

itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

PHONE: (303) 442-1255

FAX: (970) 535-3114

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WEBSITE: www.itlboulder.com

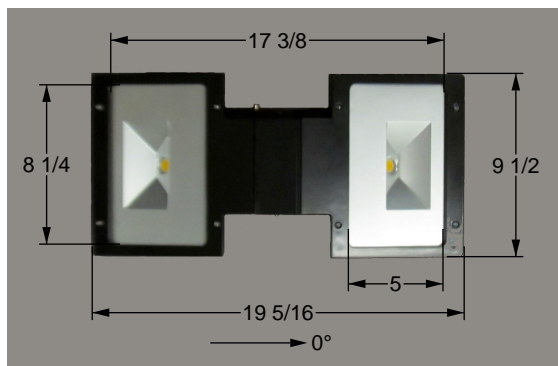
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INDEPENDENT TESTING LABORATORIES, INC.

4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 20 foot mounting height.



REPORT NUMBER: ITL81185

ISSUE DATE: 04/08/14

PAGE: 1 OF 7

PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: CLED2X18 - PLED2X18 -
PLED2X18/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 = 40.0 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 RD12-36-A0500

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

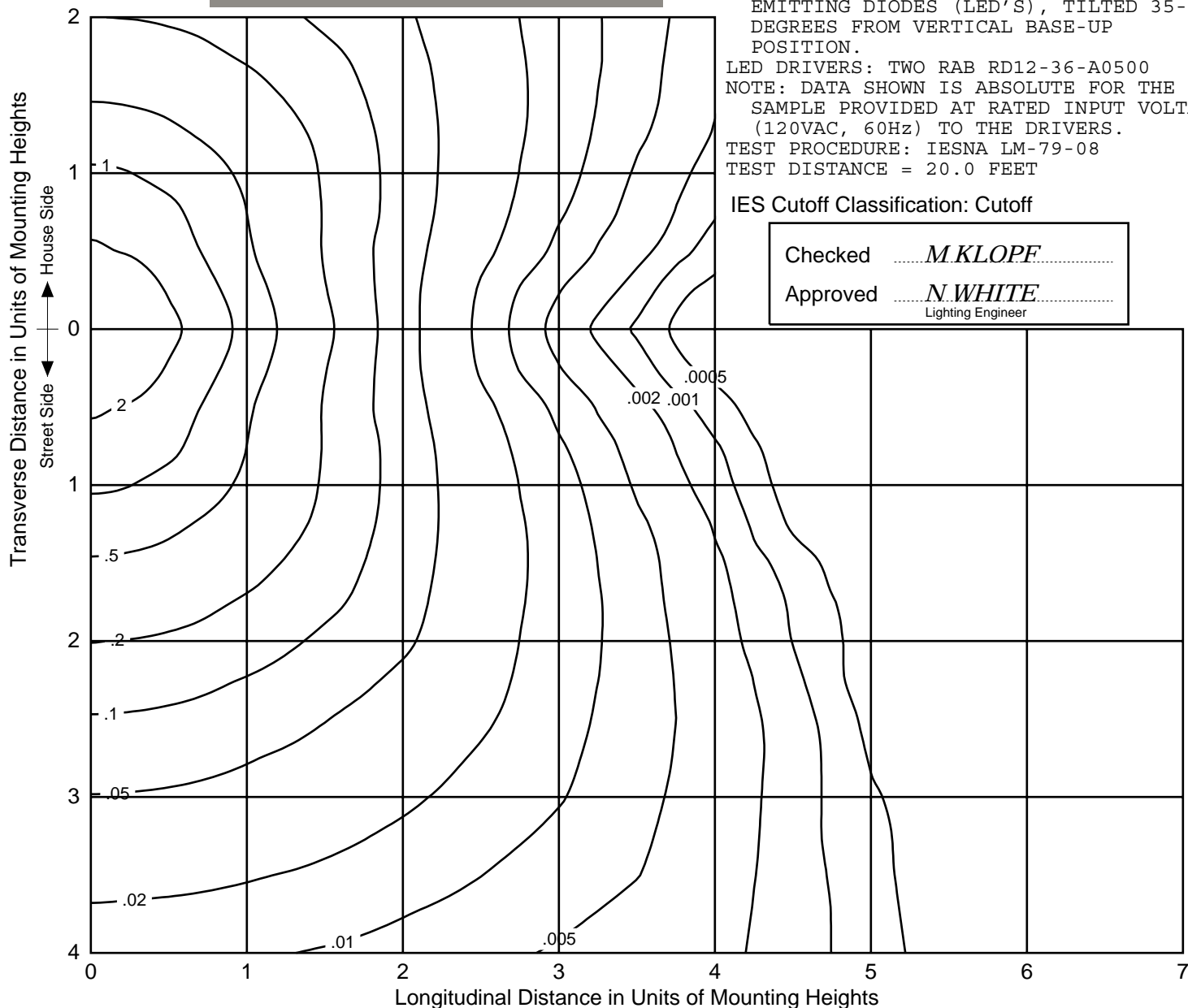
TEST PROCEDURE: IESNA LM-79-08

