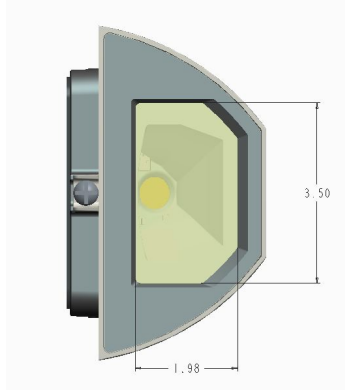


ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 10 foot mounting height.



REPORT NUMBER: RAB02336
 ISSUE DATE: 08/17/16 PAGE: 1 OF 9
 DATE SAMPLE TESTED: 08/17/16
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: SLIM18Y
 LUMINAIRE: CAST BROWN PAINTED FINNED METAL HOUSING, 1 CIRCUIT BOARD WITH 1 LED, MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH, CLEAR FLAT GLASS LENS IN CAST BROWN PAINTED METAL LENS FRAME.
 LAMP: ONE WHITE MULTI-CHIP LIGHT EMITTING DIODE (LED), AIMED 20-DEGREES FROM VERTICAL BASE-UP POSITION.

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.
 TOTAL INPUT WATTS = 20.996 W AT 277.0 VAC.

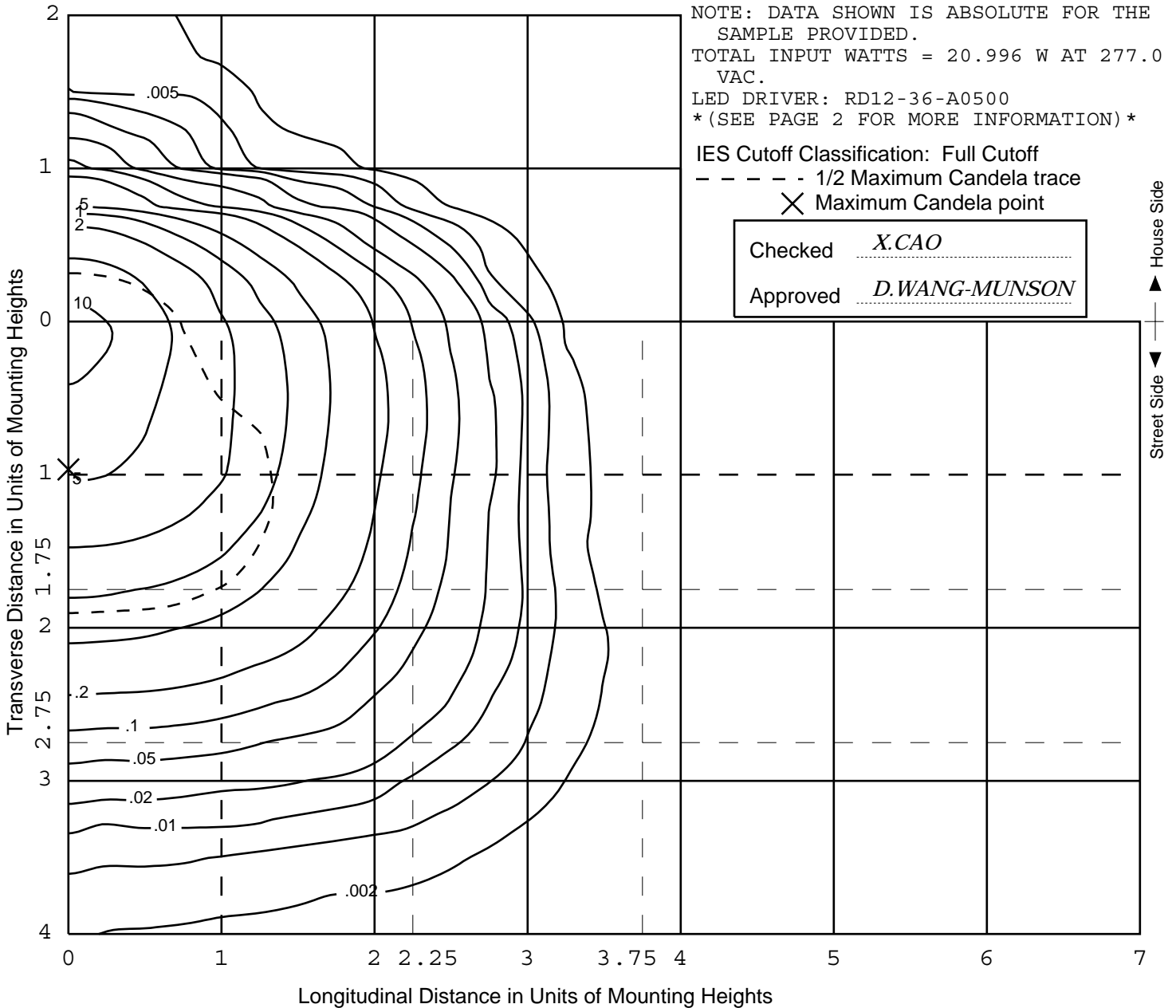
LED DRIVER: RD12-36-A0500
 (SEE PAGE 2 FOR MORE INFORMATION)

