LIGHT LABORATORY INC.
8165 E Kaiser Blvd. Anaheim, CA 92808
www.lightlaboratory.com

NVLAP TESTING
NVLAP LAB CODE 200927-0

Report No: L092511805 **Issue Date: 10/6/2025**
Amendment: N/A **Revision Date: N/A**

Report Prepared For: FX Luminaire / Lumascape
1940 Diamond Street, San Marcos, CA 92078

Model Number: TN-60-3LED-S-CW-FW

Test: Photometric/Colorimetric/Electrical Test

Standards Used: Appropriate part or all test guidelines were used for test performed:

IES LM79: 2008 Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products

ANSI/IES LM79: 2019 Approved Methods for Optical and Electrical Measurements of Solid-State Lighting Products

ANSI/NEMA C78.377: 2017 Specification of the Chromaticity of Solid State Lighting Products

ANSI C82.77-10:2014: Harmonic Emission Limits-Related Quality Requirements for Lighting Equipment

Description of Sample: Client submitted the sample. Received in working and undamaged condition. No modifications were necessary.

Special Test Condition: Fixture is tested with no special conditions.

Date of Tests: 9/30/25

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-S3	6/21/26
HP Power Supply	6032A	PS-DC05-S2	--
Fluke Digital Thermometer	52K/J	MT-TP05	6/25/26
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

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General Information	
Manufacturer:	FX Luminaire / Lumascape
Model Number:	TN-60-3LED-S-CW-FW
Driver Model Number:	Custom

Test Summary	
Total Lumens:	295.00
Efficacy:	76.67
Color Redering Index:	83.6
Correlated Color Temperature:	2980
Input Voltage (VAC/60Hz):	12.04
Input Current (Amp):	0.3485
Input Power (W):	3.85
Input Power Factor:	0.9168
Current ATHD (%):	41.8%

Test Condition	
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	1:10

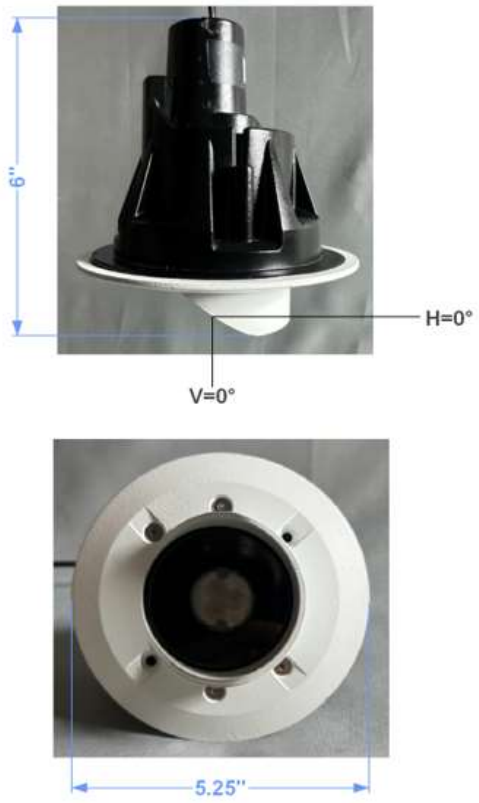
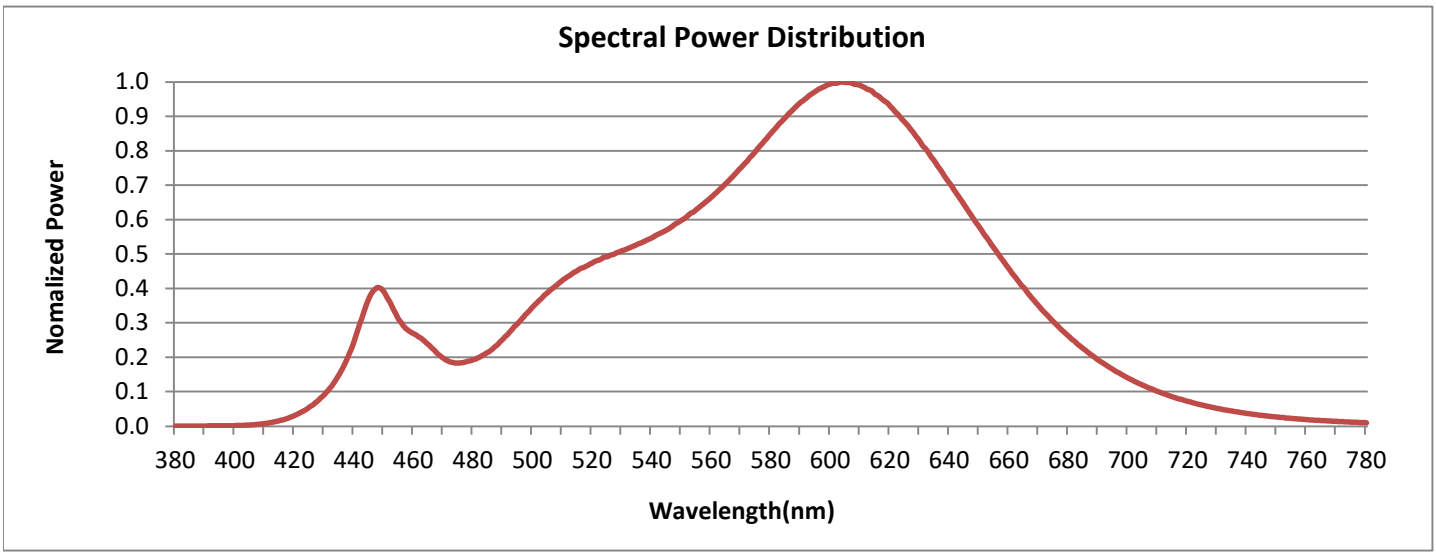


