



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: CY4456		Driver Details: CY2029	
DUT Lab ID	SRIS 2831-3	Seasoning	0 Hour	Type	LED Power Supply
Lamp Type	LED/SSL	Test Product	BUT-90-P-35	Manufacturer	Meanwell
Current Mode	AC	Manufacturer	EPISTAR	Catalog No.	IDLV-45-12
Test Report	S2008176-R1	Lamp Catalog No.	OMNICHIP (320404-xx-300-12-4.4)	Maximum Power	45 W
Test Date	17 August 2020	Drive Current	30 mA	Input Voltage	120.00 V
Report Date	20 November 2020	Nominal Color	3000 K	Operating Frequency	60 Hz
Ambient	24.2 °C	Burning Position	Junction Axial	Input Power	26.48 W

Luminaire Data

General Information		Optics		Aperture (feet)	
Manufacturer	ANDlight	Reflector	None	X	-2.9583
Name	BUTTON	Housing	Aluminum Body c/w Nylon Rope	Y	-2.9583
Catalog No.	BUT-90-P-35	Lens	Opalin Acrylic Diffuser	Z	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).





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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

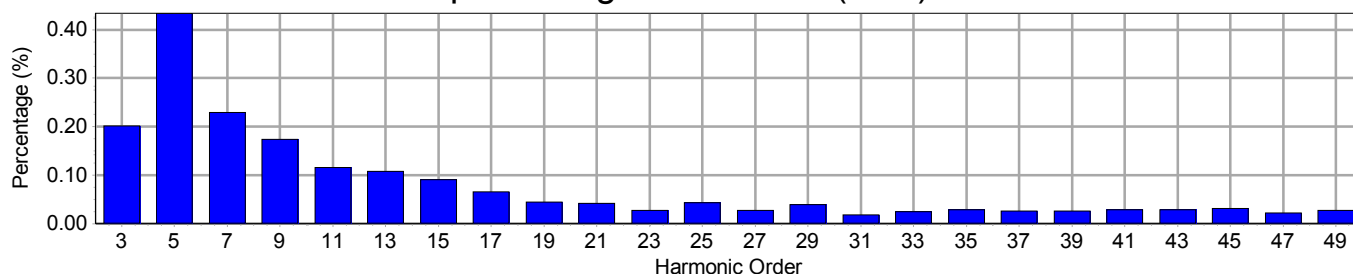


Electrical Measurements

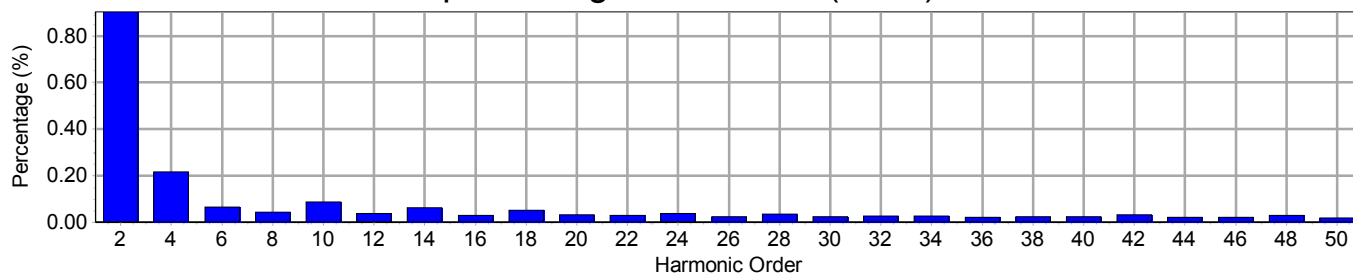
Input

Frequency	60 Hz	Active Power	26.48 W	THDV [ANSI]	1.12 %
Voltage	120.0 V(rms)	Apparent Power	27.11 VA	THDA [ANSI]	6.43 %
Current	0.2259 A(rms)	Power Factor	0.977	Max. Harmonic At	3rd order

