

REPORT NUMBER: RAB02186

ISSUE DATE: 07/05/16

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: SK12XL12RDN

LUMINAIRE: STAMPED STEEL CEILING PAN WITH WHITE FINISH, 7 LED BOARDS
EACH WITH 7 LEDS, ACRYLIC DROP LENS WITH SMOOTH FINISH AND SILVER TRIM.

LAMPS: FORTY-NINE WHITE LIGHT EMITTING DIODES (LEDs), VERTICAL BASE-UP POSITION.

NOTE: DATA SHOWN IS ABSOLUTE FOR THE
SAMPLE PROVIDED.

TOTAL INPUT WATTS = 12.163 AT 120.0 VOLTS.

LED DRIVER: RDD-MK015-MKP40-A0500

(SEE PAGE 2 FOR MORE INFORMATION)

PAGE: 1 OF 7
DATE SAMPLE TESTED: 07/05/16

DEG	CANDELA	LUMENS
0	339	
5	338	32
15	327	92
25	306	141
35	274	172
45	234	180
55	186	166
65	134	132
75	82	87
85	42	46
90	27	
95	17	19
105	7	8
115	6	6
125	6	6
135	7	5
145	8	5
155	8	4
165	9	2
175	6	1
180	6	

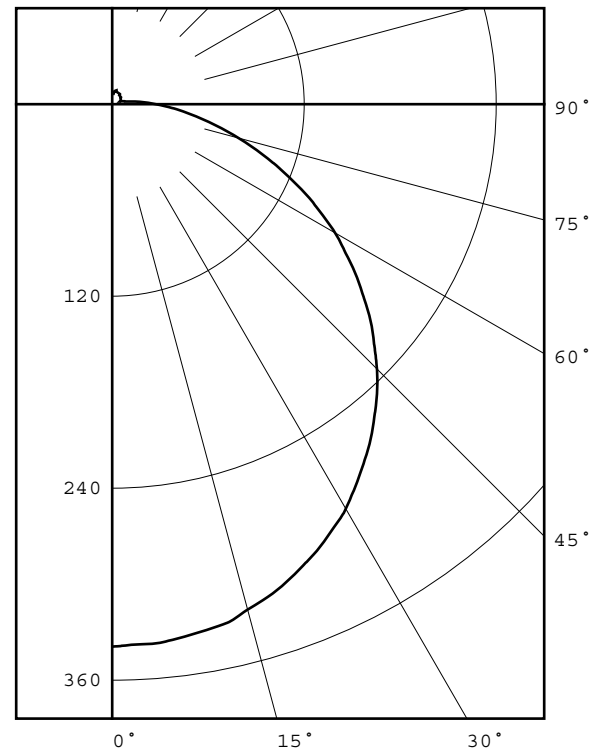
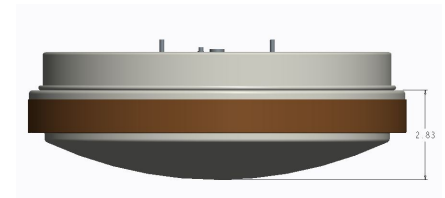
ZONAL LUMEN SUMMARY		
ZONE	LUMENS	%FIXT
0- 30	266	24.0
0- 40	437	39.6
0- 60	784	70.9
0- 90	1049	95.0
90-120	33	3.0
90-130	38	3.5
90-150	49	4.4
90-180	55	5.0
0-180	1105	100.0

TOTAL INPUT WATTS = 12.2

EFFICACY = 90.6 Lm/W

CIE TYPE - DIRECT

LUMINAIRE SPACING CRITERION = 1.3



Checked	<u>X.CAO</u>
Approved	<u>D.WANG-MUNSON</u>

REPORT NUMBER: RAB02186
ISSUE DATE: 07/05/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 2 OF 7
DATE SAMPLE TESTED: 07/05/16

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: RAB02186
ISSUE DATE: 07/05/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 3 OF 7
DATE SAMPLE TESTED: 07/05/16

LUMINOUS DIAMETER: 11.060
HEIGHT OF SIDE : 2.830

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE AVERAGE

IN DEG

45	4026.
55	3569.
65	3010.
75	2306.
85	1645.

