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THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

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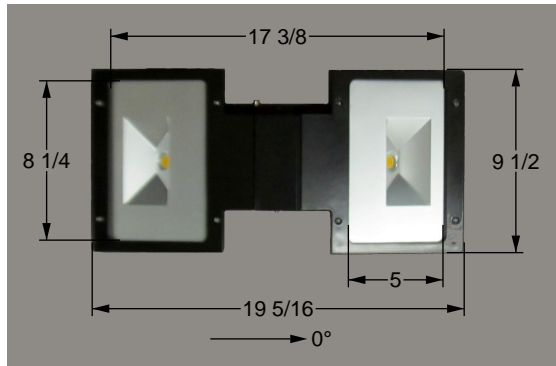
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INDEPENDENT TESTING LABORATORIES, INC.

4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 20 foot mounting height.



REPORT NUMBER: ITL81188

ISSUE DATE: 04/11/14

PAGE: 1 OF 7

PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: CLED2X26 - PLED2X26 -
PLED2X26/UP (SURFACE, PENDENT,
PENDENT INDIRECT)

LUMINAIRE: ONE LUMINAIRE CONSISTING OF
TWO OPPOSING LIGHT HEADS, EACH LIGHT
HEAD CONSISTING OF: CAST FINNED METAL
HOUSING, MACHINED METAL HEAT SINK, 1
CIRCUIT BOARD WITH 1 LED, MOLDED
PLASTIC REFLECTOR WITH SEMI-SPECULAR
FINISH, CLEAR FLAT GLASS LENS IN CAST
BROWN PAINTED METAL FRAME.

TOTAL INPUT WATTS = 58.7 AT 120.0 VOLTS
LAMPS: TWO WHITE MULTI-CHIP LIGHT

EMITTING DIODES (LED'S), TILTED 35-
DEGREES FROM VERTICAL BASE-UP
POSITION.

LED DRIVERS: TWO RAB RD26S

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

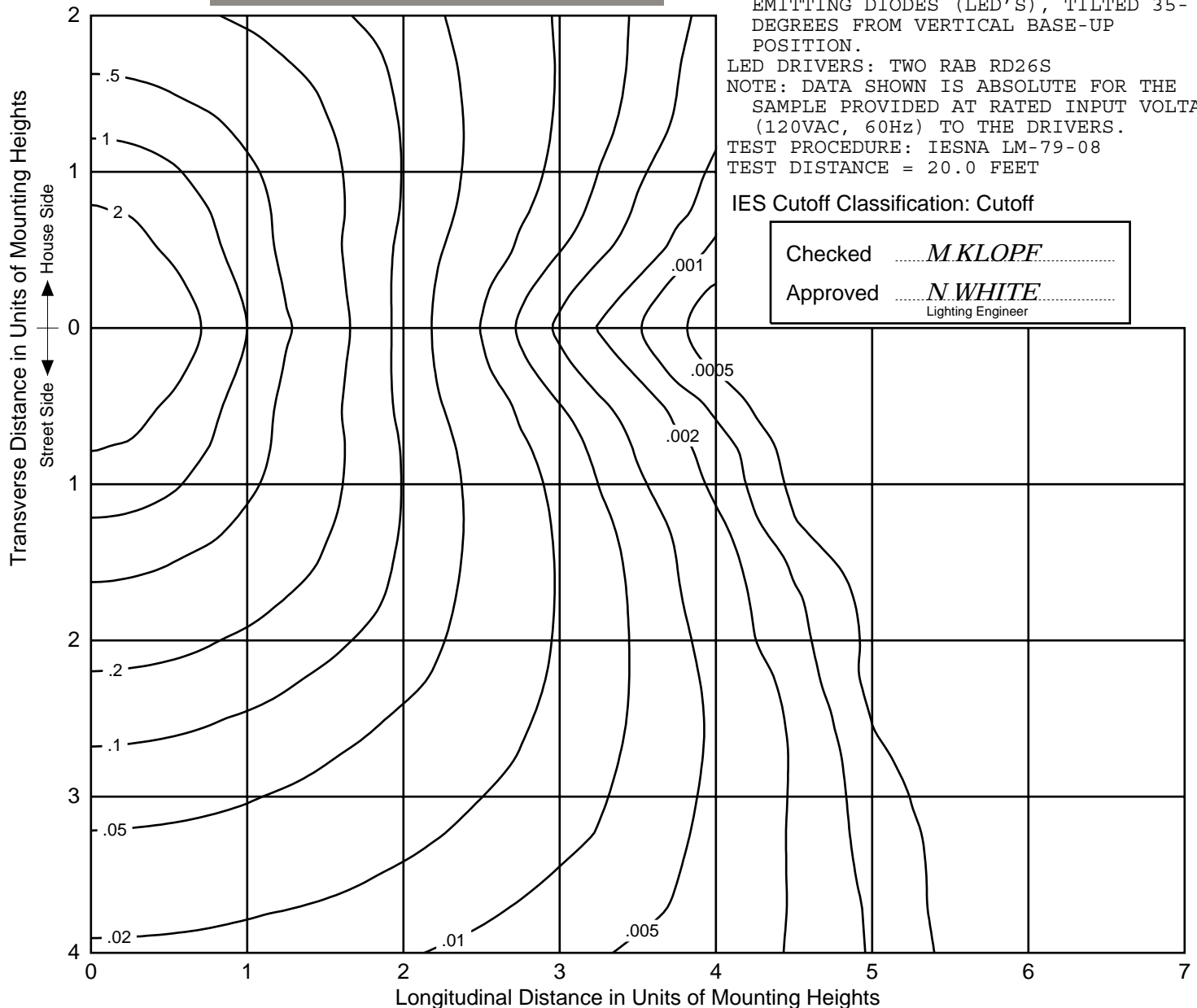
TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 20.0 FEET

