

itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

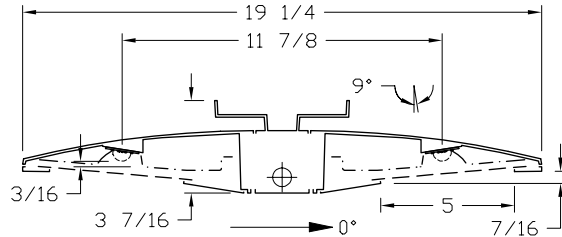
NVLAP
NVLAP LAB CODE: 200925-0

INDEPENDENT TESTING LABORATORIES, INC.
3386 LONGHORN ROAD, BOULDER, CO 80302 USA

PHONE: (303)442-1255 • FAX: (303)449-5274 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 15 foot mounting height.

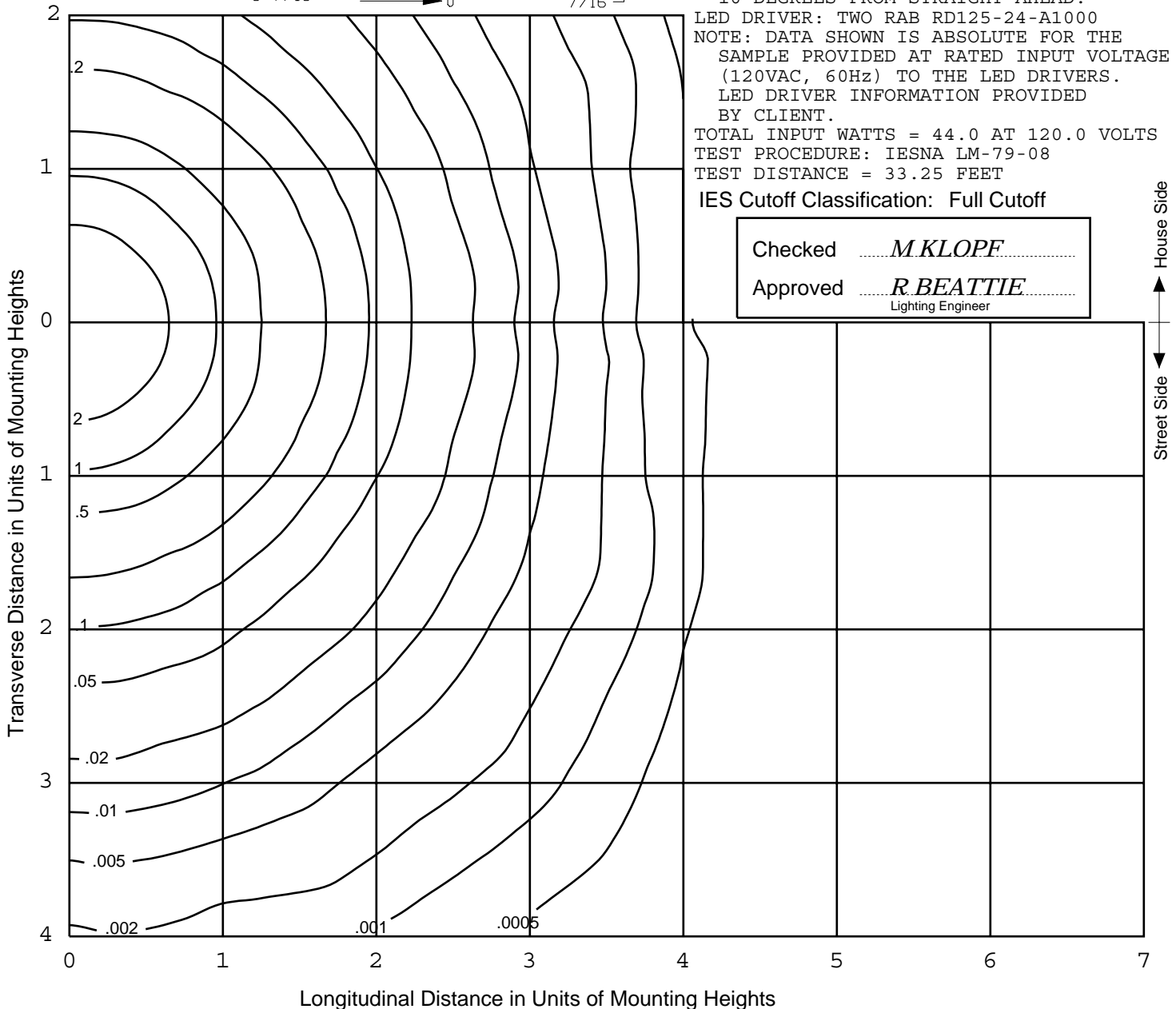


REPORT NUMBER: ITL69099
ISSUE DATE: 07/11/11 PAGE: 1 OF 7
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: CLED2X20N / PLED2X20N
LUMINAIRE: ONE LUMINAIRE CONSISTING OF TWO OPPOSING LIGHT HEADS, EACH LIGHT HEAD CONSISTING OF: CAST FINNED METAL HOUSING, TWO CIRCUIT BOARDS EACH WITH ONE LED CHIP, FORMED SPECULAR METAL REFLECTOR, CLEAR FLAT GLASS LENS IN CAST BROWN PAINTED METAL LENS FRAME.
