

REPORT NUMBER: ITL83098

PAGE: 1 OF 6

ISSUE DATE: 10/02/14

PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: SK9SYY (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, 9.36 WATTS, 0.0788 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.

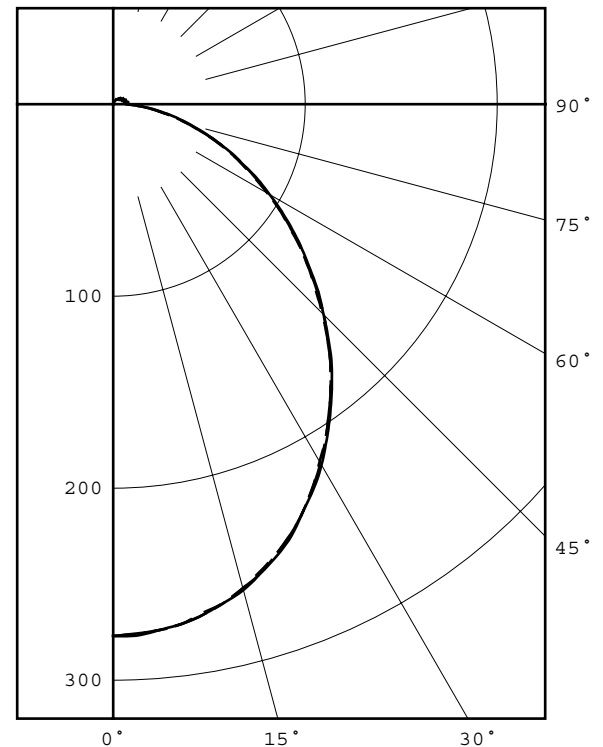
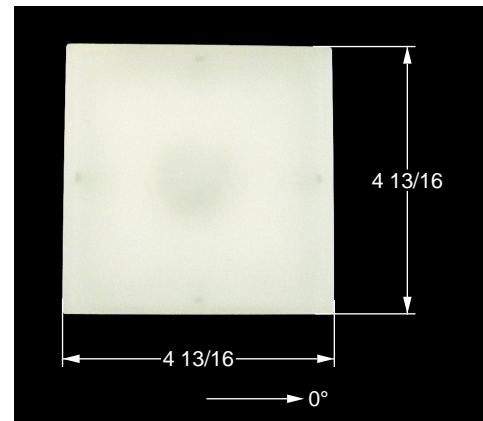
TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 20.0 FEET

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0	277	277	277	277	277
5	275	275	275	275	275
15	261	262	262	261	261
25	234	234	234	234	234
35	196	197	197	197	196
45	154	155	155	155	155
55	112	113	114	114	113
65	74	75	75	75	75
75	41	42	42	42	41
85	15	16	16	16	15
90	7	8	8	8	7
95	7	8	8	8	7
105	6	7	7	7	6
115	5	6	6	6	5
125	4	5	5	5	4
135	3	4	4	4	3
145	2	3	3	3	2
155	1	1	2	1	2
165	1	0	0	1	1
175	0	0	0	0	0
180	0	0	0	0	0

FLUX



LEGEND:

0-deg -----
45-deg =====
90-deg -----

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	207	28.9
0- 40	330	46.0
0- 60	551	76.7
0- 90	689	95.8
90-120	21	2.9
90-130	25	3.5
90-150	29	4.1
90-180	30	4.2
0-180	719	100.0

EFFICACY = 76.8 lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG

SPACING CRITERIA : 1.16 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

REPORT NUMBER: ITL83098

PAGE: 2 OF 6

ISSUE DATE: 10/02/14

PREPARED FOR: RAB LIGHTING, INC.

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	13946.	13839.	14036.
55	12245.	12188.	12354.
65	10612.	10385.	10756.
75	8938.	8623.	8938.
85	7274.	6746.	7274.



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955



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

REPORT NUMBER: ITL83098

PAGE: 3 OF 6

ISSUE DATE: 10/02/14

PREPARED FOR: RAB LIGHTING, INC.

CANDELA DISTRIBUTION
 LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
0.0	277	277	277	277	277
5.0	275	275	275	275	275
10.0	269	270	270	270	270
15.0	261	262	262	261	261
20.0	249	249	250	250	249
25.0	234	234	234	234	234
30.0	215	216	217	217	216
35.0	196	197	197	197	196
40.0	176	176	177	176	176
45.0	154	155	155	155	155
50.0	133	134	134	134	133
55.0	112	113	114	114	113
60.0	93	93	94	94	93
65.0	74	75	75	75	75
70.0	57	58	58	58	58
75.0	41	42	42	42	41
80.0	27	28	28	28	27
85.0	15	16	16	16	15
90.0	7	8	8	8	7
95.0	7	8	8	8	7
100.0	6	7	7	7	6
105.0	6	7	7	7	6
110.0	5	6	7	6	5
115.0	5	6	6	6	5
120.0	5	5	6	5	5
125.0	4	5	5	5	4
130.0	4	4	5	4	4
135.0	3	4	4	4	3
140.0	3	3	3	3	3
145.0	2	3	3	3	2
150.0	2	2	2	2	2
155.0	1	1	2	1	2
160.0	1	1	1	1	1
165.0	1	0	0	1	1
170.0	0	0	0	0	0
175.0	0	0	0	0	0
180.0	0	0	0	0	0



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

REPORT NUMBER: ITL83098
ISSUE DATE: 10/02/14
PREPARED FOR: RAB LIGHTING, INC.

