

REPORT NUMBER: ITL87846-GONIOPHOTOMETRY

ISSUE DATE: 07/12/16

PAGE: 1 OF 9

PREPARED FOR: LED ROADWAY LIGHTING LTD.

CATALOG NUMBER: NXT 72M 0 X 2ES 7 XX 4 XX X XX X

LUMINAIRE: CAST METAL HOUSING WITH GRAY PAINTED INTERIOR FINISH, 2 WHITE CIRCUIT BOARDS EACH WITH 36 LEDS, 2 CLEAR PLASTIC LENSES WITH 1 OPTIC PER LED, CLEAR FLAT GLASS LENS IN CAST GRAY PAINTED METAL DOOR FRAME.

LAMPS: SEVENTY-TWO WHITE LIGHT EMITTING DIODES (LEDs), VERTICAL BASE-UP POSITION.

INPUT ELECTRICAL: 120.0 VOLTS, 149.9 WATTS, 1.25 AMPS

LED DRIVER: LED ROADWAY LIGHTING J150UNV2, DRIVER HAS MULTIPLE LEADS, ONLY LINE INPUT AND LED OUTPUT LEADS CONNECTED FOR THIS TEST, OUTPUT CURRENT ROTARY SWITCH SET TO 700mA. LRL65633-LF SURGE PROTECTOR.

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

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 35.0 FEET

TOTAL LUMEN OUTPUT: 15910

COLOR TEMPERATURE AS MEASURED IN INTEGRATING SPHERE TEST # ITL87846-SPHERE: 3152K

COLOR RENDERING INDEX AS MEASURED IN INTEGRATING SPHERE TEST # ITL87846-SPHERE: 72

LED DC DRIVE CURRENT (mA): 700 (PROVIDED BY CLIENT)

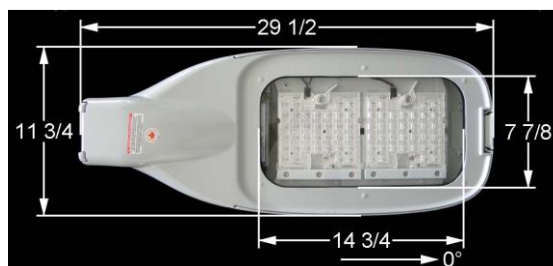
POWER FACTOR: 99.9 %

BUG RATING: B3 U0 G3

LUMINAIRE EFFICACY: 106.1 lm/W

IES CLASSIFICATION: Medium, Type II

**CUTOFF DESIGNATION IS NOT INTENDED TO BE USED WITH ABSOLUTE PHOTOMETRIC TESTS.



FLUX DISTRIBUTION

LUMENS	DOWNWARD	UPWARD	TOTALS
HOUSE SIDE	5288	0	5288
STREET SIDE	10622	0	10622
TOTALS	15910	0	15910

TESTING WAS PERFORMED IN ACCORDANCE WITH IESNA LM-79-08
TEST ANGULAR INCREMENTS AND REPORT FORMATTING WAS BASED ON IESNA LM-31-95

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



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

PHONE: (303) 442-1255

FAX: (970) 535-3114

E-MAIL: itl@itlboulder.com

WEBSITE: www.itlboulder.com

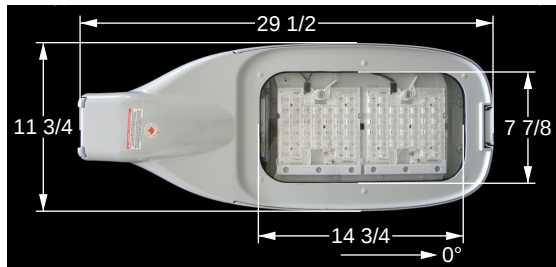
NVLAP
NVLAP LAB CODE: 200925-0

INDEPENDENT TESTING LABORATORIES, INC.

4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 30 foot mounting height.



