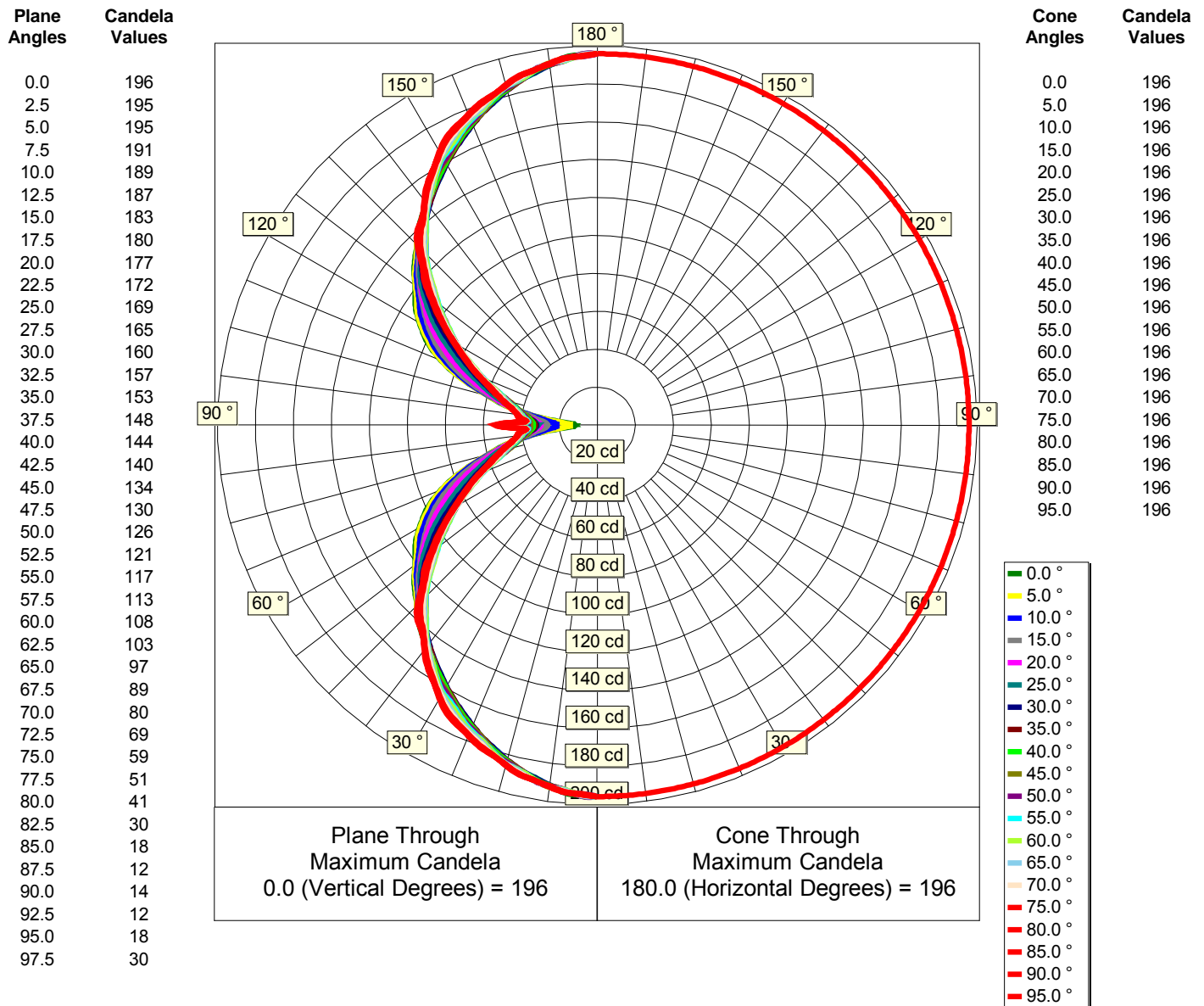


Photometric Report: S2008252-R1

Prepared for: ANDlight · Test Date: 25 August 2020

Luminaire: VALE · Lumcat: VAL-P-35

Luminous Intensity - Polar Curve for each Plane(1)



