

itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

PHONE: (303) 442-1255

FAX: (970) 535-3114

E-MAIL: itl@itlboulder.com

WEBSITE: www.itlboulder.com

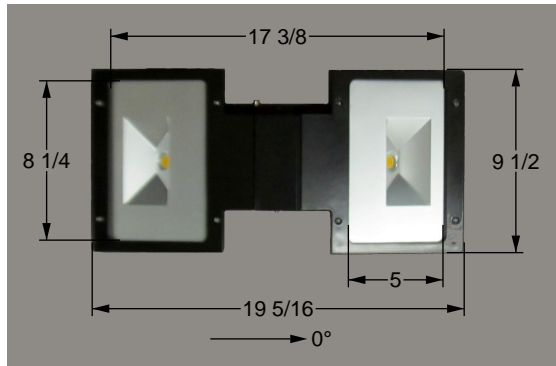
NVLAP
NVLAP LAB CODE: 200925-0

INDEPENDENT TESTING LABORATORIES, INC.

4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 20 foot mounting height.



REPORT NUMBER: ITL81187

ISSUE DATE: 04/10/14

PAGE: 1 OF 7

PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: CLED2X26N - PLED2X26N -
PLED2X26N/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 = 59.1 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.

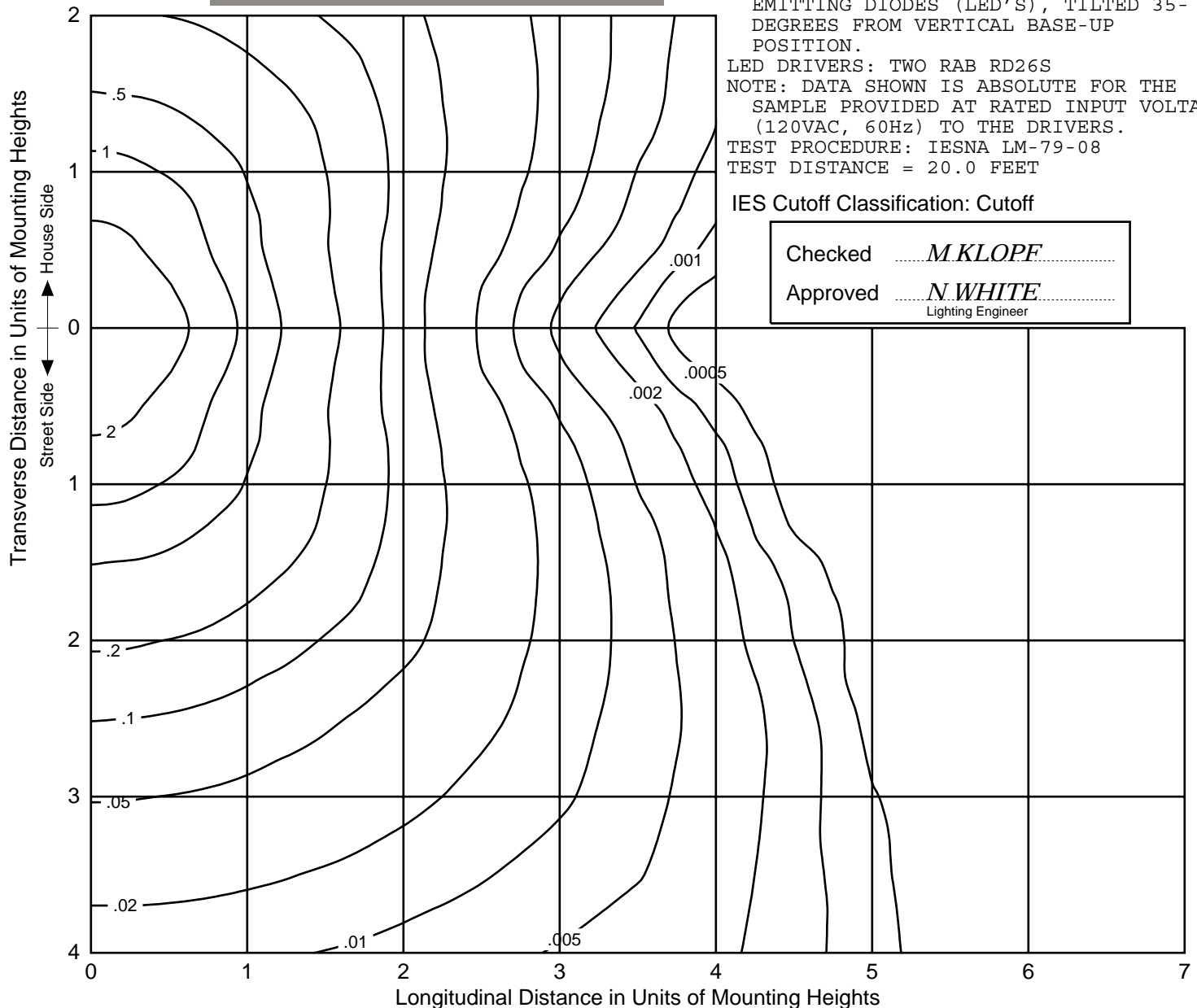
TEST PROCEDURE: IESNA LM-79-08

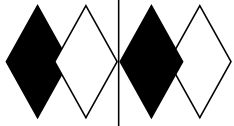
TEST DISTANCE = 20.0 FEET

IES Cutoff Classification: Cutoff

Checked M.KLOPF

Approved N.WHITE
Lighting Engineer





itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

NVLAP
NVLAP LAB CODE: 200925-0

INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL81187

ISSUE DATE: 04/10/14

PAGE: 2 OF 7

PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: CLED2X26N - PLED2X26N -

PLED2X26N/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 = 59.1 AT 120.0 VOLTS