REPORT NUMBER: ITL87846-GONIOPHOTOMETRY
ISSUE DATE: 07/12/16 PAGE: 2 OF 9
PREPARED FOR: LED ROADWAY LIGHTING LTD.
CATALOG NUMBER: NXT 72M 0 X 2ES 7 XX 4 XX X XX X

LUMINAIRE: CAST METAL HOUSING WITH GRAY PAINTED INTERIOR FINISH, 2 WHITE CIRCUIT BOARDS EACH WITH 36 LEDs, 2 CLEAR PLASTIC LENSES WITH 1 OPTIC PER LED, CLEAR FLAT GLASS LENS IN CAST GRAY PAINTED METAL DOOR FRAME.

LAMPS: SEVENTY-TWO WHITE LIGHT EMITTING DIODES (LEDs), VERTICAL BASE-UP POSITION. INPUT ELECTRICAL: 120.0 VOLTS, 149.9 WATTS, 1.25 AMPS

LED DRIVER: LED ROADWAY LIGHTING J150UNV2, DRIVER HAS MULTIPLE LEADS, ONLY LINE INPUT AND LED OUTPUT LEADS CONNECTED FOR THIS TEST, OUTPUT CURRENT ROTARY SWITCH SET TO 700mA. LRL65633-LF SURGE PROTECTOR.

