RAB LIGHTING

NVLAP LAB CODE: 201058-0

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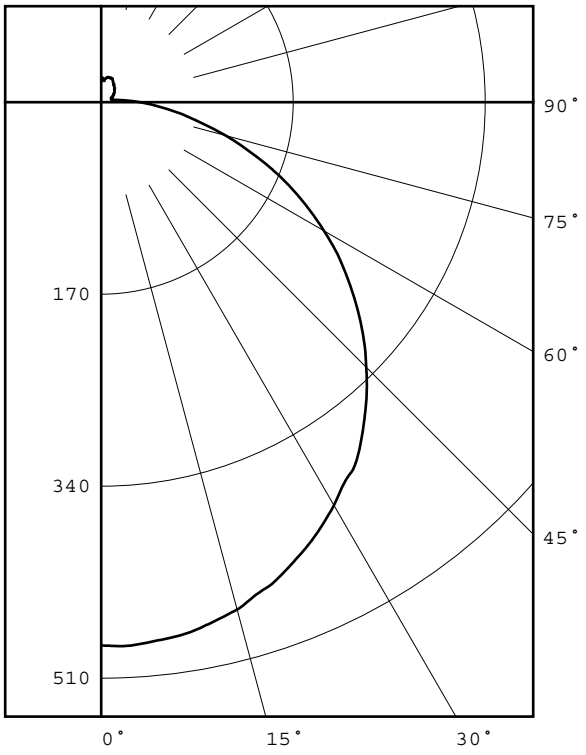
REPORT NUMBER: RAB02115 PAGE: 1 OF 7
ISSUE DATE: 06/20/16 DATE SAMPLE TESTED: 06/20/16
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: SK16XL20RDYY
LUMINAIRE: STAMPED STEEL CEILING PAN WITH WHITE FINISH, 10 LED BOARDS EACH WITH 8 LEDS, ACRYLIC DROP LENS WITH SMOOTH FINISH AND SILVER TRIM.
LAMPS: EIGHTY WHITE LIGHT EMITTING DIODES (LEDS), VERTICAL BASE-UP POSITION.
NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.
TOTAL INPUT WATTS = 19.924 AT 120.0 VOLTS.
LED DRIVER: RDD-MK022-MKP45-A0700
(SEE PAGE 2 FOR MORE INFORMATION)

DEG	CANDELA	LUMENS
0	481	
5	480	46
15	465	131
25	433	200
35	392	244
45	332	256
55	264	236
65	190	188
75	114	121
85	54	61
90	34	
95	20	23
105	9	10
115	11	11
125	14	12
135	17	13
145	19	12
155	23	10
165	23	6
175	20	2
180	22	



ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	376	23.8
0- 40	620	39.2
0- 60	1113	70.3
0- 90	1482	93.7
90-120	44	2.8
90-130	56	3.6
90-150	81	5.1
90-180	100	6.3
0-180	1583	100.0

TOTAL INPUT WATTS = 19.9
EFFICACY = 79.5 Lm/W
CIE TYPE - DIRECT
LUMINAIRE SPACING CRITERION = 1.3

Checked	*X.CAO*
Approved	*D.WANG-MUNSON*

REPORT NUMBER: RAB02115 PAGE: 2 OF 7
ISSUE DATE: 06/20/16 DATE SAMPLE TESTED: 06/20/16
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ADDITIONAL INFORMATION

TST PROCEDURE: IESNA LM 79-08
ACCREDITED LABORATORY CODE 201058-0
TEST DISTANCE = 25.25 FEET
NOTE: THIS 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.

REPORT NUMBER: RAB02115 PAGE: 3 OF 7
ISSUE DATE: 06/20/16 DATE SAMPLE TESTED: 06/20/16
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LUMINOUS DIAMETER: 16.000

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE IN DEG	AVERAGE
45	3618.
55	3547.
65	3465.
75	3394.
85	4775.

REPORT NUMBER: RAB02115 PAGE: 4 OF 7
ISSUE DATE: 06/20/16 DATE SAMPLE TESTED: 06/20/16
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CANDELA DISTRIBUTION

	0.0
0.0	481
5.0	480
10.0	475
15.0	465
20.0	451
25.0	433
30.0	412
35.0	392
40.0	363
45.0	332
50.0	299
55.0	264
60.0	228
65.0	190
70.0	151
75.0	114
80.0	81
85.0	54
90.0	34
95.0	20
100.0	12
105.0	9
110.0	9
115.0	11
120.0	12
125.0	14
130.0	15
135.0	17
140.0	18
145.0	19
150.0	21
155.0	23
160.0	23
165.0	23
170.0	21
175.0	20
180.0	22

REPORT NUMBER: RAB02115 PAGE: 5 OF 7
ISSUE DATE: 06/20/16 DATE SAMPLE TESTED: 06/20/16
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ZONAL LUMEN SUMMARY

