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

NVLAP TESTING
NVLAP LAB CODE 200927-0

Report No: L092511804 **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-GR-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-GR-FW
Driver Model Number:	Custom

Test Summary	
Total Lumens:	250.00
Efficacy:	64.92
Color Redering Index:	83.5
Correlated Color Temperature:	2974
Input Voltage (VAC/60Hz):	12.06
Input Current (Amp):	0.3486
Input Power (W):	3.85
Input Power Factor:	0.9162
Current ATHD (%):	42.2%

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

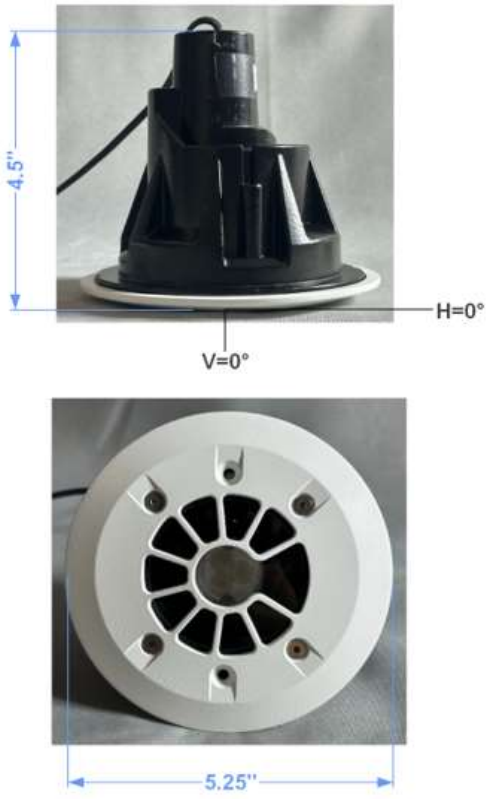


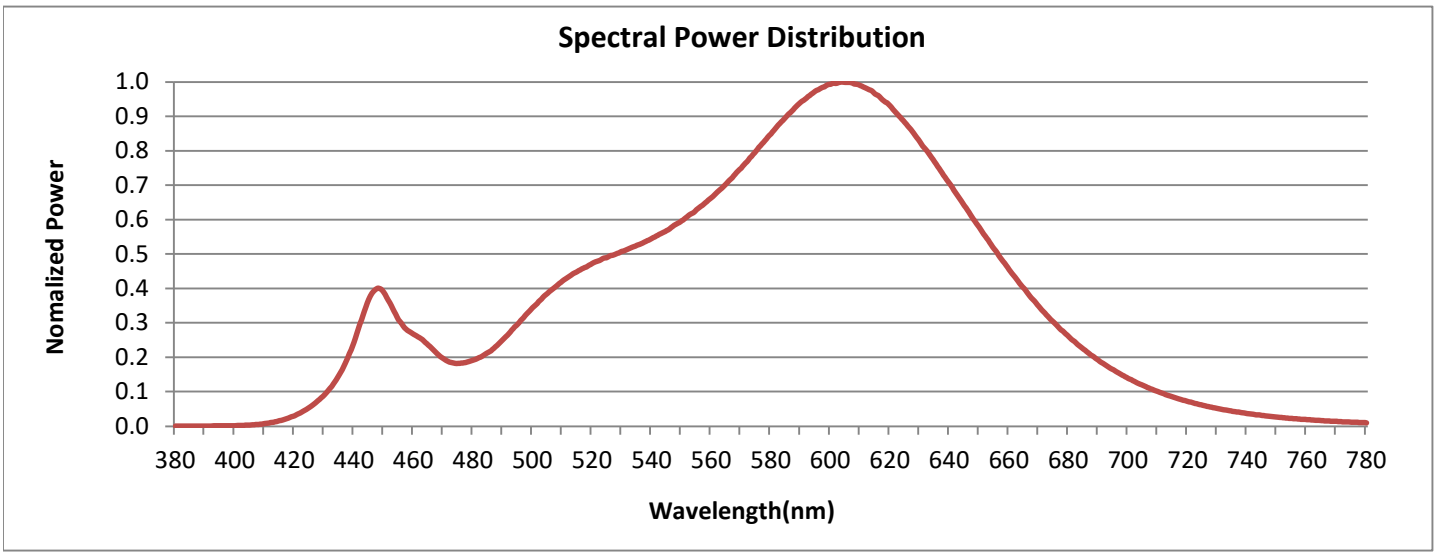
FIG. 1 LUMINAIRE

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Colorimetry Test Results

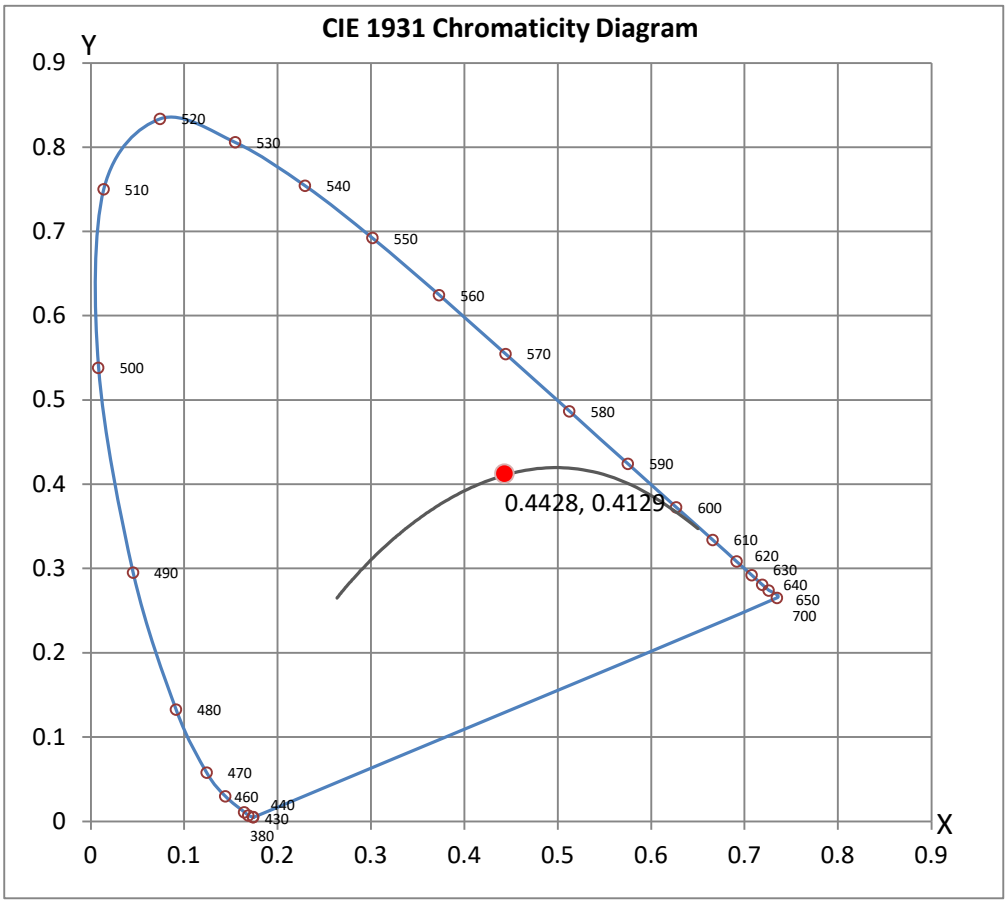


CRI & CCT

x	0.4428
y	0.4129
u'	0.2506
v'	0.5257
CRI	83.50
CCT	2974
Duv	0.00268

R Values

R1	81.41
R2	90.70
R3	97.45
R4	82.97
R5	82.36
R6	90.32
R7	83.61
R8	59.18
R9	7.01
R10	79.70
R11	83.31
R12	75.23
R13	83.46
R14	99.05
R15	72.83