IES Cutoff Classification: Full Cutoff

--- 1/2 Maximum Candela trace

× Maximum Candela point

Checked	<i>X.CAO</i>
Approved	<i>D.WANG-MUNSON</i>



REPORT NUMBER: RAB02336
ISSUE DATE: 08/17/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 2 OF 9
DATE SAMPLE TESTED: 08/17/16

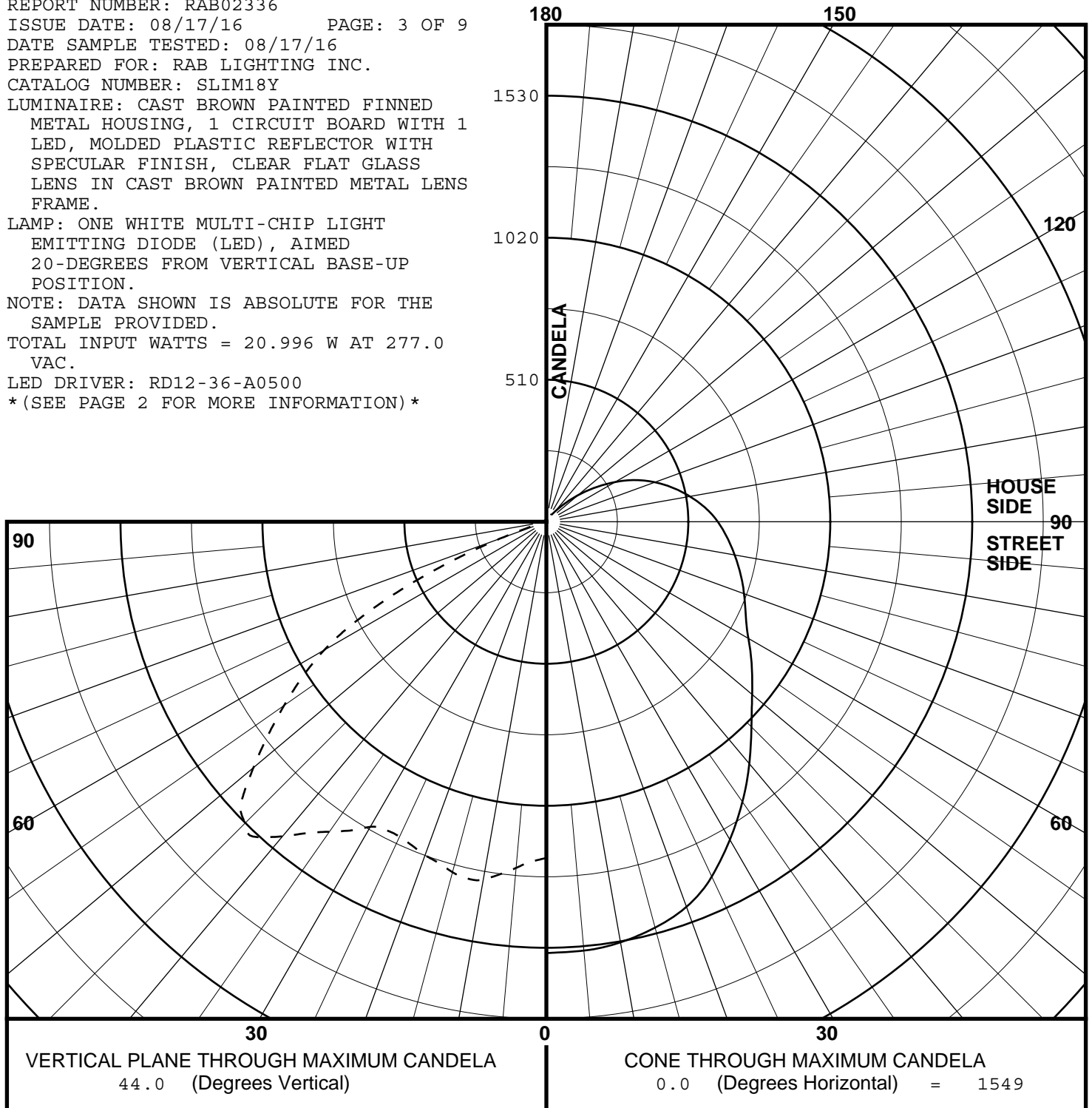
ADDITIONAL INFORMATION

TEST PROCEDURE: IESNA LM-79-08
ACCREDITED LABORATORY CODE 201058-0
TEST DISTANCE = 28.25 FEET

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.

