RAB LIGHTING

NVLAP LAB CODE: 201058-0

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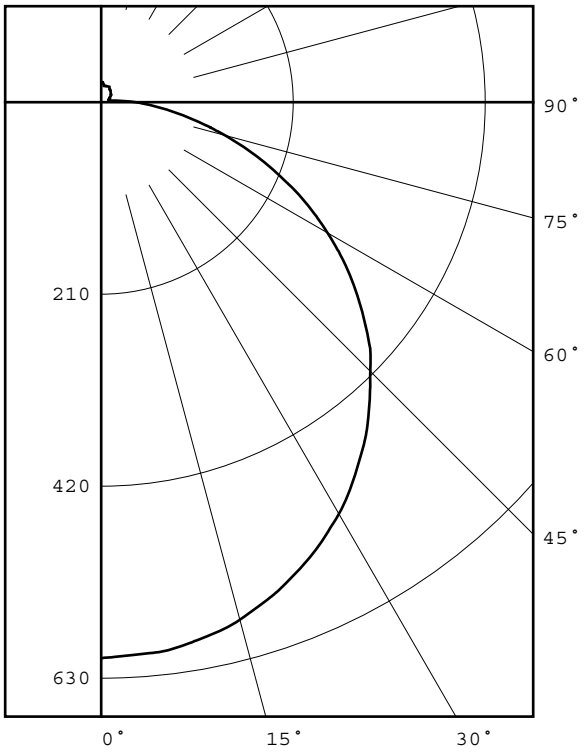
REPORT NUMBER: RAB02117 PAGE: 1 OF 7
ISSUE DATE: 06/20/16 DATE SAMPLE TESTED: 06/20/16
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: SK21XL25RDYY
LUMINAIRE: STAMPED STEEL CEILING PAN WITH WHITE FINISH, 10 LED BOARDS EACH WITH 10 LEDS, ACRYLIC DROP LENS WITH SMOOTH FINISH AND SILVER TRIM.
LAMPS: ONE-HUNDRED WHITE LIGHT EMITTING DIODES (LEDS), VERTICAL BASE-UP POSITION.
NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.
TOTAL INPUT WATTS = 24.375 AT 120.0 VOLTS.
LED DRIVER: RDD-MK022-MKP45-A0700
(SEE PAGE 2 FOR MORE INFORMATION)

DEG	CANDELA	LUMENS
0	608	
5	605	58
15	586	165
25	546	252
35	488	306
45	416	322
55	333	297
65	238	235
75	140	149
85	63	70
90	37	
95	19	23
105	8	9
115	10	10
125	13	11
135	15	11
145	17	10
155	19	9
165	18	5
175	21	2
180	22	



ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	474	24.4
0- 40	780	40.1
0- 60	1399	72.0
0- 90	1853	95.3
90-120	42	2.1
90-130	53	2.7
90-150	75	3.8
90-180	91	4.7
0-180	1944	100.0

TOTAL INPUT WATTS = 24.4
EFFICACY = 79.7 Lm/W
CIE TYPE - DIRECT
LUMINAIRE SPACING CRITERION = 1.3

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

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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.

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LUMINOUS DIAMETER: 19.220
HEIGHT OF SIDE : 3.460

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE IN DEG	AVERAGE
45	2556.
55	2336.
65	2016.
75	1557.
85	1066.

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CANDELA DISTRIBUTION

	0.0
0.0	608
5.0	605
10.0	598
15.0	586
20.0	568
25.0	546
30.0	520
35.0	488
40.0	454
45.0	416
50.0	377
55.0	333
60.0	286
65.0	238
70.0	188
75.0	140
80.0	97
85.0	63
90.0	37
95.0	19
100.0	10
105.0	8
110.0	9
115.0	10
120.0	11
125.0	13
130.0	14
135.0	15
140.0	16
145.0	17
150.0	18
155.0	19
160.0	19
165.0	18
170.0	18
175.0	21
180.0	22