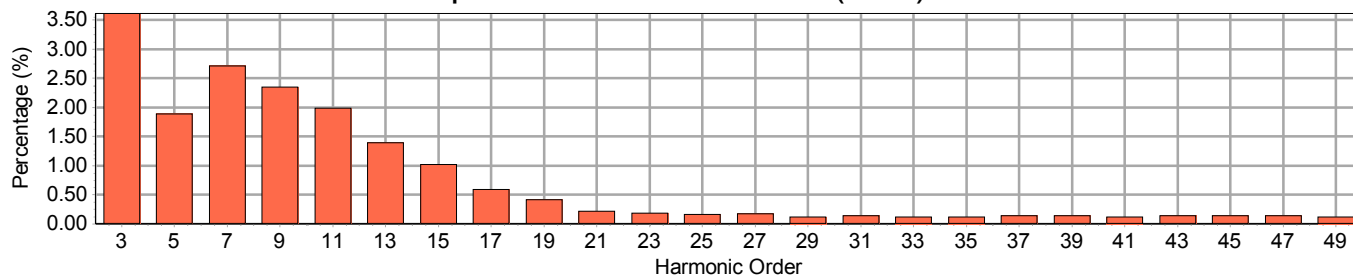
Input Voltage Harmonics (Odd)



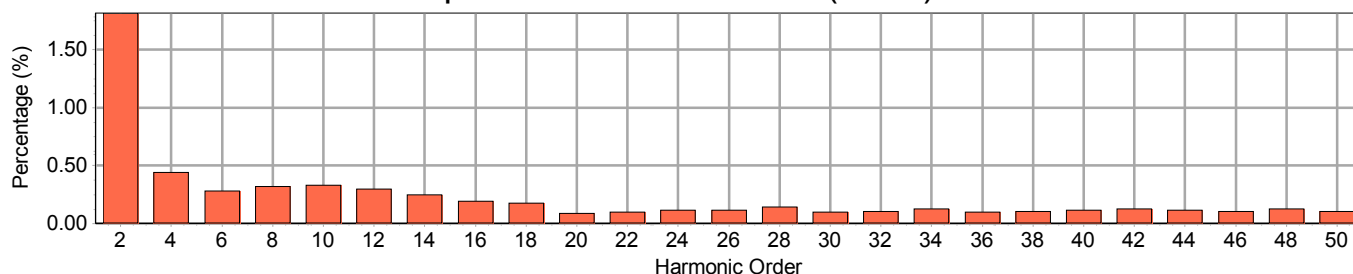
Input Voltage Harmonics (Even)



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	0.905	1.820
3	180	0.201	3.621	4	240	0.216	0.441
5	300	0.435	1.890	6	360	0.064	0.282
7	420	0.230	2.716	8	480	0.042	0.317
9	540	0.174	2.345	10	600	0.085	0.327
11	660	0.116	1.986	12	720	0.037	0.296
13	780	0.107	1.397	14	840	0.062	0.245
15	900	0.090	1.020	16	960	0.030	0.190
17	1020	0.065	0.591	18	1080	0.050	0.172
19	1140	0.044	0.413	20	1200	0.031	0.087
21	1260	0.041	0.214	22	1320	0.028	0.094
23	1380	0.027	0.185	24	1440	0.036	0.114
25	1500	0.043	0.164	26	1560	0.024	0.115
27	1620	0.027	0.173	28	1680	0.033	0.140
29	1740	0.039	0.119	30	1800	0.023	0.096
31	1860	0.018	0.133	32	1920	0.026	0.101
33	1980	0.025	0.120	34	2040	0.026	0.123
35	2100	0.029	0.110	36	2160	0.022	0.097
37	2220	0.026	0.133	38	2280	0.023	0.100
39	2340	0.026	0.141	40	2400	0.024	0.114
41	2460	0.028	0.112	42	2520	0.031	0.124
43	2580	0.028	0.133	44	2640	0.022	0.113
45	2700	0.031	0.132	46	2760	0.021	0.102
47	2820	0.022	0.134	48	2880	0.029	0.126
49	2940	0.027	0.121	50	3000	0.019	0.100



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Photometric Report: S2008176-R1

Prepared for: ANDlight · Test Date: 17 August 2020

Luminaire: BUTTON · Lumcat: BUT-90-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		121	121	121	121	118	118	118	118	114	114	114	114	108	108	108	96	96	96	96	96	96	94
1		111	106	101	97	107	103	98	95	104	100	96	92	94	91	88	85	83	81	85	83	81	78
2		101	92	84	78	98	89	83	77	94	87	81	75	82	77	73	74	71	68	74	71	68	65
3		92	80	72	65	89	78	70	64	86	76	69	63	72	66	61	65	61	57	65	61	57	55
4		84	71	62	54	81	69	60	54	78	67	59	53	64	57	52	58	53	49	58	53	49	46
5		77	63	54	47	75	62	53	46	72	60	52	46	57	50	44	52	47	42	52	47	42	40
6		71	57	47	40	69	55	46	40	66	54	46	40	52	44	39	47	42	37	47	42	37	35
7		66	51	42	36	64	50	41	35	62	49	41	35	47	40	34	43	37	33	43	37	33	31
8		61	47	38	32	59	46	37	31	57	45	37	31	43	36	30	39	34	29	39	34	29	27
9		57	43	34	28	55	42	34	28	53	41	33	28	39	32	27	36	31	26	36	31	26	25
10		53	39	31	26	52	39	31	25	50	38	30	25	36	30	25	34	28	24	34	28	24	22

