



8165 E Kaiser Blvd. Anaheim, CA 92808
 p. 714.282.2270
 f. 714.676.5558

Report No: L041609602

Date: 5/5/2016



NVLAP LAB CODE 200927-0

Report No: L041609602

Report Prepared For: GM LIGHTING
 9830 W 190th St, Torrance, CA 90503

Model Number: UCLED-16-WH-DIM-30

Test: Electrical and Photometric tests

Standards Used: Appropriate part or all test guidelines were used for test performed:
IESNA LM79: 2008 Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products
ANSI NEMA ANSLG C78.377: 2008 Specification of the Chromaticity of Solid State Lighting Products
ANSI C82.77:2002: Harmonic Emission Limits-Related Quality Requirements for Lighting Equipment

Description of Sample: Client submitted the sample. Catalog number is UCLED-16-WH-DIM-30. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Total lumens and electrical values are generated from Light Laboratory Report L041609601 by using length ratio of 2.0. Spectral color data are from Light Laboratory Report L041609601.

Sample Arrival Date: 5/3/16

Date of Tests: 5/4/16 - 5/4/16

Seasoning of Sample: No seasoning was performed in accordance with IESNA LM-79.

Equipment List

Equipment Used	Model No	Stock No	Calibration Due Date
Chroma Programmable AC Source	61604	PS-AC02	--
Yokogawa Digital Power Meter	WT210	MT-EL06-S1	11/18/16
Xitron Power Analyzer	2503AH	MT-EL01	11/30/16
ITECH DC Power Supply	IT6122	PSDC-03-S1	11/17/16
Fluke Digital Thermometer	52k/J	MT-TP02-GC	11/24/16
LLI Type C Goniophotometer System	RMG-C-MKII	CD-LL04-GC	--
LLI 2M Sphere	2MR97	CD-SN03-S2	--
LLI Spectroradiometer	SPR-3000	MT-SC01-S2	Before Use

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.



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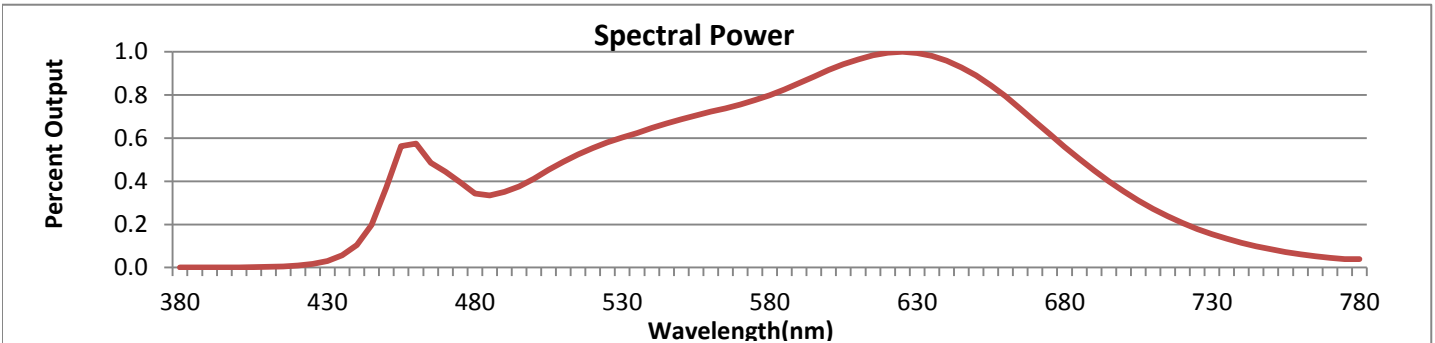


NVLAP LAB CODE 200927-0

Test Summary

Manufacturer:	GM LIGHTING
Model Number:	UCLED-16-WH-DIM-30
Driver Model Number:	CUSTOM DRIVER
Total Lumens:	752.01
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.15
Input Power (W):	14.64
Input Power Factor:	0.79
Current ATHD @ 120V(%):	9%
Current ATHD @ 277V(%):	N/A
Efficacy:	51
Color Rendering Index (CRI):	95
Correlated Color Temperature (K):	3178
Chromaticity Coordinate x:	0.4273
Chromaticity Coordinate y:	0.4052
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:45
Total Operating Time (Hours):	1:50
Off State Power(W):	0.00

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.