IES Cutoff Classification: Cutoff

Checked M.KLOPF

Approved N.WHITE
Lighting Engineer



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PENDENT INDIRECT)

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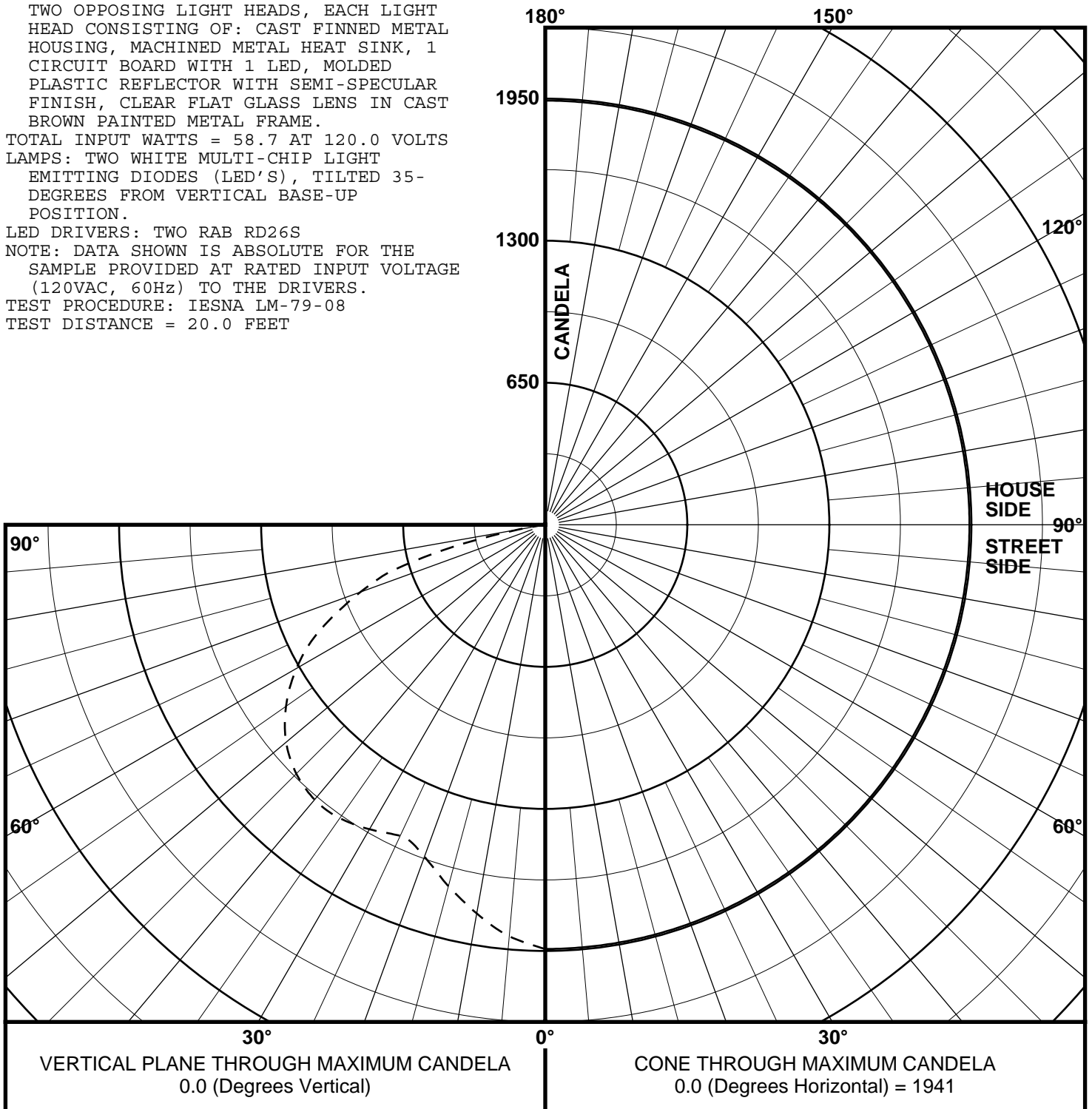
LED DRIVERS: TWO RAB RD26S