PAGE: 4 OF 6

5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	7
5- 10	19
10- 15	32
15- 20	42
20- 25	51
25- 30	57
30- 35	61
35- 40	62
40- 45	61
45- 50	58
50- 55	54
55- 60	48
60- 65	41
65- 70	34
70- 75	26
75- 80	19
80- 85	12
85- 90	6
90- 95	4
95-100	4
100-105	4
105-110	3
110-115	3
115-120	3
120-125	2
125-130	2
130-135	2
135-140	1
140-145	1
145-150	1
150-155	0
155-160	0
160-165	0
165-170	0
170-175	0
175-180	0

10-DEGREE
ZONAL LUMEN SUMMARY

0- 10	26
0- 20	100
0- 30	207
0- 40	330
0- 50	450
0- 60	551
0- 70	626
0- 80	671
0- 90	689
0-100	697
0-110	704
0-120	709
0-130	714
0-140	716
0-150	718
0-160	719
0-170	719
0-180	719



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

REPORT NUMBER: ITL83098

PAGE: 5 OF 6

ISSUE DATE: 10/02/14

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	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	87	85	83	80
2	98	90	84	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	66	61	68	63	60	57
4	83	71	62	56	80	69	61	55	66	59	54	63	57	53	61	56	52	49
5	76	64	55	48	74	62	54	48	60	52	47	57	51	46	55	50	45	43
6	70	57	49	42	68	56	48	42	54	47	41	52	46	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	33	42	36	32	30
9	57	44	36	30	55	43	35	30	42	35	30	40	34	29	39	33	29	27
10	54	41	33	28	52	40	32	27	39	32	27	37	31	27	36	31	27	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.



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955



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

REPORT NUMBER: ITL83098
ISSUE DATE: 10/02/14
PREPARED FOR: RAB LIGHTING, INC.

PAGE: 6 OF 6

ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

INSTRUMENTS:

Kikusui PCR4000LA AC Power Source	Calibration Due:
Yokogawa WT210 Digital Power Meter #5	N/A
ITL Moving Mirror Goniophotometer - 20.0' Test Distance	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 BY NVLAP, NIST, OR ANY AGENCY OF THE FEDERAL GOVERNMENT.



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

Page 1 of 4

REPORT NUMBER: ITL83104
DATE: 10/07/14
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: SK9SY (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.

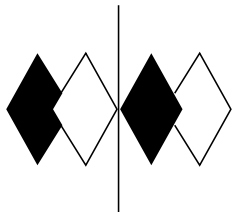
PROCEDURE: The test sample was provided by the customer and had an unknown number
of operating hours. The test sample was mounted inside the integrating
sphere and allowed to stabilize. After stabilization occurred,
measurements were taken. In order to measure mean performance, multiple
data sets were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

THIS ITL 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.

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



itl boulder

THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

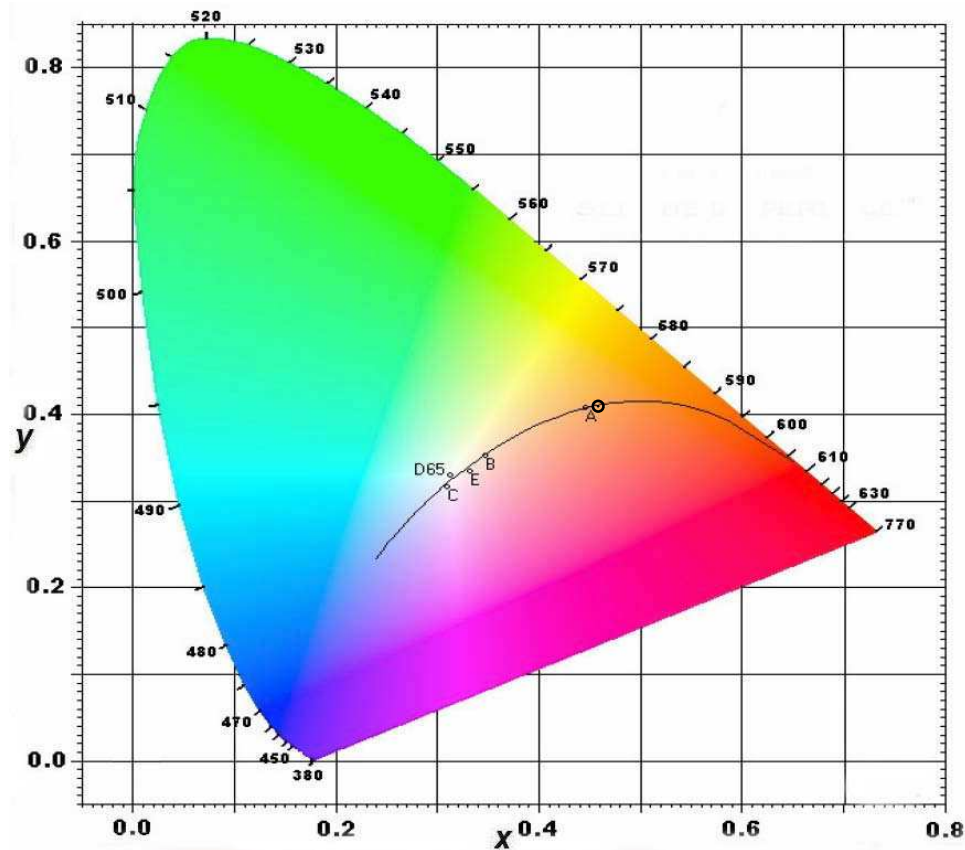
NVLAP
NVLAP LAB CODE: 200925-0

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
REPORT NUMBER: ITL83104
DATE: 10/07/14
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: SK9SY (SQUARE - SURFACE MOUNT)

