

REPORT NUMBER: ITL83100

PAGE: 1 OF 6

ISSUE DATE: 10/06/14

PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: SK9SYN (SQUARE - SURFACE MOUNT)

LUMINAIRE: CAST FINNED METAL HOUSING WITH WHITE PAINTED INTERIOR FINISH, 1 WHITE CIRCUIT BOARD WITH 42 LEDS, FROSTED HOLOGRAPHIC PLASTIC DROP LENS. LENS FROSTED BOTH SIDES.

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

INPUT ELECTRICAL: 120.0 VOLTS, 9.28 WATTS, 0.0782 AMPS

MOUNTING: SURFACE

LED DRIVER: INTEGRAL

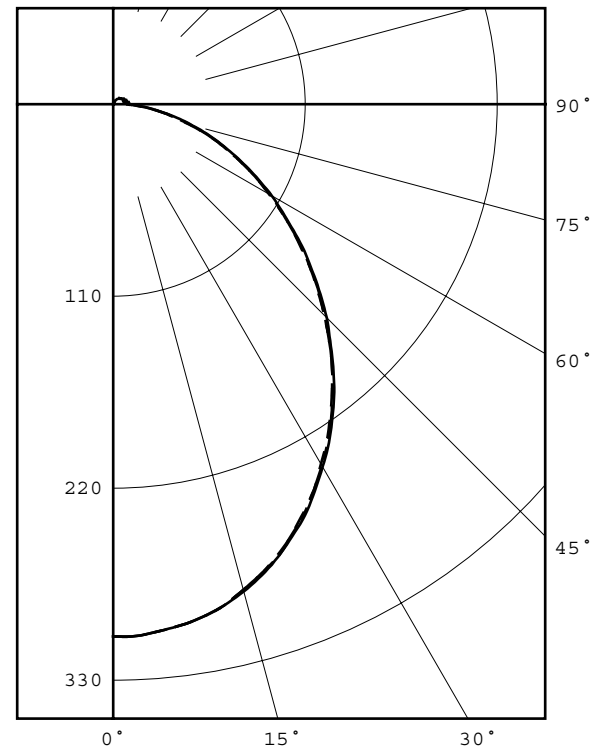
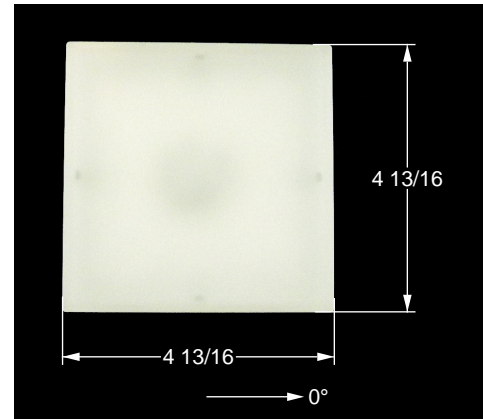
NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (120VAC, 60Hz) TO THE LED ASSEMBLY.

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 20.0 FEET

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	305	305	305	305	305	
5	303	303	303	303	303	29
15	288	289	289	289	288	81
25	258	259	260	259	259	119
35	217	218	219	218	218	136
45	171	172	173	172	171	133
55	125	126	126	126	125	113
65	83	84	84	84	83	83
75	45	47	47	47	46	50
85	16	18	18	18	17	20
90	8	9	10	9	8	
95	8	9	9	8	7	9
105	7	7	8	7	6	8
115	6	7	7	6	6	6
125	5	5	6	5	5	5
135	4	4	5	4	4	3
145	3	3	3	3	3	2
155	2	2	2	2	2	1
165	1	1	0	1	1	0
175	0	0	0	0	0	0
180	0	0	0	0	0	



LEGEND:
0-deg -----
45-deg =====
90-deg -----

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	229	28.7
0- 40	366	45.8
0- 60	611	76.6
0- 90	764	95.7
90-120	23	2.9
90-130	28	3.5
90-150	33	4.2
90-180	34	4.3
0-180	798	100.0