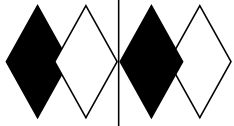
TEST DISTANCE = 20.0 FEET

IES Cutoff Classification: Cutoff

Checked M. KLOPF

Approved N. WHITE
Lighting Engineer





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PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: CLED2X18 - PLED2X18 -

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PENDENT INDIRECT)

LUMINAIRE: ONE LUMINAIRE CONSISTING OF
TWO OPPOSING LIGHT HEADS, EACH LIGHT
HEAD CONSISTING OF: CAST FINNED METAL
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TOTAL INPUT WATTS = 40.0 AT 120.0 VOLTS

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EMITTING DIODES (LED'S), TILTED 35-
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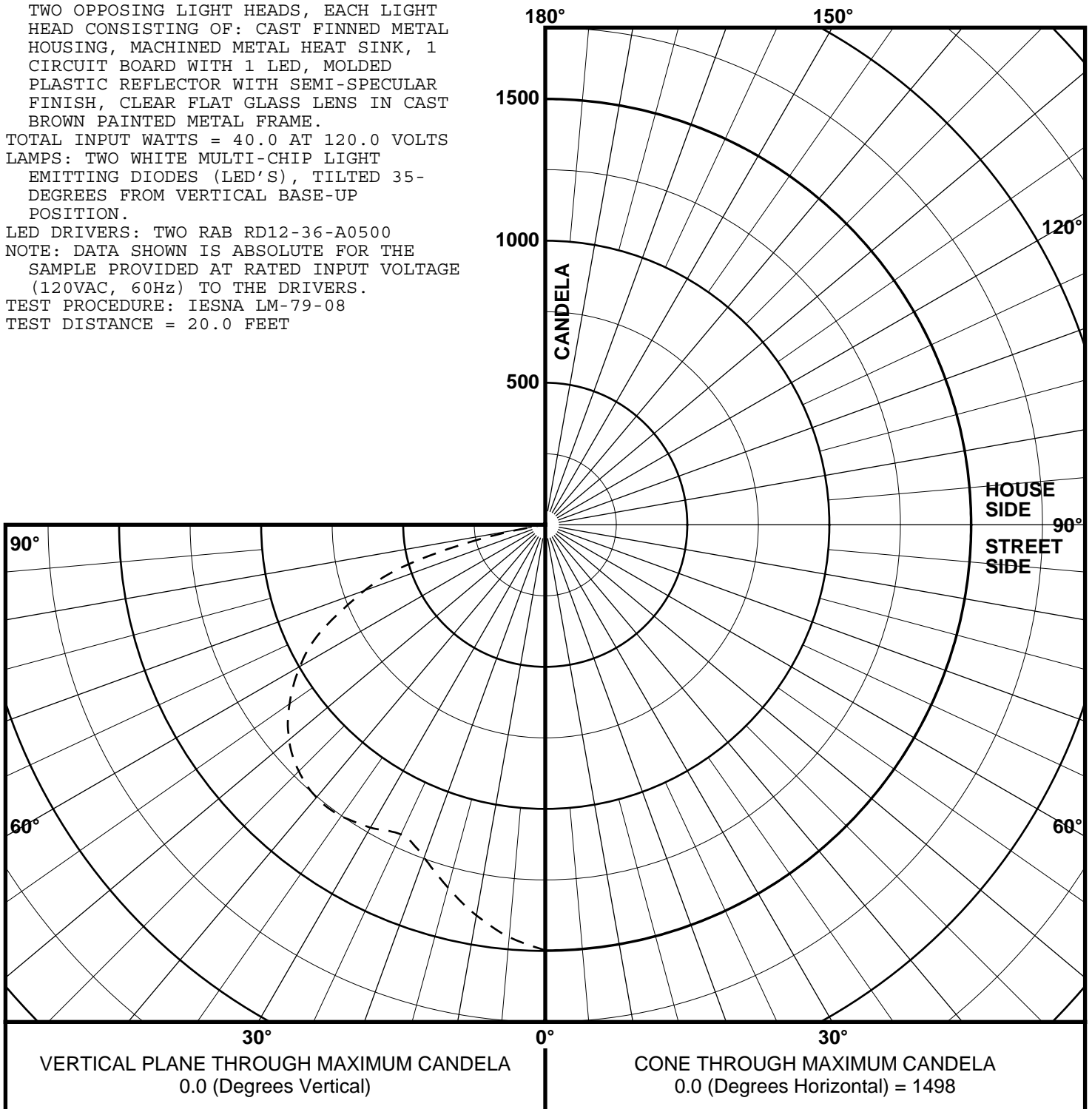
LED DRIVERS: TWO RAB RD12-36-A0500