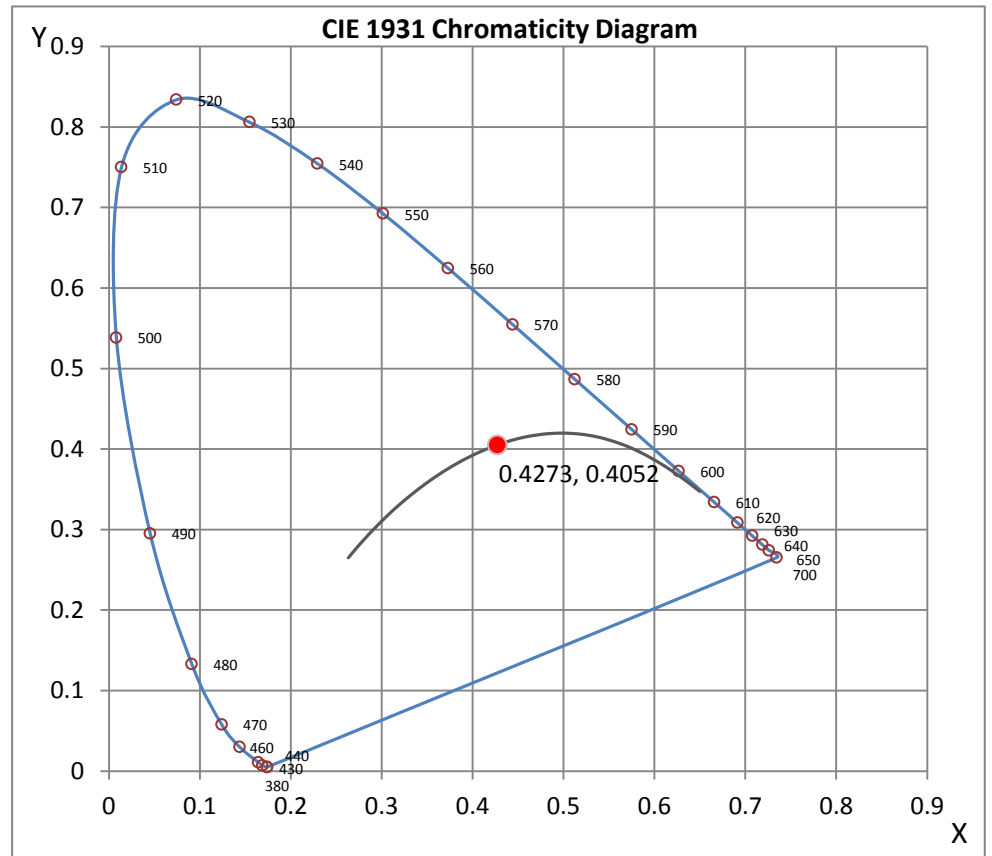
Wavelength	W/m ² nm	440	0.0006	510	0.0029	580	0.0047	650	0.0053	720	0.0012
380	0.0000	450	0.0022	520	0.0033	590	0.0051	660	0.0047	730	0.0009
390	0.0000	460	0.0034	530	0.0036	600	0.0054	670	0.0040	740	0.0007
400	0.0000	470	0.0026	540	0.0038	610	0.0057	680	0.0033	750	0.0005
410	0.0000	480	0.0020	550	0.0041	620	0.0059	690	0.0027	760	0.0004
420	0.0001	490	0.0021	560	0.0043	630	0.0059	700	0.0021	770	0.0003
430	0.0002	500	0.0024	570	0.0045	640	0.0057	710	0.0016	780	0.0002

CRI & CCT

x	0.4273
y	0.4052
u'	0.2439
v'	0.5204
CRI	94.80
CCT	3178
Duv	0.00190

R Values

R1	95.82
R2	98.68
R3	99.64
R4	92.79
R5	94.07
R6	97.39
R7	92.94
R8	87.28
R9	73.04
R10	95.20
R11	94.12
R12	76.79
R13	96.92
R14	99.08



*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

Test Methods

Photometric Measurements - Goniophotometer

A Custom Light Laboratory Type C Rotating Mirror Goniophotometer was used to measure candelas(intensity) at each angle of distribution as defined by IESNA for the appropriate fixture type.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Spectral Measurements - Integrating Sphere

A Sensing Spectroradiometer SPR-3000, in conjunction with Light Laboratory 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature(CCT) and the color rendering index(CRI) for each sample.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Disclaimers:

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Government.

