

REPORT NUMBER: RAB02177

PAGE: 1 OF 7

ISSUE DATE: 07/06/16

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: SK21XL25RY

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

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.

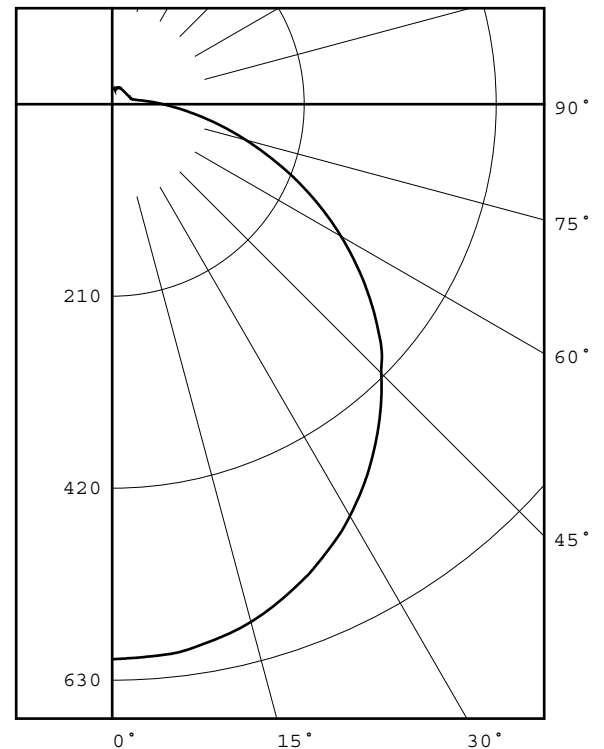
LED DRIVER: RDD-MK022-MKP45-A0700

TST PROCEDURE: IESNA LM 79-08

ACCREDITED LABORATORY CODE 201058-0

(SEE PAGE 2 FOR MORE INFORMATION)

DEG	CANDELA	LUMENS
0	607	
5	605	58
15	586	165
25	546	252
35	489	306
45	416	322
55	335	299
65	242	240
75	151	161
85	80	89
90	56	
95	38	43
105	22	24
115	20	20
125	20	18
135	20	15
145	20	13
155	20	9
165	18	5
175	19	2
180	19	



ZONAL LUMEN ZONE	SUMMARY LUMENS	%FIXT
0- 30	475	23.3
0- 40	781	38.2
0- 60	1402	68.7
0- 90	1892	92.7
90-120	87	4.3
90-130	105	5.2
90-150	133	6.5
90-180	149	7.3
0-180	2041	100.0

TOTAL INPUT WATTS = 24.4

EFFICACY = 83.6 Lm/W

CIE TYPE - DIRECT

LUMINAIRE SPACING CRITERION = 1.3

Checked X.CAO
Approved D.WANG-MUNSON

REPORT NUMBER: RAB02177
ISSUE DATE: 07/06/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 2 OF 7

ADDITIONAL INFORMATION

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: RAB02177
ISSUE DATE: 07/06/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 3 OF 7

LUMINOUS DIAMETER: 20.700
HEIGHT OF SIDE : 3.460

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE AVERAGE

IN DEG

45	2233.
55	2062.
65	1810.
75	1497.
85	1231.

REPORT NUMBER: RAB02177
ISSUE DATE: 07/06/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 4 OF 7

CANDELA DISTRIBUTION

	0.0
0.0	607
5.0	605
10.0	598
15.0	586
20.0	568
25.0	546
30.0	520
35.0	489
40.0	454
45.0	416
50.0	379
55.0	335
60.0	289
65.0	242
70.0	195
75.0	151
80.0	113
85.0	80
90.0	56
95.0	38
100.0	27
105.0	22
110.0	21
115.0	20
120.0	20
125.0	20
130.0	20
135.0	20
140.0	20
145.0	20
150.0	20
155.0	20
160.0	19
165.0	18
170.0	16
175.0	19
180.0	19

REPORT NUMBER: RAB02177
ISSUE DATE: 07/06/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 5 OF 7

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	155.
55- 60	144.
60- 65	129.
65- 70	111.
70- 75	90.
75- 80	71.
80- 85	52.
85- 90	37.
90- 95	25.
95-100	18.
100-105	13.
105-110	11.
110-115	11.
115-120	10.
120-125	9.
125-130	9.
130-135	8.
135-140	7.
140-145	7.
145-150	6.
150-155	5.
155-160	4.
160-165	3.
165-170	2.
170-175	1.
175-180	0.

REPORT NUMBER: RAB02177
 ISSUE DATE: 07/06/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 6 OF 7

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	155
55- 60	144
60- 65	129
65- 70	111
70- 75	90
75- 80	71
80- 85	52
85- 90	37
90- 95	25
95-100	18
100-105	13
105-110	11
110-115	11
115-120	10
120-125	9
125-130	9
130-135	8
135-140	7
140-145	7
145-150	6
150-155	5
155-160	4
160-165	3
165-170	2
170-175	1
175-180	0

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	58
0- 20	223
0- 30	475
0- 40	781
0- 50	1103
0- 60	1402
0- 70	1642
0- 80	1803
0- 90	1892
0-100	1935
0-110	1959
0-120	1979
0-130	1997
0-140	2013
0-150	2025
0-160	2035
0-170	2040
0-180	2041

