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THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

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NVLAP LAB CODE: 200925-0

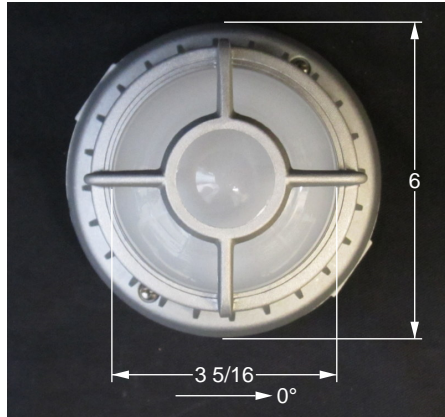
INDEPENDENT TESTING LABORATORIES, INC.

3386 LONGHORN ROAD, BOULDER, CO 80302 USA

PHONE: (303)442-1255 • FAX: (303)449-5274 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 10 foot mounting height.



REPORT NUMBER: ITL72429

ISSUE DATE: 04/12/12

PAGE: 1 OF 6

PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: VXLED13NDG /

VXBRLED13NDG

LUMINAIRE: CAST FINNED DIFFUSE METAL HOUSING, 1 CIRCUIT BOARD WITH 1 LED, FROSTED GLASS LENS, CAST DIFFUSE METAL GUARD SURROUNDING LENS. LENS FROSTED SIDE IN.

LAMP: ONE WHITE MULTI-CHIP LIGHT EMITTING DIODE (LED) WITH LEDS ARRANGED IN 3 LINEAR ROWS, VERTICAL BASE-UP POSITION.

