



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-63, IES LM-79, ANSI C82.77

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

General Information		Lamp Details: CY4458		Driver Details: CY2029	
DUT Lab ID	SRIS 2831-5	Seasoning	0 Hour	Type	LED Power Supply
Lamp Type	LED/SSL	Test Product	BUT-90-CW-27	Manufacturer	Meanwell
Current Mode	AC	Manufacturer	EPISTAR	Catalog No.	IDLV-45-12
Test Report	S2008186-R1	Lamp Catalog No.	OMNICHIP (320404-xx-300-12-4.4)	Maximum Power	45 W
Test Date	18 August 2020	Drive Current	30 mA	Input Voltage	120.00 V
Report Date	20 November 2020	Nominal Color	2700 K	Operating Frequency	60 Hz
Ambient	24.4 °C	Burning Position	Junction Axial	Input Power	26.50 W

Luminaire Data

General Information		Optics		Aperture (feet)	
Manufacturer	ANDlight	Reflector	None	X	0.0000
Name	BUTTON	Housing	Aluminum Body c/w Nylon Rope	Y	-2.9583
Catalog No.	BUT-90-CW-27	Lens	Opalin Acrylic Diffuser	Z	-2.9583

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

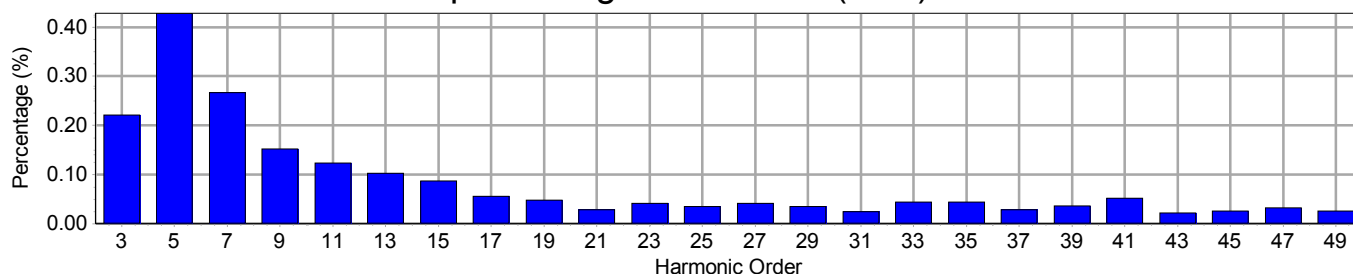


Electrical Measurements

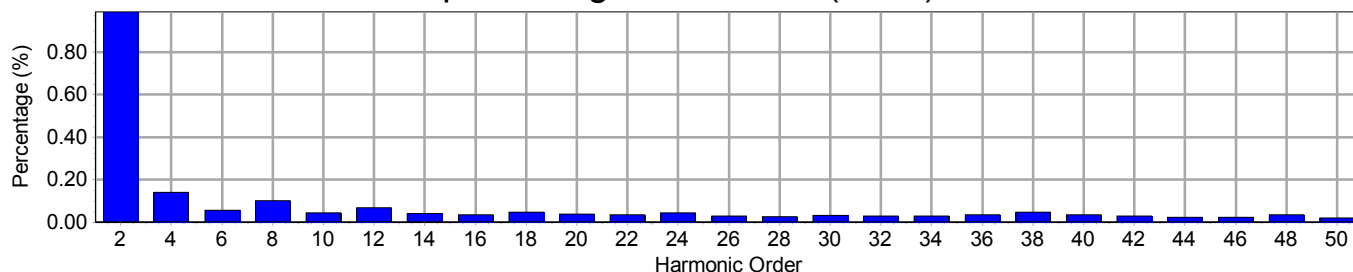
Input

Frequency	60 Hz	Active Power	26.50 W	THDV [ANSI]	1.19 %
Voltage	120.1 V(rms)	Apparent Power	27.11 VA	THDA [ANSI]	6.73 %
Current	0.2258 A(rms)	Power Factor	0.977	Max. Harmonic At	3rd order