Page 4 of 4

CIE Chromaticity Diagram





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
 REPORT NUMBER: ITL83104
 DATE: 10/07/14
 PREPARED FOR: RAB LIGHTING, INC.
 CATALOG NUMBER: SK9SY (SQUARE - SURFACE MOUNT)

Page 2 of 4

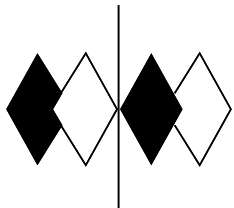
RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4582
Chromaticity Ordinate y	0.4089
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2622
Chromaticity Ordinate v'	0.5264
Correlated Color Temp CCT (K)	2709
ANSI C78.377-2008 Duv	-0.001
Scotopic / Photopic Lumen Ratio	1.290
Total Radiant Flux (milliWatts)	2311 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.079
Input Power (Watts)	9.38
Input Power Factor (%)	98.9
Input Current THD (%)	13.8
Input Voltage THD (%)	0.1
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	85
R1 Light greyish red	84
R2 Dark greyish yellow	93
R3 Strong yellowish green	97
R4 Moderate yellowish green	83
R5 Light bluish green	84
R6 Light blue	93
R7 Light violet	83
R8 Light reddish purple	62
R9 Strong red	18
R10 Strong yellow	83
R11 Strong green	83
R12 Strong blue	76
R13 Light yellowish pink (skin)	86
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.



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

NVLAP
NVLAP LAB CODE: 200925-0

INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

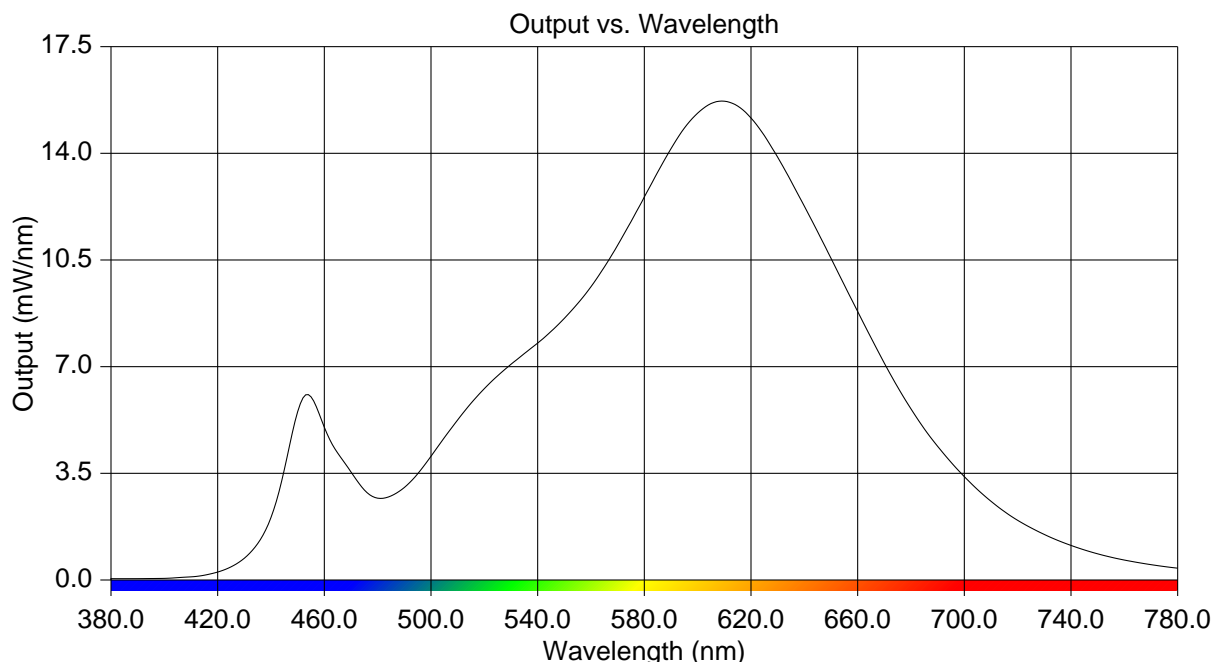
PHONE: (303)442-1255 • FAX: (970)535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL83104
DATE: 10/07/14
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: SK9SY (SQUARE - SURFACE MOUNT)

Page 3 of 4

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.044	515	5.798	650	10.557
385	0.043	520	6.278	655	9.680
390	0.044	525	6.701	660	8.810
395	0.048	530	7.079	665	7.951
400	0.053	535	7.430	670	7.114
405	0.077	540	7.774	675	6.331
410	0.103	545	8.156	680	5.614
415	0.157	550	8.585	685	4.958
420	0.261	555	9.071	690	4.384
425	0.431	560	9.624	695	3.864
430	0.713	565	10.269	700	3.391
435	1.193	570	10.987	705	2.962
440	2.052	575	11.757	710	2.583
445	3.625	580	12.568	715	2.248
450	5.523	585	13.382	720	1.958
455	6.012	590	14.152	725	1.712
460	5.010	595	14.827	730	1.494
465	4.167	600	15.320	735	1.301
470	3.543	605	15.634	740	1.134
475	2.954	610	15.711	745	0.987
480	2.684	615	15.552	750	0.859
485	2.758	620	15.159	755	0.748
490	3.035	625	14.584	760	0.654
495	3.483	630	13.873	765	0.574
500	4.060	635	13.090	770	0.503
505	4.671	640	12.267	775	0.441
510	5.253	645	11.424	780	0.388





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

Page: 1 of 10

REPORT NUMBER: ITL83108
DATE: 10/10/14
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: SK9SY (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.

