

REPORT NUMBER: RAB04341

PAGE: 2 OF 9

ISSUE DATE: 05/01/18

DATE SAMPLE TESTED: 05/01/18

CATALOG NUMBER: ALED3T78Y/480 - RWLED3T78Y/480 - RWLED3T78SFY/480 - WPLED3T78

ADDITIONAL INFORMATION

LAMPS: SIX WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDs), 2 LEDs TILTED 63-DEGREES FROM VERTICAL BASE-UP POSITION AND CANTED 75-DEGREES FROM STRAIGHT AHEAD, 2 LEDs TILTED 67-DEGREES FROM VERTICAL BASE-UP POSITION AND CANTED 68-DEGREES FROM STRAIGHT AHEAD, 2 LEDs TILTED 58-DEGREES FROM VERTICAL BASE-UP POSITION AND CANTED 40-DEGREES FROM STRAIGHT AHEAD.

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.

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

TOTAL INPUT WATTS = 79.855 W AT 480.0 VAC.

LED DRIVER: RD-S075-A2100-480

TEST PROCEDURE: IESNA LM-79-08

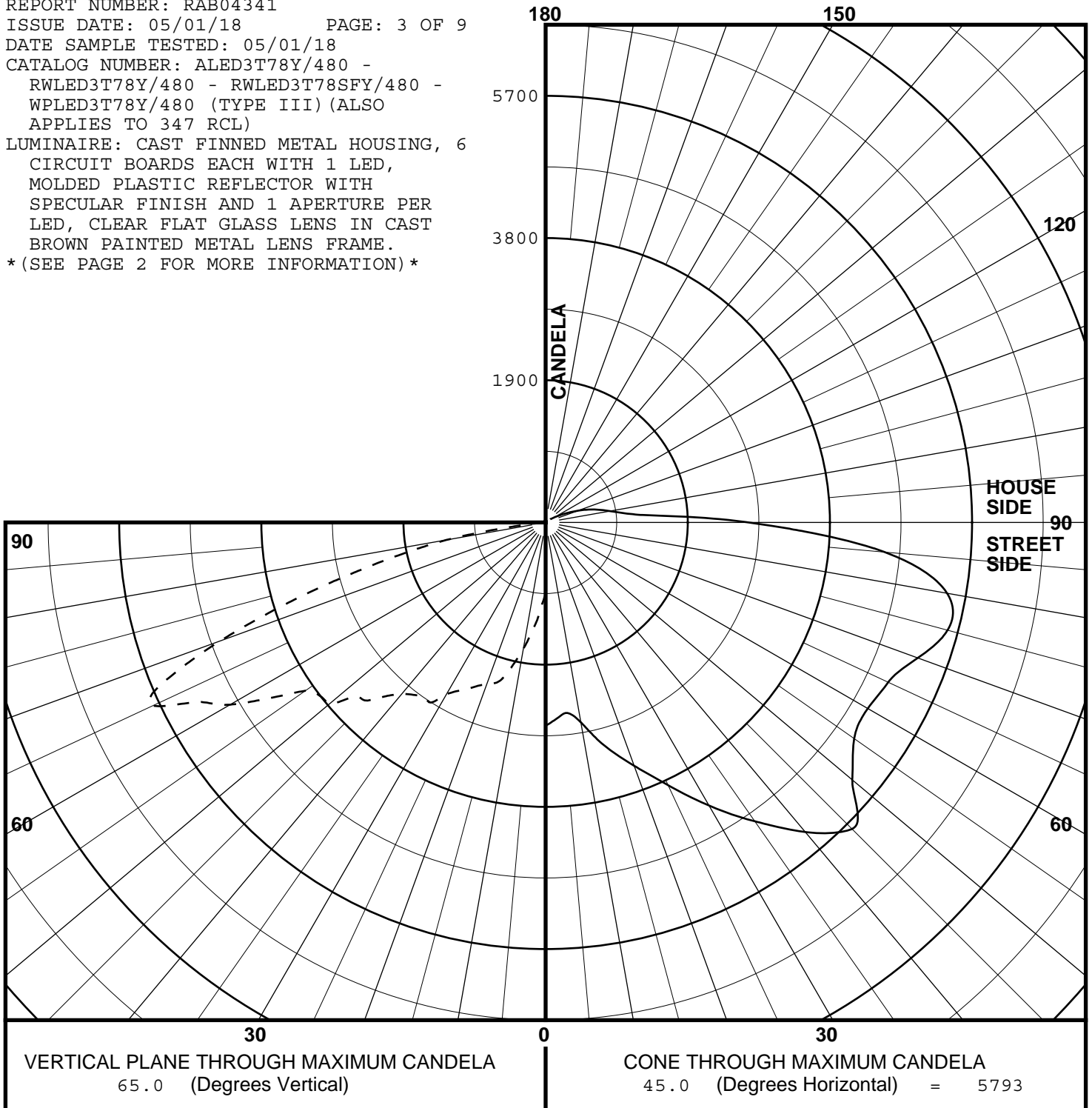
LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE

AMBIENT: 25.1

ACCREDITED LABORATORY CODE 201058-0

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

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 DATE SAMPLE TESTED: 05/01/18
 CATALOG NUMBER: ALED3T78Y/480 -
 RWLED3T78Y/480 - RWLED3T78SFY/480 -
 WPLED3T78Y/480 (TYPE III) (ALSO
 APPLIES TO 347 RCL)
 LUMINAIRE: CAST FINNED METAL HOUSING, 6
 CIRCUIT BOARDS EACH WITH 1 LED,
 MOLDED PLASTIC REFLECTOR WITH
 SPECULAR FINISH AND 1 APERTURE PER
 LED, CLEAR FLAT GLASS LENS IN CAST
 BROWN PAINTED METAL LENS FRAME.
 (SEE PAGE 2 FOR MORE INFORMATION)



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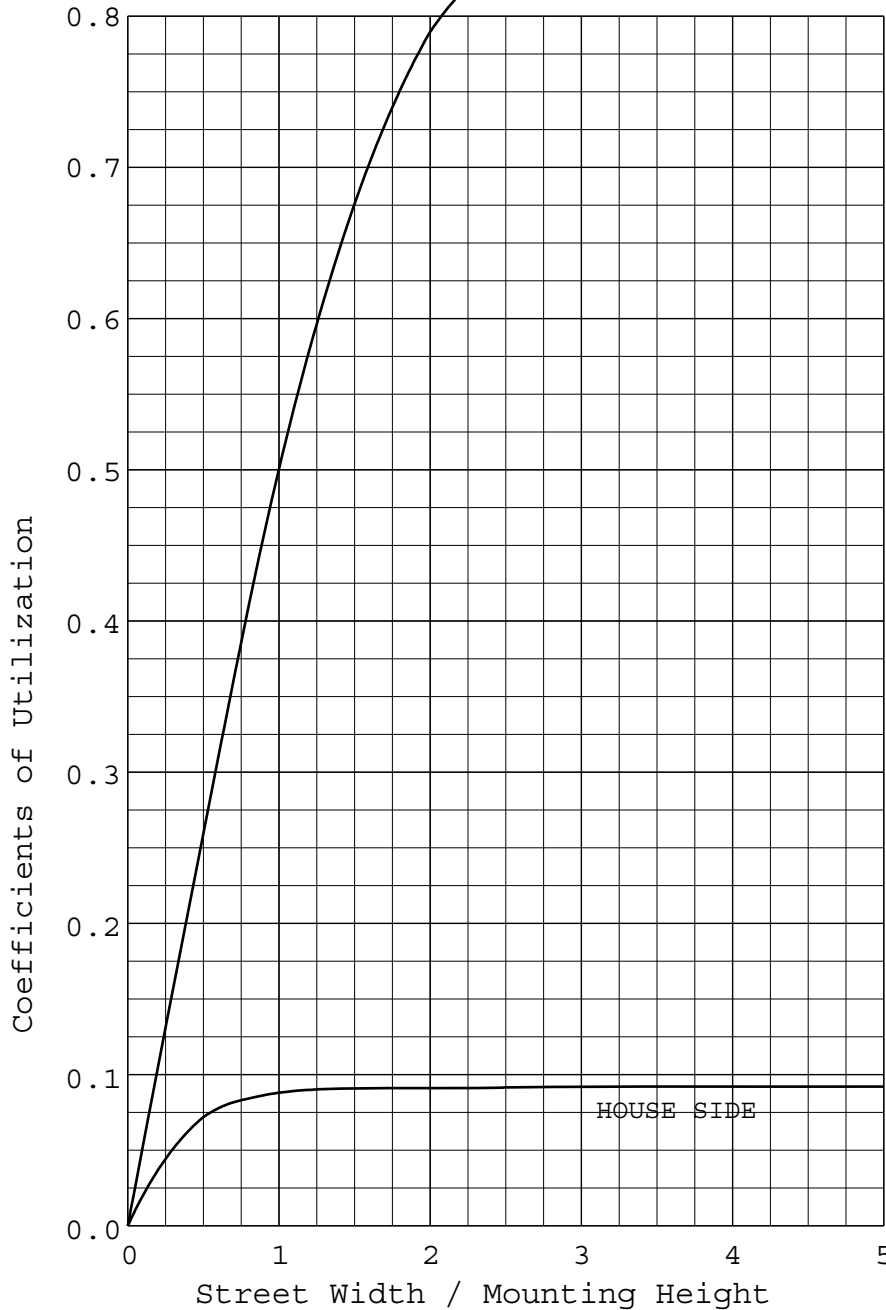
ISSUE DATE: 05/01/18