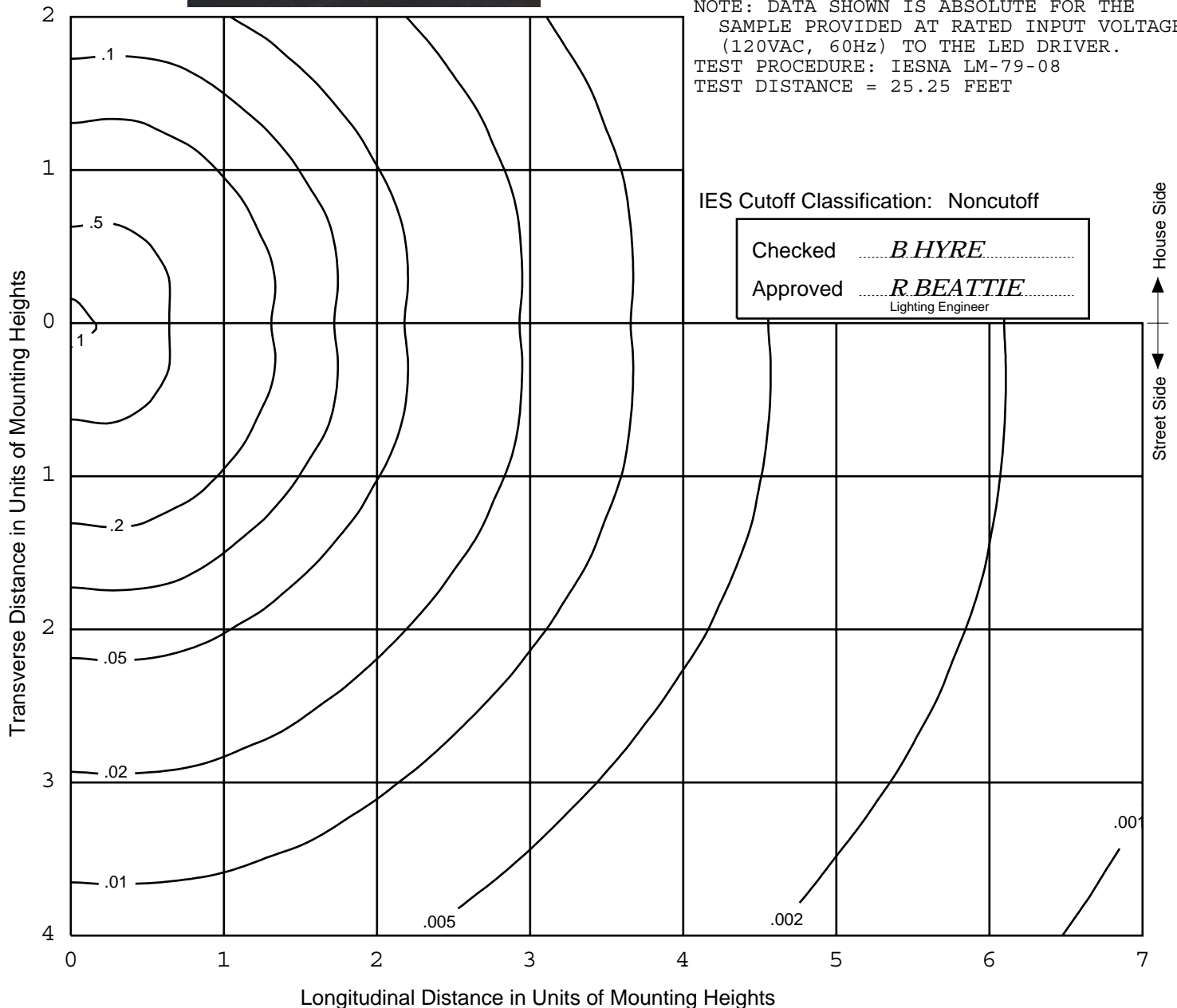
TOTAL INPUT WATTS = 15.2 AT 120.0 VOLTS

LED DRIVER: RAB RD12-24-A0720

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

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 25.25 FEET