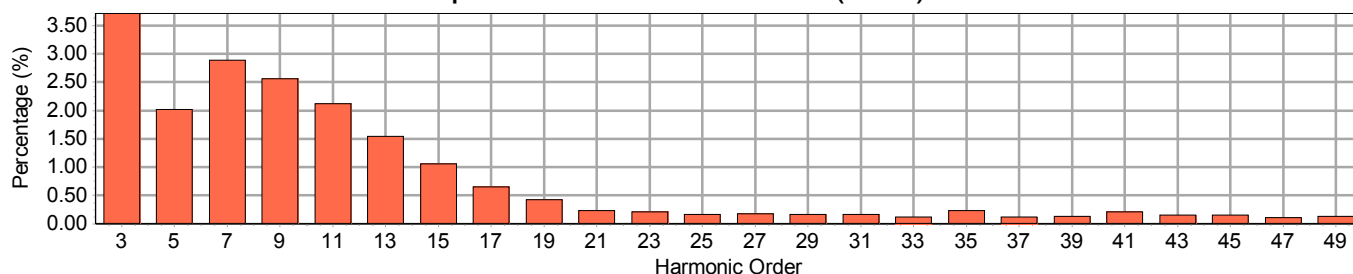
Input Voltage Harmonics (Odd)



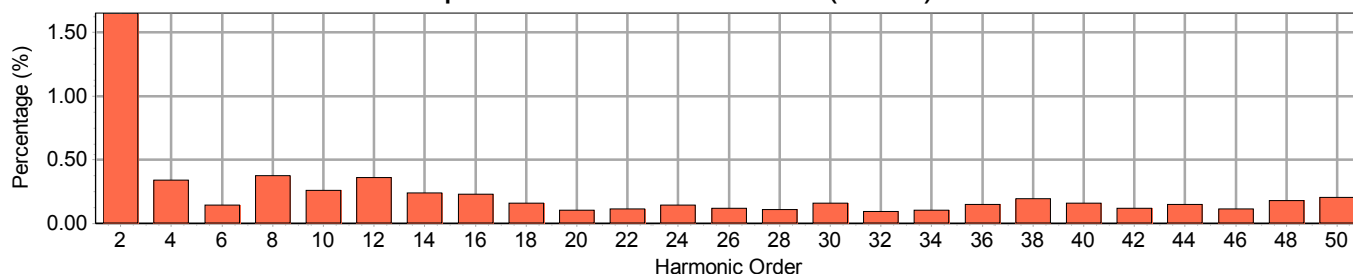
Input Voltage Harmonics (Even)



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	0.991	1.653
3	180	0.221	3.719	4	240	0.141	0.338
5	300	0.429	2.015	6	360	0.054	0.142
7	420	0.267	2.893	8	480	0.100	0.374
9	540	0.152	2.564	10	600	0.045	0.260
11	660	0.123	2.121	12	720	0.067	0.361
13	780	0.103	1.542	14	840	0.041	0.240
15	900	0.087	1.061	16	960	0.036	0.231
17	1020	0.056	0.655	18	1080	0.047	0.157
19	1140	0.047	0.420	20	1200	0.037	0.101
21	1260	0.027	0.231	22	1320	0.034	0.114
23	1380	0.041	0.208	24	1440	0.045	0.145
25	1500	0.035	0.169	26	1560	0.028	0.117
27	1620	0.042	0.178	28	1680	0.025	0.108
29	1740	0.034	0.166	30	1800	0.031	0.160
31	1860	0.023	0.163	32	1920	0.028	0.091
33	1980	0.044	0.119	34	2040	0.029	0.105
35	2100	0.044	0.235	36	2160	0.034	0.150
37	2220	0.028	0.117	38	2280	0.046	0.194
39	2340	0.036	0.127	40	2400	0.034	0.159
41	2460	0.051	0.204	42	2520	0.029	0.118
43	2580	0.022	0.154	44	2640	0.023	0.146
45	2700	0.026	0.157	46	2760	0.022	0.111
47	2820	0.031	0.104	48	2880	0.035	0.178
49	2940	0.026	0.128	50	3000	0.021	0.203



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Photometric Report: S2008186-R1

Prepared for: ANDlight · Test Date: 18 August 2020

Luminaire: BUTTON · Lumcat: BUT-90-CW-27

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	84	84	84	57	57	57	50	50	50	50
1		101	93	86	80	92	85	79	74	84	78	73	68	65	60	57	41	38	36	31	31	31	31
2		89	78	68	60	82	71	63	56	74	65	57	51	53	47	42	33	29	26	21	21	21	21
3		80	66	56	47	73	61	51	44	66	55	47	40	45	39	33	27	23	20	15	15	15	15
4		73	57	46	38	66	53	43	35	60	48	39	32	39	32	27	23	19	16	12	12	12	12
5		66	50	39	32	60	46	36	29	54	42	33	27	34	27	22	20	16	13	9	9	9	9
6		60	44	34	26	55	41	31	24	50	37	29	22	30	23	18	18	14	10	7	7	7	7
7		55	40	29	22	50	36	27	21	46	33	25	19	27	20	15	16	12	9	6	6	6	6
8		51	36	26	19	47	33	24	18	42	30	22	16	24	18	13	15	10	7	5	5	5	5
9		47	32	23	17	43	29	21	15	39	27	19	14	22	16	12	13	9	6	4	4	4	4
10		44	29	20	15	40	27	19	14	36	25	17	12	20	14	10	12	8	6	3	3	3	3