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

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 35.0 FEET

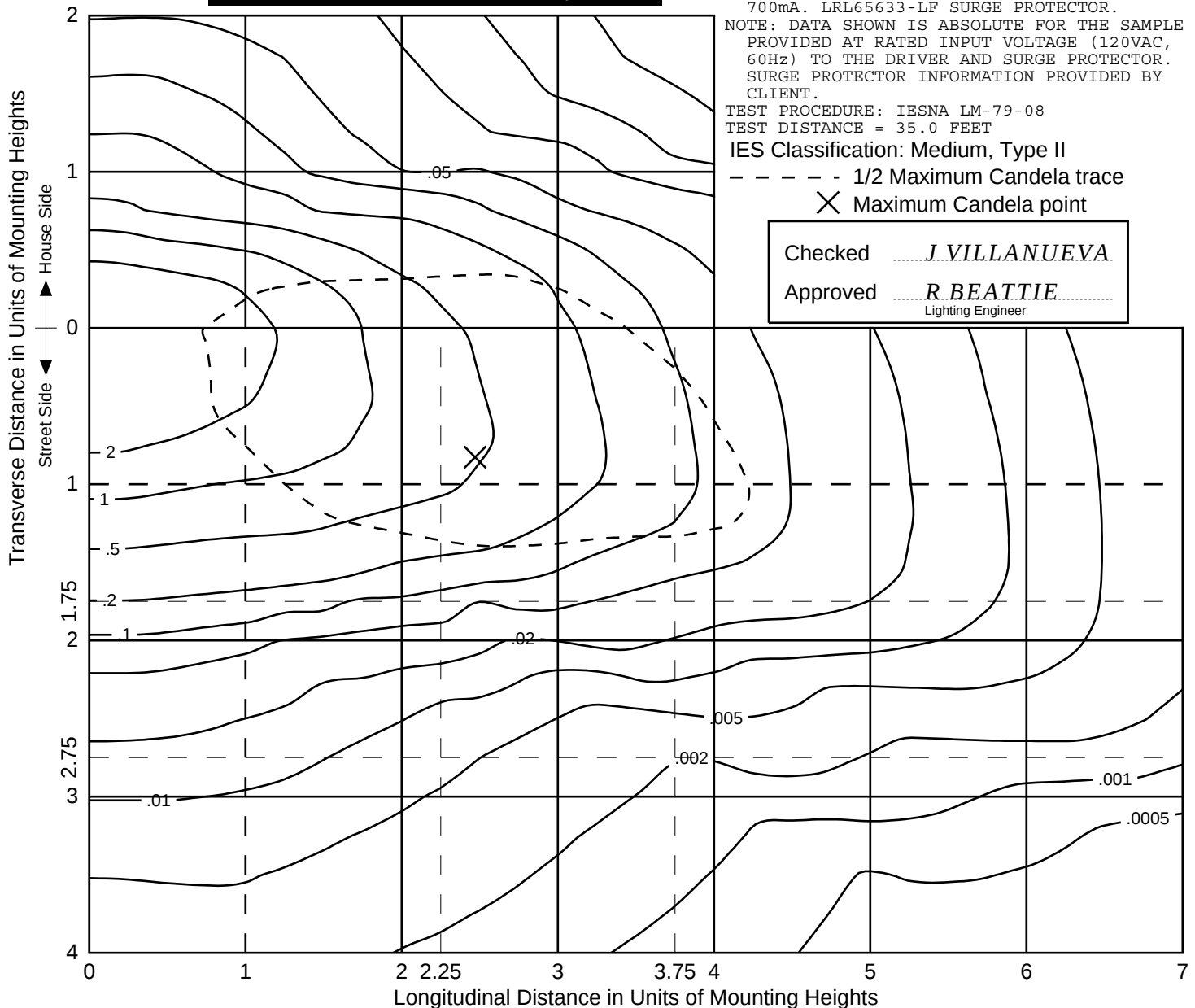
IES Classification: Medium, Type II

--- 1/2 Maximum Candela trace

X Maximum Candela point

CheckedJ.VILLANUEVA.....

ApprovedR.BEATTIE.....
Lighting Engineer



REPORT NUMBER: ITL87846-GONIOPHOTOMETRY
ISSUE DATE: 07/12/16 PAGE: 3 OF 9
PREPARED FOR: LED ROADWAY LIGHTING LTD.
