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THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

PHONE: (303) 442-1255

FAX: (970) 535-3114

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WEBSITE: www.itlboulder.com

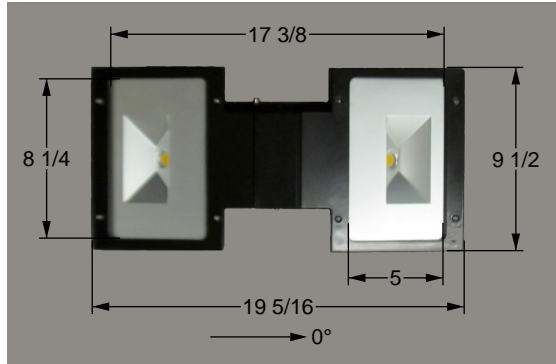
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INDEPENDENT TESTING LABORATORIES, INC.

4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 20 foot mounting height.



REPORT NUMBER: ITL81183

ISSUE DATE: 04/07/14

PAGE: 1 OF 7

PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: CLED2X18Y - PLED2X18Y -
PLED2X18Y/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.

LAMPS: TWO WHITE MULTI-CHIP LIGHT
EMITTING DIODES (LED'S), TILTED 35-
DEGREES FROM VERTICAL BASE-UP
POSITION.

TOTAL INPUT WATTS = 40.2 AT 120.0 VOLTS
LED DRIVERS: TWO RAB RD12-36-A0500

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

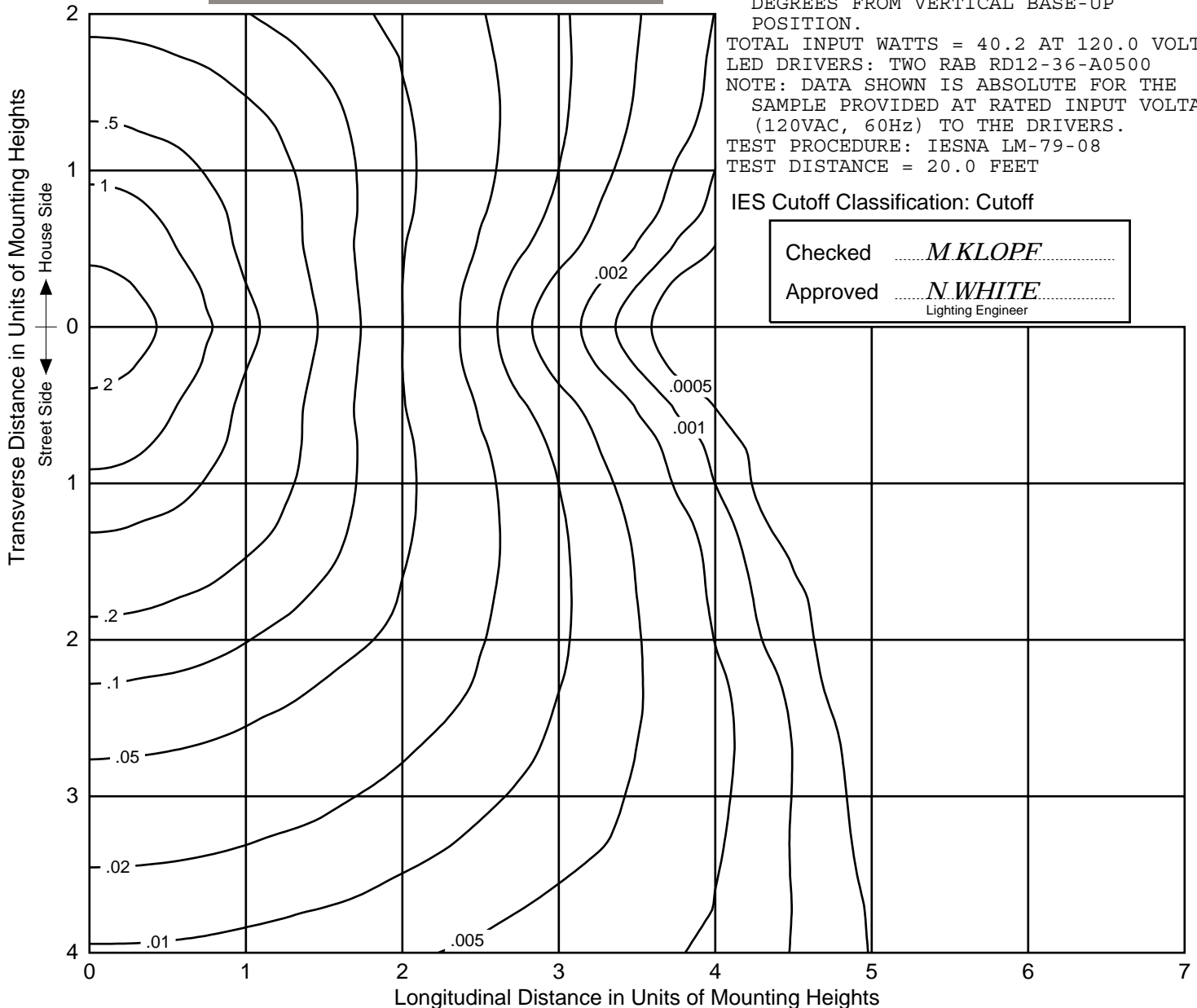
TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 20.0 FEET