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ZONAL LUMEN SUMMARY

0- 5	14.
5- 10	43.
10- 15	70.
15- 20	95.
20- 25	117.
25- 30	135.
30- 35	149.
35- 40	157.
40- 45	161.
45- 50	161.
50- 55	154.
55- 60	143.
60- 65	127.
65- 70	108.
70- 75	86.
75- 80	63.
80- 85	43.
85- 90	27.
90- 95	15.
95-100	8.
100-105	5.
105-110	4.
110-115	5.
115-120	5.
120-125	6.
125-130	6.
130-135	6.
135-140	6.
140-145	5.
145-150	5.
150-155	5.
155-160	4.
160-165	3.
165-170	2.
170-175	1.
175-180	1.

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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	14
5- 10	43
10- 15	70
15- 20	95
20- 25	117
25- 30	135
30- 35	149
35- 40	157
40- 45	161
45- 50	161
50- 55	154
55- 60	143
60- 65	127
65- 70	108
70- 75	86
75- 80	63
80- 85	43
85- 90	27
90- 95	15
95-100	8
100-105	5
105-110	4
110-115	5
115-120	5
120-125	6
125-130	6
130-135	6
135-140	6
140-145	5
145-150	5
150-155	5
155-160	4
160-165	3
165-170	2
170-175	1
175-180	1

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	58
0- 20	223
0- 30	474
0- 40	780
0- 50	1102
0- 60	1399
0- 70	1634
0- 80	1783
0- 90	1853
0-100	1876
0-110	1885
0-120	1895
0-130	1906
0-140	1918
0-150	1928
0-160	1937
0-170	1942
0-180	1944

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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	115	115	115	115	109	109	109	103	103	103	98	98	98	95
1	107	102	97	93	103	99	95	91	94	90	87	89	86	84	85	82	80	78
2	97	88	81	75	94	86	79	74	81	76	71	77	73	69	74	70	67	64
3	88	77	69	62	85	75	67	61	71	65	59	68	62	58	65	60	56	54
4	80	68	59	52	78	66	58	51	63	56	50	60	54	49	58	52	48	45
5	74	61	51	45	71	59	51	44	57	49	43	54	47	42	52	46	41	39
6	68	54	45	39	66	53	45	38	51	43	38	49	42	37	47	41	36	34
7	63	49	40	34	61	48	40	34	46	39	33	44	38	33	43	37	32	30
8	59	45	36	30	57	44	36	30	42	35	30	41	34	29	39	33	29	27
9	55	41	33	27	53	40	32	27	39	32	27	37	31	26	36	30	26	24
10	51	38	30	25	50	37	30	24	36	29	24	35	28	24	34	28	24	22

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.

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DATE: 6/21/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: SK21XL25RDYY

