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

NVLAP TESTING
NVLAP LAB CODE 200927-0

Report No: L092511810 **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-60-9LED-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: 10/1/25

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

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

NVLAP TESTING
NVLAP LAB CODE 200927-0

General Information	
Manufacturer:	FX Luminaire / Lumascape
Model Number:	TN-60-9LED-S-GR-FW
Driver Model Number:	Custom

Test Summary	
Total Lumens:	756.00
Efficacy:	69.51
Color Redering Index:	83.4
Correlated Color Temperature:	2981
Input Voltage (VAC/60Hz):	12.00
Input Current (Amp):	0.9925
Input Power (W):	10.88
Input Power Factor:	0.9129
Current ATHD (%):	41.1%

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

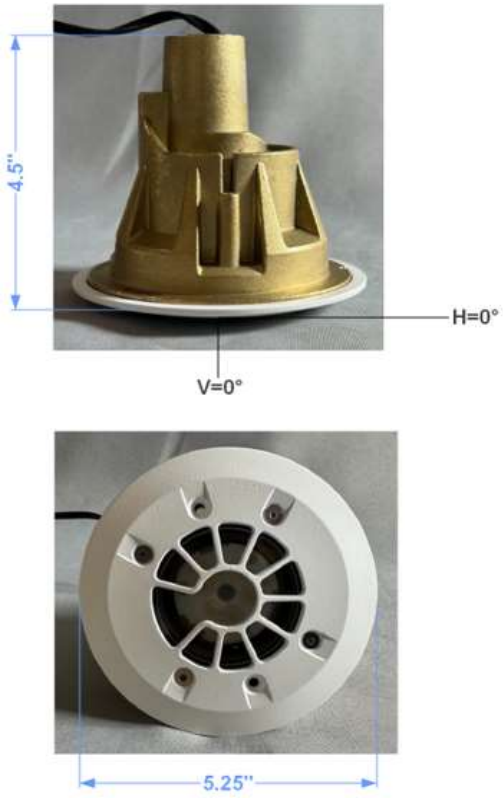


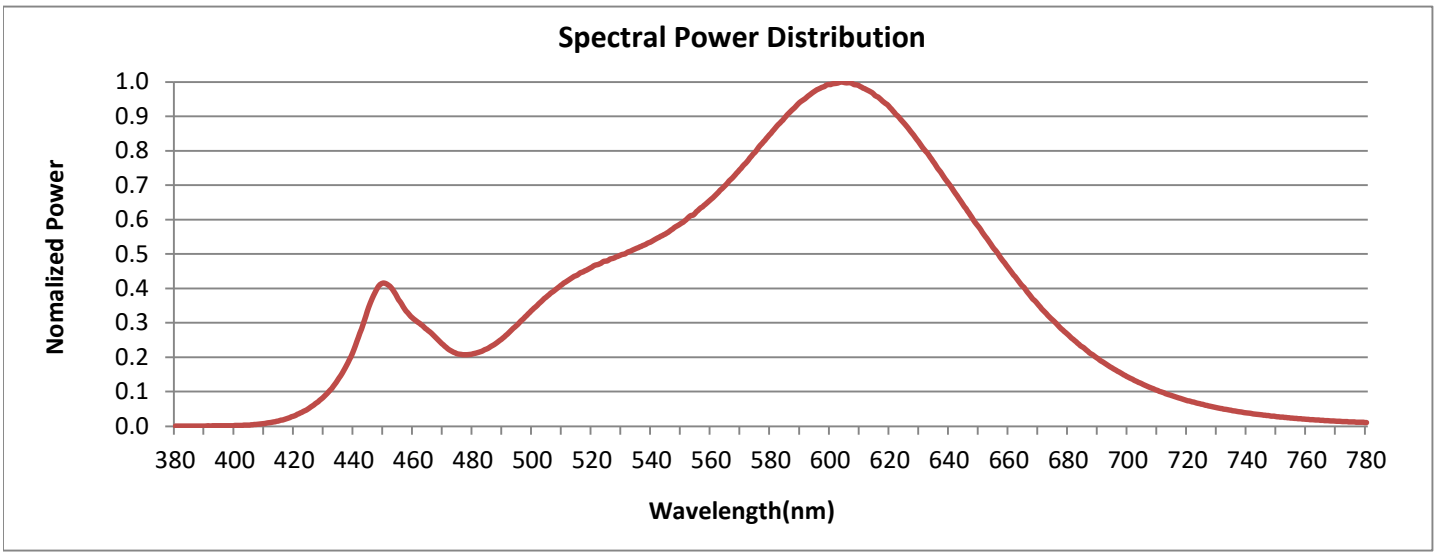
FIG. 1 LUMINAIRE

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

Report No: L092511810

NVLAP TESTING
NVLAP LAB CODE 200927-0

Colorimetry Test Results

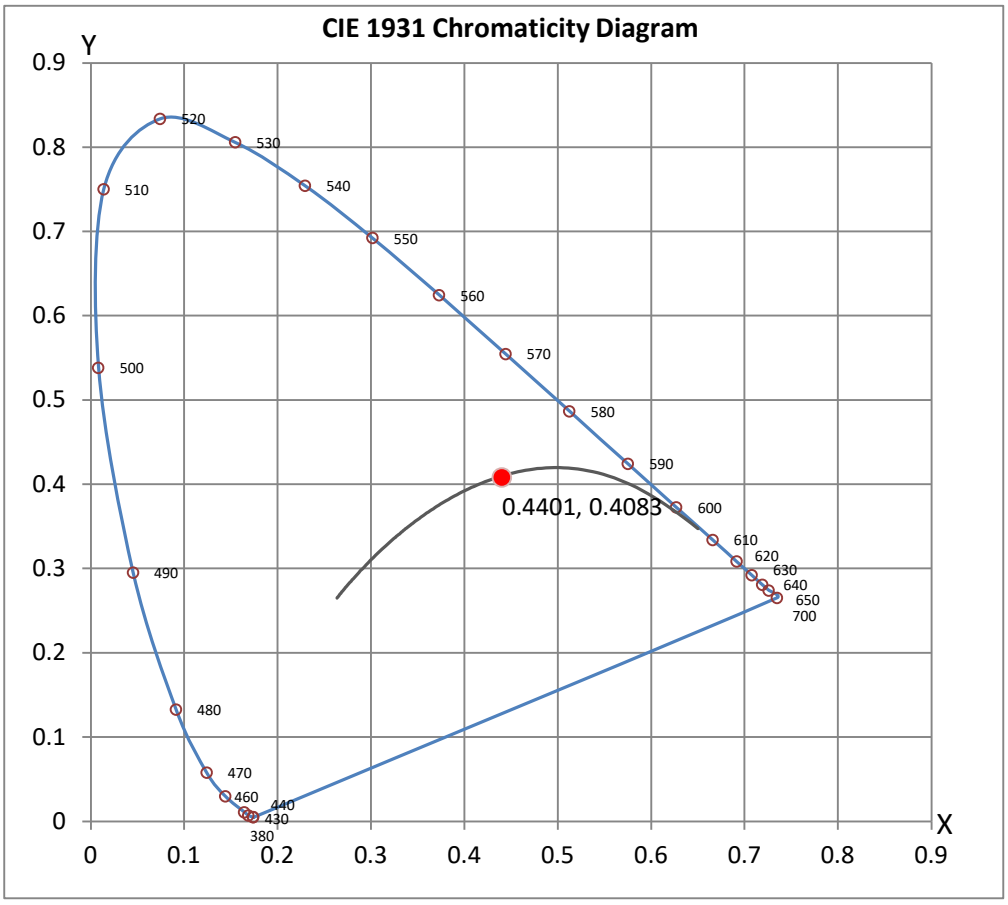


CRI & CCT

x	0.4401
y	0.4083
u'	0.2508
v'	0.5235
CRI	83.40
CCT	2981
Duv	0.00124

R Values

R1	81.69
R2	91.62
R3	96.26
R4	82.25
R5	82.72
R6	91.33
R7	82.68
R8	58.78
R9	7.57
R10	81.61
R11	82.40
R12	76.23
R13	84.04
R14	98.52
R15	73.38



