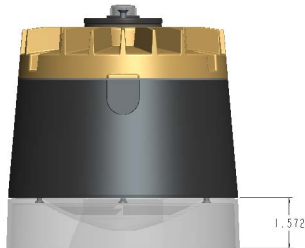


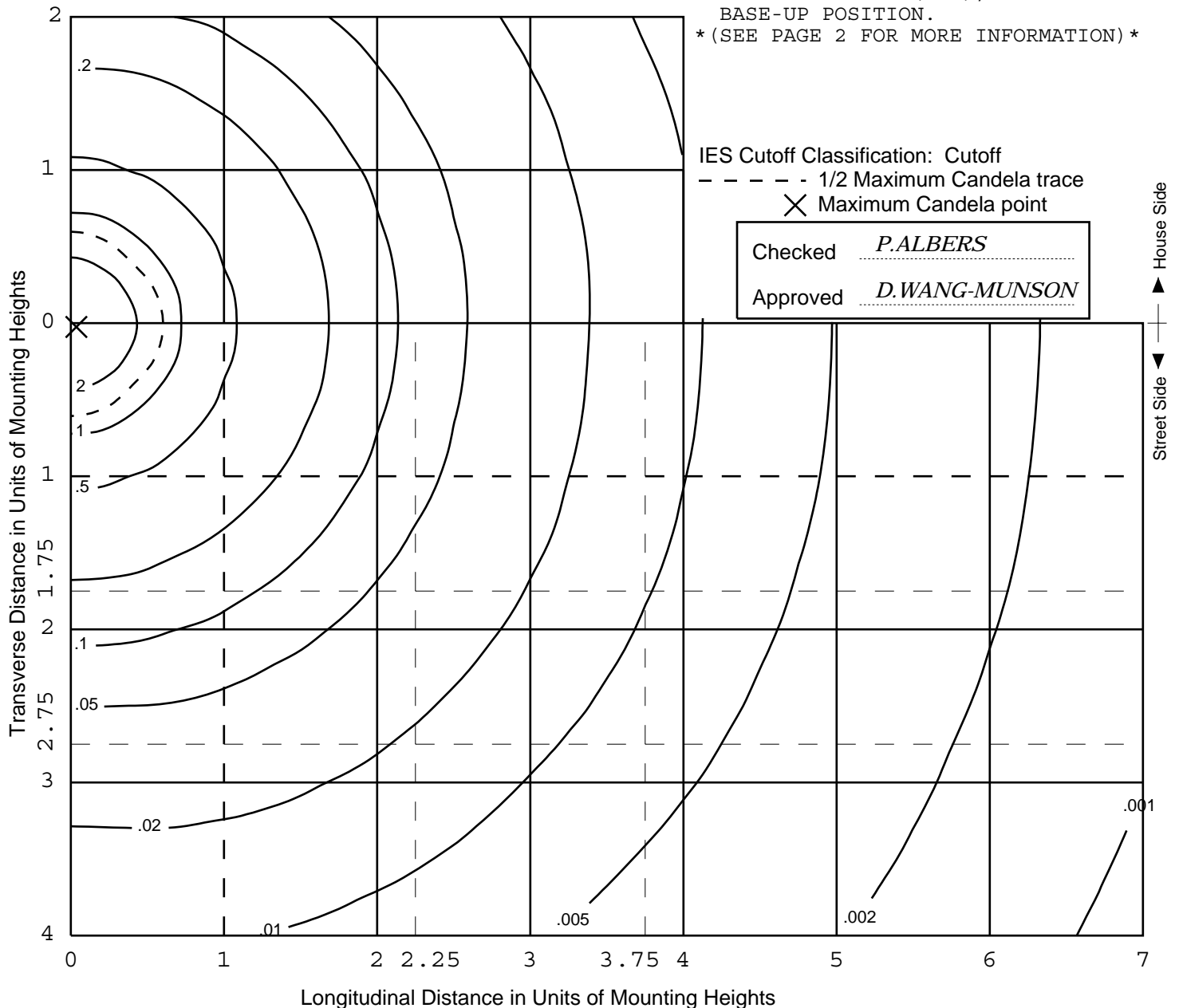
## ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 25 foot mounting height.



REPORT NUMBER: RAB03810  
 ISSUE DATE: 10/02/17 PAGE: 1 OF 9  
 DATE SAMPLE TESTED: 10/02/17  
 CATALOG NUMBER:  
 YBLED40/D10/PCU-YBLED40/ARM/D10/PCU  
 LUMINAIRE: CAST FINNED METAL HOUSING  
 WITH WHITE PAINTED INTERIOR, 1  
 CIRCUIT BOARD WITH 1 LED WITH MOLDED  
 WHITE PLASTIC TRIM, CLEAR INTERIOR  
 FROSTED CYLINDRICAL LENS WITH  
 RECESSED EXTERIOR-FROSTED CONVEX  
 CENTER. CONVEX CENTER HAS CONCENTRIC  
 CIRCULAR EXTERIOR PRISMS.  
 LAMP: ONE WHITE MULTI-CHIP LIGHT  
 EMITTING DIODE (LED), VERTICAL  
 BASE-UP POSITION.

