

REPORT NUMBER: ITL89864-GONIOPHOTOMETRY

PAGE: 1 OF 9

ISSUE DATE: 10/10/17

PREPARED FOR: BOYD LIGHTING COMPANY

ADDRESS: 1455 VAPOR TRAIL

COLORADO SPRINGS, CO 80916

CATALOG NUMBER: C10676 (3FT)

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 30 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: SIXTY WHITE LIGHT EMITTING DIODES (LEDS), AIMED AT THE HORIZON.

INPUT ELECTRICAL: 120.0 VOLTS, 43.5 WATTS, 0.363 AMPS

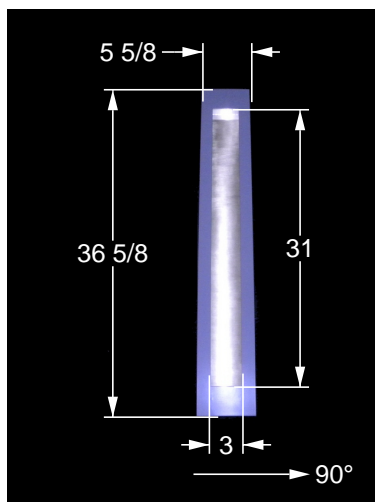
MOUNTING: RECESSED

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

M KLOPF
TECHNICIAN

Approved

N WHITE
LIGHTING ENGINEER

REPORT NUMBER: ITL89864-GONIOPHOTOMETRY

PAGE: 2 OF 9

ISSUE DATE: 10/10/17

PREPARED FOR: BOYD LIGHTING COMPANY

CATALOG NUMBER: C10676 (3FT)

CANDELA DISTRIBUTION

	0.0	45.0	90.0	135.0	180.0
0	0	0	0	0	0
5	2	2	0	0	0
15	3	16	0	0	0
25	5	32	0	0	0
35	7	52	0	0	0
45	9	82	0	0	0
55	10	122	0	0	0
65	11	164	0	0	0
75	12	196	0	0	0
85	12	216	0	0	0
90	12	218	0	0	0
95	12	216	0	0	0
105	12	195	0	0	0
115	11	165	0	0	0
125	10	125	0	0	0
135	9	85	0	0	0
145	7	56	0	0	0
155	5	36	0	0	0
165	3	20	0	0	0
175	1	4	0	0	0
180	0	0	0	0	0

FLUX

0
1
4
9
16
24
33
40
44
44
40
33
25
16
9
5
2
0

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	5	1.6
0- 40	14	4.1
0- 60	54	15.6
0- 90	170	49.5
90-120	118	34.2
90-130	142	41.3
90-150	168	48.7
90-180	174	50.5
0-180	345	100.0