EFFICACY = 86.0 lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG

SPACING CRITERIA : 1.17 1.17

Checked B. HYRE
Approved N. WHITE
Lighting Engineer



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

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PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH : 4.813 4.813
HEIGHT OF SIDE : 0.250 0.250

LUMINANCE DATA IN CANDELA/SQ M				
ANGLE	AVERAGE	AVERAGE	AVERAGE	
IN DEG	0-DEG	45-DEG	90-DEG	
45	15485.	15446.	15485.	
55	13666.	13471.	13666.	
65	11903.	11632.	11903.	
75	9810.	9649.	10028.	
85	7759.	7589.	8244.	



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CANDELA DISTRIBUTION
 LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
0.0	305	305	305	305	305
5.0	303	303	303	303	303
10.0	298	298	298	298	298
15.0	288	289	289	289	288
20.0	275	276	276	276	276
25.0	258	259	260	259	259
30.0	238	240	240	240	239
35.0	217	218	219	218	218
40.0	195	196	196	195	195
45.0	171	172	173	172	171
50.0	148	149	149	149	148
55.0	125	126	126	126	125
60.0	103	105	105	104	104
65.0	83	84	84	84	83
70.0	64	65	65	64	64
75.0	45	47	47	47	46
80.0	30	31	31	31	30
85.0	16	18	18	18	17
90.0	8	9	10	9	8
95.0	8	9	9	8	7
100.0	7	8	8	8	7
105.0	7	7	8	7	6
110.0	6	7	7	7	6
115.0	6	7	7	6	6
120.0	5	6	6	6	5
125.0	5	5	6	5	5
130.0	4	5	5	5	4
135.0	4	4	5	4	4
140.0	3	4	4	4	3
145.0	3	3	3	3	3
150.0	2	2	3	2	2
155.0	2	2	2	2	2
160.0	1	1	1	1	1
165.0	1	1	0	1	1
170.0	0	0	0	0	0
175.0	0	0	0	0	0
180.0	0	0	0	0	0



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5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	7
5- 10	22
10- 15	35
15- 20	47
20- 25	56
25- 30	63
30- 35	67
35- 40	69
40- 45	68
45- 50	65
50- 55	60
55- 60	53
60- 65	46
65- 70	37
70- 75	29
75- 80	21
80- 85	13
85- 90	7
90- 95	5
95-100	4
100-105	4
105-110	4
110-115	3
115-120	3
120-125	3
125-130	2
130-135	2
135-140	1
140-145	1
145-150	1
150-155	1
155-160	0
160-165	0
165-170	0
170-175	0
175-180	0

10-DEGREE
ZONAL LUMEN SUMMARY

0- 10	29
0- 20	110
0- 30	229
0- 40	366
0- 50	498
0- 60	611
0- 70	694
0- 80	744
0- 90	764
0-100	773
0-110	781
0-120	787
0-130	792
0-140	795
0-150	797
0-160	798
0-170	798
0-180	798



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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	96
1	108	103	99	95	105	100	97	93	95	92	89	91	88	86	86	84	83	80
2	98	90	83	78	95	88	82	77	84	79	74	80	76	72	76	73	70	67
3	90	80	72	65	87	78	70	64	74	68	63	71	65	61	68	63	59	57
4	82	71	62	56	80	69	61	55	66	59	54	63	57	53	61	56	51	49
5	76	63	55	48	74	62	54	48	59	52	47	57	51	46	55	49	45	43
6	70	57	49	42	68	56	48	42	54	47	41	52	45	41	50	44	40	38
7	65	52	44	38	63	51	43	37	49	42	37	47	41	36	46	40	36	34
8	61	48	39	34	59	47	39	33	45	38	33	44	37	32	42	36	32	30
9	57	44	36	30	55	43	35	30	42	35	30	40	34	29	39	33	29	27
10	53	40	33	28	52	40	32	27	39	32	27	37	31	27	36	31	26	25

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 TEST SAMPLE.