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 : L092511804.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L092511804
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
[ISSUEDATE] 10/3/2025
[MANUFAC] FX Luminaire / Lumascape
[LUMCAT] TN-60-3LED-S-GR-FW
[LUMINAIRE] TN60, 3LED, 3000K, Grill, 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

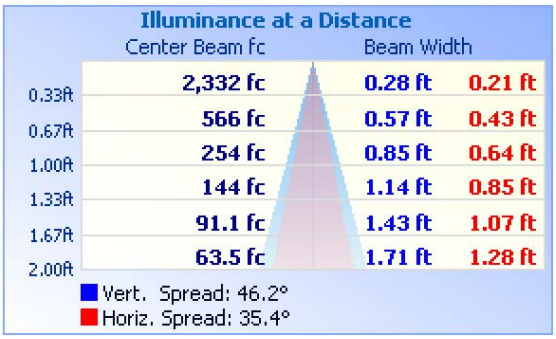
IES Classification	Type I
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	250
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	65
Total Luminaire Watts	3.85
Ballast Factor	1.00
Upward Waste Light Ratio	0.01
Maximum Candela	324
Maximum Candela Angle	0H 15V
Maximum Candela (<90 Degrees Vertical)	324
Maximum Candela Angle (<90 Degrees Vertical)	0H 15V
Maximum Candela At 90 Degrees Vertical	1 (0.4% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	4 (1.6% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

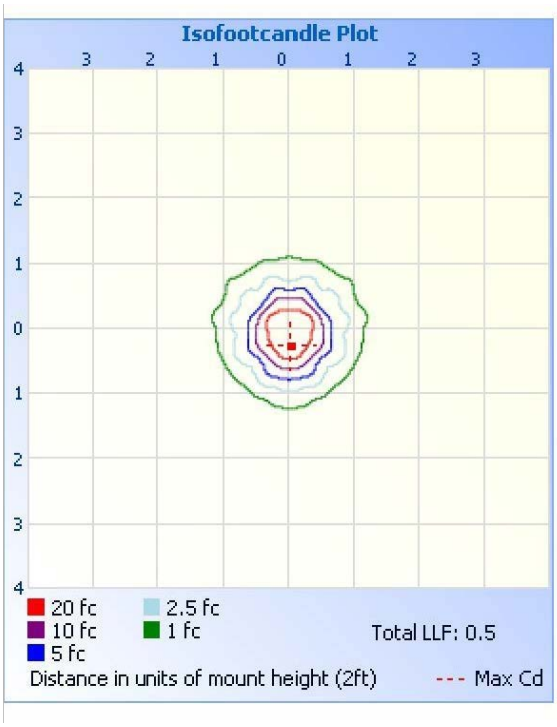
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Results derived from content of manufacturers photometric file.

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LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	84.9	N.A.	33.9
FM - Front-Medium (30-60)	44.9	N.A.	18.0
FH - Front-High (60-80)	5.2	N.A.	2.1
FVH - Front-Very High (80-90)	1.0	N.A.	0.4
BL - Back-Low (0-30)	69.6	N.A.	27.8
BM - Back-Medium (30-60)	36.8	N.A.	14.7
BH - Back-High (60-80)	4.2	N.A.	1.7
BVH - Back-Very High (80-90)	0.6	N.A.	0.2
UL - Uplight-Low (90-100)	0.2	N.A.	0.1
UH - Uplight-High (100-180)	3.0	N.A.	1.2
Total	250.4	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	266	266	266	267	266	266	266	266	266	267
10	302	302	301	301	300	298	294	292	288	284
15	324	323	319	313	304	294	281	271	263	255
20	281	280	276	267	253	237	224	211	204	198
25	206	205	204	197	186	171	158	151	148	147
30	133	134	135	134	127	120	110	101	95	94
35	90	89	90	90	91	91	82	68	57	51
40	72	70	65	64	68	70	64	53	47	43
45	43	43	39	35	39	43	41	36	38	41
50	32	32	32	28	24	25	24	19	19	21
55	11	10	10	10	11	12	12	10	13	15
60	6	6	6	6	6	6	6	6	6	6
65	5	5	5	5	5	6	6	6	6	6
70	5	5	5	5	5	5	5	5	5	5
75	5	4	5	5	5	5	5	5	5	5
80	4	4	3	4	4	4	3	3	3	3
85	2	2	2	2	2	2	2	2	2	2
90	1	1	1	1	1	1	1	1	1	1
95	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0
105	1	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	1	0	0	0
115	0	0	0	0	0	0	0	0	0	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	0	0	0	1
135	1	0	0	1	1	0	1	0	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	1	1	1	1	1	1	1	1	1	1
155	1	2	2	2	2	1	2	2	1	2
160	2	2	2	2	2	2	2	2	2	2
165	2	2	2	2	2	2	2	2	2	2
170	2	2	2	2	2	2	2	2	2	2
175	2	2	2	2	2	2	2	2	2	2
180	2	2	2	2	2	2	2	2	2	2

