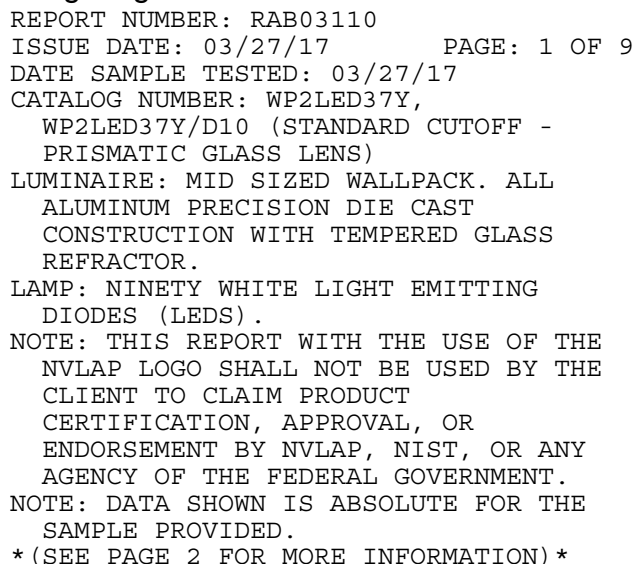


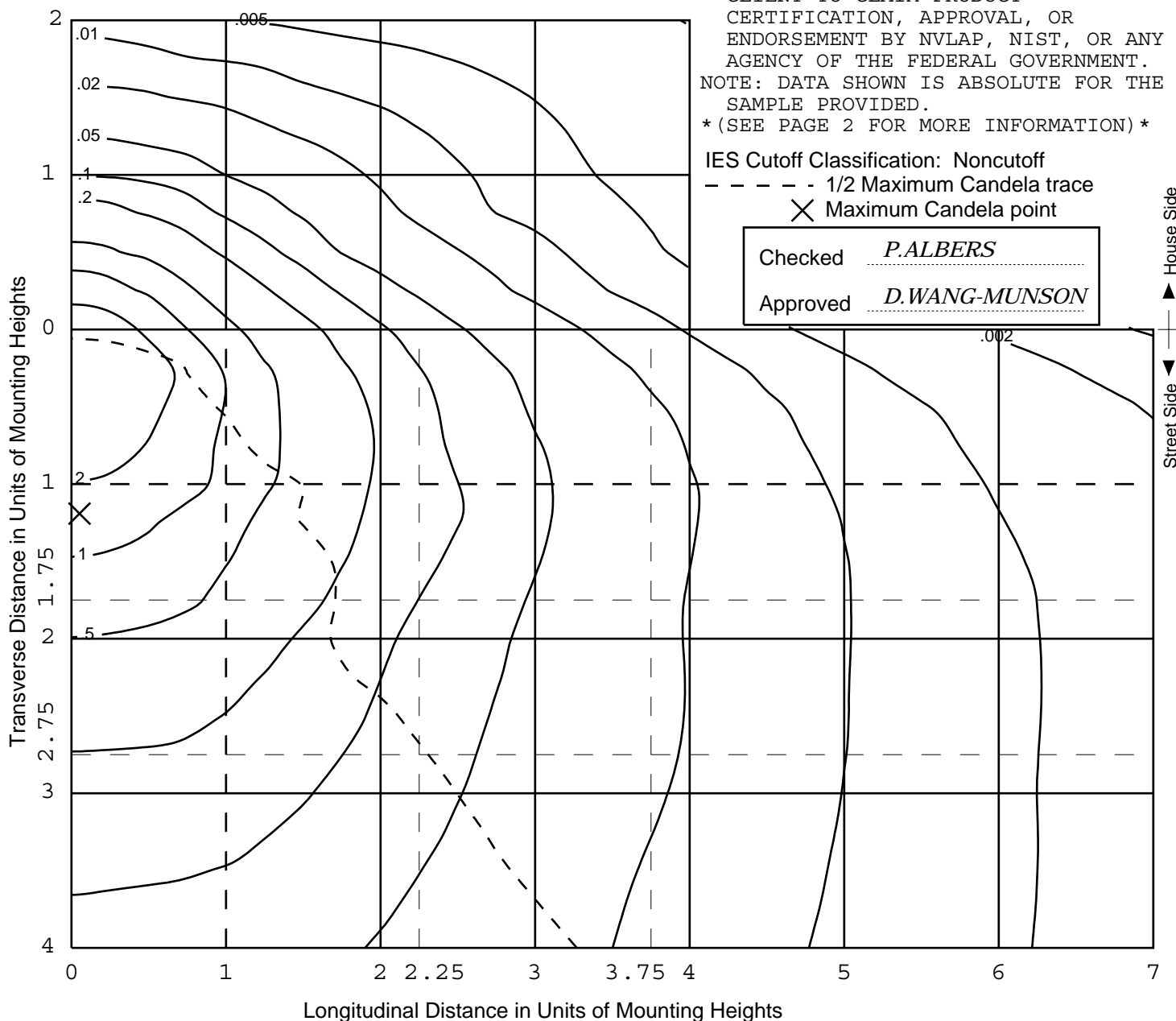
Values based on 16 foot mounting height.