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

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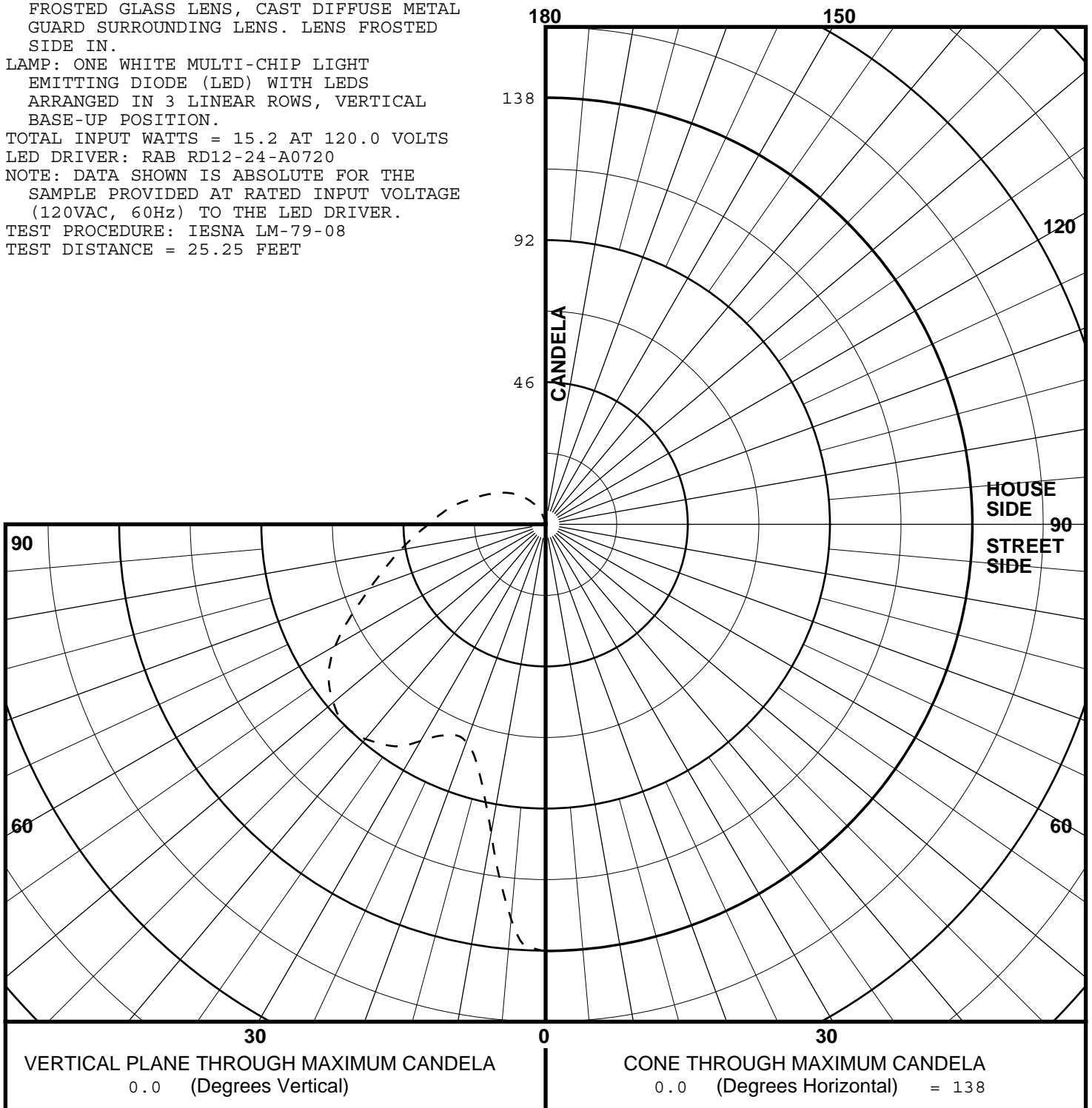
LED DRIVER: RAB RD12-24-A0720