CATALOG NUMBER: NXT 72M 0 X 2ES 7 XX 4
XX X XX X

LUMINAIRE: CAST METAL HOUSING WITH GRAY
PAINTED INTERIOR FINISH, 2 WHITE
CIRCUIT BOARDS EACH WITH 36 LEDS, 2
CLEAR PLASTIC LENSES WITH 1 OPTIC PER
LED, CLEAR FLAT GLASS LENS IN CAST
GRAY PAINTED METAL DOOR FRAME.

LAMPS: SEVENTY-TWO WHITE LIGHT EMITTING
DIODES (LEDs), VERTICAL BASE-UP
POSITION.

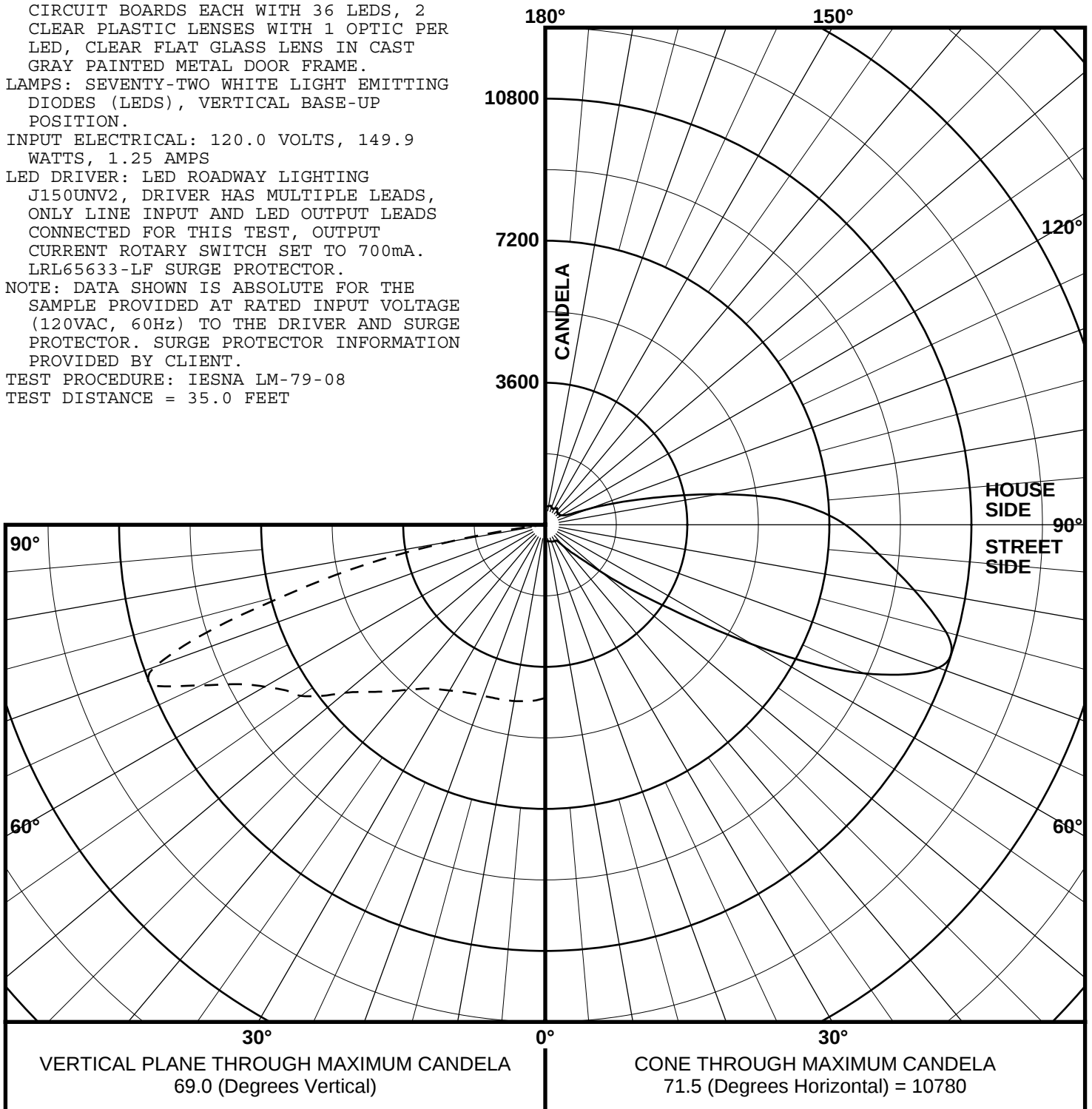
INPUT ELECTRICAL: 120.0 VOLTS, 149.9
WATTS, 1.25 AMPS