\*(SEE PAGE 2 FOR MORE INFORMATION)\*



REPORT NUMBER: RAB03810

PAGE: 2 OF 9

ISSUE DATE: 10/02/17

DATE SAMPLE TESTED: 10/02/17

CATALOG NUMBER: YBLED40/D10/PCU-YBLED40/ARM/D10/PCU

ADDITIONAL INFORMATION

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 = 41.931 W AT 120.0 VAC.

LED DRIVER: RDD-040-A1100

TEST PROCEDURE: IESNA LM-79-08

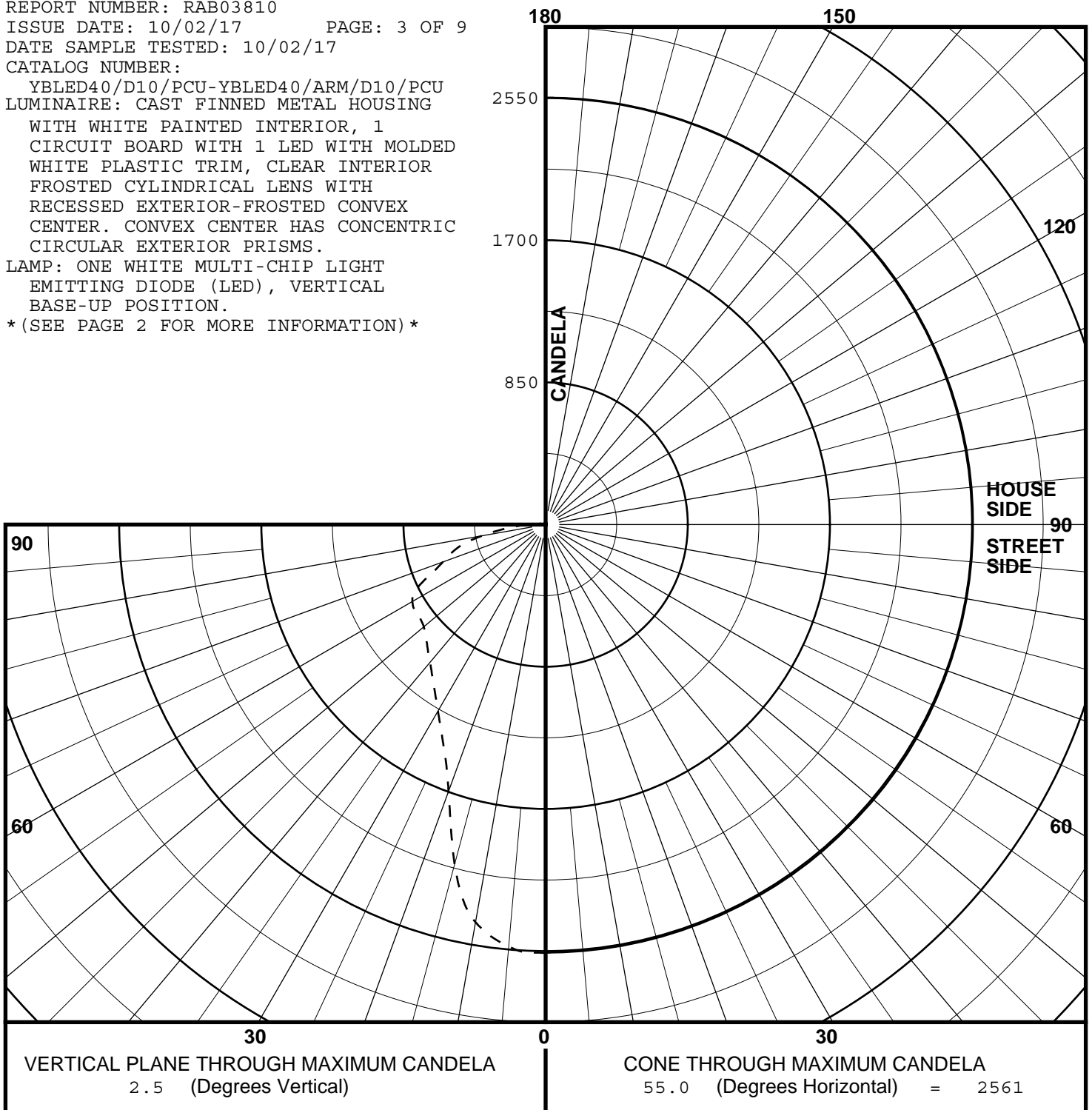
LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE

AMBIENT: 24.5

ACCREDITED LABORATORY CODE 201058-0

## MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

REPORT NUMBER: RAB03810  
 ISSUE DATE: 10/02/17 PAGE: 3 OF 9  
 DATE SAMPLE TESTED: 10/02/17  
 CATALOG NUMBER:  
 YBLED40/D10/PCU-YBLED40/ARM/D10/PCU  
 LUMINAIRE: CAST FINNED METAL HOUSING  
 WITH WHITE PAINTED INTERIOR, 1  
 CIRCUIT BOARD WITH 1 LED WITH MOLDED  
 WHITE PLASTIC TRIM, CLEAR INTERIOR  
 FROSTED CYLINDRICAL LENS WITH  
 RECESSED EXTERIOR-FROSTED CONVEX  
 CENTER. CONVEX CENTER HAS CONCENTRIC  
 CIRCULAR EXTERIOR PRISMS.  
 LAMP: ONE WHITE MULTI-CHIP LIGHT  
 EMITTING DIODE (LED), VERTICAL  
 BASE-UP POSITION.  
 \*(SEE PAGE 2 FOR MORE INFORMATION) \*