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

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA





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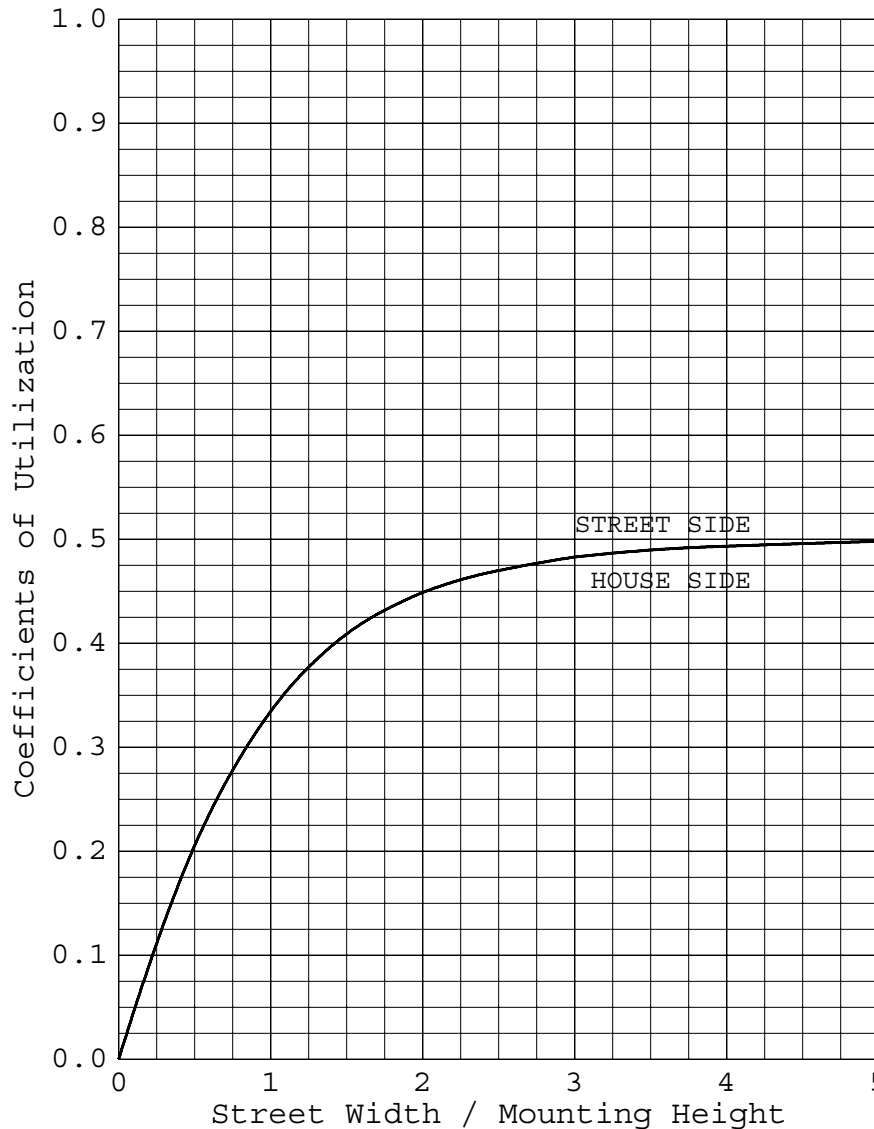


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COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	2115	50.0
DOWNWARD HOUSE SIDE	2115	50.0
DOWNWARD TOTAL	4229	100.0
UPWARD STREET SIDE	0	0.0
UPWARD HOUSE SIDE	0	0.0
UPWARD TOTAL	0	0.0
TOTAL FLUX	4229	100.0

EFFICACY = 105.7 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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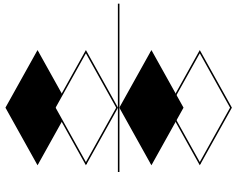
FLUX DISTRIBUTION BY SOLID ANGLE

