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THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

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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 12 foot mounting height.



REPORT NUMBER: ITL79958

ISSUE DATE: 11/20/13

PAGE: 1 OF 7

PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: GLED52N OR GPLED52N (W/
PRISMATIC LENS - CEILING OR PENDENT
MOUNT)

LUMINAIRE: CAST 2-PIECE BROWN PAINTED
FINNED METAL HOUSING, 4 CAST METAL
HEAT SINKS/CIRCUIT BOARD MOUNTING
BRACKETS, 4 CIRCUIT BOARDS EACH WITH 1
LED AND MOLDED PLASTIC CIRCUIT BOARD
PERIMETER OVERLAY WITH SPECULAR
FINISH, MOLDED PLASTIC REFLECTOR WITH
SPECULAR FINISH AND 1 APERTURE PER
LED, CLEAR PLASTIC DROP LENS WITH
RADIALLY PRISMATIC BOTTOM AND
PRISMATIC SIDES IN CAST BROWN PAINTED
METAL FRAME. LENS RADIAL PRISMS IN,
AND SIDE PRISMS IN AND OUT.

LAMPS: FOUR WHITE MULTI-CHIP LIGHT
EMITTING DIODES (LEDs), AIMED AT THE
HORIZON.

TOTAL INPUT WATTS = 59.4 AT 120.0 VOLTS
LED DRIVERS: TWO RAB RD26S

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

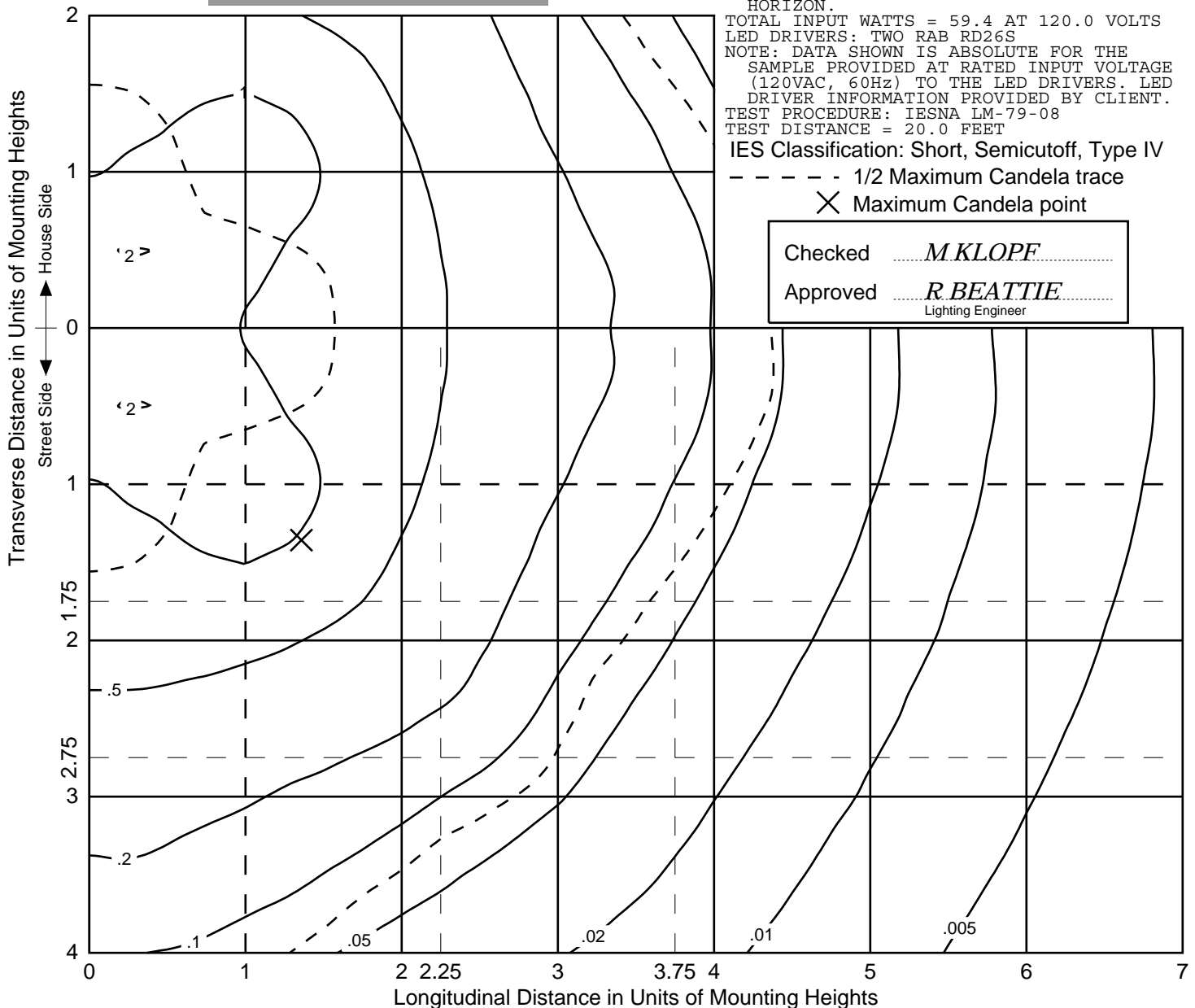
TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 20.0 FEET