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0 - 10	1	0.08	0.08
10 - 20	11	0.64	0.64
20 - 30	31	1.86	1.86
30 - 40	60	3.59	3.59
40 - 50	94	5.58	5.58
50 - 60	127	7.58	7.58
60 - 70	156	9.32	9.32
70 - 80	178	10.59	10.59
80 - 90	189	11.26	11.26
90 - 120	520	30.97	30.97
90 - 130	645	38.41	38.41
90 - 150	793	47.26	47.26
90 - 180	831	49.51	49.51
0 - 180	1679	100.00	100.00

Average Luminance (Cd/m²)

Angle	0 Degree	45 Degree	90 Degree
45.0	414	303	18
55.0	592	441	26
65.0	890	665	40
75.0	1536	1157	72
85.0	4699	3561	223

Luminaire Luminous Flux: 1679

Measured Input Power: 26.50 W

Total Luminaire Efficiency: N/A

Luminaire Luminous Efficacy: 63.3 lm/W

Luminaire Spacing Criterion (0 Degree): 9.8824

Luminaire Spacing Criterion (90 Degree): 2.6493

Category: Up and Down

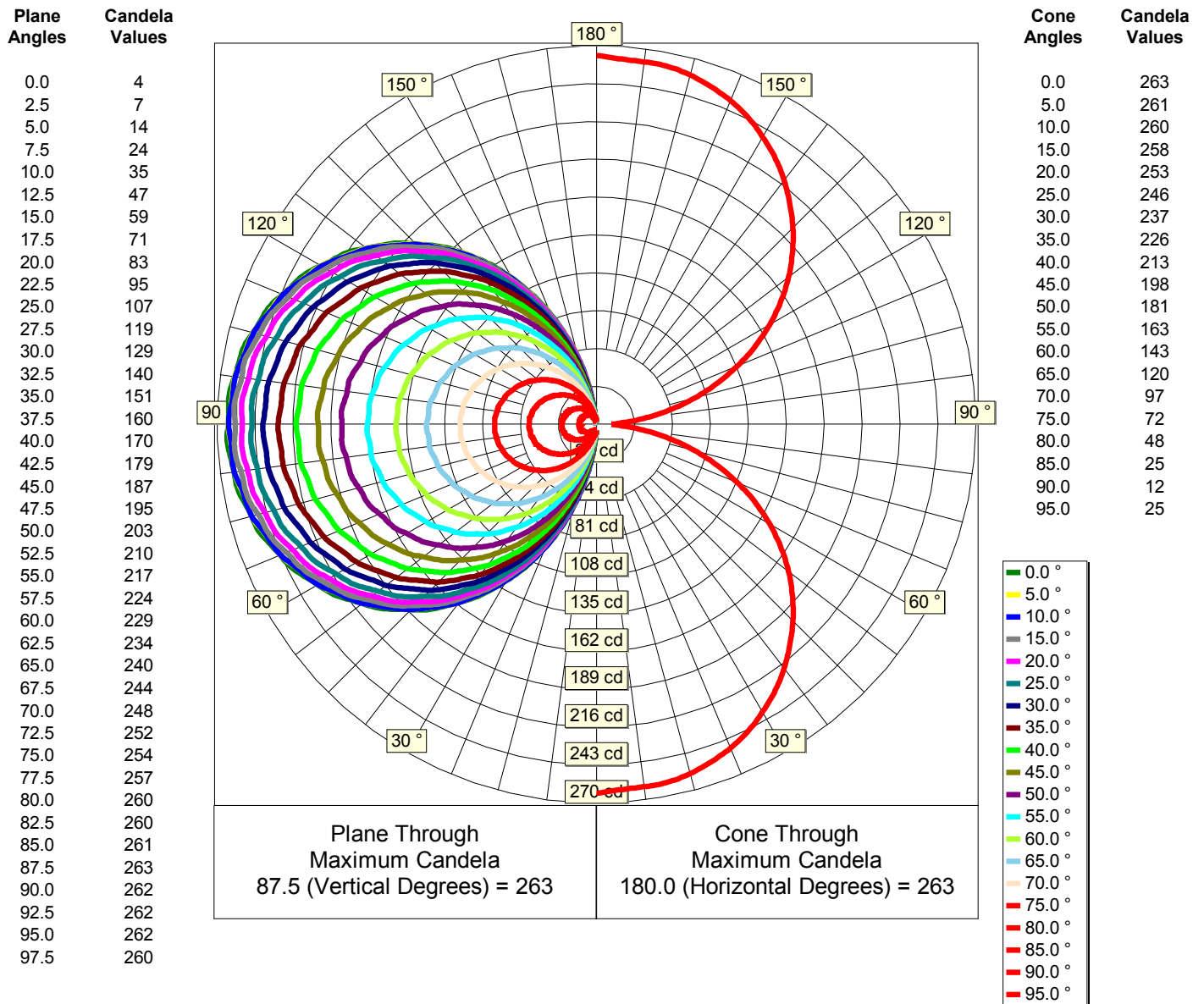


Photometric Report: S2008186-R1

Prepared for: ANDlight · Test Date: 18 August 2020

Luminaire: BUTTON · Lumcat: BUT-90-CW-27

Luminous Intensity - Polar Curve for each Plane(1)