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0 - 10	49	3.00	3.00
10 - 20	141	8.66	8.66
20 - 30	215	13.22	13.22
30 - 40	264	16.22	16.22
40 - 50	279	17.13	17.13
50 - 60	255	15.63	15.63
60 - 70	194	11.90	11.90
70 - 80	105	6.46	6.46
80 - 90	23	1.43	1.43
90 - 120	33	2.05	2.05
90 - 130	51	3.12	3.12
90 - 150	84	5.17	5.17
90 - 180	103	6.35	6.35
0 - 180	1629	100.00	100.00

Average Luminance (Cd/m²)

Angle	0 Degree	45 Degree	90 Degree
45.0	830	696	693
55.0	763	830	844
65.0	714	779	786
75.0	618	523	523
85.0	305	333	319

Luminaire Luminous Flux: 1629

Measured Input Power: 26.48 W

Total Luminaire Efficiency: N/A

Luminaire Luminous Efficacy: 61.5 lm/W

Luminaire Spacing Criterion (0 Degree): 1.2842

Luminaire Spacing Criterion (90 Degree): 1.1504

Category: Up and Down

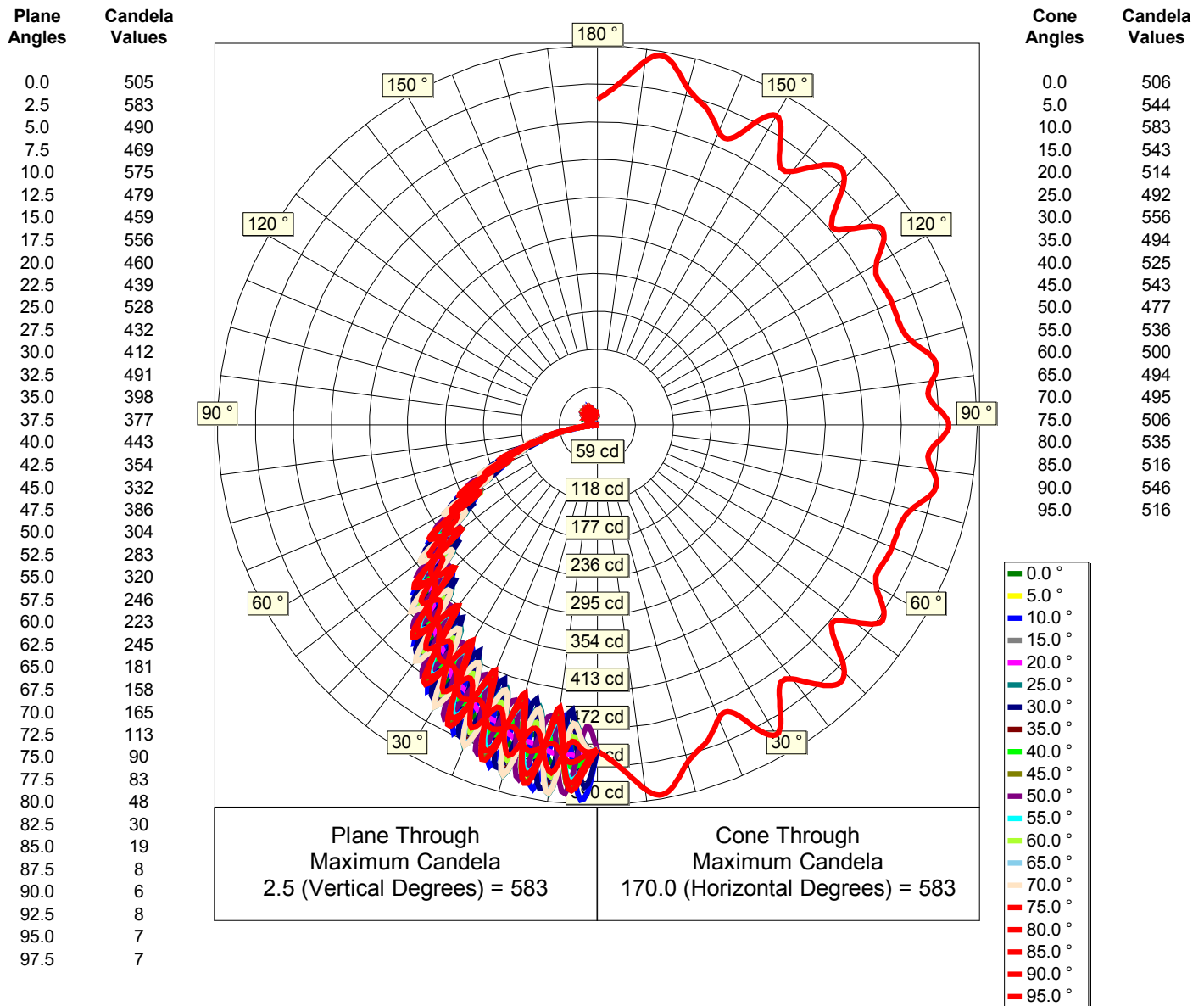


Photometric Report: S2008176-R1

Prepared for: ANDlight · Test Date: 17 August 2020

Luminaire: BUTTON · Lumcat: BUT-90-P-35

Luminous Intensity - Polar Curve for each Plane(1)