LAMPS: TWO WHITE MULTI-CHIP LIGHT

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

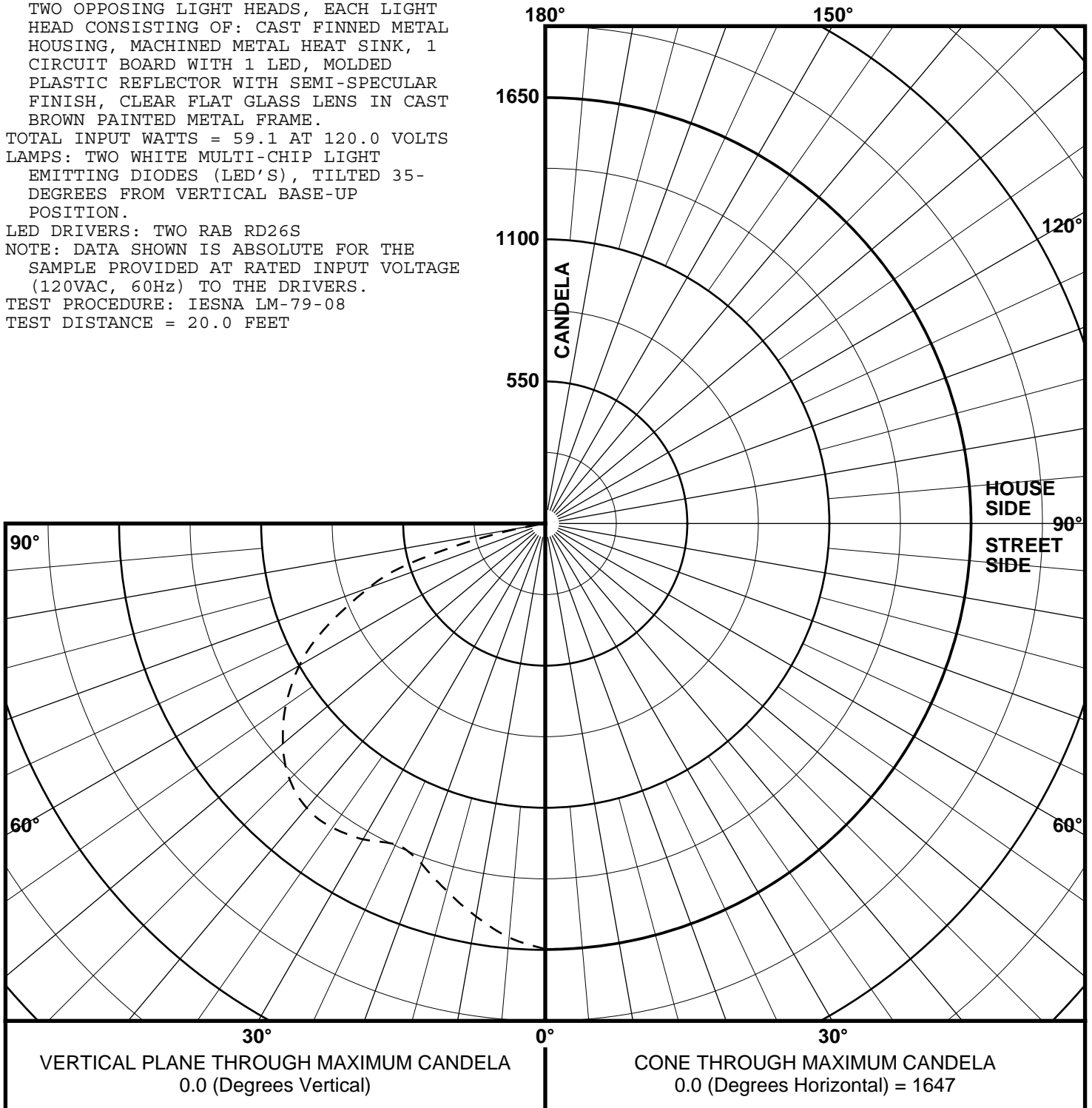
LED DRIVERS: TWO RAB RD26S

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