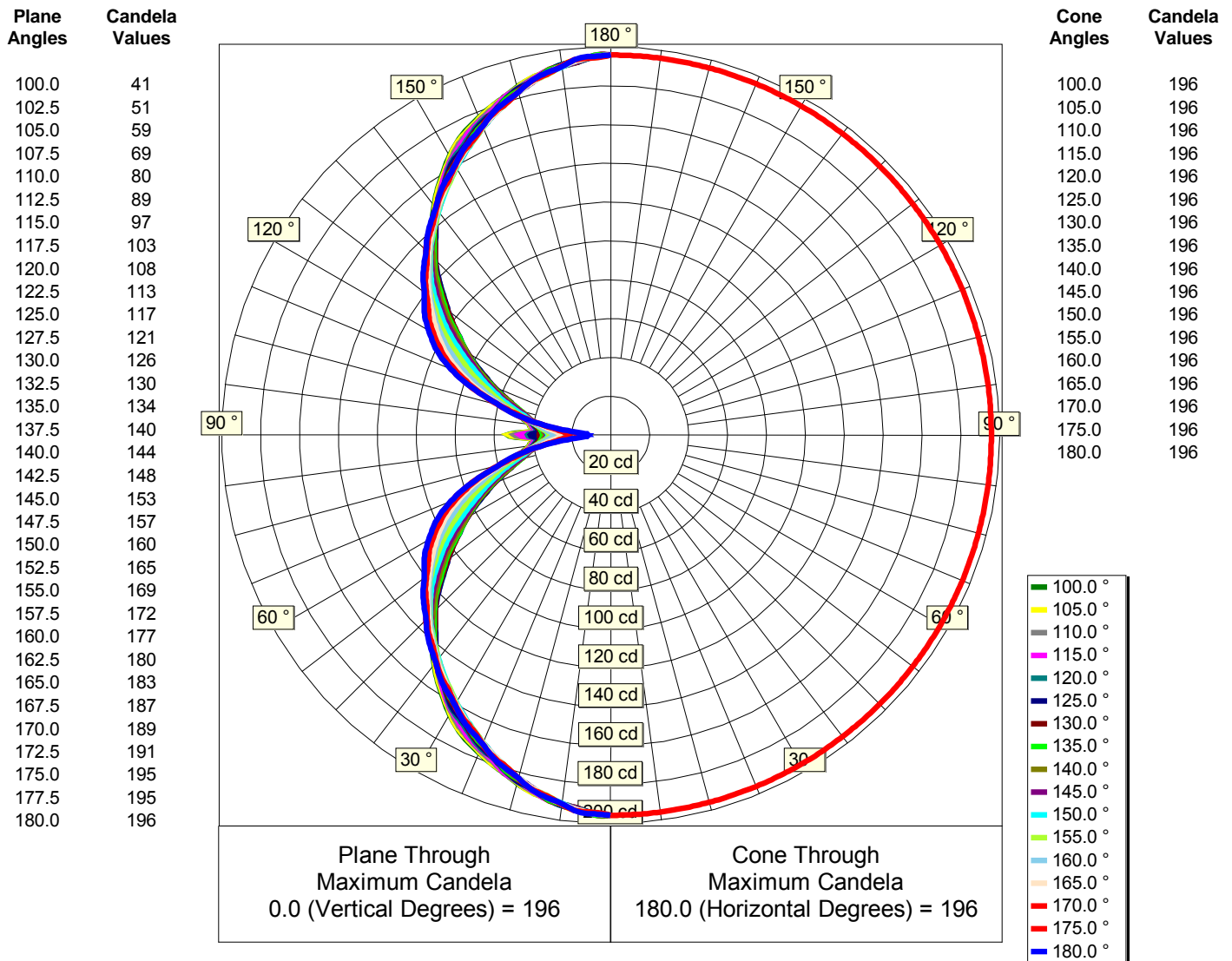


Photometric Report: S2008252-R1

Prepared for: ANDlight · Test Date: 25 August 2020

Luminaire: VALE · Lumcat: VAL-P-35

Luminous Intensity - Polar Curve for each Plane(2)





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IES File Headers

IESNA:LM-63
[ISSUEDATE] 25 August 2020
[TESTLAB] Spectra Lux
[TEST] S2008252-R1
[MANUFAC] AndLight
[LUMCAT] VAL-P-35
[LUMINAIRE] VALE
[LAMP] Clusters of EPISTAR 3500K LEDs c/w Meanwell Driver IDLV-45-24 @ 120.00V
[_BURNING] Horizontal (1,218 Luminaire Lumens)
[_REFLECTOR] None
[_LENS] Up & Down Prismatic Acrylic Diffuser
[_HOUSING] Aluminum Frame
[_NOMINAL COLOR] 3500 K
[_DRIVE CURRENT] 18 mA