REPORT NUMBER: RAB03810

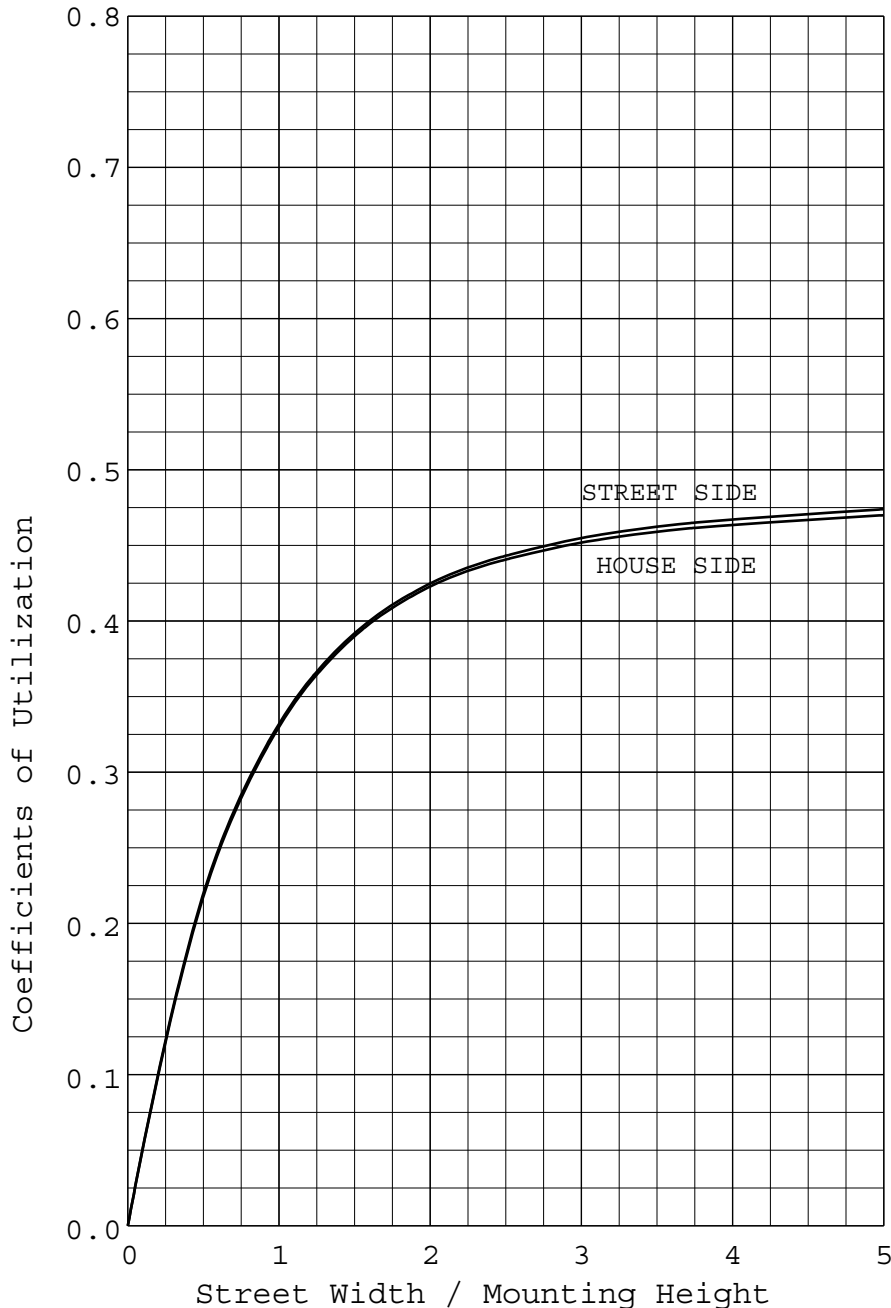
PAGE: 4 OF 9

ISSUE DATE: 10/02/17

DATE SAMPLE TESTED: 10/02/17

CATALOG NUMBER: YBLED40/D10/PCU-YBLED40/ARM/D10/PCU

## COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	2714.	49.0
DOWNWARD HOUSE SIDE	2690.	48.6
DOWNWARD TOTAL	5404.	97.6
UPWARD STREET SIDE	71.	1.3
UPWARD HOUSE SIDE	64.	1.1
UPWARD TOTAL	135.	2.4
TOTAL FLUX	5539.	100.0
TOTAL INPUT WATTS = 41.9		
EFFICACY = 132.2 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: RAB03810

ISSUE DATE: 10/02/17

PAGE: 5 OF 9

DATE SAMPLE TESTED: 10/02/17

CATALOG NUMBER: YBLED40/D10/PCU-YBLED40/ARM/D10/PCU

BUG Rating:

Zonal Summary

Lumens

% of Fixture

B2 U3 G2

Zone Ratings

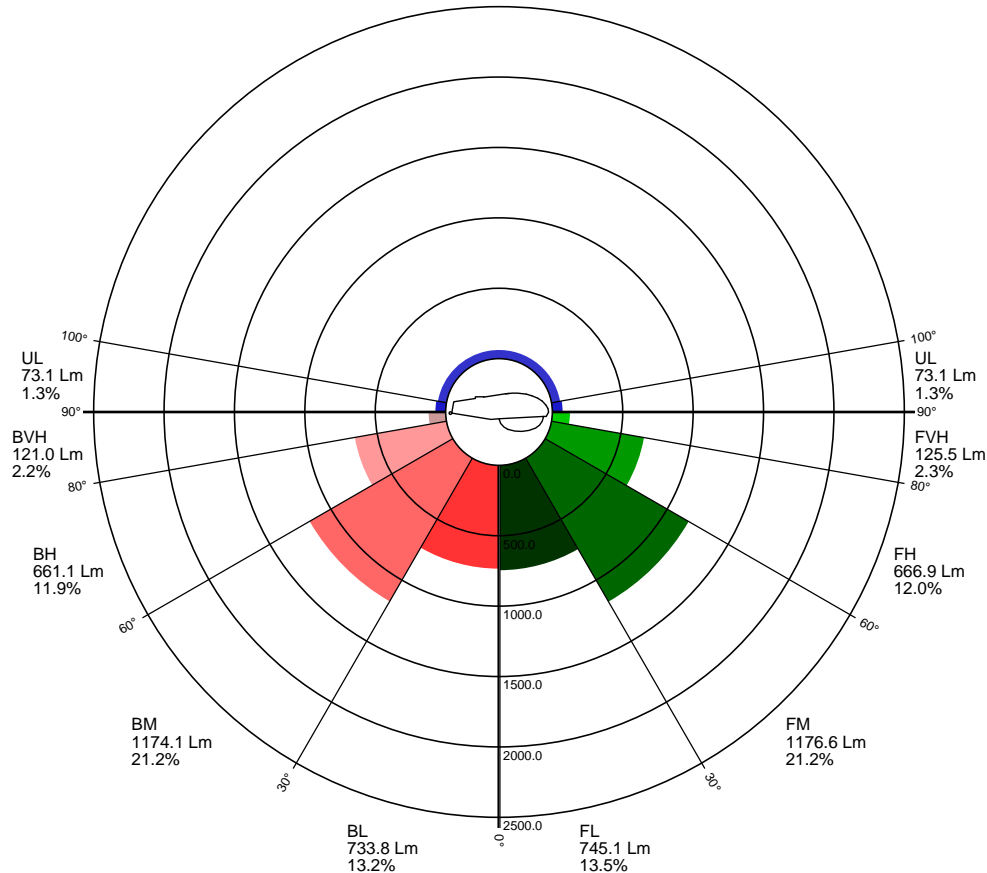
B U G

Forward		2714	49.0			
FL	(0° - 30°)	745.1	13.5			
FM	(30° - 60°)	1176.6	21.2			
FH	(60° - 80°)	666.9	12.0			G1
FVH	(80° - 90°)	125.5	2.3			G2
Backward		2690	48.6			
BL	(0° - 30°)	733.8	13.2	B2		
BM	(30° - 60°)	1174.1	21.2	B2		
BH	(60° - 80°)	661.1	11.9	B2		G1
BVH	(80° - 90°)	121.0	2.2			G2
Upward		135	2.4			
UL	(90° - 100°)	73.1	1.3		U3	
UH	(100° - 180°)	61.6	1.1		U3	
Trapped Light		0	0.0			
Total Flux		5539	100.0			

## Zonal Lumen Summary

(Linear scale)

UH  
61.6 Lm  
1.1%



REPORT NUMBER: RAB03810

ISSUE DATE: 10/02/17

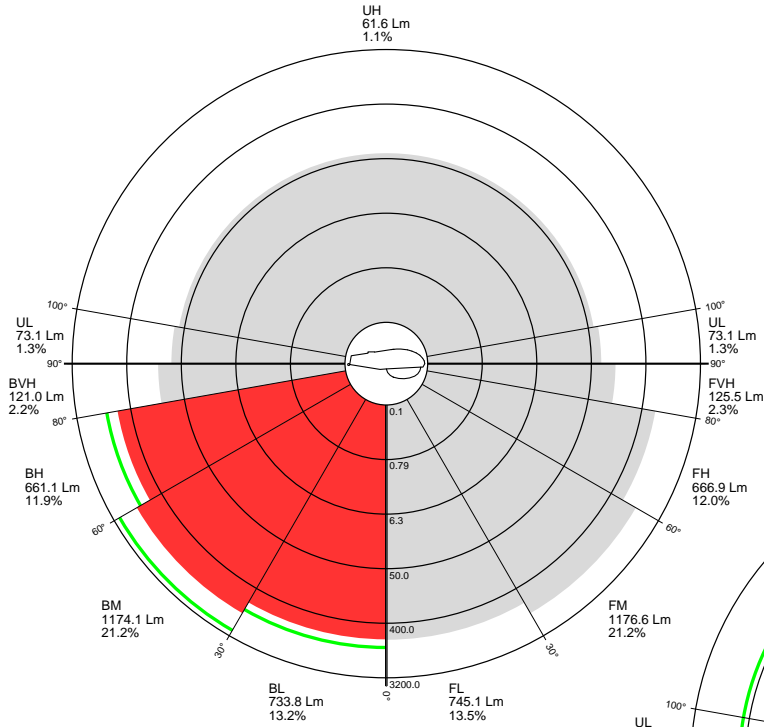
CATALOG NUMBER: YBLED40/D10/PCU-YBLED40/ARM/D10/PCU