IES Classification: Short, Semicutoff, Type IV

--- 1/2 Maximum Candela trace

X Maximum Candela point



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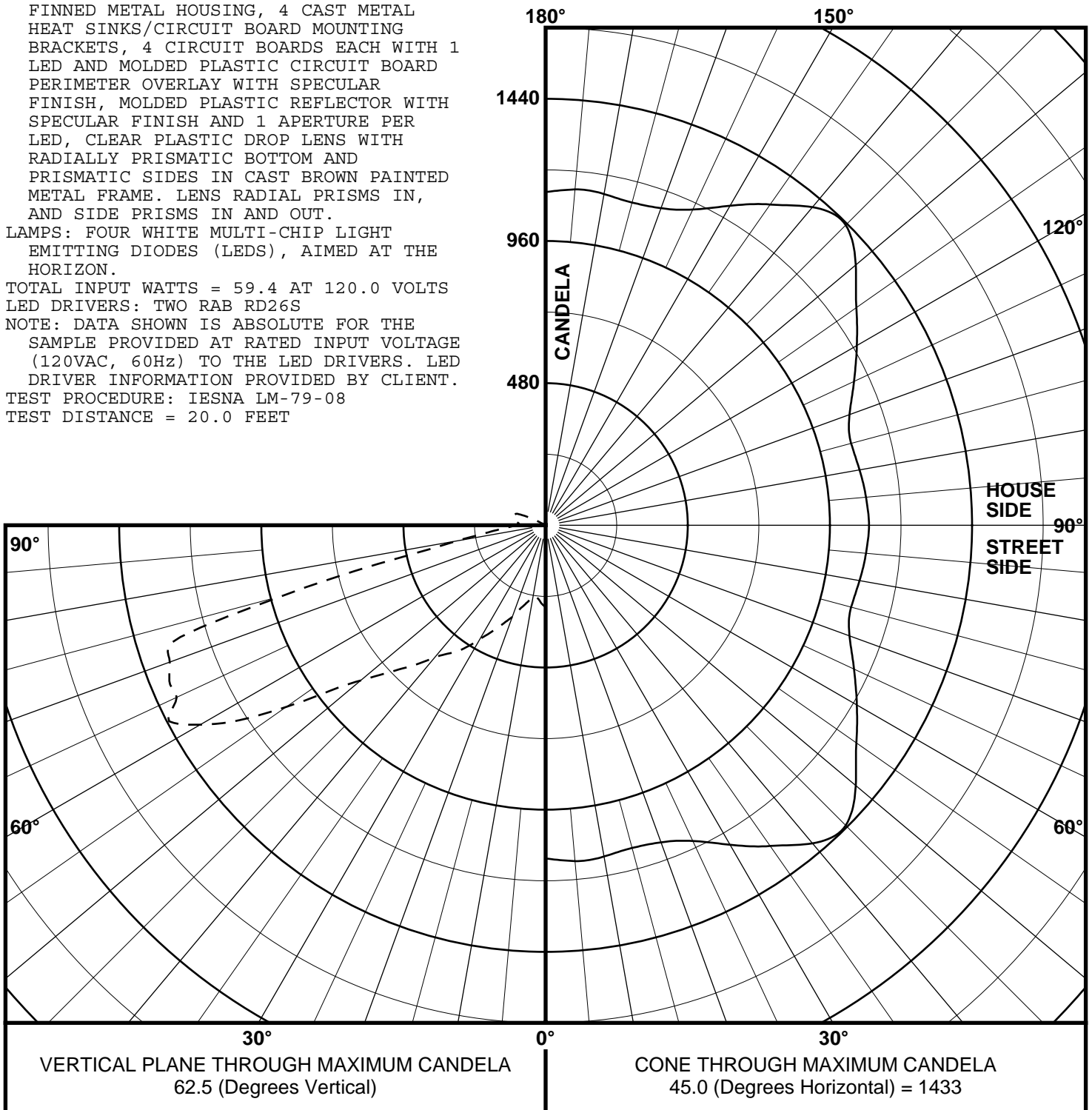
TOTAL INPUT WATTS = 59.4 AT 120.0 VOLTS
LED DRIVERS: TWO RAB RD26S

