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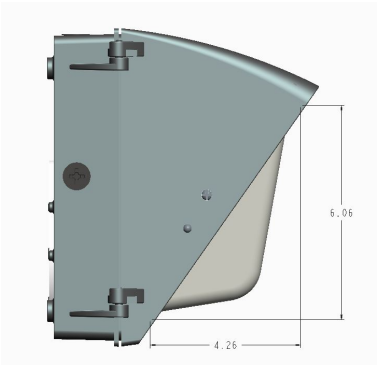
ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

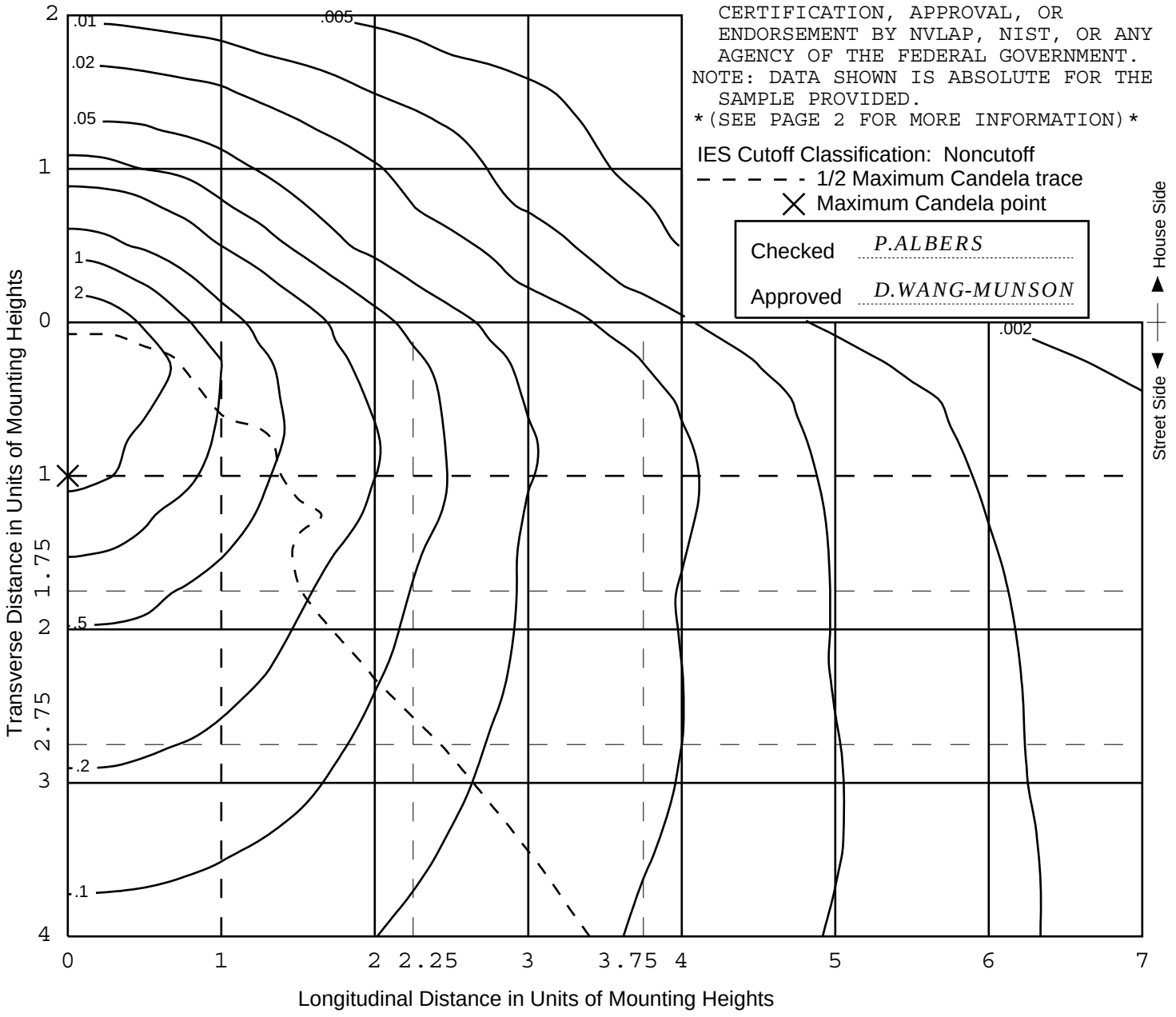
Values based on 16 foot mounting height.