LAMPS: FOUR CHIPS EACH WITH A 3X3 ARRAY OF WHITE LIGHT EMITTING DIODES (LEDs) AND A CLEAR HEMISPHERICAL INTEGRAL LENS, TILTED 9-DEGREES FROM VERTICAL BASE UP POSITION AND CANTED 10-DEGREES FROM STRAIGHT AHEAD.
LED DRIVER: TWO RAB RD125-24-A1000
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.

TOTAL INPUT WATTS = 44.0 AT 120.0 VOLTS
TEST PROCEDURE: IESNA LM-79-08
TEST DISTANCE = 33.25 FEET

IES Cutoff Classification: Full Cutoff

Checked *M.KLOPF*
Approved *R.BEATTIE*
Lighting Engineer



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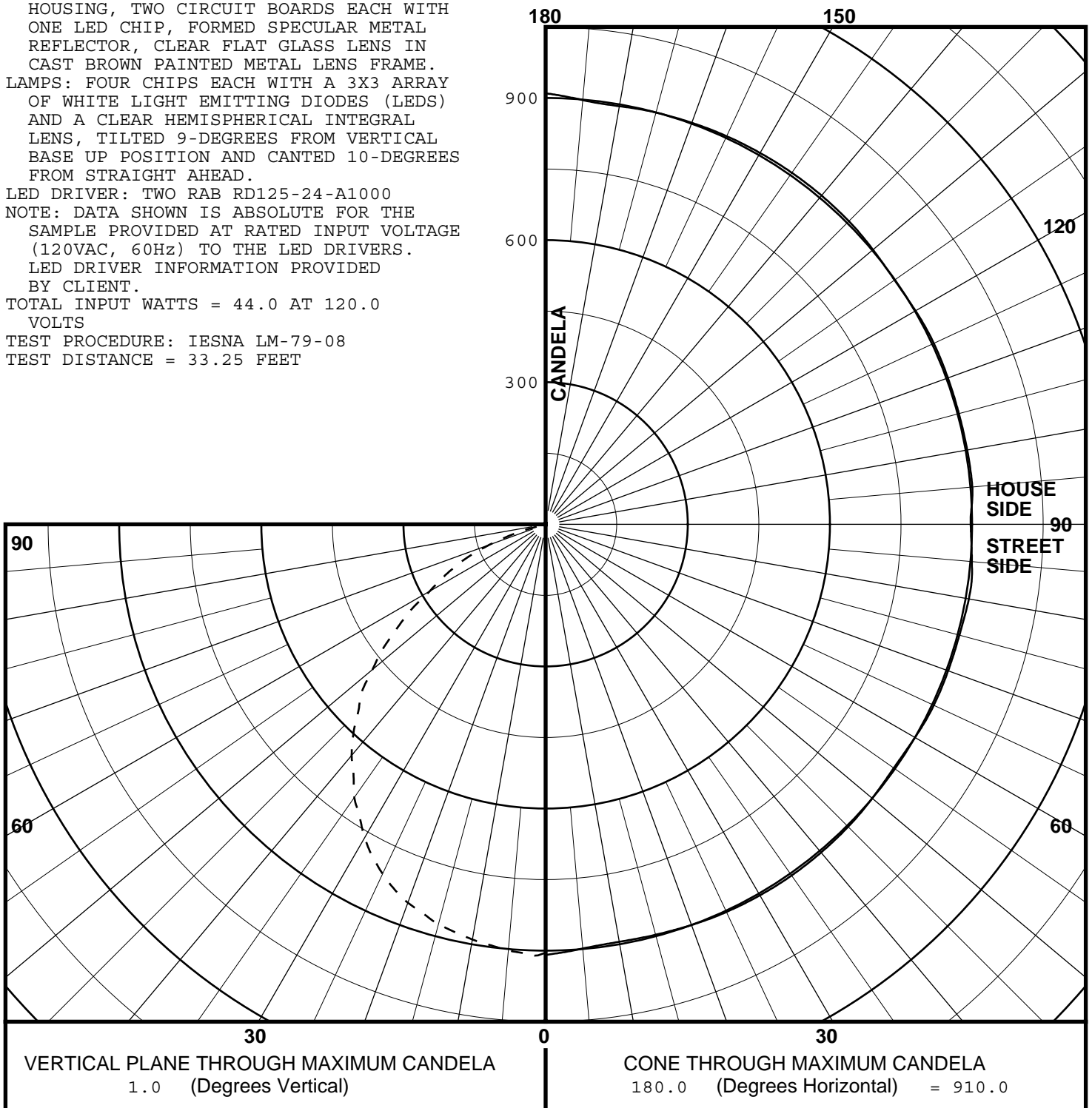
LED DRIVER INFORMATION PROVIDED BY CLIENT.