PAGE: 6 OF 9

DATE SAMPLE TESTED: 10/02/17

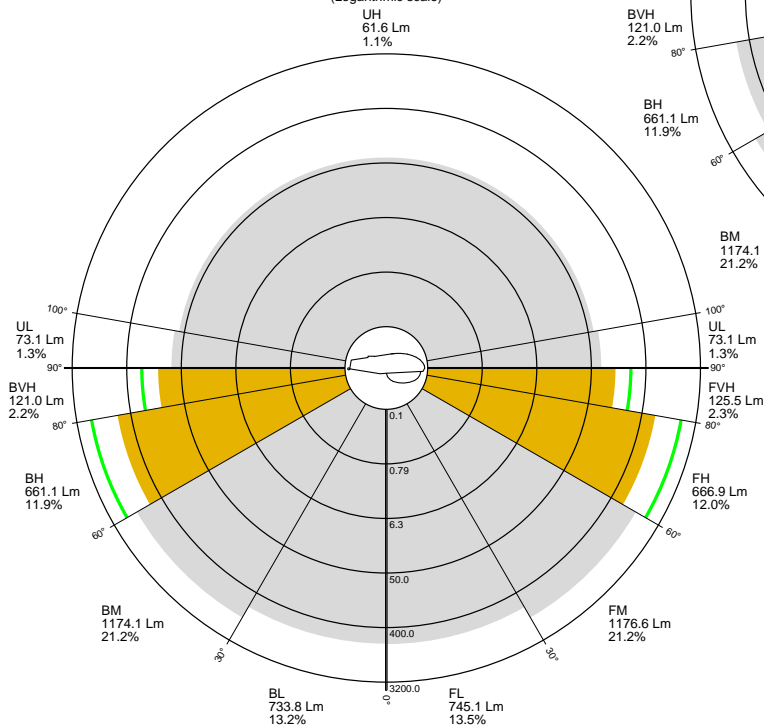
### Backlight Rating Details

(Logarithmic scale)



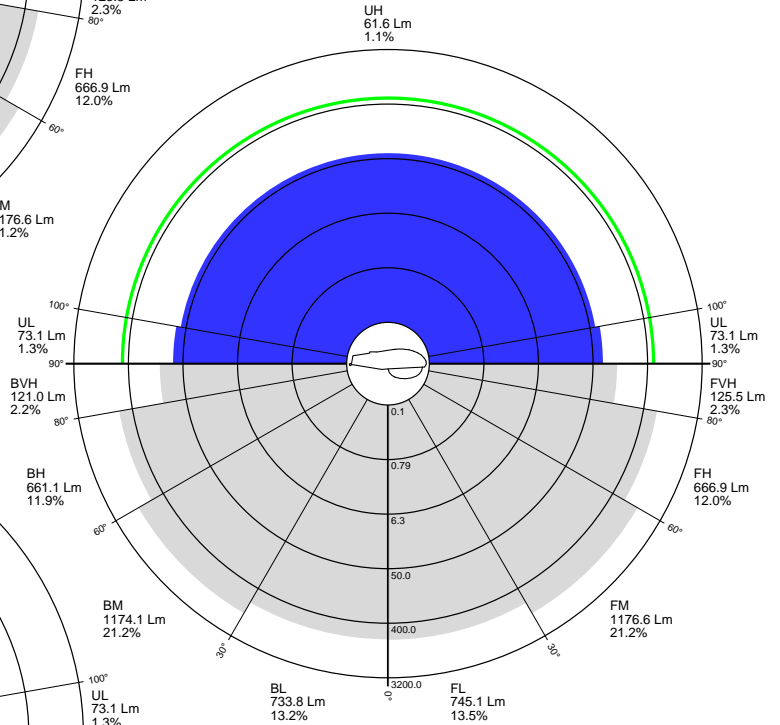
### Glare Rating Details

(Logarithmic scale)



### Uplight Rating Details

(Logarithmic scale)