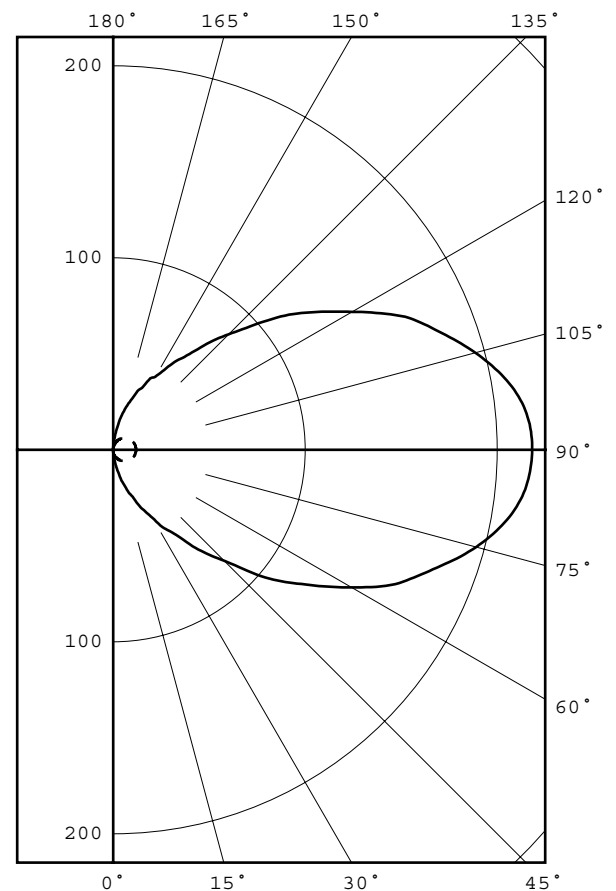
EFFICACY = 7.9 lm/W

CIE TYPE - GENERAL DIFFUSE

PLANE : 0-DEG 90-DEG

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

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



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



INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL89864-GONIOPHOTOMETRY

PAGE: 3 OF 9

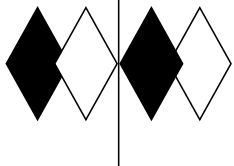
ISSUE DATE: 10/10/17

PREPARED FOR: BOYD LIGHTING COMPANY

CATALOG NUMBER: C10676 (3FT)

PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH : 0.000 3.000
HEIGHT OF SIDE :31.000 31.000

LUMINANCE DATA IN CANDELA/SQ M				
ANGLE	AVERAGE	AVERAGE	AVERAGE	
IN DEG	0-DEG	45-DEG	90-DEG	
45	200.	2722.	0.	
55	201.	3518.	0.	
65	200.	4271.	0.	
75	198.	4774.	0.	
85	197.	5109.	0.	



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955



NVLAP LAB CODE: 200925-0

INDEPENDENT TESTING LABORATORIES, INC.

4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL89864-GONIOPHOTOMETRY

PAGE: 4 OF 9

ISSUE DATE: 10/10/17

PREPARED FOR: BOYD LIGHTING COMPANY

CATALOG NUMBER: C10676 (3FT)