IES Cutoff Classification: Noncutoff

- - - - - 1/2 Maximum Candela trace
 X Maximum Candela point

Checked P. ALBERS
Approved D. WANG-MUNSON



REPORT NUMBER: RAB03110

PAGE: 2 OF 9

ISSUE DATE: 03/27/17

DATE SAMPLE TESTED: 03/27/17

CATALOG NUMBER: WP2LED37Y, WP2LED37Y/D10 (STANDARD CUTOFF - PRISMATIC GLASS L

ADDITIONAL INFORMATION

TOTAL INPUT WATTS = 38.46 W AT 277.0 VAC.

LED DRIVER: RD-042-A0700N

TEST PROCEDURE: IESNA LM-79-08

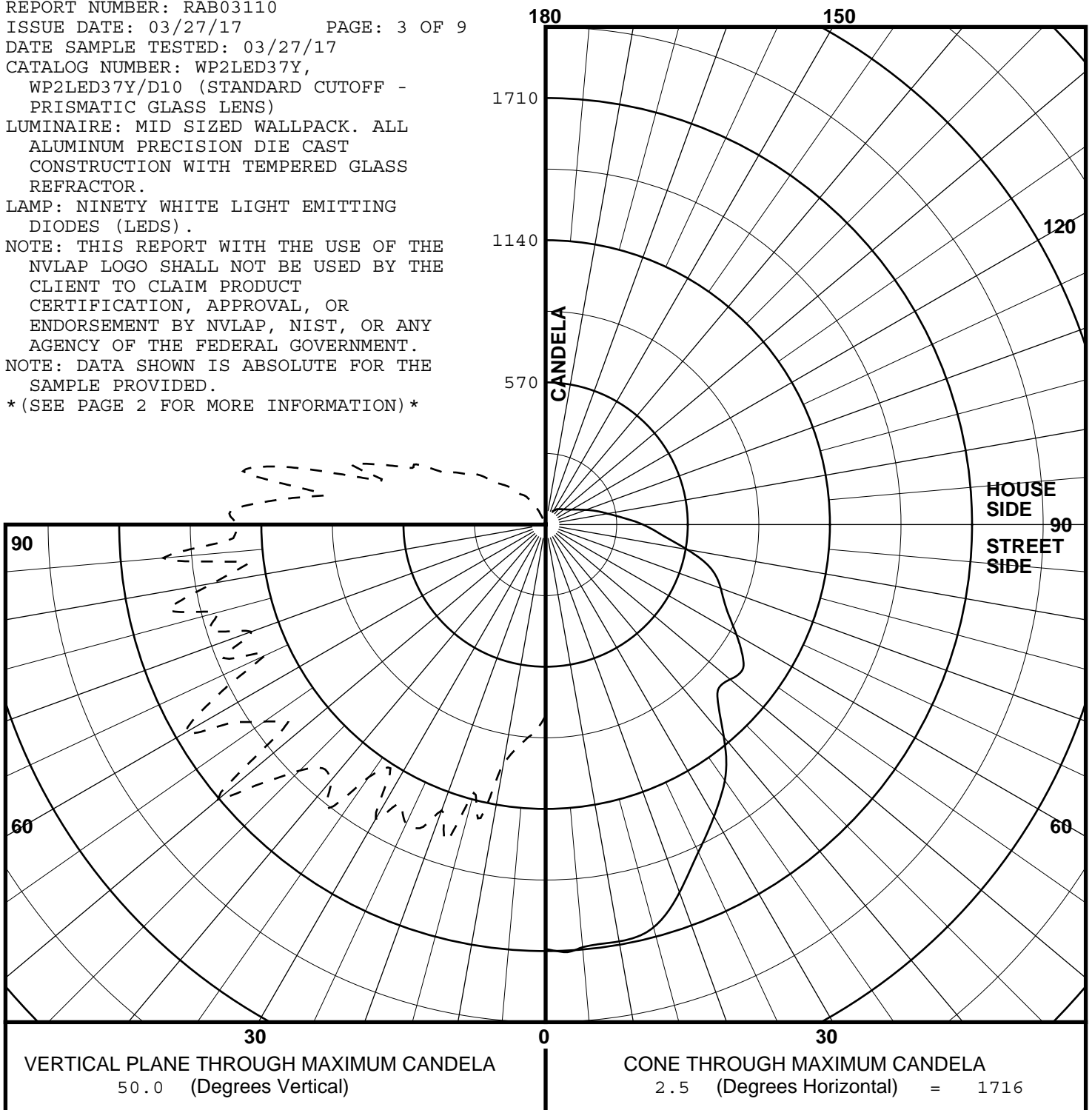
LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE

AMBIENT: 24.5

ACCREDITED LABORATORY CODE 201058-0

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

REPORT NUMBER: RAB03110
 ISSUE DATE: 03/27/17 PAGE: 3 OF 9
 DATE SAMPLE TESTED: 03/27/17
 CATALOG NUMBER: WP2LED37Y,
 WP2LED37Y/D10 (STANDARD CUTOFF -
 PRISMATIC GLASS LENS)
 LUMINAIRE: MID SIZED WALLPACK. ALL
 ALUMINUM PRECISION DIE CAST
 CONSTRUCTION WITH TEMPERED GLASS
 REFRACTOR.
 LAMP: NINETY WHITE LIGHT EMITTING
 DIODES (LEDs).
 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.
 (SEE PAGE 2 FOR MORE INFORMATION)



REPORT NUMBER: RAB03110

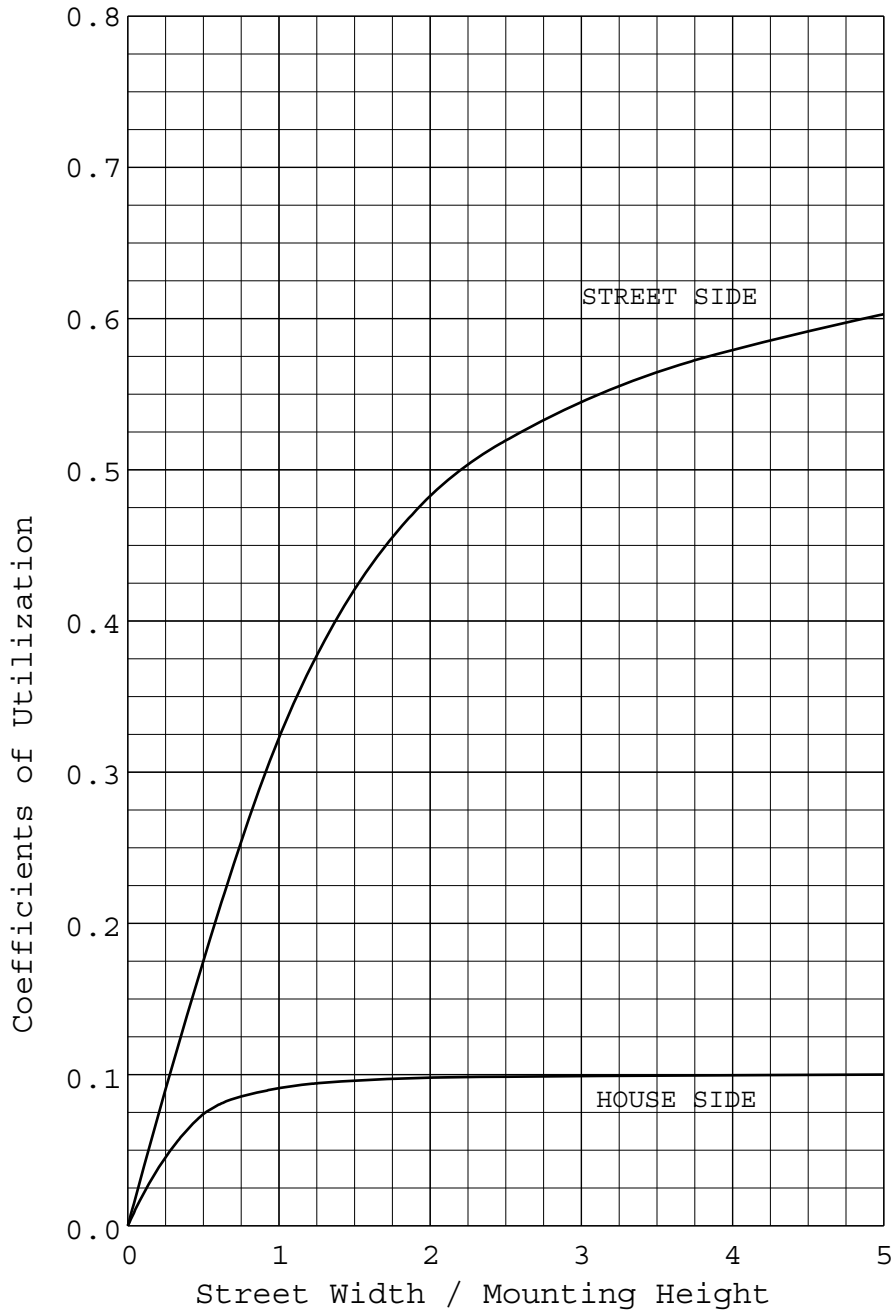
PAGE: 4 OF 9

ISSUE DATE: 03/27/17

DATE SAMPLE TESTED: 03/27/17

CATALOG NUMBER: WP2LED37Y, WP2LED37Y/D10 (STANDARD CUTOFF - PRISMATIC GLASS L

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	2912.	69.2
DOWNWARD HOUSE SIDE	426.	10.1
DOWNWARD TOTAL	3338.	79.3
UPWARD STREET SIDE	843.	20.0
UPWARD HOUSE SIDE	27.	0.6
UPWARD TOTAL	870.	20.7
TOTAL FLUX	4208.	100.0

TOTAL INPUT WATTS = 38.5
EFFICACY = 109.3 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.

