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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.

4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 12 foot mounting height.



REPORT NUMBER: ITL79957

ISSUE DATE: 11/19/13

PAGE: 1 OF 7

PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: GLED52Y OR GPLED52Y (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 = 58.3 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.

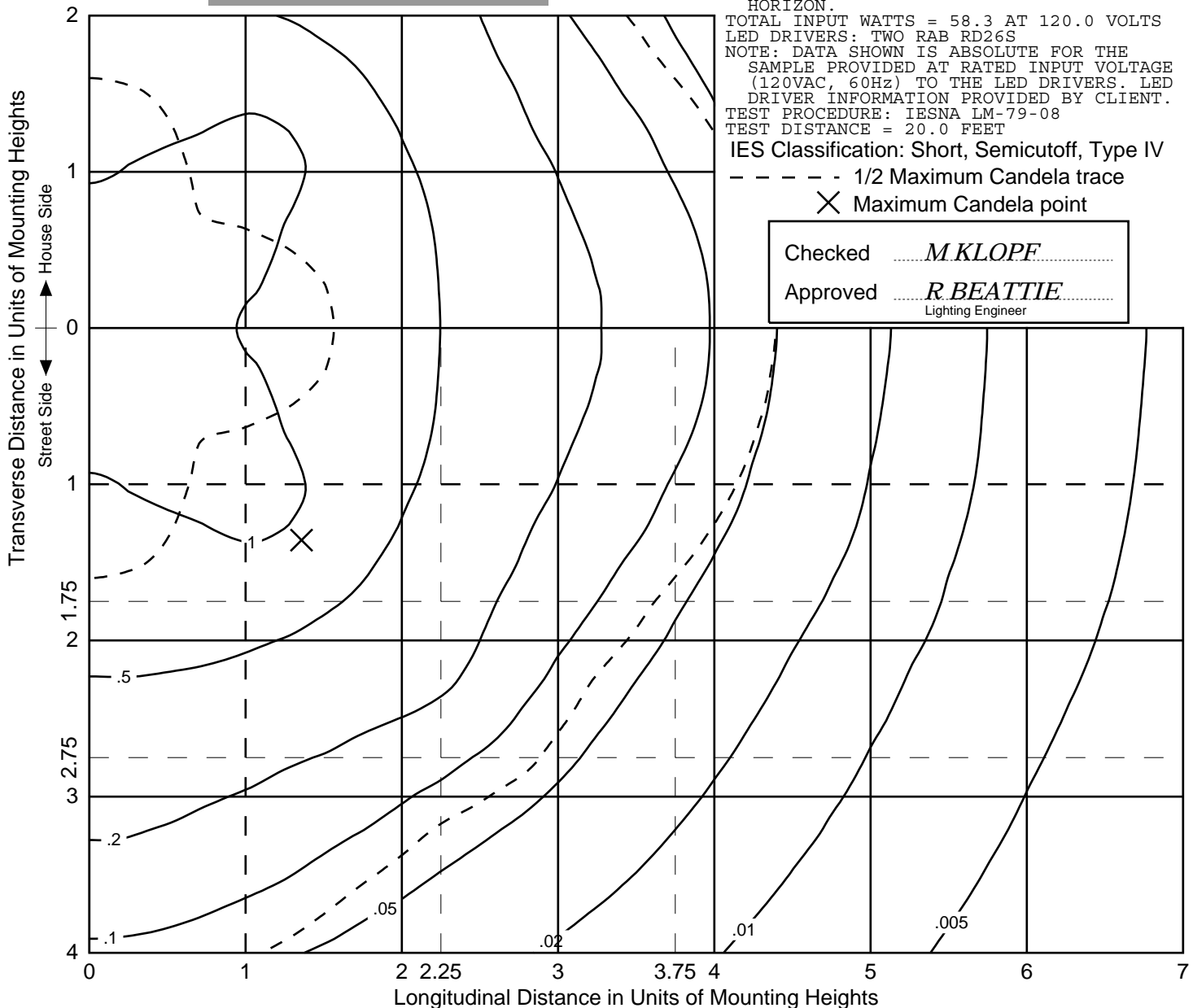
TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 20.0 FEET