FIG. 1 LUMINAIRE

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Colorimetry Test Results

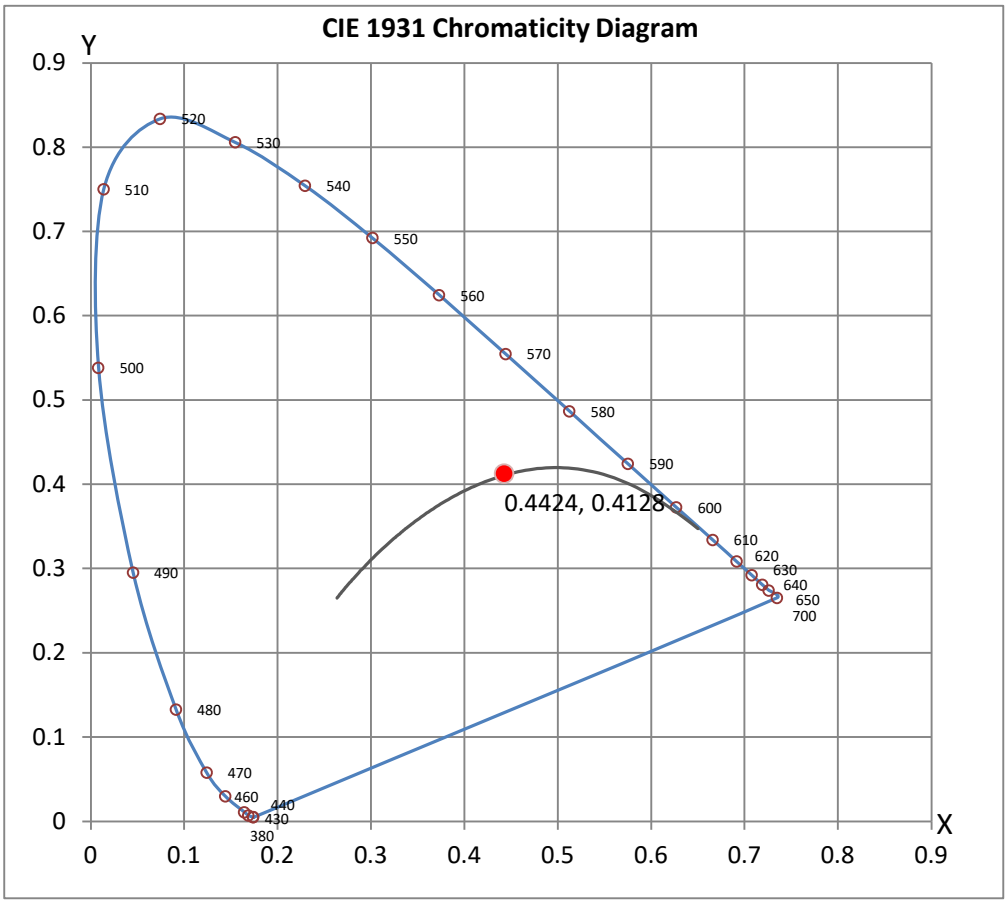


CRI & CCT

x	0.4424
y	0.4128
u'	0.2503
v'	0.5256
CRI	83.60
CCT	2980
Duv	0.00269

R Values

R1	81.49
R2	90.72
R3	97.48
R4	83.06
R5	82.43
R6	90.34
R7	83.70
R8	59.38
R9	7.37
R10	79.75
R11	83.41
R12	75.26
R13	83.53
R14	99.06
R15	72.93



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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:

The results related only to the samples as received and tested. This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the Federal Government.

Report Prepared by : JG

Test Report Reviewed by:

Steve Kang
Quality Assurance

**Attached are photometric data reports.*

Addendum A

Report Amendment Log

Date	Reference No.	Revision Description	Revision By

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Photometric Test Report

IES ROAD REPORT
PHOTOMETRIC FILENAME : L092511805.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L092511805