IES Cutoff Classification: Cutoff

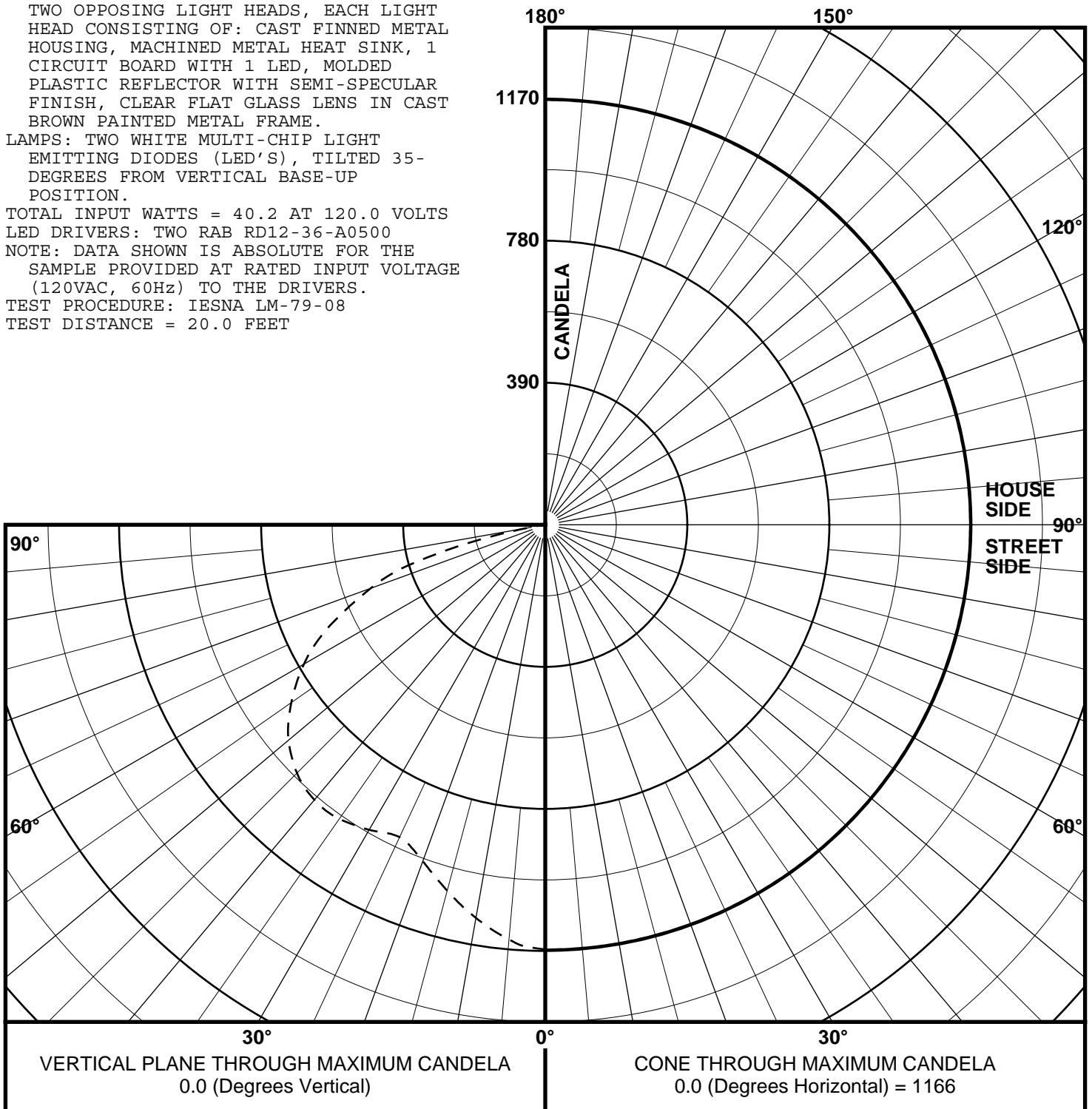
Checked M.KLOPF

Approved N.WHITE
Lighting Engineer



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TEST PROCEDURE: IESNA LM-79-08
TEST DISTANCE = 20.0 FEET

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA





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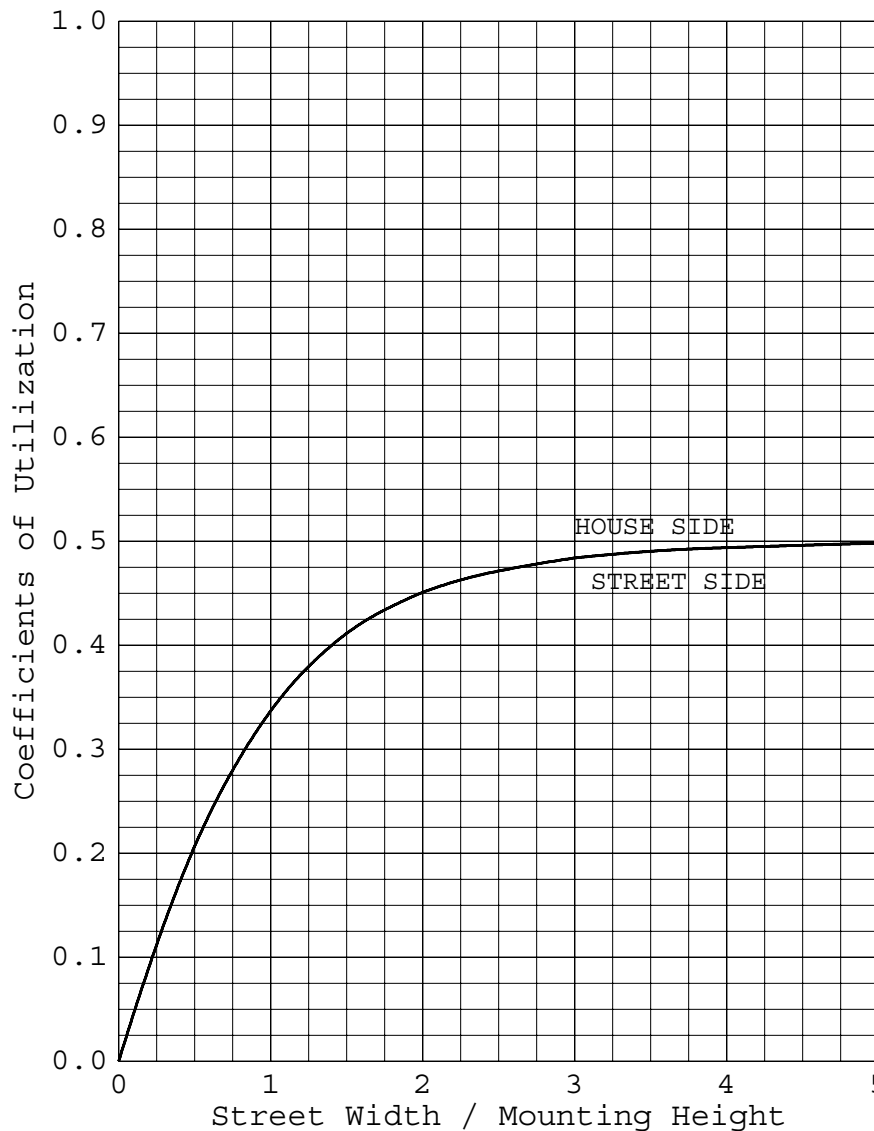
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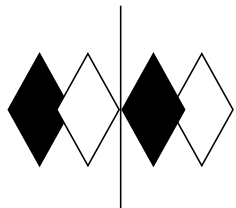
COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	1639	50.0
DOWNWARD HOUSE SIDE	1639	50.0
DOWNWARD TOTAL	3277	100.0
UPWARD STREET SIDE	0	0.0
UPWARD HOUSE SIDE	0	0.0
UPWARD TOTAL	0	0.0
TOTAL FLUX	3277	100.0

