

REPORT NUMBER: ITL89865-GONIOPHOTOMETRY

PAGE: 1 OF 9

ISSUE DATE: 10/11/17

PREPARED FOR: BOYD LIGHTING COMPANY

ADDRESS: 1455 VAPOR TRAIL
COLORADO SPRINGS, CO 80916

CATALOG NUMBER: C10676 (4FT)

LUMINAIRE: EXTRUDED DIFFUSE METAL HOUSING WITH FABRICATED WHITE PAINTED METAL TOP AND BOTTOM END CAPS. EACH VERTICAL SIDE OF HOUSING CONSISTS OF: FABRICATED DIFFUSE METAL CIRCUIT BOARD MOUNT, 3 WHITE CIRCUIT BOARDS WITH A TOTAL OF 42 LEDS, CLEAR LINEAR PRISMATIC PLASTIC LENS. FABRICATED GOLD PAINTED METAL REFLECTOR WITH 1 FLAT PLASTIC REAR-FACED MIRROR INSERT ON TOP AND BOTTOM, FABRICATED WHITE PAINTED METAL TRIM.

LAMPS: EIGHTY-FOUR WHITE LIGHT EMITTING DIODES (LEDS), AIMED AT THE HORIZON.

INPUT ELECTRICAL: 120.0 VOLTS, 42.6 WATTS, 0.357 AMPS

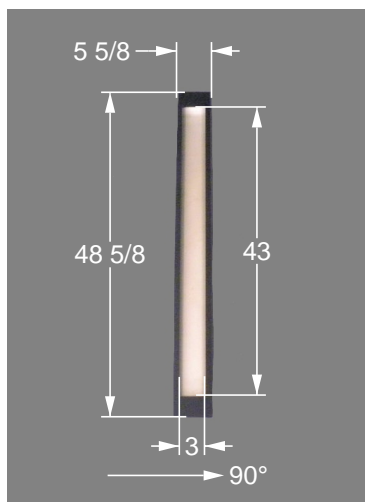
MOUNTING: RECESSED

LED DRIVER: OSRAM OTi 48/120-277/2A0 DIM-1 L AUX, DRIVER HAS MULTIPLE LEADS, ONLY LINE INPUT AND LED OUTPUT LEADS CONNECTED FOR THIS TEST. CLIENT STATES DRIVER PROGRAMMED FOR 2000mA OUTPUT.

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (120VAC, 60Hz) TO THE DRIVER.

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 35.0 FEET



THIS REPORT WITH THE USE OF THE NVLAP LOGO SHALL NOT BE USED BY THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT BY NVLAP, NIST, OR ANY AGENCY OF THE FEDERAL GOVERNMENT.

Checked	<u>M KLOPF</u> TECHNICIAN
Approved	<u>N WHITE</u> LIGHTING ENGINEER

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CANDELA DISTRIBUTION

	0.0	45.0	90.0	135.0	180.0
0	0	0	0	0	0
5	4	4	0	0	0
15	12	20	0	0	0
25	21	38	0	0	0
35	30	61	0	0	0
45	40	94	0	0	0
55	50	138	0	0	0
65	59	188	0	0	0
75	67	227	0	0	0
85	71	253	0	0	0
90	72	256	0	0	0
95	72	254	0	0	0
105	68	228	0	0	0
115	60	191	0	0	0
125	50	140	0	0	0
135	40	95	0	0	0
145	30	61	0	0	0
155	21	40	0	0	0
165	12	22	0	0	0
175	6	5	0	0	0
180	0	0	0	0	0

FLUX

0
2
6
12
22
35
49
62
70
70
62
50
35
22
12
6
2
0

ZONAL LUMEN	SUMMARY LUMENS	%FIXT
0- 30	8	1.6
0- 40	21	4.0
0- 60	78	14.9
0- 90	259	49.9
90-120	182	35.1
90-130	217	41.9
90-150	252	48.5
90-180	260	50.1
0-180	519	100.0