REPORT NUMBER: RAB03810

PAGE: 7 OF 9

ISSUE DATE: 10/02/17

DATE SAMPLE TESTED: 10/02/17

CATALOG NUMBER: YBLED40/D10/PCU-YBLED40/ARM/D10/PCU

### 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	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
	165.0	2.	2.	2.	2.	2.	2.	2.	1.	1.	1.
	155.0	3.	3.	3.	3.	3.	3.	2.	2.	2.	2.
	145.0	4.	4.	4.	4.	4.	3.	3.	3.	2.	2.
	135.0	6.	6.	6.	6.	6.	5.	5.	5.	5.	4.
	125.0	11.	11.	11.	11.	10.	10.	10.	10.	10.	10.
	115.0	20.	21.	21.	22.	22.	21.	21.	22.	22.	21.
	105.0	25.	25.	26.	26.	27.	27.	26.	26.	26.	26.
	95.0	64.	63.	64.	63.	64.	63.	63.	63.	64.	64.
	90.0	118.	117.	118.	115.	115.	113.	114.	114.	116.	115.
	87.5	164.	161.	164.	158.	160.	156.	157.	156.	156.	155.
	85.0	225.	223.	228.	221.	223.	217.	217.	211.	212.	209.
	82.5	293.	299.	309.	303.	308.	299.	298.	287.	285.	280.
V	80.0	369.	378.	394.	394.	400.	389.	388.	375.	368.	360.
E	77.5	442.	446.	472.	481.	490.	479.	479.	467.	453.	444.
R	75.0	484.	491.	527.	545.	557.	552.	550.	539.	524.	510.
T	72.5	511.	520.	563.	587.	605.	606.	604.	596.	578.	565.
I	70.0	554.	565.	609.	633.	651.	661.	655.	651.	636.	626.
C	67.5	637.	641.	687.	698.	719.	723.	718.	717.	706.	691.
A	65.0	762.	766.	791.	798.	806.	816.	812.	808.	800.	797.
L	62.5	872.	875.	889.	887.	885.	890.	888.	887.	886.	884.
	60.0	913.	917.	923.	919.	915.	917.	920.	923.	924.	926.
A	57.5	934.	935.	937.	934.	929.	930.	934.	935.	936.	940.
N	55.0	930.	930.	931.	929.	926.	927.	928.	928.	928.	933.
G	52.5	942.	942.	944.	943.	942.	940.	939.	938.	939.	941.
L	50.0	953.	953.	954.	956.	953.	953.	951.	951.	950.	951.
E	47.5	982.	983.	983.	988.	983.	980.	977.	975.	975.	973.
	45.0	1008.	1008.	1009.	1012.	1008.	1008.	1004.	1004.	1004.	1002.
	42.5	1041.	1041.	1042.	1045.	1042.	1041.	1039.	1038.	1037.	1036.
	40.0	1074.	1077.	1077.	1079.	1077.	1076.	1075.	1075.	1075.	1072.
	37.5	1117.	1116.	1117.	1121.	1119.	1119.	1118.	1117.	1118.	1115.
	35.0	1163.	1165.	1163.	1167.	1167.	1166.	1167.	1166.	1165.	1163.
	30.0	1284.	1286.	1286.	1290.	1288.	1288.	1288.	1288.	1287.	1284.
	25.0	1450.	1452.	1450.	1454.	1447.	1445.	1448.	1445.	1443.	1440.
	20.0	1705.	1706.	1709.	1707.	1703.	1698.	1697.	1690.	1685.	1679.
	15.0	2130.	2118.	2131.	2117.	2111.	2103.	2103.	2091.	2079.	2069.
	10.0	2431.	2428.	2433.	2423.	2419.	2418.	2414.	2405.	2400.	2394.
	5.0	2538.	2537.	2540.	2536.	2537.	2536.	2532.	2530.	2530.	2530.
	2.5<<	2559.	2559.	2559.	2558.	2560.	2558.	2561.	2558.	2556.	2556.
	0.0	2560.	2560.	2560.	2560.	2560.	2560.	2560.	2560.	2560.	2560.