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

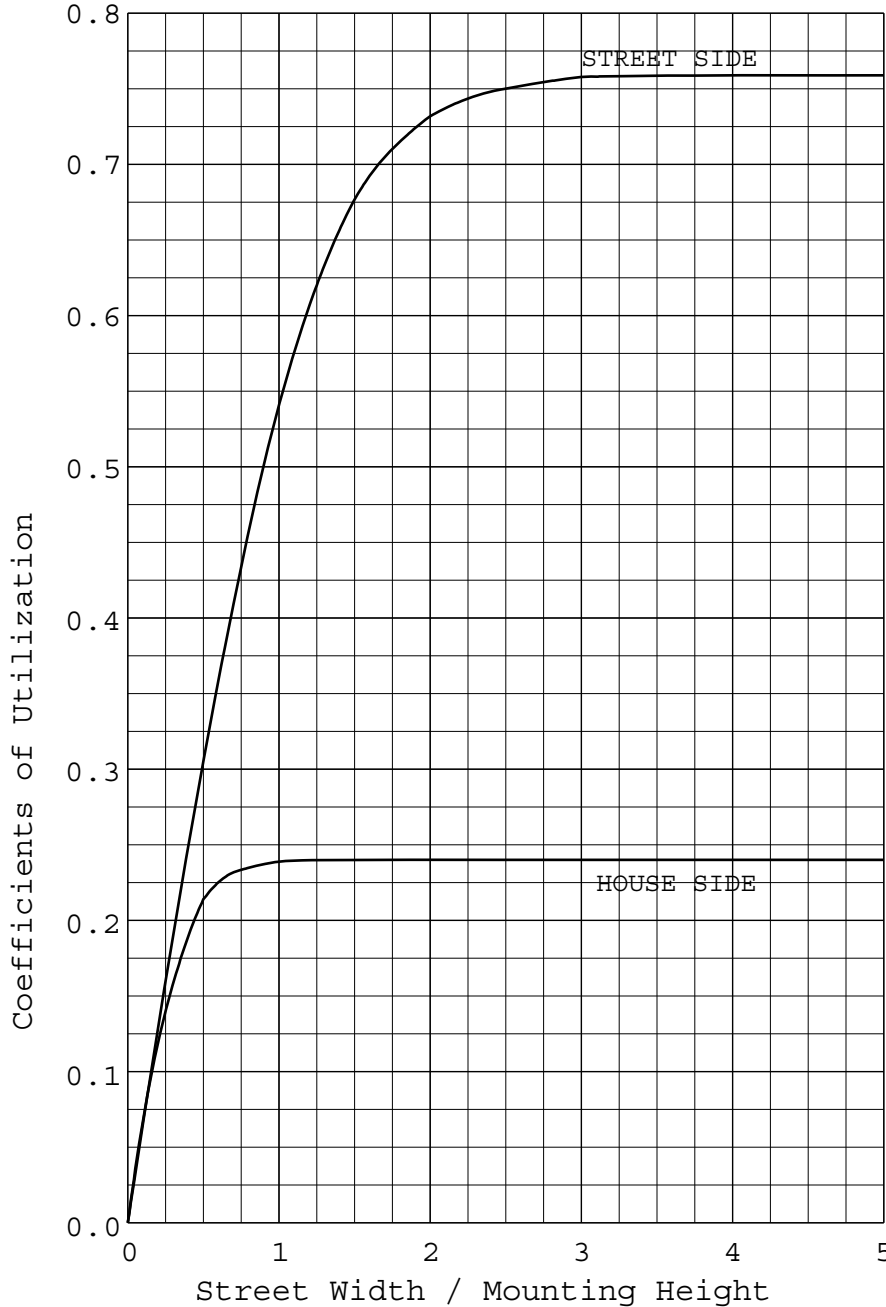
REPORT NUMBER: RAB02336
 ISSUE DATE: 08/17/16 PAGE: 3 OF 9
 DATE SAMPLE TESTED: 08/17/16
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: SLIM18Y
 LUMINAIRE: CAST BROWN PAINTED FINNED METAL HOUSING, 1 CIRCUIT BOARD WITH 1 LED, MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH, CLEAR FLAT GLASS LENS IN CAST BROWN PAINTED METAL LENS FRAME.
 LAMP: ONE WHITE MULTI-CHIP LIGHT EMITTING DIODE (LED), AIMED 20-DEGREES FROM VERTICAL BASE-UP POSITION.
 NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.
 TOTAL INPUT WATTS = 20.996 W AT 277.0 VAC.
 LED DRIVER: RD12-36-A0500
 (SEE PAGE 2 FOR MORE INFORMATION)