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
[ISSUEDATE] 10/3/2025
[MANUFAC] FX Luminaire / Lumascape
[LUMCAT] TN-60-3LED-S-CW-FW
[LUMINAIRE] TN60, 3LED, 3000K, Cowling, Flat White
[BALLASTCAT] Custom
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[INPUT] 12 VAC
[TEST PROCEDURE] IESNA:LM-79-19

CHARACTERISTICS

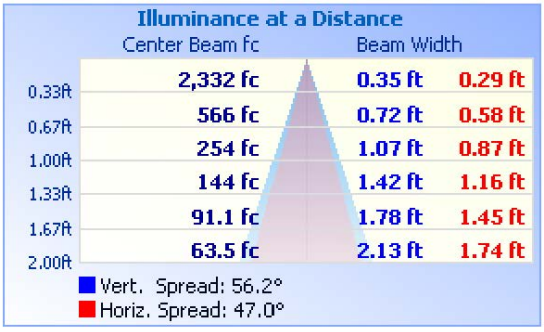
IES Classification	Type I
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	295
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	77
Total Luminaire Watts	3.85
Ballast Factor	1.00
Upward Waste Light Ratio	0.02
Maximum Candela	318
Maximum Candela Angle	10H 15V
Maximum Candela (<90 Degrees Vertical)	318
Maximum Candela Angle (<90 Degrees Vertical)	10H 15V
Maximum Candela At 90 Degrees Vertical	8 (2.7% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	11 (3.7% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

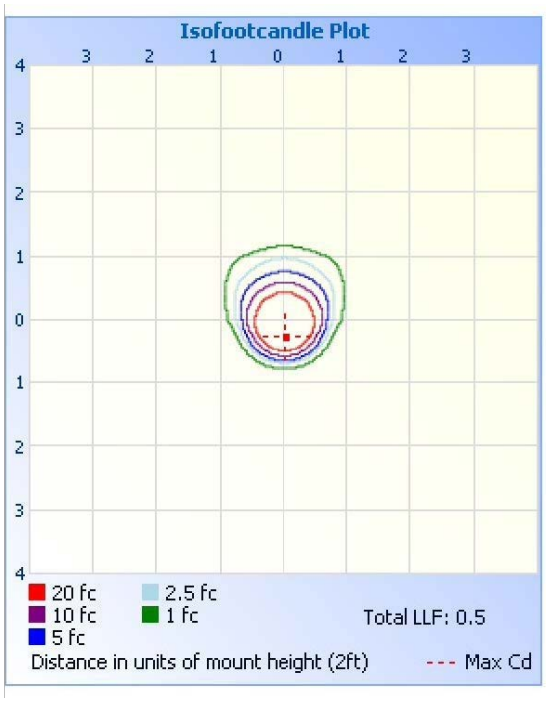
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Results derived from content of manufacturers photometric file.