IES Classification: Short, Semicutoff, Type IV

--- 1/2 Maximum Candela trace

X Maximum Candela point



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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,
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LAMPS: FOUR WHITE MULTI-CHIP LIGHT
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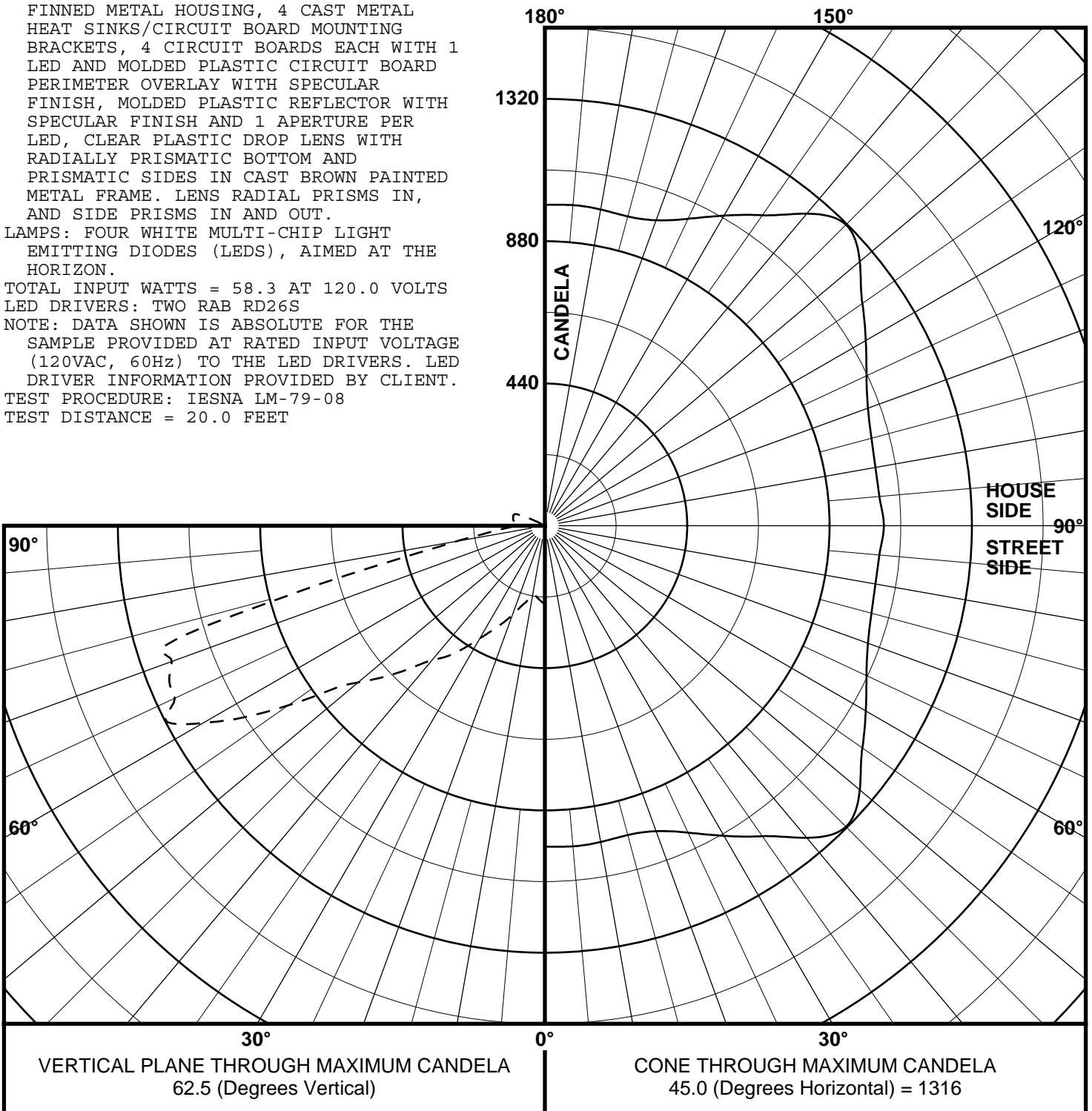
TOTAL INPUT WATTS = 58.3 AT 120.0 VOLTS
LED DRIVERS: TWO RAB RD26S