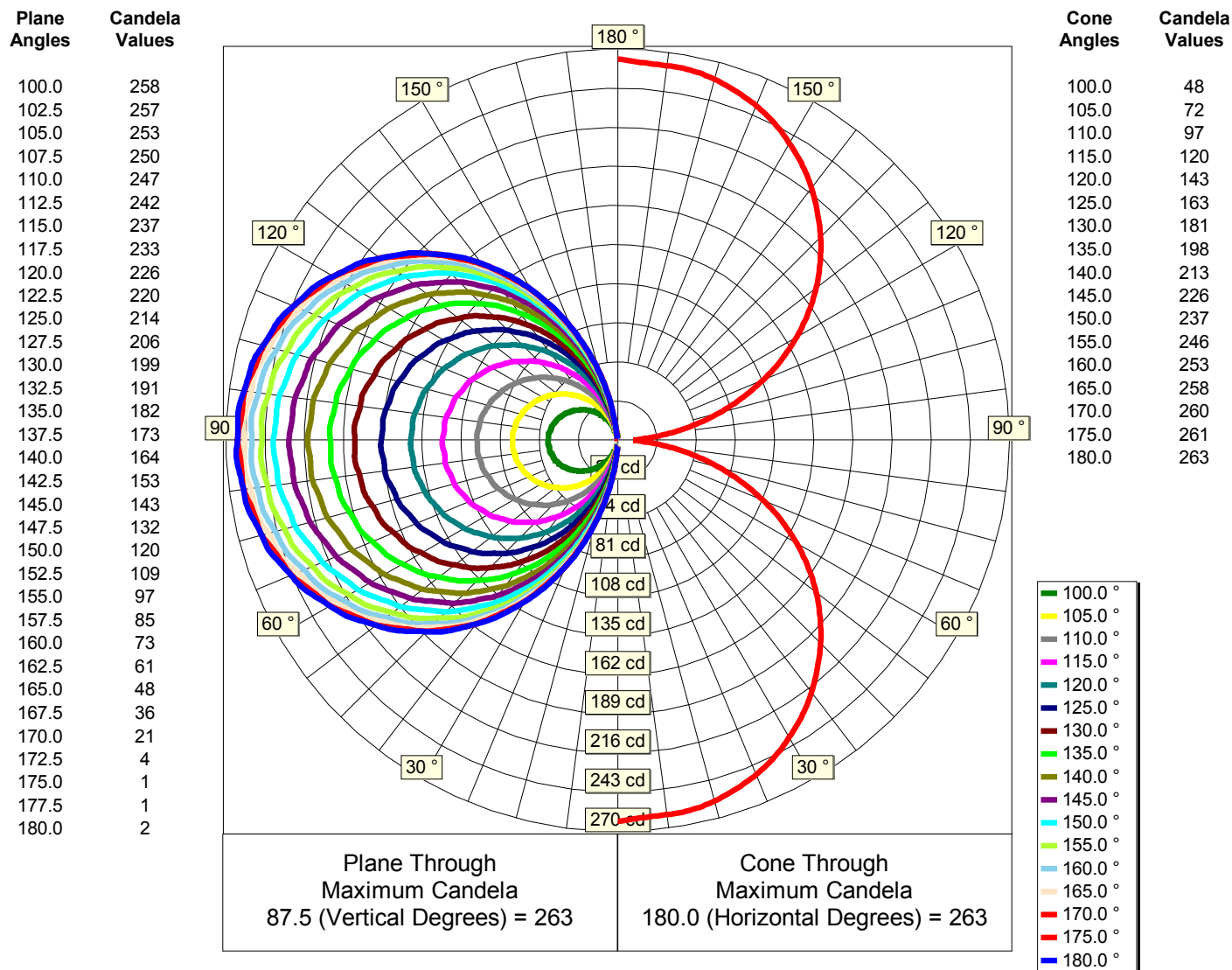


Photometric Report: S2008186-R1

Prepared for: ANDlight · Test Date: 18 August 2020

Luminaire: BUTTON · Lumcat: BUT-90-CW-27

Luminous Intensity - Polar Curve for each Plane(2)





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IES File Headers

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IESNA:LM-63
[ISSUEDATE]      18 August 2020
[TESTLAB]        Spectra Lux
[TEST]           S2008186-R1
[MANUFAC]        ANDlight
[LUMCAT]         BUT-90-CW-27
[LUMINAIRE]      BUTTON
[LAMP]           Clusters of EPISTAR OMNICHIP (320404-xx-300-12-4.4) LEDs c/w Meanwell Driver IDLV-45-12 @ 120.00V
[_BURNING]        Axial (1,679 Luminaire Lumens)
[_REFLECTOR]      None
[_LENS]           Opalin Acrylic Diffuser
[_HOUSING]        Aluminum Body c/w Nylon Rope
[_NOMINAL COLOR] 2700K
[_DRIVE CURRENT] 30 mA
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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	4	4	4	4	4	4	4	4	4
	2.5	7	7	7	7	7	7	7	7	6
	5.0	14	14	14	14	14	13	12	12	10
	7.5	24	24	24	23	23	22	21	20	18
	10.0	35	34	35	34	33	32	30	28	26
	12.5	47	46	46	45	44	43	40	38	35
	15.0	59	58	59	57	55	54	51	48	44
	17.5	71	70	71	69	67	65	61	58	54