STREET SIDE

DATE SAMPLE TESTED: 05/01/18

CATALOG NUMBER: ALED3T78Y/480 - RWLED3T78Y/480 - RWLED3T78SFY/480 - WPLED3T78

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	8348.	90.8
DOWNWARD HOUSE SIDE	848.	9.2
DOWNWARD TOTAL	9195.	100.0
UPWARD STREET SIDE	0.	0.0
UPWARD HOUSE SIDE	0.	0.0
UPWARD TOTAL	0.	0.0
TOTAL FLUX	9195.	100.0

TOTAL INPUT WATTS = 79.9
EFFICACY = 115.1 Lm/W

ALL CANDELA AND LUMENS 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.

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DATE SAMPLE TESTED: 05/01/18

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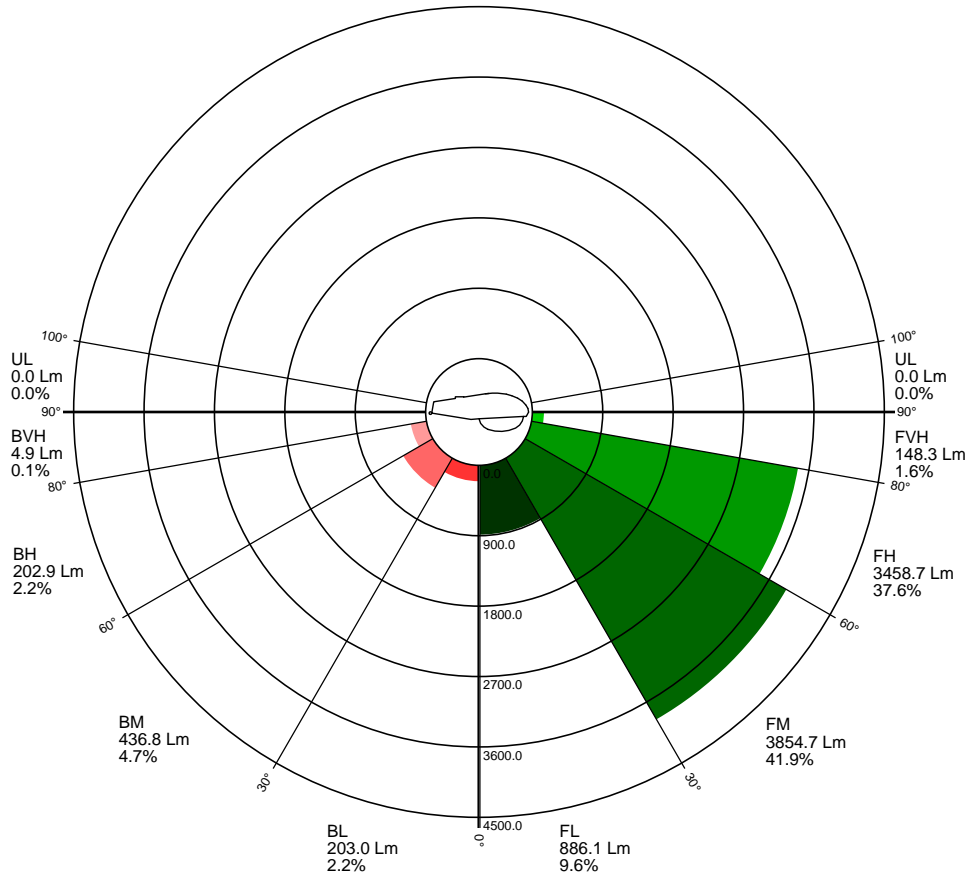
WPLLED3T78Y/480 (TYPE III) (ALSO APPLIES TO B1 U0 G2)