REPORT NUMBER: RAB03110

ISSUE DATE: 03/27/17

PAGE: 5 OF 9

DATE SAMPLE TESTED: 03/27/17

CATALOG NUMBER: WP2LED37Y, WP2LED37Y/D10 (STANDARD CUTOFF - PRISMATIC

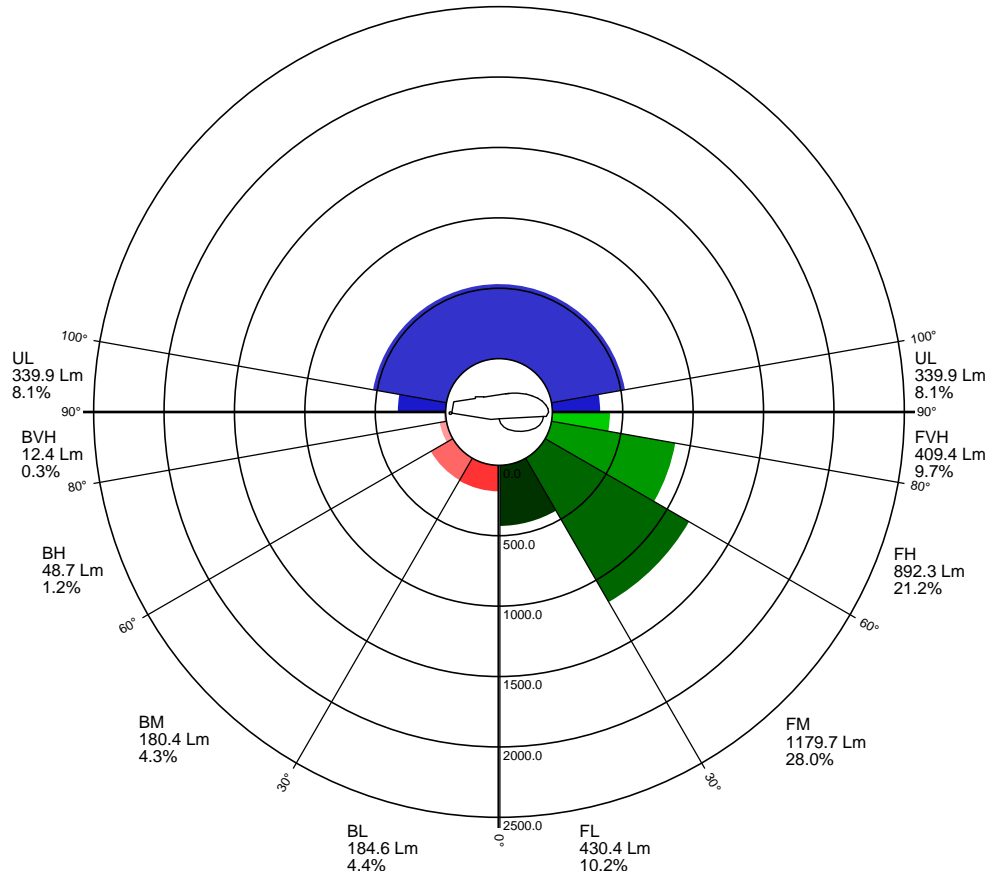
GLASS LENS)

Zonal Summary				Zone Ratings		
				B	U	G
Forward		2912	69.2			
FL	(0° - 30°)	430.4	10.2			
FM	(30° - 60°)	1179.7	28.0			
FH	(60° - 80°)	892.3	21.2			G1
FVH	(80° - 90°)	409.4	9.7			G3
Backward		426	10.1			
BL	(0° - 30°)	184.6	4.4	B1		
BM	(30° - 60°)	180.4	4.3	B0		
BH	(60° - 80°)	48.7	1.2	B0		G0
BVH	(80° - 90°)	12.4	0.3			G1
Upward		870	20.7			
UL	(90° - 100°)	339.9	8.1		U3	
UH	(100° - 180°)	529.7	12.6		U4	
Trapped Light		0	0.0			
Total Flux		4208	100.0			

Zonal Lumen Summary

(Linear scale)