REPORT NUMBER: RAB02336
 ISSUE DATE: 08/17/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 4 OF 9
 DATE SAMPLE TESTED: 08/17/16

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	1909.	75.9
DOWNWARD HOUSE SIDE	605.	24.1
DOWNWARD TOTAL	2513.	100.0
UPWARD STREET SIDE	0.	0.0
UPWARD HOUSE SIDE	0.	0.0
UPWARD TOTAL	0.	0.0
TOTAL FLUX	2513.	100.0

TOTAL INPUT WATTS = 21
 EFFICACY = 119.7 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.

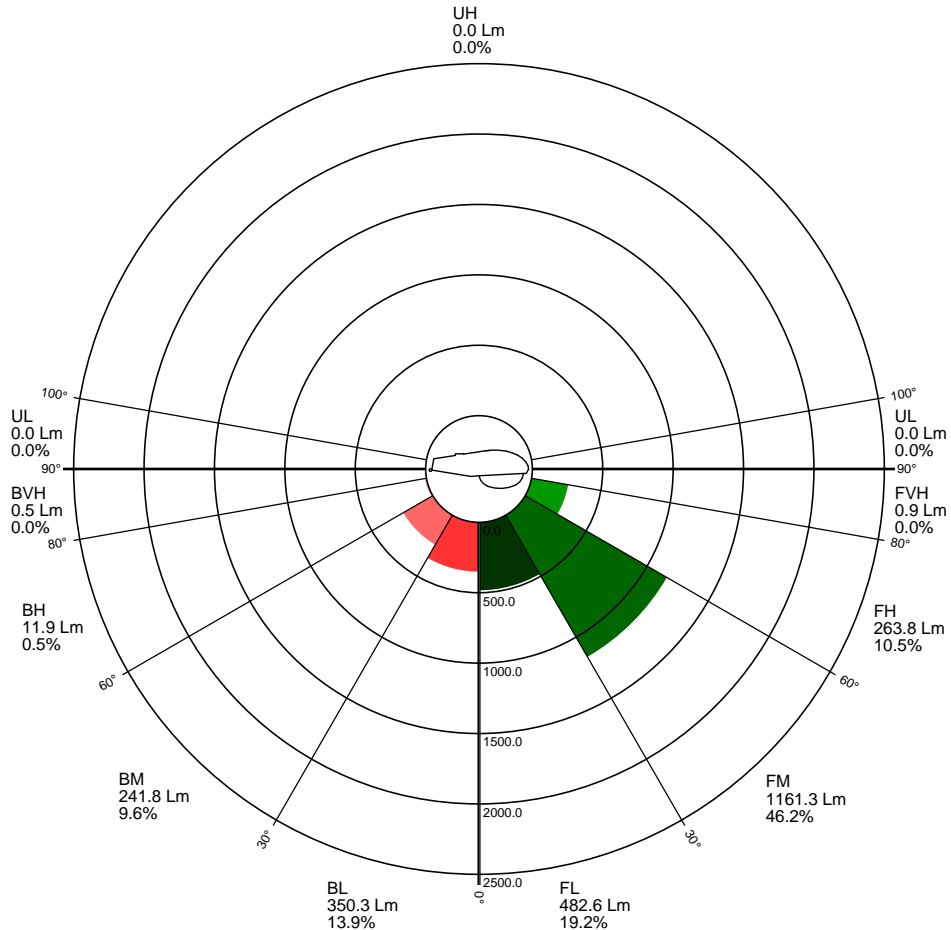
REPORT NUMBER: RAB02336
 ISSUE DATE: 08/17/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 5 OF 9
 DATE SAMPLE TESTED: 08/17/16

BUG Rating:			B1	U0	G0
Zonal Summary		Lumens	Zone Ratings		
			B	U	G
Forward		1909			
FL	(0° - 30°)	482.6			
FM	(30° - 60°)	1161.3			
FH	(60° - 80°)	263.8			G0
FVH	(80° - 90°)	0.9			G0
Backward		605			
BL	(0° - 30°)	350.3	B1		
BM	(30° - 60°)	241.8	B1		
BH	(60° - 80°)	11.9	B0		G0
BVH	(80° - 90°)	0.5			G0
Upward		0			
UL	(90° - 100°)	0.0		U0	
UH	(100° - 180°)	0.0		U0	
Trapped Light		0			
Total Flux		2513			

Zonal Lumen Summary

(Linear scale)