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	266	266	266	265	265	264	263	262	261	260
10	279	275	270	266	263	262	261	259	259	257
15	247	240	232	227	225	223	223	225	229	233
20	193	189	187	182	178	175	174	175	179	183
25	143	142	144	145	142	136	130	128	127	127
30	92	100	108	109	104	92	81	75	73	72
35	54	61	70	72	67	58	51	47	51	57
40	47	51	55	57	54	50	45	42	48	54
45	41	42	46	48	46	41	40	38	37	41
50	21	20	17	18	20	21	22	21	22	28
55	15	15	13	12	15	15	15	14	11	12

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PHOTOMETRIC FILENAME : L092511804.IES

CANDELA TABULATION - (Cont.)

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

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	259	258	257	255	254	252	252	252	251	250
10	255	252	250	248	247	247	246	245	244	243
15	235	239	240	240	237	235	233	229	224	216
20	189	194	197	197	196	193	190	182	176	170
25	126	126	124	121	117	113	113	113	114	118
30	72	73	71	66	59	56	56	56	59	66
35	60	59	55	52	50	49	48	45	41	43
40	59	56	47	45	50	55	53	48	41	38
45	46	41	33	31	36	39	38	35	33	32
50	31	27	23	24	24	29	30	25	22	23
55	14	14	12	11	10	11	12	10	10	13
60	6	6	6	6	6	6	6	6	5	6
65	6	6	5	5	5	5	5	5	5	5
70	5	5	5	5	5	5	4	4	4	4
75	4	4	4	4	4	4	4	4	3	3
80	3	3	3	2	2	3	2	2	2	2
85	1	1	1	1	1	1	1	1	1	1
90	0	0	0	0	1	0	0	0	1	0
95	0	1	0	0	0	0	0	0	1	0
100	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	1	0	0	0
110	0	0	0	0	0	0	0	1	0	0
115	0	0	1	0	0	1	0	0	0	0
120	0	0	0	0	0	0	0	0	0	1
125	0	0	0	0	0	0	0	0	0	0
130	0	0	0	1	0	0	0	0	0	0

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Results derived from content of manufacturers photometric file.

CANDELA TABULATION - (Cont.)