UH
529.7 Lm
12.6%



REPORT NUMBER: RAB03110

ISSUE DATE: 03/27/17

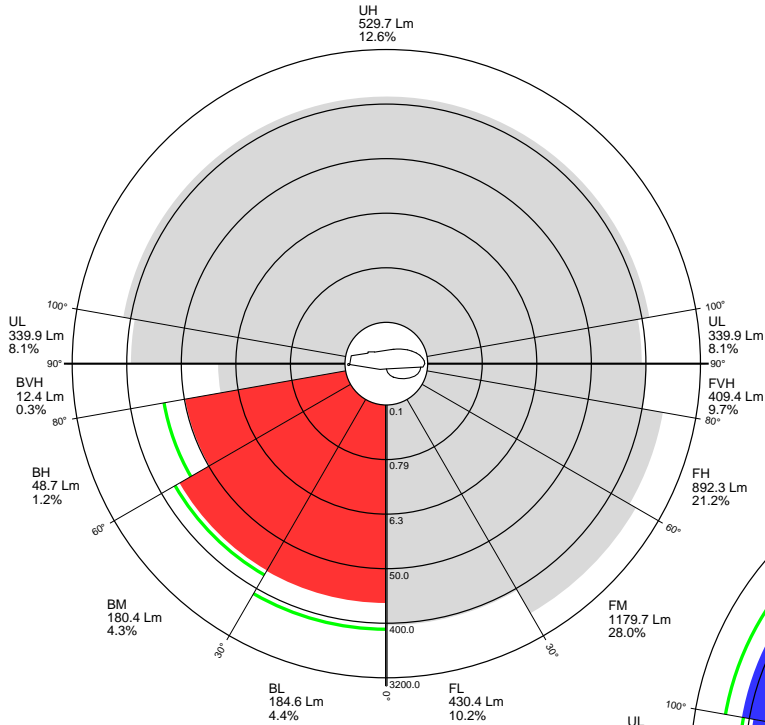
CATALOG NUMBER: WP2LED37Y, WP2LED37Y/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

PAGE: 6 OF 9

DATE SAMPLE TESTED: 03/27/17

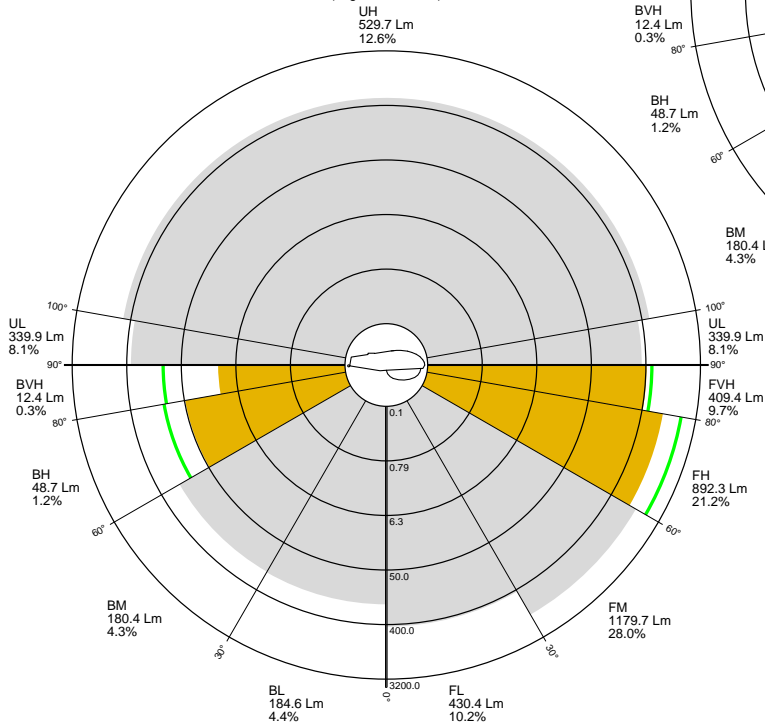
Backlight Rating Details

(Logarithmic scale)



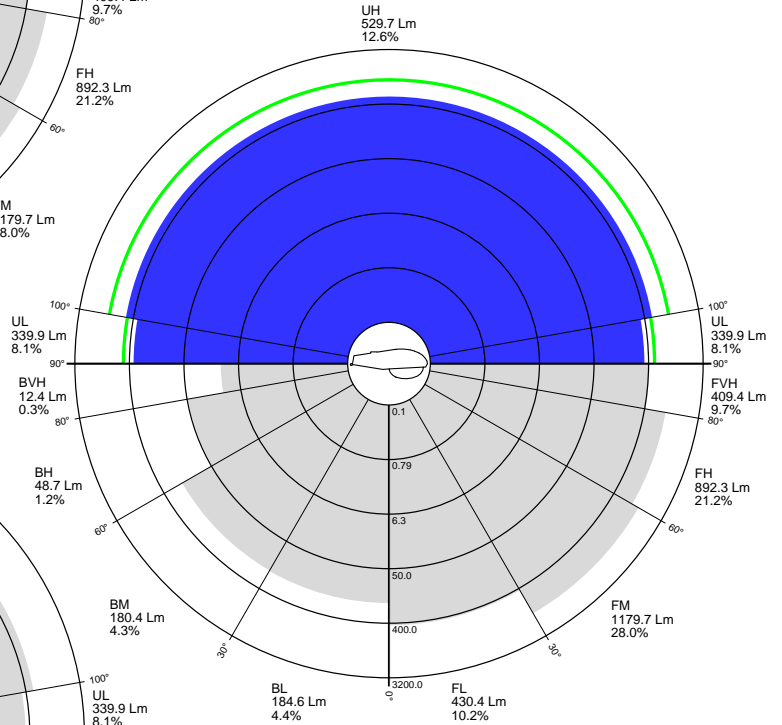
Glare Rating Details

(Logarithmic scale)



Uplight Rating Details

(Logarithmic scale)