Report Prepared by : Keyur Patel

Test Report Released by:



Jeff Ahn
Engineering Manager

Test Report Reviewed by:



Steve Kang
Quality Assurance

**Attached are photometric data reports. Total number of pages: 11*



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Photometric Test Report

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L041609602.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] L041609602
 [TESTLAB] LIGHT LABORATORY, INC.
 [ISSUEDATE] 5/4/2016
 [MANUFAC] GM LIGHTING
 [LUMCAT] UCLED-8-WH-DIM-30
 [LUMINAIRE] 16"Lumentask Undercabinet Lighting
 [BALLASTCAT] CUSTOM DRIVER
 [LAMPPOSITION] 0,0
 [LAMPCAT] N/A
 [OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
 [MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
 [TEST CONDITION] CANDELA AND ELECTRICAL VALUES ARE GENERATED FROM LIGHT
 [MORE] LABORATORY REPORT L041696001 BY USING LENGTH RATIO OF 2.0.
 [INPUT] 120VAC, 14.64W
 [TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	752
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	51
Total Luminaire Watts	14.64
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.08
Spacing Criterion (90-270)	1.06
Spacing Criterion (Diagonal)	1.14
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.21 ft
Luminous Width (90-270)	1.26 ft
Luminous Height	0.00 ft

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L041609602.IES

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	8701	9243	9680
55	6669	7009	7388
65	5933	5757	5624
75	6162	5364	4343
85	10119	7573	3031

**IES INDOOR REPORT
PHOTOMETRIC FILENAME : L041609602.IES**

CANDELA TABULATION

	<u>0</u>	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>25</u>	<u>30</u>	<u>35</u>	<u>40</u>	<u>45</u>
0	404.08	404.08	404.08	404.08	404.08	404.08	404.08	404.08	404.08	404.08
5	404.14	404.14	403.88	403.62	403.16	402.68	402.08	401.36	400.44	399.64
10	393.34	393.52	393.32	392.96	392.48	391.88	391.12	390.18	389.24	388.42
15	376.52	376.48	376.34	376.06	375.54	374.88	374.08	372.96	371.78	370.74
20	352.80	352.80	352.72	352.34	351.78	350.94	349.98	348.80	347.50	346.14
25	320.78	320.72	320.62	320.34	319.84	319.26	318.38	317.14	315.74	314.56
30	282.24	282.24	282.32	282.28	282.00	281.68	280.96	280.34	279.40	278.66
35	237.16	237.26	237.52	237.68	237.94	238.10	238.14	238.20	238.42	238.74
40	192.70	192.84	193.16	193.72	194.24	194.94	195.70	196.72	198.10	199.60
45	151.38	151.48	151.84	152.32	152.98	153.76	154.96	156.74	158.66	160.82
50	118.82	118.96	119.18	119.38	119.84	120.46	121.58	123.14	125.08	127.32
55	94.12	94.12	94.10	94.12	94.16	94.48	95.06	96.08	97.36	98.92
60	75.76	75.76	75.58	75.42	75.20	75.14	75.20	75.62	76.18	76.92
65	61.70	61.58	61.36	61.02	60.70	60.28	60.08	59.98	59.94	59.86
70	48.76	48.70	48.42	48.00	47.52	47.04	46.54	46.12	45.64	45.12
75	39.24	39.10	38.76	38.22	37.68	37.08	36.38	35.66	34.96	34.16
80	31.52	31.38	30.92	30.16	29.36	28.52	27.82	27.00	25.88	24.60
85	21.70	21.70	21.64	21.46	21.12	20.56	19.76	18.88	17.74	16.24
90	11.48	11.52	11.38	10.74	9.92	8.84	7.68	6.48	5.28	4.32