Zonal Summary		Lumens	% of Fixture	Zone Ratings		
				B	U	G
Forward		8348	90.8			
FL	(0° - 30°)	886.1	9.6			
FM	(30° - 60°)	3854.7	41.9			
FH	(60° - 80°)	3458.7	37.6			G2
FVH	(80° - 90°)	148.3	1.6			G2
Backward		848	9.2			
BL	(0° - 30°)	203.0	2.2	B1		
BM	(30° - 60°)	436.8	4.7	B1		
BH	(60° - 80°)	202.9	2.2	B1		G1
BVH	(80° - 90°)	4.9	0.1			G0
Upward		0	0.0			
UL	(90° - 100°)	0.0	0.0		U0	
UH	(100° - 180°)	0.0	0.0		U0	
Trapped Light		0	0.0			
Total Flux		9195	100.0			

Zonal Lumen Summary

(Linear scale)

UH
0.0 Lm
0.0%



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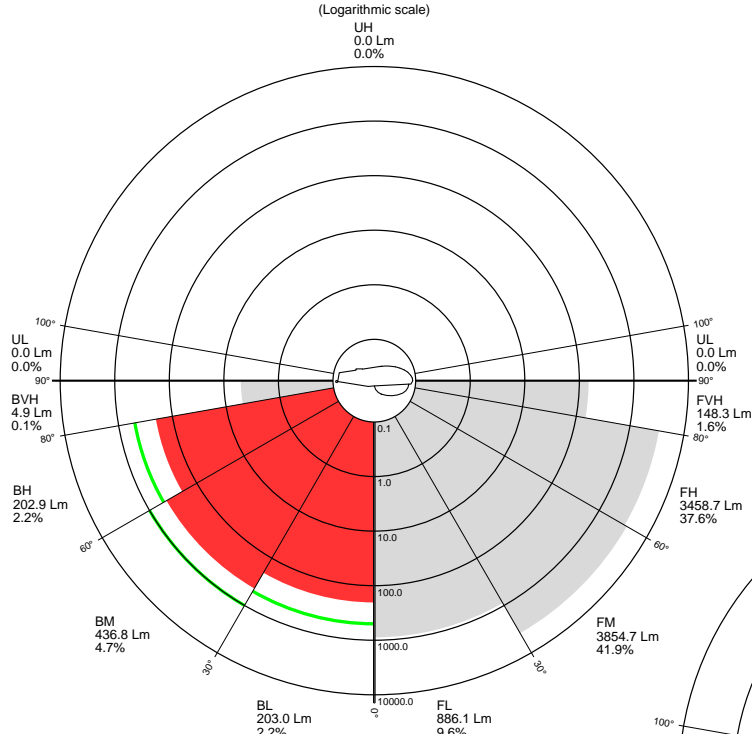
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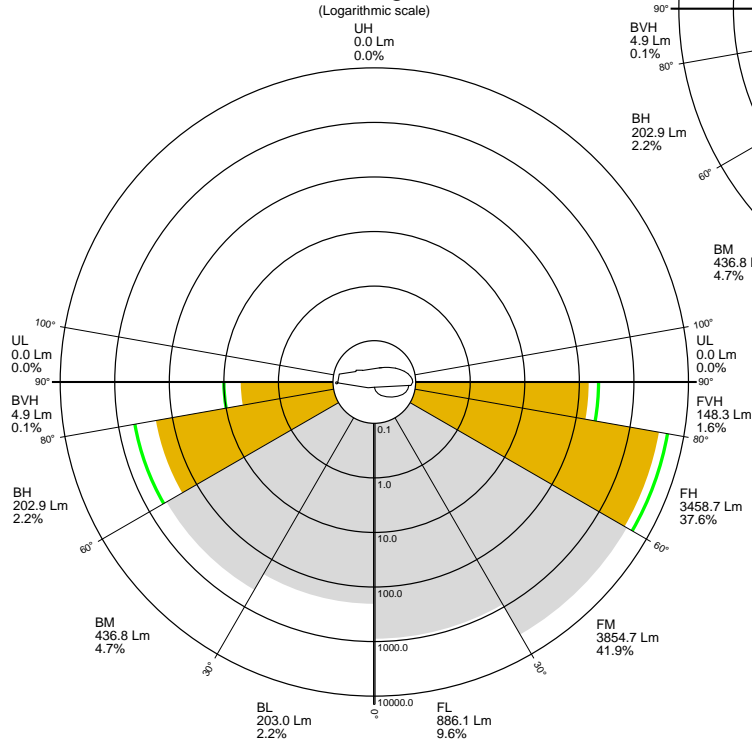
DATE SAMPLE TESTED: 05/01/18