REPORT NUMBER: RAB03133
ISSUE DATE: 04/03/17 PAGE: 1 OF 9
DATE SAMPLE TESTED: 04/03/17
CATALOG NUMBER: WP2LED37N, WP2LED37N/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)

IES Cutoff Classification: Noncutoff
- - - - - 1/2 Maximum Candela trace
X Maximum Candela point

Checked	*P.ALBERS*
Approved	*D.WANG-MUNSON*



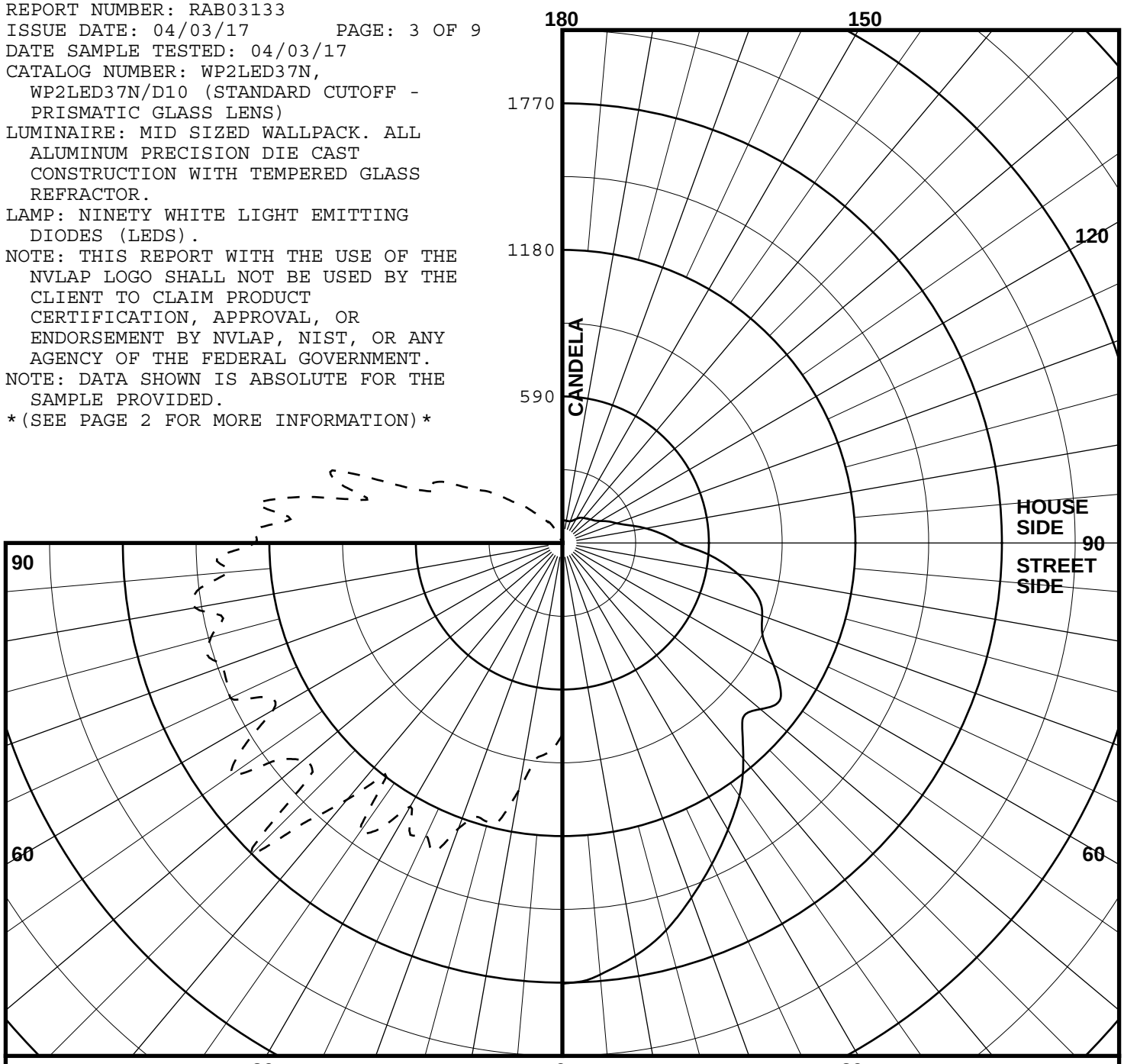
REPORT NUMBER: RAB03133 PAGE: 2 OF 9
ISSUE DATE: 04/03/17 DATE SAMPLE TESTED: 04/03/17
CATALOG NUMBER: WP2LED37N, WP2LED37N/D10 (STANDARD CUTOFF - PRISMATIC GLASS L

ADDITIONAL INFORMATION

TOTAL INPUT WATTS = 37.06 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: 24.7
ACCREDITED LABORATORY CODE 201058-0

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

REPORT NUMBER: RAB03133
ISSUE DATE: 04/03/17 PAGE: 3 OF 9
DATE SAMPLE TESTED: 04/03/17
CATALOG NUMBER: WP2LED37N,
WP2LED37N/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)