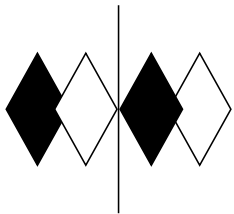
NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (120VAC, 60Hz) TO THE LED DRIVER.

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MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

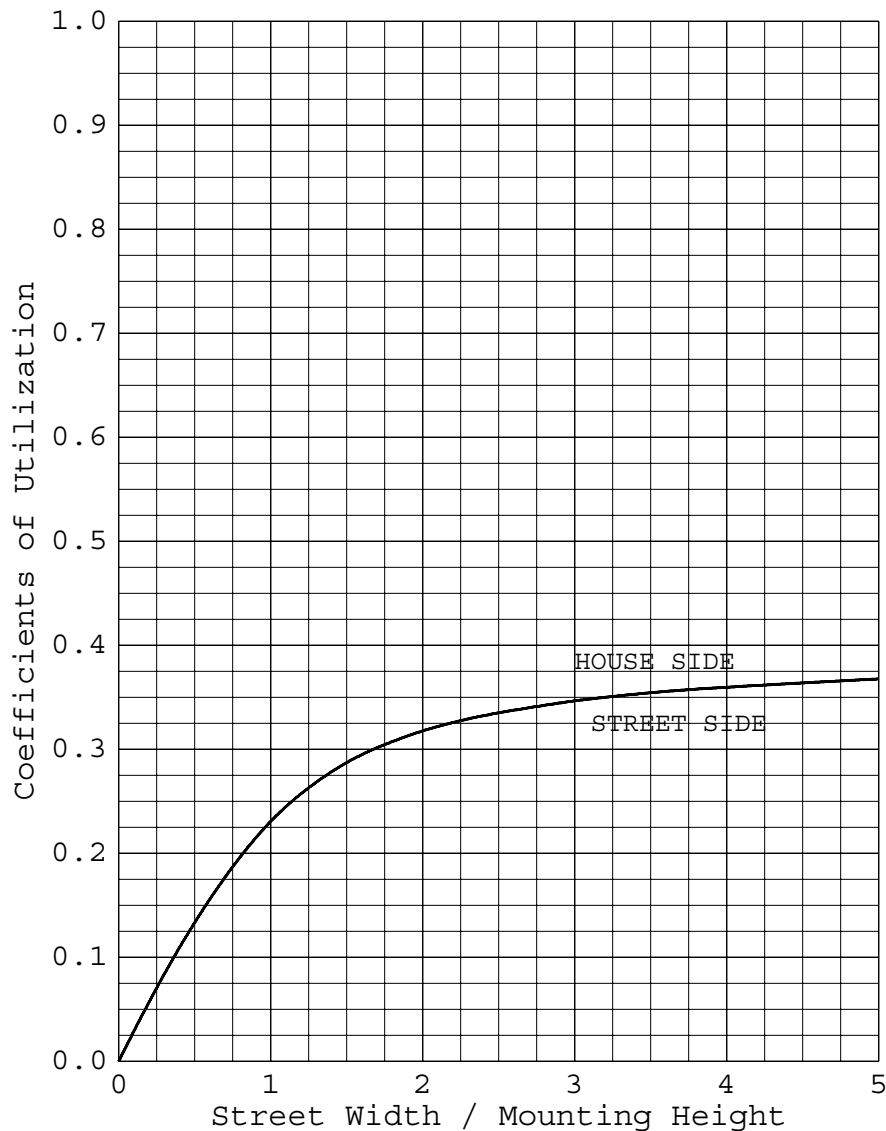




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COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	236	39.7
DOWNWARD HOUSE SIDE	236	39.7
DOWNWARD TOTAL	472	79.3
UPWARD STREET SIDE	62	10.3
UPWARD HOUSE SIDE	62	10.3
UPWARD TOTAL	123	20.7
TOTAL FLUX	595	100.0
EFFICACY = 39.1 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.



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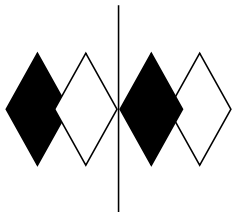
FLUX DISTRIBUTION BY SOLID ANGLE

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

	LUMENS	PERCENT OF FIXTURE	BUG ZONE RATINGS
FORWARD LIGHT	236.	39.7	
FL (0- 30)	35.9	6.0	
FM (30- 60)	109.5	18.4	
FH (60- 80)	67.1	11.3	G0
FVH(80- 90)	23.5	3.9	G1
BACK LIGHT	236.	39.7	
BL (0- 30)	35.9	6.0	B0
BM (30- 60)	109.5	18.4	B0
BH (60- 80)	67.1	11.3	B0 G0
BVH(80- 90)	23.5	3.9	G1
UPLIGHT	123.	20.7	
UL (90-100)	37.3	6.3	U2
UH (100-180)	85.8	14.4	U3
TRAPPED LIGHT	0.	0.0	
TOTAL FLUX	595.	100.0	

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

BUG RATING: B0 U3 G1



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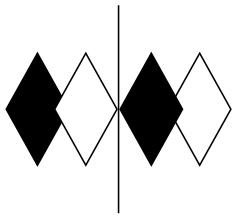
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CANDELA TABULATION