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

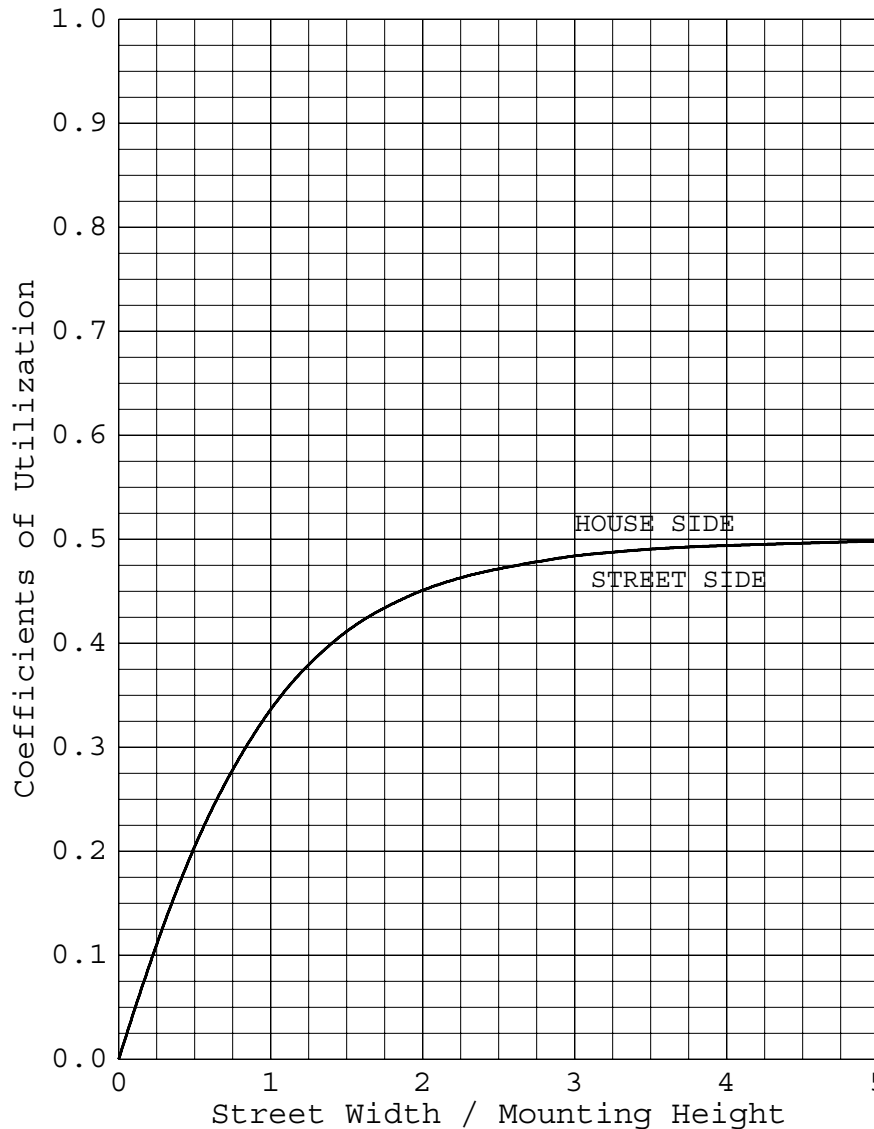




REPORT NUMBER: ITL81187
ISSUE DATE: 04/10/14
PREPARED FOR: RAB LIGHTING, INC.