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PHOTOMETRIC FILENAME : L092511805.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	103.1	N.A.	34.9
FM - Front-Medium (30-60)	18.0	N.A.	6.1
FH - Front-High (60-80)	2.4	N.A.	0.8
FVH - Front-Very High (80-90)	0.3	N.A.	0.1
BL - Back-Low (0-30)	99.8	N.A.	33.8
BM - Back-Medium (30-60)	51.9	N.A.	17.6
BH - Back-High (60-80)	9.9	N.A.	3.4
BVH - Back-Very High (80-90)	3.7	N.A.	1.3
UL - Uplight-Low (90-100)	2.1	N.A.	0.7
UH - Uplight-High (100-180)	4.0	N.A.	1.4
Total	295.2	N.A.	100.0
BUG Rating	B0-U1-G0		





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CANDELA TABULATION

Vert. Angles	Horizontal Angles									
	0	**5**	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**
0	254	254	254	254	254	254	254	254	254	254
5	263	263	262	262	263	262	262	263	263	263
10	297	296	297	296	294	293	293	293	293	293
15	318	317	318	316	314	312	312	312	312	311
20	292	292	292	289	288	285	284	283	283	283
25	222	222	222	222	222	222	220	222	222	223
30	111	111	111	111	111	110	108	106	104	102
35	23	23	24	28	30	31	33	34	35	35
40	3	3	3	3	3	4	4	5	5	5
45	2	2	2	2	3	3	3	3	4	4
50	2	2	2	2	2	3	3	3	3	4
55	2	2	2	2	2	3	3	3	3	4
60	2	2	2	2	2	2	2	3	3	4
65	1	1	1	2	2	2	2	2	3	3
70	0	0	1	0	1	1	1	1	2	2
75	0	0	0	0	0	0	1	1	1	1
80	1	0	0	0	1	0	0	0	0	1
85	1	1	0	0	0	0	1	0	0	0
90	1	1	0	0	0	0	0	1	1	0
95	1	0	1	1	1	0	1	1	1	0
100	1	1	0	1	0	0	1	0	1	0
105	1	0	1	0	0	0	1	0	0	1
110	1	0	0	0	0	0	0	0	0	1
115	0	0	1	0	0	0	0	0	0	0
120	1	1	1	0	0	0	1	0	0	0
125	1	0	0	1	0	0	1	1	1	0
130	0	0	1	1	0	1	1	1	1	1
135	1	1	1	1	1	1	1	1	1	1
140	1	1	1	1	1	1	1	1	1	1
145	1	1	1	1	1	1	1	1	1	1
150	2	2	2	2	2	2	2	2	2	2
155	2	2	2	2	2	2	2	2	2	2
160	3	2	2	2	2	2	2	2	2	2
165	3	3	2	3	3	2	3	2	3	3
170	3	3	3	3	3	3	3	3	3	3
175	3	3	3	3	3	3	3	3	3	3
180	3	3	3	3	3	3	3	3	3	3

Vert. Angles	Horizontal Angles									
	50	**55**	**60**	**65**	**70**	**75**	**80**	**85**	**90**	**95**
0	254	254	254	254	254	254	254	254	254	254
5	264	264	265	264	265	265	265	265	264	264
10	293	290	290	290	290	289	288	288	288	287
15	310	308	307	306	305	305	305	304	303	301
20	283	282	281	281	281	280	280	279	279	278
25	223	223	223	222	222	223	223	222	220	219
30	101	102	103	107	113	122	130	138	143	147
35	35	36	36	37	39	40	43	47	52	60
40	6	6	7	8	8	11	14	19	25	30
45	4	5	5	5	6	7	7	8	10	11
50	4	5	5	5	6	6	6	7	7	8
55	4	4	5	5	6	6	6	7	7	7

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PHOTOMETRIC FILENAME : L092511805.IES

CANDELA TABULATION - (Cont.)