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

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 20.0 FEET

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

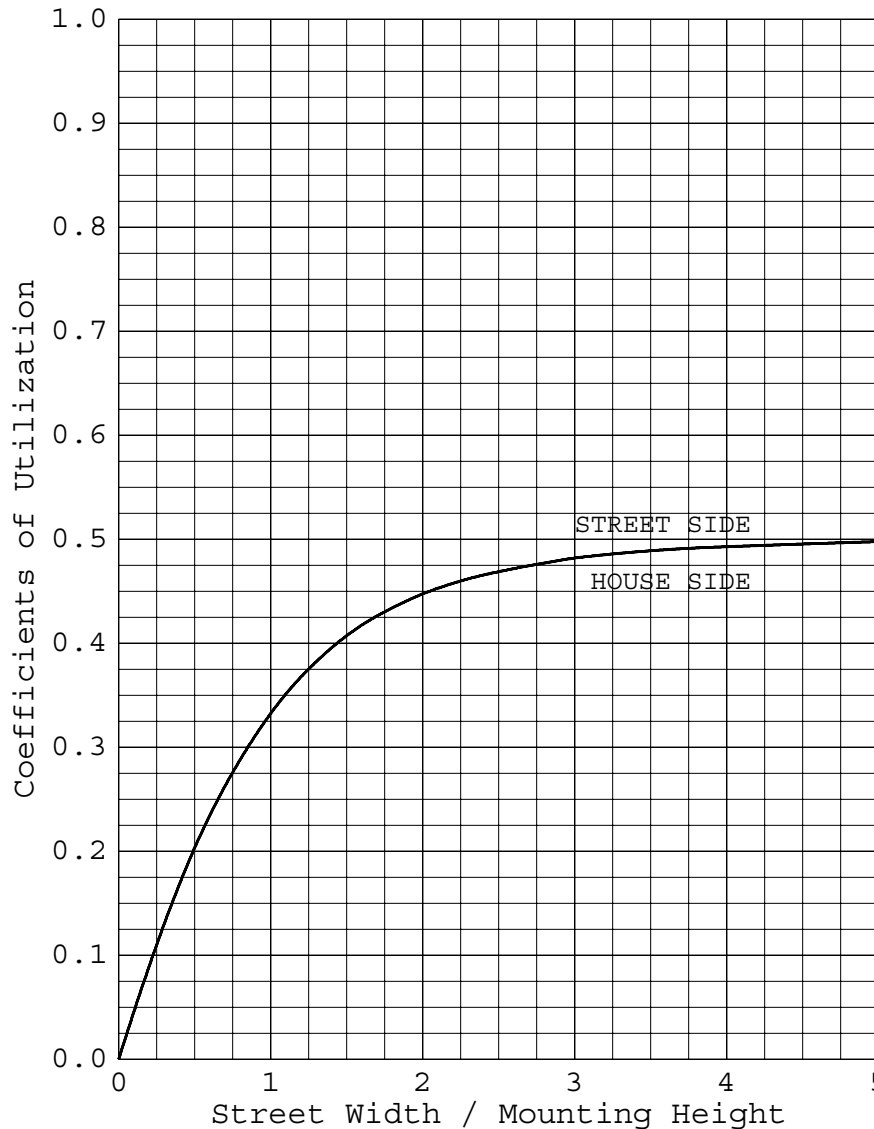




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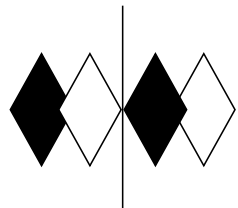
COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	2759	50.0
DOWNWARD HOUSE SIDE	2759	50.0
DOWNWARD TOTAL	5519	100.0
UPWARD STREET SIDE	0	0.0
UPWARD HOUSE SIDE	0	0.0
UPWARD TOTAL	0	0.0
TOTAL FLUX	5519	100.0

EFFICACY = 94.0 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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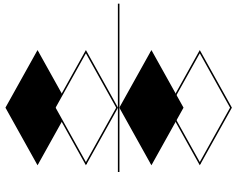
FLUX DISTRIBUTION BY SOLID ANGLE

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

	LUMENS	PERCENT OF FIXTURE	BUG ZONE RATINGS
FORWARD LIGHT	2759.	50.0	
FL (0- 30)	702.5	12.7	
FM (30- 60)	1439.5	26.1	
FH (60- 80)	604.9	11.0	G0
FVH(80- 90)	12.5	0.2	G1
BACK LIGHT	2759.	50.0	
BL (0- 30)	702.5	12.7	B2
BM (30- 60)	1439.5	26.1	B2
BH (60- 80)	604.9	11.0	B2 G2
BVH(80- 90)	12.5	0.2	G1
UPLIGHT	0.	0.0	
UL (90-100)	0.0	0.0	U1
UH (100-180)	0.0	0.0	U0
TRAPPED LIGHT	0.	0.0	
TOTAL FLUX	5519.	100.0	

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

BUG RATING: B2 U1 G2



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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	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	105.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	95.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	92.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	90.0	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.
	87.5	5.	5.	4.	4.	3.	3.	2.	1.	0.	0.	0.
	85.0	12.	12.	11.	10.	9.	8.	4.	2.	1.	0.	0.
V	82.5	30.	30.	29.	30.	45.	73.	13.	5.	3.	2.	1.