PAGE: 3 OF 7

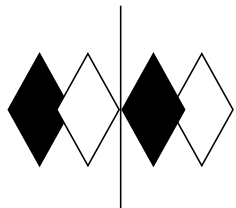
COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	2344	50.0
DOWNWARD HOUSE SIDE	2344	50.0
DOWNWARD TOTAL	4688	100.0
UPWARD STREET SIDE	0	0.0
UPWARD HOUSE SIDE	0	0.0
UPWARD TOTAL	0	0.0
TOTAL FLUX	4688	100.0

EFFICACY = 79.3 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.



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com



INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

REPORT NUMBER: ITL81187
ISSUE DATE: 04/10/14
PREPARED FOR: RAB LIGHTING, INC.

PAGE: 4 OF 7

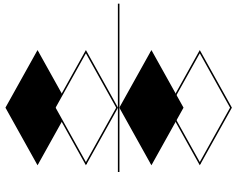
FLUX DISTRIBUTION BY SOLID ANGLE

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

	LUMENS	PERCENT OF FIXTURE	BUG ZONE RATINGS
FORWARD LIGHT	2344.	50.0	
FL (0- 30)	602.1	12.8	
FM (30- 60)	1236.5	26.4	
FH (60- 80)	497.5	10.6	G0
FVH(80- 90)	8.0	0.2	G0
BACK LIGHT	2344.	50.0	
BL (0- 30)	602.1	12.8	B2
BM (30- 60)	1236.5	26.4	B2
BH (60- 80)	497.5	10.6	B1 G1
BVH(80- 90)	8.0	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	4688.	100.0	

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

BUG RATING: B2 U1 G1



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

NVLAP
NVLAP LAB CODE: 200925-0

INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL81187
ISSUE DATE: 04/10/14
PREPARED FOR: RAB LIGHTING, INC.

PAGE: 5 OF 7

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.	0.	0.	0.	0.	0.	0.	0.	0.
	87.5	3.	3.	3.	2.	2.	2.	1.	0.	0.	0.	0.
	85.0	7.	8.	7.	7.	6.	5.	3.	2.	1.	1.	1.
V	82.5	16.	17.	18.	19.	23.	40.	9.	3.	2.	1.	1.
E	80.0	64.	69.	83.	113.	153.	181.	74.	11.	4.	3.	2.
R	77.5	239.	248.	262.	290.	326.	336.	223.	85.	18.	5.	5.
T	75.0	434.	442.	458.	479.	481.	429.	331.	204.	80.	17.	9.
I	72.5	620.	621.	621.	608.	571.	543.	401.	282.	163.	54.	32.
C	70.0	726.	722.	711.	700.	677.	666.	484.	342.	220.	104.	83.
A	67.5	823.	823.	811.	802.	784.	746.	574.	409.	276.	168.	159.
L	65.0	927.	927.	916.	900.	868.	805.	643.	481.	336.	247.	247.
	62.5	1022.	1022.	1007.	980.	933.	858.	698.	539.	394.	335.	340.
A	60.0	1099.	1098.	1079.	1047.	994.	907.	748.	585.	447.	425.	435.
N	57.5	1165.	1164.	1143.	1111.	1049.	952.	793.	626.	505.	515.	529.
G	55.0	1226.	1224.	1202.	1169.	1097.	992.	835.	668.	571.	604.	619.
L	52.5	1279.	1275.	1256.	1222.	1140.	1027.	871.	709.	642.	689.	705.
E	50.0	1326.	1323.	1305.	1269.	1177.	1057.	905.	750.	716.	771.	787.
	47.5	1368.	1363.	1346.	1307.	1207.	1081.	935.	797.	794.	851.	866.
	45.0	1400.	1394.	1378.	1334.	1229.	1101.	965.	854.	871.	928.	943.
	42.5	1423.	1416.	1400.	1350.	1244.	1118.	992.	918.	948.	1004.	1018.
	40.0	1437.	1430.	1413.	1357.	1254.	1135.	1020.	985.	1023.	1078.	1090.
	37.5	1442.	1434.	1414.	1357.	1259.	1151.	1061.	1053.	1094.	1149.	1159.
	35.0	1437.	1430.	1408.	1351.	1264.	1164.	1113.	1119.	1162.	1214.	1224.
	32.5	1426.	1417.	1396.	1345.	1262.	1187.	1170.	1183.	1227.	1275.	1284.
	30.0	1411.	1402.	1382.	1333.	1265.	1225.	1228.	1245.	1286.	1331.	1338.
	25.0	1370.	1363.	1354.	1336.	1315.	1317.	1336.	1357.	1394.	1428.	1432.
	20.0	1401.	1399.	1401.	1401.	1394.	1405.	1431.	1451.	1482.	1507.	1511.
	15.0	1472.	1471.	1474.	1477.	1472.	1486.	1513.	1530.	1551.	1568.	1570.
	10.0	1544.	1543.	1546.	1546.	1543.	1555.	1580.	1589.	1601.	1612.	1613.
	5.0	1608.	1608.	1608.	1606.	1599.	1604.	1624.	1625.	1632.	1640.	1639.
	0.0<<	1647.	1647.	1647.	1647.	1647.	1647.	1647.	1647.	1647.	1647.	1647.