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

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

Photometric Test Report

IES ROAD REPORT
PHOTOMETRIC FILENAME : L092511810.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L092511810
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
[ISSUEDATE] 10/3/2025
[MANUFAC] FX Luminaire / Lumascape
[LUMCAT] TN-60-9LED-S-GR-FW
[LUMINAIRE] TN60, 9LED, 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

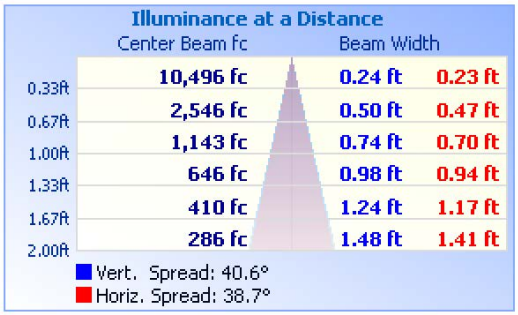
IES Classification	Type VS
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	756
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	69
Total Luminaire Watts	10.88
Ballast Factor	1.00
Upward Waste Light Ratio	0.01
Maximum Candela	1143
Maximum Candela Angle	180H 0V
Maximum Candela (<90 Degrees Vertical)	1143
Maximum Candela Angle (<90 Degrees Vertical)	180H 0V
Maximum Candela At 90 Degrees Vertical	2 (0.3% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	7 (0.9% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

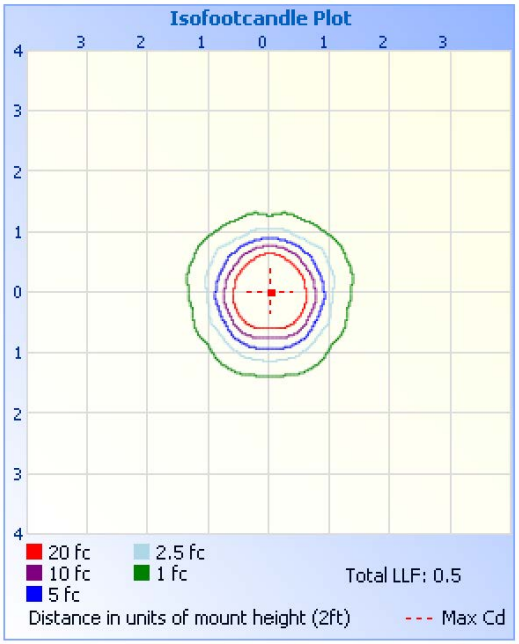
Photometric Toolbox (R) Copyright 2002-2023 by Lighting Analysts, Inc.
Calculations based on published IES Methods and recommendations, values rounded for display purposes.
Results derived from content of manufacturers photometric file.

IES ROAD REPORT
PHOTOMETRIC FILENAME : L092511810.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	246.6	N.A.	32.6
FM - Front-Medium (30-60)	107.8	N.A.	14.3
FH - Front-High (60-80)	15.2	N.A.	2.0
FVH - Front-Very High (80-90)	2.0	N.A.	0.3
BL - Back-Low (0-30)	253.1	N.A.	33.5
BM - Back-Medium (30-60)	104.9	N.A.	13.9
BH - Back-High (60-80)	13.5	N.A.	1.8
BVH - Back-Very High (80-90)	1.7	N.A.	0.2
UL - Uplight-Low (90-100)	1.0	N.A.	0.1
UH - Uplight-High (100-180)	9.9	N.A.	1.3
Total	755.7	N.A.	100.0
BUG Rating	B1-U1-G0		





Photometric Toolbox (R) Copyright 2002-2023 by Lighting Analysts, Inc.
Calculations based on published IES Methods and recommendations, values rounded for display purposes.
Results derived from content of manufacturers photometric file.

