

itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

PHONE: (303) 442-1255

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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: ITL79969

ISSUE DATE: 11/19/13

PAGE: 1 OF 7

PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: CLED52Y OR PLED52Y (W/
CLEAR FLAT GLASS 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 FLAT GLASS LENS IN CAST
BROWN PAINTED METAL FRAME.

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.

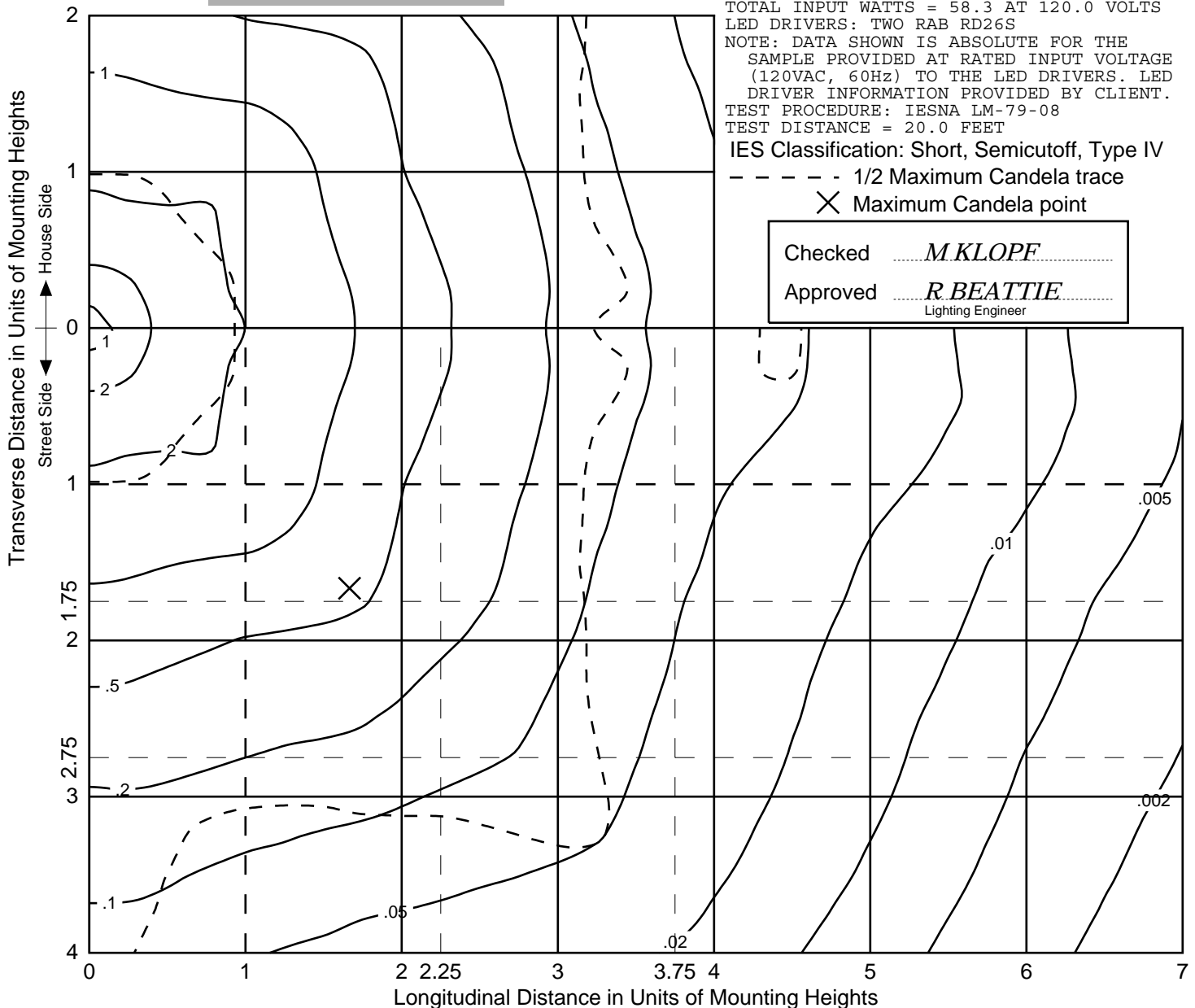
TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 20.0 FEET