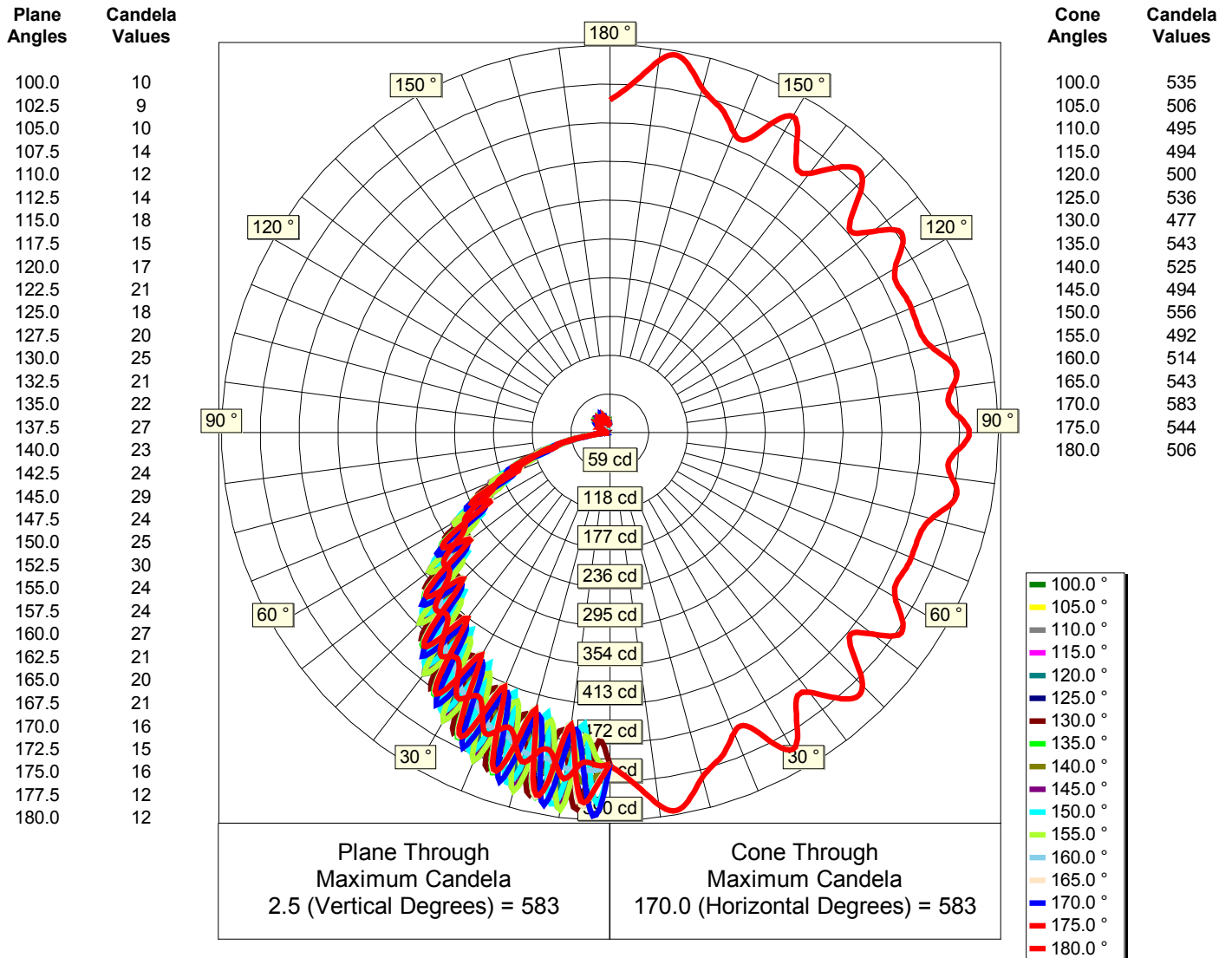


Photometric Report: S2008176-R1

Prepared for: ANDlight · Test Date: 17 August 2020

Luminaire: BUTTON · Lumcat: BUT-90-P-35

Luminous Intensity - Polar Curve for each Plane(2)





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IES File Headers

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IESNA:LM-63
[ISSUEDATE]      17 August 2020
[TESTLAB]        Spectra Lux
[TEST]           S2008176-R1
[MANUFAC]        ANDlight
[LUMCAT]          BUT-90-P-35
[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 (1,629 Luminaire Lumens)
[_REFLECTOR]      None
[_LENS]           Opalin Acrylic Diffuser
[_HOUSING]        Aluminum Body c/w Nylon Rope
[_NOMINAL COLOR] 3500K
[_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	505	505	505	505	505	505	505	505	505	505
	2.5	506	544	583	543	514	492	556	494	525	543
	5.0	505	551	490	558	514	471	445	477	529	558
	7.5	531	448	469	447	515	578	543	571	492	446
	10.0	498	538	575	536	507	484	547	486	518	536
	12.5	496	539	479	545	504	463	436	468	518	546
	15.0	518	436	459	435	503	564	530	557	479	434
	17.5	483	521	556	519	491	467	530	471	502	520
	20.0	478	517	460	522	485	447	420	451	498	525