LED DRIVER: LED ROADWAY LIGHTING
J150UNV2, DRIVER HAS MULTIPLE LEADS,
ONLY LINE INPUT AND LED OUTPUT LEADS
CONNECTED FOR THIS TEST, OUTPUT
CURRENT ROTARY SWITCH SET TO 700mA.
LRL65633-LF SURGE PROTECTOR.

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

TEST PROCEDURE: IESNA LM-79-08
TEST DISTANCE = 35.0 FEET

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

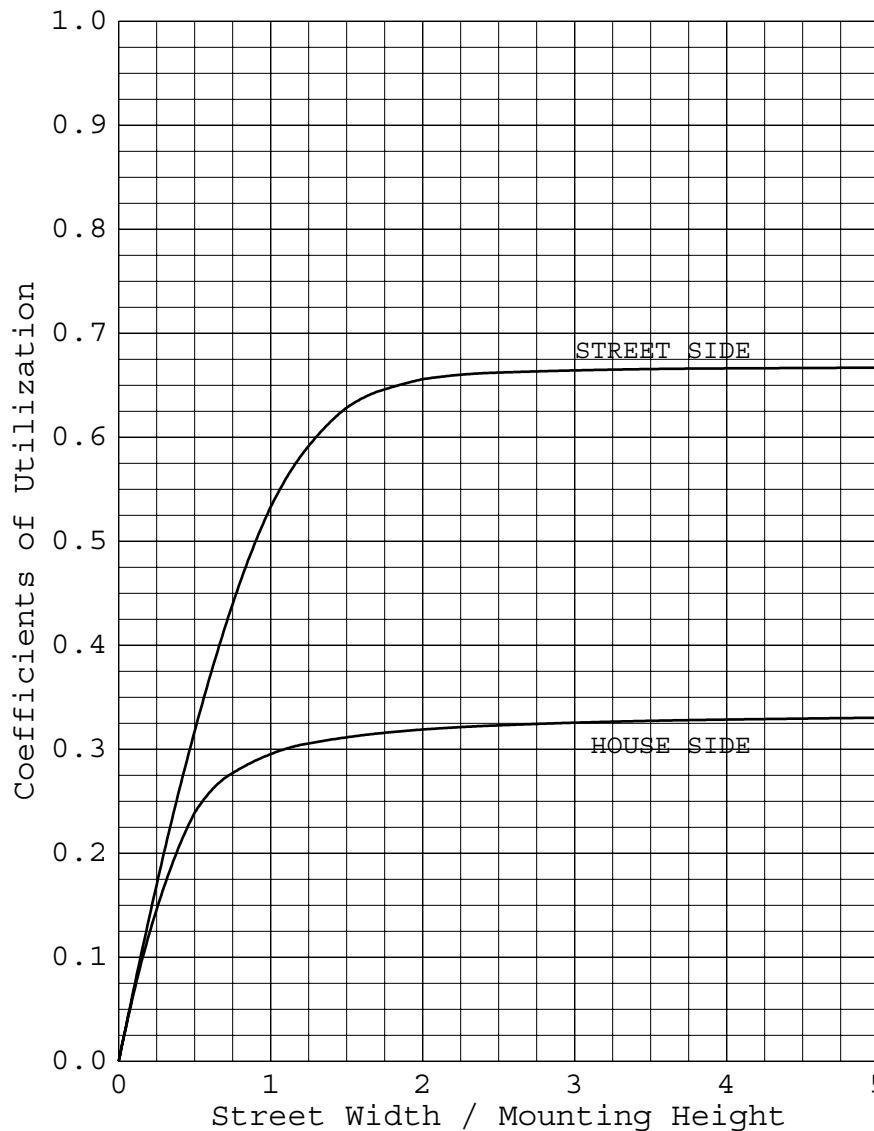




REPORT NUMBER: ITL87846-GONIOPHOTOMETRY
ISSUE DATE: 07/12/16
PREPARED FOR: LED ROADWAY LIGHTING LTD.

PAGE: 4 OF 9

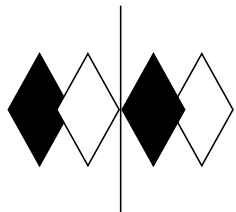
COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	10622	66.8
DOWNWARD HOUSE SIDE	5288	33.2
DOWNWARD TOTAL	15910	100.0
UPWARD STREET SIDE	0	0.0
UPWARD HOUSE SIDE	0	0.0
UPWARD TOTAL	0	0.0
TOTAL FLUX	15910	100.0

EFFICACY = 106.1 lm/W

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



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

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



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

REPORT NUMBER: ITL87846-GONIOPHOTOMETRY
ISSUE DATE: 07/12/16
PREPARED FOR: LED ROADWAY LIGHTING LTD.

PAGE: 5 OF 9

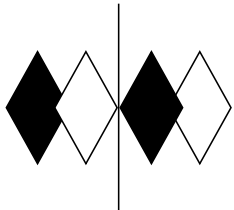
FLUX DISTRIBUTION BY SOLID ANGLE

(PER IESNA TM-15-11, LUMINAIRE CLASSIFICATION
SYSTEM FOR OUTDOOR LUMINAIRES)

	LUMENS	PERCENT OF FIXTURE	BUG ZONE RATINGS
FORWARD LIGHT	10622.	66.8	
FL (0- 30)	1940.2	12.2	
FM (30- 60)	5411.3	34.0	
FH (60- 80)	3198.8	20.1	G2
FVH(80- 90)	71.8	0.5	G1
BACK LIGHT	5288.	33.2	
BL (0- 30)	1417.1	8.9	B3
BM (30- 60)	2614.5	16.4	B3
BH (60- 80)	1212.5	7.6	B3 G3
BVH(80- 90)	44.2	0.3	G1
UPLIGHT	0.	0.0	
UL (90-100)	0.0	0.0	U0
UH (100-180)	0.0	0.0	U0
TRAPPED LIGHT	0.	0.0	
TOTAL FLUX	15910.	100.0	

BACKLIGHT, UPLIGHT, AND GLARE (BUG) RATINGS
(PER ADDENDUM A FOR IESNA TM-15-11)

BUG RATING: B3 U0 G3



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955



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: ITL87846-GONIOPHOTOMETRY
ISSUE DATE: 07/12/16
PREPARED FOR: LED ROADWAY LIGHTING LTD.