60	4	4	5	5	5	6	6	6	7	7
65	3	4	4	5	5	5	6	6	6	7
70	2	3	3	3	4	4	5	5	6	6
75	1	2	2	2	2	3	3	4	5	5
80	1	1	1	1	1	2	2	3	3	4
85	0	0	0	0	1	1	1	1	2	2
90	0	0	0	0	0	0	0	0	0	1
95	0	0	0	0	0	0	0	1	0	0
100	0	0	1	0	0	0	0	0	0	0
105	1	0	1	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	1	0	0	0	0
120	0	0	0	0	0	0	1	0	1	0
125	0	0	0	0	1	0	0	0	1	0
130	1	1	0	1	0	1	0	0	0	0
135	1	1	1	1	1	1	1	1	1	1
140	1	1	1	1	1	1	1	1	1	1
145	1	1	1	1	1	1	1	1	1	1
150	2	2	2	2	2	2	2	2	2	2
155	2	2	2	2	2	2	2	2	2	2
160	2	2	2	2	2	2	2	2	2	2
165	3	3	3	2	3	2	2	2	3	2
170	2	3	3	3	3	3	3	3	3	3
175	3	3	3	3	3	3	3	3	3	3
180	3	3	3	3	3	3	3	3	3	3

Vert. Angles	**Horizontal Angles**									
	100	**105**	**110**	**115**	**120**	**125**	**130**	**135**	**140**	**145**
0	254	254	254	254	254	254	254	254	254	254
5	264	264	263	263	262	261	260	259	259	258
10	286	284	283	283	281	281	281	280	278	276
15	300	298	296	295	295	294	294	292	290	288
20	276	273	272	271	269	268	267	265	264	262
25	218	217	216	215	214	213	212	211	209	208
30	148	149	149	148	147	146	146	145	144	143
35	72	82	89	94	99	100	100	100	99	98
40	33	36	41	51	58	64	68	71	72	72
45	13	18	24	28	31	38	43	45	47	48
50	8	10	11	13	18	22	25	31	33	33
55	8	8	10	10	11	11	12	13	14	16
60	8	8	8	10	10	10	11	11	11	12
65	7	8	8	8	10	10	11	11	11	11
70	7	7	8	8	8	10	10	11	11	11
75	6	6	7	7	8	8	10	10	11	11
80	4	5	6	6	7	7	8	8	10	10
85	3	4	4	5	6	6	7	7	8	8
90	1	2	3	3	4	5	5	6	6	7
95	0	1	1	2	2	3	3	4	4	5
100	0	0	0	1	1	1	2	2	2	2
105	0	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	1	0
120	0	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	1	0	0	1

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Results derived from content of manufacturers photometric file.

CANDELA TABULATION - (Cont.)