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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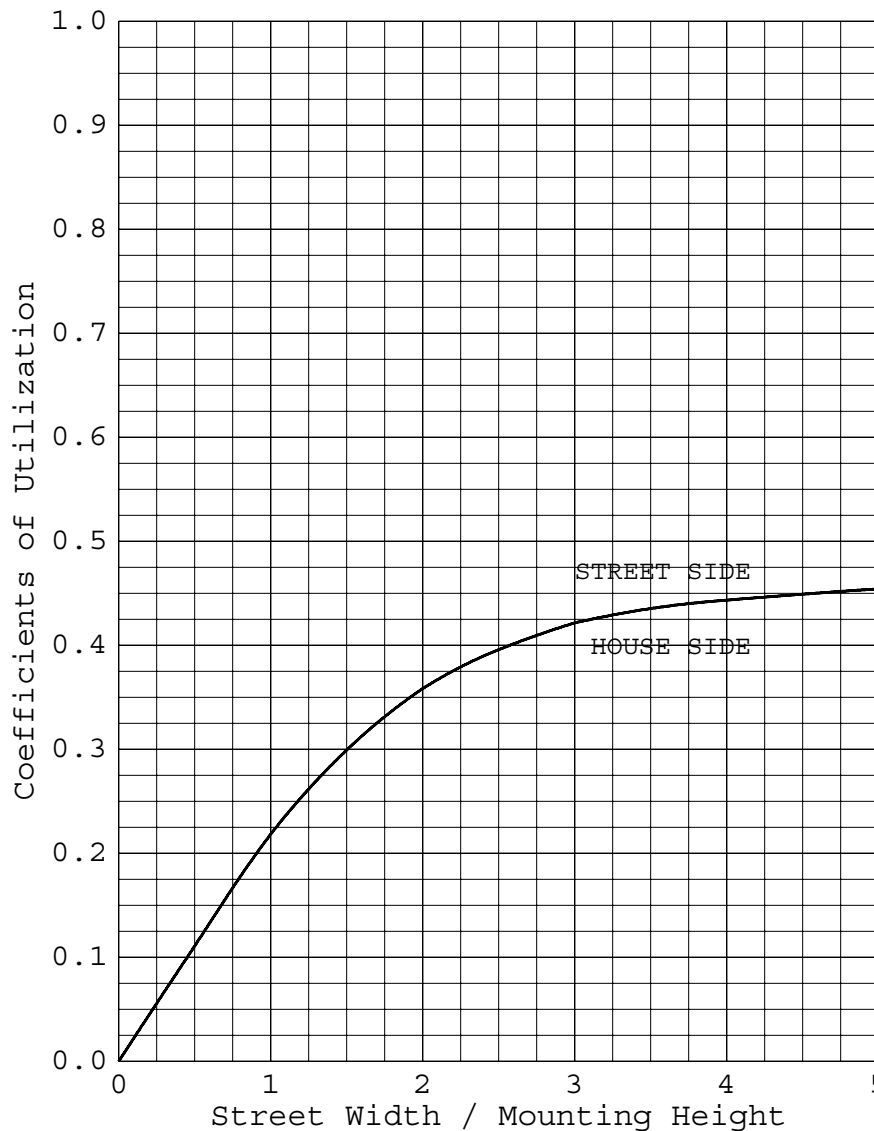
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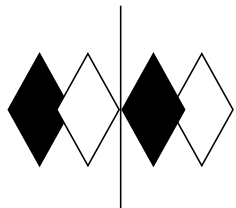
COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	1827	46.9
DOWNWARD HOUSE SIDE	1827	46.9
DOWNWARD TOTAL	3655	93.9
UPWARD STREET SIDE	119	3.1
UPWARD HOUSE SIDE	119	3.1
UPWARD TOTAL	238	6.1
TOTAL FLUX	3893	100.0

EFFICACY = 66.8 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	1827.	46.9	
FL (0- 30)	125.2	3.2	
FM (30- 60)	659.9	17.0	
FH (60- 80)	957.8	24.6	G1
FVH(80- 90)	84.4	2.2	G1
BACK LIGHT	1827.	46.9	
BL (0- 30)	125.2	3.2	B1
BM (30- 60)	659.9	17.0	B1
BH (60- 80)	957.8	24.6	B2 G1
BVH(80- 90)	84.4	2.2	G1
UPLIGHT	238.	6.1	
UL (90-100)	91.3	2.3	U3
UH (100-180)	147.0	3.8	U3
TRAPPED LIGHT	0.	0.0	
TOTAL FLUX	3893.	100.0	