Vert. Horizontal Angles

	<u>50</u>	<u>55</u>	<u>60</u>	<u>65</u>	<u>70</u>	<u>75</u>	<u>80</u>	<u>85</u>	<u>90</u>	<u>95</u>
0	404.08	404.08	404.08	404.08	404.08	404.08	404.08	404.08	404.08	404.08
5	398.96	398.22	397.42	396.82	396.14	395.22	394.12	393.42	393.18	393.52
10	387.50	386.68	385.56	384.68	383.72	382.70	381.60	380.94	380.76	381.10
15	369.66	368.54	367.16	366.14	364.96	363.86	362.46	361.62	361.46	361.84
20	344.72	343.40	341.98	340.72	339.46	338.00	336.66	335.98	335.78	336.12
25	313.24	312.06	310.80	309.94	308.86	307.68	306.36	305.52	305.44	306.00
30	277.96	277.52	277.06	276.72	276.08	275.42	274.42	273.86	273.76	274.18
35	239.36	239.92	240.44	240.68	240.74	240.44	239.80	239.42	239.40	239.66
40	201.26	202.70	204.04	205.02	205.40	205.40	205.06	204.82	204.68	204.96
45	163.14	165.20	166.82	168.12	168.82	168.98	168.88	168.54	168.42	168.64
50	129.34	131.34	133.06	134.28	135.04	135.28	135.18	134.94	134.86	134.90
55	100.42	101.92	103.20	104.14	104.70	104.78	104.70	104.40	104.26	104.28
60	77.72	78.54	79.10	79.58	79.76	79.70	79.44	79.06	78.86	78.86
65	59.98	60.10	60.14	60.08	59.80	59.56	59.14	58.78	58.48	58.40
70	44.64	44.18	43.70	43.24	42.76	42.12	41.56	41.12	40.74	41.30
75	33.30	32.36	31.56	30.72	29.96	29.18	28.56	28.04	27.66	27.56
80	23.28	22.12	20.94	19.72	18.58	17.74	17.04	16.52	16.24	16.14
85	14.74	13.12	11.66	10.44	9.28	7.90	7.06	6.72	6.50	6.48
90	3.28	2.12	1.60	1.56	1.56	1.50	1.42	1.40	1.42	1.42

Vert. Horizontal Angles

	<u>100</u>	<u>105</u>	<u>110</u>	<u>115</u>	<u>120</u>	<u>125</u>	<u>130</u>	<u>135</u>	<u>140</u>	<u>145</u>
0	404.08	404.08	404.08	404.08	404.08	404.08	404.08	404.08	404.08	404.08
5	394.22	395.08	395.88	396.66	397.22	398.02	398.96	399.68	400.34	400.86
10	381.80	382.88	383.96	385.00	386.04	386.92	388.20	389.32	390.22	391.02
15	362.78	364.06	365.46	366.60	368.10	369.62	371.16	372.66	374.32	375.58
20	337.14	338.74	340.24	341.84	343.50	345.58	347.78	350.00	351.88	353.60
25	306.98	308.30	309.72	311.50	313.48	315.50	317.94	320.34	322.70	324.90
30	275.18	276.16	277.34	278.66	280.12	281.72	283.36	285.38	287.36	289.34
35	240.34	240.96	241.62	242.34	243.26	243.88	244.46	245.06	245.80	246.66

IES INDOOR REPORT
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CANDELA TABULATION - (Cont.)

40	205.30	205.68	205.96	206.10	205.92	205.44	204.92	203.98	203.12	202.38
45	168.84	168.88	168.78	168.36	167.50	166.00	164.26	162.06	159.94	158.14
50	135.00	134.82	134.44	133.64	132.32	130.30	128.00	125.54	122.90	120.42
55	104.22	103.90	103.32	102.30	100.92	99.00	96.84	94.38	91.98	89.82
60	78.72	78.38	77.78	76.88	75.70	74.10	72.38	70.44	68.50	66.86
65	58.10	57.96	57.36	56.70	55.72	54.62	53.36	52.18	50.82	49.56
70	41.04	40.80	40.50	40.04	39.44	38.72	37.98	37.18	35.80	35.06
75	27.42	27.28	27.02	26.76	26.48	26.12	25.70	25.26	24.80	24.38
80	16.04	15.94	15.86	15.72	15.66	15.52	15.34	15.20	15.02	14.82
85	6.44	6.44	6.44	6.48	6.58	6.68	6.72	6.72	6.72	6.68
90	1.46	1.50	1.60	1.60	1.64	1.60	1.56	1.56	1.54	1.56

