

REPORT NUMBER: ITL83096

PAGE: 1 OF 6

ISSUE DATE: 10/03/14

PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: SK9RY (ROUND - 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, 9.06 WATTS, 0.0763 AMPS

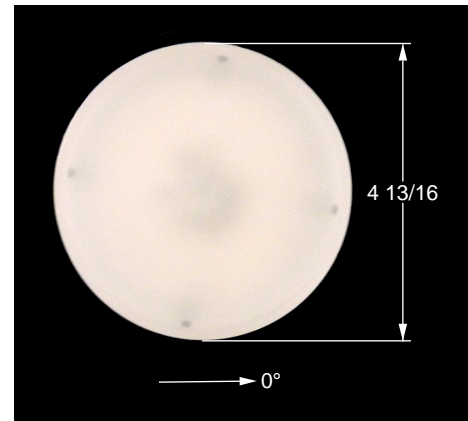
MOUNTING: SURFACE

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



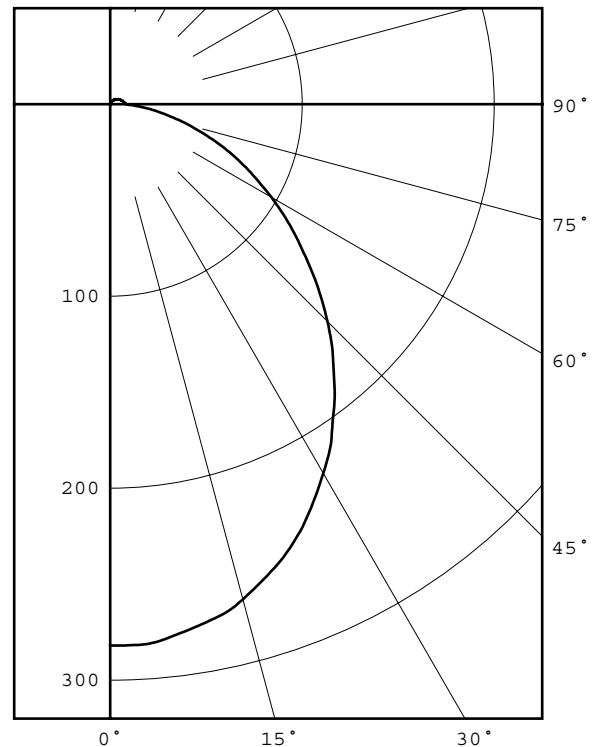
DEG	CANDELA	LUMENS
0	282	
5	281	27
15	267	75
25	240	110
35	202	126
45	160	123
55	117	105
65	78	77
75	43	46
85	16	18
90	8	
95	8	8
105	7	7
115	6	6
125	4	4
135	3	3
145	2	2
155	1	1
165	0	0
175	0	0
180	0	

ZONAL LUMEN SUMMARY		
ZONE	LUMENS	%FIXT
0- 30	212	28.8
0- 40	339	45.9
0- 60	567	76.8
0- 90	708	96.0
90-120	21	2.8
90-130	25	3.4
90-150	29	3.9
90-180	30	4.0
0-180	737	100.0

EFFICACY = 81.3 lm/W

CIE TYPE - DIRECT

LUMINAIRE SPACING CRITERION = 1.18



Checked B. HYRE
Approved N. WHITE
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: ITL83096
ISSUE DATE: 10/03/14
PREPARED FOR: RAB LIGHTING, INC.

PAGE: 2 OF 6

LUMINOUS DIAMETER: 4.813
HEIGHT OF SIDE : 0.250

LUMINANCE DATA IN CANDELA/SQ M
ANGLE AVERAGE
IN DEG

45	18085.
55	15882.
65	13773.
75	11354.
85	8908.



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: ITL83096

PAGE: 3 OF 6

ISSUE DATE: 10/03/14

PREPARED FOR: RAB LIGHTING, INC.