Candela Table

Lateral Angles

	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0
V e r t i c a l	0.0	196	196	196	196	196	196	196	196	196
	2.5	195	195	195	195	195	195	195	195	196
	5.0	195	194	194	194	194	194	193	194	193
	7.5	191	192	192	192	192	191	191	192	192
	10.0	189	189	189	189	189	189	189	189	190
	12.5	187	187	187	186	186	186	186	186	186
	15.0	183	183	183	183	183	183	183	183	184
	17.5	180	179	179	179	179	179	180	180	181
	20.0	177	177	176	176	176	175	175	176	176
	22.5	172	172	172	172	172	171	172	172	173
	25.0	169	168	167	168	167	167	168	168	169
	27.5	165	165	164	164	164	163	163	164	164
	30.0	160	161	160	159	159	159	159	159	160
	32.5	157	156	155	155	154	154	155	155	156
	35.0	153	152	152	151	151	150	150	151	151
	37.5	148	148	147	146	146	145	146	146	146
	40.0	144	143	142	142	141	141	141	141	141
A n g l e s	42.5	140	139	138	137	137	136	136	135	134
	45.0	134	134	133	132	132	131	131	129	128
	47.5	130	129	128	128	127	126	124	123	122
	50.0	126	125	124	123	122	120	118	116	114
	52.5	121	121	119	118	117	113	111	109	107
	55.0	117	116	114	113	111	109	104	101	100
	57.5	113	112	110	107	106	99	96	93	91
	60.0	108	108	105	102	100	96	91	88	86
	62.5	103	102	100	97	93	88	83	81	79
	65.0	97	96	94	90	86	81	76	74	72
	67.5	89	89	86	83	79	74	69	68	66
	70.0	80	79	78	75	71	67	63	61	59
	72.5	69	70	69	67	64	60	57	55	53
	75.0	59	60	58	58	56	54	51	49	48
	77.5	51	51	49	49	49	48	45	44	44
	80.0	41	42	40	41	43	42	41	41	41
	82.5	30	30	32	35	38	38	37	37	38
	85.0	18	21	26	30	34	35	35	35	36
	87.5	12	15	22	27	31	32	33	33	35
	90.0	14	14	21	26	30	31	32	34	35



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Lateral Angles

	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	
V e r t i c a l	92.5	12	15	22	27	31	32	33	33	34	35
	95.0	18	21	26	30	34	35	35	35	35	36
	97.5	30	30	32	35	38	38	38	37	37	38
	100.0	41	42	40	41	43	42	41	41	40	41
	102.5	51	51	49	49	49	48	45	44	44	44
	105.0	59	60	58	58	56	54	51	49	48	48
	107.5	69	70	69	67	64	60	57	55	53	53
	110.0	80	79	78	75	71	67	63	61	60	59
	112.5	89	89	86	83	79	74	69	68	67	66
	115.0	97	96	94	90	86	81	76	74	73	72
	117.5	103	102	100	97	93	88	83	81	80	79
	120.0	108	108	105	102	100	96	91	88	86	86
	122.5	113	112	110	107	106	103	99	96	93	91
	125.0	117	116	114	113	111	109	106	104	101	100
	127.5	121	121	119	118	117	116	113	111	109	107
	130.0	126	125	124	123	122	122	120	118	116	114
	132.5	130	129	128	128	127	126	126	124	123	122
	135.0	134	134	133	132	132	131	131	131	129	128
A n g l e s	137.5	140	139	138	137	137	136	136	136	135	134
	140.0	144	143	142	142	141	141	141	141	141	141
	142.5	148	148	147	146	146	146	145	146	146	146
	145.0	153	152	152	151	151	150	150	150	151	151
	147.5	157	156	155	155	155	154	154	155	155	156
	150.0	160	161	160	159	159	159	159	159	159	160
	152.5	165	165	164	164	164	164	163	163	164	164
	155.0	169	168	167	168	167	167	167	168	168	169
	157.5	172	172	172	172	172	172	171	172	172	173
	160.0	177	177	176	176	176	176	175	175	176	176
	162.5	180	179	179	179	179	179	179	180	180	181
	165.0	183	183	183	183	183	183	183	183	183	184
	167.5	187	187	187	186	186	186	186	186	186	186
	170.0	189	189	189	189	189	189	189	189	189	190
	172.5	191	192	192	192	192	192	191	191	192	192
	175.0	195	194	194	194	194	194	194	193	194	193
	177.5	195	195	195	195	195	195	195	195	195	196
	180.0	196	196	196	196	196	196	196	196	196	196