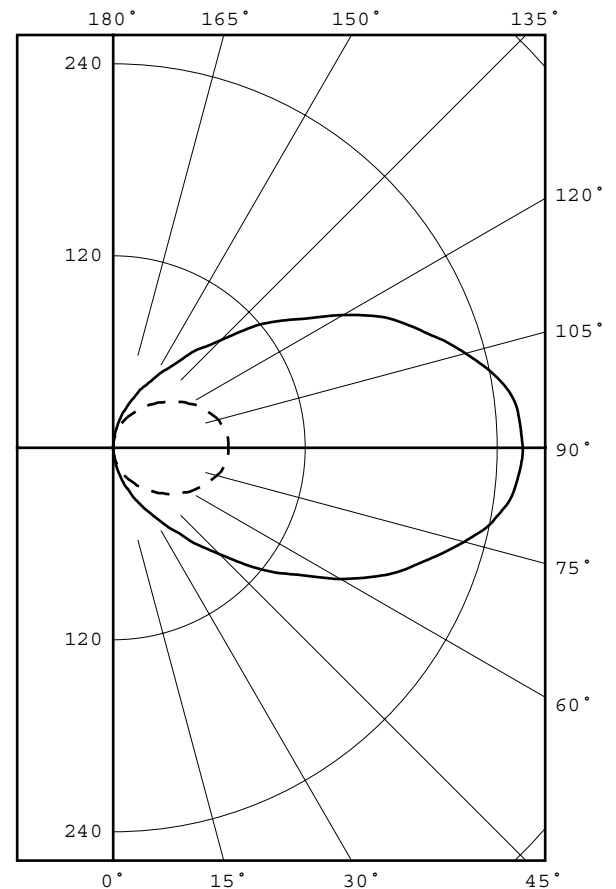
EFFICACY = 12.2 lm/W

CIE TYPE - GENERAL DIFFUSE

PLANE : 0-DEG 90-DEG

BEAM ANGLE (50%) : N/A X N/A DEGREES

FIELD ANGLE (10%) : 117.5 X N/A DEGREES



LEGEND
0-deg - - - - -
45-deg - - - - -
90-deg - - - - -



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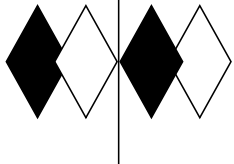
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PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH : 0.000 3.000
HEIGHT OF SIDE : 43.000 43.000

LUMINANCE DATA IN CANDELA/SQ M

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	680.	2258.	0.
55	733.	2862.	0.
65	782.	3524.	0.
75	833.	3992.	0.
85	856.	4314.	0.



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CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	5.0	15.0	25.0	35.0	40.0	42.5	45.0	47.5	50.0	52.5	55.0	65.0	75.0
0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.5	1	1	1	1	1	1	1	1	1	1	1	1	1	0
5.0	4	4	4	5	5	5	5	4	4	4	4	4	3	1
7.5	6	6	7	8	8	8	8	8	8	8	8	7	5	2
10.0	8	9	10	12	13	13	13	12	12	12	11	11	7	3
12.5	10	11	14	16	17	17	17	16	16	15	15	14	9	4
15.0	12	13	17	20	21	21	21	20	20	19	18	17	11	5
17.5	15	15	21	24	25	25	25	25	24	23	21	20	12	5
20.0	17	18	24	28	30	30	29	28	28	27	25	23	13	6
22.5	19	20	28	33	35	35	34	34	33	31	29	26	15	7
25.0	21	22	32	38	40	40	39	38	37	35	33	30	17	8
27.5	23	25	36	44	46	45	44	43	42	39	36	32	19	9
30.0	25	27	41	49	51	51	50	48	47	44	41	36	20	10
32.5	28	30	45	56	58	57	55	54	53	49	45	39	22	11
35.0	30	32	50	61	64	64	62	61	58	54	49	43	25	12
37.5	32	35	55	68	72	71	69	67	65	61	56	48	26	13
40.0	35	37	60	75	79	79	78	77	74	69	62	52	28	14
42.5	37	40	65	81	87	87	87	85	82	75	67	57	31	15
45.0	40	43	70	88	96	97	96	94	90	84	76	63	34	16
47.5	42	46	74	96	106	107	106	105	101	95	84	70	35	18
50.0	45	48	80	104	115	118	118	117	113	105	91	74	37	18
52.5	47	51	84	110	126	131	130	128	123	113	97	79	40	19
55.0	50	54	89	119	137	143	142	138	132	122	106	86	43	20
57.5	52	57	94	127	149	153	153	150	145	133	116	94	46	21
60.0	55	60	99	135	160	164	165	164	157	145	125	101	48	22
62.5	57	62	104	143	170	177	178	176	169	156	132	106	50	23
65.0	59	65	108	152	181	190	190	188	180	164	139	110	52	24
67.5	62	67	113	160	192	201	201	198	189	172	145	115	54	25
70.0	64	69	118	168	203	211	211	207	198	181	152	120	55	25
72.5	65	71	122	175	212	220	220	217	208	190	159	125	57	26
75.0	67	73	125	182	221	229	230	227	218	197	165	129	58	27
77.5	69	75	128	189	228	238	240	237	226	204	170	131	59	27
80.0	70	76	131	194	235	246	248	244	233	210	173	134	60	28
82.5	71	77	133	199	241	253	254	250	238	214	176	135	61	28
85.0	71	78	135	201	246	257	258	253	241	216	177	137	61	28
87.5	72	78	136	203	249	260	260	255	243	217	178	137	62	28
90.0	72	79	137	203	251	262	261	256	243	218	179	138	62	29
92.5	72	79	136	203	250	262	261	255	242	217	178	137	62	29
95.0	72	78	135	201	246	258	259	254	241	216	177	137	62	28
97.5	71	78	134	199	242	253	255	251	239	214	176	136	61	28
100.0	70	77	131	195	235	247	249	245	235	211	174	134	60	28
102.5	69	75	129	190	228	239	241	237	228	207	171	132	59	27
105.0	68	74	126	183	222	231	232	228	220	200	166	129	58	27
107.5	66	72	122	175	215	222	222	219	210	192	161	126	57	26
110.0	64	70	118	168	206	213	212	209	200	182	154	122	56	25
112.5	62	68	113	161	194	204	204	200	190	173	146	116	54	25
115.0	60	65	109	154	182	192	194	191	182	165	139	110	53	24
117.5	58	63	105	145	170	179	180	179	173	158	133	105	51	23
120.0	55	60	99	135	160	166	166	166	160	147	126	101	49	22
122.5	53	57	95	126	151	154	153	152	146	135	116	94	46	21
125.0	50	54	90	120	139	144	142	140	134	123	107	87	44	20
127.5	48	51	85	112	126	133	132	130	124	113	98	79	41	19
130.0	45	49	79	103	115	119	120	120	115	105	91	74	39	18
132.5	42	46	75	95	107	107	107	107	103	96	85	70	36	17
135.0	40	43	70	89	98	98	97	95	91	85	76	64	34	16
137.5	37	40	64	82	87	90	89	86	82	76	67	57	32	15
140.0	35	37	60	74	79	79	79	75	75	69	61	51	29	13
142.5	32	35	55	69	73	71	69	69	66	62	56	48	27	12
145.0	30	32	50	62	65	65	64	61	58	55	49	44	26	11
147.5	27	29	46	55	58	58	58	56	54	50	44	38	23	10