	22.5	495	418	439	416	481	540	508	533	458	416
	25.0	459	497	528	495	466	444	503	447	476	495
	27.5	451	487	432	492	458	423	396	427	470	495
	30.0	464	391	412	389	451	505	477	499	429	389
	32.5	426	462	491	460	433	412	467	414	444	461
	35.0	415	449	398	453	422	390	365	394	433	456
	37.5	424	356	377	355	411	462	437	456	392	355
	40.0	386	420	443	416	391	371	422	374	402	418
	42.5	372	400	354	404	377	350	327	353	387	407
	45.0	375	315	332	314	364	408	386	404	347	314
	47.5	336	366	386	365	341	324	368	326	352	366
	50.0	320	344	304	348	325	302	281	303	333	351
A n g l e s	52.5	317	268	283	265	308	345	328	342	294	266
	55.0	279	303	320	303	283	268	306	270	292	304
	57.5	260	280	246	282	263	245	228	247	270	284
	60.0	251	210	223	209	243	273	260	270	232	211
	62.5	214	235	245	233	217	205	235	208	224	234
	65.0	193	206	181	208	195	182	170	183	200	210
	67.5	178	150	158	148	172	194	185	192	165	150
	70.0	144	158	165	157	146	138	158	140	151	158
	72.5	121	130	113	131	123	115	107	115	126	132
	75.0	102	86	90	85	99	111	107	110	95	86
	77.5	74	81	83	80	75	71	81	71	77	81
	80.0	52	56	48	56	53	50	47	50	54	57
	82.5	34	29	30	28	33	37	37	37	32	29
	85.0	17	19	19	19	18	17	19	17	18	19
	87.5	9	9	8	9	9	9	8	8	9	9
	90.0	6	5	6	6	7	7	7	7	6	5