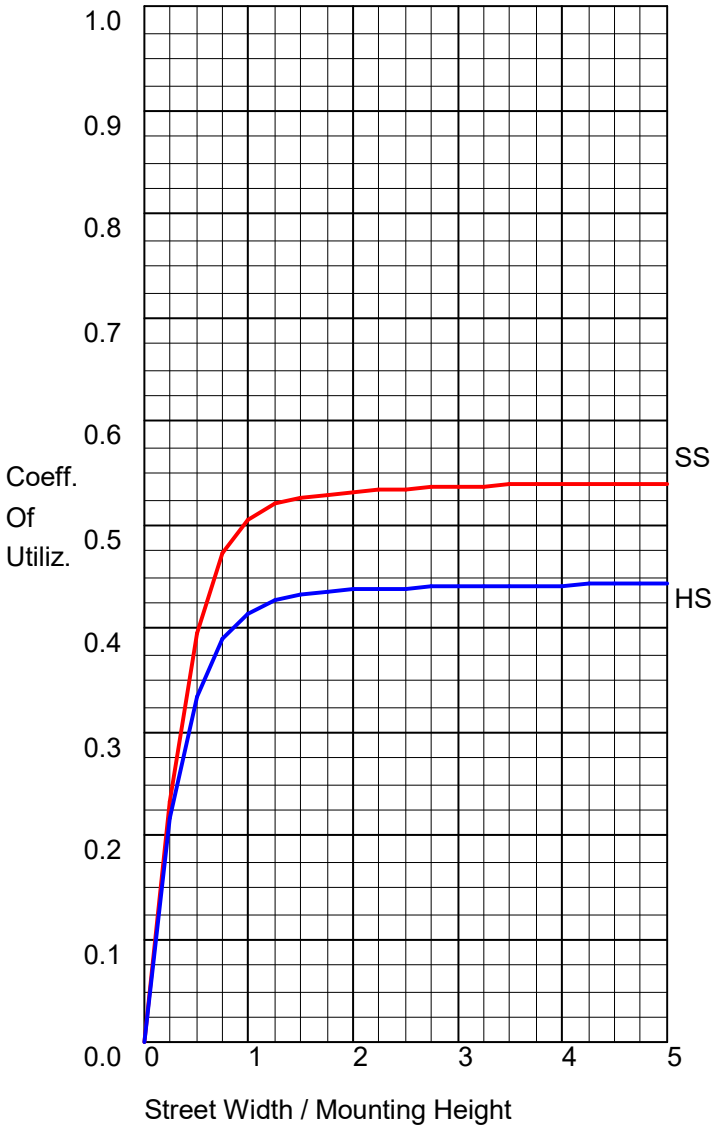
135	1	1	1	1	1	1	1	1	1	1
140	1	1	1	1	1	1	1	1	1	1
145	1	1	1	1	1	1	1	1	1	1
150	1	2	2	1	1	1	2	2	1	1
155	2	2	2	2	2	2	2	2	2	2
160	2	2	2	2	2	2	2	2	2	2
165	2	2	2	2	2	2	2	2	2	2
170	2	2	2	2	2	2	2	2	2	2
175	2	2	2	2	2	2	2	2	2	2
180	2	2	2	2	2	2	2	2	2	2

Vert. Angles	**Horizontal Angles**						
	150	**155**	**160**	**165**	**170**	**175**	**180**
0	254	254	254	254	254	254	254
5	249	249	250	250	250	250	250
10	241	240	239	237	237	236	235
15	209	204	199	195	193	192	191
20	164	160	156	153	149	147	146
25	122	126	126	122	118	113	112
30	76	84	88	86	81	76	75
35	49	55	57	54	49	42	39
40	41	47	48	45	39	36	34
45	34	39	40	37	34	37	39
50	21	21	21	18	17	19	19
55	13	14	13	10	12	14	14
60	6	5	5	5	5	5	5
65	4	4	4	4	4	4	4
70	4	4	4	3	3	3	3
75	3	3	3	3	3	3	3
80	2	2	2	2	2	2	2
85	1	1	1	1	1	1	1
90	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0
100	0	1	0	1	0	1	0
105	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0
120	0	0	0	0	0	1	0
125	0	1	0	0	0	0	0
130	1	0	0	0	1	1	0
135	1	1	1	1	1	1	1
140	1	1	1	1	1	1	1
145	1	1	1	1	1	1	1
150	1	1	2	2	2	1	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	2	2	2	2	2	2	2
175	2	2	2	2	2	2	2
180	2	2	2	2	2	2	2