TOTAL INPUT WATTS = 44.0 AT 120.0 VOLTS

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 33.25 FEET

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

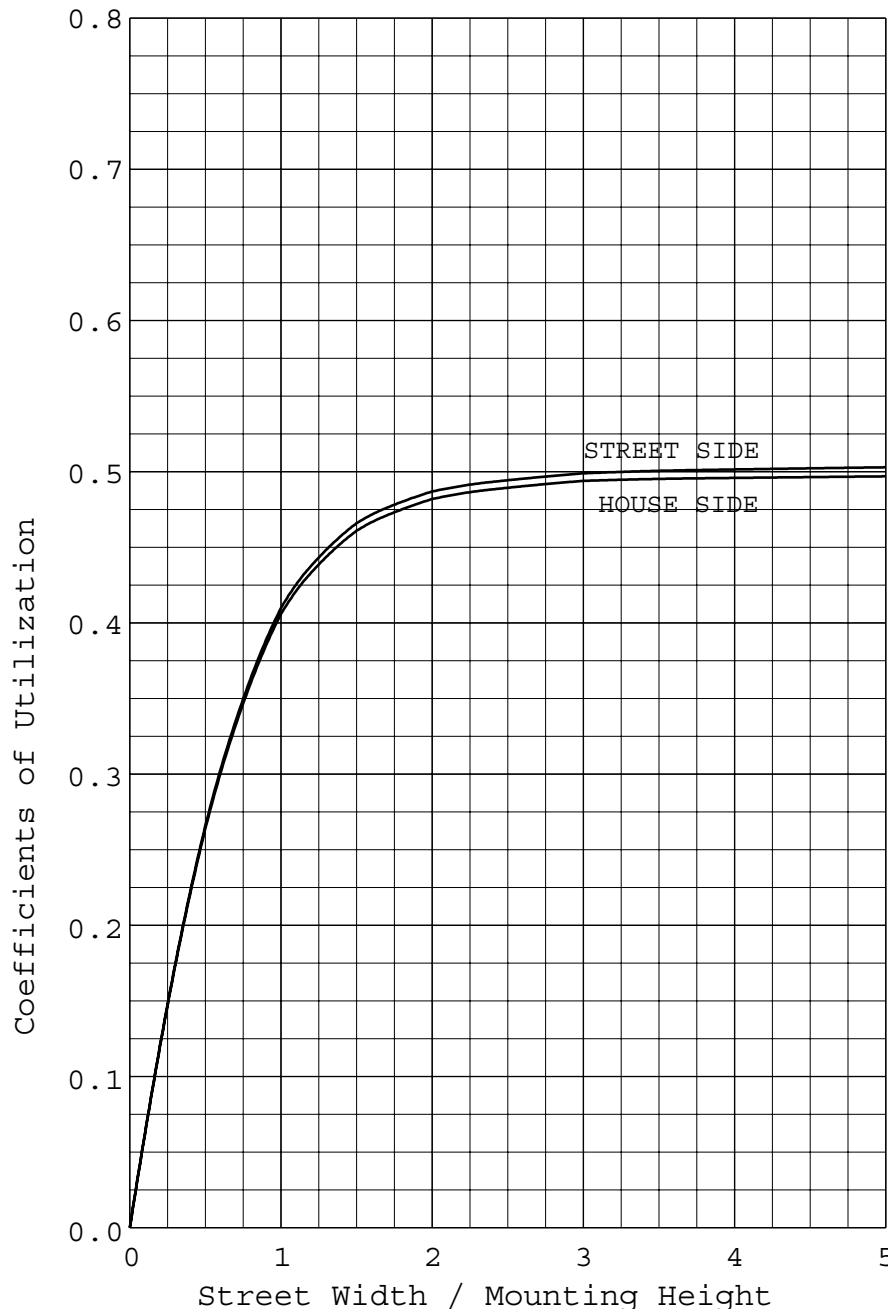




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COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	1103	50.3
DOWNWARD HOUSE SIDE	1091	49.7
DOWNWARD TOTAL	2194	100.0
UPWARD STREET SIDE	0	0.0
UPWARD HOUSE SIDE	0	0.0
UPWARD TOTAL	0	0.0
TOTAL FLUX	2194	100.0
EFFICACY = 49.9 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-15-07, LUMINAIRE CLASSIFICATION
 SYSTEM FOR OUTDOOR LUMINAIRES)

	LUMENS	PERCENT OF FIXTURE	BUG ZONE RATINGS
FORWARD LIGHT	1103.	50.3	
FL (0- 30)	358.7	16.3	
FM (30- 60)	625.2	28.5	
FH (60- 80)	118.1	5.4	G0
FVH(80- 90)	0.8	0.0	U0 G0
BACK LIGHT	1091.	49.7	
BL (0- 30)	355.9	16.2	B1
BM (30- 60)	619.2	28.2	B1
BH (60- 80)	115.6	5.3	B1 G0
BVH(80- 90)	0.8	0.0	U0 G0
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	2194.	100.0	

BACKLIGHT, UPLIGHT, AND GLARE (BUG) RATINGS
 (PER ADDENDUM A FOR IESNA TM-15-07)

BUG RATING: B1 U0 G0



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CANDELA TABULATION

	STREET SIDE										
	0.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0	82.5	85.0
	90.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	87.5	2.	1.	0.	0.	0.	1.	0.	0.	0.	0.
	85.0	2.	2.	2.	2.	2.	0.	0.	0.	0.	0.
	82.5	3.	3.	3.	3.	2.	2.	2.	1.	2.	1.
	80.0	5.	5.	6.	7.	6.	7.	5.	4.	4.	2.
	77.5	10.	10.	14.	18.	18.	19.	14.	10.	6.	6.
	75.0	37.	44.	35.	43.	37.	38.	31.	29.	17.	13.
	72.5	84.	87.	85.	77.	68.	66.	60.	53.	44.	40.
	70.0	132.	137.	122.	122.	106.	106.	91.	89.	79.	84.