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

LED DRIVER: INTEGRAL

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

TEST DISTANCE: 4.0 FEET

INSTRUMENTATION: ITL Moving Mirror Gonio-Colorimeter
Kikusui PCR4000LA AC Power Source
Yokogawa WT210 Digital Power Meter

Calibration Due:
10/18/14
N/A
02/28/15

OBJECT OF TEST: Measure the Color Spatial Uniformity and Electrical Data to the
luminaire in accordance with IESNA LM-79-08.

RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Averaged Chromaticity Ordinate (x)	0.4587
Averaged Chromaticity Ordinate (y)	0.4102
Observer	CIE 1976 2 degree
Averaged Chromaticity Ordinate (u')	0.2619
Averaged Chromaticity Ordinate (v')	0.5270
Correlated Color Temp CCT (K)	2713 *
ELECTRICAL	
Input Power (Watts)	9.36

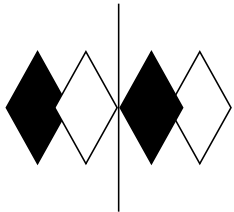
*NOTE: The candela values provided are calculated from the Y photocell
of the color sensor, and are solely for relative measurement in
relation to a precision fl' photocell. Average Color Temperature
is averaged from intensities above 10% maximum on only two planes
of data taken.

Legend of angular measurements on subsequent pages

[!] Measurement Angle Exceeds Delta u'v' distance of 0.004 from
Weighted Average

[+] Angular Intensity is not reported below 10% of maximum intensity

Checked *N THOMAS*
Approved *R BERGIN*
Lighting Engineer



itl boulder

THE LIGHT CENTER OF THE INDUSTRY SINCE 1955



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

REPORT NUMBER:

ITL83108

DATE:

10/10/14

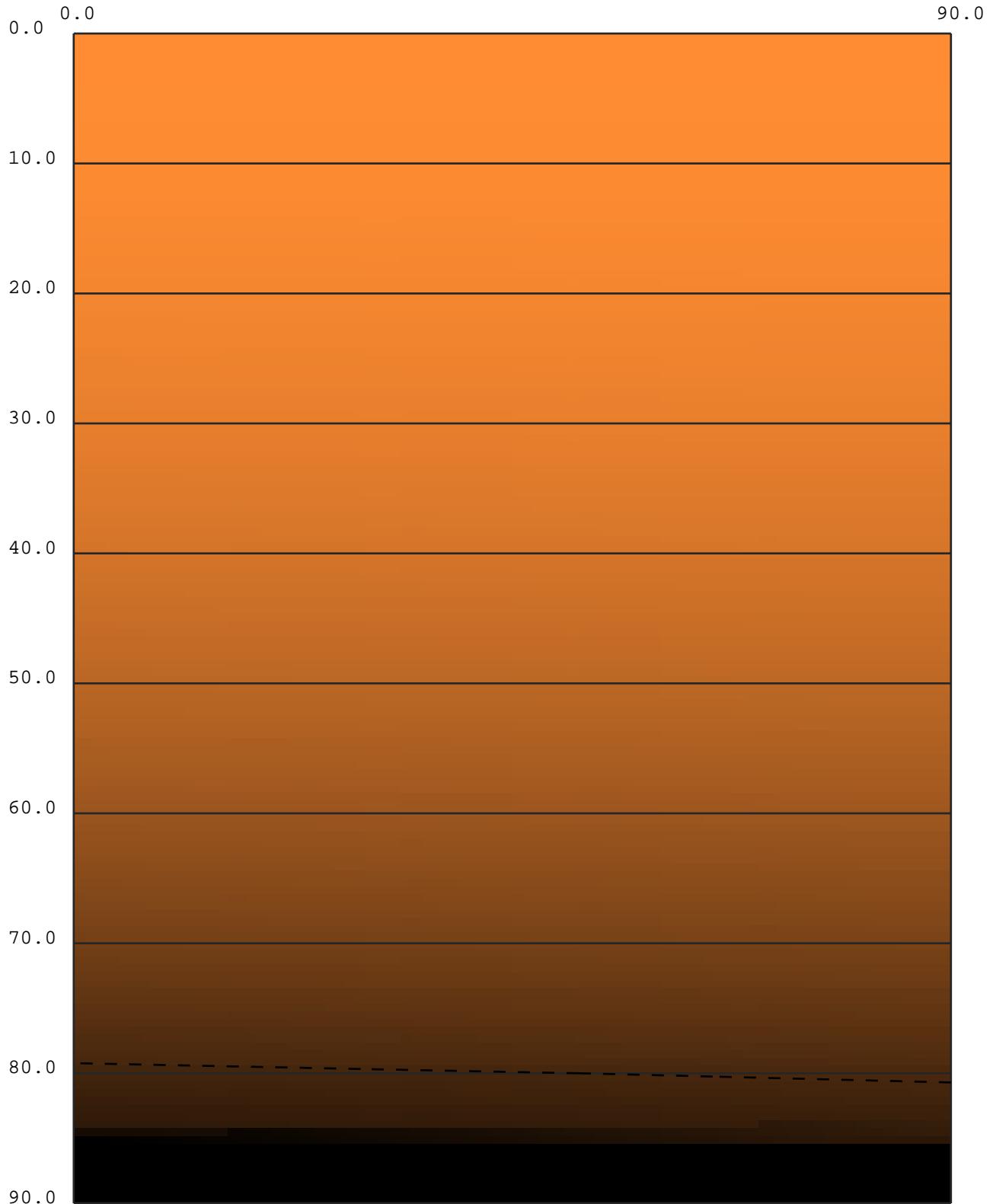
PREPARED FOR:

RAB LIGHTING, INC.

