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THE LIGHT CENTER OF THE INDUSTRY SINCE 1955
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: ITL82343
DATE: 07/31/14
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: TRLED2X4-37YN/D10

ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

LUMINAIRE: FABRICATED METAL HOUSING WITH WHITE PAINTED INTERIOR FINISH, FORMED WHITE PAINTED METAL DRIVER COVER, 4 WHITE CIRCUIT BOARDS EACH WITH 32 LEDS, CLEAR FLAT PRISMATIC PLASTIC LENS IN FABRICATED WHITE PAINTED METAL FRAME. LENS PRISMS OUT.

LAMP: ONE HUNDRED TWENTY-EIGHT WHITE LIGHT EMITTING DIODES (LEDS), VERTICAL BASE-UP POSITION.

DRIVER: RAB LIGHTING RDD-037W-350G, DRIVER HAS MULTIPLE LEADS, ONLY LINE INPUT AND LED OUTPUT LEADS CONNECTED FOR THIS TEST.

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (120.0 AND 277.0 VAC, 60Hz) TO THE DRIVER. DRIVER INFORMATION PROVIDED BY CLIENT.

INSTRUMENTS:		Calibration Due:
	Associated Power Technologies APT5040 AC Power Source	N/A
	Yokogawa WT210 Digital Power Meter #8	12/31/14
	Ocean Optics QE65000 Spectroradiometer	07/14/15
	ITL 2.0m Diameter Integrating Sphere S20-2, 4PI Geometry	07/14/15

OBJECT OF TEST: Measure the Total Radiant Flux*, Spectral Power Distribution (SPD), Correlated Color Temperature (CCT), Color Rendering Indices (CRIa,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)

Checked *N THOMAS*
Approved *P O'CONNOR*
Sphere Lab Supervisor

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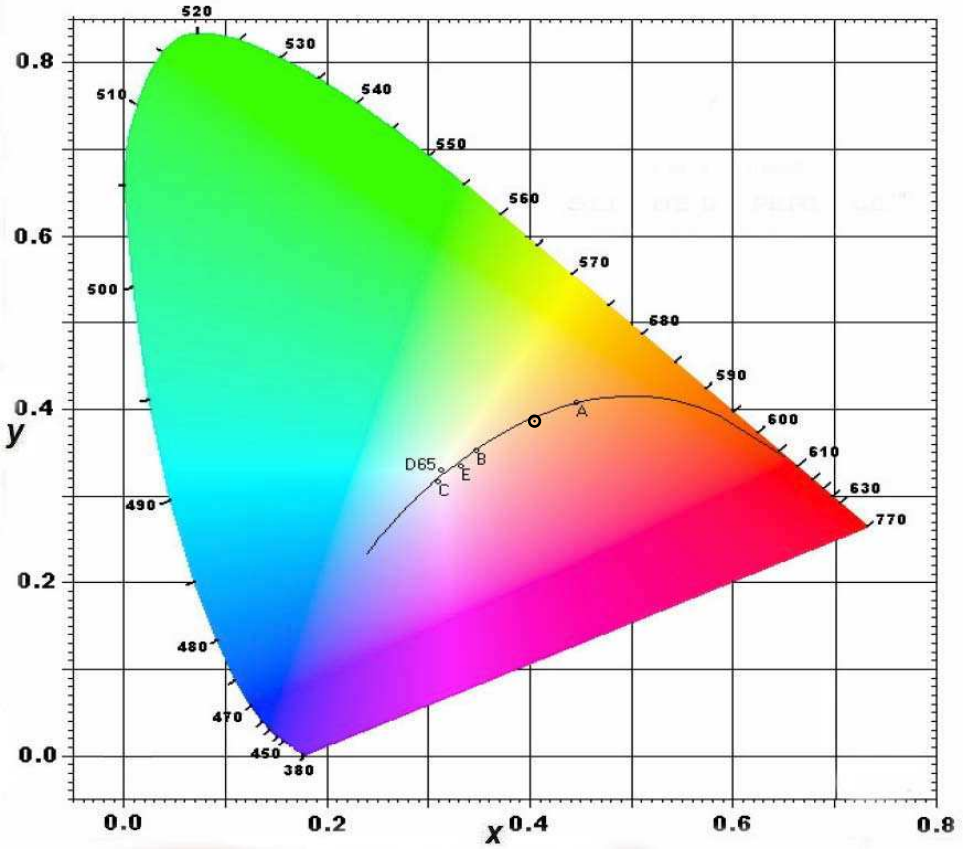
CIE Chromaticity Diagram



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RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4044
Chromaticity Ordinate y	0.3859
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2371
Chromaticity Ordinate v'	0.5091
Correlated Color Temp CCT (K)	3479
ANSI C78.377-2008 Duv	-0.002
Total Radiant Flux (milliWatts)	11349 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.314
Input Power (Watts)	37.4
Input Power Factor (%)	99.3
Input Current THD (%)	10.1
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)	0.143
Input Power (Watts)	37.2
Input Power Factor (%)	93.9
Input Current THD (%)	13.1
Input Voltage THD (%)	0.1

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	84
R1 Light greyish red	83
R2 Dark greyish yellow	90
R3 Strong yellowish green	94
R4 Moderate yellowish green	82
R5 Light bluish green	82
R6 Light blue	86
R7 Light violet	87
R8 Light reddish purple	70
R9 Strong red	28
R10 Strong yellow	76
R11 Strong green	79
R12 Strong blue	63
R13 Light yellowish pink (skin)	85
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	0.296	515	33.139	650	43.308
385	0.289	520	35.787	655	40.033
390	0.286	525	38.070	660	36.712
395	0.303	530	40.187	665	33.277
400	0.352	535	42.172	670	29.977
405	0.444	540	44.172	675	26.984
410	0.643	545	46.241	680	24.417
415	1.072	550	48.329	685	22.082
420	1.929	555	50.472	690	19.850
425	3.593	560	52.723	695	17.682
430	6.709	565	54.866	700	15.645
435	11.900	570	56.833	705	13.742
440	20.111	575	58.576	710	12.040
445	34.247	580	60.057	715	10.491
450	52.485	585	61.197	720	9.131
455	57.151	590	61.912	725	7.945
460	42.641	595	62.214	730	6.911
465	30.645	600	62.117	735	6.006
470	24.446	605	61.682	740	5.235
475	18.689	610	61.043	745	4.547
480	15.332	615	59.993	750	3.949
485	15.173	620	58.654	755	3.430
490	16.636	625	56.947	760	2.967
495	19.224	630	54.850	765	2.562
500	22.757	635	52.343	770	2.210
505	26.581	640	49.515	775	1.910
510	30.058	645	46.487	780	1.643