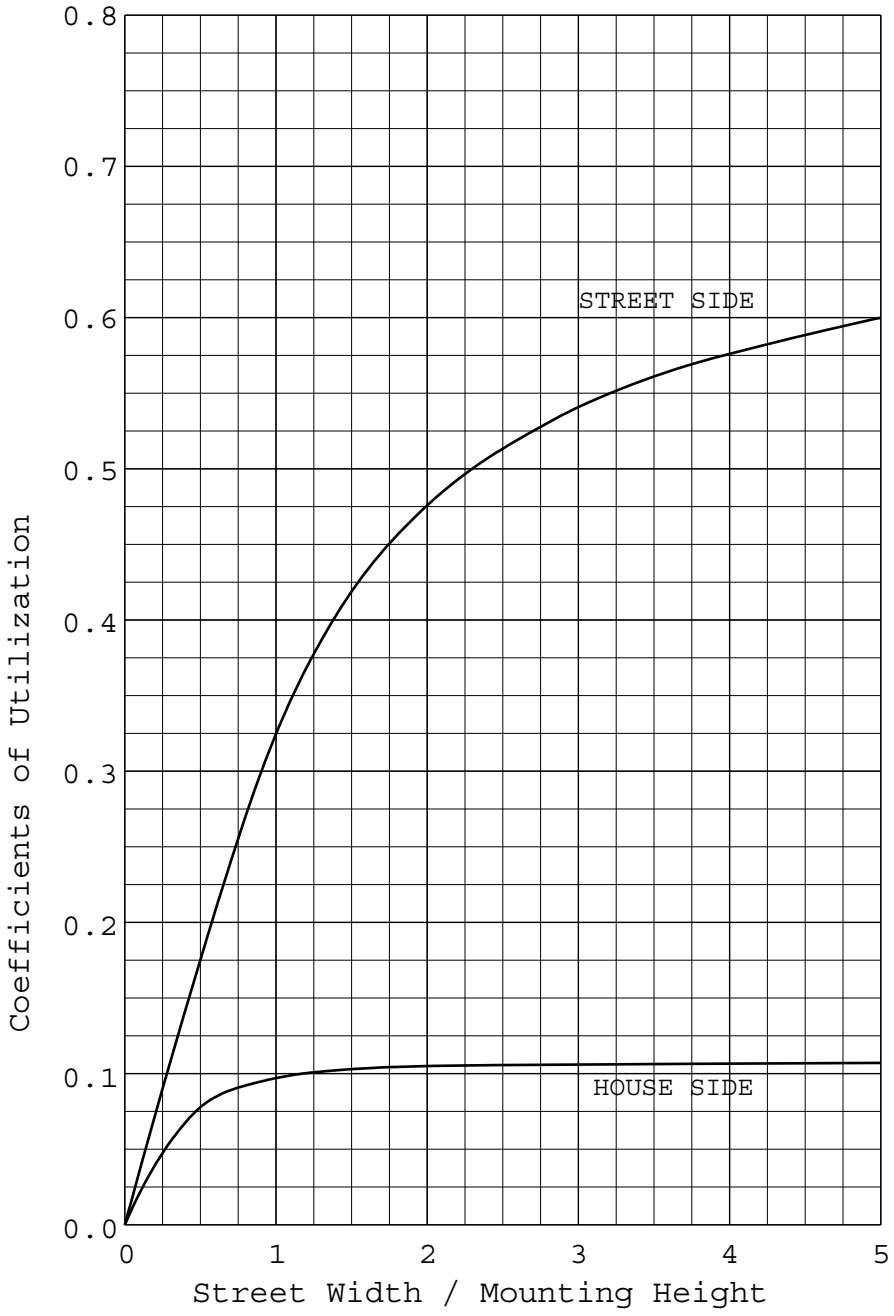


VERTICAL PLANE THROUGH MAXIMUM CANDELA
45.0 (Degrees Vertical)

CONE THROUGH MAXIMUM CANDELA
0.0 (Degrees Horizontal) = 1774

REPORT NUMBER: RAB03133 PAGE: 4 OF 9
ISSUE DATE: 04/03/17 DATE SAMPLE TESTED: 04/03/17
CATALOG NUMBER: WP2LED37N, WP2LED37N/D10 (STANDARD CUTOFF - PRISMATIC GLASS L

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	3005.	68.9
DOWNWARD HOUSE SIDE	475.	10.9
DOWNWARD TOTAL	3480.	79.7
UPWARD STREET SIDE	857.	19.6
UPWARD HOUSE SIDE	28.	0.6
UPWARD TOTAL	885.	20.3
TOTAL FLUX	4365.	100.0