Vert. Horizontal Angles

	<u>150</u>	<u>155</u>	<u>160</u>	<u>165</u>	<u>170</u>	<u>175</u>	<u>180</u>
0	404.08	404.08	404.08	404.08	404.08	404.08	404.08
5	401.42	402.08	402.68	403.26	403.58	403.76	403.78
10	391.92	392.86	393.52	394.22	394.56	394.78	394.94
15	376.66	377.94	378.98	379.74	380.38	380.72	380.90
20	355.44	357.04	358.52	359.68	360.38	360.86	360.86
25	326.94	328.92	330.52	331.74	332.58	333.10	333.24
30	291.32	292.96	294.56	295.78	296.48	296.92	297.06
35	247.50	248.50	249.40	250.18	250.60	250.76	250.80
40	201.86	201.68	201.82	201.90	201.82	201.64	201.54
45	156.40	155.36	154.62	154.14	153.72	153.36	153.20
50	118.52	116.92	115.80	114.96	114.48	114.06	113.88
55	87.80	86.34	85.22	84.52	83.94	83.66	83.56
60	65.32	64.10	63.20	62.64	62.30	62.02	62.06
65	48.56	47.72	47.04	46.62	46.40	46.24	46.26
70	34.40	33.84	33.40	33.08	32.94	32.84	32.84
75	23.96	23.58	23.34	23.14	23.06	23.06	23.10
80	14.62	14.40	14.30	14.22	14.20	14.16	14.20
85	6.62	6.50	6.44	6.40	6.36	6.36	6.34
90	1.56	1.60	1.56	1.60	1.56	1.54	1.54

IES INDOOR REPORT
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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	142.04	N.A.	18.90
0-30	287.57	N.A.	38.20
0-40	438.82	N.A.	58.40
0-60	651.95	N.A.	86.70
0-80	739.78	N.A.	98.40
0-90	752.01	N.A.	100.00
10-90	714.23	N.A.	95.00
20-40	296.78	N.A.	39.50
20-50	422.01	N.A.	56.10
40-70	269.36	N.A.	35.80
60-80	87.83	N.A.	11.70
70-80	31.61	N.A.	4.20
80-90	12.23	N.A.	1.60
90-110	0.00	N.A.	0.00
90-120	0.00	N.A.	0.00
90-130	0.00	N.A.	0.00
90-150	0.00	N.A.	0.00
90-180	0.00	N.A.	0.00
110-180	0.00	N.A.	0.00
0-180	752.01	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	37.78
10-20	104.26
20-30	145.53
30-40	151.25
40-50	125.23
50-60	87.90
60-70	56.22
70-80	31.61
80-90	12.23
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