||
PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA



INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL81187
ISSUE DATE: 04/10/14
PREPARED FOR: RAB LIGHTING, INC.

PAGE: 6 OF 7

5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	39
5- 10	114
10- 15	182
15- 20	242
20- 25	292
25- 30	336
30- 35	375
35- 40	407
40- 45	427
45- 50	434
50- 55	426
55- 60	403
60- 65	364
65- 70	303
70- 75	221
75- 80	107
80- 85	15
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	153
0- 20	577
0- 30	1204
0- 40	1986
0- 50	2847
0- 60	3677
0- 70	4344
0- 80	4672
0- 90	4688
0-100	4688
0-110	4688
0-120	4688
0-130	4688
0-140	4688
0-150	4688
0-160	4688
0-170	4688
0-180	4688



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955



INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL81187
ISSUE DATE: 04/10/14
PREPARED FOR: RAB LIGHTING, INC.

PAGE: 7 OF 7

ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

THIS ITL REPORT WITH THE USE OF THE NVLAP LOGO SHALL NOT BE USED BY THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT BY NVLAP, NIST, OR ANY AGENCY OF THE FEDERAL GOVERNMENT.



INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303)442-1255 • FAX: (970)535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

Page 1 of 4

REPORT NUMBER: ITL81193
DATE: 04/15/14
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: CLED2X26N - PLED2X26N - PLED2X26N/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.

	Calibration Due:
INSTRUMENTS:	
Associated Power Technologies APT5040 AC Power Source	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)

THIS ITL REPORT WITH THE USE OF THE NVLAP LOGO SHALL NOT BE USED BY THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT BY NVLAP, NIST, OR ANY AGENCY OF THE FEDERAL GOVERNMENT.