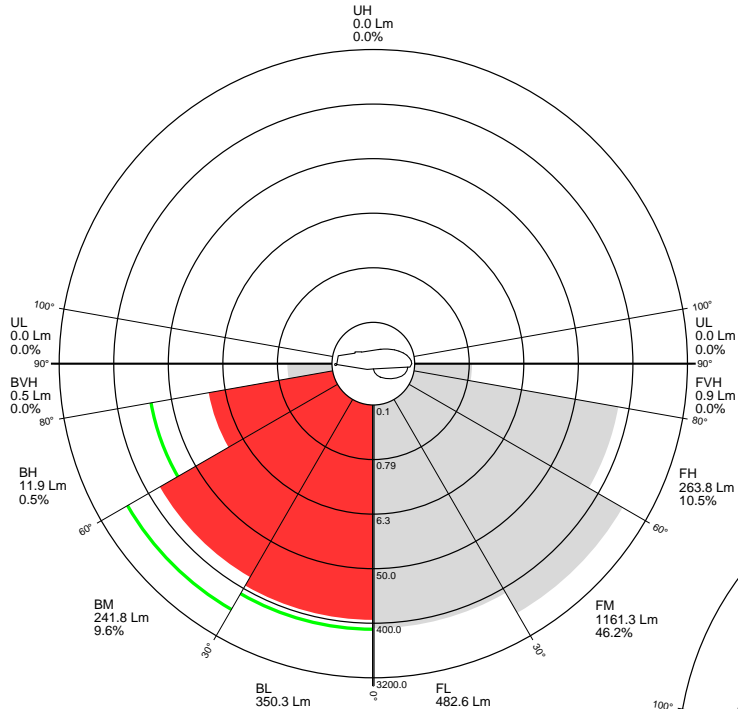


REPORT NUMBER: RAB02336
 ISSUE DATE: 08/17/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 6 OF 9
 DATE SAMPLE TESTED: 08/17/16

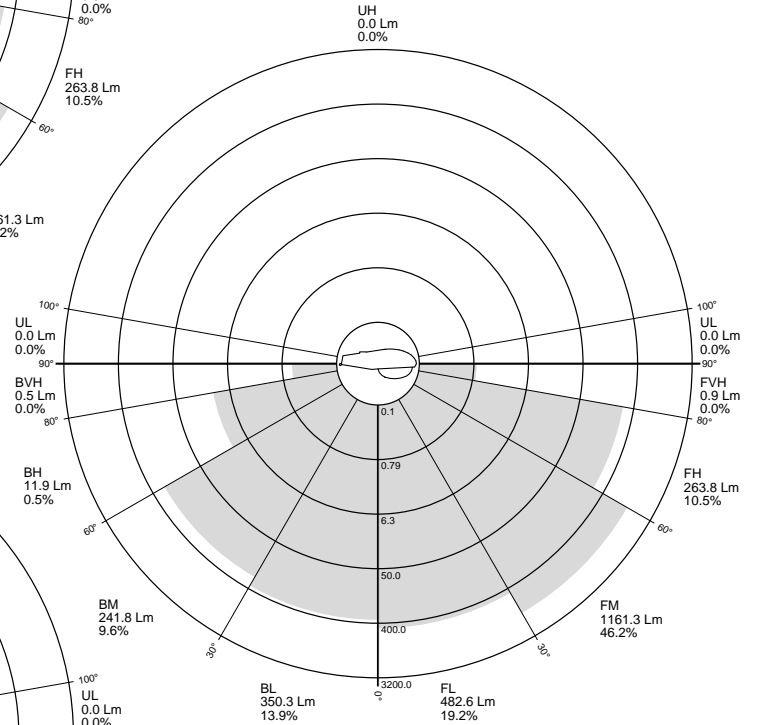
Backlight Rating Details

(Logarithmic scale)