CATALOG NUMBER: ALED3T78Y/480 - RWLED3T78Y/480 - RWLED3T78SFY/480 -
WPLED3T78Y/480 (TYPE III) (ALSO APPLIES TO 347 RCL)

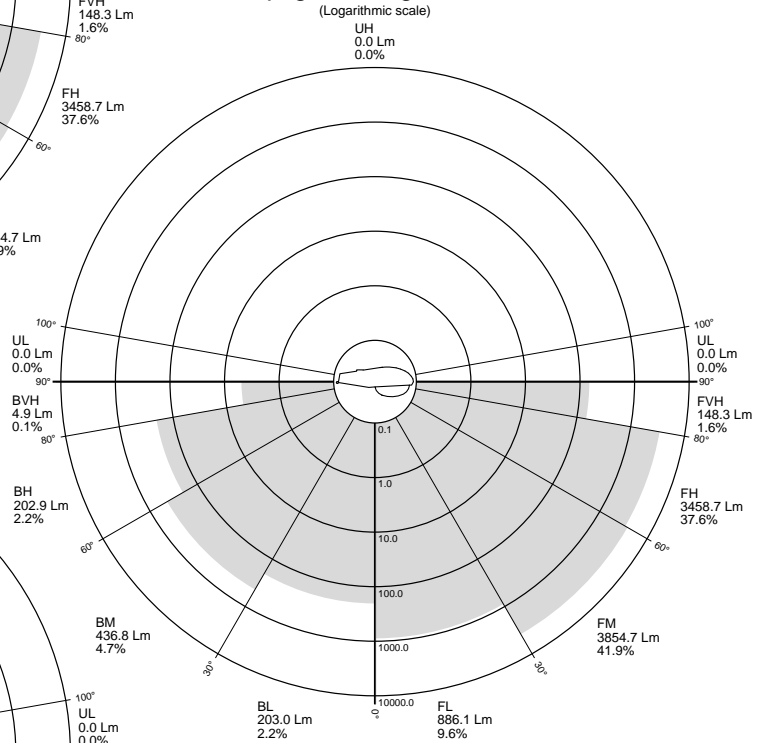
Backlight Rating Details



Glare Rating Details



Uplight Rating Details



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CATALOG NUMBER: ALED3T78Y/480 - RWLED3T78Y/480 - RWLED3T78SFY/480 - WPLED3T78

CANDELA TABULATION

	STREET	LATERAL ANGLE									
		SIDE	0.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0
	180.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	175.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	165.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	155.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	145.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	135.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	125.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	115.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	105.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	95.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	90.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	87.5	3.	3.	5.	5.	12.	14.	14.	15.	14.	8.
	85.0	19.	16.	41.	62.	102.	131.	181.	195.	156.	17.
V	82.5	59.	87.	213.	254.	388.	529.	860.	989.	743.	136.
E	80.0	196.	248.	429.	655.	907.	1343.	1831.	1926.	1490.	570.
R	77.5	664.	687.	907.	1341.	1609.	1994.	2617.	3166.	2513.	1512.
T	75.0	1202.	1177.	1418.	1887.	2321.	2762.	3316.	4145.	3317.	2113.
I	72.5	1548.	1507.	1781.	2322.	2820.	3671.	4399.	5031.	4306.	2693.
C	70.0	1870.	1807.	2140.	2777.	3417.	4631.	5455.	5295.	5153.	3504.
A	67.5	2255.	2147.	2567.	3319.	4146.	5480.	5547.	5228.	5332.	4417.
L	65.0<<	2717.	2575.	3101.	3874.	4875.	5793.	5035.	5053.	5562.	4552.
	62.5	3330.	3202.	3775.	4559.	5437.	5194.	4983.	4768.	5564.	4413.
A	60.0	4211.	4101.	4583.	5294.	5140.	4870.	4570.	4938.	5239.	4105.
N	57.5	4845.	4807.	4967.	4984.	4443.	4368.	4260.	5329.	4787.	3754.
G	55.0	4511.	4519.	4310.	4099.	4004.	3922.	4050.	4569.	4291.	3424.
L	52.5	3702.	3723.	3681.	3703.	3532.	3804.	4066.	4140.	3768.	2928.
E	50.0	3331.	3375.	3382.	3297.	3224.	3766.	3791.	3874.	3520.	2463.
	47.5	3092.	3148.	3098.	3063.	3214.	3441.	3520.	3500.	3367.	2319.
	45.0	2926.	2977.	2905.	2964.	3170.	3365.	3304.	3225.	3199.	2178.
	42.5	2827.	2850.	2886.	3046.	3182.	3146.	3133.	3062.	2941.	1993.
	40.0	2844.	2844.	2867.	2932.	3033.	2989.	2922.	2873.	2795.	1861.
	37.5	2627.	2638.	2726.	3118.	2875.	2903.	2719.	2695.	2579.	1776.
	35.0	2775.	2789.	2904.	2862.	2874.	2842.	2668.	2652.	2375.	1695.
	30.0	2823.	2791.	2761.	2776.	2755.	2647.	2575.	2559.	2295.	1574.
	25.0	2930.	2916.	2681.	2585.	2496.	2450.	2412.	2329.	1877.	1374.
	20.0	2674.	2698.	2554.	2429.	2332.	2304.	2239.	1999.	1615.	1196.
	15.0	2398.	2396.	2382.	2286.	2196.	2130.	1955.	1664.	1326.	1050.
	10.0	2120.	2135.	2114.	2022.	1875.	1716.	1518.	1359.	1142.	980.
	5.0	1498.	1510.	1470.	1446.	1369.	1310.	1207.	1121.	1033.	959.
	0.0	948.	948.	948.	948.	948.	948.	948.	948.	948.	948.