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

	LUMENS	PERCENT OF FIXTURE	BUG ZONE RATINGS
FORWARD LIGHT	2115.	50.0	
FL (0- 30)	541.8	12.8	
FM (30- 60)	1104.3	26.1	
FH (60- 80)	459.8	10.9	G0
FVH(80- 90)	8.6	0.2	G0
BACK LIGHT	2115.	50.0	
BL (0- 30)	541.8	12.8	B2
BM (30- 60)	1104.3	26.1	B2
BH (60- 80)	459.8	10.9	B1 G1
BVH(80- 90)	8.6	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	4229.	100.0	

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

BUG RATING: B2 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.	1.	1.	0.	0.	0.	0.	0.	0.	0.
	87.5	3.	3.	3.	3.	2.	2.	1.	0.	0.	0.	0.
	85.0	8.	8.	8.	7.	6.	5.	3.	2.	1.	0.	0.
V	82.5	19.	19.	20.	20.	29.	53.	9.	3.	2.	1.	1.
E	80.0	78.	76.	90.	118.	155.	188.	77.	12.	4.	2.	2.
R	77.5	244.	240.	255.	285.	316.	320.	214.	83.	18.	5.	4.
T	75.0	426.	418.	432.	453.	452.	404.	305.	190.	75.	16.	10.
I	72.5	579.	577.	577.	563.	535.	516.	370.	259.	149.	51.	28.
C	70.0	677.	671.	660.	646.	630.	621.	449.	313.	202.	96.	76.
A	67.5	765.	762.	751.	737.	722.	686.	527.	376.	253.	156.	146.
L	65.0	859.	851.	839.	822.	791.	737.	587.	440.	308.	230.	229.
	62.5	937.	928.	914.	885.	849.	783.	635.	490.	361.	311.	316.
A	60.0	997.	989.	972.	940.	899.	825.	678.	531.	408.	394.	403.
N	57.5	1051.	1044.	1025.	992.	944.	861.	716.	568.	461.	477.	489.
G	55.0	1099.	1092.	1072.	1039.	984.	892.	749.	604.	524.	560.	572.
L	52.5	1142.	1135.	1114.	1081.	1016.	919.	780.	640.	590.	639.	652.
E	50.0	1177.	1171.	1150.	1116.	1044.	942.	808.	678.	659.	717.	732.
	47.5	1206.	1200.	1180.	1143.	1066.	961.	834.	723.	729.	790.	805.
	45.0	1227.	1222.	1203.	1162.	1083.	977.	860.	776.	802.	863.	875.
	42.5	1243.	1238.	1218.	1173.	1094.	991.	883.	835.	872.	933.	943.
	40.0	1253.	1248.	1226.	1177.	1101.	1006.	910.	897.	939.	998.	1008.
	37.5	1256.	1250.	1227.	1175.	1105.	1020.	950.	958.	1005.	1060.	1073.
	35.0	1252.	1245.	1221.	1170.	1109.	1033.	999.	1019.	1068.	1119.	1130.
	32.5	1242.	1236.	1211.	1166.	1108.	1059.	1053.	1079.	1125.	1174.	1183.
	30.0	1231.	1225.	1202.	1156.	1114.	1096.	1107.	1136.	1178.	1223.	1232.
	25.0	1202.	1198.	1187.	1171.	1171.	1185.	1208.	1237.	1272.	1308.	1315.
	20.0	1246.	1244.	1242.	1240.	1251.	1272.	1297.	1320.	1350.	1375.	1381.
	15.0	1322.	1321.	1320.	1318.	1328.	1347.	1369.	1389.	1409.	1429.	1432.
	10.0	1396.	1394.	1393.	1389.	1395.	1410.	1429.	1442.	1452.	1466.	1469.
	5.0	1457.	1456.	1452.	1447.	1448.	1458.	1471.	1476.	1481.	1490.	1492.
	0.0<<	1498.	1498.	1498.	1498.	1498.	1498.	1498.	1498.	1498.	1498.	1498.

||
PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA



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5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	35
5- 10	103
10- 15	165
15- 20	218
20- 25	262
25- 30	300
30- 35	334
35- 40	361
40- 45	380
45- 50	387
50- 55	382
55- 60	364
60- 65	332
65- 70	279
70- 75	206
75- 80	103
80- 85	16
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	138
0- 20	521
0- 30	1084
0- 40	1779
0- 50	2546
0- 60	3292
0- 70	3903
0- 80	4212
0- 90	4229
0-100	4229
0-110	4229
0-120	4229
0-130	4229
0-140	4229
0-150	4229
0-160	4229
0-170	4229
0-180	4229



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ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