REPORT NUMBER: RAB02186
ISSUE DATE: 07/05/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 4 OF 7
DATE SAMPLE TESTED: 07/05/16

CANDELA DISTRIBUTION

	0.0
0.0	339
5.0	338
10.0	334
15.0	327
20.0	318
25.0	306
30.0	292
35.0	274
40.0	255
45.0	234
50.0	211
55.0	186
60.0	161
65.0	134
70.0	107
75.0	82
80.0	60
85.0	42
90.0	27
95.0	17
100.0	10
105.0	7
110.0	5
115.0	6
120.0	6
125.0	6
130.0	7
135.0	7
140.0	7
145.0	8
150.0	8
155.0	8
160.0	8
165.0	9
170.0	8
175.0	6
180.0	6

REPORT NUMBER: RAB02186
ISSUE DATE: 07/05/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 5 OF 7
DATE SAMPLE TESTED: 07/05/16

ZONAL LUMEN SUMMARY

0- 5	8.
5- 10	24.
10- 15	39.
15- 20	53.
20- 25	65.
25- 30	76.
30- 35	83.
35- 40	88.
40- 45	91.
45- 50	90.
50- 55	86.
55- 60	80.
60- 65	72.
65- 70	61.
70- 75	49.
75- 80	38.
80- 85	27.
85- 90	19.
90- 95	12.
95-100	7.
100-105	4.
105-110	3.
110-115	3.
115-120	3.
120-125	3.
125-130	3.
130-135	3.
135-140	3.
140-145	3.
145-150	2.
150-155	2.
155-160	2.
160-165	1.
165-170	1.
170-175	1.
175-180	0.

REPORT NUMBER: RAB02186
 ISSUE DATE: 07/05/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 6 OF 7
 DATE SAMPLE TESTED: 07/05/16

5-DEGREE ZONAL LUMEN SUMMARY

0- 5	8
5- 10	24
10- 15	39
15- 20	53
20- 25	65
25- 30	76
30- 35	83
35- 40	88
40- 45	91
45- 50	90
50- 55	86
55- 60	80
60- 65	72
65- 70	61
70- 75	49
75- 80	38
80- 85	27
85- 90	19
90- 95	12
95-100	7
100-105	4
105-110	3
110-115	3
115-120	3
120-125	3
125-130	3
130-135	3
135-140	3
140-145	3
145-150	2
150-155	2
155-160	2
160-165	1
165-170	1
170-175	1
175-180	0

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	32
0- 20	125
0- 30	266
0- 40	437
0- 50	618
0- 60	784
0- 70	916
0- 80	1003
0- 90	1049
0-100	1069
0-110	1076
0-120	1082
0-130	1088
0-140	1093
0-150	1098
0-160	1102
0-170	1104
0-180	1105

REPORT NUMBER: RAB02186
ISSUE DATE: 07/05/16

PAGE: 7 OF 7
DATE SAMPLE TESTED: 07/05/16

PREPARED FOR: RAB LIGHTING INC.

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	108	108	108	103	103	103	97	97	97	95
1	106	101	96	92	103	98	94	90	93	90	86	88	85	83	84	82	79	77
2	96	88	80	74	93	85	79	73	81	75	70	77	72	68	73	69	66	63
3	88	77	68	61	85	75	67	60	71	64	59	67	62	57	64	59	55	53
4	80	68	58	52	77	66	57	51	63	55	50	60	53	48	57	52	47	45
5	73	60	51	44	71	59	50	44	56	49	43	54	47	42	51	45	41	39
6	68	54	45	38	65	53	44	38	51	43	37	48	42	37	46	40	36	34
7	63	49	40	34	61	48	39	33	46	38	33	44	37	32	42	36	32	30
8	58	45	36	30	57	44	36	30	42	35	29	40	34	29	39	33	28	26
9	55	41	33	27	53	40	32	27	39	31	26	37	31	26	36	30	26	24
10	51	38	30	24	50	37	29	24	36	29	24	34	28	24	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.

REPORT NUMBER: RAB02187
DATE: 7/1/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: SK12XL12RDN

Page 1 of 4

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: STAMPED STEEL CEILING PAN WITH WHITE FINISH, 7 LED BOARDS EACH WITH 7 LEDS, ACRYLIC DROP LENS WITH SMOOTH FINISH AND SILVER TRIM.

LAMP: FORTY-NINE WHITE LIGHT EMITTING DIODES (LEDs), VERTICAL BASE-UP POSITION.

DRIVER: RDD-MK015-MKP40-A0500

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

INSTRUMENTS:	GWINSTEK PROGRAMMABLE AC POWER SOURCE APS-7100	Calibration Due:
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	N/A
	OCEAN OPTICS QE65PRO Spectroradiometer	2/26/17
	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 (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.

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	<u>X.CAO</u>
Approved	<u>D.WANG-MUNSON</u> Lighting Engineer

REPORT NUMBER: RAB02187
 DATE: 7/1/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: SK12XL12RDN