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

BUG RATING: B2 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	56.	53.	54.	56.	58.	59.	58.	56.	53.	52.	55.
	105.0	87.	86.	85.	88.	93.	101.	96.	91.	88.	88.	89.
	95.0	75.	76.	77.	81.	84.	86.	85.	83.	78.	78.	77.
	92.5	74.	74.	75.	78.	80.	82.	81.	79.	76.	76.	75.
	90.0	82.	83.	84.	87.	89.	90.	90.	88.	84.	83.	83.
	87.5	105.	106.	106.	109.	109.	108.	110.	109.	108.	108.	108.
	85.0	140.	141.	139.	137.	140.	142.	141.	140.	142.	144.	143.
V	82.5	190.	189.	183.	185.	186.	188.	191.	189.	195.	194.	196.
E	80.0	274.	276.	275.	276.	274.	280.	275.	274.	287.	286.	290.
R	77.5	534.	540.	485.	439.	416.	433.	432.	441.	517.	550.	575.
T	75.0	1071.	1044.	906.	777.	725.	791.	747.	816.	970.	1193.	1197.
I	72.5	1178.	1173.	1028.	976.	1024.	1229.	1037.	995.	1058.	1145.	1145.
C	70.0	1097.	1101.	1012.	1013.	1112.	1227.	1117.	1023.	1025.	1108.	1111.
A	67.5	1050.	1058.	1074.	1144.	1204.	1257.	1196.	1154.	1073.	1044.	1054.
L	65.0	1052.	1078.	1105.	1122.	1210.	1262.	1236.	1155.	1151.	1085.	1081.
	62.5<<	992.	995.	990.	1047.	1172.	1316.	1198.	1097.	1045.	1038.	1048.
A	60.0	812.	802.	805.	910.	1138.	1220.	1149.	965.	854.	850.	858.
N	57.5	592.	604.	673.	770.	1001.	1102.	1005.	792.	711.	641.	636.
G	55.0	486.	494.	601.	693.	833.	969.	833.	715.	631.	521.	518.
L	52.5	415.	421.	535.	622.	742.	833.	744.	640.	564.	436.	426.
E	50.0	341.	360.	495.	572.	679.	754.	671.	584.	522.	372.	350.
	47.5	314.	334.	473.	545.	638.	698.	630.	554.	495.	349.	329.
	45.0	337.	346.	451.	522.	613.	643.	606.	534.	469.	358.	350.
	42.5	352.	355.	438.	505.	586.	588.	579.	517.	454.	368.	364.
	40.0	361.	369.	432.	489.	548.	542.	541.	497.	444.	383.	377.
	37.5	396.	402.	426.	461.	510.	513.	502.	470.	432.	413.	407.
	35.0	407.	409.	411.	437.	475.	479.	469.	444.	418.	424.	420.
	32.5	398.	396.	392.	418.	445.	439.	441.	424.	401.	412.	411.
	30.0	380.	377.	376.	399.	412.	403.	405.	403.	383.	388.	389.
	25.0	324.	323.	329.	343.	346.	344.	345.	338.	328.	330.	330.
	20.0	271.	273.	285.	294.	291.	294.	290.	288.	283.	276.	274.
	15.0	240.	241.	248.	249.	248.	250.	243.	241.	240.	238.	237.
	10.0	219.	219.	219.	221.	221.	220.	216.	213.	212.	212.	212.
	5.0	228.	228.	226.	225.	226.	227.	227.	226.	225.	225.	226.
	0.0	243.	243.	243.	243.	243.	243.	243.	243.	243.	243.	243.
		PLANE OF MAXIMUM CANDELA										
		CONE OF MAXIMUM CANDELA										



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5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	6
5- 10	16
10- 15	27
15- 20	44
20- 25	65
25- 30	93
30- 35	123
35- 40	153
40- 45	181
45- 50	213
50- 55	270
55- 60	380
60- 65	526
65- 70	570
70- 75	538
75- 80	282
80- 85	108
85- 90	61
90- 95	44
95-100	47
100-105	49
105-110	47
110-115	39
115-120	12
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	21
0- 20	92
0- 30	250
0- 40	526
0- 50	920
0- 60	1570
0- 70	2666
0- 80	3486
0- 90	3655
0-100	3746
0-110	3842
0-120	3893
0-130	3893
0-140	3893
0-150	3893
0-160	3893
0-170	3893
0-180	3893



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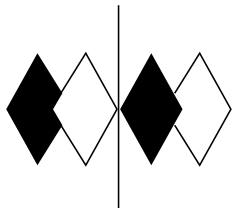
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ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

