

REPORT NUMBER: ITL80272

PAGE: 1 OF 5

ISSUE DATE: 12/31/13

PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: AISLED78Y (FLAT GLASS LENS - CEILING AND/OR PENDENT MOUNT - AISLE DISTRIBUTION)

LUMINAIRE: CAST 2-PIECE WHITE PAINTED FINNED METAL HOUSING, 3 FLAT METAL HEAT SINKS, 3 CIRCUIT BOARDS EACH WITH 1 LED AND MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH, MOLDED PLASTIC TRIM WITH SPECULAR FINISH AND 1 APERTURE PER LED, CLEAR FLAT GLASS LENS IN CAST WHITE PAINTED METAL LENS FRAME.

LAMPS: THREE WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDs), VERTICAL BASE-UP POSITION.

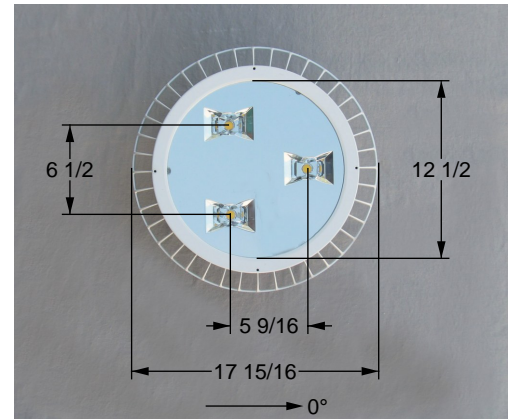
TOTAL INPUT WATTS = 90.0 AT 120.0 VOLTS

LED DRIVERS: THREE RAB RDF25U7-02

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

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 35.0 FEET



#### CANDELA DISTRIBUTION

	0.0	25.0	45.0	65.0	90.0	FLUX
0	3865	3865	3865	3865	3865	
5	4177	4129	4006	3902	3949	392
15	4460	4443	4148	3673	3468	1129
25	4343	4440	3338	2205	1882	1489
35	3499	3724	1864	877	849	1351
45	1520	2508	781	318	243	853
55	106	1312	903	257	220	534
65	48	758	381	130	105	305
75	41	41	131	80	42	89
85	3	3	2	2	9	7
90	0	0	0	0	0	

#### ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	3010	49.0
0- 40	4361	70.9
0- 60	5748	93.5
0- 90	6148	100.0
90-180	0	0.0
0-180	6148	100.0

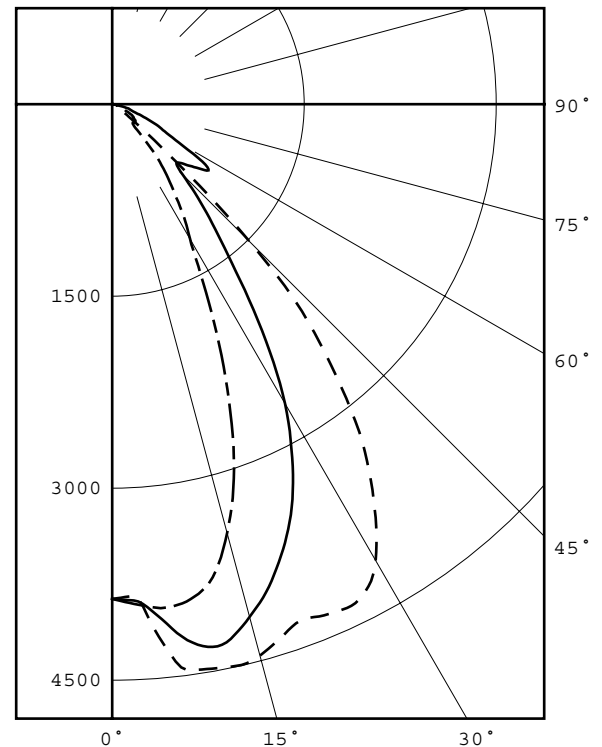
EFFICACY = 68.3 lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG  
SPACING CRITERIA : 1.40 0.80  
BEAM ANGLE (50%) : 84.4 X 45.8 DEGREES  
FIELD ANGLE (10%) : 99.1 X 82.9 DEGREES  
LUMINOUS DIAMETER: 12.500

#### LUMINANCE DATA IN CANDELA/SQ M

ANGLE	AVERAGE	AVERAGE	AVERAGE
IN DEG	0-DEG	45-DEG	90-DEG
45	27151.	13950.	4341.
55	2334.	19885.	4845.
65	1435.	11387.	3138.
75	2001.	6393.	2050.
85	435.	290.	1304.