	67.5	168.	173.	175.	172.	149.	141.	133.	134.	126.	131.
	65.0	219.	223.	215.	205.	191.	188.	181.	188.	179.	176.
	62.5	254.	259.	250.	254.	238.	242.	231.	240.	234.	236.
	60.0	294.	298.	292.	295.	293.	293.	292.	297.	296.	304.
	57.5	345.	346.	334.	345.	343.	358.	346.	354.	353.	356.
V	55.0	392.	390.	387.	397.	397.	406.	404.	408.	404.	404.
E	52.5	437.	441.	435.	443.	450.	450.	450.	452.	450.	448.
R	50.0	478.	488.	485.	500.	497.	497.	495.	500.	493.	493.
T	47.5	539.	538.	535.	541.	539.	535.	535.	540.	537.	532.
I	45.0	575.	581.	578.	579.	577.	574.	575.	577.	571.	566.
C	42.5	613.	617.	617.	617.	617.	611.	613.	613.	612.	608.
A	40.0	645.	649.	649.	651.	651.	652.	651.	651.	648.	644.
L	37.5	679.	681.	683.	690.	692.	695.	692.	695.	685.	683.
	35.0	712.	713.	717.	724.	736.	735.	736.	731.	729.	723.
A	32.5	747.	745.	746.	754.	768.	771.	769.	761.	760.	757.
N	30.0	775.	778.	771.	783.	796.	807.	795.	794.	794.	798.
G	27.5	806.	802.	797.	808.	820.	828.	817.	820.	823.	829.
L	25.0	828.	824.	816.	829.	835.	842.	834.	844.	846.	857.
E	22.5	847.	841.	834.	843.	848.	850.	849.	859.	864.	876.
	20.0	861.	854.	845.	853.	857.	857.	859.	868.	876.	889.
	17.5	869.	864.	855.	861.	866.	865.	866.	873.	882.	894.
	15.0	879.	871.	864.	869.	874.	872.	872.	879.	887.	893.
	12.5	885.	878.	872.	876.	880.	880.	876.	884.	891.	894.
	10.0	891.	884.	879.	883.	887.	885.	881.	889.	895.	897.
	7.5	898.	889.	884.	889.	891.	890.	885.	892.	896.	898.
	5.0	901.	893.	889.	895.	897.	896.	888.	897.	899.	900.
	2.5	906.	898.	894.	901.	903.	900.	895.	902.	903.	903.
	1.0<<	909.	899.	897.	903.	905.	903.	897.	904.	904.	907.
	0.0	904.	904.	904.	904.	904.	904.	904.	904.	904.	904.