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

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

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

DRIVER: RDD-MK022-MKP45-A0700-MW

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

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RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4521
Chromaticity Ordinate y	0.4035
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2607
Chromaticity Ordinate v'	0.5234
Correlated Color Temp CCT (K)	2755
Color Rendering Index (CRIa)	85
Color Rendering Index 1 (Light greyish red)	86
Color Rendering Index 2 (Dark greyish yellow)	97
Color Rendering Index 3 (Strong yellowish green)	90
Color Rendering Index 4 (Moderate yellowish green)	82
Color Rendering Index 5 (Light bluish green)	87
Color Rendering Index 6 (Light blue)	96
Color Rendering Index 7 (Light violet)	80
Color Rendering Index 8 (Light reddish purple)	61
Color Rendering Index 9 (Strong red)	22
Color Rendering Index 10 (Strong yellow)	94
Color Rendering Index 11 (Strong green)	83
Color Rendering Index 12 (Strong blue)	81
Color Rendering Index 13 (Light yellowish pink (skin))	89
Color Rendering Index 14 (Moderate olive green (leaf))	95
ANSI C78.377-2008 Duv	-0.002
Total Radiant Flux (milliWatts)	6247 *
ELECTRICAL FOR SPECTRORADIOMETRIC TEST	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.207
Input Power (Watts)	24.4
Input Power Factor (%)	98.4
Input Current THD (%)	16.7
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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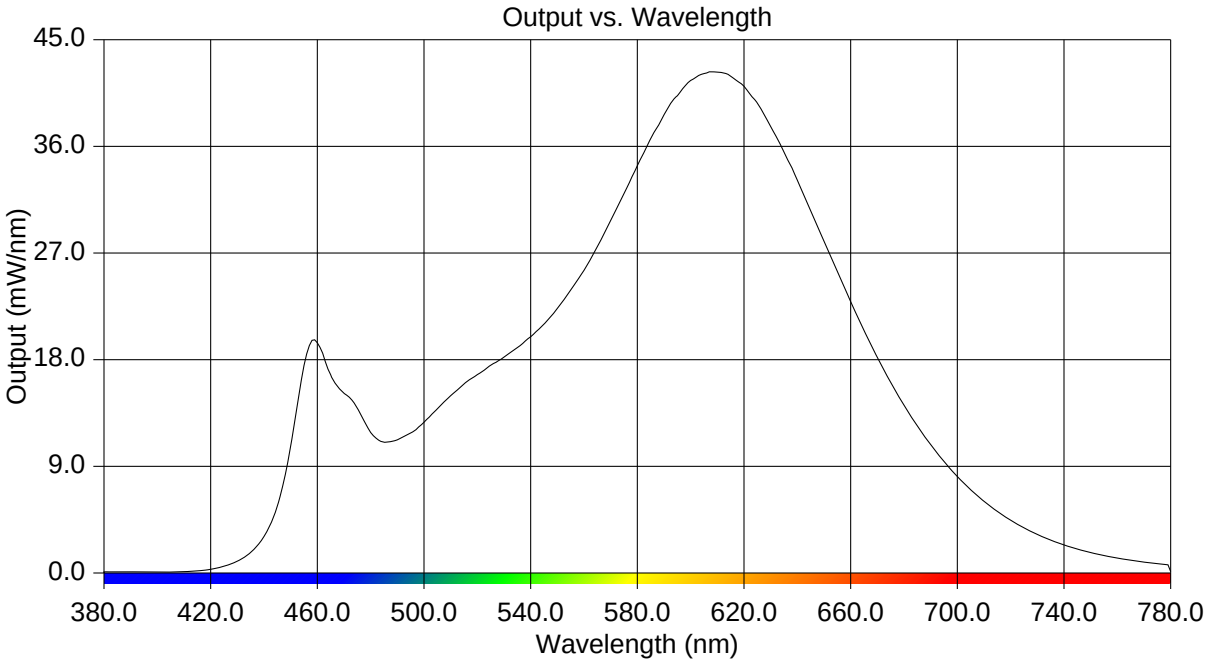
RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.094	515	15.943	650	27.991
385	0.093	520	16.738	655	25.433
390	0.090	525	17.532	660	22.894
395	0.082	530	18.211	665	20.461
400	0.082	535	19.018	670	18.169
405	0.085	540	19.932	675	16.087
410	0.111	545	20.992	680	14.169
415	0.168	550	22.344	685	12.394
420	0.312	555	23.855	690	10.817
425	0.570	560	25.535	695	9.413
430	0.991	565	27.492	700	8.137
435	1.738	570	29.713	705	7.036
440	3.083	575	32.018	710	6.058
445	5.646	580	34.364	715	5.195
450	10.708	585	36.649	720	4.454
455	17.509	590	38.664	725	3.805
460	19.422	595	40.261	730	3.250
465	16.728	600	41.559	735	2.770
470	15.163	605	42.139	740	2.361
475	13.903	610	42.266	745	2.016
480	11.854	615	41.916	750	1.729
485	11.035	620	41.068	755	1.471
490	11.235	625	39.676	760	1.261
495	11.816	630	37.671	765	1.072
500	12.718	635	35.523	770	0.920
505	13.832	640	33.144	775	0.785
510	14.961	645	30.566	780	0.117



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CIE Chromaticity Diagram