E	80.0	121.	124.	138.	178.	217.	249.	102.	16.	6.	3.	3.
R	77.5	340.	343.	356.	396.	426.	418.	279.	103.	22.	7.	6.
T	75.0	577.	577.	588.	612.	596.	527.	392.	244.	93.	18.	13.
I	72.5	781.	775.	769.	748.	706.	673.	475.	331.	188.	60.	32.
C	70.0	900.	891.	878.	860.	833.	811.	577.	403.	256.	116.	87.
A	67.5	1018.	1008.	998.	980.	952.	896.	683.	486.	322.	189.	174.
L	65.0	1134.	1124.	1113.	1087.	1042.	962.	764.	570.	393.	286.	278.
	62.5	1234.	1224.	1209.	1171.	1115.	1022.	825.	636.	462.	390.	390.
A	60.0	1314.	1305.	1286.	1245.	1182.	1075.	880.	690.	524.	498.	504.
N	57.5	1386.	1376.	1354.	1311.	1239.	1122.	929.	737.	591.	606.	616.
G	55.0	1448.	1439.	1416.	1372.	1289.	1163.	974.	785.	670.	712.	735.
L	52.5	1502.	1494.	1470.	1425.	1331.	1197.	1014.	832.	754.	812.	838.
E	50.0	1548.	1539.	1516.	1470.	1365.	1227.	1052.	880.	845.	916.	937.
	47.5	1583.	1575.	1554.	1504.	1393.	1252.	1087.	936.	937.	1011.	1032.
	45.0	1611.	1604.	1582.	1528.	1415.	1273.	1120.	1002.	1029.	1105.	1125.
	42.5	1630.	1623.	1601.	1542.	1429.	1292.	1151.	1075.	1118.	1195.	1214.
	40.0	1642.	1635.	1610.	1547.	1439.	1311.	1183.	1153.	1207.	1282.	1299.
	37.5	1645.	1637.	1610.	1545.	1445.	1331.	1230.	1232.	1295.	1365.	1380.
	35.0	1639.	1631.	1603.	1539.	1450.	1346.	1291.	1313.	1374.	1442.	1456.
	32.5	1626.	1618.	1590.	1532.	1452.	1372.	1357.	1390.	1450.	1514.	1527.
	30.0	1609.	1602.	1577.	1522.	1455.	1417.	1428.	1462.	1520.	1580.	1591.
	25.0	1570.	1564.	1549.	1528.	1518.	1529.	1560.	1596.	1645.	1690.	1700.
	20.0	1616.	1611.	1613.	1611.	1622.	1641.	1677.	1708.	1749.	1783.	1787.
	15.0	1712.	1708.	1710.	1711.	1721.	1741.	1775.	1801.	1828.	1852.	1855.
	10.0	1806.	1803.	1804.	1803.	1810.	1826.	1856.	1870.	1884.	1900.	1903.
	5.0	1890.	1887.	1885.	1880.	1881.	1889.	1909.	1914.	1920.	1930.	1932.
	0.0<<	1941.	1941.	1941.	1941.	1941.	1941.	1941.	1941.	1941.	1941.	1941.