LEGEND:

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

Checked B. HYRE  
Approved N. WHITE  
Lighting Engineer



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# CANDELA DISTRIBUTION LATERAL ANGLE

	0.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0	85.0	90.0
0.0	3865	3865	3865	3865	3865	3865	3865	3865	3865	3865	3865
2.5	3843	3839	3852	3859	3870	3880	3887	3882	3903	3910	3907
5.0	4177	4169	4157	4129	4062	4006	3943	3902	3938	3949	3949
7.5	4457	4448	4451	4432	4333	4197	4060	3944	3907	3942	3945
10.0	4478	4482	4493	4498	4453	4305	4106	3952	3866	3879	3883
12.5	4495	4497	4495	4457	4370	4279	4069	3875	3760	3736	3737
15.0	4460	4463	4473	4443	4332	4148	3940	3673	3524	3463	3468
17.5	4373	4382	4411	4406	4275	3997	3725	3387	3199	3125	3148
20.0	4294	4313	4344	4390	4212	3807	3389	3026	2809	2733	2752
22.5	4322	4343	4380	4400	4129	3594	3024	2629	2388	2306	2314
25.0	4343	4362	4403	4440	4041	3338	2646	2205	1973	1883	1882
27.5	4288	4306	4358	4409	3926	3034	2261	1820	1624	1525	1500
30.0	4117	4139	4215	4317	3736	2700	1839	1450	1330	1249	1215
32.5	3829	3834	3945	4064	3455	2293	1423	1117	1045	1050	1043
35.0	3499	3482	3610	3724	3034	1864	1060	877	804	833	849
37.5	3122	3137	3333	3417	2629	1489	837	703	656	670	697
40.0	2658	2704	2959	3183	2363	1216	684	558	529	534	557
42.5	2196	2243	2544	2879	2152	990	564	437	385	364	373
45.0	1520	1565	1968	2508	1839	781	436	318	273	243	243
47.5	795	841	1288	1997	1494	682	374	269	242	217	219
50.0	378	431	846	1504	1305	724	381	257	237	212	221
52.5	180	243	673	1324	1409	807	401	258	241	213	227
55.0	106	163	643	1312	1507	903	397	257	249	215	220
57.5	71	93	619	1298	1319	834	350	237	228	198	196
60.0	57	62	414	1186	1167	602	285	194	209	190	184
62.5	51	52	186	991	1027	462	221	165	179	152	151
65.0	48	49	77	758	904	381	163	130	140	110	105
67.5	45	47	52	497	779	285	117	89	121	91	80
70.0	43	43	44	301	620	195	75	84	113	83	57
72.5	40	41	42	151	420	154	29	94	101	76	43
75.0	41	42	36	41	174	131	13	80	82	60	42
77.5	38	38	31	20	47	76	11	56	70	49	43
80.0	26	27	17	14	24	38	8	24	37	30	25
82.5	13	14	10	10	9	12	3	5	11	14	13
85.0	3	3	3	3	2	2	1	2	2	6	9
87.5	1	1	1	1	1	1	1	1	0	1	1
90.0	0	0	0	0	0	0	0	0	0	0	0



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5-DEGREE  
ZONAL LUMEN SUMMARY

0- 5	94
5- 10	298
10- 15	492
15- 20	637
20- 25	725
25- 30	763
30- 35	724
35- 40	627
40- 45	510
45- 50	343
50- 55	273
55- 60	260
60- 65	187
65- 70	118
70- 75	64
75- 80	25
80- 85	6
85- 90	1

10-DEGREE  
ZONAL LUMEN SUMMARY

0- 10	392
0- 20	1521
0- 30	3010
0- 40	4361
0- 50	5214
0- 60	5748
0- 70	6053
0- 80	6142
0- 90	6148