0- 5	12.
5- 10	34.
10- 15	56.
15- 20	75.
20- 25	93.
25- 30	107.
30- 35	118.
35- 40	126.
40- 45	129.
45- 50	128.
50- 55	122.
55- 60	114.
60- 65	102.
65- 70	86.
70- 75	69.
75- 80	52.
80- 85	37.
85- 90	24.
90- 95	15.
95-100	8.
100-105	5.
105-110	5.
110-115	5.
115-120	6.
120-125	6.
125-130	6.
130-135	6.
135-140	6.
140-145	6.
145-150	6.
150-155	6.
155-160	5.
160-165	4.
165-170	3.
170-175	1.
175-180	1.

REPORT NUMBER: RAB02115 PAGE: 6 OF 7
ISSUE DATE: 06/20/16 DATE SAMPLE TESTED: 06/20/16
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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	12
5- 10	34
10- 15	56
15- 20	75
20- 25	93
25- 30	107
30- 35	118
35- 40	126
40- 45	129
45- 50	128
50- 55	122
55- 60	114
60- 65	102
65- 70	86
70- 75	69
75- 80	52
80- 85	37
85- 90	24
90- 95	15
95-100	8
100-105	5
105-110	5
110-115	5
115-120	6
120-125	6
125-130	6
130-135	6
135-140	6
140-145	6
145-150	6
150-155	6
155-160	5
160-165	4
165-170	3
170-175	1
175-180	1

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	46
0- 20	177
0- 30	376
0- 40	620
0- 50	877
0- 60	1113
0- 70	1301
0- 80	1422
0- 90	1482
0-100	1505
0-110	1516
0-120	1526
0-130	1539
0-140	1552
0-150	1564
0-160	1574
0-170	1581
0-180	1583

REPORT NUMBER: RAB02115 PAGE: 7 OF 7
ISSUE DATE: 06/20/16 DATE SAMPLE TESTED: 06/20/16

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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	118	118	118	118	114	114	114	114	108	108	108	102	102	102	96	96	96	94
1	106	101	96	92	103	98	94	90	93	89	86	88	85	82	83	81	79	76
2	96	88	80	74	93	85	78	73	80	75	70	76	72	68	72	69	65	63
3	87	77	68	61	84	74	67	60	71	64	58	67	61	57	64	59	55	52
4	80	68	59	52	77	66	57	51	62	55	50	59	53	48	56	51	47	44
5	73	60	51	44	71	59	50	44	56	48	43	53	47	42	51	45	41	38
6	68	54	45	38	65	53	44	38	50	43	37	48	41	36	46	40	36	33
7	63	49	40	34	61	48	39	33	46	38	33	44	37	32	42	36	31	29
8	58	45	36	30	56	44	35	30	42	34	29	40	33	29	38	33	28	26
9	54	41	33	27	53	40	32	27	38	31	26	37	30	26	35	30	25	23
10	51	38	30	24	49	37	29	24	35	29	24	34	28	23	33	27	23	21

ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES 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.

NVLAP LAB CODE: 201058-0

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REPORT NUMBER: RAB02116
DATE: 6/21/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: SK16XL20RDYY

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: STAMPED STEEL CEILING PAN WITH WHITE FINISH, 10 LED BOARDS EACH WITH 8 LEDS, ACRYLIC DROP LENS WITH SMOOTH FINISH AND SILVER TRIM.

LAMP: EIGHTY WHITE LIGHT EMITTING DIODES (LEDS), VERTICAL BASE-UP POSITION.

DRIVER: RDD-MK022-MKP45-A0700

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (120.0 VAC , 60Hz) TO THE TEST SAMPLE.

INSTRUMENTS:		Calibration Due:
	GWINSTEK PROGRAMMABLE AC POWER SOURCE APS-7100	N/A
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	2/26/17
	OCEAN OPTICS QE65PRO Spectroradiometer	5/31/17
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	5/31/17

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.

PROCEDURE: The test sample was provided by the customer and had an unknown number of burn 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 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 X.CAO

Approved D.WANG-MUNSON
Lighting Engineer

REPORT NUMBER: RAB02116 Page 2 of 4
DATE: 6/21/2016
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CATALOG NUMBER: SK16XL20RDYY

RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4557
Chromaticity Ordinate y	0.4053
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2622
Chromaticity Ordinate v'	0.5247
Correlated Color Temp CCT (K)	2716
Color Rendering Index (CRIa)	84
Color Rendering Index 1 (Light greyish red)	85
Color Rendering Index 2 (Dark greyish yellow)	97
Color Rendering Index 3 (Strong yellowish green)	91
Color Rendering Index 4 (Moderate yellowish green)	81
Color Rendering Index 5 (Light bluish green)	86
Color Rendering Index 6 (Light blue)	96
Color Rendering Index 7 (Light violet)	80
Color Rendering Index 8 (Light reddish purple)	60
Color Rendering Index 9 (Strong red)	19
Color Rendering Index 10 (Strong yellow)	93
Color Rendering Index 11 (Strong green)	82
Color Rendering Index 12 (Strong blue)	81
Color Rendering Index 13 (Light yellowish pink (skin))	88
Color Rendering Index 14 (Moderate olive green (leaf))	96
ANSI C78.377-2008 Duv	-0.002
Total Radiant Flux (milliWatts)	5064 *
ELECTRICAL FOR SPECTRORADIOMETRIC TEST	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.169
Input Power (Watts)	19.9
Input Power Factor (%)	98.0
Input Current THD (%)	17.7
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

*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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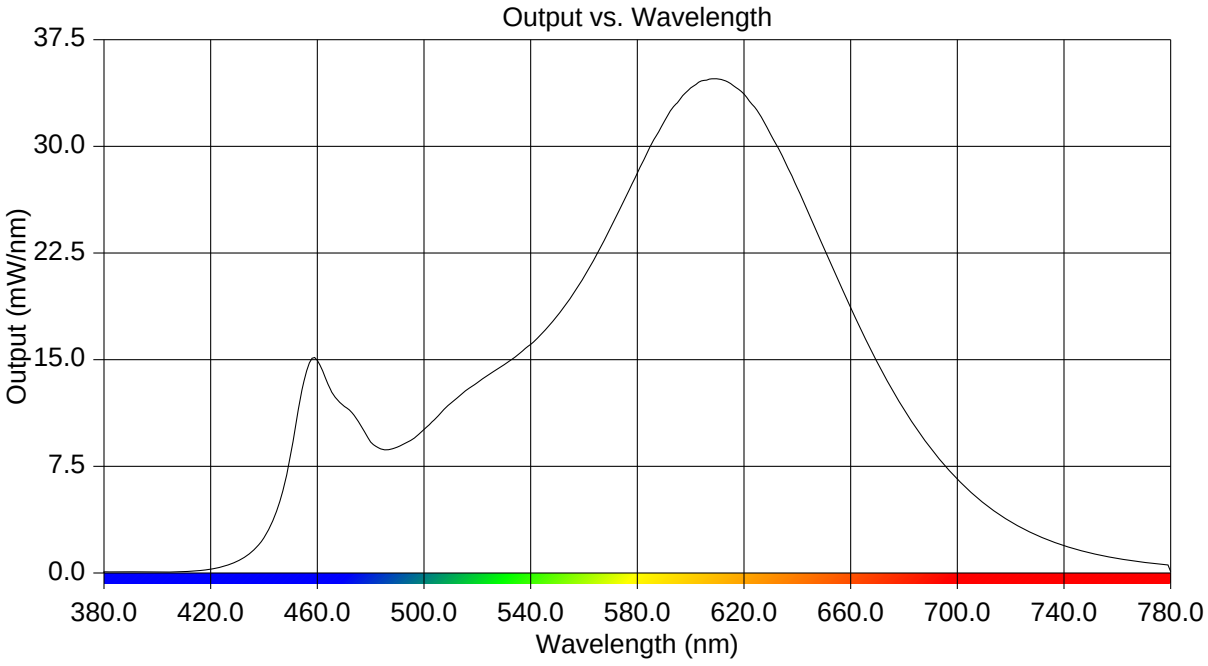
RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.080	515	12.717	650	22.817
385	0.084	520	13.381	655	20.743
390	0.076	525	14.048	660	18.658
395	0.069	530	14.639	665	16.670
400	0.073	535	15.318	670	14.785
405	0.076	540	16.074	675	13.086
410	0.093	545	16.997	680	11.513
415	0.146	550	18.082	685	10.060
420	0.269	555	19.380	690	8.777
425	0.476	560	20.825	695	7.636
430	0.829	565	22.454	700	6.601
435	1.428	570	24.278	705	5.699
440	2.479	575	26.217	710	4.909
445	4.480	580	28.117	715	4.212
450	8.367	585	30.051	720	3.612
455	13.500	590	31.723	725	3.079
460	14.948	595	33.056	730	2.635
465	12.884	600	34.106	735	2.254
470	11.732	605	34.637	740	1.917
475	10.757	610	34.750	745	1.639
480	9.206	615	34.411	750	1.407
485	8.665	620	33.678	755	1.195
490	8.852	625	32.535	760	1.027
495	9.313	630	30.834	765	0.875
500	10.092	635	29.077	770	0.750
505	10.977	640	27.068	775	0.645
510	11.930	645	24.951	780	0.096



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CIE Chromaticity Diagram