THIS REPORT IS BASED ON PUBLISHED INDUSTRY PROCEDURES. FIELD PERFORMANCE MAY DIFFER FROM LABORATORY PERFORMANCE.



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CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	5.0	15.0	25.0	35.0	40.0	42.5	45.0	47.5	50.0	52.5	55.0	65.0	75.0
150.0	25	27	41	50	53	51	50	49	48	45	41	36	20	9
152.5	23	25	37	44	46	47	46	44	41	39	36	32	19	7
155.0	21	22	32	39	41	40	40	40	38	36	32	27	16	6
157.5	19	20	28	34	36	35	35	34	33	31	29	26	15	5
160.0	17	18	24	29	31	30	30	30	29	27	25	22	13	5
162.5	14	15	21	24	26	26	25	25	24	23	22	20	11	4
165.0	12	13	17	20	22	22	22	22	21	20	18	16	10	3
167.5	10	11	14	16	18	18	17	17	17	16	15	14	9	3
170.0	8	9	11	13	13	13	13	13	13	13	12	11	7	2
172.5	7	7	8	9	9	9	9	9	9	9	9	8	5	1
175.0	6	6	6	6	6	5	5	5	5	4	4	3	2	0
177.5	2	2	2	2	1	1	1	1	1	0	0	0	0	0
180.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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CANDELA DISTRIBUTION
LATERAL ANGLE