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Lab Code: 200899-0

Lateral Angles

	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0	90.0	95.0
V e r t i c a l	0.0	196	196	196	196	196	196	196	196	196
	2.5	196	195	195	195	195	195	195	194	195
	5.0	193	193	193	193	194	194	194	194	194
	7.5	192	192	193	192	192	192	192	192	192
	10.0	190	190	190	190	190	190	190	190	190
	12.5	186	187	187	187	188	188	189	189	189
	15.0	184	185	185	185	185	186	185	186	185
	17.5	181	181	181	182	182	183	183	182	183
	20.0	176	177	177	178	179	180	180	181	180
	22.5	173	174	175	175	176	177	177	177	177
	25.0	170	170	171	172	173	174	175	174	175
	27.5	165	165	166	168	169	171	171	171	171
	30.0	161	162	163	164	164	166	166	166	166
	32.5	157	157	158	159	159	160	161	161	161
	35.0	151	151	152	153	153	155	155	156	155
	37.5	146	146	147	147	148	149	149	150	149
	40.0	141	140	140	141	141	142	143	143	143
	42.5	134	133	133	134	136	137	138	139	139
	45.0	127	127	128	128	129	131	133	134	133
	47.5	121	120	120	121	122	123	124	125	125
A n g l e s	50.0	113	112	112	113	114	116	118	119	118
	52.5	106	105	106	107	107	109	110	111	110
	55.0	98	99	99	100	100	101	102	103	102
	57.5	92	91	92	93	93	94	94	95	94
	60.0	85	85	85	85	85	86	87	87	87
	62.5	79	78	78	79	78	79	80	80	80
	65.0	72	71	71	72	72	73	74	74	74
	67.5	65	65	65	65	66	67	67	68	67
	70.0	59	58	59	60	60	60	61	61	61
	72.5	53	53	53	54	54	56	56	57	57
	75.0	48	49	49	50	51	52	52	52	52
	77.5	45	45	46	47	47	47	48	48	48
	80.0	41	42	42	43	44	44	45	45	45
	82.5	39	40	40	41	41	42	42	43	42
	85.0	37	38	39	39	40	40	40	41	41
	87.5	36	37	37	38	38	39	40	40	40
	90.0	37	41	43	47	50	52	53	54	53
	92.5	36	37	37	38	38	39	40	40	40
	95.0	37	38	39	39	40	40	40	41	41
	97.5	39	40	40	41	41	42	42	43	42
	100.0	41	42	42	43	44	44	45	45	45
	102.5	45	45	46	47	47	47	48	48	48
	105.0	48	49	49	50	51	52	52	52	52
	107.5	53	53	53	54	54	56	56	57	57
	110.0	59	58	59	60	60	60	61	61	61
	112.5	65	65	65	65	66	67	67	68	67
	115.0	72	71	71	72	72	73	74	74	74
	117.5	79	78	78	79	78	79	80	80	80
	120.0	85	85	85	85	85	86	87	87	87
	122.5	92	91	92	93	93	94	94	95	94
	125.0	98	99	99	100	100	101	102	103	102
	127.5	106	105	106	107	107	109	110	111	110
	130.0	113	112	112	113	114	116	118	119	118
	132.5	121	120	120	121	122	123	124	125	125



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Lateral Angles

	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0	90.0	95.0	
V e r t i c a l	135.0	127	127	128	128	129	131	133	133	134	133
	137.5	134	133	133	134	136	137	138	139	140	139
	140.0	141	140	140	141	141	142	143	143	143	143
	142.5	146	146	147	147	147	148	149	149	150	149
	145.0	151	151	152	153	153	155	155	155	156	155
	147.5	157	157	158	159	159	160	160	161	161	161
	150.0	161	162	163	164	164	165	166	166	166	166
	152.5	165	165	166	168	169	170	171	171	171	171
	155.0	170	170	171	172	173	173	174	175	174	175
	157.5	173	174	175	175	176	177	177	177	177	177
	160.0	176	177	177	178	179	180	180	180	181	180
	162.5	181	181	181	182	182	182	183	183	182	183
	165.0	184	185	185	185	185	185	186	185	186	185
	167.5	186	187	187	187	188	188	188	189	189	189
	170.0	190	190	190	190	190	190	190	190	190	190
	172.5	192	192	193	192	192	192	192	192	192	192
	175.0	193	193	193	193	194	194	194	194	194	194
	177.5	196	195	195	195	195	195	195	195	194	195
	180.0	196	196	196	196	196	196	196	196	196	196
A n g l e s											