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

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 20.0 FEET

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

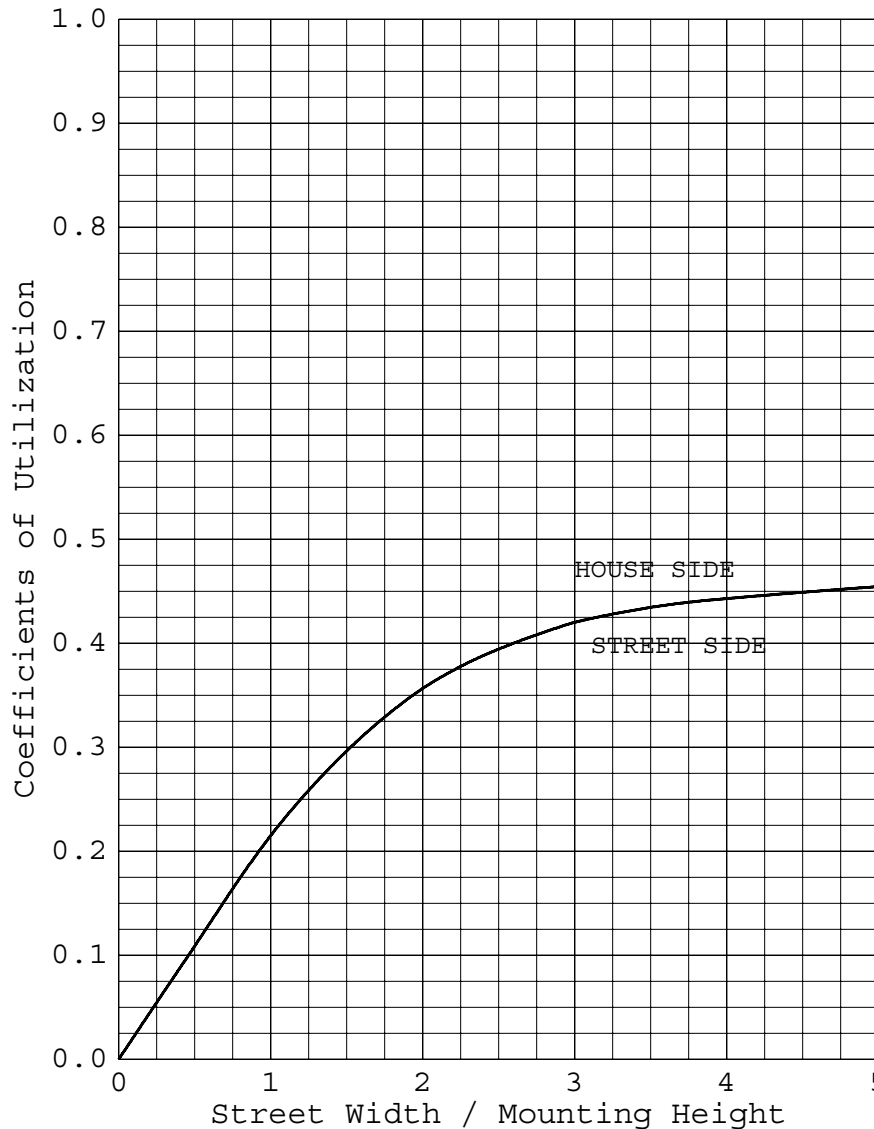




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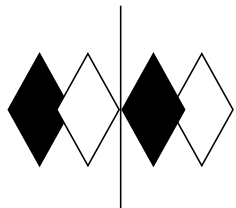
COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	1993	47.0
DOWNWARD HOUSE SIDE	1993	47.0
DOWNWARD TOTAL	3986	94.0
UPWARD STREET SIDE	128	3.0
UPWARD HOUSE SIDE	128	3.0
UPWARD TOTAL	256	6.0
TOTAL FLUX	4242	100.0