Checked	<i>N THOMAS</i>
Approved	<i>P O'CONNOR</i> Sphere Lab Supervisor



itl boulder

THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

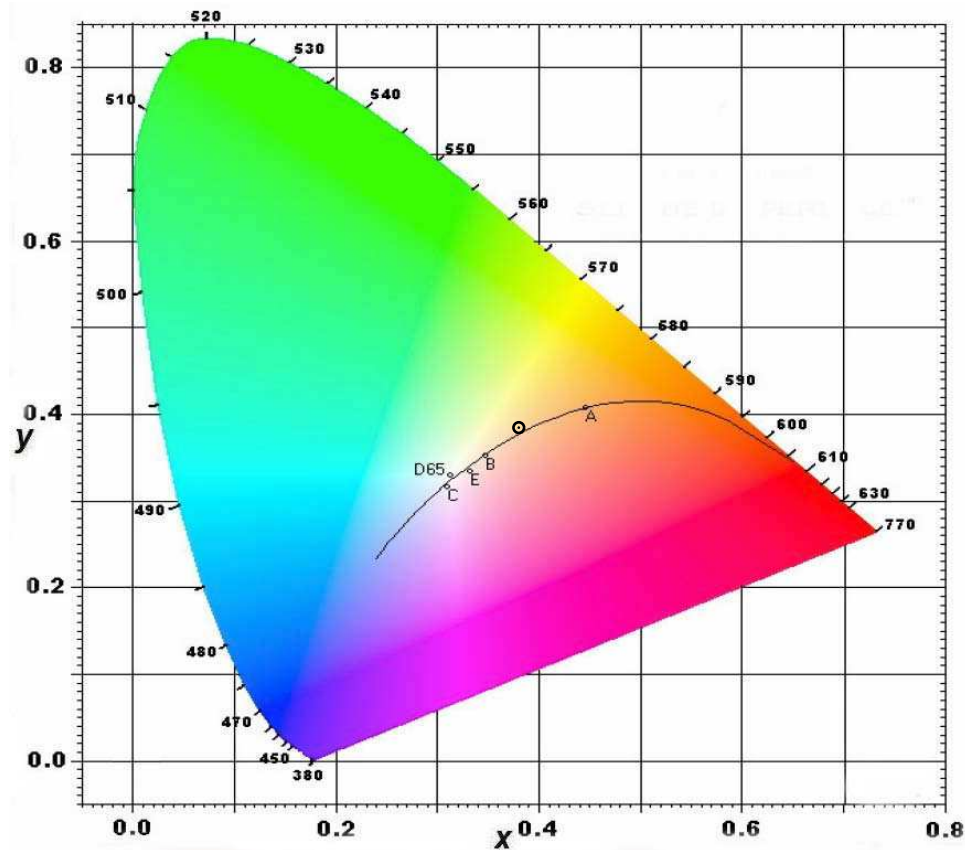
NVLAP
NVLAP LAB CODE: 200925-0

INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303)442-1255 • FAX: (970)535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com
REPORT NUMBER: ITL81193
DATE: 04/15/14
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: CLED2X26N - PLED2X26N - PLED2X26N/UP (SURFACE, PENDENT, PENDENT INDIRECT)

Page 4 of 4

CIE Chromaticity Diagram





INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303)442-1255 • FAX: (970)535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

Page 2 of 4

REPORT NUMBER: ITL81193
DATE: 04/15/14
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: CLED2X26N - PLED2X26N - PLED2X26N/UP (SURFACE, PENDENT, PENDENT INDIRECT)

RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3800
Chromaticity Ordinate y	0.3842
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2219
Chromaticity Ordinate v'	0.5048
Correlated Color Temp CCT (K)	4064
ANSI C78.377-2008 Duv	0.004
Total Radiant Flux (milliWatts)	13983 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.495
Input Power (Watts)	59.1
Input Power Factor (%)	99.5
Input Current THD (%)	8.6
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)	0.236
Input Power (Watts)	58.9
Input Power Factor (%)	90.1
Input Current THD (%)	11.1
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	93
R4 Moderate yellowish green	82
R5 Light bluish green	80
R6 Light blue	83
R7 Light violet	87
R8 Light reddish purple	64
R9 Strong red	3
R10 Strong yellow	69
R11 Strong green	80
R12 Strong blue	57
R13 Light yellowish pink (skin)	81
R14 Moderate olive green (leaf)	96

*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.



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

NVLAP
NVLAP LAB CODE: 200925-0

INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303)442-1255 • FAX: (970)535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com
REPORT NUMBER: ITL81193
DATE: 04/15/14
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: CLED2X26N - PLED2X26N - PLED2X26N/UP (SURFACE, PENDENT, PENDENT INDIRECT)

Page 3 of 4

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.323	515	53.195	650	39.687
385	0.319	520	57.057	655	35.329
390	0.343	525	59.792	660	31.208
395	0.387	530	61.735	665	27.452
400	0.485	535	63.043	670	24.016
405	0.705	540	64.002	675	20.936
410	1.142	545	64.934	680	18.204
415	2.021	550	66.051	685	15.774
420	3.800	555	67.382	690	13.648
425	7.219	560	69.051	695	11.776
430	13.333	565	71.035	700	10.147
435	23.047	570	73.206	705	8.744
440	38.032	575	75.382	710	7.532
445	61.162	580	77.311	715	6.471
450	81.467	585	78.819	720	5.566
455	76.395	590	79.763	725	4.770
460	55.413	595	79.935	730	4.081
465	40.489	600	79.269	735	3.506
470	31.096	605	77.761	740	3.012
475	24.328	610	75.224	745	2.595
480	21.462	615	71.845	750	2.247
485	22.091	620	68.045	755	1.934
490	24.997	625	63.674	760	1.668
495	29.820	630	58.916	765	1.439
500	36.008	635	54.137	770	1.244
505	42.434	640	49.157	775	1.080
510	48.429	645	44.280	780	0.935