		LATERAL ANGLE										
		0.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0	85.0	90.0
	180.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	175.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	165.0	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
	155.0	6.	6.	6.	6.	6.	6.	6.	6.	6.	6.	6.
	145.0	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.
	135.0	14.	14.	14.	14.	13.	13.	13.	14.	14.	14.	14.
	125.0	18.	18.	18.	17.	17.	17.	17.	17.	18.	18.	18.
	115.0	22.	22.	22.	22.	21.	20.	21.	22.	22.	22.	22.
	105.0	28.	28.	28.	28.	26.	26.	26.	27.	28.	28.	28.
	95.0	35.	35.	35.	35.	33.	32.	33.	34.	35.	35.	34.
	92.5	36.	36.	37.	37.	35.	34.	35.	36.	37.	36.	36.
	90.0	38.	38.	39.	39.	37.	36.	37.	38.	39.	38.	38.
	87.5	40.	41.	42.	41.	39.	38.	39.	41.	41.	41.	40.
	85.0	43.	43.	44.	44.	42.	41.	42.	43.	44.	43.	42.
V	82.5	45.	46.	47.	47.	45.	44.	45.	46.	47.	46.	45.
E	80.0	48.	49.	50.	50.	48.	47.	48.	50.	50.	49.	48.
R	77.5	51.	52.	53.	53.	52.	51.	51.	53.	54.	52.	51.
T	75.0	54.	55.	57.	57.	55.	55.	55.	57.	57.	55.	54.
I	72.5	57.	58.	61.	61.	60.	59.	59.	61.	61.	59.	57.
C	70.0	61.	62.	66.	66.	65.	64.	64.	66.	66.	63.	60.
A	67.5	65.	67.	71.	72.	70.	69.	70.	71.	71.	67.	64.
L	65.0	69.	72.	77.	78.	77.	76.	76.	77.	76.	72.	68.
	62.5	74.	77.	83.	85.	83.	82.	82.	83.	82.	77.	73.
A	60.0	79.	82.	88.	91.	90.	89.	89.	89.	88.	82.	78.
N	57.5	83.	86.	93.	97.	96.	95.	94.	94.	93.	87.	82.
G	55.0	86.	89.	97.	100.	100.	99.	97.	97.	96.	91.	86.
L	52.5	88.	91.	98.	102.	101.	100.	98.	98.	98.	93.	89.
E	50.0	90.	92.	99.	104.	102.	101.	99.	99.	98.	94.	90.
	47.5	91.	93.	101.	107.	103.	101.	101.	100.	98.	94.	92.
	45.0	92.	94.	102.	107.	103.	101.	101.	100.	98.	94.	92.
	42.5	92.	93.	100.	105.	102.	101.	100.	99.	97.	93.	91.
	40.0	91.	92.	98.	102.	100.	99.	98.	98.	96.	92.	91.
	37.5	89.	90.	94.	97.	98.	97.	96.	96.	94.	90.	89.
	35.0	88.	88.	91.	93.	94.	94.	93.	93.	91.	88.	87.
	32.5	85.	86.	87.	89.	90.	90.	89.	89.	88.	85.	85.
	30.0	81.	81.	83.	84.	85.	85.	85.	85.	84.	82.	82.
	25.0	75.	76.	77.	78.	79.	79.	79.	79.	79.	78.	77.
	20.0	75.	75.	76.	77.	77.	77.	77.	77.	76.	76.	76.
	15.0	83.	83.	84.	84.	85.	85.	85.	84.	83.	83.	83.
	10.0	102.	102.	102.	102.	102.	102.	102.	102.	102.	101.	101.
	5.0	128.	128.	128.	128.	128.	128.	128.	128.	128.	128.	128.
	0.0<<	138.	138.	138.	138.	138.	138.	138.	138.	138.	138.	138.

||
PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA



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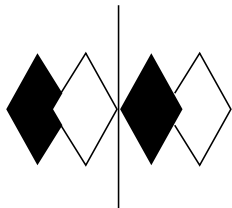
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ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647



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CATALOG NUMBER: VXLED13NDG / VXBRLD13NDG

ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

LUMINAIRE: CAST FINNED DIFFUSE METAL HOUSING, 1 CIRCUIT BOARD WITH 1 LED,
FROSTED GLASS LENS, CAST DIFFUSE METAL GUARD SURROUNDING LENS. LENS
FROSTED SIDE IN.

LAMP: ONE WHITE MULTI-CHIP LIGHT EMITTING DIODE (LED) WITH LEDS ARRANGED
IN 3 LINEAR ROWS, VERTICAL BASE-UP POSITION.