EFFICACY = 71.4 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	1993.	47.0	
FL (0- 30)	139.5	3.3	
FM (30- 60)	719.1	17.0	
FH (60- 80)	1043.2	24.6	G1
FVH(80- 90)	91.3	2.2	G1
BACK LIGHT	1993.	47.0	
BL (0- 30)	139.5	3.3	B1
BM (30- 60)	719.1	17.0	B1
BH (60- 80)	1043.2	24.6	B3 G1
BVH(80- 90)	91.3	2.2	G1
UPLIGHT	256.	6.0	
UL (90-100)	99.3	2.3	U3
UH (100-180)	156.9	3.7	U3
TRAPPED LIGHT	0.	0.0	
TOTAL FLUX	4242.	100.0	

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

BUG RATING: B3 U3 G1



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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	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	155.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	145.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	135.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	125.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	115.0	57.	56.	58.	60.	63.	63.	63.	59.	56.	55.	57.
	105.0	93.	92.	92.	95.	101.	109.	101.	95.	92.	92.	93.
	95.0	83.	84.	85.	90.	92.	94.	91.	89.	84.	82.	81.
	92.5	82.	83.	84.	87.	88.	90.	87.	86.	82.	80.	80.
	90.0	92.	94.	95.	99.	99.	99.	97.	96.	92.	89.	88.
	87.5	119.	120.	120.	122.	120.	120.	118.	119.	115.	114.	113.
	85.0	157.	157.	153.	153.	153.	156.	149.	148.	148.	150.	149.
V	82.5	212.	210.	204.	201.	203.	206.	196.	194.	197.	203.	201.
E	80.0	310.	307.	308.	300.	303.	306.	290.	289.	297.	307.	297.
R	77.5	658.	634.	581.	495.	482.	501.	466.	482.	547.	643.	625.
T	75.0	1297.	1326.	1050.	887.	837.	921.	812.	861.	1005.	1225.	1184.
I	72.5	1220.	1258.	1140.	1077.	1172.	1329.	1130.	1045.	1105.	1259.	1222.
C	70.0	1192.	1200.	1094.	1094.	1232.	1351.	1205.	1074.	1071.	1166.	1159.
A	67.5	1120.	1132.	1163.	1218.	1306.	1375.	1279.	1194.	1122.	1114.	1106.
L	65.0	1174.	1188.	1235.	1226.	1345.	1375.	1317.	1194.	1176.	1142.	1123.
	63.0	1145.	1159.	1159.	1194.	1322.	1430.	1286.	1166.	1096.	1106.	1104.
A	62.5<<	1125.	1138.	1128.	1176.	1322.	1433.	1281.	1149.	1068.	1086.	1092.
N	60.0	948.	933.	932.	1049.	1283.	1346.	1249.	1020.	881.	895.	914.
G	57.5	710.	706.	763.	872.	1129.	1225.	1111.	855.	718.	683.	691.
L	55.0	564.	570.	672.	779.	930.	1069.	918.	761.	637.	560.	561.
E	52.5	468.	479.	591.	698.	830.	919.	804.	669.	563.	468.	461.
	50.0	393.	411.	535.	638.	756.	815.	729.	612.	511.	403.	388.
	47.5	367.	383.	506.	601.	703.	743.	681.	578.	484.	378.	364.
	45.0	375.	385.	486.	577.	666.	684.	646.	553.	467.	381.	373.
	42.5	389.	394.	475.	561.	635.	633.	617.	539.	459.	392.	386.
	40.0	406.	410.	471.	543.	601.	583.	590.	522.	458.	409.	404.
	37.5	439.	442.	466.	521.	564.	547.	554.	502.	457.	437.	432.
	35.0	454.	458.	462.	498.	524.	520.	515.	482.	453.	452.	449.
	30.0	435.	433.	426.	447.	455.	444.	448.	432.	418.	423.	425.
	25.0	368.	369.	374.	386.	386.	381.	380.	378.	366.	359.	358.
	20.0	306.	308.	320.	329.	326.	329.	324.	321.	316.	303.	301.
	15.0	267.	269.	274.	278.	275.	279.	274.	273.	269.	267.	267.
	10.0	243.	243.	242.	244.	246.	246.	246.	243.	240.	241.	241.
	5.0	255.	255.	253.	253.	252.	253.	253.	253.	255.	257.	258.
	0.0	277.	277.	277.	277.	277.	277.	277.	277.	277.	277.	277.
		PLANE OF MAXIMUM CANDELA										
		CONE OF MAXIMUM CANDELA										