CATALOG NUMBER:

SK9SY (SQUARE - SURFACE MOUNT)

Page: 2 of 10





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

REPORT NUMBER:

ITL83108

Page: 3 of 10

DATE:

10/10/14

PREPARED FOR:

RAB LIGHTING, INC.

CATALOG NUMBER:

SK9SY (SQUARE - SURFACE MOUNT)

Candela Value (cd)

!=Over Delta u'v' +=Below 10%

u'

v'

CCT (Kelvin)

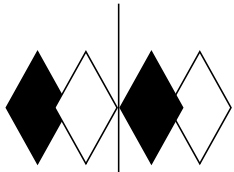
Delta u'v'

RESULTS:

0.0

90.0

0.0	268.1 0.2620 0.5270 2712K 0.0001	268.1 0.2620 0.5270 2712K 0.0001
1.0	267.9 0.2619 0.5270 2712K 0.0000	268.1 0.2620 0.5270 2712K 0.0001
2.0	267.7 0.2619 0.5270 2713K 0.0000	268.0 0.2619 0.5270 2712K 0.0000
3.0	267.3 0.2619 0.5270 2714K 0.0000	267.8 0.2619 0.5270 2712K 0.0000
4.0	266.9 0.2618 0.5271 2714K 0.0001	267.5 0.2619 0.5270 2712K 0.0000
5.0	266.3 0.2618 0.5271 2715K 0.0001	267.1 0.2619 0.5270 2712K 0.0000
6.0	265.5 0.2618 0.5271 2715K 0.0001	266.5 0.2619 0.5270 2712K 0.0000
7.0	264.6 0.2619 0.5271 2714K 0.0001	265.7 0.2620 0.5270 2712K 0.0000
8.0	263.6 0.2619 0.5271 2713K 0.0000	264.8 0.2619 0.5270 2712K 0.0000
9.0	262.4 0.2619 0.5271 2713K 0.0000	263.7 0.2620 0.5270 2712K 0.0001
10.0	261.1 0.2620 0.5271 2712K 0.0001	262.5 0.2620 0.5270 2712K 0.0001
11.0	259.6 0.2620 0.5271 2711K 0.0001	261.3 0.2620 0.5270 2711K 0.0001
12.0	258.1 0.2620 0.5271 2711K 0.0001	259.8 0.2620 0.5270 2711K 0.0001
13.0	256.4 0.2620 0.5271 2711K 0.0001	258.3 0.2620 0.5270 2710K 0.0001
14.0	254.6 0.2620 0.5271 2710K 0.0001	256.6 0.2620 0.5271 2710K 0.0001



itl boulder

THE LIGHT CENTER OF THE INDUSTRY SINCE 1955



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

REPORT NUMBER:

ITL83108

Page: 4 of 10

DATE:

10/10/14

PREPARED FOR:

RAB LIGHTING, INC.

CATALOG NUMBER:

SK9SY (SQUARE - SURFACE MOUNT)

Candela Value (cd)

!=Over Delta u'v' +=Below 10%

u'

v'

CCT (Kelvin)

Delta u'v'

RESULTS:

0.0

90.0

15.0	252.7 0.2620 0.5271 2710K 0.0001	254.8 0.2620 0.5271 2710K 0.0001
16.0	250.6 0.2620 0.5271 2710K 0.0001	252.9 0.2621 0.5271 2709K 0.0002
17.0	248.4 0.2620 0.5271 2710K 0.0001	250.9 0.2621 0.5271 2709K 0.0002
18.0	246.1 0.2620 0.5271 2710K 0.0001	248.7 0.2621 0.5271 2709K 0.0002
19.0	243.7 0.2620 0.5271 2710K 0.0001	246.4 0.2621 0.5271 2709K 0.0002
20.0	241.1 0.2620 0.5271 2710K 0.0002	244.0 0.2621 0.5271 2709K 0.0002
21.0	238.5 0.2621 0.5271 2709K 0.0002	241.4 0.2621 0.5271 2709K 0.0002
22.0	235.7 0.2621 0.5271 2708K 0.0002	238.8 0.2621 0.5271 2709K 0.0002
23.0	232.9 0.2622 0.5271 2707K 0.0003	236.0 0.2621 0.5271 2709K 0.0002
24.0	230.0 0.2622 0.5272 2707K 0.0003	233.1 0.2621 0.5271 2709K 0.0002
25.0	226.9 0.2622 0.5272 2707K 0.0003	230.2 0.2621 0.5271 2708K 0.0002
26.0	223.7 0.2622 0.5272 2707K 0.0003	227.2 0.2621 0.5272 2708K 0.0002
27.0	220.5 0.2622 0.5272 2707K 0.0003	224.1 0.2621 0.5272 2708K 0.0003
28.0	217.2 0.2622 0.5272 2707K 0.0003	220.9 0.2621 0.5272 2708K 0.0003
29.0	213.8 0.2622 0.5272 2707K 0.0003	217.6 0.2622 0.5272 2707K 0.0003



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

REPORT NUMBER:

ITL83108

Page: 5 of 10

DATE:

10/10/14

PREPARED FOR:

RAB LIGHTING, INC.