PAGE: 6 OF 9

CANDELA TABULATION

	STREET SIDE										
	0.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	71.5	75.0	85.0
	180.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	175.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	165.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	155.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	145.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	135.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	125.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	115.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	105.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	95.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	92.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	90.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	87.5	1.	2.	2.	3.	4.	4.	6.	7.	6.	7.
	85.0	15.	17.	24.	23.	18.	18.	17.	19.	20.	22.
V	82.5	55.	55.	79.	68.	54.	56.	54.	132.	603.	406.
E	80.0	112.	115.	153.	119.	104.	121.	117.	471.	2463.	1948.
R	77.5	167.	171.	212.	163.	174.	178.	216.	1393.	4692.	4006.
T	75.0	201.	206.	246.	234.	244.	258.	388.	3269.	6660.	5636.
I	72.5	257.	263.	297.	314.	322.	405.	1084.	5863.	8891.	6914.
C	70.0	355.	358.	386.	417.	425.	776.	2685.	8269.	10533.	8212.
A	69.0<<	414.	417.	436.	467.	488.	1083.	3381.	8914.	10780.	8483.
L	67.5	496.	501.	514.	554.	658.	1751.	4374.	9389.	10676.	8641.
	65.0	648.	663.	703.	831.	1377.	3104.	5681.	8899.	9629.	9566.
A	62.5	962.	984.	1135.	1473.	2336.	4097.	6117.	8246.	8744.	8645.
N	60.0	1497.	1526.	1709.	2133.	2900.	4347.	6019.	7808.	8207.	8118.
G	57.5	1957.	1991.	2125.	2486.	3140.	4407.	5931.	7510.	7804.	7706.
L	55.0	2242.	2280.	2390.	2697.	3329.	4429.	5850.	7332.	7562.	7435.
E	52.5	2476.	2515.	2613.	2901.	3510.	4410.	5698.	6913.	7120.	7048.
	50.0	2661.	2706.	2813.	3106.	3670.	4444.	5561.	6429.	6623.	6611.
	47.5	2846.	2899.	3019.	3298.	3818.	4524.	5454.	6116.	6271.	6284.
	45.0	3023.	3094.	3224.	3480.	3959.	4598.	5307.	5806.	5985.	6024.
	42.5	3209.	3278.	3415.	3690.	4136.	4678.	5213.	5549.	5716.	5773.
	40.0	3444.	3510.	3665.	3948.	4335.	4765.	5136.	5312.	5460.	5534.
	37.5	3755.	3856.	3995.	4223.	4530.	4842.	5037.	5103.	5242.	5316.
	35.0	4116.	4189.	4328.	4507.	4691.	4864.	4881.	4931.	5068.	5143.
	30.0	4733.	4802.	4826.	4842.	4805.	4698.	4595.	4713.	4850.	4904.
	25.0	4867.	4926.	4880.	4785.	4593.	4458.	4461.	4612.	4693.	4718.
	20.0	4558.	4602.	4536.	4470.	4415.	4425.	4499.	4599.	4613.	4613.
	15.0	4399.	4448.	4444.	4452.	4488.	4545.	4583.	4604.	4570.	4554.
	10.0	4539.	4591.	4598.	4609.	4625.	4634.	4611.	4581.	4535.	4519.
	5.0	4566.	4606.	4605.	4591.	4582.	4569.	4538.	4519.	4485.	4476.
	0.0	4389.	4389.	4389.	4389.	4389.	4389.	4389.	4389.	4389.	4389.

||
PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

NVLAP
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: ITL87846-GONIOPHOTOMETRY
ISSUE DATE: 07/12/16
PREPARED FOR: LED ROADWAY LIGHTING LTD.