IES Classification: Short, Semicutoff, Type IV

--- 1/2 Maximum Candela trace

X Maximum Candela point



Checked *M. KLOPF*

Approved *R. BEATTIE*
Lighting Engineer

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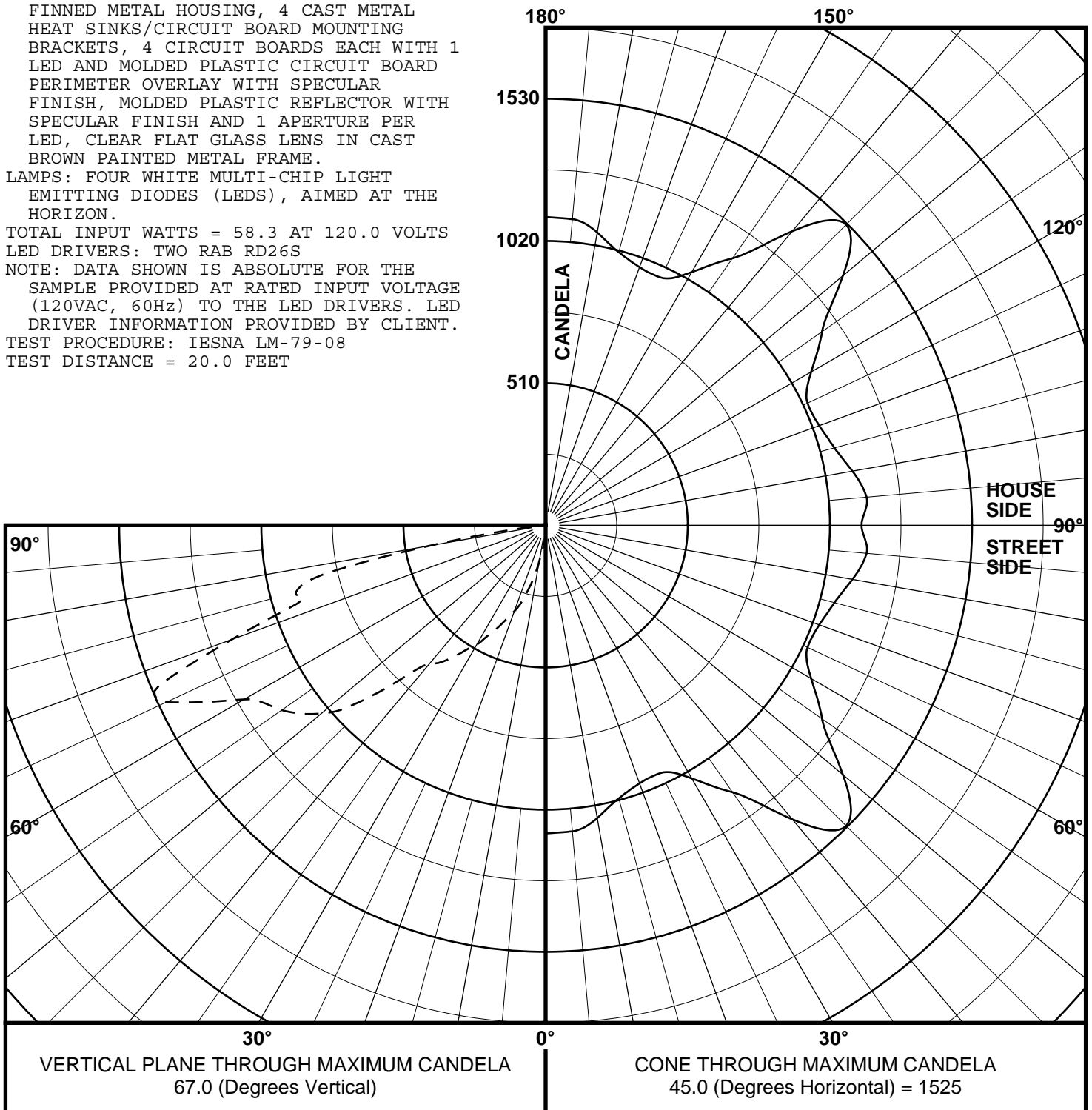
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TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 20.0 FEET