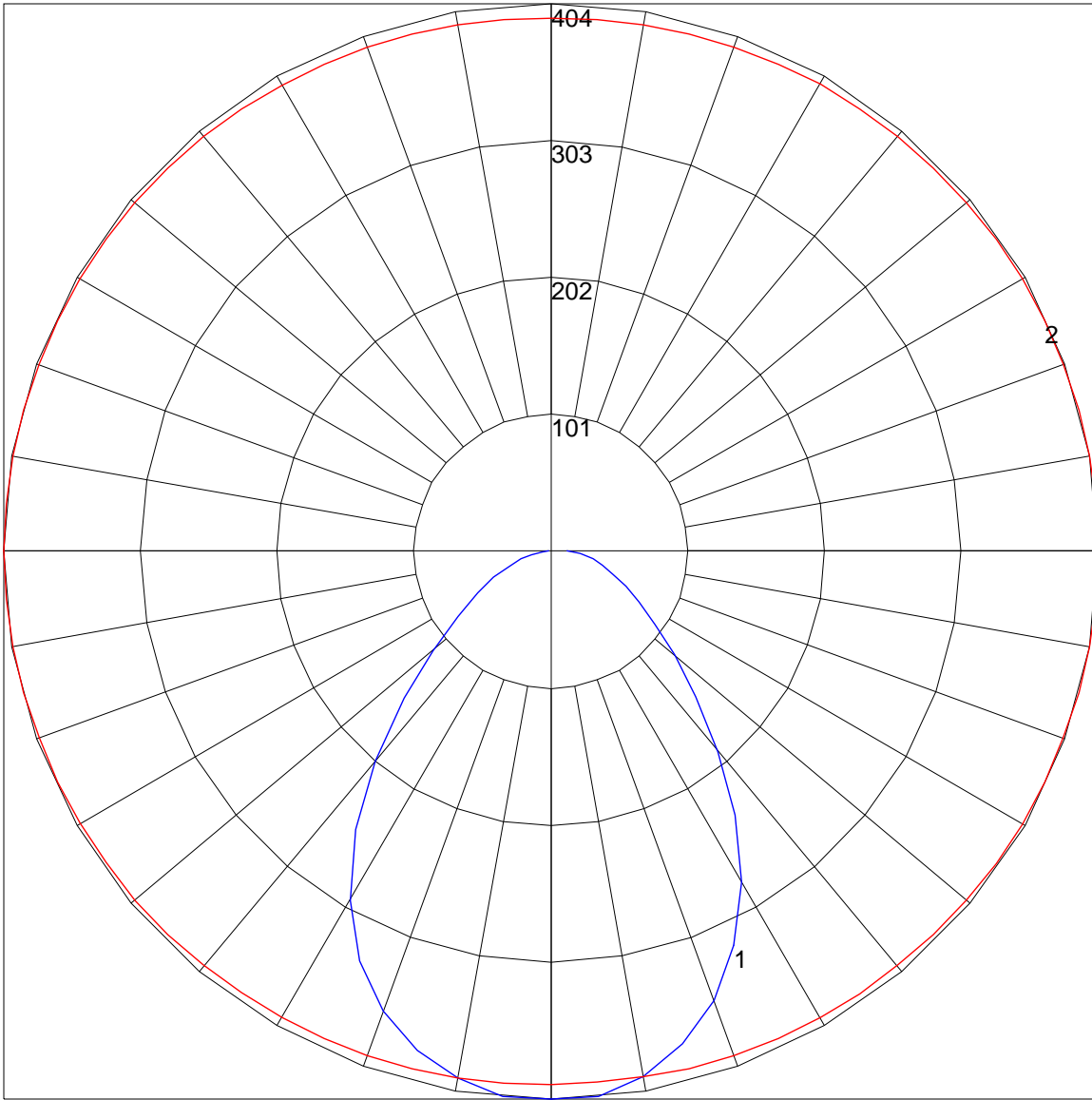
IES INDOOR REPORT
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	110	106	102	99	108	104	100	97	100	97	94	96	93	91	92	90	89	87
2	102	94	88	83	99	93	87	82	89	84	80	86	82	79	83	80	77	75
3	94	85	77	72	91	83	76	71	80	74	70	77	73	69	75	71	67	65
4	87	76	68	62	85	75	68	62	72	66	61	70	65	60	68	63	60	58
5	81	69	61	55	79	68	60	55	66	59	54	64	58	54	62	57	53	51
6	75	63	55	49	73	62	54	49	60	53	48	59	53	48	57	52	48	46
7	70	58	50	44	68	57	49	44	55	49	44	54	48	43	53	47	43	41
8	66	53	45	40	64	52	45	40	51	44	40	50	44	39	49	43	39	37
9	62	49	42	36	60	49	41	36	48	41	36	46	40	36	46	40	36	34
10	58	46	38	33	57	45	38	33	44	38	33	43	37	33	43	37	33	31

POLAR GRAPH



Maximum Candela = 404.14 Located At Horizontal Angle = 0, Vertical Angle = 5
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (5) (Through Max. Cd.)