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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	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	112	108	105	103	109	106	103	101	102	100	98	98	96	95	95	93	92	90
2	104	98	93	89	102	96	92	88	93	89	86	90	87	84	87	85	82	80
3	97	89	83	78	95	88	82	77	85	80	76	83	78	75	80	77	74	72
4	91	82	75	69	89	80	74	69	78	72	68	76	71	67	74	70	66	65
5	85	75	67	62	83	74	67	62	72	66	61	70	65	61	68	64	60	58
6	80	69	61	56	78	68	61	56	66	60	56	65	59	55	63	58	55	53
7	75	64	56	51	73	63	56	51	61	55	51	60	55	50	59	54	50	48
8	70	59	52	47	69	58	52	47	57	51	47	56	50	46	55	50	46	44
9	66	55	48	43	65	54	48	43	53	47	43	52	47	43	51	46	43	41
10	63	51	45	40	62	51	44	40	50	44	40	49	44	40	48	43	39	38

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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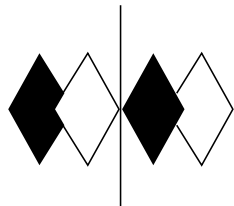
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ADDRESS: 170 LUDLOW AVE  
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REPORT NUMBER: ITL80275  
DATE: 01/03/14  
PREPARED FOR: RAB LIGHTING, INC.  
CATALOG NUMBER: AISLED78Y (FLAT GLASS LENS - CEILING AND/OR PENDENT MOUNT - AISLE DISTRIBUTION)

ADDRESS: 170 LUDLOW AVE  
NORTHVALE, NJ 07647

LUMINAIRE: CAST 2-PIECE WHITE PAINTED FINNED METAL HOUSING, 3 FLAT METAL HEAT SINKS, 3 CIRCUIT BOARDS EACH WITH 1 LED AND MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH, MOLDED PLASTIC TRIM WITH SPECULAR FINISH AND 1 APERTURE PER LED, CLEAR FLAT GLASS LENS IN CAST WHITE PAINTED METAL LENS FRAME.

LAMP: THREE WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDs), VERTICAL BASE-UP POSITION.

DRIVERS: THREE RAB RDF25U7-02

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (120.0 AND 277.0 VAC, 60Hz) TO THE DRIVERS.

INSTRUMENTS:	Associated Power Technologies APT5040 AC Power Source	Calibration Due: N/A
	Yokogawa WT210 Digital Power Meter #8	12/31/14
	Ocean Optics QE65000 Spectroradiometer	10/16/14
	ITL 2.0m Diameter Integrating Sphere S20-2, 4PI Geometry	10/16/14

OBJECT OF TEST: Measure the Total Radiant Flux\*, Spectral Power Distribution (SPD), Correlated Color Temperature (CCT), Color Rendering Indices (CRI<sub>a</sub>,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. Measure electrical data including Total Harmonic Distortion (THD) at maximum rated voltage.