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PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA

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CATALOG NUMBER: ALED3T78Y/480 - RWLED3T78Y/480 - RWLED3T78SFY/480 - WPLED3T78

CANDELA TABULATION

HOUSE SIDE		LATERAL ANGLE									
		90.0	95.0	105.0	115.0	125.0	135.0	145.0	155.0	165.0	175.0 180.0
	180.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	175.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	165.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	155.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	145.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	135.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	125.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	115.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	105.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	95.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	90.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	87.5	8.	7.	8.	7.	7.	6.	5.	4.	3.	3. 4.
	85.0	10.	9.	8.	8.	7.	6.	5.	4.	3.	3. 3.
V	82.5	66.	28.	16.	9.	7.	6.	5.	3.	4.	4. 3.
E	80.0	318.	135.	25.	24.	8.	5.	5.	4.	4.	4. 4.
R	77.5	764.	445.	68.	36.	10.	6.	5.	4.	5.	5. 5.
T	75.0	1098.	514.	145.	40.	18.	8.	5.	4.	5.	5. 5.
I	72.5	1466.	700.	184.	84.	52.	12.	7.	5.	5.	5. 5.
C	70.0	2132.	920.	444.	146.	58.	13.	17.	7.	7.	7. 7.
A	67.5	2532.	1100.	681.	206.	62.	23.	13.	8.	8.	8. 8.
L	65.0 <<	2716.	1208.	671.	272.	75.	48.	23.	9.	9.	9. 9.
	62.5	2722.	1275.	711.	340.	97.	65.	43.	16.	10.	8. 7.
A	60.0	2409.	1289.	822.	430.	128.	93.	53.	23.	11.	7. 7.
N	57.5	2275.	1270.	779.	419.	156.	114.	63.	29.	14.	8. 7.
G	55.0	2139.	1276.	714.	418.	186.	121.	71.	38.	17.	8. 8.
L	52.5	1936.	1256.	640.	438.	260.	132.	79.	45.	22.	11. 8.
E	50.0	1760.	1247.	606.	540.	356.	171.	87.	49.	27.	33. 33.
	47.5	1684.	1217.	626.	460.	360.	190.	100.	55.	33.	36. 61.
	45.0	1651.	1145.	639.	471.	335.	204.	120.	64.	44.	38. 34.
	42.5	1627.	1229.	629.	466.	357.	216.	130.	116.	55.	32. 28.
	40.0	1533.	1304.	703.	463.	378.	227.	143.	97.	81.	48. 34.
	37.5	1463.	1289.	1038.	488.	375.	244.	159.	109.	92.	69. 58.
	35.0	1413.	1239.	1085.	738.	415.	299.	176.	122.	99.	74. 65.
	30.0	1292.	1144.	854.	611.	462.	345.	302.	150.	103.	80. 71.
	25.0	1144.	1035.	767.	587.	405.	303.	233.	180.	134.	120. 118.
	20.0	1042.	952.	751.	622.	449.	327.	239.	188.	177.	182. 183.
	15.0	939.	867.	755.	624.	551.	481.	384.	318.	285.	251. 236.
	10.0	907.	845.	754.	686.	616.	564.	520.	486.	436.	407. 398.
	5.0	927.	891.	824.	776.	733.	708.	677.	651.	623.	623. 616.
	0.0	948.	948.	948.	948.	948.	948.	948.	948.	948.	948. 948.