CANDELA DISTRIBUTION

0.0	282
5.0	281
10.0	275
15.0	267
20.0	255
25.0	240
30.0	222
35.0	202
40.0	181
45.0	160
50.0	138
55.0	117
60.0	97
65.0	78
70.0	60
75.0	43
80.0	28
85.0	16
90.0	8
95.0	8
100.0	7
105.0	7
110.0	6
115.0	6
120.0	5
125.0	4
130.0	4
135.0	3
140.0	3
145.0	2
150.0	2
155.0	1
160.0	1
165.0	0
170.0	0
175.0	0
180.0	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: ITL83096
ISSUE DATE: 10/03/14
PREPARED FOR: RAB LIGHTING, INC.

PAGE: 4 OF 6

5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	7
5- 10	20
10- 15	32
15- 20	43
20- 25	52
25- 30	58
30- 35	63
35- 40	64
40- 45	63
45- 50	60
50- 55	55
55- 60	49
60- 65	42
65- 70	35
70- 75	27
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	27
0- 20	102
0- 30	212
0- 40	339
0- 50	462
0- 60	567
0- 70	644
0- 80	690
0- 90	708
0-100	716
0-110	723
0-120	729
0-130	733
0-140	735
0-150	737
0-160	737
0-170	737
0-180	737



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



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

REPORT NUMBER: ITL83096

PAGE: 5 OF 6

ISSUE DATE: 10/03/14

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	68
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	58	53	61	56	52	49
5	76	63	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	53	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: ITL83096
ISSUE DATE: 10/03/14
PREPARED FOR: RAB LIGHTING, INC.

PAGE: 6 OF 6

ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

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: ITL83102
DATE: 10/08/14
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: SK9RY (ROUND - 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.

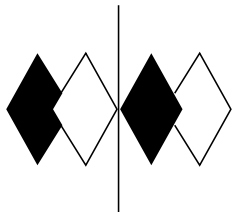
PROCEDURE: The test sample was provided by the customer and had an unknown number
of operating hours. The test sample was mounted inside the integrating
sphere and allowed to stabilize. After stabilization occurred,
measurements were taken. In order to measure mean performance, multiple
data sets were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