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Lateral Angles

	100.0	105.0	110.0	115.0	120.0	125.0	130.0	135.0	140.0	145.0
V e r t i c a l	0.0	196	196	196	196	196	196	196	196	196
	2.5	195	195	195	195	195	196	196	195	195
	5.0	194	194	194	193	193	193	193	194	193
	7.5	192	192	192	192	193	192	192	192	191
	10.0	190	190	190	190	190	190	190	189	189
	12.5	188	188	188	187	187	186	186	186	186
	15.0	186	185	185	185	185	184	184	183	183
	17.5	183	182	182	182	181	181	181	180	180
	20.0	180	180	179	178	177	176	176	176	175
	22.5	177	177	176	175	175	173	173	172	172
	25.0	174	173	173	172	171	170	169	168	168
	27.5	171	170	169	168	166	165	164	164	163
	30.0	166	165	164	164	163	162	161	160	159
	32.5	160	160	159	159	158	157	156	155	155
	35.0	155	155	153	153	152	151	151	151	150
	37.5	149	148	147	147	147	146	146	146	146
	40.0	143	142	141	141	140	140	141	141	141
	42.5	138	137	136	134	133	133	134	134	136
	45.0	133	131	129	128	128	127	127	128	129
	47.5	124	123	122	121	120	120	121	122	123
A n g l e s	50.0	118	116	114	113	112	112	113	114	116
	52.5	110	109	107	107	106	105	106	107	109
	55.0	102	101	100	100	99	99	98	100	101
	57.5	94	94	93	93	92	91	92	91	93
	60.0	87	86	85	85	85	85	85	86	86
	62.5	80	79	78	79	78	78	79	79	80
	65.0	74	73	72	72	71	71	72	72	73
	67.5	67	67	66	65	65	65	65	66	67
	70.0	61	60	60	60	59	58	59	59	60
	72.5	56	56	54	54	53	53	53	53	55
	75.0	52	52	51	50	49	49	48	48	48
	77.5	48	47	47	47	46	45	45	44	44
	80.0	45	44	44	43	42	42	41	41	40
	82.5	42	42	41	41	40	40	39	38	37
	85.0	40	40	40	39	39	38	37	36	35
	87.5	40	39	38	38	37	37	36	35	34
	90.0	53	52	50	47	43	41	37	35	34
	92.5	40	39	38	38	37	37	36	35	34
	95.0	40	40	40	39	39	38	37	36	35
	97.5	42	42	41	41	40	40	39	38	37
	100.0	45	44	44	43	42	42	41	41	40
	102.5	48	47	47	47	46	45	45	44	44
	105.0	52	52	51	50	49	49	48	48	48
	107.5	56	56	54	54	53	53	53	53	55
	110.0	61	60	60	60	59	58	59	59	60
	112.5	67	67	66	65	65	65	65	66	67
	115.0	74	73	72	72	71	71	72	72	73
	117.5	80	79	78	79	78	78	79	79	80
	120.0	87	86	85	85	85	85	85	86	86
	122.5	94	94	93	93	92	91	92	91	93
	125.0	102	101	100	100	99	99	98	100	101
	127.5	110	109	107	107	106	105	106	107	109
	130.0	118	116	114	113	112	112	113	114	116
	132.5	124	123	122	121	120	120	121	122	123