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	0	0	0	0
5.0	2	2	3	3	3	3	2	2	2	2	2	2	1	0
7.5	2	3	4	5	6	6	5	5	5	5	4	4	2	1
10.0	3	3	6	8	9	9	9	9	8	8	7	6	4	1
12.5	3	4	8	11	13	13	13	12	12	11	10	9	5	2
15.0	3	4	10	14	16	17	17	16	15	14	13	11	6	2
17.5	4	5	12	17	20	21	20	19	19	17	16	14	8	2
20.0	4	5	14	20	23	24	24	24	22	20	18	16	9	3
22.5	5	6	16	23	27	28	28	26	26	24	22	20	10	3
25.0	5	6	18	26	31	32	32	32	31	29	26	22	12	4
27.5	6	7	21	29	35	37	37	36	34	32	30	27	14	4
30.0	6	8	23	33	40	41	41	41	41	39	35	31	16	5
32.5	7	8	25	36	44	46	47	48	46	43	38	34	18	5
35.0	7	9	28	41	49	53	53	52	50	48	44	39	20	6
37.5	7	10	31	45	55	57	58	58	58	56	52	44	22	6
40.0	8	10	33	49	60	64	66	67	67	62	56	46	24	7
42.5	8	11	36	55	67	73	74	74	73	68	61	49	24	7
45.0	9	11	39	60	75	80	81	82	81	77	68	52	26	8
47.5	9	12	42	64	82	87	90	92	92	87	74	54	28	8
50.0	9	13	44	70	89	97	101	104	102	95	78	53	29	9
52.5	10	13	47	76	98	109	112	113	111	101	81	53	27	9
55.0	10	14	50	81	108	118	121	122	120	109	85	52	26	10
57.5	10	14	52	86	117	126	130	133	130	117	88	52	27	10
60.0	10	15	55	91	124	137	141	143	141	126	91	51	28	11
62.5	11	15	58	98	132	147	153	155	151	132	90	49	29	11
65.0	11	16	60	103	142	158	164	164	159	136	87	47	30	12
67.5	11	16	62	107	151	168	172	172	165	139	84	47	31	12
70.0	11	16	64	112	160	175	179	179	172	143	81	46	31	12
72.5	11	16	66	117	166	182	187	188	179	145	78	46	32	13
75.0	12	17	68	121	171	189	195	196	186	147	75	46	32	13
77.5	12	17	69	126	177	196	202	203	191	147	72	46	33	13
80.0	12	17	70	129	183	202	208	209	196	147	70	46	33	14
82.5	12	17	71	131	188	208	213	213	199	147	68	46	34	14
85.0	12	17	72	133	192	212	217	216	201	146	67	46	34	14
87.5	12	17	72	134	194	214	219	218	202	146	66	47	34	14
90.0	12	17	73	134	195	214	219	218	203	146	66	47	34	14
92.5	12	17	72	134	193	214	219	218	203	147	66	47	34	14
95.0	12	17	72	134	190	212	217	216	202	148	67	47	34	14
97.5	12	17	71	132	187	208	213	213	200	150	69	47	34	14
100.0	12	17	70	130	183	204	208	208	198	151	71	46	33	14
102.5	12	17	69	126	178	198	202	202	193	152	75	46	33	14
105.0	12	17	68	122	173	192	195	195	188	152	79	46	32	14
107.5	11	17	66	117	167	185	188	188	181	151	83	47	32	13
110.0	11	16	64	113	159	178	181	180	174	148	87	47	31	13
112.5	11	16	62	109	150	170	174	173	168	146	91	48	31	13
115.0	11	16	60	104	141	159	164	165	161	143	96	49	30	13
117.5	11	15	58	98	133	149	153	154	152	138	99	53	29	12
120.0	11	15	55	92	126	139	143	144	141	130	98	56	29	12
122.5	10	14	53	88	118	130	133	134	132	122	96	57	27	12
125.0	10	14	50	83	108	121	124	125	123	114	92	59	27	11
127.5	10	14	47	77	98	110	114	116	114	107	88	60	28	11
130.0	9	13	44	71	91	99	102	105	105	100	85	61	28	11
132.5	9	12	42	67	84	90	93	94	94	90	79	61	27	11
135.0	9	12	39	62	76	82	84	85	85	80	72	57	26	10
137.5	8	11	36	57	69	74	76	77	77	73	65	54	24	10
140.0	8	11	33	52	63	66	67	68	69	67	61	51	24	9
142.5	8	10	31	48	57	60	61	61	60	58	54	48	23	9
145.0	7	9	28	43	51	54	56	56	55	52	47	42	21	8
147.5	7	9	25	39	47	48	49	49	50	48	43	38	19	8

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



PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL89864-GONIOPHOTOMETRY

PAGE: 5 OF 9

ISSUE DATE: 10/10/17

PREPARED FOR: BOYD LIGHTING COMPANY

CATALOG NUMBER: C10676 (3FT)

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	6	8	23	35	42	44	45	44	43	42	39	35	17	7
152.5	6	7	21	31	38	40	41	42	41	38	34	30	16	7
155.0	5	7	19	28	34	36	36	36	36	35	32	28	14	6
157.5	5	6	17	25	30	32	33	33	32	29	26	24	13	6
160.0	4	5	15	22	27	28	28	28	28	26	24	22	11	5
162.5	4	5	12	19	23	24	24	24	23	22	20	18	10	5
165.0	3	4	10	16	20	20	21	20	20	19	18	16	9	4
167.5	3	3	8	12	15	16	16	16	16	15	14	13	7	3
170.0	2	3	6	9	11	12	12	12	12	11	11	10	6	3
172.5	2	2	4	6	7	7	8	8	8	7	7	7	5	2
175.0	1	1	3	3	4	4	4	4	4	4	4	4	3	2
177.5	1	1	1	1	1	1	1	2	1	1	1	1	1	1
180.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL89864-GONIOPHOTOMETRY

PAGE: 6 OF 9

ISSUE DATE: 10/10/17

PREPARED FOR: BOYD LIGHTING COMPANY

CATALOG NUMBER: C10676 (3FT)