||
PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA



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5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	46
5- 10	134
10- 15	213
15- 20	282
20- 25	340
25- 30	390
30- 35	434
35- 40	470
40- 45	495
45- 50	505
50- 55	499
55- 60	476
60- 65	434
65- 70	365
70- 75	271
75- 80	139
80- 85	23
85- 90	2
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	179
0- 20	675
0- 30	1405
0- 40	2310
0- 50	3309
0- 60	4284
0- 70	5083
0- 80	5494
0- 90	5519
0-100	5519
0-110	5519
0-120	5519
0-130	5519
0-140	5519
0-150	5519
0-160	5519
0-170	5519
0-180	5519



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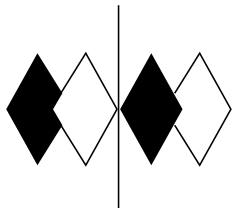
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ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

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DATE: 04/15/14
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: CLED2X26 - PLED2X26 - PLED2X26/UP (SURFACE, PENDENT, PENDENT INDIRECT)

ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

LUMINAIRE: ONE LUMINAIRE CONSISTING OF TWO OPPOSING LIGHT HEADS, EACH LIGHT HEAD CONSISTING OF: CAST FINNED METAL HOUSING, MACHINED METAL HEAT SINK, 1 CIRCUIT BOARD WITH 1 LED, MOLDED PLASTIC REFLECTOR WITH SEMI-SPECULAR FINISH, CLEAR FLAT GLASS LENS IN CAST BROWN PAINTED METAL FRAME.

LAMP: TWO WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDs), TILTED 35-DEGREES FROM VERTICAL BASE-UP POSITION.

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 DRIVERS.

INSTRUMENTS:	Associated Power Technologies APT5040 AC Power Source	Calibration Due: N/A
	Yokogawa WT210 Digital Power Meter #8	12/31/14
	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	<i>N THOMAS</i>
Approved	<i>P O'CONNOR</i> Sphere Lab Supervisor