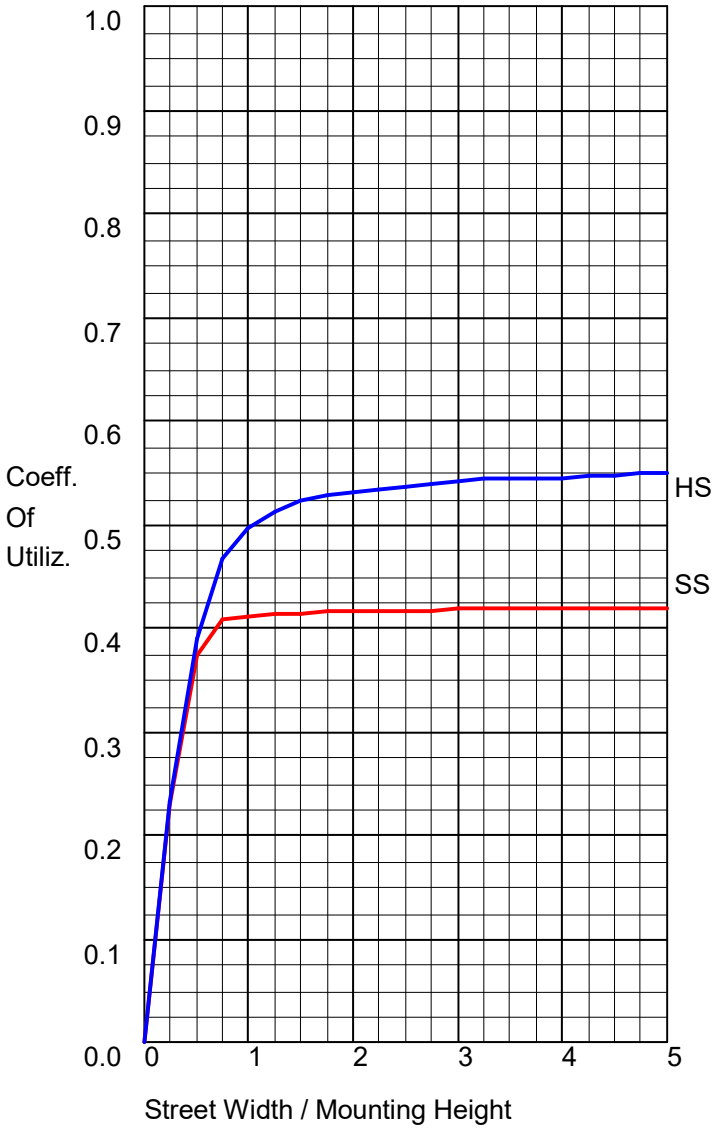
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140	1	1	1	1	1	1	1	1	1	1
145	1	1	1	1	1	1	1	1	1	1
150	2	2	2	2	2	2	2	2	2	2
155	2	2	2	2	2	2	2	2	2	2
160	2	2	2	2	2	2	2	2	2	2
165	3	3	2	2	2	2	2	2	2	2
170	3	3	3	3	2	3	3	3	2	2
175	3	3	3	3	3	3	3	3	3	3
180	3	3	3	3	3	3	3	3	3	3

Vert. Angles	**Horizontal Angles**						
	150	**155**	**160**	**165**	**170**	**175**	**180**
0	254	254	254	254	254	254	254
5	257	257	255	255	255	254	253
10	275	275	275	273	272	272	273
15	286	284	283	283	282	281	282
20	260	259	259	257	255	255	255
25	206	204	202	202	201	200	199
30	142	141	141	140	139	139	139
35	96	95	95	95	95	94	94
40	72	71	71	71	72	71	72
45	49	51	52	53	53	54	54
50	31	30	29	28	28	28	28
55	18	19	20	20	20	20	21
60	12	13	13	13	13	13	13
65	12	12	12	12	12	12	12
70	11	12	12	12	12	12	12
75	11	11	12	12	12	12	12
80	11	11	11	11	11	11	11
85	8	10	10	10	10	10	10
90	7	8	8	8	8	8	8
95	5	5	6	6	6	6	6
100	3	3	3	3	3	4	4
105	1	1	1	1	1	1	1
110	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0
130	0	1	0	0	0	0	0
135	1	1	1	1	1	0	1
140	1	1	1	1	1	1	1
145	1	1	1	1	1	1	1
150	2	2	2	2	2	2	2
155	2	2	2	2	2	2	2
160	2	2	2	2	2	2	2
165	2	2	2	2	2	2	2
170	3	3	2	3	3	3	2
175	3	3	3	3	3	3	3
180	3	3	3	3	3	3	3