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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	7	7	8	8	7	7	7	7	7
	95.0	7	8	7	8	7	7	6	7	7
	97.5	8	7	7	7	8	9	9	9	8
	100.0	9	9	10	10	9	8	9	9	9
	102.5	10	10	9	10	10	9	8	9	10
	105.0	11	9	10	9	11	12	12	12	10
	107.5	11	13	14	13	12	11	13	11	12
	110.0	13	14	12	14	13	12	11	12	13
	112.5	15	12	14	12	14	16	15	16	14
	115.0	15	17	18	17	15	14	16	15	16
	117.5	16	17	15	17	16	16	14	16	17
	120.0	18	15	17	15	18	20	19	20	17
	122.5	18	20	21	20	19	17	20	18	19
	125.0	19	21	18	21	20	19	17	19	20
	127.5	22	18	20	18	21	23	22	23	20
	130.0	21	24	25	23	22	20	22	20	22
	132.5	22	24	21	24	22	21	19	22	23
	135.0	24	20	22	20	23	26	25	26	22
	137.5	24	26	27	26	23	22	25	22	25
	140.0	25	26	23	25	24	23	21	23	25
A n g l e s	142.5	26	22	24	21	25	28	27	28	24
	145.0	25	28	29	27	25	23	26	23	26
	147.5	26	27	24	27	26	24	22	24	26
	150.0	28	23	25	23	26	29	28	29	24
	152.5	26	29	30	28	26	24	27	24	27
	155.0	25	27	24	27	26	24	22	24	26
	157.5	26	22	24	22	25	28	27	28	24
	160.0	23	26	27	26	24	22	25	22	24
	162.5	23	23	21	24	23	21	20	22	23
	165.0	22	18	20	18	21	24	23	24	20
	167.5	19	21	21	21	19	18	20	18	20
	170.0	18	18	16	18	18	17	15	18	18
	172.5	17	14	15	14	16	18	18	18	16
	175.0	14	15	16	15	14	13	15	13	15
	177.5	12	13	12	13	13	12	11	12	12
	180.0	12	12	12	12	12	12	12	12	12



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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	505	505	505	505	505	505	505	505	505
	2.5	477	536	500	494	495	506	535	516	516
	5.0	575	544	491	474	473	497	550	525	525
	7.5	492	464	552	574	578	545	460	501	442
	10.0	471	529	492	487	487	499	528	510	540
	12.5	564	532	482	466	465	487	539	515	544
	15.0	480	452	539	560	563	531	449	489	431
	17.5	458	513	477	471	471	483	513	495	524
	20.0	544	512	464	450	448	470	519	496	526
	22.5	458	433	516	536	540	509	429	468	412
	25.0	436	489	453	447	448	459	489	471	500
	27.5	514	484	439	426	424	445	490	468	494
	30.0	430	406	484	503	506	478	403	440	387
	32.5	407	455	420	415	416	427	455	438	465
	35.0	474	445	406	392	392	410	452	431	456
	37.5	391	371	443	459	463	437	369	402	353
	40.0	368	412	380	375	376	386	413	397	423
	42.5	424	398	364	352	352	368	404	387	408
	45.0	346	328	392	407	410	387	326	356	313
	47.5	323	360	332	328	328	337	362	347	370
A n g l e s	50.0	366	343	314	305	303	317	347	334	351
	52.5	293	278	332	345	347	328	276	302	265
	55.0	269	300	275	272	272	281	302	289	309
	57.5	298	279	255	248	248	258	282	271	287
	60.0	232	220	263	273	275	260	219	239	210
	62.5	207	231	211	209	209	216	233	223	238
	65.0	221	207	189	184	185	192	210	201	212
	67.5	165	157	187	195	196	186	156	171	150
	70.0	141	156	143	141	141	146	158	150	162
	72.5	140	130	120	116	116	122	132	127	134
	75.0	95	91	108	112	113	107	90	99	87
	77.5	72	80	73	72	72	74	81	76	83
	80.0	61	56	51	50	50	53	57	54	57
	82.5	32	30	36	37	38	35	30	32	28
	85.0	17	18	16	16	16	16	17	16	18
	87.5	10	8	7	7	7	7	6	6	6
	90.0	6	5	6	6	5	5	4	3	2
	92.5	6	6	5	5	4	5	5	4	5
	95.0	7	7	6	6	6	6	6	6	6
	97.5	7	7	8	8	8	7	6	6	5
	100.0	8	9	8	7	7	7	8	7	8
	102.5	10	9	9	8	8	9	9	8	9
	105.0	10	9	11	11	11	10	9	9	8
	107.5	11	12	11	11	10	11	12	11	12
	110.0	14	13	12	12	12	12	13	12	13
	112.5	13	13	15	15	15	14	12	13	11
	115.0	14	16	14	14	14	14	16	15	16
	117.5	18	17	16	15	15	16	17	16	17
	120.0	16	16	19	19	19	18	15	17	15
	122.5	18	20	18	17	17	18	20	19	20
	125.0	22	20	19	18	18	19	20	20	20
	127.5	19	19	22	23	23	22	19	20	18
	130.0	20	23	20	20	20	20	23	22	24
	132.5	25	23	22	21	21	22	23	23	23