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ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

INSTRUMENTS:

Kikusui PCR4000LA AC Power Source

Yokogawa WT210 Digital Power Meter #5

ITL Moving Mirror Goniophotometer - 20.0' Test Distance

Calibration Due:

N/A

02/28/15

05/13/15

THIS ITL REPORT WITH THE USE OF THE NVLAP LOGO SHALL NOT BE USED BY
THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT
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PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: SK9SYN (SQUARE - SURFACE MOUNT)

ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

LUMINAIRE: CAST FINNED METAL HOUSING WITH WHITE PAINTED INTERIOR FINISH, 1
WHITE CIRCUIT BOARD WITH 42 LEDS, FROSTED HOLOGRAPHIC PLASTIC DROP
LENS. LENS FROSTED BOTH SIDES.

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

DRIVER: INTEGRAL

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

INSTRUMENTS:	Associated Power Technologies APT5010 AC Power Source	Calibration Due: N/A
	Yokogawa WT210 Digital Power Meter #6	10/31/14
	Ocean Optics QE65000 Spectroradiometer	07/14/15
	ITL 1.5m Diameter Integrating Sphere S15-2, 4PI Geometry	07/14/15

OBJECT OF TEST: Measure the Total Radiant Flux*, Spectral Power Distribution (SPD),
Correlated Color Temperature (CCT), Color Rendering Indices (CRI_a,1-14),
Chromaticity Coordinates (x,y; u'v'), ANSI C78.377 Duv, Scotopic /
Photopic Ratio, and electrical data including ANSI C82.77-2002 Power
Factor (PF) and Total Harmonic Distortion (THD) to the test sample.
Report Off-State Power.

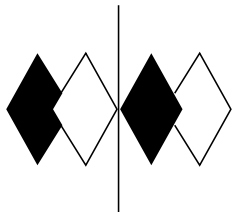
PROCEDURE: The test sample was provided by the customer and had an unknown number
of operating hours. The test sample was mounted inside the integrating
sphere and allowed to stabilize. After stabilization occurred,
measurements were taken. In order to measure mean performance, multiple
data sets were recorded and averaged. Readings were taken with the test
sample operating at 120.0 VAC input. 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)

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Checked	<i>N THOMAS</i>
Approved	<i>P O'CONNOR</i> Sphere Lab Supervisor



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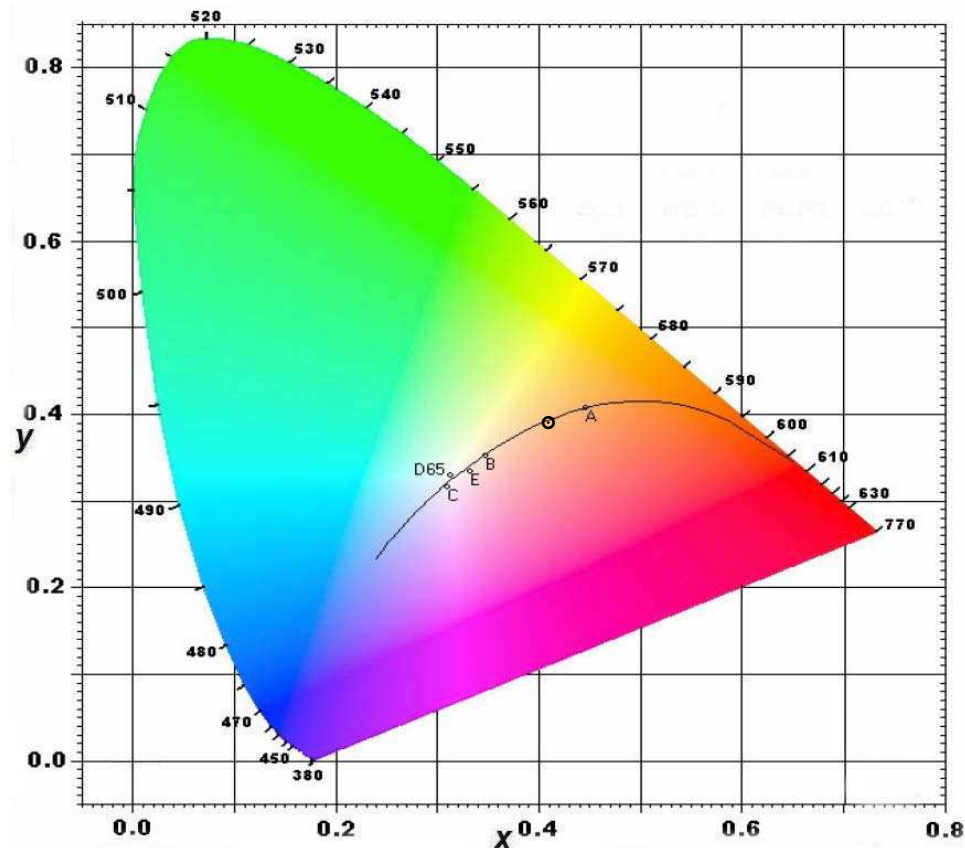
NVLAP
NVLAP LAB CODE: 200925-0