	20.0	83	82	83	81	79	77	72	68	63
	22.5	95	94	95	92	90	87	83	78	73
	25.0	107	106	106	104	102	99	93	88	82
	27.5	119	117	117	115	113	109	104	98	91
	30.0	129	129	129	126	123	119	114	108	101
	32.5	140	139	139	137	134	130	123	117	109
	35.0	151	149	149	147	144	139	133	126	118
	37.5	160	160	160	156	153	148	142	135	127
	40.0	170	168	169	166	162	158	150	143	134
	42.5	179	177	177	175	171	166	159	151	141
	45.0	187	186	187	183	179	174	167	159	149
	47.5	195	194	194	191	188	182	174	165	156
A n g l e s	50.0	203	201	202	199	195	189	181	173	162
	52.5	210	210	210	205	201	195	189	179	169
	55.0	217	215	216	213	209	203	194	185	174
	57.5	224	222	222	219	215	209	200	191	180
	60.0	229	229	229	224	220	213	206	197	185
	62.5	234	233	233	231	226	219	210	201	189
	65.0	240	238	238	235	231	224	215	205	193
	67.5	244	243	243	239	234	228	220	210	198
	70.0	248	246	246	244	239	232	223	212	201
	72.5	252	250	249	247	242	236	226	216	203
	75.0	254	254	254	249	244	237	230	219	207
	77.5	257	255	255	253	248	241	231	221	208
	80.0	260	257	257	254	250	243	234	223	210
	82.5	260	260	260	255	250	243	236	225	212
	85.0	261	260	260	258	252	245	236	225	212
	87.5	263	261	260	258	253	246	237	226	213
	90.0	262	262	262	257	252	245	237	227	214