||  
PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB03810

PAGE: 8 OF 9

ISSUE DATE: 10/02/17

DATE SAMPLE TESTED: 10/02/17

CATALOG NUMBER: YBLED40/D10/PCU-YBLED40/ARM/D10/PCU

### 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	1.	0.	1.	1.	0.	1.	0.	0.	1.	0.
	165.0	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
	155.0	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
	145.0	2.	2.	2.	3.	3.	3.	3.	2.	2.	2.
	135.0	4.	4.	5.	5.	5.	5.	5.	4.	3.	2.
	125.0	10.	10.	10.	10.	10.	10.	9.	8.	5.	2.
	115.0	20.	20.	20.	20.	20.	20.	20.	18.	8.	3.
	105.0	26.	26.	26.	26.	26.	26.	25.	22.	16.	9.
	95.0	64.	64.	64.	64.	63.	64.	64.	62.	54.	57.
	90.0	115.	115.	115.	115.	116.	116.	115.	115.	113.	115.
	87.5	155.	155.	155.	156.	157.	159.	157.	154.	152.	156.
	85.0	209.	209.	209.	211.	214.	216.	214.	208.	204.	209.
	82.5	280.	280.	281.	286.	291.	293.	287.	278.	269.	274.
V	80.0	361.	362.	365.	372.	380.	382.	374.	358.	347.	349.
E	77.5	443.	447.	452.	460.	471.	474.	463.	439.	424.	418.
R	75.0	513.	518.	524.	537.	547.	552.	542.	513.	493.	477.
T	72.5	568.	574.	582.	594.	605.	608.	598.	572.	550.	520.
I	70.0	628.	630.	642.	654.	658.	666.	659.	636.	607.	554.
C	67.5	697.	700.	709.	716.	713.	725.	718.	706.	677.	606.
A	65.0	803.	805.	806.	818.	815.	823.	818.	812.	773.	682.
L	62.5	889.	892.	896.	899.	893.	903.	901.	905.	873.	800.
	60.0	927.	929.	932.	933.	934.	935.	935.	943.	938.	899.
A	57.5	940.	941.	944.	942.	942.	942.	944.	951.	952.	938.
N	55.0	934.	934.	935.	935.	933.	934.	935.	942.	950.	944.
G	52.5	942.	942.	943.	942.	940.	942.	943.	947.	950.	948.
L	50.0	950.	951.	952.	950.	949.	948.	950.	955.	958.	955.
E	47.5	973.	973.	973.	970.	968.	967.	969.	971.	975.	975.
	45.0	1000.	999.	998.	997.	993.	991.	992.	994.	998.	997.
	42.5	1036.	1033.	1033.	1030.	1027.	1023.	1023.	1025.	1028.	1027.
	40.0	1072.	1071.	1069.	1067.	1066.	1062.	1061.	1063.	1067.	1065.
	37.5	1114.	1114.	1112.	1110.	1110.	1107.	1106.	1109.	1110.	1110.
	35.0	1164.	1162.	1162.	1161.	1160.	1160.	1157.	1160.	1160.	1158.
	30.0	1284.	1285.	1283.	1282.	1281.	1282.	1280.	1280.	1279.	1277.
	25.0	1439.	1438.	1437.	1435.	1435.	1433.	1433.	1430.	1428.	1425.
	20.0	1677.	1672.	1668.	1665.	1660.	1658.	1657.	1653.	1650.	1648.
	15.0	2067.	2063.	2059.	2058.	2055.	2053.	2037.	2045.	2038.	2038.
	10.0	2389.	2385.	2383.	2383.	2382.	2384.	2380.	2381.	2379.	2376.
	5.0	2527.	2527.	2525.	2522.	2523.	2522.	2519.	2525.	2521.	2519.
	2.5<<	2555.	2556.	2556.	2555.	2556.	2552.	2551.	2553.	2553.	2553.
	0.0	2560.	2560.	2560.	2560.	2560.	2560.	2560.	2560.	2560.	2560.

CONE OF MAXIMUM CANDELA



REPORT NUMBER: RAB03810

PAGE: 9 OF 9

ISSUE DATE: 10/02/17

DATE SAMPLE TESTED: 10/02/17

PREPARED FOR: RAB LIGHTING INC. RC LIGHTING.

### 5-DEGREE

#### ZONAL LUMEN SUMMARY

0- 5	61
5- 10	176
10- 15	266
15- 20	307
20- 25	325
25- 30	344
30- 35	359
35- 40	372
40- 45	383
45- 50	394
50- 55	410
55- 60	432
60- 65	424
65- 70	358
70- 75	303
75- 80	243
80- 85	158
85- 90	88
90- 95	48
95-100	25
100-105	15
105-110	12
110-115	11
115-120	8
120-125	5
125-130	3
130-135	2
135-140	1
140-145	1
145-150	1
150-155	1
155-160	0
160-165	0
165-170	0
170-175	0
175-180	0

### 10-DEGREE

#### ZONAL LUMEN SUMMARY

0- 10	237
0- 20	810
0- 30	1479
0- 40	2210
0- 50	2988
0- 60	3829
0- 70	4611
0- 80	5157
0- 90	5404
0-100	5477
0-110	5505
0-120	5523
0-130	5532
0-140	5535
0-150	5537
0-160	5538
0-170	5539
0-180	5539

REPORT NUMBER: RAB03811  
 DATE: 9/29/2017  
 PREPARED FOR: RAB LIGHTING INC. RC LIGHTING.  
 CATALOG NUMBER: YBLED40/D10/PCU-YBLED40/ARM/D10/PCU

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: CAST FINNED METAL HOUSING WITH WHITE PAINTED INTERIOR, 1 CIRCUIT BOARD WITH 1 LED WITH MOLDED WHITE PLASTIC TRIM, CLEAR INTERIOR FROSTED CYLINDRICAL LENS WITH RECESSED EXTERIOR-FROSTED CONVEX CENTER. CONVEX CENTER HAS CONCENTRIC CIRCULAR EXTERIOR PRISMS.

LAMP: ONE WHITE MULTI-CHIP LIGHT EMITTING DIODE (LED), VERTICAL BASE-UP POSITION.