EFFICACY = 81.5 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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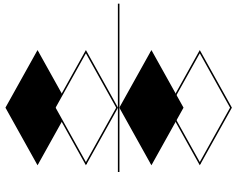
FLUX DISTRIBUTION BY SOLID ANGLE

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

	LUMENS	PERCENT OF FIXTURE	BUG ZONE RATINGS
FORWARD LIGHT	1639.	50.0	
FL (0- 30)	424.1	12.9	
FM (30- 60)	860.2	26.2	
FH (60- 80)	348.4	10.6	G0
FVH(80- 90)	5.8	0.2	G0
BACK LIGHT	1639.	50.0	
BL (0- 30)	424.1	12.9	B1
BM (30- 60)	860.2	26.2	B1
BH (60- 80)	348.4	10.6	B1 G1
BVH(80- 90)	5.8	0.2	G0
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	3277.	100.0	

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

BUG RATING: B1 U1 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	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.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	87.5	2.	2.	2.	2.	1.	1.	1.	0.	0.	0.	0.
	85.0	5.	5.	5.	4.	4.	3.	2.	1.	0.	0.	0.
V	82.5	13.	13.	12.	13.	17.	33.	6.	2.	1.	1.	1.
E	80.0	52.	55.	64.	84.	106.	134.	52.	6.	3.	2.	1.
R	77.5	170.	174.	180.	206.	227.	236.	157.	56.	12.	3.	3.
T	75.0	309.	311.	317.	335.	334.	299.	230.	140.	58.	10.	6.
I	72.5	437.	436.	433.	422.	396.	383.	278.	197.	117.	37.	23.
C	70.0	510.	508.	499.	487.	470.	469.	338.	239.	157.	74.	60.
A	67.5	579.	578.	570.	560.	544.	520.	402.	289.	196.	122.	118.
L	65.0	650.	649.	642.	629.	601.	562.	452.	341.	238.	183.	183.
	62.5	713.	713.	702.	681.	647.	599.	489.	380.	280.	247.	250.
A	60.0	765.	763.	751.	729.	688.	633.	522.	410.	316.	311.	318.
N	57.5	810.	808.	795.	772.	725.	663.	553.	438.	358.	374.	383.
G	55.0	851.	850.	836.	811.	759.	688.	579.	466.	406.	436.	446.
L	52.5	889.	885.	872.	846.	787.	710.	603.	493.	457.	496.	507.
E	50.0	920.	916.	904.	877.	810.	729.	625.	521.	511.	554.	566.
	47.5	944.	940.	929.	900.	830.	745.	645.	557.	566.	610.	623.
	45.0	964.	960.	949.	917.	845.	758.	665.	600.	621.	665.	677.
	42.5	978.	973.	963.	927.	855.	770.	684.	647.	676.	718.	729.
	40.0	986.	982.	970.	931.	861.	782.	705.	695.	728.	769.	780.
	37.5	989.	983.	970.	930.	864.	793.	738.	743.	779.	818.	827.
	35.0	986.	980.	966.	927.	867.	805.	779.	790.	826.	863.	871.
	32.5	977.	971.	957.	923.	867.	827.	822.	837.	871.	905.	912.
	30.0	967.	962.	949.	916.	872.	859.	865.	881.	913.	944.	950.
	25.0	946.	942.	938.	930.	921.	929.	945.	962.	987.	1012.	1016.
	20.0	983.	979.	982.	983.	983.	997.	1015.	1029.	1049.	1067.	1070.
	15.0	1040.	1034.	1039.	1042.	1043.	1055.	1073.	1083.	1098.	1111.	1112.
	10.0	1096.	1089.	1091.	1093.	1095.	1101.	1119.	1124.	1134.	1141.	1143.
	5.0	1143.	1133.	1134.	1135.	1135.	1136.	1151.	1150.	1156.	1161.	1161.
	0.0<<	1166.	1166.	1166.	1166.	1166.	1166.	1166.	1166.	1166.	1166.	1166.

||
PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA



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5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	28
5- 10	81
10- 15	129
15- 20	171
20- 25	205
25- 30	235
30- 35	261
35- 40	282
40- 45	297
45- 50	302
50- 55	297
55- 60	282
60- 65	255
65- 70	212
70- 75	155
75- 80	75
80- 85	11
85- 90	1
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	108
0- 20	408
0- 30	848
0- 40	1392
0- 50	1990
0- 60	2569
0- 70	3036
0- 80	3265
0- 90	3277
0-100	3277
0-110	3277
0-120	3277
0-130	3277
0-140	3277
0-150	3277
0-160	3277
0-170	3277
0-180	3277



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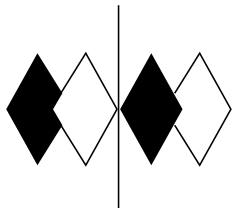
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ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

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DATE: 04/15/14
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: CLED2X18Y - PLED2X18Y - PLED2X18Y/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 RD12-36-A0500