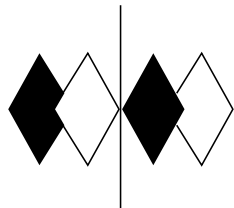
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CIE Chromaticity Diagram





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NVLAP LAB CODE: 200925-0

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CATALOG NUMBER: SK9SYN (SQUARE - SURFACE MOUNT)

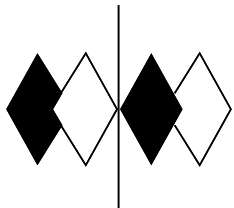
RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4091
Chromaticity Ordinate y	0.3900
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2385
Chromaticity Ordinate v'	0.5115
Correlated Color Temp CCT (K)	3411
ANSI C78.377-2008 Duv	-0.001
Scotopic / Photopic Lumen Ratio	1.604
Total Radiant Flux (milliWatts)	2533 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.078
Input Power (Watts)	9.31
Input Power Factor (%)	99.5
Input Current THD (%)	13.8
Input Voltage THD (%)	0.1
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	86
R1 Light greyish red	85
R2 Dark greyish yellow	94
R3 Strong yellowish green	96
R4 Moderate yellowish green	84
R5 Light bluish green	86
R6 Light blue	92
R7 Light violet	85
R8 Light reddish purple	67
R9 Strong red	25
R10 Strong yellow	86
R11 Strong green	83
R12 Strong blue	73
R13 Light yellowish pink (skin)	88
R14 Moderate olive green (leaf)	99

*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	0.059	515	7.724	650	9.312
385	0.060	520	8.062	655	8.498
390	0.063	525	8.395	660	7.701
395	0.071	530	8.744	665	6.928
400	0.087	535	9.116	670	6.183
405	0.135	540	9.520	675	5.480
410	0.198	545	9.974	680	4.845
415	0.324	550	10.458	685	4.273
420	0.555	555	10.957	690	3.770
425	0.917	560	11.459	695	3.313
430	1.468	565	11.974	700	2.907
435	2.317	570	12.484	705	2.536
440	3.688	575	12.981	710	2.208
445	6.080	580	13.462	715	1.917
450	9.545	585	13.934	720	1.671
455	11.231	590	14.348	725	1.457
460	9.239	595	14.677	730	1.271
465	7.296	600	14.855	735	1.109
470	6.340	605	14.895	740	0.966
475	5.305	610	14.749	745	0.839
480	4.728	615	14.423	750	0.732
485	4.869	620	13.912	755	0.639
490	5.259	625	13.266	760	0.560
495	5.753	630	12.521	765	0.491
500	6.339	635	11.740	770	0.431
505	6.892	640	10.934	775	0.378
510	7.347	645	10.123	780	0.332