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REPORT NUMBER: ITL81191
DATE: 04/15/14
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: CLED2X18 - PLED2X18 - PLED2X18/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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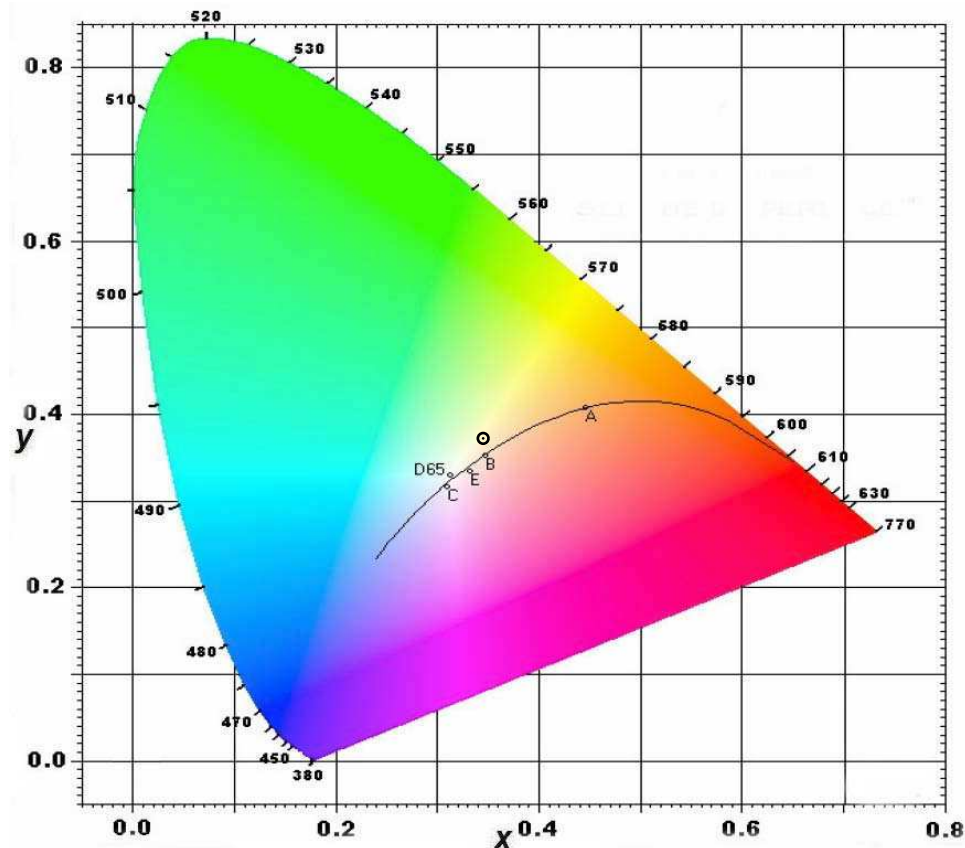
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CIE Chromaticity Diagram





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RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3449
Chromaticity Ordinate y	0.3718
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2038
Chromaticity Ordinate v'	0.4941
Correlated Color Temp CCT (K)	5067
ANSI C78.377-2008 Duv	0.010
Total Radiant Flux (milliWatts)	12191 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.336
Input Power (Watts)	40.0
Input Power Factor (%)	99.2
Input Current THD (%)	10.8
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)	41.0
Input Power Factor (%)	91.4
Input Current THD (%)	21.8
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	32
R11 Strong green	62
R12 Strong blue	31
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	0.336	515	44.785	650	24.988
385	0.373	520	53.265	655	22.471
390	0.428	525	60.144	660	20.154
395	0.538	530	65.432	665	17.995
400	0.775	535	69.082	670	16.030
405	1.245	540	71.415	675	14.258
410	2.286	545	72.867	680	12.665
415	4.338	550	73.545	685	11.231
420	8.140	555	73.563	690	9.928
425	14.737	560	73.203	695	8.779
430	25.077	565	72.472	700	7.746
435	39.377	570	71.336	705	6.830
440	59.510	575	69.736	710	6.020
445	87.695	580	67.802	715	5.296
450	102.290	585	65.588	720	4.662
455	80.253	590	63.052	725	4.089
460	49.854	595	60.208	730	3.598
465	32.976	600	57.164	735	3.155
470	22.205	605	53.946	740	2.773
475	14.688	610	50.556	745	2.441
480	11.061	615	47.061	750	2.155
485	9.910	620	43.633	755	1.898
490	10.480	625	40.187	760	1.672
495	13.307	630	36.860	765	1.470
500	18.767	635	33.717	770	1.295
505	26.427	640	30.611	775	1.145
510	35.555	645	27.687	780	1.008