PAGE: 7 OF 9

CANDELA TABULATION

	HOUSE SIDE		LATERAL ANGLE								
	90.0	95.0	105.0	115.0	125.0	135.0	145.0	155.0	165.0	175.0	180.0
	180.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	175.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	165.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	155.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	145.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	135.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	125.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	115.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	105.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	95.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	92.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	90.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	87.5	8.	6.	7.	6.	5.	5.	4.	3.	1.	0.
	85.0	21.	20.	20.	20.	21.	24.	34.	51.	49.	18.
V	82.5	333.	277.	57.	60.	63.	83.	112.	139.	170.	169.
E	80.0	1607.	1275.	154.	120.	122.	160.	216.	248.	297.	327.
R	77.5	3190.	2464.	338.	199.	196.	234.	310.	361.	448.	478.
T	75.0	4774.	3780.	722.	297.	274.	302.	376.	404.	543.	599.
I	72.5	6023.	4945.	1320.	411.	351.	358.	425.	414.	536.	582.
C	70.0	7322.	6128.	2215.	532.	417.	416.	483.	430.	506.	492.
A	69.0<<	7605.	6381.	2495.	575.	442.	438.	508.	444.	496.	469.
L	67.5	7796.	6545.	2851.	632.	481.	473.	542.	474.	489.	443.
	65.0	7630.	6533.	3396.	739.	539.	529.	586.	536.	508.	454.
A	62.5	7382.	6539.	3882.	916.	592.	589.	621.	601.	563.	511.
N	60.0	7286.	6620.	4300.	1219.	650.	646.	628.	649.	626.	568.
G	57.5	7213.	6710.	4656.	1661.	718.	700.	656.	670.	676.	627.
L	55.0	7107.	6698.	4956.	2164.	806.	754.	696.	696.	721.	677.
E	52.5	6927.	6536.	4964.	2636.	970.	804.	742.	745.	770.	717.
	50.0	6680.	6346.	4996.	3042.	1224.	852.	785.	784.	793.	756.
	47.5	6441.	6182.	5015.	3341.	1567.	922.	836.	828.	817.	789.
	45.0	6211.	6007.	4983.	3532.	1878.	1070.	895.	871.	857.	838.
	42.5	5975.	5803.	4916.	3647.	2180.	1290.	971.	916.	901.	886.
	40.0	5732.	5579.	4814.	3715.	2419.	1520.	1125.	984.	940.	919.
	37.5	5492.	5334.	4689.	3750.	2624.	1739.	1313.	1121.	1029.	989.
	35.0	5279.	5126.	4565.	3763.	2801.	1964.	1512.	1285.	1181.	1133.
	30.0	4918.	4763.	4327.	3759.	3096.	2472.	1983.	1694.	1532.	1458.
	25.0	4640.	4500.	4152.	3773.	3351.	2929.	2545.	2260.	2063.	1976.
	20.0	4456.	4344.	4080.	3829.	3568.	3298.	3057.	2858.	2711.	2629.
	15.0	4388.	4296.	4099.	3930.	3764.	3606.	3470.	3355.	3266.	3216.
	10.0	4381.	4319.	4187.	4068.	3967.	3866.	3797.	3733.	3687.	3662.
	5.0	4399.	4364.	4297.	4241.	4181.	4113.	4083.	4046.	4022.	4009.
	0.0	4389.	4389.	4389.	4389.	4389.	4389.	4389.	4389.	4389.	4389.

CONE OF MAXIMUM CANDELA



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: ITL87846-GONIOPHOTOMETRY
ISSUE DATE: 07/12/16
PREPARED FOR: LED ROADWAY LIGHTING LTD.

PAGE: 8 OF 9

5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	104
5- 10	308
10- 15	494
15- 20	661
20- 25	820
25- 30	970
30- 35	1100
35- 40	1205
40- 45	1302
45- 50	1397
50- 55	1486
55- 60	1535
60- 65	1506
65- 70	1392
70- 75	1003
75- 80	510
80- 85	112
85- 90	4
90- 95	0
95-100	0
100-105	0
105-110	0
110-115	0
115-120	0
120-125	0
125-130	0
130-135	0
135-140	0
140-145	0
145-150	0
150-155	0
155-160	0
160-165	0
165-170	0
170-175	0
175-180	0

10-DEGREE
ZONAL LUMEN SUMMARY

0- 10	412
0- 20	1568
0- 30	3357
0- 40	5663
0- 50	8362
0- 60	11383
0- 70	14281
0- 80	15794
0- 90	15910
0-100	15910
0-110	15910
0-120	15910
0-130	15910
0-140	15910
0-150	15910
0-160	15910
0-170	15910
0-180	15910



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955



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: ITL87846-GONIOPHOTOMETRY
ISSUE DATE: 07/12/16
PREPARED FOR: LED ROADWAY LIGHTING LTD.

PAGE: 9 OF 9

ADDRESS: 115 CHAIN LAKE DRIVE
SUITE 201
HALIFAX, NOVA SCOTIA, CANADA B3S 1B3

THIS ITL 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.