CONE OF MAXIMUM CANDELA

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DATE SAMPLE TESTED: 05/01/18

PREPARED FOR: RAB LIGHTING INC. RC LIGHTING

5-DEGREE

ZONAL LUMEN SUMMARY

0- 5	23
5- 10	76
10- 15	140
15- 20	207
20- 25	280
25- 30	363
30- 35	448
35- 40	520
40- 45	607
45- 50	716
50- 55	881
55- 60	1119
60- 65	1196
65- 70	1119
70- 75	855
75- 80	492
80- 85	144
85- 90	9
90- 95	0
95-100	0
100-105	0
105-110	0
110-115	0
115-120	0
120-125	0
125-130	0
130-135	0
135-140	0
140-145	0
145-150	0
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	99
0- 20	445
0- 30	1089
0- 40	2057
0- 50	3380
0- 60	5381
0- 70	7695
0- 80	9042
0- 90	9195
0-100	9195
0-110	9195
0-120	9195
0-130	9195
0-140	9195
0-150	9195
0-160	9195
0-170	9195
0-180	9195

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DATE: 5/2/2018
PREPARED FOR: RAB LIGHTING INC. RC LIGHTING
CATALOG NUMBER: ALED3T78Y/480 - RWLED3T78Y/480 - RWLED3T78SFY/480 - WPLED3T78Y/480
(TYPE III) (ALSO APPLIES TO 347 RCL)

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: CAST FINNED METAL HOUSING, 6 CIRCUIT BOARDS EACH WITH 1 LED, MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH AND 1 APERTURE PER LED, CLEAR FLAT GLASS LENS IN CAST BROWN PAINTED METAL LENS FRAME.

LAMP: SIX WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDs), 2 LEDs TILTED 63-DEGREES FROM VERTICAL BASE-UP POSITION AND CANTED 75-DEGREES FROM STRAIGHT AHEAD, 2 LEDs TILTED 67-DEGREES FROM VERTICAL BASE-UP POSITION AND CANTED 68-DEGREES FROM STRAIGHT AHEAD, 2 LEDs TILTED 58-DEGREES FROM VERTICAL BASE-UP POSITION AND CANTED 40-DEGREES FROM STRAIGHT AHEAD.

DRIVER: RD-S075-A2100-480

OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT VOLTAGES (480.0 AND 347.0 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	3/08/19
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	04/23/19

OBJECT OF TEST: Measure the Absolute Flux in lumens*, Total Radiant Flux*, Spectral Power Distribution (SPD), Correlated Color Temperature (CCT), Color Rendering Indices (CRIa,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. Measure electrical data including Total Harmonic Distortion (THD) at maximum nominal rated input voltage. Report Off-State Power.

PROCEDURE: The test sample was mounted inside the integrating sphere, energized, 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 60 HZ input in a 25 +/-1 degree Celsius free air ambient and in accordance with IESNA LM-79-08. Electrical data was also recorded at maximum nominal rated input voltage (347.0 VAC). 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	<u>X.CAO</u>
Approved	<u>D.WANG-MUNSON</u> Lighting Engineer

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 (TYPE III) (ALSO APPLIES TO 347 RCL)

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RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	9195 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4323
Chromaticity Ordinate y	0.4054
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2470
Chromaticity Ordinate v'	0.5212
Correlated Color Temp CCT (K)	3090
ANSI C78.377-2008 Duv	0.001
Total Radiant Flux (milliWatts)	25584 *
ELECTRICAL	
Input Voltage (Volts AC)	480.0
Input Current (Amps AC)	0.174
Input Power (Watts)	79.9
Input Power Factor (%)	95.7
Input Current THD (%)	10.1
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	115.1
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	347.0
Input Current (Amps AC)	0.230
Input Power (Watts)	79.4
Input Power Factor (%)	99.4
Input Current THD (%)	10.7
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	71
R1 Light greyish red	66
R2 Dark greyish yellow	82
R3 Strong yellowish green	95
R4 Moderate yellowish green	69
R5 Light bluish green	68
R6 Light blue	77
R7 Light violet	76
R8 Light reddish purple	39
R9 Strong red	-46
R10 Strong yellow	61
R11 Strong green	66
R12 Strong blue	59
R13 Light yellowish pink (skin)	69
R14 Moderate olive green (leaf)	97