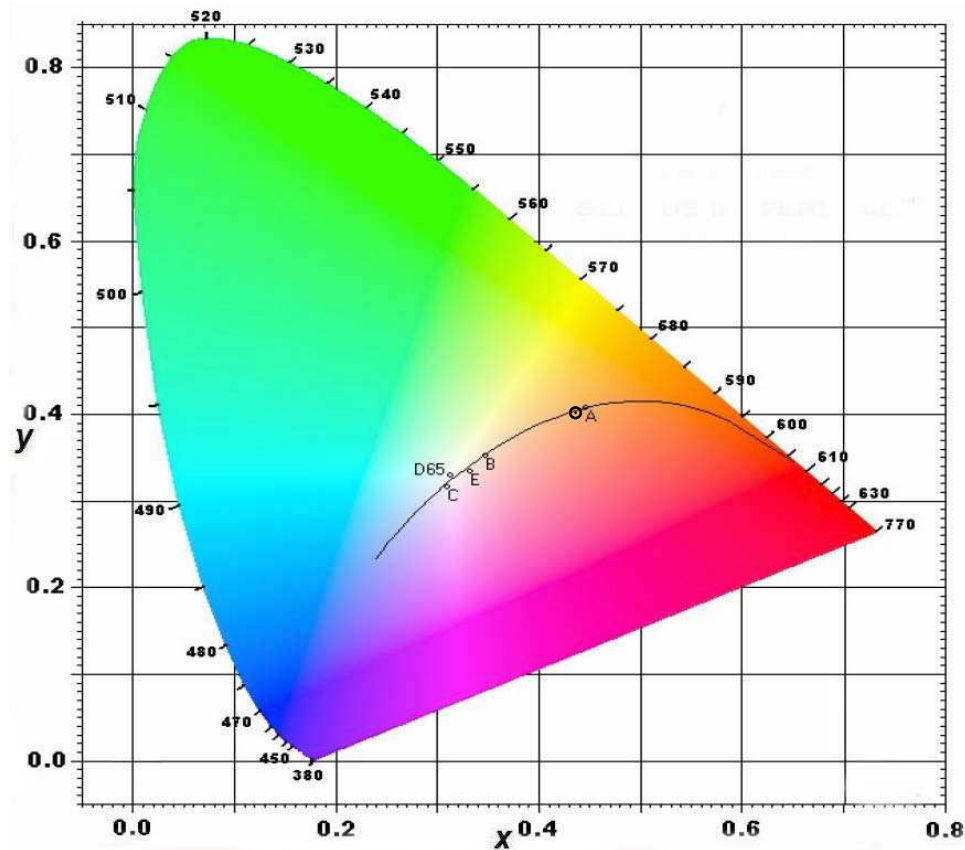
NVLAP
NVLAP LAB CODE: 200925-0

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: ITL83102
DATE: 10/08/14
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: SK9RY (ROUND - 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: ITL83102
 DATE: 10/08/14
 PREPARED FOR: RAB LIGHTING, INC.
 CATALOG NUMBER: SK9RY (ROUND - SURFACE MOUNT)

Page 2 of 4

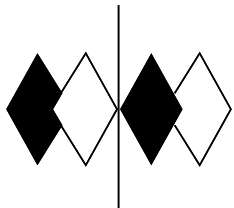
RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4359
Chromaticity Ordinate y	0.4013
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2511
Chromaticity Ordinate v'	0.5201
Correlated Color Temp CCT (K)	2995
ANSI C78.377-2008 Duv	-0.001
Scotopic / Photopic Lumen Ratio	1.428
Total Radiant Flux (milliWatts)	2337 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.076
Input Power (Watts)	9.05
Input Power Factor (%)	99.2
Input Current THD (%)	14.0
Input Voltage THD (%)	0.1
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	84
R1 Light greyish red	83
R2 Dark greyish yellow	93
R3 Strong yellowish green	95
R4 Moderate yellowish green	81
R5 Light bluish green	84
R6 Light blue	92
R7 Light violet	83
R8 Light reddish purple	62
R9 Strong red	16
R10 Strong yellow	84
R11 Strong green	80
R12 Strong blue	76
R13 Light yellowish pink (skin)	85
R14 Moderate olive green (leaf)	98

*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 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

Page 3 of 4

REPORT NUMBER: ITL83102
DATE: 10/08/14
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: SK9RY (ROUND - SURFACE MOUNT)

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.050	515	6.303	650	9.530
385	0.051	520	6.632	655	8.710
390	0.053	525	6.959	660	7.910
395	0.060	530	7.303	665	7.125
400	0.070	535	7.696	670	6.363
405	0.108	540	8.136	675	5.650
410	0.160	545	8.636	680	5.006
415	0.259	550	9.184	685	4.417
420	0.441	555	9.767	690	3.903
425	0.725	560	10.391	695	3.435
430	1.142	565	11.042	700	3.018
435	1.768	570	11.700	705	2.637
440	2.761	575	12.342	710	2.298
445	4.393	580	12.981	715	1.997
450	6.443	585	13.590	720	1.740
455	7.527	590	14.119	725	1.520
460	6.574	595	14.560	730	1.327
465	5.328	600	14.828	735	1.156
470	4.684	605	14.931	740	1.007
475	4.084	610	14.854	745	0.875
480	3.724	615	14.566	750	0.765
485	3.845	620	14.090	755	0.665
490	4.188	625	13.454	760	0.582
495	4.619	630	12.728	765	0.510
500	5.099	635	11.958	770	0.448
505	5.567	640	11.158	775	0.394
510	5.957	645	10.343	780	0.345