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

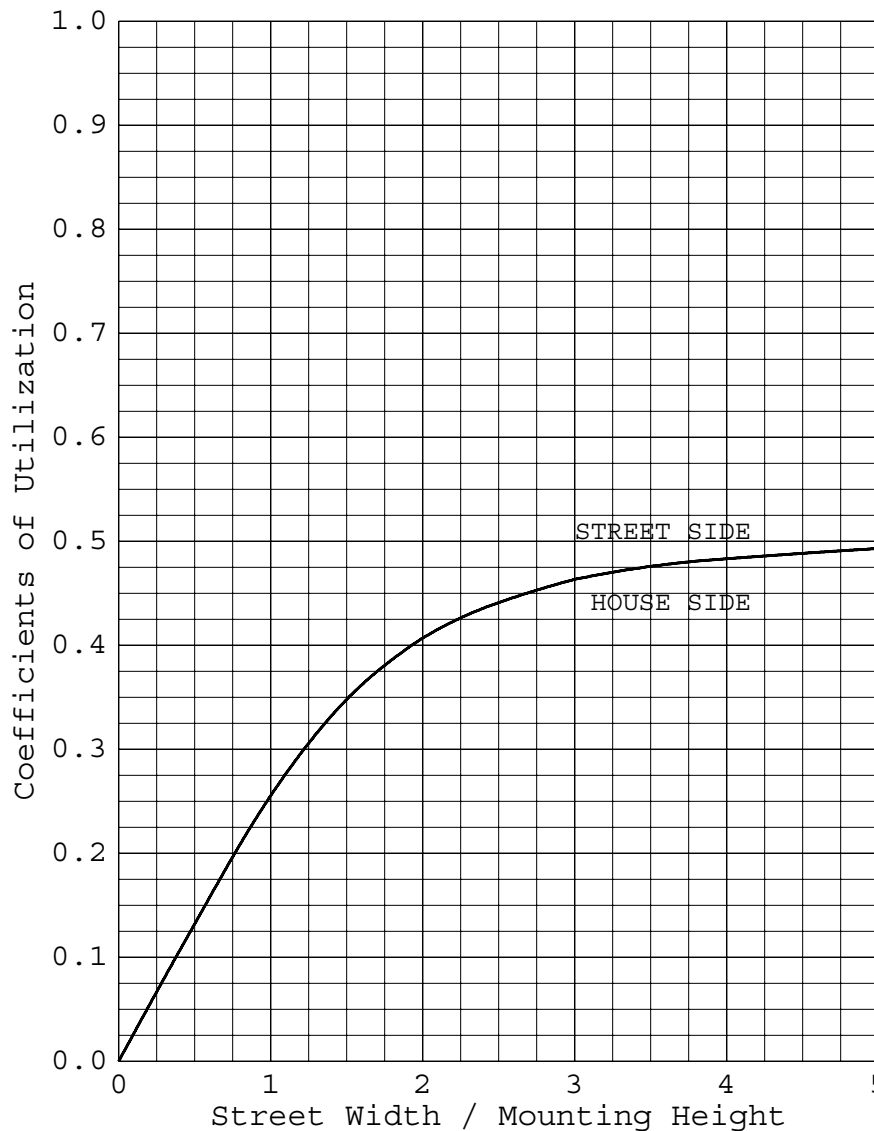




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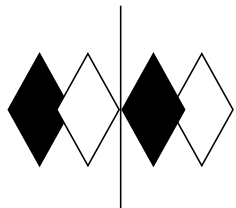
COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	2076	50.0
DOWNWARD HOUSE SIDE	2076	50.0
DOWNWARD TOTAL	4153	100.0
UPWARD STREET SIDE	0	0.0
UPWARD HOUSE SIDE	0	0.0
UPWARD TOTAL	0	0.0
TOTAL FLUX	4153	100.0

EFFICACY = 71.2 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	2076.	50.0	
FL (0- 30)	140.4	3.4	
FM (30- 60)	950.0	22.9	
FH (60- 80)	939.0	22.6	G1
FVH(80- 90)	47.0	1.1	G1
BACK LIGHT	2076.	50.0	
BL (0- 30)	140.4	3.4	B1
BM (30- 60)	950.0	22.9	B1
BH (60- 80)	939.0	22.6	B2 G1
BVH(80- 90)	47.0	1.1	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	4153.	100.0	

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

BUG RATING: B2 U0 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



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5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	1
5- 10	7
10- 15	25
15- 20	49
20- 25	79
25- 30	119
30- 35	157
35- 40	203
40- 45	267
45- 50	351
50- 55	429
55- 60	493
60- 65	551
65- 70	558
70- 75	451
75- 80	317
80- 85	91
85- 90	3

10-DEGREE
ZONAL LUMEN SUMMARY

0- 10	8
0- 20	82
0- 30	281
0- 40	641
0- 50	1259
0- 60	2181
0- 70	3291
0- 80	4059
0- 90	4153



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ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

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CATALOG NUMBER: CLED52Y OR PLED52Y (W/ CLEAR FLAT GLASS 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 FLAT GLASS LENS IN CAST BROWN PAINTED METAL FRAME.