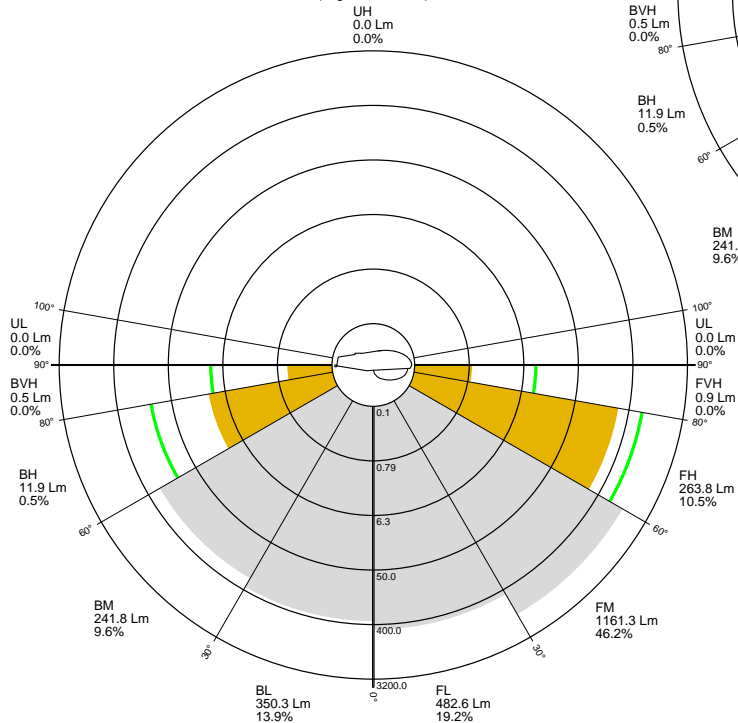
Uplight Rating Details

(Logarithmic scale)



Glare Rating Details

(Logarithmic scale)



REPORT NUMBER: RAB02336
 ISSUE DATE: 08/17/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 7 OF 9
 DATE SAMPLE TESTED: 08/17/16

CANDELA TABULATION

	LATERAL ANGLE										
	STREET SIDE	0.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0	85.0
	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	0.	0.	0.	1.	1.	1.	1.	1.	2.	2.
	85.0	1.	1.	1.	1.	1.	1.	2.	2.	2.	2.
	82.5	3.	2.	2.	3.	3.	2.	2.	2.	2.	2.
V	80.0	6.	5.	4.	4.	5.	4.	3.	3.	2.	2.
E	77.5	11.	10.	8.	8.	11.	16.	9.	4.	3.	3.
R	75.0	18.	16.	18.	24.	50.	61.	34.	9.	5.	4.
T	72.5	53.	48.	66.	111.	180.	161.	96.	36.	17.	10.
I	70.0	181.	175.	220.	284.	360.	317.	214.	123.	78.	47.
C	67.5	364.	360.	407.	477.	529.	467.	349.	236.	174.	122.
A	65.0	571.	566.	615.	669.	685.	582.	449.	339.	271.	205.
L	62.5	765.	762.	806.	832.	832.	717.	542.	416.	343.	270.
	60.0	922.	920.	944.	957.	988.	879.	664.	521.	424.	341.
A	57.5	1041.	1036.	1057.	1075.	1131.	1032.	785.	634.	515.	412.
N	55.0	1150.	1146.	1171.	1187.	1191.	1092.	864.	716.	586.	482.
G	52.5	1261.	1256.	1279.	1279.	1261.	1065.	867.	718.	611.	524.
L	50.0	1374.	1367.	1368.	1382.	1302.	1057.	869.	729.	637.	551.
E	47.5	1486.	1482.	1456.	1438.	1288.	1055.	882.	756.	668.	588.
	45.0	1533.	1527.	1512.	1425.	1245.	1047.	898.	781.	708.	634.
	44.0<<	1549.	1546.	1509.	1406.	1228.	1042.	901.	790.	722.	652.
	42.5	1536.	1540.	1476.	1379.	1201.	1036.	906.	806.	744.	679.
	40.0	1475.	1483.	1430.	1316.	1175.	1032.	917.	833.	785.	722.
	37.5	1409.	1416.	1357.	1264.	1152.	1038.	936.	871.	827.	770.
	35.0	1359.	1356.	1318.	1237.	1145.	1049.	960.	910.	869.	820.
	30.0	1265.	1263.	1242.	1194.	1137.	1070.	1021.	986.	948.	916.
	25.0	1248.	1240.	1206.	1171.	1133.	1100.	1072.	1046.	1013.	990.
	20.0	1274.	1265.	1222.	1179.	1159.	1143.	1126.	1094.	1068.	1050.
	15.0	1303.	1298.	1277.	1241.	1206.	1178.	1157.	1134.	1120.	1097.
	10.0	1305.	1300.	1282.	1261.	1237.	1216.	1191.	1174.	1161.	1147.
	5.0	1248.	1248.	1242.	1240.	1237.	1232.	1228.	1224.	1216.	1200.
	0.0	1207.	1207.	1207.	1207.	1207.	1207.	1207.	1207.	1207.	1207.

||
 PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB02336
 ISSUE DATE: 08/17/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 8 OF 9
 DATE SAMPLE TESTED: 08/17/16