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. Electrical data was also recorded at maximum nominal rated input voltage (277.0 VAC). 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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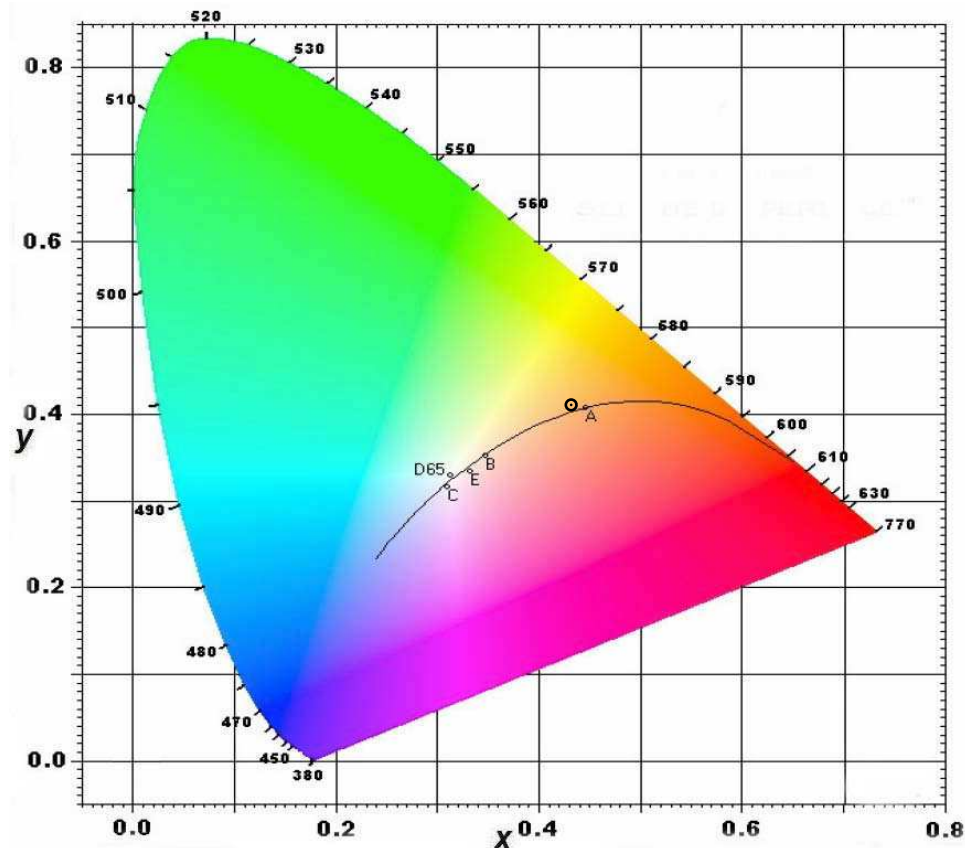
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NVLAP LAB CODE: 200925-0

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## CIE Chromaticity Diagram





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#### RESULTS:

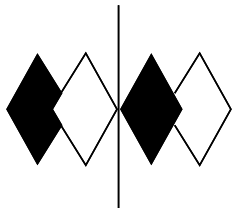
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4316
Chromaticity Ordinate y	0.4104
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2445
Chromaticity Ordinate v'	0.5230
Correlated Color Temp CCT (K)	3142
ANSI C78.377-2008 Duv	0.003
Total Radiant Flux (milliWatts)	18038 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.758
Input Power (Watts)	90.0
Input Power Factor (%)	98.9
Input Current THD (%)	13.7
Input Voltage THD (%)	0.3
Off-State Power (Watts)	
	0.0
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.381
Input Power (Watts)	90.3
Input Power Factor (%)	85.6
Input Current THD (%)	21.4
Input Voltage THD (%)	0.1

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	81
R1 Light greyish red	79
R2 Dark greyish yellow	87
R3 Strong yellowish green	95
R4 Moderate yellowish green	83
R5 Light bluish green	80
R6 Light blue	85
R7 Light violet	84
R8 Light reddish purple	59
R9 Strong red	-1
R10 Strong yellow	70
R11 Strong green	84
R12 Strong blue	67
R13 Light yellowish pink (skin)	81
R14 Moderate olive green (leaf)	97

#### \*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	0.407	515	61.953	650	65.563
385	0.408	520	66.405	655	58.243
390	0.440	525	69.538	660	51.302
395	0.509	530	71.738	665	44.667
400	0.659	535	73.171	670	38.709
405	0.955	540	74.425	675	33.473
410	1.578	545	75.866	680	29.012
415	2.915	550	77.831	685	25.148
420	5.712	555	80.571	690	21.722
425	11.084	560	84.373	695	18.716
430	20.069	565	89.141	700	15.940
435	34.053	570	94.707	705	13.633
440	54.856	575	100.909	710	11.626
445	68.831	580	107.103	715	9.914
450	56.839	585	112.818	720	8.448
455	37.263	590	117.501	725	7.186
460	26.417	595	120.784	730	6.108
465	19.288	600	122.183	735	5.203
470	14.618	605	121.762	740	4.423
475	13.400	610	119.711	745	3.782
480	14.751	615	115.959	750	3.248
485	18.290	620	110.677	755	2.765
490	24.214	625	104.353	760	2.374
495	31.913	630	96.958	765	2.038
500	40.426	635	89.270	770	1.743
505	48.609	640	81.306	775	1.495
510	56.004	645	73.265	780	1.290