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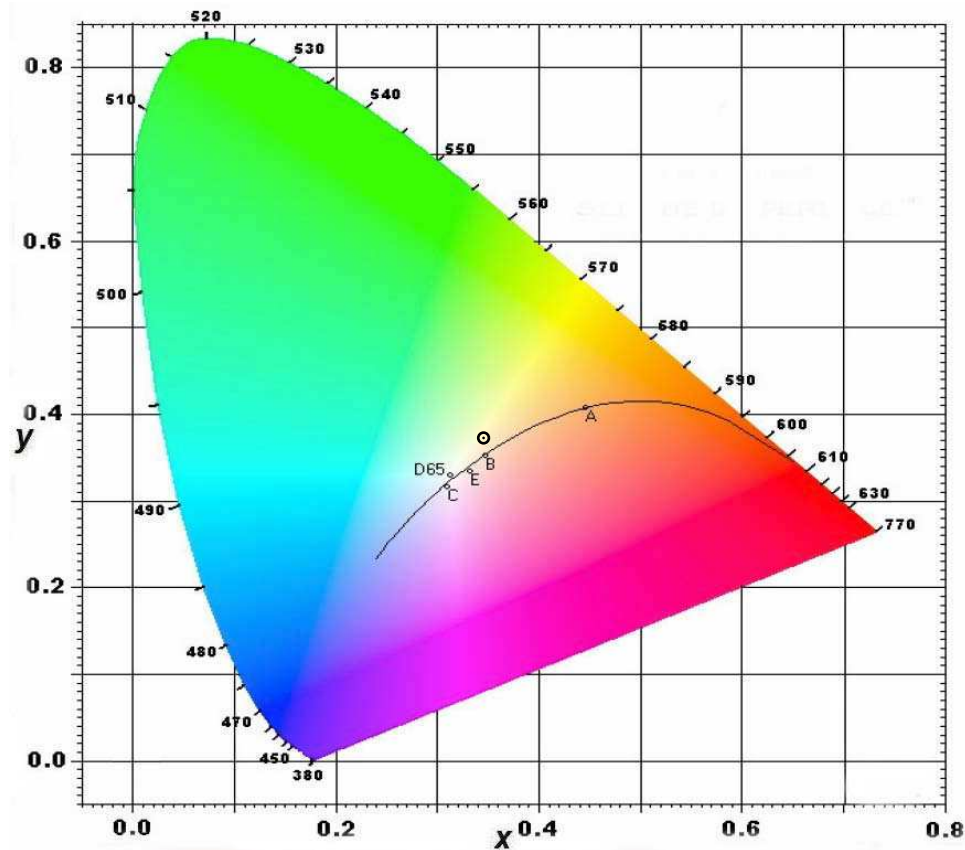
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CIE Chromaticity Diagram





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RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3453
Chromaticity Ordinate y	0.3723
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2038
Chromaticity Ordinate v'	0.4944
Correlated Color Temp CCT (K)	5057
ANSI C78.377-2008 Duv	0.010
Total Radiant Flux (milliWatts)	15945 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.492
Input Power (Watts)	58.7
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)	58.5
Input Power Factor (%)	90.3
Input Current THD (%)	10.9
Input Voltage THD (%)	0.1

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	67
R1 Light greyish red	63
R2 Dark greyish yellow	72
R3 Strong yellowish green	78
R4 Moderate yellowish green	67
R5 Light bluish green	64
R6 Light blue	61
R7 Light violet	80
R8 Light reddish purple	53
R9 Strong red	-46
R10 Strong yellow	33
R11 Strong green	61
R12 Strong blue	32
R13 Light yellowish pink (skin)	64
R14 Moderate olive green (leaf)	87

*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	0.467	515	57.727	650	32.796
385	0.499	520	68.760	655	29.532
390	0.585	525	77.876	660	26.483
395	0.761	530	84.959	665	23.696
400	1.115	535	89.871	670	21.147
405	1.871	540	93.111	675	18.828
410	3.469	545	95.057	680	16.731
415	6.504	550	96.043	685	14.848
420	11.923	555	96.185	690	13.168
425	20.809	560	95.765	695	11.653
430	34.228	565	94.767	700	10.287
435	52.171	570	93.206	705	9.083
440	75.230	575	91.138	710	8.030
445	106.306	580	88.642	715	7.070
450	126.164	585	85.676	720	6.231
455	105.934	590	82.284	725	5.472
460	68.903	595	78.532	730	4.809
465	45.555	600	74.548	735	4.226
470	31.187	605	70.398	740	3.724
475	21.088	610	65.995	745	3.286
480	15.784	615	61.394	750	2.898
485	14.004	620	56.949	755	2.559
490	14.615	625	52.539	760	2.256
495	18.070	630	48.180	765	1.990
500	24.818	635	44.089	770	1.756
505	34.413	640	40.057	775	1.548
510	45.952	645	36.287	780	1.368