TOTAL INPUT WATTS = 37.1
EFFICACY = 117.7 Lm/W

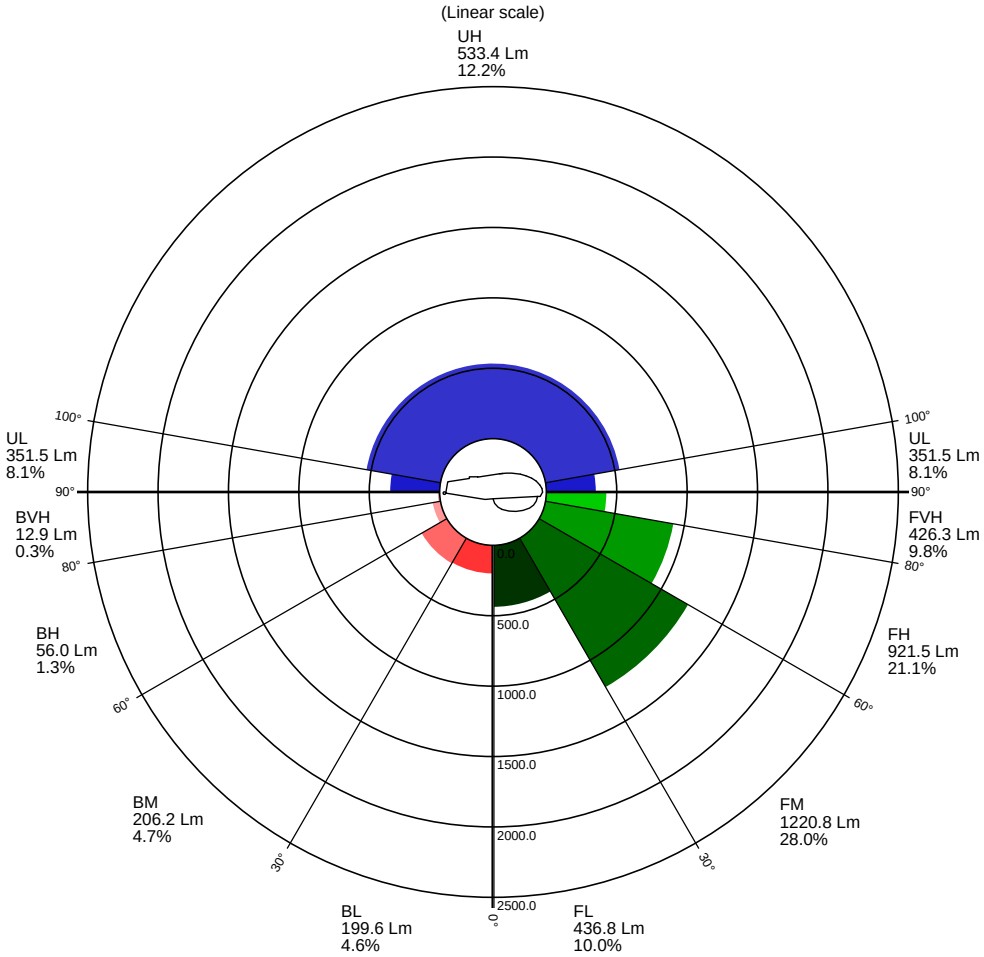
ALL CANDELA AND LUMENS IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

REPORT NUMBER: RAB03133 PAGE: 5 OF 9
ISSUE DATE: 04/03/17 DATE SAMPLE TESTED: 04/03/17
CATALOG NUMBER: WP2LED37N, WP2LED37N/D10 (STANDARD CUTOFF – PRISMATIC GLASS LENS)

BUG Rating: B1 U4 G3

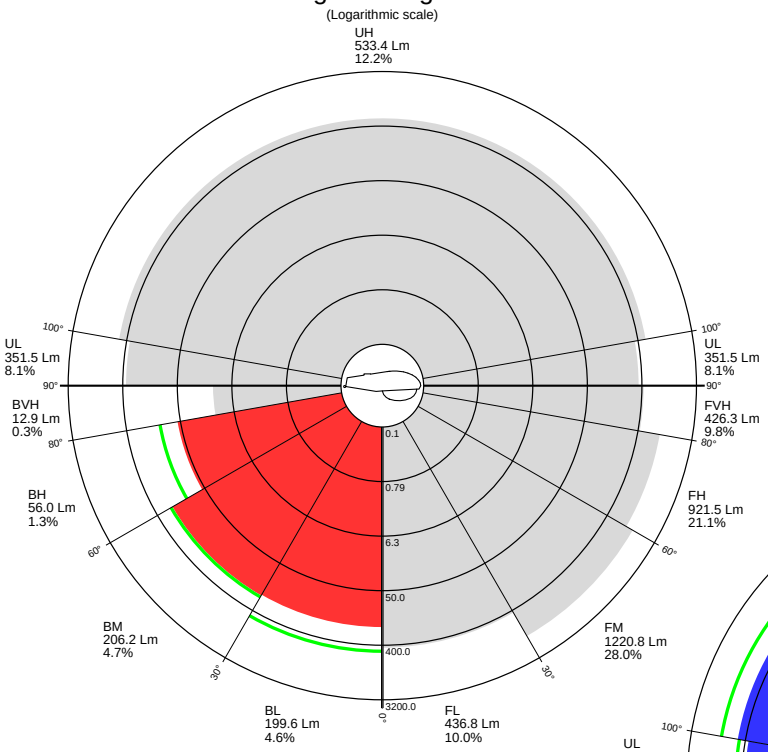
Zonal Summary		Lumens	% of Fixture	Zone Ratings B	U	G
Forward		3005	68.9			
FL	(0° – 30°)	436.8	10.0			
FM	(30° – 60°)	1220.8	28.0			
FH	(60° – 80°)	921.5	21.1			G1
FVH	(80° – 90°)	426.3	9.8			G3
Backward		475	10.9			
BL	(0° – 30°)	199.6	4.6	B1		
BM	(30° – 60°)	206.2	4.7	B0		
BH	(60° – 80°)	56.0	1.3	B0		G0
BVH	(80° – 90°)	12.9	0.3			G1
Upward		885	20.3			
UL	(90° – 100°)	351.5	8.1		U3	
UH	(100° – 180°)	533.4	12.2		U4	
Trapped Light		0	0.0			
Total Flux		4365	100.0			