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.	0.
175.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
165.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
155.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
145.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
135.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
125.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
115.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
105.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
95.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
90.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
87.5	2.	2.	1.	1.	1.	1.	1.	1.	1.	0.	0.
85.0	2.	2.	2.	1.	1.	1.	1.	1.	0.	0.	0.
82.5	2.	2.	2.	2.	1.	1.	1.	1.	1.	1.	1.
V 80.0	2.	2.	2.	2.	1.	1.	1.	1.	1.	1.	1.
E 77.5	3.	3.	2.	2.	1.	1.	1.	1.	1.	1.	1.
R 75.0	4.	3.	2.	2.	1.	1.	1.	1.	2.	2.	2.
T 72.5	7.	5.	3.	2.	2.	1.	1.	2.	3.	4.	3.
I 70.0	36.	15.	4.	2.	2.	1.	1.	2.	4.	4.	4.
C 67.5	99.	65.	6.	2.	2.	1.	1.	2.	3.	4.	4.
A 65.0	174.	133.	24.	3.	2.	1.	1.	2.	3.	4.	4.
L 62.5	236.	191.	66.	5.	2.	2.	2.	2.	3.	4.	4.
60.0	300.	253.	118.	11.	2.	2.	3.	3.	2.	3.	3.
A 57.5	369.	318.	174.	41.	4.	3.	5.	4.	2.	2.	3.
N 55.0	432.	377.	230.	86.	8.	4.	6.	6.	4.	3.	3.
G 52.5	477.	416.	288.	142.	29.	6.	7.	8.	8.	8.	9.
L 50.0	508.	460.	344.	202.	68.	10.	8.	10.	14.	17.	18.
E 47.5	549.	506.	395.	266.	123.	26.	11.	15.	20.	25.	26.
45.0	596.	553.	450.	329.	186.	67.	21.	23.	28.	34.	34.
44.0<<	616.	573.	471.	354.	214.	90.	30.	27.	32.	38.	39.
42.5	644.	602.	505.	390.	260.	131.	52.	37.	38.	44.	45.
40.0	693.	657.	565.	456.	341.	210.	112.	63.	55.	60.	59.
37.5	745.	714.	627.	527.	418.	300.	193.	120.	92.	85.	83.
35.0	799.	768.	691.	595.	498.	390.	281.	205.	161.	143.	137.
30.0	904.	876.	804.	727.	640.	567.	477.	406.	348.	330.	322.
25.0	981.	961.	899.	833.	763.	708.	649.	609.	562.	545.	537.
20.0	1038.	1023.	977.	930.	872.	832.	786.	762.	732.	720.	715.
15.0	1085.	1071.	1035.	996.	962.	931.	905.	891.	872.	866.	860.
10.0	1135.	1122.	1094.	1066.	1043.	1028.	1013.	1006.	993.	991.	985.
5.0	1193.	1182.	1162.	1145.	1128.	1124.	1116.	1116.	1112.	1115.	1113.
0.0	1207.	1207.	1207.	1207.	1207.	1207.	1207.	1207.	1207.	1207.	1207.

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB02336
ISSUE DATE: 08/17/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 9 OF 9
DATE SAMPLE TESTED: 08/17/16

5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	29
5- 10	83
10- 15	130
15- 20	170
20- 25	201
25- 30	221
30- 35	232
35- 40	236
40- 45	243
45- 50	246
50- 55	236
55- 60	209
60- 65	156
65- 70	90
70- 75	26
75- 80	3
80- 85	1
85- 90	0
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	111
0- 20	411
0- 30	833
0- 40	1301
0- 50	1791
0- 60	2236
0- 70	2483
0- 80	2512
0- 90	2513
0-100	2513
0-110	2513
0-120	2513
0-130	2513
0-140	2513
0-150	2513
0-160	2513
0-170	2513
0-180	2513

REPORT NUMBER: RAB02337
DATE: 8/17/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: SLIM18Y

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: CAST BROWN PAINTED FINNED METAL HOUSING, 1 CIRCUIT BOARD WITH 1 LED, MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH, CLEAR FLAT GLASS LENS IN CAST BROWN PAINTED METAL LENS FRAME.

LAMP: ONE WHITE MULTI-CHIP LIGHT EMITTING DIODE (LED), AIMED 20-DEGREES FROM VERTICAL BASE-UP POSITION.