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COEFFICIENTS OF UTILIZATION



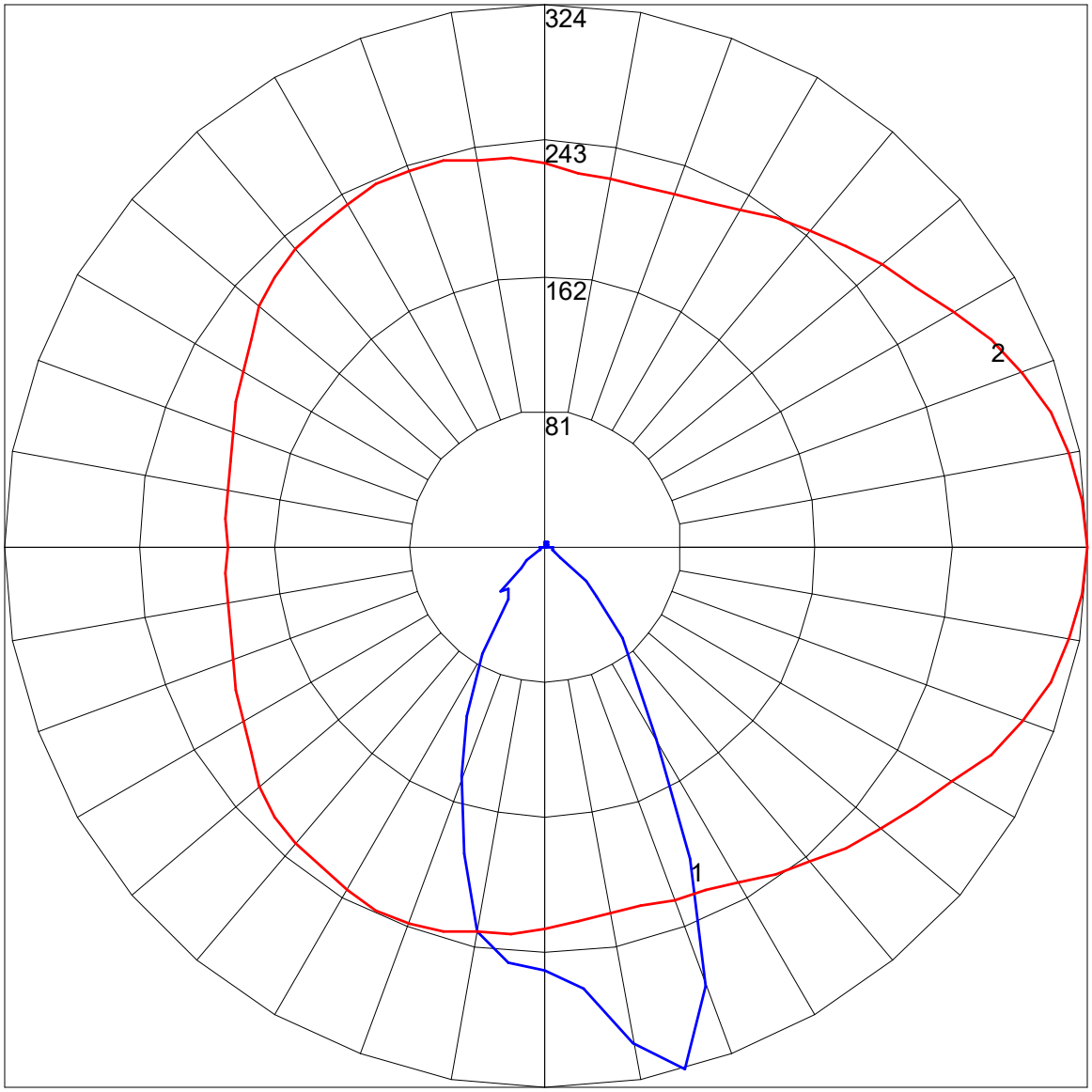
FLUX DISTRIBUTION

	Lumens	Percent Of Luminaire
Downward Street Side	136.0	54.3
Downward House Side	111.2	44.4
Downward Total	247.2	98.7
Upward Street Side	1.5	0.6
Upward House Side	1.7	0.7
Upward Total	3.2	1.3
Total Flux	250.4	100.0