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5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	6
5- 10	18
10- 15	31
15- 20	49
20- 25	73
25- 30	103
30- 35	136
35- 40	166
40- 45	194
45- 50	228
50- 55	294
55- 60	419
60- 65	573
65- 70	611
70- 75	586
75- 80	316
80- 85	116
85- 90	66
90- 95	48
95-100	51
100-105	52
105-110	50
110-115	41
115-120	13
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	24
0- 20	103
0- 30	279
0- 40	582
0- 50	1004
0- 60	1717
0- 70	2902
0- 80	3804
0- 90	3986
0-100	4086
0-110	4188
0-120	4242
0-130	4242
0-140	4242
0-150	4242
0-160	4242
0-170	4242
0-180	4242



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ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

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REPORT NUMBER: ITL79961
DATE: 11/27/13
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: GLED52N OR GPLED52N (W/ PRISMATIC LENS - CEILING OR PENDENT MOUNT)

ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

LUMINAIRE: CAST 2-PIECE BROWN PAINTED FINNED METAL HOUSING, 4 CAST METAL HEAT SINKS/CIRCUIT BOARD MOUNTING BRACKETS, 4 CIRCUIT BOARDS EACH WITH 1 LED AND MOLDED PLASTIC CIRCUIT BOARD PERIMETER OVERLAY WITH SPECULAR FINISH, MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH AND 1 APERTURE PER LED, CLEAR PLASTIC DROP LENS WITH RADIALY PRISMATIC BOTTOM AND PRISMATIC SIDES IN CAST BROWN PAINTED METAL FRAME. LENS RADIAL PRISMS IN, AND SIDE PRISMS IN AND OUT.

LAMP: FOUR WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDs), AIMED AT THE HORIZON.

DRIVERS: TWO RAB RD26S

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (120.0 AND 277.0 VAC, 60Hz) TO THE LED DRIVERS. LED DRIVER INFORMATION PROVIDED BY CLIENT.

INSTRUMENTS:	Associated Power Technologies APT5040 AC Power Source	Calibration Due: N/A
	Yokogawa WT210 Digital Power Meter #9	02/28/14
	Ocean Optics QE65000 Spectroradiometer	10/16/14
	ITL 2.0m Diameter Integrating Sphere S20-2, 4PI Geometry	10/16/14

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 ANSI C82.77-2002 Power Factor (PF) and Total Harmonic Distortion (THD) to the test sample. Report Off-State Power. Measure electrical data including Total Harmonic Distortion (THD) at maximum rated voltage.

PROCEDURE: The test sample was provided by the customer and had an unknown number of operating 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 120.0 VAC input. Electrical data was also recorded at maximum nominal rated input voltage (277.0 VAC). All testing performed 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)

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Checked	<u>P O'CONNOR</u>
Approved	<u>L GRABA</u> Lighting Engineer