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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	262	261	261	258	253	246	236	225	212	199
	95.0	262	260	260	257	252	245	236	225	212	197
	97.5	260	260	259	255	250	243	235	224	211	196
	100.0	258	257	257	255	249	242	232	222	209	195
	102.5	257	255	254	252	247	240	231	220	207	192
	105.0	253	253	252	248	243	236	229	218	205	190
	107.5	250	249	248	246	241	234	225	214	202	188
	110.0	247	245	244	242	237	230	222	211	198	185
	112.5	242	242	241	237	232	226	218	208	196	181
	115.0	237	236	236	234	229	222	213	203	191	178
	117.5	233	231	230	228	223	217	209	198	186	173
	120.0	226	226	226	222	217	210	204	194	182	168
	122.5	220	219	219	217	212	205	197	188	176	164
	125.0	214	212	212	210	205	199	191	182	170	158
	127.5	206	206	206	202	198	191	185	176	165	152
	130.0	199	198	197	196	191	185	177	168	158	147
	132.5	191	190	189	187	183	177	170	161	151	140
	135.0	182	182	181	178	174	168	163	154	144	133
A n g l e s	137.5	173	172	172	170	166	160	154	146	136	126
	140.0	164	163	162	161	157	152	145	137	128	118
	142.5	153	153	153	150	146	141	137	129	120	110
	145.0	143	142	142	141	137	132	126	119	111	103
	147.5	132	131	131	130	126	122	117	110	102	94
	150.0	120	121	120	118	115	111	107	101	93	85
	152.5	109	109	108	107	104	100	96	90	83	77
	155.0	97	97	96	95	93	89	85	80	74	68
	157.5	85	85	84	83	81	77	75	70	65	59
	160.0	73	72	72	72	69	66	64	60	55	51
	162.5	61	60	60	60	58	55	53	49	45	41
	165.0	48	48	48	48	46	43	41	37	33	30
	167.5	36	36	36	35	32	29	27	25	22	20
	170.0	21	20	19	19	17	16	15	14	13	12
	172.5	4	6	5	7	7	7	8	8	7	7
	175.0	1	1	1	1	2	2	3	3	3	3
	177.5	1	1	1	1	1	1	2	2	2	2
	180.0	2	2	2	2	2	2	2	2	2	2



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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	0.0	4	4	4	4	4	4	4	4	4
	2.5	6	6	6	5	5	5	4	4	4
	5.0	10	9	8	7	6	6	5	4	4
	7.5	15	13	11	10	8	7	5	4	5
	10.0	21	18	15	13	10	8	6	5	4
	12.5	28	24	20	17	13	10	7	5	4
	15.0	35	30	26	21	16	12	8	6	5
	17.5	43	37	31	26	20	14	10	6	5
	20.0	51	44	37	31	23	17	11	7	5
	22.5	59	51	43	36	27	20	13	7	5
	25.0	67	58	49	41	31	23	15	8	5
	27.5	75	65	56	46	35	26	16	9	5
	30.0	82	72	62	51	39	28	18	10	6
	32.5	90	79	68	56	44	32	20	11	6
	35.0	98	86	74	61	47	34	22	12	6
	37.5	105	92	80	66	51	37	24	13	7
	40.0	112	98	85	70	56	40	26	14	7
	42.5	118	105	90	75	59	43	28	15	8
	45.0	124	111	96	80	63	46	30	15	8
	47.5	131	115	100	84	67	49	31	16	8
A n g l e s	50.0	136	121	105	88	69	51	33	17	9
	52.5	141	126	110	92	73	54	35	18	9
	55.0	147	130	114	95	76	56	36	19	10
	57.5	152	136	118	99	79	58	38	20	10
	60.0	156	140	122	103	81	60	39	21	10
	62.5	161	143	125	105	84	63	41	21	11
	65.0	164	147	128	108	86	64	42	22	11
	67.5	167	150	131	111	88	66	43	22	11
	70.0	171	152	133	112	91	67	44	23	12
	72.5	173	155	136	115	92	69	45	23	12
	75.0	175	157	138	117	93	69	46	24	12
	77.5	178	158	139	117	95	71	46	24	12
	80.0	179	161	140	119	95	71	47	24	12
	82.5	180	162	141	120	96	72	47	24	12
	85.0	181	162	142	120	97	72	47	25	12
	87.5	181	163	143	120	97	72	48	25	12
	90.0	181	163	143	121	97	72	48	25	12
	92.5	182	162	142	120	97	72	48	24	12
	95.0	180	162	142	120	96	72	48	25	12
	97.5	179	161	141	119	96	71	47	24	12
	100.0	179	159	139	117	95	71	47	24	12
	102.5	176	158	138	117	93	70	46	24	12
	105.0	174	156	137	115	92	69	45	24	12
	107.5	172	153	134	113	91	68	44	23	12
	110.0	169	152	132	111	89	66	44	23	11
	112.5	165	148	129	109	87	64	42	22	11
	115.0	162	144	126	106	85	63	41	22	11
	117.5	158	142	123	103	82	61	40	21	11
	120.0	153	137	119	100	80	59	39	20	11
	122.5	149	133	115	96	77	57	37	20	11
	125.0	144	129	111	93	74	54	36	19	10
	127.5	138	124	107	89	71	52	34	18	10
	130.0	133	118	102	85	68	50	33	18	10
	132.5	127	113	97	81	64	47	31	17	10