REPORT NUMBER: RAB02177
ISSUE DATE: 07/06/16

PAGE: 7 OF 7

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	117	117	117	117	114	114	114	114	107	107	107	101	101	101	95	95	95	93
1	106	100	96	91	102	97	93	89	92	88	85	87	84	81	82	80	77	75
2	96	87	80	74	92	84	78	72	80	74	69	75	71	67	71	67	64	61
3	87	76	67	61	84	74	66	60	70	63	58	66	60	56	62	58	54	51
4	79	67	58	51	77	65	57	50	62	54	49	59	52	47	56	50	46	43
5	73	60	51	44	70	58	50	43	55	48	42	52	46	41	50	44	40	37
6	67	54	45	38	65	52	44	37	50	42	37	47	41	36	45	39	35	33
7	62	49	40	33	60	47	39	33	45	38	32	43	36	32	41	35	31	29
8	58	44	36	30	56	43	35	29	41	34	29	39	33	28	38	32	28	26
9	54	41	32	27	52	40	32	26	38	31	26	36	30	25	35	29	25	23
10	51	37	29	24	49	37	29	24	35	28	23	34	27	23	32	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: RAB02178
DATE: 7/5/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: SK21XL25RYY

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.

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:	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	7/5/17

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 X.CAO

Approved D.WANG-MUNSON
Lighting Engineer

REPORT NUMBER: RAB02178
 DATE: 7/5/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: SK21XL25RYY

Page 2 of 4

RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4531
Chromaticity Ordinate y	0.4037
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2612
Chromaticity Ordinate v'	0.5237
Correlated Color Temp CCT (K)	2741
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)	6559 *
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 (%)	16.6
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

*NOTE:

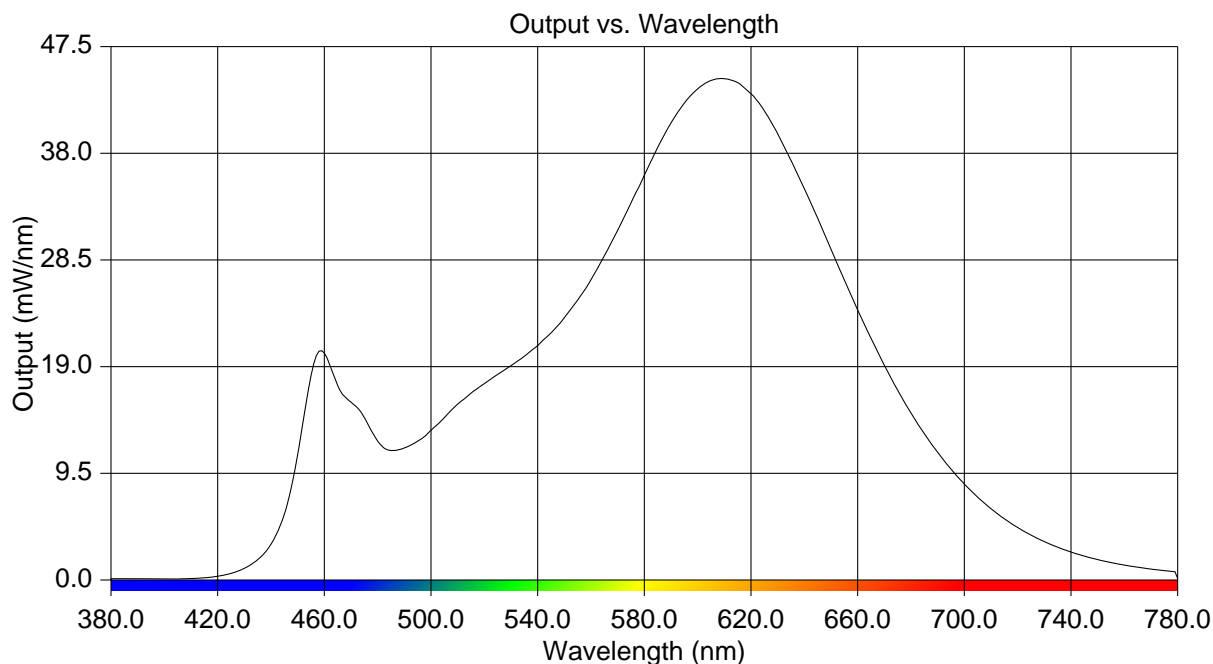
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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: RAB02178
 DATE: 7/5/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: SK21XL25RYY

Page 3 of 4

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.104	515	16.637	650	29.487
385	0.115	520	17.486	655	26.701
390	0.109	525	18.303	660	24.049
395	0.099	530	19.076	665	21.492
400	0.104	535	19.906	670	19.133
405	0.094	540	20.875	675	16.899
410	0.117	545	21.970	680	14.857
415	0.182	550	23.326	685	12.997
420	0.335	555	24.936	690	11.361
425	0.586	560	26.742	695	9.891
430	1.041	565	28.879	700	8.539
435	1.808	570	31.145	705	7.380
440	3.182	575	33.590	710	6.356
445	5.848	580	36.049	715	5.454
450	11.157	585	38.526	720	4.671
455	18.182	590	40.727	725	3.999
460	20.221	595	42.458	730	3.415
465	17.332	600	43.712	735	2.915
470	15.827	605	44.480	740	2.492
475	14.468	610	44.654	745	2.130
480	12.368	615	44.303	750	1.816
485	11.524	620	43.301	755	1.559
490	11.779	625	41.807	760	1.325
495	12.347	630	39.752	765	1.135
500	13.337	635	37.412	770	0.970
505	14.454	640	34.851	775	0.832
510	15.670	645	32.185	780	0.124



REPORT NUMBER: RAB02178
DATE: 7/5/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: SK21XL25RY

Page 4 of 4

CIE Chromaticity Diagram