PAGE: 7 OF 9

DATE SAMPLE TESTED: 03/27/17

CANDELA TABULATION

STREET SIDE

LATERAL ANGLE

	0.0	2.5	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0	85.0
	180.0	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
	175.0	0.	0.	0.	1.	2.	2.	3.	3.	4.	4.
	165.0	0.	0.	0.	1.	2.	2.	3.	3.	4.	4.
	155.0	27.	26.	25.	17.	12.	6.	3.	4.	4.	4.
	145.0	137.	138.	136.	117.	88.	59.	31.	11.	5.	5.
	135.0	217.	218.	216.	198.	169.	125.	82.	46.	18.	9.
	125.0	357.	358.	356.	336.	296.	221.	166.	97.	46.	22.
	115.0	564.	572.	566.	542.	465.	367.	278.	184.	95.	40.
	105.0	681.	682.	668.	645.	667.	648.	417.	300.	197.	71.
	95.0	1125.	1101.	1112.	1132.	990.	782.	593.	448.	317.	172.
	90.0	1232.	1238.	1212.	1165.	1045.	911.	628.	509.	368.	241.
	87.5	1261.	1254.	1268.	1329.	1218.	872.	685.	536.	392.	268.
	85.0	1522.	1539.	1472.	1376.	1078.	915.	718.	550.	412.	305.
V	82.5	1200.	1205.	1183.	1177.	1152.	978.	732.	561.	419.	338.
E	80.0	1372.	1354.	1357.	1392.	1239.	975.	707.	573.	459.	374.
R	77.5	1523.	1544.	1501.	1436.	1211.	942.	734.	611.	446.	385.
T	75.0	1374.	1367.	1348.	1370.	1199.	975.	738.	595.	492.	469.
I	72.5	1441.	1408.	1367.	1318.	1155.	969.	759.	602.	602.	475.
C	70.0	1241.	1256.	1235.	1270.	1167.	908.	750.	706.	690.	460.
A	67.5	1403.	1398.	1358.	1273.	1099.	955.	864.	745.	632.	466.
L	65.0	1237.	1242.	1225.	1223.	1196.	1084.	935.	774.	678.	591.
	62.5	1491.	1484.	1452.	1446.	1406.	1152.	882.	825.	652.	528.
A	60.0	1665.	1666.	1631.	1555.	1343.	1089.	940.	907.	742.	552.
N	57.5	1463.	1474.	1444.	1367.	1191.	1053.	1013.	876.	692.	585.
G	55.0	1363.	1377.	1332.	1322.	1181.	1130.	1142.	842.	754.	667.
L	52.5	1297.	1302.	1275.	1295.	1337.	1310.	1054.	839.	708.	629.
E	50.0<<	1702.	1716.	1701.	1672.	1449.	1253.	974.	969.	800.	688.
	47.5	1566.	1529.	1495.	1398.	1247.	1179.	972.	964.	818.	667.
	45.0	1393.	1395.	1370.	1336.	1255.	1114.	1131.	952.	865.	723.
	42.5	1332.	1325.	1285.	1260.	1231.	1193.	1110.	910.	836.	748.
	40.0	1300.	1339.	1341.	1376.	1341.	1230.	1022.	1009.	913.	757.
	37.5	1475.	1434.	1415.	1354.	1260.	1144.	1010.	1036.	1001.	795.
	35.0	1257.	1236.	1226.	1195.	1199.	1062.	1117.	1036.	990.	830.
	30.0	1360.	1362.	1357.	1265.	1254.	1189.	1100.	1150.	1004.	827.
	25.0	1333.	1323.	1302.	1187.	1246.	1222.	1247.	1071.	991.	787.
	20.0	1205.	1220.	1214.	1165.	1307.	1213.	1099.	1080.	847.	797.
	15.0	1107.	1114.	1102.	1081.	1054.	1189.	1041.	851.	905.	782.
	10.0	955.	971.	964.	934.	852.	833.	906.	901.	818.	813.
	5.0	856.	861.	860.	860.	848.	821.	799.	803.	798.	790.
	0.0	767.	767.	767.	767.						