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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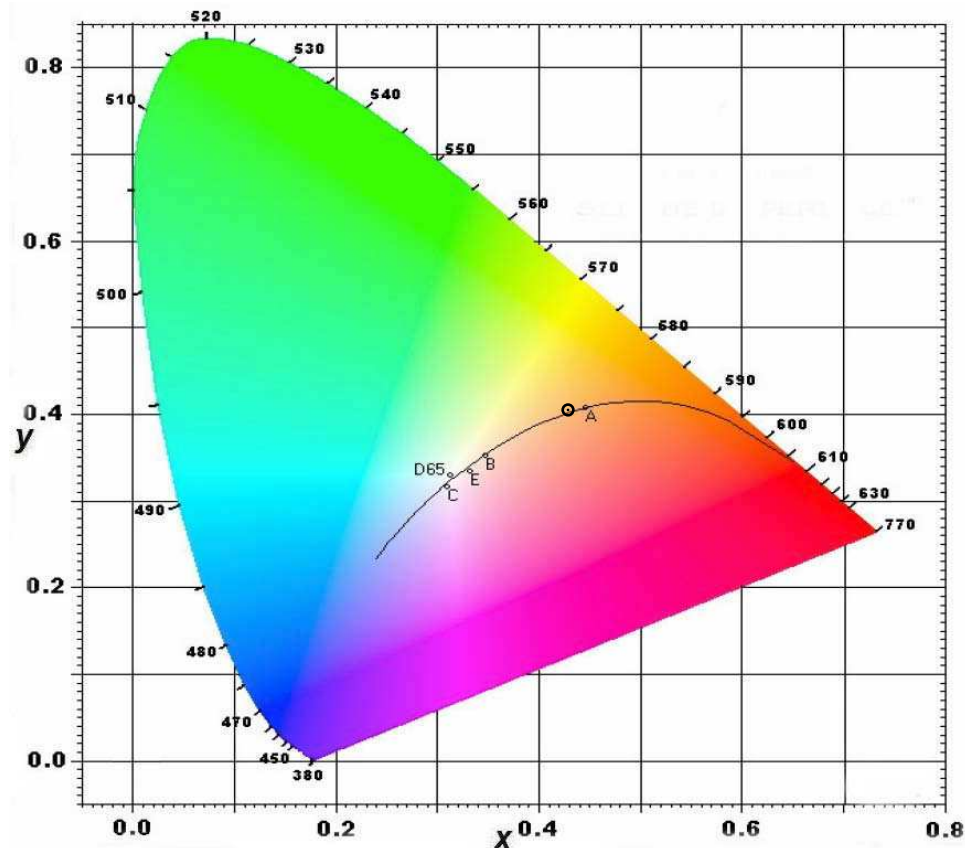
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CIE Chromaticity Diagram



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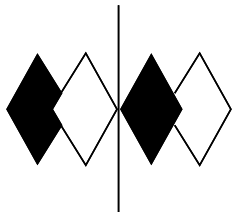
RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4285
Chromaticity Ordinate y	0.4046
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2449
Chromaticity Ordinate v'	0.5203
Correlated Color Temp CCT (K)	3152
ANSI C78.377-2008 Duv	0.001
Total Radiant Flux (milliWatts)	12274 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.489
Input Power (Watts)	58.4
Input Power Factor (%)	99.5
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 (%)	10.5
Input Voltage THD (%)	0.1

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	81
R1 Light greyish red	79
R2 Dark greyish yellow	88
R3 Strong yellowish green	96
R4 Moderate yellowish green	81
R5 Light bluish green	80
R6 Light blue	86
R7 Light violet	83
R8 Light reddish purple	58
R9 Strong red	0
R10 Strong yellow	73
R11 Strong green	81
R12 Strong blue	65
R13 Light yellowish pink (skin)	81
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	0.241	515	39.632	650	44.376
385	0.231	520	42.834	655	39.444
390	0.236	525	45.200	660	34.826
395	0.262	530	46.994	665	30.567
400	0.325	535	48.343	670	26.675
405	0.460	540	49.625	675	23.177
410	0.743	545	51.022	680	20.067
415	1.313	550	52.765	685	17.318
420	2.499	555	54.963	690	14.905
425	4.818	560	57.737	695	12.848
430	8.941	565	61.188	700	10.935
435	15.324	570	65.069	705	9.338
440	25.070	575	69.139	710	7.965
445	39.033	580	73.190	715	6.796
450	47.792	585	76.905	720	5.791
455	40.821	590	79.900	725	4.922
460	28.887	595	81.895	730	4.186
465	21.666	600	82.775	735	3.559
470	16.834	605	82.381	740	3.029
475	13.566	610	80.844	745	2.586
480	12.726	615	78.212	750	2.214
485	13.904	620	74.597	755	1.884
490	16.596	625	70.329	760	1.611
495	20.702	630	65.358	765	1.382
500	25.715	635	60.162	770	1.186
505	30.891	640	54.880	775	1.017
510	35.645	645	49.574	780	0.875