DRIVER: RD12-36-A0500

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 N/A
CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202 2/26/17
OCEAN OPTICS QE65PRO Spectroradiometer 8/11/17
RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry 8/11/17

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: RAB02337
 DATE: 8/17/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: SLIM18Y

RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	2513 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4324
Chromaticity Ordinate y	0.4053
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2472
Chromaticity Ordinate v'	0.5212
Correlated Color Temp CCT (K)	3086
ANSI C78.377-2008 Duv	0.001
Total Radiant Flux (milliWatts)	7061 *
ELECTRICAL	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.083
Input Power (Watts)	21.0
Input Power Factor (%)	91.1
Input Current THD (%)	21.1
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
119.7	
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.172
Input Power (Watts)	20.4
Input Power Factor (%)	99.2
Input Current THD (%)	10.5
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
0.0	

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	70
R1 Light greyish red	67
R2 Dark greyish yellow	80
R3 Strong yellowish green	91
R4 Moderate yellowish green	67
R5 Light bluish green	66
R6 Light blue	72
R7 Light violet	78
R8 Light reddish purple	44
R9 Strong red	-35
R10 Strong yellow	53
R11 Strong green	60
R12 Strong blue	42
R13 Light yellowish pink (skin)	69
R14 Moderate olive green (leaf)	95

*NOTE:

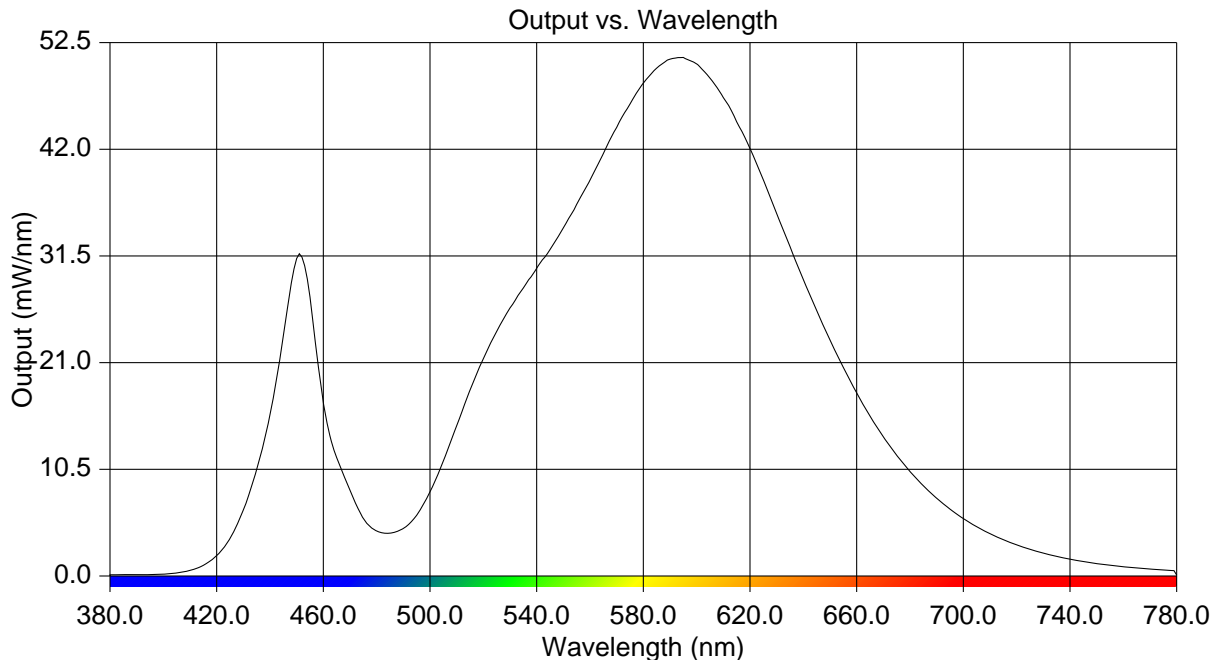
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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: RAB02337
 DATE: 8/17/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: SLIM18Y

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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.114	515	18.269	650	23.234
385	0.125	520	21.421	655	20.533
390	0.127	525	24.047	660	17.990
395	0.145	530	26.385	665	15.750
400	0.195	535	28.350	670	13.701
405	0.293	540	30.285	675	11.893
410	0.537	545	32.130	680	10.293
415	1.048	550	34.243	685	8.875
420	1.999	555	36.583	690	7.651
425	3.692	560	38.993	695	6.583
430	6.469	565	41.571	700	5.661
435	10.563	570	44.154	705	4.861
440	15.772	575	46.458	710	4.162
445	23.648	580	48.524	715	3.574
450	31.255	585	49.992	720	3.067
455	27.465	590	50.876	725	2.621
460	17.111	595	51.044	730	2.253
465	11.654	600	50.411	735	1.924
470	8.440	605	49.020	740	1.654
475	5.698	610	47.093	745	1.421
480	4.422	615	44.710	750	1.221
485	4.231	620	42.053	755	1.058
490	4.672	625	38.960	760	0.909
495	5.974	630	35.659	765	0.785
500	8.307	635	32.435	770	0.677
505	11.288	640	29.174	775	0.593
510	14.763	645	26.087	780	0.090



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CIE Chromaticity Diagram