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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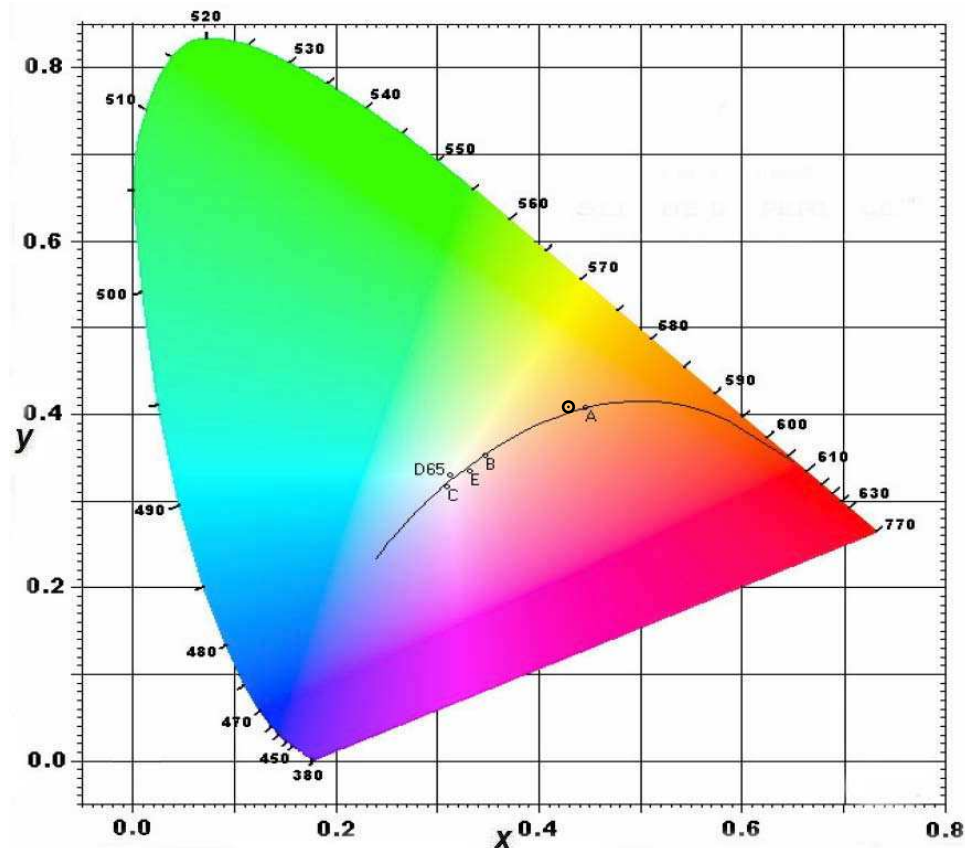
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CIE Chromaticity Diagram





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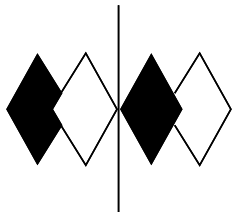
RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4289
Chromaticity Ordinate y	0.4081
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2437
Chromaticity Ordinate v'	0.5218
Correlated Color Temp CCT (K)	3173
ANSI C78.377-2008 Duv	0.003
Total Radiant Flux (milliWatts)	9674 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.337
Input Power (Watts)	40.1
Input Power Factor (%)	99.2
Input Current THD (%)	10.5
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)	0.162
Input Power (Watts)	41.1
Input Power Factor (%)	91.6
Input Current THD (%)	20.8
Input Voltage THD (%)	0.1

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	82
R1 Light greyish red	80
R2 Dark greyish yellow	87
R3 Strong yellowish green	95
R4 Moderate yellowish green	84
R5 Light bluish green	81
R6 Light blue	85
R7 Light violet	85
R8 Light reddish purple	60
R9 Strong red	2
R10 Strong yellow	71
R11 Strong green	85
R12 Strong blue	68
R13 Light yellowish pink (skin)	81
R14 Moderate olive green (leaf)	97

*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	0.200	515	33.610	650	35.100
385	0.207	520	35.952	655	31.175
390	0.219	525	37.549	660	27.544
395	0.259	530	38.650	665	24.146
400	0.344	535	39.363	670	21.038
405	0.515	540	39.911	675	18.276
410	0.853	545	40.587	680	15.819
415	1.570	550	41.531	685	13.630
420	3.092	555	42.885	690	11.700
425	6.064	560	44.783	695	10.028
430	11.101	565	47.231	700	8.587
435	19.460	570	50.161	705	7.342
440	32.009	575	53.287	710	6.266
445	39.117	580	56.538	715	5.344
450	30.788	585	59.582	720	4.557
455	19.899	590	62.101	725	3.872
460	14.146	595	63.873	730	3.295
465	10.154	600	64.749	735	2.799
470	7.678	605	64.717	740	2.388
475	7.158	610	63.601	745	2.037
480	7.938	615	61.604	750	1.748
485	9.920	620	58.905	755	1.497
490	13.208	625	55.499	760	1.281
495	17.443	630	51.714	765	1.098
500	22.061	635	47.706	770	0.941
505	26.540	640	43.449	775	0.811
510	30.521	645	39.188	780	0.697