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Lateral Angles

	100.0	105.0	110.0	115.0	120.0	125.0	130.0	135.0	140.0	145.0	
V e r t i c a l	135.0	133	131	129	128	128	127	127	128	129	131
	137.5	138	137	136	134	133	133	134	134	135	136
	140.0	143	142	141	141	140	140	141	141	141	141
	142.5	149	148	147	147	147	146	146	146	146	146
	145.0	155	155	153	153	152	151	151	151	151	150
	147.5	160	160	159	159	158	157	157	156	155	155
	150.0	166	165	164	164	163	162	161	160	159	159
	152.5	171	170	169	168	166	165	165	164	164	163
	155.0	174	173	173	172	171	170	170	169	168	168
	157.5	177	177	176	175	175	174	173	173	172	172
	160.0	180	180	179	178	177	177	176	176	176	175
	162.5	183	182	182	182	181	181	181	181	180	180
	165.0	186	185	185	185	185	185	184	184	183	183
	167.5	188	188	188	187	187	187	186	186	186	186
	170.0	190	190	190	190	190	190	190	190	189	189
	172.5	192	192	192	192	193	192	192	192	192	191
	175.0	194	194	194	193	193	193	193	193	194	193
	177.5	195	195	195	195	195	195	196	196	195	195
	180.0	196	196	196	196	196	196	196	196	196	196
A n g l e s											



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Lab Code: 200899-0

Lateral Angles

	150.0	155.0	160.0	165.0	170.0	175.0	180.0
V e r t i c a l	0.0	196	196	196	196	196	196
	2.5	195	195	195	195	195	195
	5.0	194	194	194	194	194	195
	7.5	191	192	192	192	192	191
	10.0	189	189	189	189	189	189
	12.5	186	186	186	187	187	187
	15.0	183	183	183	183	183	183
	17.5	179	179	179	179	179	180
	20.0	175	176	176	176	177	177
	22.5	171	172	172	172	172	172
	25.0	167	167	167	168	168	169
	27.5	163	164	164	164	165	165
	30.0	159	159	159	160	161	160
	32.5	154	154	155	155	156	157
	35.0	150	150	151	151	152	153
	37.5	145	146	146	147	148	148
	40.0	141	141	141	142	143	144
	42.5	136	136	137	137	138	140
	45.0	131	131	132	132	133	134
	47.5	126	126	127	128	129	130
A n g l e s	50.0	120	122	122	123	124	126
	52.5	113	116	117	118	119	121
	55.0	106	109	111	113	114	117
	57.5	99	103	106	107	110	113
	60.0	91	96	100	102	105	108
	62.5	83	88	93	97	100	103
	65.0	76	81	86	90	94	97
	67.5	69	74	79	83	86	89
	70.0	63	67	71	75	78	80
	72.5	57	60	64	67	69	69
	75.0	51	54	56	58	58	59
	77.5	45	48	49	49	49	51
	80.0	41	42	43	41	40	41
	82.5	38	38	38	35	32	30
	85.0	35	35	34	30	26	21
	87.5	33	32	31	27	22	15
	90.0	32	31	30	26	21	14
	92.5	33	32	31	27	22	15
	95.0	35	35	34	30	26	21
	97.5	38	38	38	35	32	30
	100.0	41	42	43	41	40	42
	102.5	45	48	49	49	49	51
	105.0	51	54	56	58	58	60
	107.5	57	60	64	67	69	70
	110.0	63	67	71	75	78	79
	112.5	69	74	79	83	86	89
	115.0	76	81	86	90	94	96
	117.5	83	88	93	97	100	102
	120.0	91	96	100	102	105	108
	122.5	99	103	106	107	110	112
	125.0	106	109	111	113	114	116
	127.5	113	116	117	118	119	121
	130.0	120	122	122	123	124	125
	132.5	126	126	127	128	128	129



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Lateral Angles

	150.0	155.0	160.0	165.0	170.0	175.0	180.0
V e r t i c a l	135.0	131	131	132	132	133	134
	137.5	136	136	137	137	138	139
	140.0	141	141	141	142	142	143
	142.5	145	146	146	146	147	148
	145.0	150	150	151	151	152	153
	147.5	154	154	155	155	156	157
	150.0	159	159	159	160	161	160
	152.5	163	164	164	164	165	165
	155.0	167	167	167	168	167	168
	157.5	171	172	172	172	172	172
	160.0	175	176	176	176	177	177
	162.5	179	179	179	179	179	180
	165.0	183	183	183	183	183	183
	167.5	186	186	186	187	187	187
	170.0	189	189	189	189	189	189
	172.5	191	192	192	192	192	191
	175.0	194	194	194	194	194	195
	177.5	195	195	195	195	195	195
	180.0	196	196	196	196	196	196
A n g l e s							