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COEFFICIENTS OF UTILIZATION



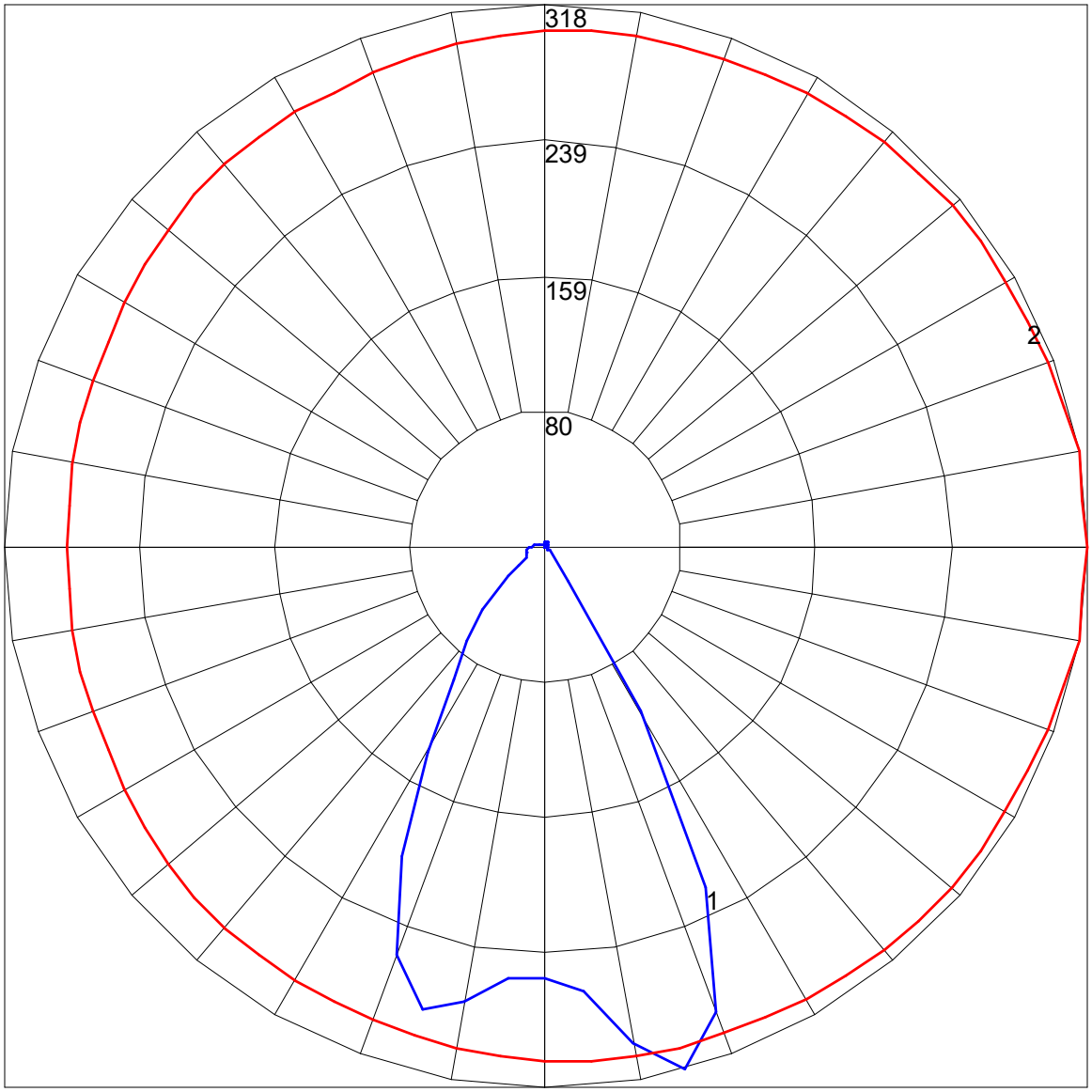
FLUX DISTRIBUTION

	Lumens	Percent Of Luminaire
Downward Street Side	123.7	41.9
Downward House Side	165.3	56.0
Downward Total	289.0	97.9
Upward Street Side	2.3	0.8
Upward House Side	3.9	1.3
Upward Total	6.2	2.1
Total Flux	295.2	100.0