CONE OF MAXIMUM CANDELA



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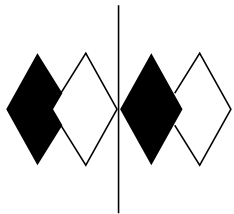
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CANDELA TABULATION

	HOUSE SIDE										
	90.0	95.0	105.0	115.0	125.0	135.0	145.0	155.0	165.0	175.0	180.0
	90.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	87.5	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
	85.0	0.	0.	0.	0.	1.	1.	2.	2.	2.	2.
	82.5	1.	2.	2.	1.	2.	3.	3.	2.	2.	3.
	80.0	4.	4.	3.	4.	4.	5.	6.	6.	6.	5.
	77.5	6.	6.	6.	6.	10.	14.	15.	17.	14.	10.
	75.0	10.	11.	12.	24.	25.	33.	32.	37.	35.	32.
	72.5	36.	42.	40.	48.	52.	60.	64.	74.	75.	81.
	70.0	79.	86.	79.	84.	87.	98.	102.	118.	122.	126.
	67.5	130.	136.	128.	131.	133.	141.	150.	164.	169.	172.
	65.0	176.	176.	178.	188.	184.	186.	188.	205.	208.	210.
	62.5	238.	244.	236.	242.	235.	242.	233.	248.	243.	246.
	60.0	304.	305.	297.	298.	296.	293.	288.	289.	288.	291.
	57.5	351.	358.	352.	358.	350.	357.	338.	344.	332.	346.
V	55.0	403.	403.	404.	409.	404.	405.	395.	390.	385.	389.
E	52.5	443.	448.	449.	451.	447.	447.	444.	440.	434.	437.
R	50.0	490.	498.	493.	500.	490.	493.	491.	494.	480.	486.
T	47.5	529.	530.	533.	539.	532.	531.	535.	534.	526.	532.
I	45.0	564.	565.	567.	570.	570.	569.	570.	570.	566.	565.
C	42.5	599.	605.	608.	611.	608.	607.	609.	608.	606.	606.
A	40.0	635.	643.	642.	644.	644.	643.	644.	646.	641.	639.
L	37.5	673.	680.	678.	682.	681.	682.	681.	681.	678.	673.
	35.0	714.	717.	717.	719.	720.	719.	723.	714.	709.	703.
A	32.5	750.	752.	752.	752.	751.	756.	756.	742.	738.	733.
N	30.0	786.	791.	781.	783.	776.	787.	785.	771.	762.	763.
G	27.5	822.	825.	817.	810.	804.	810.	806.	793.	788.	788.
L	25.0	852.	856.	842.	833.	824.	826.	821.	817.	806.	810.
E	22.5	875.	877.	861.	851.	841.	839.	836.	832.	824.	829.
	20.0	887.	890.	874.	862.	852.	850.	848.	844.	836.	843.
	17.5	890.	893.	882.	872.	861.	860.	858.	856.	848.	856.
	15.0	887.	891.	887.	880.	869.	869.	868.	866.	860.	865.
	12.5	887.	891.	891.	886.	876.	877.	877.	875.	870.	875.
	10.0	889.	893.	894.	889.	882.	885.	884.	884.	880.	883.
	7.5	888.	894.	895.	894.	886.	891.	891.	891.	886.	888.
	5.0	890.	897.	897.	897.	890.	896.	897.	898.	891.	893.
	2.5	895.	901.	901.	903.	896.	903.	903.	903.	897.	897.
	1.0<<	897.	904.	903.	904.	899.	905.	906.	904.	900.	899.
	0.0	904.	904.	904.	904.	904.	904.	904.	904.	904.	904.

PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA



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PAGE: 7 OF 7

ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

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REPORT NUMBER: ITL69102

DATE: 7/29/11

PREPARED FOR: RAB LIGHTING, INC.

Page 1 of 3

ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

CATALOG NUMBER: CLED2X20N / PLED2X20N

LUMINAIRE: ONE LUMINAIRE CONSISTING OF TWO OPPOSING LIGHT HEADS, EACH LIGHT HEAD CONSISTING OF: CAST FINNED METAL HOUSING, TWO CIRCUIT BOARDS EACH WITH ONE LED CHIP, FORMED SPECULAR METAL REFLECTOR, CLEAR FLAT GLASS LENS IN CAST BROWN PAINTED METAL LENS FRAME.

LAMPS: FOUR CHIPS EACH WITH A 3X3 ARRAY OF WHITE LIGHT EMITTING DIODES (LEDs) AND A CLEAR HEMISPHERICAL INTEGRAL LENS, TILTED 9-DEGREES FROM VERTICAL BASE UP POSITION AND CANTED 10-DEGREES FROM STRAIGHT AHEAD.

DRIVERS: TWO RAB RD125-24-A1000

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.

INSTRUMENTS:	Kikusui PCR500L AC Power Source	Calibration Due:
	Yokogawa WT210 Digital Power Meter #4	N/A
	Optronic Laboratories OL770 Spectroradiometer	03/04/12
	ITL 1.5 Meter Diameter Integrating Sphere, 4 π Geometry	03/24/12

OBJECT OF TEST: Measure the Spectral Power Distribution (SPD), Correlated Color Temperature (CCT), Color Rendering Index (CRI_a,9), Chromaticity Coordinates (x,y,u',v'), ANSI C78.377 Duv, and electrical data including Power Factor (PF), Total Harmonic Distortion (THD), and Off-State Power to the luminaire.

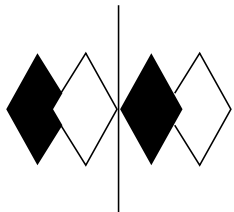
PROCEDURE: The luminaire was provided by the customer and had an unknown number of burn hours. The luminaire was mounted inside the integrating sphere in a horizontal position (see luminaire description for LED orientations). The luminaire was allowed to stabilize at 120VAC input. After stabilization occurred, Spectral Power Distribution (SPD), Correlated Color Temperature (CCT), Color Rendering Index (CRI_a,9), Chromaticity Coordinates (x,y,u',v'), ANSI C78.377 Duv, and electrical data including Power Factor (PF), Total Harmonic Distortion (THD), and Off-State Power were measured with the luminaire operating in the integrating sphere. In order to measure mean performance, multiple data sets were recorded and averaged. Readings were taken with the luminaire operating at 120VAC input 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.