DRIVER: RAB RD12-24-A0720

ORIENTATION
IN SPHERE: NORMAL OPERATING POSITION

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

INSTRUMENTS:	Kikusui PCR500L AC Power Source	Calibration Due:
	Yokogawa WT210 Digital Power Meter #4	N/A
	Optronic Laboratories OL770 Spectroradiometer	03/08/13
	ITL 1.5 meter Diameter Integrating Sphere, 4PI Geometry	02/21/13

OBJECT OF TEST: Measure the Total Radiant Flux*, Spectral Power Distribution (SPD),
Correlated Color Temperature (CCT), Color Rendering Indices (CRI_a,1-14),
Chromaticity Coordinates (x,y; u'v'), ANSI C78.377 Duv, and electrical
data including Power Factor (PF) and Total Harmonic Distortion (THD) to
the test sample. Report Off-State Power.

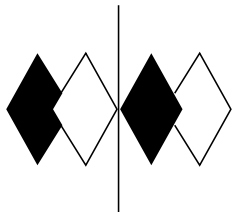
PROCEDURE: The test sample was provided by the customer and had an unknown number
of burn hours. The test sample was mounted inside the integrating sphere
and allowed to stabilize. After stabilization occurred, measurements
were taken. In order to measure mean performance, multiple data sets
were recorded and averaged. Readings were taken with the test sample
operating at 120VAC input in a 25 +/-1 degree Celsius
free air ambient and in accordance with IESNA LM-79-08. All data are
traceable to the National Institute of Standards and Technology.
Off-State Power was reported with no voltage applied to the sample.

*NOTE: Proper calibration of integrating spheres for measuring total flux
output of non-directional samples will produce reliable, repeatable
results within the calibration tolerances of the equipment used.
However, measurement of test samples with significant self absorption
and/or directional output, even when these effects are compensated
for, are likely to have a greater variation in results compared to
the flux output calculated from a goniophotometric exploration since
these artifacts do not affect the goniophotometric results.

RESULTS: (continued subsequent pages)

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.

Checked	<i>T BERGER</i>
Approved	<i>N GULLY</i>
	Lighting Engineer



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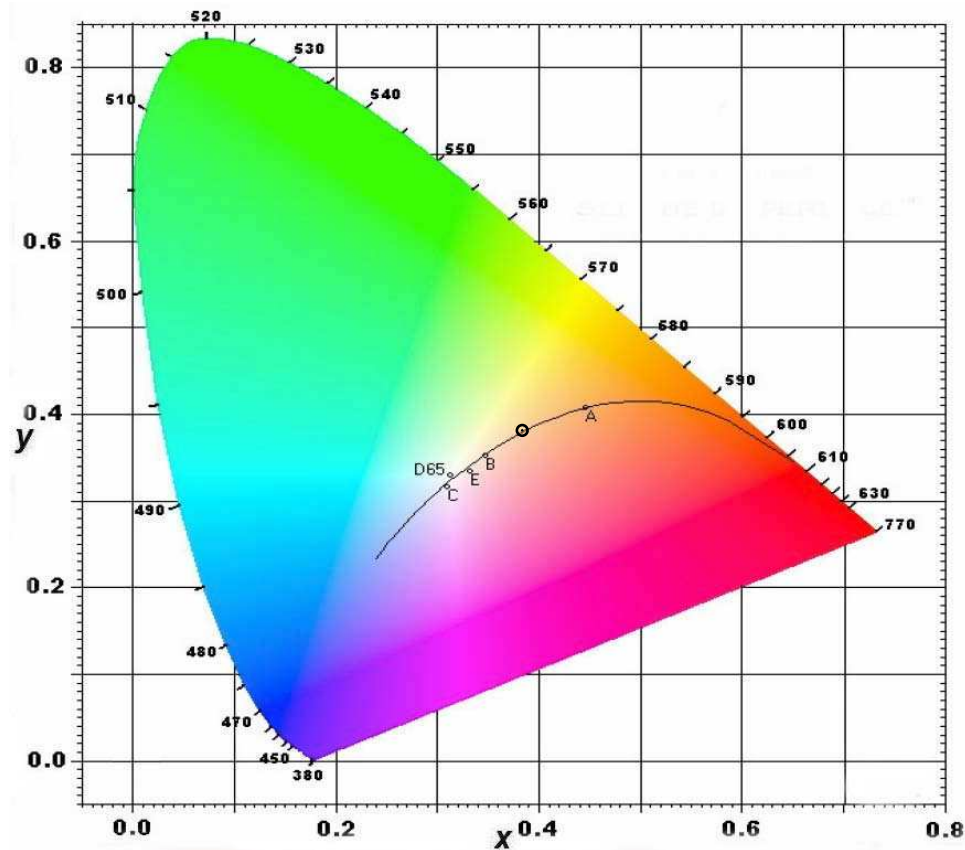
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CIE Chromaticity Diagram