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POLAR GRAPH

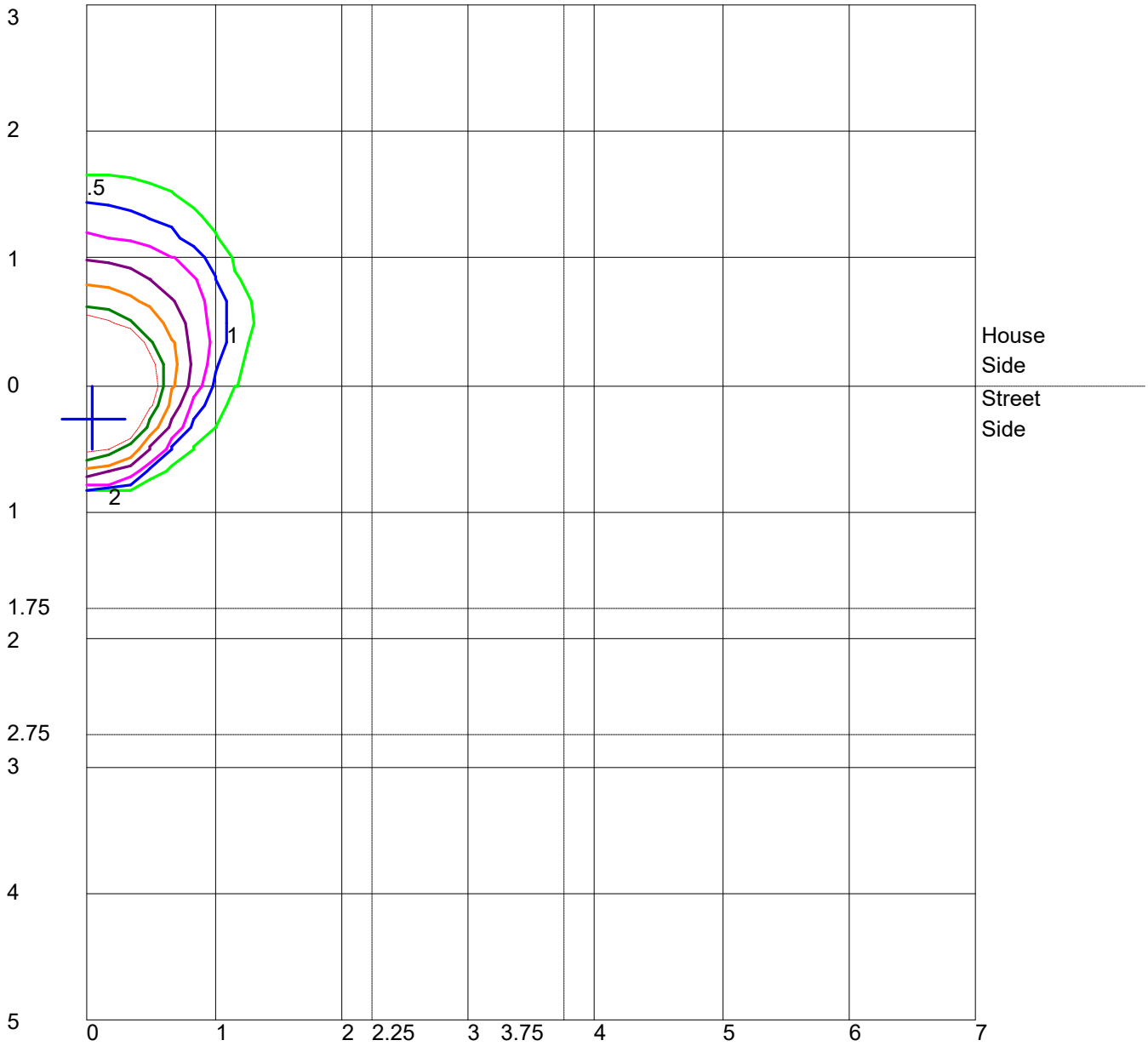


Maximum Candela = 318 Located At Horizontal Angle = 10, Vertical Angle = 15
1 - Vertical Plane Through Horizontal Angles (10 - 190) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (15) (Through Max. Cd.)

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ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



Distance In Units Of Mounting Height
Values Based On 2 Foot Mounting Height
1/2 Maximum Candela Trace Shown As Dashed Curve
(+) = Maximum Candela Point

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