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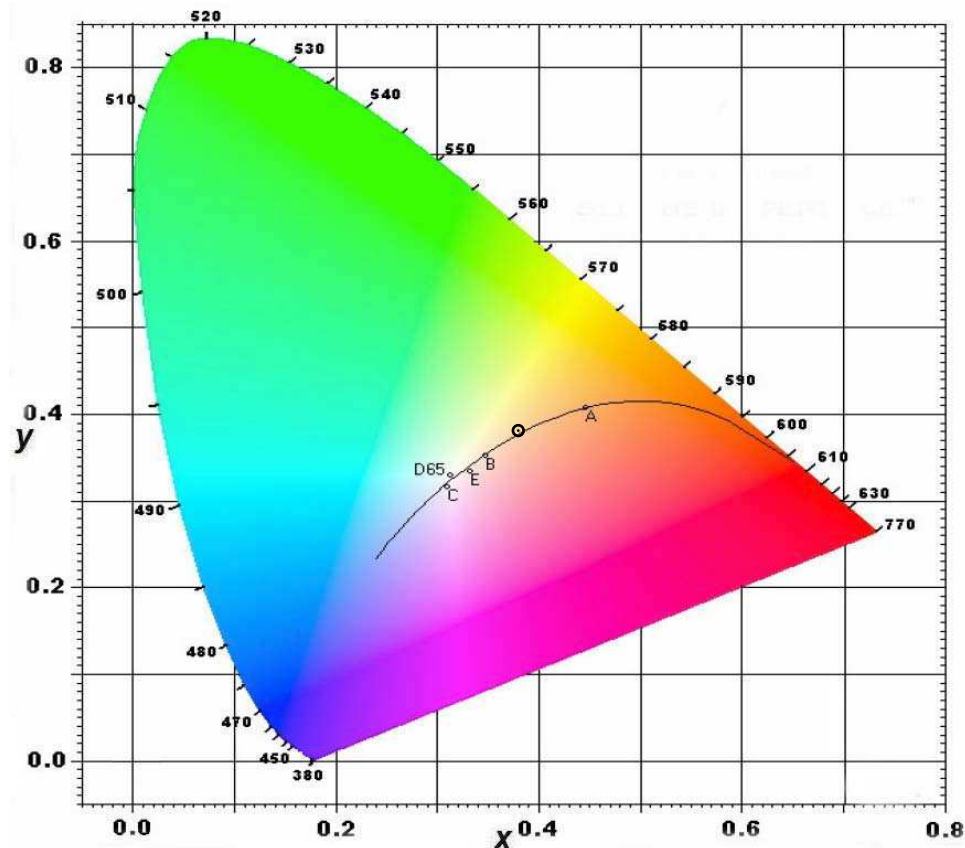
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CIE Chromaticity Diagram





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RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3795
Chromaticity Ordinate y	0.3808
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2228
Chromaticity Ordinate v'	0.5032
Correlated Color Temp CCT (K)	4056
ANSI C78.377-2008 Duv	0.002
Total Radiant Flux (milliWatts)	12913 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.498
Input Power (Watts)	59.4
Input Power Factor (%)	99.4
Input Current THD (%)	7.5
Input Voltage THD (%)	0.1
Off-State Power (Watts)	
	0.0
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.236
Input Power (Watts)	59.3
Input Power Factor (%)	90.7
Input Current THD (%)	9.9
Input Voltage THD (%)	0.1

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	83
R1 Light greyish red	82
R2 Dark greyish yellow	86
R3 Strong yellowish green	90
R4 Moderate yellowish green	85
R5 Light bluish green	83
R6 Light blue	83
R7 Light violet	87
R8 Light reddish purple	68
R9 Strong red	14
R10 Strong yellow	68
R11 Strong green	86
R12 Strong blue	63
R13 Light yellowish pink (skin)	83
R14 Moderate olive green (leaf)	94

*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	0.301	515	51.478	650	38.566
385	0.309	520	54.724	655	34.630
390	0.349	525	56.824	660	30.801
395	0.417	530	57.989	665	27.221
400	0.563	535	58.431	670	23.924
405	0.871	540	58.607	675	20.923
410	1.516	545	58.731	680	18.225
415	2.862	550	59.048	685	15.802
420	5.693	555	59.742	690	13.674
425	11.221	560	60.763	695	11.778
430	20.656	565	62.156	700	10.128
435	35.221	570	63.897	705	8.691
440	57.535	575	65.712	710	7.459
445	78.162	580	67.636	715	6.406
450	72.715	585	69.362	720	5.497
455	50.011	590	70.779	725	4.700
460	34.289	595	71.601	730	4.020
465	24.747	600	71.775	735	3.433
470	18.025	605	71.059	740	2.938
475	14.916	610	69.465	745	2.527
480	14.921	615	66.897	750	2.182
485	17.170	620	63.543	755	1.870
490	21.542	625	59.689	760	1.612
495	27.634	630	55.401	765	1.392
500	34.522	635	51.144	770	1.202
505	41.128	640	46.898	775	1.038
510	46.943	645	42.707	780	0.898