REPORT NUMBER: RAB03110

PAGE: 8 OF 9

ISSUE DATE: 03/27/17

DATE SAMPLE TESTED: 03/27/17

CATALOG NUMBER: WP2LED37Y, WP2LED37Y/D10 (STANDARD CUTOFF - PRISMATIC GLASS L

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	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
	175.0	4.	4.	4.	4.	4.	3.	2.	2.	1.	0. 1.
	165.0	4.	4.	4.	4.	4.	3.	3.	2.	2.	1. 1.
	155.0	4.	4.	4.	4.	4.	4.	3.	2.	2.	2. 2.
	145.0	5.	5.	4.	4.	4.	4.	3.	3.	2.	2. 2.
	135.0	6.	6.	5.	5.	4.	4.	3.	3.	2.	2. 2.
	125.0	15.	13.	9.	5.	5.	4.	3.	3.	3.	3. 2.
	115.0	27.	26.	16.	9.	6.	4.	3.	3.	4.	4. 4.
	105.0	35.	37.	28.	17.	9.	6.	5.	5.	5.	5. 5.
	95.0	32.	41.	44.	30.	16.	9.	6.	6.	6.	7. 7.
	90.0	31.	38.	48.	38.	21.	10.	6.	6.	6.	6. 7.
	87.5	37.	37.	50.	41.	24.	11.	7.	6.	6.	7. 7.
	85.0	50.	40.	52.	44.	26.	12.	7.	6.	6.	6. 6.
V	82.5	75.	47.	55.	46.	29.	12.	7.	5.	6.	6. 6.
E	80.0	108.	55.	57.	48.	30.	13.	7.	5.	5.	5. 5.
R	77.5	145.	69.	60.	51.	31.	14.	6.	4.	5.	5. 5.
T	75.0	183.	94.	63.	55.	36.	15.	7.	4.	4.	4. 4.
I	72.5	218.	120.	67.	58.	40.	20.	7.	3.	3.	3. 3.
C	70.0	247.	148.	72.	61.	45.	27.	15.	3.	3.	3. 3.
A	67.5	270.	175.	79.	66.	50.	32.	21.	13.	9.	4. 4.
L	65.0	295.	196.	89.	72.	55.	38.	29.	20.	18.	18. 18.
	62.5	314.	215.	103.	79.	61.	44.	36.	26.	24.	23. 23.
A	60.0	333.	238.	124.	88.	68.	50.	41.	32.	29.	29. 30.
N	57.5	347.	258.	146.	97.	74.	56.	46.	41.	34.	31. 31.
G	55.0	361.	270.	168.	109.	82.	65.	53.	46.	44.	37. 37.
L	52.5	368.	286.	189.	126.	93.	75.	63.	50.	50.	48. 48.
E	50.0<<	390.	312.	210.	142.	105.	87.	74.	57.	56.	55. 55.
	47.5	409.	331.	227.	165.	121.	101.	87.	69.	62.	62. 62.
	45.0	422.	355.	246.	185.	140.	117.	100.	85.	73.	68. 68.
	42.5	448.	385.	274.	205.	159.	134.	116.	102.	88.	80. 80.
	40.0	472.	405.	300.	224.	182.	153.	132.	122.	109.	98. 99.
	37.5	496.	441.	329.	251.	204.	173.	150.	141.	133.	122. 123.
	35.0	526.	475.	366.	277.	226.	193.	167.	156.	153.	147. 148.
	30.0	584.	544.	431.	347.	278.	241.	212.	196.	187.	181. 183.
	25.0	636.	605.	501.	417.	342.	296.	265.	246.	230.	223. 225.
	20.0	691.	662.	571.	502.	435.	366.	348.	313.	296.	290. 292.
	15.0	731.	702.	645.	597.	550.	487.	445.	408.	383.	380. 380.
	10.0	754.	732.	727.	666.	629.	616.	586.	550.	530.	522. 518.
	5.0	739.	720.	711.	738.	741.	718.	682.	666.	658.	654. 657.
	0.0	767.	767.	767.	767.	767.	767.	767.	767.	767.	767. 767.

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB03110
ISSUE DATE: 03/27/17
PREPARED FOR: RAB LIGHTING INC.

PAGE: 9 OF 9
DATE SAMPLE TESTED: 03/27/17

5-DEGREE ZONAL LUMEN SUMMARY

0- 5	18
5- 10	54
10- 15	90
15- 20	122
20- 25	153
25- 30	177
30- 35	193
35- 40	212
40- 45	222
45- 50	240
50- 55	245
55- 60	248
60- 65	251
65- 70	232
70- 75	229
75- 80	229
80- 85	215
85- 90	207
90- 95	185
95-100	155
100-105	140
105-110	104
110-115	83
115-120	62
120-125	46
125-130	34
130-135	24
135-140	16
140-145	11
145-150	7
150-155	3
155-160	1
160-165	0
165-170	0
170-175	0
175-180	0

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	73
0- 20	285
0- 30	615
0- 40	1020
0- 50	1482
0- 60	1975
0- 70	2458
0- 80	2916
0- 90	3338
0-100	3678
0-110	3921
0-120	4066
0-130	4146
0-140	4186
0-150	4203
0-160	4206
0-170	4207
0-180	4207

REPORT NUMBER: RAB03111
DATE: 3/27/2017
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: WP2LED37Y, WP2LED37Y/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

Page 1 of 4

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: MID SIZED WALLPACK. ALL ALUMINUM PRECISION DIE CAST CONSTRUCTION WITH TEMPERED GLASS REFRACTOR.

LAMP: NINETY WHITE LIGHT EMITTING DIODES (LEDs).