RESULTS: (continued subsequent pages)

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Checked *L Brockman*

Approved *N Gully*
Lighting Engineer



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NVLAP LAB CODE: 200925-0

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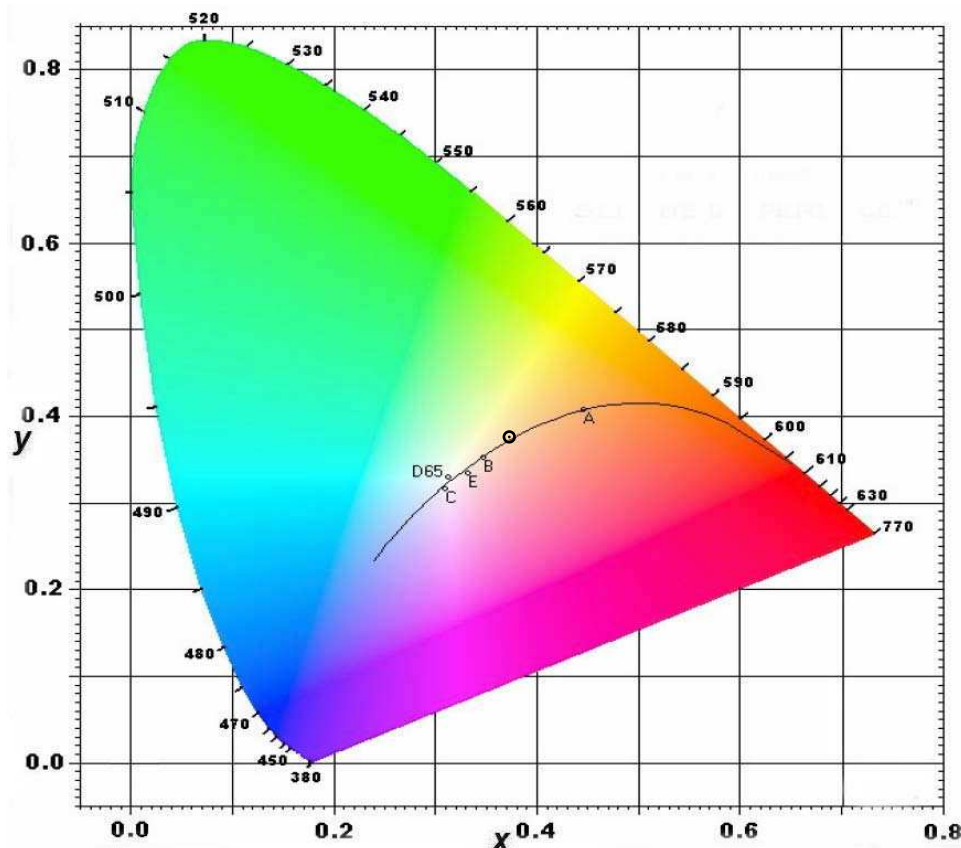
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RESULTS:

CIE Chromaticity Diagram



SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3726
Chromaticity Ordinate y	0.3758
Chromaticity Ordinate u'	0.2203
Chromaticity Ordinate v'	0.5000
Correlated Color Temp CCT (K)	4212
Color Rendering Index (CRIa)	74
Color Rendering Index 9 (Strong red)	-8
Total Radiant Flux (milliWatts)	6608
ANSI C78.377-2008 Duv	0.002
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (mA AC)	368
Input Power (Watts)	43.8
Input Power Factor (%)	99.2
Input Current THD (%)	7.7
Input Voltage THD (%)	0.0
Off State Power (Watts)	0.0

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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.599	515	20.158	650	19.763
385	0.583	520	22.981	655	18.149
390	0.624	525	25.722	660	16.515
395	0.673	530	28.073	665	14.819
400	0.770	535	29.966	670	13.222
405	1.004	540	31.819	675	11.661
410	1.489	545	33.493	680	10.202
415	2.285	550	34.989	685	8.833
420	3.488	555	36.231	690	7.620
425	5.679	560	37.233	695	6.499
430	9.251	565	37.926	700	5.514
435	14.585	570	38.270	705	4.651
440	22.713	575	38.158	710	3.906
445	34.344	580	37.746	715	3.267
450	42.357	585	37.031	720	2.754
455	38.381	590	36.040	725	2.312
460	27.497	595	34.868	730	1.937
465	19.406	600	33.546	735	1.616
470	14.190	605	32.193	740	1.354
475	10.456	610	30.847	745	1.138
480	8.283	615	29.547	750	0.962
485	7.449	620	28.315	755	0.816
490	7.559	625	26.923	760	0.697
495	8.672	630	25.595	765	0.590
500	10.801	635	24.223	770	0.502
505	13.658	640	22.856	775	0.427
510	16.859	645	21.379	780	0.386