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	1	0	0	0	0	0	0
42.5	1	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	2	0	0	0	0	0	0
60.0	2	0	0	0	0	0	0
62.5	2	0	0	0	0	0	0
65.0	2	0	0	0	0	0	0
67.5	2	0	0	0	0	0	0
70.0	2	0	0	0	0	0	0
72.5	2	0	0	0	0	0	0
75.0	2	0	0	0	0	0	0
77.5	2	0	0	0	0	0	0
80.0	2	0	0	0	0	0	0
82.5	2	0	0	0	0	0	0
85.0	3	0	0	0	0	0	0
87.5	3	0	0	0	0	0	0
90.0	3	0	0	0	0	0	0
92.5	3	0	0	0	0	0	0
95.0	3	0	0	0	0	0	0
97.5	3	0	0	0	0	0	0
100.0	2	0	0	0	0	0	0
102.5	2	0	0	0	0	0	0
105.0	2	0	0	0	0	0	0
107.5	2	0	0	0	0	0	0
110.0	2	0	0	0	0	0	0
112.5	2	0	0	0	0	0	0
115.0	2	0	0	0	0	0	0
117.5	2	0	0	0	0	0	0
120.0	2	0	0	0	0	0	0
122.5	2	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	2	0	0	0	0	0	0
142.5	2	0	0	0	0	0	0
145.0	2	0	0	0	0	0	0
147.5	1	0	0	0	0	0	0

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



INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL89864-GONIOPHOTOMETRY

PAGE: 7 OF 9

ISSUE DATE: 10/10/17

PREPARED FOR: BOYD LIGHTING COMPANY

CATALOG NUMBER: C10676 (3FT)

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	1	0	0	0	0	0	0
157.5	1	0	0	0	0	0	0
160.0	1	0	0	0	0	0	0
162.5	1	0	0	0	0	0	0
165.0	1	0	0	0	0	0	0
167.5	1	0	0	0	0	0	0
170.0	1	0	0	0	0	0	0
172.5	1	0	0	0	0	0	0
175.0	1	0	0	0	0	0	0
177.5	0	0	0	0	0	0	0
180.0	0	0	0	0	0	0	0



PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com



REPORT NUMBER: ITL89864-GONIOPHOTOMETRY

PAGE: 8 OF 9

ISSUE DATE: 10/10/17

PREPARED FOR: BOYD LIGHTING COMPANY

CATALOG NUMBER: C10676 (3FT)

5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	0
5- 10	0
10- 15	0
15- 20	1
20- 25	2
25- 30	2
30- 35	4
35- 40	5
40- 45	7
45- 50	9
50- 55	11
55- 60	13
60- 65	15
65- 70	17
70- 75	19
75- 80	21
80- 85	22
85- 90	22
90- 95	22
95-100	22
100-105	21
105-110	19
110-115	18
115-120	16
120-125	13
125-130	11
130-135	9
135-140	7
140-145	5
145-150	4
150-155	3
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	1
0- 30	5
0- 40	14
0- 50	30
0- 60	54
0- 70	86
0- 80	126
0- 90	170
0-100	215
0-110	255
0-120	288
0-130	313
0-140	329
0-150	338
0-160	343
0-170	344
0-180	345



PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL89864-GONIOPHOTOMETRY

PAGE: 9 OF 9

ISSUE DATE: 10/10/17

PREPARED FOR: BOYD LIGHTING COMPANY

CATALOG NUMBER: C10676 (3FT)

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	49
1	91	84	77	72	83	77	71	66	63	58	54	50	47	44	39	36	34	28
2	80	70	61	53	73	63	56	49	51	45	40	41	36	32	30	27	24	19
3	72	59	49	42	65	54	45	38	43	37	31	34	29	24	25	21	17	13
4	65	51	41	34	58	46	37	31	37	30	25	29	23	19	21	17	13	9
5	59	45	35	28	53	41	32	25	33	26	20	25	20	15	18	14	11	7
6	54	40	30	23	49	36	27	21	29	22	17	22	17	13	16	12	9	5
7	50	35	26	20	45	32	24	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	4
9	42	29	20	15	38	26	18	13	21	15	11	17	11	8	12	8	5	3
10	40	26	18	13	36	24	16	12	19	13	9	15	10	7	11	7	5	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.