*NOTE:

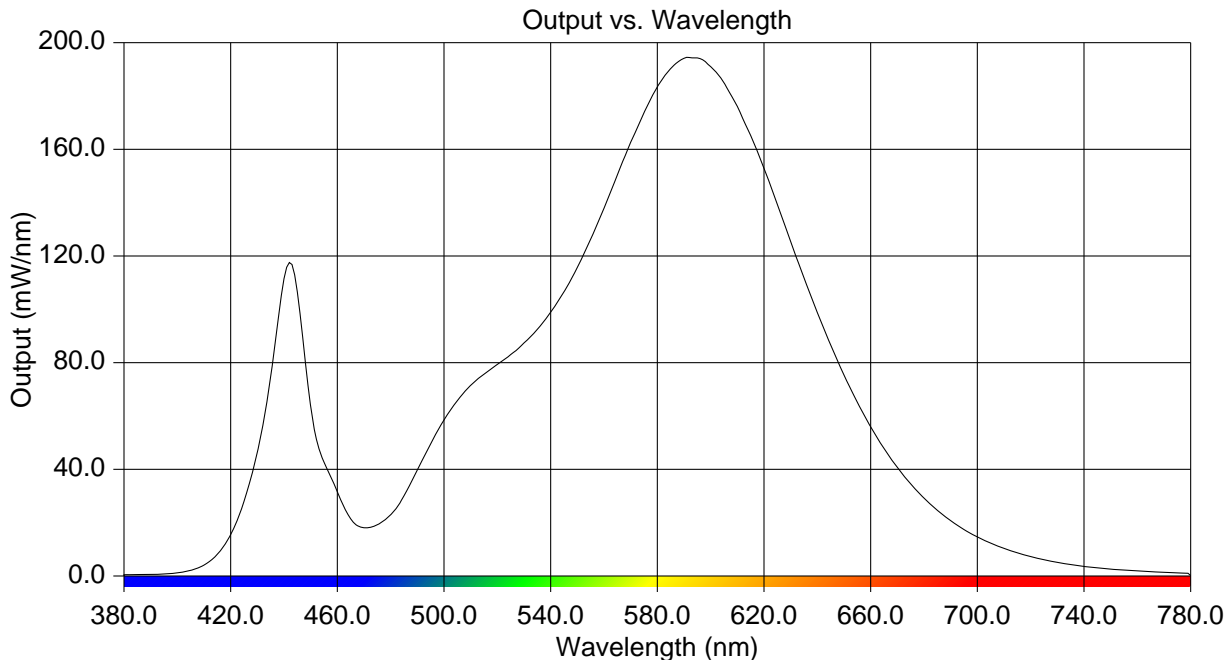
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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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 (TYPE III) (ALSO APPLIES TO 347 RCL)

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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.457	515	75.761	650	75.284
385	0.536	520	79.397	655	65.108
390	0.588	525	83.029	660	55.904
395	0.760	530	87.400	665	47.830
400	1.177	535	92.447	670	40.653
405	2.099	540	98.989	675	34.573
410	4.091	545	106.562	680	29.247
415	8.089	550	115.652	685	24.648
420	15.495	555	126.362	690	20.753
425	27.983	560	137.862	695	17.411
430	46.405	565	150.325	700	14.698
435	74.552	570	162.646	705	12.290
440	111.499	575	173.644	710	10.319
445	106.522	580	183.385	715	8.670
450	63.572	585	190.339	720	7.291
455	42.704	590	194.133	725	6.092
460	31.577	595	194.284	730	5.112
465	21.448	600	190.988	735	4.284
470	18.048	605	184.968	740	3.621
475	19.254	610	176.108	745	3.063
480	22.917	615	165.203	750	2.599
485	30.082	620	152.909	755	2.189
490	39.823	625	139.604	760	1.883
495	49.590	630	125.311	765	1.581
500	58.568	635	111.748	770	1.356
505	65.732	640	98.796	775	1.164
510	71.552	645	86.614	780	0.172



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 (TYPE III) (ALSO APPLIES TO 347 RCL)

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CIE Chromaticity Diagram