CATALOG NUMBER:

SK9SY (SQUARE - SURFACE MOUNT)

Candela Value (cd)

!=Over Delta u'v' +=Below 10%

u'

v'

CCT (Kelvin)

Delta u'v'

RESULTS:

0.0

90.0

30.0	210.3 0.2622 0.5272 2707K 0.0003	214.3 0.2622 0.5272 2707K 0.0003
31.0	206.7 0.2621 0.5272 2707K 0.0003	210.8 0.2622 0.5272 2706K 0.0003
32.0	203.0 0.2621 0.5272 2708K 0.0003	207.2 0.2622 0.5272 2706K 0.0003
33.0	199.3 0.2621 0.5272 2708K 0.0003	203.6 0.2622 0.5272 2706K 0.0004
34.0	195.5 0.2621 0.5272 2708K 0.0002	200.0 0.2622 0.5272 2706K 0.0003
35.0	191.7 0.2621 0.5272 2709K 0.0002	196.3 0.2622 0.5271 2706K 0.0003
36.0	187.8 0.2621 0.5272 2709K 0.0002	192.4 0.2622 0.5271 2706K 0.0003
37.0	183.9 0.2621 0.5272 2710K 0.0002	188.6 0.2622 0.5271 2706K 0.0004
38.0	180.0 0.2620 0.5272 2710K 0.0002	184.7 0.2622 0.5271 2706K 0.0003
39.0	176.1 0.2620 0.5272 2710K 0.0002	180.7 0.2622 0.5272 2706K 0.0003
40.0	172.1 0.2620 0.5271 2711K 0.0001	176.7 0.2622 0.5272 2706K 0.0003
41.0	168.0 0.2620 0.5271 2710K 0.0001	172.7 0.2622 0.5272 2707K 0.0003
42.0	163.9 0.2620 0.5271 2710K 0.0002	168.6 0.2621 0.5272 2708K 0.0003
43.0	159.7 0.2620 0.5271 2710K 0.0001	164.4 0.2621 0.5272 2708K 0.0002
44.0	155.5 0.2620 0.5271 2710K 0.0001	160.2 0.2621 0.5272 2709K 0.0002



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

REPORT NUMBER:

ITL83108

Page: 6 of 10

DATE:

10/10/14

PREPARED FOR:

RAB LIGHTING, INC.

CATALOG NUMBER:

SK9SY (SQUARE - SURFACE MOUNT)

Candela Value (cd)

!=Over Delta u'v' +=Below 10%

u'

v'

CCT (Kelvin)

Delta u'v'

RESULTS:

0.0

90.0

45.0	151.3 0.2620 0.5271 2711K 0.0001	156.2 0.2620 0.5271 2710K 0.0002
46.0	147.2 0.2619 0.5271 2713K 0.0001	152.2 0.2620 0.5271 2711K 0.0001
47.0	143.1 0.2619 0.5271 2714K 0.0001	148.2 0.2619 0.5271 2713K 0.0001
48.0	138.9 0.2618 0.5271 2715K 0.0001	144.1 0.2619 0.5271 2714K 0.0001
49.0	134.7 0.2618 0.5271 2715K 0.0001	140.0 0.2618 0.5271 2716K 0.0001
50.0	130.6 0.2617 0.5271 2717K 0.0002	135.9 0.2618 0.5271 2716K 0.0001
51.0	126.5 0.2617 0.5271 2717K 0.0002	131.8 0.2617 0.5271 2716K 0.0002
52.0	122.5 0.2616 0.5271 2719K 0.0003	127.6 0.2617 0.5271 2717K 0.0002
53.0	118.4 0.2617 0.5271 2718K 0.0003	123.5 0.2617 0.5270 2717K 0.0002
54.0	114.4 0.2617 0.5270 2718K 0.0003	119.4 0.2617 0.5270 2717K 0.0002
55.0	110.4 0.2617 0.5270 2718K 0.0002	115.3 0.2617 0.5270 2717K 0.0002
56.0	106.4 0.2617 0.5270 2718K 0.0002	111.2 0.2617 0.5270 2717K 0.0002
57.0	102.3 0.2617 0.5269 2717K 0.0002	107.2 0.2617 0.5269 2717K 0.0002
58.0	98.4 0.2617 0.5269 2718K 0.0003	103.3 0.2618 0.5269 2716K 0.0002
59.0	94.5 0.2617 0.5269 2718K 0.0003	99.5 0.2618 0.5268 2717K 0.0003



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

REPORT NUMBER:

ITL83108

Page: 7 of 10

DATE:

10/10/14

PREPARED FOR:

RAB LIGHTING, INC.