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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	120	107	92	77	60	44	29	16	10	16
	137.5	114	101	86	72	57	42	27	15	9	15
	140.0	107	95	81	67	53	39	26	15	9	15
	142.5	99	88	76	62	49	36	24	14	9	14
	145.0	92	81	69	57	45	33	22	13	9	13
	147.5	84	75	64	52	41	30	20	12	8	12
	150.0	76	68	58	47	37	27	18	11	8	11
	152.5	69	60	51	42	33	24	16	10	7	10
	155.0	61	54	45	37	29	21	15	9	7	9
	157.5	53	46	39	32	25	18	13	8	6	8
	160.0	45	39	33	26	21	15	11	7	5	7
	162.5	35	31	26	21	17	12	8	6	5	6
	165.0	26	23	19	16	13	9	6	5	4	5
	167.5	18	16	13	11	9	6	5	4	4	4
	170.0	11	10	8	7	6	5	4	4	3	4
	172.5	6	6	5	4	4	3	3	3	3	3
	175.0	3	3	3	3	3	3	3	3	3	3
	177.5	2	2	2	2	2	2	2	2	2	2
	180.0	2	2	2	2	2	2	2	2	2	2
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	4	4	4	4	4	4	4	4	4
	2.5	5	5	5	6	6	6	6	7	7
	5.0	5	6	6	7	8	9	10	10	12
	7.5	5	7	8	10	11	13	15	16	18
	10.0	6	8	10	13	15	18	21	23	26
	12.5	7	10	13	17	20	24	28	31	35
	15.0	8	12	16	21	26	30	35	39	44
	17.5	10	14	20	26	31	37	43	48	54
	20.0	11	17	23	31	37	44	51	57	63
	22.5	13	20	27	36	43	51	59	66	73
	25.0	15	23	31	41	49	58	67	75	82
	27.5	16	26	35	46	56	65	75	83	91
	30.0	18	28	39	51	62	72	82	91	101
	32.5	20	32	44	56	68	79	90	100	109
	35.0	22	34	47	61	74	86	98	108	118
	37.5	24	37	51	66	80	92	105	115	127
	40.0	26	40	56	70	85	98	112	123	134
	42.5	28	43	59	75	90	105	118	130	141
	45.0	30	46	63	80	96	111	124	137	149
A n g l e s	47.5	31	49	67	84	100	115	131	144	156
	50.0	33	51	69	88	105	121	136	150	162
	52.5	35	54	73	92	110	126	141	155	169
	55.0	36	56	76	95	114	130	147	162	174
	57.5	38	58	79	99	118	136	152	166	180
	60.0	39	60	81	103	122	140	156	171	185
	62.5	41	63	84	105	125	143	161	176	189
	65.0	42	64	86	108	128	147	164	179	193
	67.5	43	66	88	111	131	150	167	183	198
	70.0	44	67	91	112	133	152	171	187	201
	72.5	45	69	92	115	136	155	173	189	203
	75.0	46	69	93	117	138	157	175	191	207
	77.5	46	71	95	117	139	158	178	194	208
	80.0	47	71	95	119	140	161	179	195	210
	82.5	47	72	96	120	141	162	180	196	212
	85.0	47	72	97	120	142	162	181	198	212
	87.5	48	72	97	120	143	163	181	198	213
	90.0	48	72	97	121	143	163	181	198	214
	92.5	48	72	97	120	142	162	182	199	212
	95.0	48	72	96	120	142	162	180	197	212
	97.5	47	71	96	119	141	161	179	196	211
	100.0	47	71	95	117	139	159	179	195	209
	102.5	46	70	93	117	138	158	176	192	207
	105.0	45	69	92	115	137	156	174	190	205
	107.5	44	68	91	113	134	153	172	188	202
	110.0	44	66	89	111	132	152	169	185	198
	112.5	42	64	87	109	129	148	165	181	196
	115.0	41	63	85	106	126	144	162	178	191
	117.5	40	61	82	103	123	142	158	173	186
	120.0	39	59	80	100	119	137	153	168	182
	122.5	37	57	77	96	115	133	149	164	176
	125.0	36	54	74	93	111	129	144	158	170
	127.5	34	52	71	89	107	124	138	152	165
	130.0	33	50	68	85	102	118	133	147	158
	132.5	31	47	64	81	97	113	127	140	151