Zonal Lumen Summary

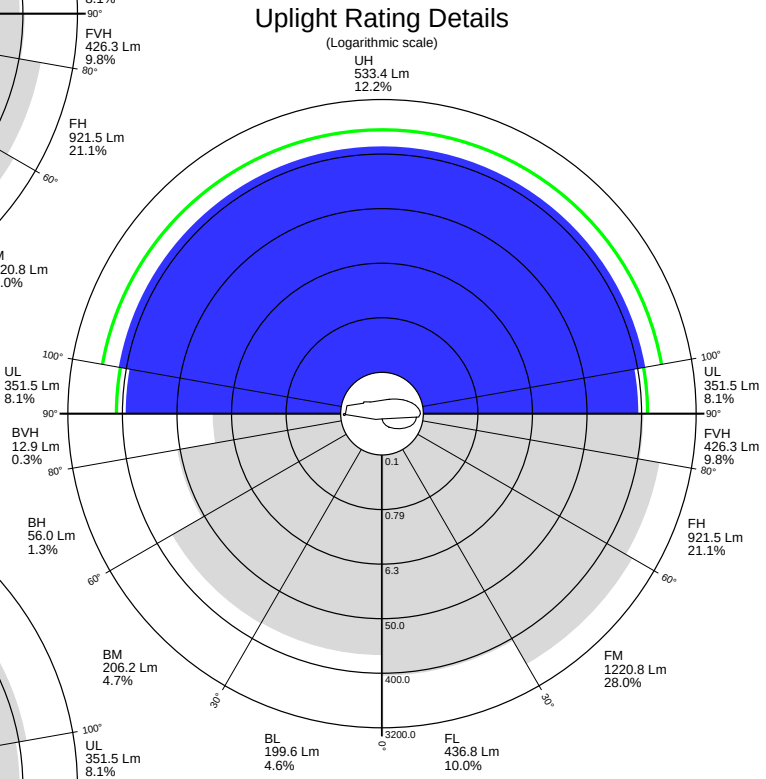


REPORT NUMBER: RAB03133 PAGE: 6 OF 9
ISSUE DATE: 04/03/17 DATE SAMPLE TESTED: 04/03/17
CATALOG NUMBER: WP2LED37N, WP2LED37N/D10 (STANDARD CUTOFF – PRISMATIC GLASS LENS)

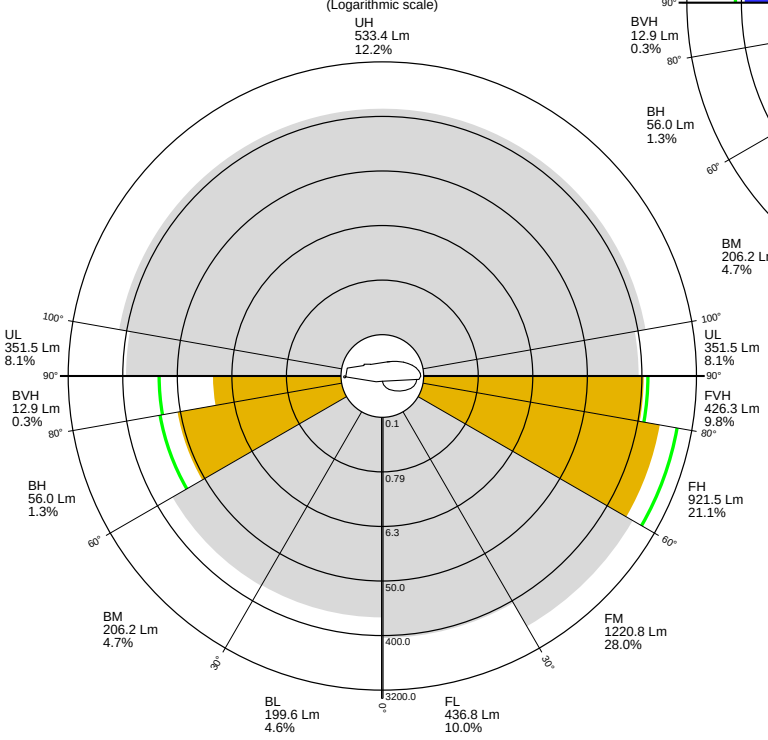
Backlight Rating Details



Uplight Rating Details



Glare Rating Details



REPORT NUMBER: RAB03133 PAGE: 7 OF 9
ISSUE DATE: 04/03/17 DATE SAMPLE TESTED: 04/03/17
CATALOG NUMBER: WP2LED37N, WP2LED37N/D10 (STANDARD CUTOFF - PRISMATIC GLASS L