CATALOG NUMBER:

SK9SY (SQUARE - SURFACE MOUNT)

Candela Value (cd)

!=Over Delta u'v' +=Below 10%

u'

v'

CCT (Kelvin)

Delta u'v'

RESULTS:

	0.0	90.0
60.0	90.7 0.2617 0.5269 2719K 0.0003	95.7 0.2618 0.5268 2717K 0.0003
61.0	86.9 0.2617 0.5268 2719K 0.0003	91.9 0.2617 0.5267 2718K 0.0004
62.0	83.1 0.2616 0.5268 2720K 0.0004	88.2 0.2617 0.5268 2719K 0.0004
63.0	79.4 0.2616 0.5268 2721K 0.0004	84.4 0.2616 0.5267 2720K 0.0004
64.0	75.7 0.2616 0.5268 2721K 0.0004	80.7 0.2616 0.5268 2722K 0.0004
65.0	72.0 0.2615 0.5268 2722K 0.0005	77.1 0.2615 0.5268 2722K 0.0004
66.0	68.5 0.2615 0.5268 2723K 0.0005	73.4 0.2615 0.5269 2722K 0.0004
67.0	65.1 0.2614 0.5268 2724K 0.0006	69.9 0.2614 0.5269 2723K 0.0005
68.0	61.6 0.2614 0.5267 2725K 0.0006	66.4 0.2614 0.5270 2724K 0.0005
69.0	58.1 0.2614 0.5267 2724K 0.0006	63.0 0.2614 0.5269 2724K 0.0005
70.0	54.8 0.2615 0.5267 2724K 0.0006	59.6 0.2614 0.5269 2724K 0.0005
71.0	51.5 0.2614 0.5268 2724K 0.0005	56.2 0.2614 0.5269 2725K 0.0006
72.0	48.2 0.2614 0.5268 2724K 0.0005	52.9 0.2614 0.5269 2725K 0.0006
73.0	45.0 0.2615 0.5269 2721K 0.0004	49.6 0.2614 0.5268 2725K 0.0006
74.0	41.9 0.2616 0.5270 2720K 0.0003	46.4 0.2614 0.5268 2725K 0.0006



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

REPORT NUMBER:

ITL83108

DATE:

10/10/14

PREPARED FOR:

RAB LIGHTING, INC.

CATALOG NUMBER:

SK9SY (SQUARE - SURFACE MOUNT)

Page: 8 of 10

RESULTS:

0.0

90.0

Candela Value (cd)

!=Over Delta u'v' +=Below 10%

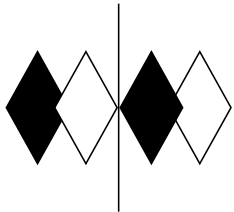
u'

v'

CCT (Kelvin)

Delta u'v'

75.0	38.8 0.2617 0.5270 2718K 0.0003	43.3 0.2613 0.5266 2727K 0.0007
76.0	35.9 0.2617 0.5270 2717K 0.0002	40.3 0.2614 0.5266 2726K 0.0007
77.0	33.0 0.2617 0.5269 2717K 0.0002	37.3 0.2614 0.5265 2727K 0.0007
78.0	30.2 0.2617 0.5269 2718K 0.0003	34.4 0.2614 0.5266 2725K 0.0007
79.0	27.5 0.2617 0.5268 2719K 0.0004	31.6 0.2614 0.5265 2727K 0.0008
80.0	24.5 0.2617 0.5267 2718K 0.0004	28.5 0.2614 0.5264 2727K 0.0008
81.0	22.1 0.2618 0.5266 2718K 0.0004	26.1 0.2614 0.5264 2727K 0.0009
82.0	19.9 0.2618 0.5267 2716K 0.0004	23.9 0.2614 0.5265 2726K 0.0008
83.0	17.8 0.2620 0.5268 2713K 0.0002	21.7 0.2614 0.5264 2725K 0.0008
84.0	15.6 0.2621 0.5271 2708K 0.0002	19.3 0.2614 0.5265 2725K 0.0007
85.0	N/A 0.0000 0.0000 OK N/A	16.7 0.2616 0.5265 2722K 0.0006
86.0	N/A 0.0000 0.0000 OK N/A	N/A 0.0000 0.0000 OK N/A
87.0	N/A 0.0000 0.0000 OK N/A	N/A 0.0000 0.0000 OK N/A
88.0	N/A 0.0000 0.0000 OK N/A	N/A 0.0000 0.0000 OK N/A
89.0	N/A 0.0000 0.0000 OK N/A	N/A 0.0000 0.0000 OK N/A



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

REPORT NUMBER: ITL83108
DATE: 10/10/14

Page: 9 of 10

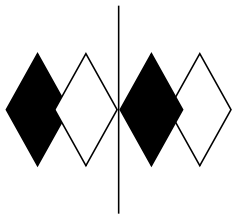
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: SK9SY (SQUARE - SURFACE MOUNT)

RESULTS:		Candela Value (cd)	!=Over Delta u'v' +=Below 10%
		u'	v'
		CCT (Kelvin)	Delta u'v'

0.0 90.0

90.0

N/A	+	N/A	+
0.0000	0.0000	0.0000	0.0000
OK	N/A	OK	N/A



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

NVLAP
NVLAP LAB CODE: 200925-0

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

REPORT NUMBER:

ITL83108

DATE:

10/10/14

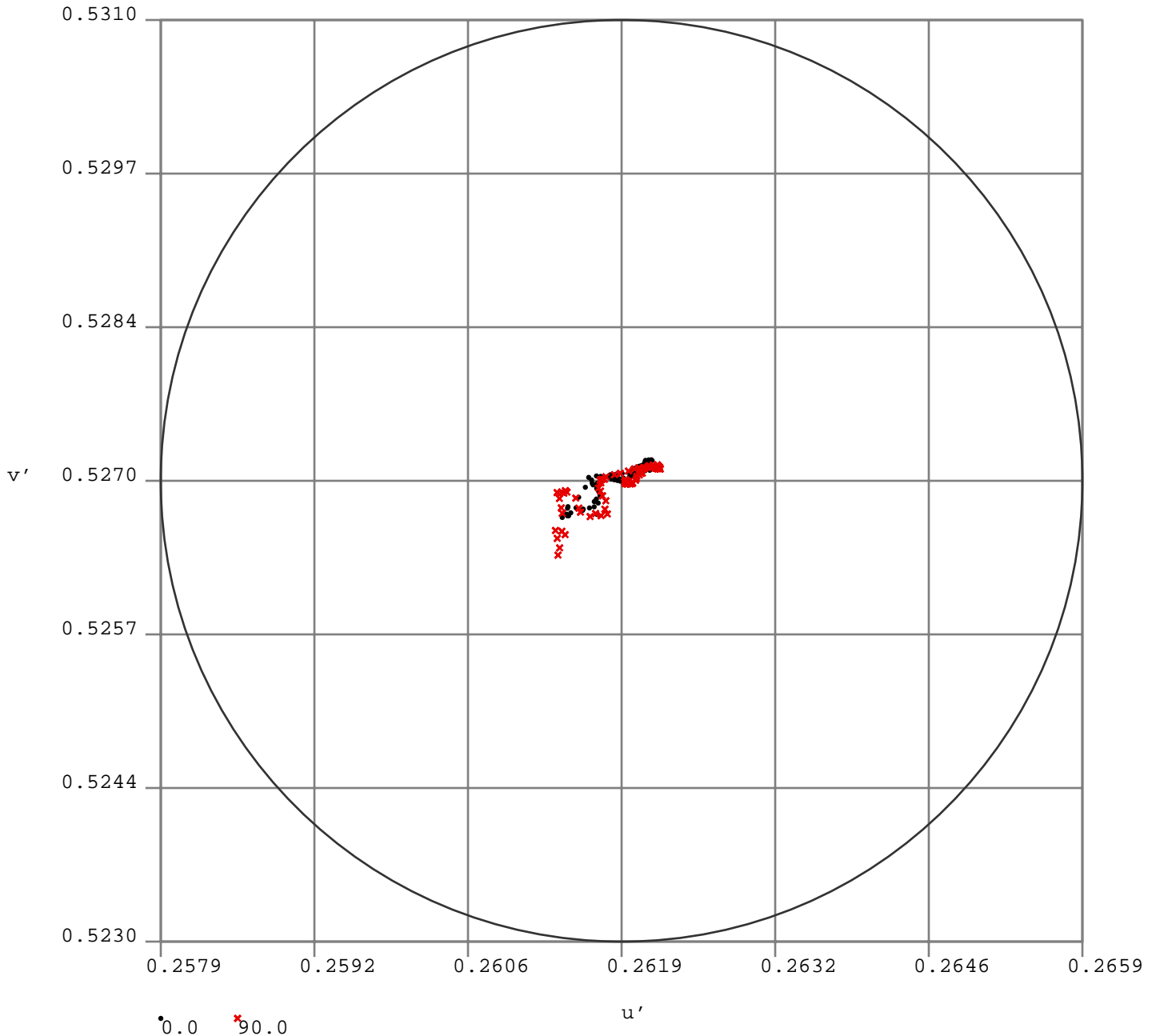
PREPARED FOR:

RAB LIGHTING, INC.

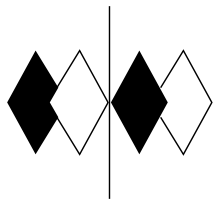
CATALOG NUMBER:

SK9SYY (SQUARE - SURFACE MOUNT)

Page: 10 of 10



NOTE: A 0.004 Del uv Boundary line from the weighted average point on the CIE 1976 (u'v') diagram for all angular intervals is provided.



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

INDEPENDENT TESTING LABORATORIES, INC.

3386 LONGHORN ROAD, BOULDER, CO 80302 USA

PHONE: (303)442-1255

• FAX: (303)449-5274

• E-MAIL: itl@itlboulder.com

• WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL83110
DATE: 10/13/2014
PREPARED FOR: RAB Lighting, Inc.
LUMINAIRE CAT NO: SK9SYY (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.

LED DRIVER: Integral

DIMMER: Lutron SELV-300P Switched Sliding Dimmer

OBJECT OF TEST: Measure three complete luminaire samples for Start Time, Operating Frequency, Dimming Capabilities, Power Factor, and Off-State Power Consumption.

INSTRUMENTATION:	Calibration Due
Elgar 6006B AC Line Conditioner	NA
Tektronix TDS310 Digital Oscilloscope	03/31/15
Yokogawa WT210 Digital Power Meter	10/31/14

PROCEDURE: Each luminaire in turn was mounted in the horizontal position in a 25 +/-1 degree Celsius free air ambient. Each luminaire was then tested for Start Time, Operating Frequency, Power Factor, and Off-State Power Consumption with 120VAC, 60Hz input to the LED driver. The average of three measurements were recorded for each parameter, per luminaire. The dimmer was then installed on each luminaire in turn and light output measurements were recorded over the full range of dimmer settings at 120VAC, 60Hz input to the dimmer/driver combination.

RESULTS:

Performance Data

	<u>Unit A1</u>	<u>Unit B3</u>	<u>Unit B4</u>
Start Time (milliseconds):	456	371	361
Operating Frequency (Hertz):	120	120	120
Continuous Dimming From 100% to:	<5%	<5%	<5%
Power Factor(%):	99.0	99.0	99.0
Off-State Power Consumption(watts):	0	0	0

Note: The units tested did not incorporate integral switching.

Checked: R. Bergin

Approved: C. Stout