DRIVER: RDD-040-A1100

OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT VOLTAGES (120.0 AND 277.0 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	09/27/18

OBJECT OF TEST: Measure the Absolute Flux in lumens\*, 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. 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 (277.0 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

REPORT NUMBER: RAB03811  
 DATE: 9/29/2017  
 PREPARED FOR: RAB LIGHTING INC. RC LIGHTING.  
 CATALOG NUMBER: YBLED40/D10/PCU-YBLED40/ARM/D10/PCU

Page 2 of 4

### RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	5539 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3436
Chromaticity Ordinate y	0.3588
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2077
Chromaticity Ordinate v'	0.4879
Correlated Color Temp CCT (K)	5078
ANSI C78.377-2008 Duv	0.004
Total Radiant Flux (milliWatts)	16163 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.351
Input Power (Watts)	41.9
Input Power Factor (%)	99.7
Input Current THD (%)	6.0
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	132.2
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.169
Input Power (Watts)	41.5
Input Power Factor (%)	88.9
Input Current THD (%)	8.6
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	70
R1 Light greyish red	66
R2 Dark greyish yellow	77
R3 Strong yellowish green	84
R4 Moderate yellowish green	68
R5 Light bluish green	67
R6 Light blue	67
R7 Light violet	81
R8 Light reddish purple	52
R9 Strong red	-43
R10 Strong yellow	44
R11 Strong green	62
R12 Strong blue	37
R13 Light yellowish pink (skin)	68
R14 Moderate olive green (leaf)	91

### \*NOTE:

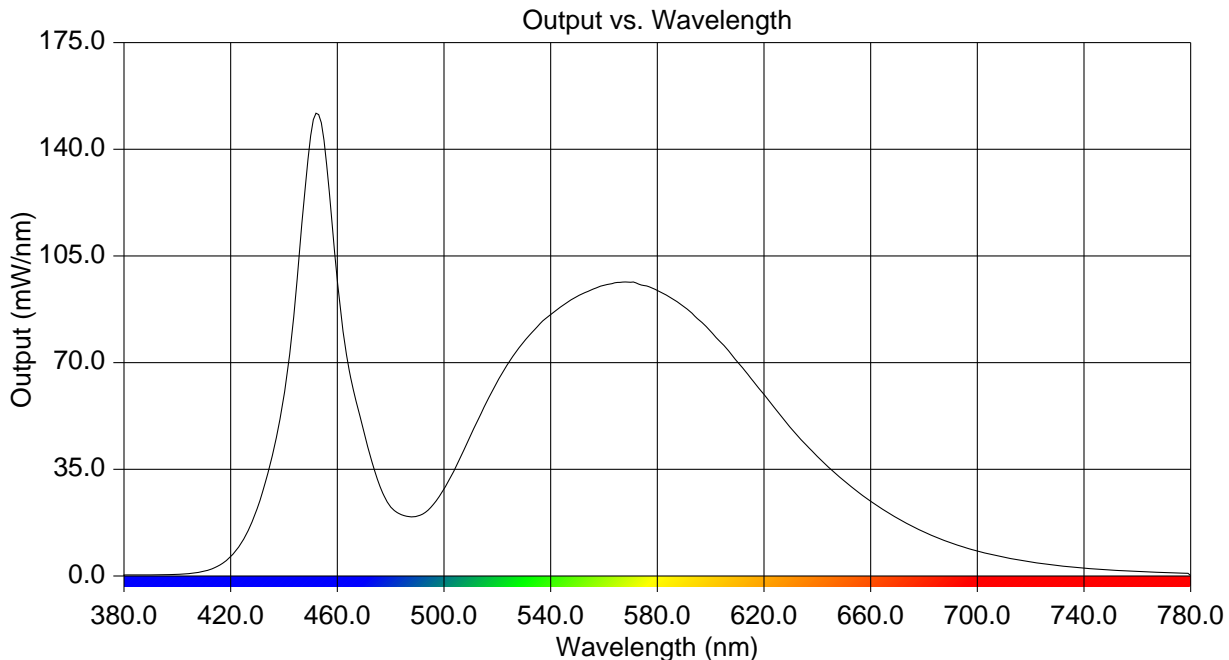
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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: RAB03811  
 DATE: 9/29/2017  
 PREPARED FOR: RAB LIGHTING INC. RC LIGHTING.  
 CATALOG NUMBER: YBLED40/D10/PCU-YBLED40/ARM/D10/PCU

Page 3 of 4

### RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.326	515	55.381	650	31.237
385	0.349	520	63.839	655	27.739
390	0.378	525	70.987	660	24.497
395	0.414	530	76.973	665	21.645
400	0.539	535	81.795	670	19.006
405	0.838	540	85.750	675	16.549
410	1.550	545	89.031	680	14.446
415	3.157	550	91.805	685	12.576
420	6.364	555	93.786	690	10.891
425	12.256	560	95.435	695	9.464
430	22.256	565	96.325	700	8.182
435	37.122	570	96.381	705	7.094
440	59.025	575	95.306	710	6.133
445	97.797	580	93.746	715	5.323
450	144.448	585	91.367	720	4.604
455	143.005	590	88.319	725	3.996
460	96.946	595	84.463	730	3.446
465	65.070	600	80.271	735	2.974
470	47.087	605	75.594	740	2.568
475	31.788	610	70.311	745	2.230
480	22.662	615	64.959	750	1.963
485	19.823	620	59.587	755	1.702
490	19.640	625	53.973	760	1.483
495	22.460	630	48.643	765	1.292
500	28.564	635	43.706	770	1.134
505	36.737	640	39.223	775	0.978
510	46.191	645	35.076	780	0.150



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## CIE Chromaticity Diagram