CANDELA TABULATION

	STREET SIDE	LATERAL ANGLE								
		0.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0	85.0
		|									
	180.0	3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
	175.0	1.	1.	1.	2.	3.	3.	4.	4.	4.	4.
	165.0	0.	0.	1.	2.	2.	3.	4.	4.	4.	4.
	155.0	19.	17.	13.	8.	5.	3.	4.	4.	4.	4.
	145.0	104.	102.	96.	83.	51.	25.	9.	5.	5.	6.
	135.0	200.	194.	196.	161.	127.	77.	43.	17.	10.	10.
	125.0	358.	354.	351.	292.	234.	162.	91.	46.	23.	18.
	115.0	573.	575.	534.	441.	354.	304.	180.	95.	41.	28.
	105.0	932.	917.	801.	645.	547.	464.	306.	196.	72.	32.
	95.0	1099.	1091.	1030.	970.	757.	621.	465.	309.	178.	38.
	90.0	1237.	1257.	1189.	1161.	897.	693.	527.	360.	245.	71.
	87.5	1392.	1408.	1348.	1137.	959.	699.	550.	385.	271.	105.
	85.0	1351.	1354.	1286.	1200.	958.	746.	572.	407.	301.	150.
V	82.5	1485.	1514.	1420.	1248.	985.	743.	598.	427.	323.	204.
E	80.0	1502.	1501.	1391.	1217.	996.	775.	626.	436.	341.	247.
R	77.5	1399.	1426.	1391.	1280.	1037.	793.	636.	453.	390.	290.
T	75.0	1465.	1469.	1394.	1261.	1029.	811.	635.	461.	528.	326.
I	72.5	1499.	1517.	1449.	1260.	998.	807.	637.	489.	473.	352.
C	70.0	1455.	1456.	1382.	1229.	1014.	791.	646.	613.	442.	367.
A	67.5	1463.	1462.	1424.	1245.	983.	815.	720.	724.	536.	395.
L	65.0	1476.	1494.	1433.	1239.	980.	840.	872.	761.	628.	414.
	62.5	1343.	1336.	1316.	1189.	1042.	1063.	806.	650.	539.	426.
A	60.0	1345.	1346.	1350.	1307.	1225.	1027.	898.	724.	531.	455.
N	57.5	1517.	1507.	1543.	1378.	1149.	922.	967.	790.	634.	491.
G	55.0	1625.	1585.	1486.	1277.	1097.	1018.	1046.	792.	713.	511.
L	52.5	1429.	1408.	1353.	1215.	1114.	1138.	914.	747.	662.	526.
E	50.0	1361.	1330.	1256.	1262.	1308.	1231.	912.	762.	623.	562.
	47.5	1364.	1372.	1491.	1481.	1363.	1022.	969.	835.	726.	591.
	45.0<<	1774.	1744.	1614.	1425.	1243.	1024.	1074.	891.	811.	604.
	42.5 |	1517.	1494.	1390.	1352.	1074.	1067.	985.	914.	856.	578.
	40.0 |	1349.	1324.	1278.	1140.	1196.	1213.	994.	956.	803.	570.
	37.5 |	1173.	1154.	1181.	1288.	1259.	1029.	1027.	1004.	806.	600.
	35.0 |	1423.	1414.	1395.	1346.	1207.	1036.	1127.	1063.	851.	619.
	30.0 |	1225.	1222.	1198.	1200.	1193.	1202.	1091.	1019.	856.	677.
	25.0 |	1299.	1253.	1236.	1295.	1171.	1166.	1141.	1002.	801.	717.
	20.0 |	1223.	1219.	1258.	1190.	1163.	1171.	1062.	930.	807.	750.
	15.0 |	1162.	1159.	1164.	1207.	1108.	1060.	969.	844.	859.	785.
	10.0 |	1011.	1007.	1001.	976.	962.	890.	849.	851.	820.	780.
	5.0 |	856.	855.	856.	865.	884.	904.	865.	833.	824.	793.
	0.0 |	772.	772.	772.	772.	772.	772.	772.	772.	772.	772.
	|	||									
	|	PLANE OF MAXIMUM CANDELA									
	|										
	CONE OF MAXIMUM CANDELA										

RAB LIGHTING

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REPORT NUMBER: RAB03133 PAGE: 8 OF 9
ISSUE DATE: 04/03/17 DATE SAMPLE TESTED: 04/03/17
CATALOG NUMBER: WP2LED37N, WP2LED37N/D10 (STANDARD CUTOFF - PRISMATIC GLASS L