	85.0	90.0	95.0	112.5	135.0	157.5	180.0
0.0	0	0	0	0	0	0	0
2.5	0	0	0	0	0	0	0
5.0	0	0	0	0	0	0	0
7.5	0	0	0	0	0	0	0
10.0	0	0	0	0	0	0	0
12.5	0	0	0	0	0	0	0
15.0	0	0	0	0	0	0	0
17.5	1	0	0	0	0	0	0
20.0	1	0	0	0	0	0	0
22.5	1	0	0	0	0	0	0
25.0	1	0	0	0	0	0	0
27.5	1	0	0	0	0	0	0
30.0	1	0	0	0	0	0	0
32.5	1	0	0	0	0	0	0
35.0	1	0	0	0	0	0	0
37.5	1	0	0	0	0	0	0
40.0	2	0	0	0	0	0	0
42.5	2	0	0	0	0	0	0
45.0	2	0	0	0	0	0	0
47.5	2	0	0	0	0	0	0
50.0	2	0	0	0	0	0	0
52.5	2	0	0	0	0	0	0
55.0	2	0	0	0	0	0	0
57.5	3	0	0	0	0	0	0
60.0	3	0	0	0	0	0	0
62.5	3	0	0	0	0	0	0
65.0	3	0	0	0	0	0	0
67.5	3	0	0	0	0	0	0
70.0	3	0	0	0	0	0	0
72.5	3	0	0	0	0	0	0
75.0	3	0	0	0	0	0	0
77.5	4	0	0	0	0	0	0
80.0	4	0	0	0	0	0	0
82.5	4	0	0	0	0	0	0
85.0	4	0	0	0	0	0	0
87.5	4	0	0	0	0	0	0
90.0	4	0	0	0	0	0	0
92.5	4	0	0	0	0	0	0
95.0	4	0	0	0	0	0	0
97.5	4	0	0	0	0	0	0
100.0	4	0	0	0	0	0	0
102.5	4	0	0	0	0	0	0
105.0	3	0	0	0	0	0	0
107.5	3	0	0	0	0	0	0
110.0	3	0	0	0	0	0	0
112.5	3	0	0	0	0	0	0
115.0	3	0	0	0	0	0	0
117.5	3	0	0	0	0	0	0
120.0	3	0	0	0	0	0	0
122.5	3	0	0	0	0	0	0
125.0	2	0	0	0	0	0	0
127.5	2	0	0	0	0	0	0
130.0	2	0	0	0	0	0	0
132.5	2	0	0	0	0	0	0
135.0	2	0	0	0	0	0	0
137.5	2	0	0	0	0	0	0
140.0	1	0	0	0	0	0	0
142.5	1	0	0	0	0	0	0
145.0	1	0	0	0	0	0	0
147.5	1	0	0	0	0	0	0



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CANDELA DISTRIBUTION
LATERAL ANGLE

	85.0	90.0	95.0	112.5	135.0	157.5	180.0
150.0	1	0	0	0	0	0	0
152.5	1	0	0	0	0	0	0
155.0	0	0	0	0	0	0	0
157.5	0	0	0	0	0	0	0
160.0	0	0	0	0	0	0	0
162.5	0	0	0	0	0	0	0
165.0	0	0	0	0	0	0	0
167.5	0	0	0	0	0	0	0
170.0	0	0	0	0	0	0	0
172.5	0	0	0	0	0	0	0
175.0	0	0	0	0	0	0	0
177.5	0	0	0	0	0	0	0
180.0	0	0	0	0	0	0	0



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5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	0
5- 10	0
10- 15	1
15- 20	1
20- 25	2
25- 30	4
30- 35	5
35- 40	7
40- 45	10
45- 50	12
50- 55	16
55- 60	19
60- 65	23
65- 70	26
70- 75	30
75- 80	32
80- 85	34
85- 90	35
90- 95	36
95-100	35
100-105	33
105-110	30
110-115	27
115-120	23
120-125	19
125-130	16
130-135	13
135-140	10
140-145	7
145-150	5
150-155	4
155-160	2
160-165	1
165-170	1
170-175	0
175-180	0

10-DEGREE
ZONAL LUMEN SUMMARY

0- 10	0
0- 20	2
0- 30	8
0- 40	21
0- 50	43
0- 60	78
0- 70	127
0- 80	189
0- 90	259
0-100	329
0-110	391
0-120	441
0-130	476
0-140	498
0-150	510
0-160	516
0-170	518
0-180	519



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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	50
1	91	84	77	71	83	76	71	65	63	58	54	50	47	43	39	36	34	28
2	80	69	60	53	73	63	55	48	51	45	40	40	36	31	30	27	23	18
3	72	59	49	41	65	53	45	38	43	36	31	34	28	24	25	21	17	13
4	65	51	41	33	58	46	37	30	37	30	24	29	23	19	21	17	13	9
5	59	44	35	27	53	40	31	25	32	25	20	25	20	15	18	14	10	7
6	54	39	30	23	48	36	27	21	29	22	17	22	17	12	16	12	9	5
7	49	35	26	19	45	32	23	18	26	19	14	20	15	11	15	10	7	4
8	46	32	23	17	41	29	21	15	23	17	12	18	13	9	13	9	6	3
9	42	29	20	14	38	26	18	13	21	15	10	16	11	8	12	8	5	3
10	39	26	18	13	36	24	16	11	19	13	9	15	10	7	11	7	4	2

ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS TEST SAMPLE.

NOTE: THE ZONAL CAVITY CALCULATION TECHNIQUE IS ACCURATE WHEN LUMINAIRES WITH SYMMETRIC CANDELA DISTRIBUTIONS ARE EMPLOYED AND WHEN THE LUMINAIRES ARE LOCATED SYMMETRICALLY THROUGHOUT THE ROOM. THIS UNIT HAS SPECIAL CHARACTERISTICS AND THEREFORE THESE COEFFICIENTS SHOULD BE USED WITH CAUTION.