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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	22	21	25	26	26	24	21	23	20	23
	137.5	22	25	22	22	22	23	25	24	26	24
	140.0	27	25	23	23	23	24	25	25	26	25
	142.5	23	22	26	27	28	26	22	24	21	24
	145.0	24	26	23	23	23	24	26	25	27	25
	147.5	28	26	24	24	24	24	26	25	26	25
	150.0	24	23	27	28	28	27	22	24	21	24
	152.5	25	27	24	23	23	24	27	26	28	26
	155.0	28	26	25	24	24	25	26	26	27	26
	157.5	23	22	26	28	28	26	22	24	21	24
	160.0	23	26	23	22	22	23	25	24	26	24
	162.5	25	23	22	22	22	22	24	23	24	23
	165.0	20	19	23	24	24	23	19	21	18	21
	167.5	19	21	19	18	18	19	21	20	21	20
	170.0	20	19	18	17	17	18	19	18	19	18
172.5	16	15	18	18	19	18	15	17	15	17	
175.0	14	15	14	13	13	14	15	15	16	15	
177.5	14	13	12	12	12	12	13	12	13	12	
180.0	12	12	12	12	12	12	12	12	12	12	
A n g l e s											



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Lab Code: 200899-0

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	505	505	505	505	505	505	505	505	505
	2.5	535	506	495	494	500	536	477	543	494
	5.0	550	497	473	474	491	544	575	558	477
	7.5	460	545	578	574	552	464	492	446	492
	10.0	528	499	487	487	492	529	471	536	518
	12.5	539	487	465	466	482	532	564	546	518
	15.0	449	531	563	560	539	452	480	434	479
	17.5	513	483	471	471	477	513	458	520	502
	20.0	519	470	448	450	464	512	544	525	498
	22.5	429	509	540	536	516	433	458	416	458
	25.0	489	459	448	447	453	489	436	495	476
	27.5	490	445	424	426	439	484	514	495	470
	30.0	403	478	506	503	484	406	430	389	429
	32.5	455	427	416	415	420	455	407	461	444
	35.0	452	410	392	392	406	445	474	456	433
	37.5	369	437	463	459	443	371	391	355	392
	40.0	413	386	376	375	380	412	368	418	402
	42.5	404	368	352	352	364	398	424	407	387
	45.0	326	387	410	407	392	328	346	314	347
	47.5	362	337	328	328	332	360	323	366	352
A n g l e s	50.0	347	317	303	305	314	343	366	351	333
	52.5	276	328	347	345	332	278	293	266	294
	55.0	302	281	272	272	275	300	269	304	292
	57.5	282	258	248	248	255	279	298	284	270
	60.0	219	260	275	273	263	220	232	211	232
	62.5	233	216	209	209	211	231	207	234	224
	65.0	210	192	185	184	189	207	221	210	200
	67.5	156	186	196	195	187	157	165	150	165
	70.0	158	146	141	141	143	156	141	158	151
	72.5	132	122	116	116	120	130	140	132	126
	75.0	90	107	113	112	108	91	95	86	95
	77.5	81	74	72	72	73	80	72	81	77
	80.0	57	53	50	50	51	56	61	57	54
	82.5	30	35	38	37	36	30	32	29	32
	85.0	17	16	16	16	16	18	17	19	18
	87.5	6	7	7	7	7	8	10	9	9
	90.0	4	5	5	6	6	5	6	5	6
	92.5	5	5	4	5	5	6	6	7	7
	95.0	6	6	6	6	6	7	7	7	7
	97.5	6	7	8	8	8	7	7	7	8
	100.0	8	7	7	7	8	9	8	9	9
	102.5	9	9	8	8	9	9	10	10	10
	105.0	9	10	11	11	11	9	10	9	10
	107.5	12	11	10	11	11	12	11	13	12
	110.0	13	12	12	12	12	13	14	14	13
	112.5	12	14	15	15	15	13	13	12	14
	115.0	16	14	14	14	14	16	14	17	16
	117.5	17	16	15	15	16	17	18	18	17
	120.0	15	18	19	19	19	16	16	15	17
	122.5	20	18	17	17	18	20	18	20	19
	125.0	20	19	18	18	19	20	22	21	20
	127.5	19	22	23	23	22	19	19	18	20
	130.0	23	20	20	20	20	23	20	23	22
	132.5	23	22	21	21	22	23	25	24	23