CANDELA TABULATION

VERTICAL ANGLE	HOUSE SIDE 90.0	95.0	105.0	115.0	125.0	135.0	145.0	155.0	165.0	175.0	180.0
180.0	3.	3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
175.0	4.	4.	4.	4.	4.	4.	3.	2.	2.	1.	1.
165.0	4.	4.	4.	4.	4.	4.	3.	2.	2.	2.	2.
155.0	4.	4.	4.	4.	4.	4.	3.	3.	2.	2.	2.
145.0	5.	5.	4.	4.	4.	4.	3.	3.	3.	3.	3.
135.0	9.	5.	5.	5.	4.	4.	3.	3.	3.	3.	3.
125.0	17.	15.	7.	6.	5.	4.	3.	3.	3.	3.	3.
115.0	28.	27.	16.	9.	6.	4.	4.	4.	4.	4.	4.
105.0	35.	37.	31.	16.	9.	7.	5.	5.	6.	6.	6.
95.0	30.	42.	44.	31.	15.	9.	6.	6.	7.	7.	7.
90.0	31.	39.	50.	40.	20.	11.	7.	6.	7.	7.	7.
87.5	38.	38.	53.	43.	22.	11.	7.	6.	7.	7.	7.
85.0	56.	42.	55.	46.	24.	12.	7.	6.	7.	7.	7.
82.5	86.	49.	59.	48.	26.	13.	7.	6.	6.	6.	6.
80.0	122.	61.	63.	51.	28.	14.	7.	5.	6.	6.	6.
77.5	167.	81.	67.	55.	30.	15.	7.	5.	5.	5.	5.
75.0	209.	106.	71.	61.	35.	17.	8.	4.	5.	5.	5.
72.5	249.	136.	76.	66.	40.	24.	10.	4.	4.	4.	4.
70.0	284.	168.	82.	72.	47.	31.	17.	7.	4.	4.	3.
67.5	307.	199.	91.	78.	54.	38.	26.	17.	14.	10.	11.
65.0	327.	225.	104.	86.	62.	45.	34.	26.	21.	21.	21.
62.5	351.	250.	120.	94.	71.	52.	44.	33.	29.	27.	26.
60.0	374.	273.	142.	103.	82.	61.	54.	41.	36.	34.	34.
57.5	395.	290.	166.	114.	92.	71.	62.	50.	43.	42.	42.
55.0	427.	309.	189.	126.	101.	83.	68.	62.	50.	50.	49.
52.5	433.	328.	215.	143.	112.	96.	78.	73.	60.	55.	55.
50.0	439.	355.	233.	164.	125.	110.	91.	77.	74.	66.	64.
47.5	444.	371.	257.	184.	140.	124.	108.	84.	84.	81.	79.
45.0<<	468.	405.	277.	205.	158.	139.	124.	100.	91.	91.	90.
42.5 |	482.	427.	305.	229.	177.	155.	142.	120.	105.	99.	99.
40.0 |	501.	446.	336.	250.	198.	174.	161.	142.	126.	114.	113.
37.5 |	538.	484.	365.	278.	216.	191.	179.	163.	150.	138.	137.
35.0 |	566.	518.	408.	309.	238.	208.	196.	185.	177.	170.	169.
30.0 |	626.	581.	481.	382.	293.	250.	228.	221.	221.	220.	220.
25.0 |	678.	647.	556.	464.	369.	308.	275.	254.	251.	245.	245.
20.0 |	714.	702.	637.	569.	475.	407.	361.	318.	308.	296.	299.
15.0 |	759.	743.	700.	658.	614.	524.	491.	452.	431.	417.	418.
10.0 |	760.	754.	736.	704.	708.	674.	647.	620.	600.	578.	584.
5.0 |	778.	772.	781.	789.	754.	729.	727.	733.	738.	739.	740.
0.0 |	772.	772.	772.	772.	772.	772.	772.	772.	772.	772.	772.

CONE OF MAXIMUM CANDELA

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REPORT NUMBER: RAB03133 PAGE: 9 OF 9
ISSUE DATE: 04/03/17 DATE SAMPLE TESTED: 04/03/17
PREPARED FOR: RAB LIGHTING INC.

5-DEGREE ZONAL LUMEN SUMMARY

0- 5	19
5- 10	57
10- 15	94
15- 20	127
20- 25	157
25- 30	182
30- 35	205
35- 40	217
40- 45	239
45- 50	253
50- 55	251
55- 60	263
60- 65	251
65- 70	248
70- 75	242
75- 80	237
80- 85	228
85- 90	211
90- 95	186
95-100	166
100-105	134
105-110	114
110-115	82
115-120	65
120-125	48
125-130	34
130-135	23
135-140	15
140-145	9
145-150	6
150-155	2
155-160	1
160-165	0
165-170	0
170-175	0
175-180	0

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	76
0- 20	297
0- 30	636
0- 40	1058
0- 50	1550
0- 60	2063
0- 70	2563
0- 80	3041
0- 90	3480
0-100	3832
0-110	4080
0-120	4226
0-130	4308
0-140	4346
0-150	4361
0-160	4364
0-170	4365
0-180	4365

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NVLAP LAB CODE: 201058-0

REPORT NUMBER: RAB03134
DATE: 3/31/2017
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: WP2LED37N, WP2LED37N/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

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:	Calibration Due:
GWINSTEK PROGRAMMABLE AC POWER SOURCE APS-7100	N/A
CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	3/01/18
OCEAN OPTICS QE65PRO Spectroradiometer	03/07/18
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 X.CAO
Approved D.WANG-MUNSON
Lighting Engineer