DRIVER: RD-042-A0700N

OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT VOLTAGES (277.0 AND 120.0 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	3/01/18
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	03/07/18

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 (120.0 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

REPORT NUMBER: RAB03111
 DATE: 3/27/2017
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: WP2LED37Y, WP2LED37Y/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

Page 2 of 4

RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	4208 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4281
Chromaticity Ordinate y	0.3984
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2473
Chromaticity Ordinate v'	0.5178
Correlated Color Temp CCT (K)	3108
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	12879 *
ELECTRICAL	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.143
Input Power (Watts)	38.5
Input Power Factor (%)	96.8
Input Current THD (%)	7.7
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	109.3
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.322
Input Power (Watts)	38.3
Input Power Factor (%)	99.1
Input Current THD (%)	8.8
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	83
R1 Light greyish red	81
R2 Dark greyish yellow	91
R3 Strong yellowish green	96
R4 Moderate yellowish green	80
R5 Light bluish green	82
R6 Light blue	89
R7 Light violet	83
R8 Light reddish purple	60
R9 Strong red	9
R10 Strong yellow	80
R11 Strong green	79
R12 Strong blue	73
R13 Light yellowish pink (skin)	83
R14 Moderate olive green (leaf)	99

*NOTE:

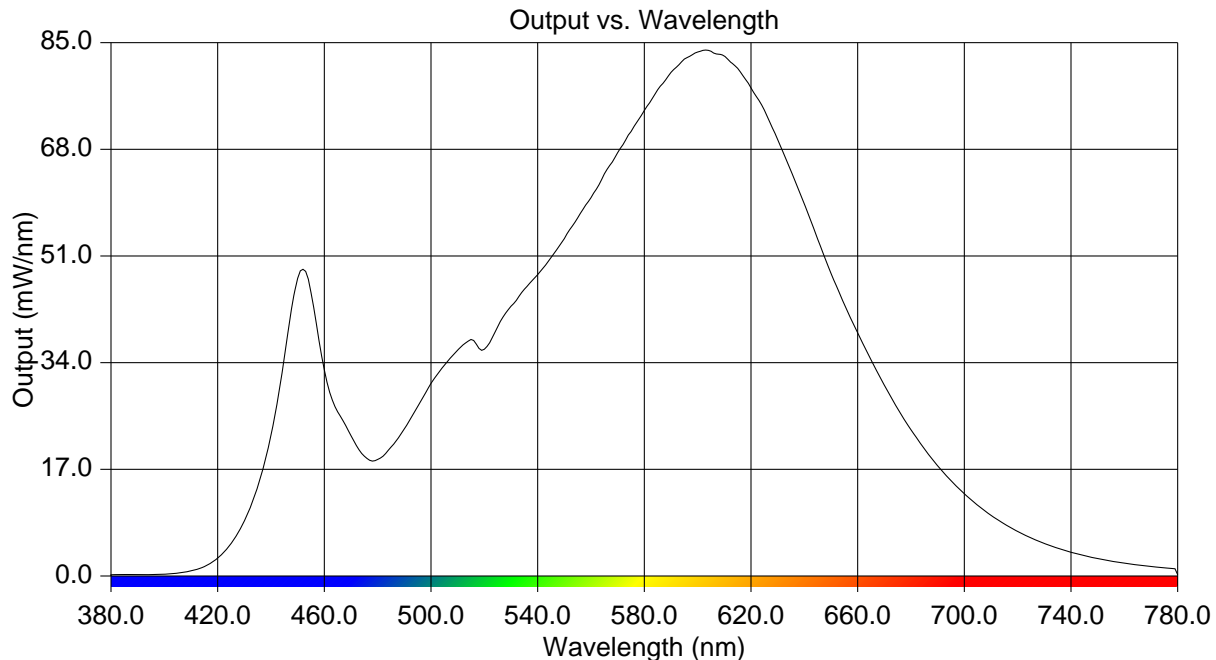
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even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

REPORT NUMBER: RAB03111
 DATE: 3/27/2017
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: WP2LED37Y, WP2LED37Y/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

Page 3 of 4

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.192	515	37.696	650	48.231
385	0.211	520	36.137	655	43.228
390	0.213	525	39.713	660	38.733
395	0.230	530	42.994	665	34.460
400	0.294	535	45.695	670	30.430
405	0.448	540	48.082	675	26.671
410	0.813	545	50.690	680	23.299
415	1.495	550	53.766	685	20.260
420	2.844	555	57.069	690	17.561
425	5.110	560	60.293	695	15.211
430	8.822	565	64.083	700	13.103
435	14.233	570	67.473	705	11.248
440	22.384	575	70.820	710	9.666
445	34.756	580	74.191	715	8.310
450	47.444	585	77.492	720	7.121
455	45.171	590	80.263	725	6.055
460	32.850	595	82.385	730	5.173
465	26.161	600	83.508	735	4.410
470	22.361	605	83.632	740	3.789
475	19.096	610	82.853	745	3.242
480	18.575	615	80.912	750	2.775
485	20.541	620	77.786	755	2.388
490	23.457	625	74.261	760	2.042
495	27.031	630	69.557	765	1.752
500	30.703	635	64.544	770	1.503
505	33.561	640	59.266	775	1.302
510	35.981	645	53.690	780	0.195



REPORT NUMBER: RAB03111
DATE: 3/27/2017
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: WP2LED37Y, WP2LED37Y/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

Page 4 of 4

CIE Chromaticity Diagram