Page 2 of 4

RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3826
Chromaticity Ordinate y	0.3822
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2244
Chromaticity Ordinate v'	0.5043
Correlated Color Temp CCT (K)	3982
Color Rendering Index (CRIa)	82
Color Rendering Index 1 (Light greyish red)	80
Color Rendering Index 2 (Dark greyish yellow)	89
Color Rendering Index 3 (Strong yellowish green)	95
Color Rendering Index 4 (Moderate yellowish green)	81
Color Rendering Index 5 (Light bluish green)	81
Color Rendering Index 6 (Light blue)	85
Color Rendering Index 7 (Light violet)	86
Color Rendering Index 8 (Light reddish purple)	63
Color Rendering Index 9 (Strong red)	5
Color Rendering Index 10 (Strong yellow)	74
Color Rendering Index 11 (Strong green)	80
Color Rendering Index 12 (Strong blue)	61
Color Rendering Index 13 (Light yellowish pink (skin))	82
Color Rendering Index 14 (Moderate olive green (leaf))	98
ANSI C78.377-2008 Duv	0.002
Total Radiant Flux (milliWatts)	3325 *
ELECTRICAL FOR SPECTRORADIOMETRIC TEST	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.105
Input Power (Watts)	12.2
Input Power Factor (%)	96.6
Input Current THD (%)	21.2
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

*NOTE:

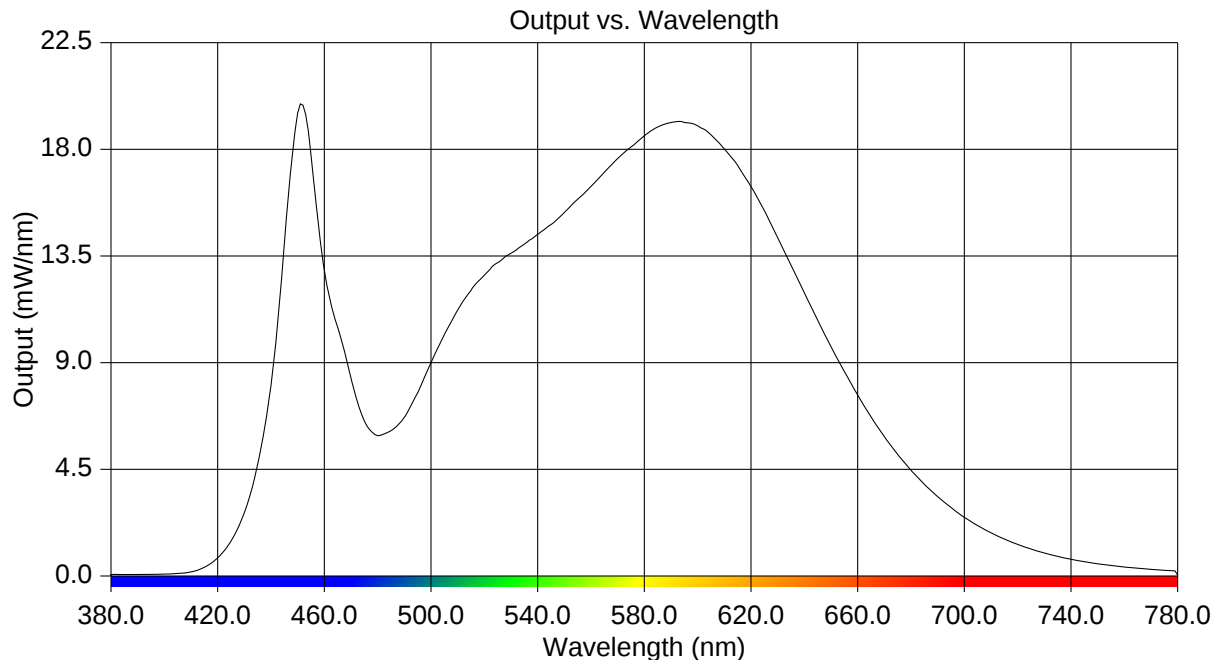
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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.

REPORT NUMBER: RAB02187
 DATE: 7/1/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: SK12XL12RDN

Page 3 of 4

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.062	515	12.048	650	9.665
385	0.062	520	12.693	655	8.629
390	0.064	525	13.219	660	7.633
395	0.065	530	13.617	665	6.708
400	0.080	535	13.999	670	5.874
405	0.105	540	14.416	675	5.131
410	0.172	545	14.825	680	4.461
415	0.367	550	15.336	685	3.872
420	0.763	555	15.894	690	3.350
425	1.473	560	16.432	695	2.893
430	2.658	565	17.023	700	2.481
435	4.668	570	17.613	705	2.129
440	8.099	575	18.099	710	1.820
445	13.970	580	18.566	715	1.553
450	19.529	585	18.943	720	1.334
455	17.760	590	19.127	725	1.135
460	12.879	595	19.130	730	0.967
465	10.494	600	18.994	735	0.825
470	8.348	605	18.602	740	0.704
475	6.541	610	18.013	745	0.602
480	5.916	615	17.321	750	0.517
485	6.129	620	16.424	755	0.442
490	6.687	625	15.440	760	0.381
495	7.723	630	14.254	765	0.325
500	8.999	635	13.113	770	0.279
505	10.168	640	11.949	775	0.240
510	11.234	645	10.781	780	0.036



REPORT NUMBER: RAB02187
DATE: 7/1/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: SK12XL12RDN

Page 4 of 4

CIE Chromaticity Diagram