RAB LIGHTING

NVLAP LAB CODE: 201058-0

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REPORT NUMBER: RAB03134
DATE: 3/31/2017
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CATALOG NUMBER: WP2LED37N, WP2LED37N/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	4365 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3787
Chromaticity Ordinate y	0.3743
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2249
Chromaticity Ordinate v'	0.5002
Correlated Color Temp CCT (K)	4030
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	13474 *
ELECTRICAL	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.139
Input Power (Watts)	37.1
Input Power Factor (%)	96.0
Input Current THD (%)	8.0
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	117.7
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.309
Input Power (Watts)	36.8
Input Power Factor (%)	99.2
Input Current THD (%)	7.8
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	84
R1 Light greyish red	83
R2 Dark greyish yellow	91
R3 Strong yellowish green	96
R4 Moderate yellowish green	83
R5 Light bluish green	83
R6 Light blue	87
R7 Light violet	86
R8 Light reddish purple	66
R9 Strong red	14
R10 Strong yellow	78
R11 Strong green	82
R12 Strong blue	68
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.

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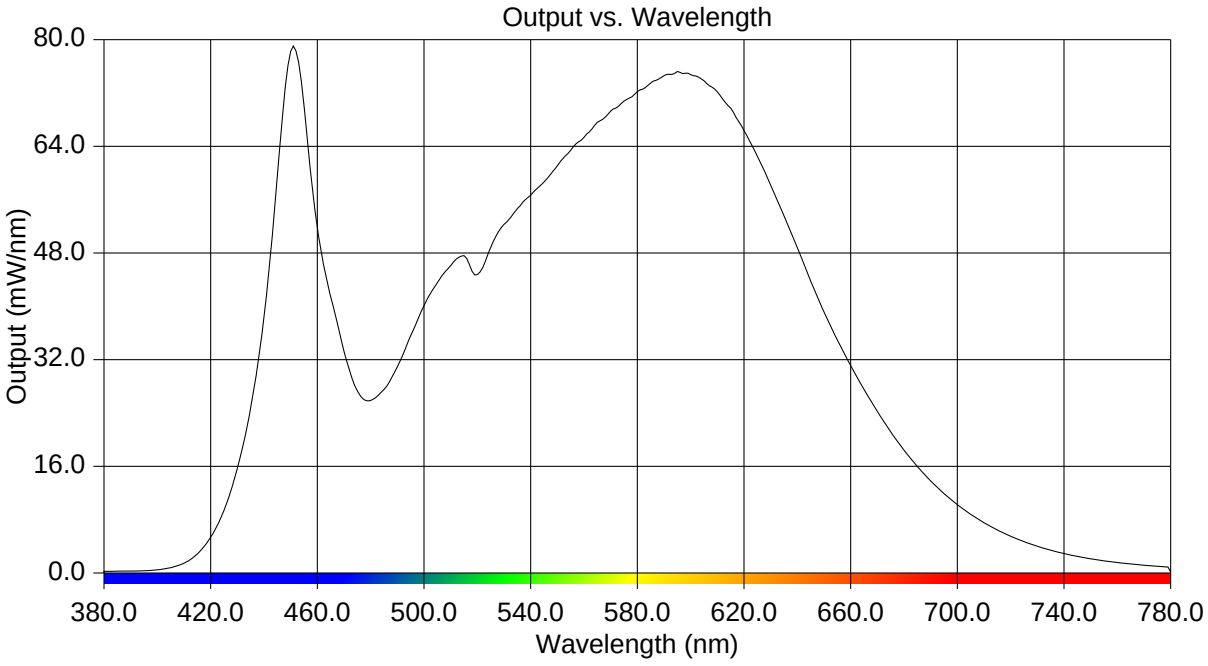
CATALOG NUMBER: WP2LED37N, WP2LED37N/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.245	515	47.606	650	39.092
385	0.268	520	44.757	655	34.935
390	0.289	525	48.842	660	31.086
395	0.341	530	52.299	665	27.550
400	0.480	535	54.604	670	24.254
405	0.792	540	56.687	675	21.170
410	1.476	545	58.660	680	18.445
415	2.840	550	61.080	685	15.977
420	5.347	555	63.412	690	13.825
425	9.447	560	65.346	695	11.925
430	15.673	565	67.602	700	10.253
435	24.674	570	69.282	705	8.800
440	38.297	575	70.789	710	7.533
445	59.407	580	72.196	715	6.445
450	78.246	585	73.494	720	5.501
455	70.009	590	74.595	725	4.694
460	51.672	595	75.221	730	4.002
465	41.524	600	74.755	735	3.410
470	33.239	605	73.842	740	2.900
475	27.329	610	72.164	745	2.487
480	25.885	615	69.732	750	2.140
485	27.518	620	66.370	755	1.825
490	30.931	625	62.631	760	1.568
495	35.605	630	58.160	765	1.352
500	40.101	635	53.584	770	1.156
505	43.539	640	48.781	775	0.998
510	46.085	645	43.851	780	0.151



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CIE Chromaticity Diagram