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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 A n g l e s	135.0	21	24	26	26	25	21	22	20	22	26
	137.5	25	23	22	22	22	25	22	26	25	22
	140.0	25	24	23	23	23	25	27	26	25	23
	142.5	22	26	28	27	26	22	23	21	24	28
	145.0	26	24	23	23	23	26	24	27	26	23
	147.5	26	24	24	24	24	26	28	27	26	24
	150.0	22	27	28	28	27	23	24	22	24	29
	152.5	27	24	23	23	24	27	25	28	27	24
	155.0	26	25	24	24	25	26	28	27	26	24
	157.5	22	26	28	28	26	22	23	22	24	28
	160.0	25	23	22	22	23	26	23	26	24	22
	162.5	24	22	22	22	22	23	25	24	23	22
	165.0	19	23	24	24	23	19	20	18	20	24
	167.5	21	19	18	18	19	21	19	21	20	18
	170.0	19	18	17	17	18	19	20	19	18	18
	172.5	15	18	19	18	18	15	16	15	16	18
	175.0	15	14	13	13	14	15	14	16	15	13
	177.5	13	12	12	12	12	13	14	13	12	12
	180.0	12	12	12	12	12	12	12	12	12	12



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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	505	505	505	505	505	505
	2.5	556	492	514	543	583	544
	5.0	445	471	514	558	490	551
	7.5	543	578	515	447	469	448
	10.0	547	484	507	536	575	538
	12.5	436	463	504	545	479	539
	15.0	530	564	503	435	459	436
	17.5	530	467	491	519	556	521
	20.0	420	447	485	522	460	517
	22.5	508	540	481	416	439	418
	25.0	503	444	466	495	528	497
	27.5	396	423	458	492	432	487
	30.0	477	505	451	389	412	391
	32.5	467	412	433	460	491	462
	35.0	365	390	422	453	398	449
	37.5	437	462	411	355	377	356
	40.0	422	371	391	416	443	420
	42.5	327	350	377	404	354	400
	45.0	386	408	364	314	332	315
	47.5	368	324	341	365	386	366
A n g l e s	50.0	281	302	325	348	304	344
	52.5	328	345	308	265	283	268
	55.0	306	268	283	303	320	303
	57.5	228	245	263	282	246	280
	60.0	260	273	243	209	223	210
	62.5	235	205	217	233	245	235
	65.0	170	182	195	208	181	206
	67.5	185	194	172	148	158	150
	70.0	158	138	146	157	165	158
	72.5	107	115	123	131	113	130
	75.0	107	111	99	85	90	86
	77.5	81	71	75	80	83	81
	80.0	47	50	53	56	48	56
	82.5	37	37	33	28	30	29
	85.0	19	17	18	19	19	19
	87.5	8	9	9	9	8	9
	90.0	7	7	7	6	6	5
	92.5	7	7	7	8	8	7
	95.0	6	7	7	8	7	8
	97.5	9	9	8	7	7	7
	100.0	9	8	9	10	10	9
	102.5	8	9	10	10	9	10
	105.0	12	12	11	9	10	9
	107.5	13	11	12	13	14	13
	110.0	11	12	13	14	12	14
	112.5	15	16	14	12	14	12
	115.0	16	14	15	17	18	17
	117.5	14	16	16	17	15	17
	120.0	19	20	18	15	17	15
	122.5	20	17	19	20	21	20
	125.0	17	19	20	21	18	21
	127.5	22	23	21	18	20	18
	130.0	22	20	22	23	25	24
	132.5	19	21	22	24	21	24



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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	25	26	23	20	22	20	24
	137.5	25	22	23	26	27	26	24
	140.0	21	23	24	25	23	26	25
	142.5	27	28	25	21	24	22	26
	145.0	26	23	25	27	29	28	25
	147.5	22	24	26	27	24	27	26
	150.0	28	29	26	23	25	23	28
	152.5	27	24	26	28	30	29	26
	155.0	22	24	26	27	24	27	25
	157.5	27	28	25	22	24	22	26
	160.0	25	22	24	26	27	26	23
	162.5	20	21	23	24	21	23	23
	165.0	23	24	21	18	20	18	22
	167.5	20	18	19	21	21	21	19
	170.0	15	17	18	18	16	18	18
	172.5	18	18	16	14	15	14	17
	175.0	15	13	14	15	16	15	14
	177.5	11	12	13	13	12	13	12
	180.0	12	12	12	12	12	12	12
A n g l e s								