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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
135.0	29	44	60	77	92	107	120	133	144	154
137.5	27	42	57	72	86	101	114	126	136	146
140.0	26	39	53	67	81	95	107	118	128	137
142.5	24	36	49	62	76	88	99	110	120	129
145.0	22	33	45	57	69	81	92	103	111	119
147.5	20	30	41	52	64	75	84	94	102	110
150.0	18	27	37	47	58	68	76	85	93	101
152.5	16	24	33	42	51	60	69	77	83	90
155.0	15	21	29	37	45	54	61	68	74	80
157.5	13	18	25	32	39	46	53	59	65	70
160.0	11	15	21	26	33	39	45	51	55	60
162.5	8	12	17	21	26	31	35	41	45	49
165.0	6	9	13	16	19	23	26	30	33	37
167.5	5	6	9	11	13	16	18	20	22	25
170.0	4	5	6	7	8	10	11	12	13	14
172.5	3	3	4	4	5	6	6	7	7	8
175.0	3	3	3	3	3	3	3	3	3	3
177.5	2	2	2	2	2	2	2	2	2	2
180.0	2	2	2	2	2	2	2	2	2	2

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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	0.0	4	4	4	4	4	4
	2.5	7	7	7	7	7	7
	5.0	13	14	14	14	14	14
	7.5	21	22	23	23	24	24
	10.0	30	32	33	34	35	35
	12.5	40	43	44	45	46	47
	15.0	51	54	55	57	58	59
	17.5	61	65	67	69	71	71
	20.0	72	77	79	81	83	83
	22.5	83	87	90	92	95	95
	25.0	93	99	102	104	106	107
	27.5	104	109	113	115	117	119
	30.0	114	119	123	126	129	129
	32.5	123	130	134	137	139	140
	35.0	133	139	144	147	149	151
	37.5	142	148	153	156	160	160
	40.0	150	158	162	166	169	170
	42.5	159	166	171	175	177	179
	45.0	167	174	179	183	187	187
	47.5	174	182	188	191	194	195
A n g l e s	50.0	181	189	195	199	202	203
	52.5	189	195	201	205	210	210
	55.0	194	203	209	213	216	217
	57.5	200	209	215	219	222	224
	60.0	206	213	220	224	229	229
	62.5	210	219	226	231	233	234
	65.0	215	224	231	235	238	240
	67.5	220	228	234	239	243	244
	70.0	223	232	239	244	246	248
	72.5	226	236	242	247	249	252
	75.0	230	237	244	249	254	254
	77.5	231	241	248	253	255	257
	80.0	234	243	250	254	257	260
	82.5	236	243	250	255	260	260
	85.0	236	245	252	258	260	261
	87.5	237	246	253	258	261	263
	90.0	237	245	252	257	262	262
	92.5	236	246	253	258	261	262
	95.0	236	245	252	257	260	262
	97.5	235	243	250	255	259	260
	100.0	232	242	249	255	257	258
	102.5	231	240	247	252	254	257
	105.0	229	236	243	248	252	253
	107.5	225	234	241	246	249	250
	110.0	222	230	237	242	244	247
	112.5	218	226	232	237	241	242
	115.0	213	222	229	234	236	237
	117.5	209	217	223	228	230	233
	120.0	204	210	217	222	226	226
	122.5	197	205	212	217	219	220
	125.0	191	199	205	210	212	214
	127.5	185	191	198	202	206	206
	130.0	177	185	191	196	197	199
	132.5	170	177	183	187	189	191



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Lateral Angles

	150.0	155.0	160.0	165.0	170.0	175.0	180.0
135.0	163	168	174	178	181	182	182
137.5	154	160	166	170	172	172	173
140.0	145	152	157	161	162	163	164
142.5	137	141	146	150	153	153	153
145.0	126	132	137	141	142	142	143
147.5	117	122	126	130	131	131	132
150.0	107	111	115	118	120	121	120
152.5	96	100	104	107	108	109	109
155.0	85	89	93	95	96	97	97
157.5	75	77	81	83	84	85	85
160.0	64	66	69	72	72	72	73
162.5	53	55	58	60	60	60	61
165.0	41	43	46	48	48	48	48
167.5	27	29	32	35	36	36	36
170.0	15	16	17	19	19	20	21
172.5	8	7	7	7	5	6	4
175.0	3	2	2	1	1	1	1
177.5	2	1	1	1	1	1	1
180.0	2	2	2	2	2	2	2

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