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POLAR GRAPH

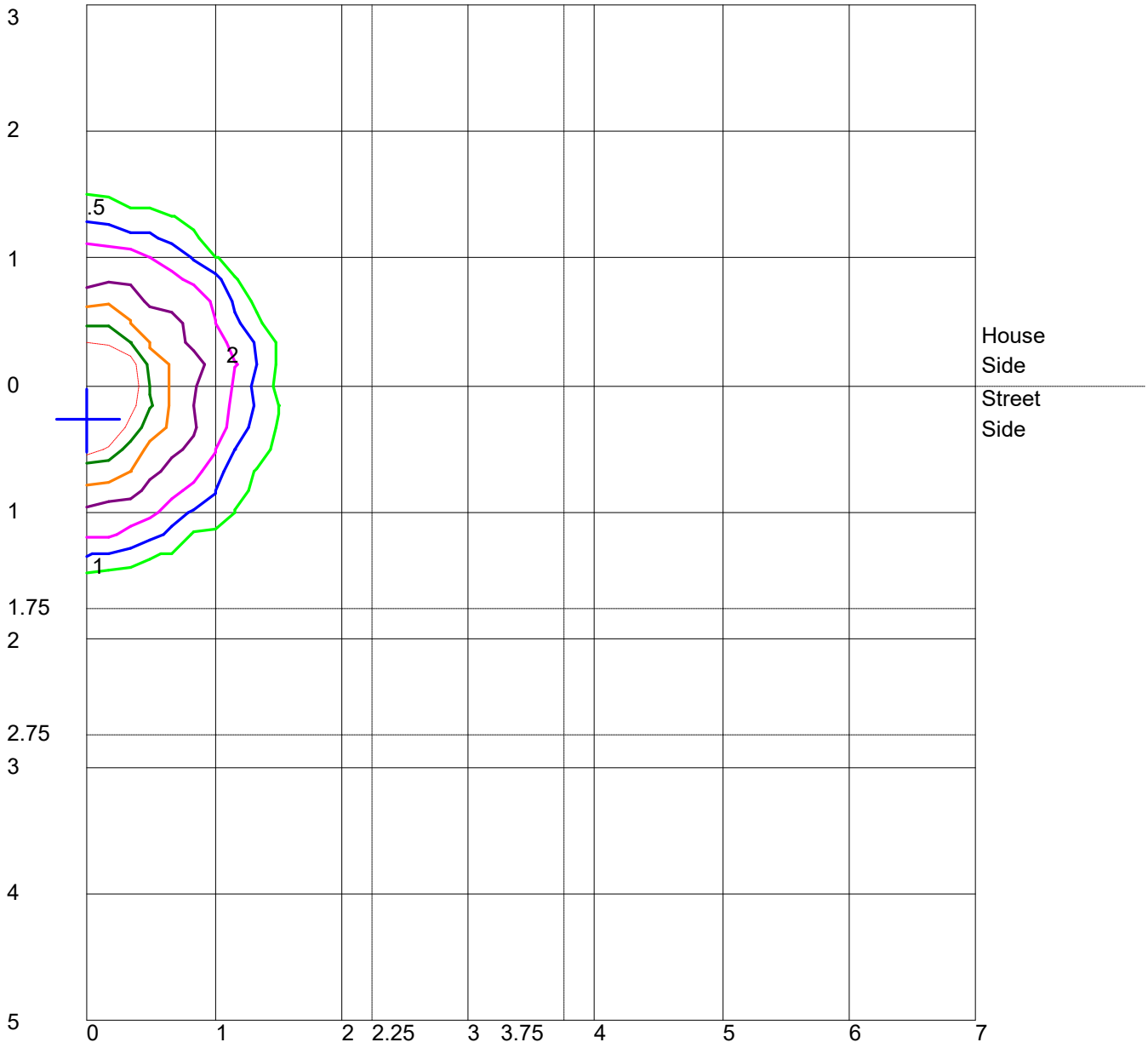


Maximum Candela = 324 Located At Horizontal Angle = 0, Vertical Angle = 15
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (15) (Through Max. Cd.)

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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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