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REPORT NUMBER: ITL79960
DATE: 11/27/13
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: GLED52Y OR GPLED52Y (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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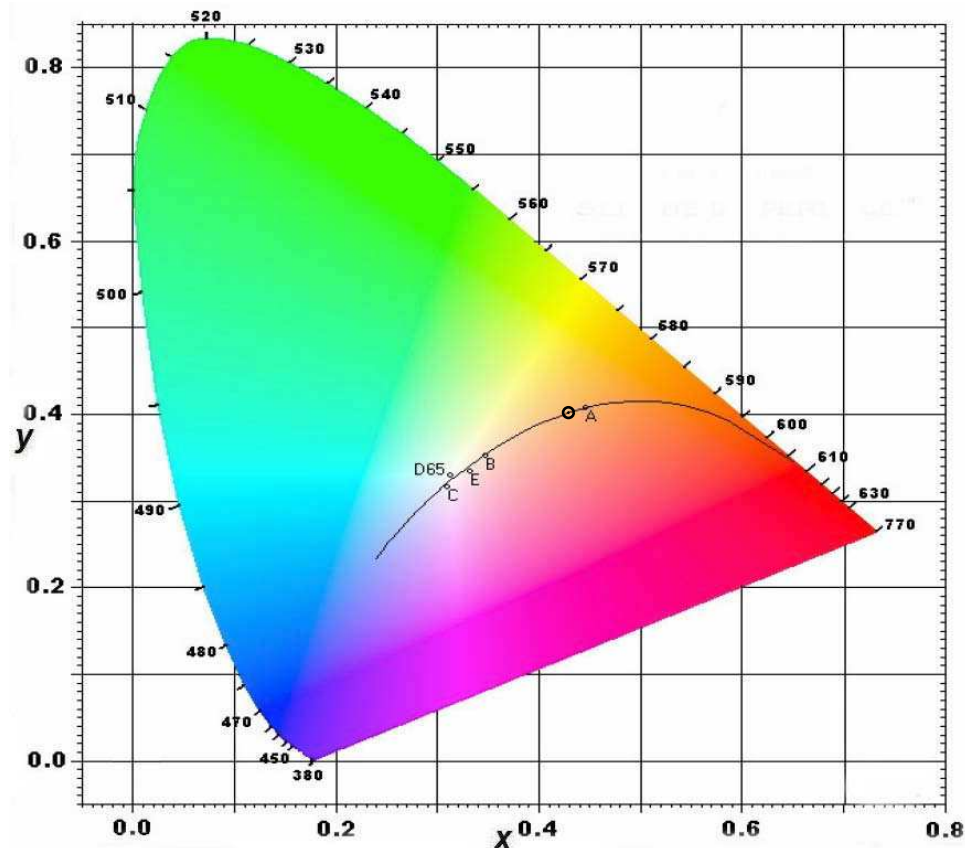
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CIE Chromaticity Diagram





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RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4289
Chromaticity Ordinate y	0.4015
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2465
Chromaticity Ordinate v'	0.5191
Correlated Color Temp CCT (K)	3118
ANSI C78.377-2008 Duv	0.000
Total Radiant Flux (milliWatts)	11764 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.489
Input Power (Watts)	58.3
Input Power Factor (%)	99.4
Input Current THD (%)	7.7
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)	0.234
Input Power (Watts)	58.2
Input Power Factor (%)	89.8
Input Current THD (%)	10.6
Input Voltage THD (%)	0.1

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	83
R1 Light greyish red	81
R2 Dark greyish yellow	89
R3 Strong yellowish green	96
R4 Moderate yellowish green	83
R5 Light bluish green	82
R6 Light blue	87
R7 Light violet	84
R8 Light reddish purple	60
R9 Strong red	7
R10 Strong yellow	76
R11 Strong green	83
R12 Strong blue	68
R13 Light yellowish pink (skin)	83
R14 Moderate olive green (leaf)	98

*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	0.222	515	37.192	650	44.269
385	0.219	520	40.117	655	39.819
390	0.231	525	42.258	660	35.484
395	0.256	530	43.831	665	31.425
400	0.313	535	44.990	670	27.631
405	0.433	540	46.099	675	24.158
410	0.701	545	47.351	680	21.056
415	1.259	550	48.966	685	18.259
420	2.415	555	51.041	690	15.813
425	4.644	560	53.594	695	13.685
430	8.634	565	56.750	700	11.703
435	14.816	570	60.338	705	10.034
440	24.206	575	64.067	710	8.613
445	37.563	580	67.857	715	7.397
450	45.914	585	71.368	720	6.335
455	39.224	590	74.429	725	5.418
460	27.795	595	76.689	730	4.626
465	20.815	600	77.996	735	3.945
470	16.179	605	78.078	740	3.376
475	13.043	610	77.035	745	2.899
480	12.224	615	74.795	750	2.495
485	13.325	620	71.518	755	2.146
490	15.859	625	67.586	760	1.841
495	19.679	630	62.978	765	1.582
500	24.379	635	58.317	770	1.366
505	29.139	640	53.619	775	1.174
510	33.535	645	48.936	780	1.016