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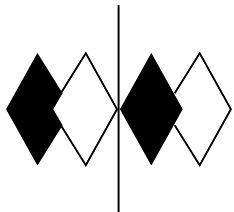
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RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3834
Chromaticity Ordinate y	0.3810
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2253
Chromaticity Ordinate v'	0.5039
Correlated Color Temp CCT (K)	3953
Color Rendering Index (CRIa)	88
Color Rendering Index 1 (Light greyish red)	87
Color Rendering Index 2 (Dark greyish yellow)	91
Color Rendering Index 3 (Strong yellowish green)	92
Color Rendering Index 4 (Moderate yellowish green)	87
Color Rendering Index 5 (Light bluish green)	86
Color Rendering Index 6 (Light blue)	86
Color Rendering Index 7 (Light violet)	93
Color Rendering Index 8 (Light reddish purple)	81
Color Rendering Index 9 (Strong red)	51
Color Rendering Index 10 (Strong yellow)	76
Color Rendering Index 11 (Strong green)	84
Color Rendering Index 12 (Strong blue)	61
Color Rendering Index 13 (Light yellowish pink (skin))	88
Color Rendering Index 14 (Moderate olive green (leaf))	95
ANSI C78.377-2008 Duv	0.001
Total Radiant Flux (milliWatts)	2014 *
ELECTRICAL FOR SPECTRORADIOMETRIC TEST	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.128
Input Power (Watts)	15.2
Input Power Factor (%)	99.0
Input Current THD (%)	11.3
Input Voltage THD (%)	0.0
Off-State Power (Watts)	0.0

*NOTE:

Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even when these effects are compensated for, are likely to have a greater variation in results compared to the flux output calculated from a goniophotometric exploration since these artifacts do not affect the goniophotometric results.



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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.170	515	6.302	650	7.604
385	0.178	520	6.857	655	7.182
390	0.190	525	7.337	660	6.748
395	0.191	530	7.748	665	6.299
400	0.211	535	8.069	670	5.824
405	0.249	540	8.337	675	5.321
410	0.348	545	8.570	680	4.874
415	0.485	550	8.767	685	4.439
420	0.647	555	8.925	690	4.025
425	0.976	560	9.053	695	3.621
430	1.515	565	9.154	700	3.239
435	2.445	570	9.213	705	2.877
440	3.834	575	9.245	710	2.541
445	6.037	580	9.252	715	2.228
450	9.010	585	9.263	720	1.936
455	10.436	590	9.295	725	1.671
460	8.590	595	9.301	730	1.451
465	6.364	600	9.307	735	1.268
470	5.126	605	9.293	740	1.113
475	4.126	610	9.270	745	0.970
480	3.429	615	9.233	750	0.839
485	3.225	620	9.158	755	0.727
490	3.369	625	9.023	760	0.627
495	3.726	630	8.815	765	0.539
500	4.290	635	8.577	770	0.468
505	4.989	640	8.311	775	0.405
510	5.683	645	7.974	780	0.000