IES ROAD REPORT
PHOTOMETRIC FILENAME : L092511810.IES

CANDELA TABULATION

Vert. Angles	Horizontal Angles									
	0	**5**	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**
0	1143	1143	1143	1143	1143	1143	1143	1143	1143	1143
5	1070	1070	1073	1078	1083	1084	1089	1096	1099	1101
10	883	886	891	899	908	918	925	937	948	957
15	681	683	686	696	706	711	719	730	741	752
20	534	534	534	533	533	535	538	546	557	566
25	386	386	384	383	384	386	391	399	410	420
30	242	244	251	260	270	279	288	296	302	306
35	157	161	171	180	190	199	208	213	216	215
40	107	110	117	121	125	130	136	135	133	125
45	85	83	82	84	84	83	77	74	74	72
50	59	57	55	57	60	59	57	56	53	47
55	36	35	35	37	40	40	40	40	38	34
60	22	22	23	25	27	27	27	28	28	27
65	16	16	16	17	17	18	18	18	19	19
70	13	13	14	14	14	14	14	15	15	15
75	11	11	11	12	12	12	12	12	12	12
80	7	7	7	7	7	7	7	7	7	7
85	4	4	4	4	4	4	4	4	4	4
90	1	1	1	1	1	2	1	1	1	1
95	0	1	1	0	1	0	1	1	0	1
100	1	1	1	1	0	0	1	1	1	1
105	1	0	1	1	1	1	1	1	1	1
110	1	1	0	0	0	1	1	1	1	1
115	1	1	1	1	1	1	1	1	1	1
120	1	1	1	1	1	1	1	1	1	1
125	1	1	1	1	1	1	1	1	0	1
130	1	1	1	1	1	1	1	1	1	1
135	1	1	1	1	1	1	1	1	1	1
140	2	2	2	2	2	2	2	2	2	2
145	3	3	3	3	3	3	3	3	3	3
150	4	4	4	4	4	4	4	4	4	4
155	4	5	5	5	5	5	5	5	5	5
160	5	5	5	5	5	5	5	5	5	5
165	5	5	6	6	6	6	6	6	6	5
170	6	6	6	6	6	6	6	6	6	6
175	6	6	6	6	6	6	6	6	6	6
180	6	6	6	6	6	6	6	6	6	6

Vert. Angles	Horizontal Angles									
	50	**55**	**60**	**65**	**70**	**75**	**80**	**85**	**90**	**95**
0	1143	1143	1143	1143	1143	1143	1143	1143	1143	1143
5	1108	1107	1103	1105	1101	1096	1094	1091	1092	1092
10	960	968	970	971	975	975	972	964	957	952
15	759	766	777	782	783	780	776	766	756	745
20	577	584	587	589	587	579	565	553	545	538
25	426	426	421	417	414	409	399	385	375	366
30	310	307	300	290	286	283	281	273	265	259
35	206	196	190	188	190	194	198	197	188	178
40	113	106	105	107	107	109	114	119	116	109
45	70	70	73	74	68	64	63	63	63	67
50	42	45	49	49	46	42	42	43	43	47
55	32	33	35	35	33	31	31	34	35	35

Photometric Toolbox (R) Copyright 2002-2023 by Lighting Analysts, Inc.
Calculations based on published IES Methods and recommendations, values rounded for display purposes.
Results derived from content of manufacturers photometric file.

IES ROAD REPORT
PHOTOMETRIC FILENAME : L092511810.IES

CANDELA TABULATION - (Cont.)

60	25	25	27	27	27	24	24	25	25	24
65	19	19	19	19	19	19	18	18	18	17
70	15	15	15	15	15	14	14	14	14	13
75	12	12	12	11	11	11	11	11	11	11
80	7	7	6	6	6	6	6	6	6	6
85	3	3	3	3	3	3	3	3	3	3
90	1	1	1	1	1	1	1	1	1	1
95	1	0	1	1	1	1	1	1	1	1
100	1	0	1	1	1	1	1	1	1	1
105	0	1	1	1	1	1	1	1	1	1
110	1	1	0	1	1	0	1	1	1	1
115	1	1	1	1	1	1	1	1	1	1
120	1	1	1	1	1	1	1	0	1	1
125	1	1	1	1	1	1	1	1	1	1
130	1	1	1	1	1	1	1	1	1	1
135	1	1	1	1	1	1	1	1	1	1
140	2	2	2	2	2	2	2	2	2	2
145	3	3	3	3	3	3	3	3	3	3
150	4	4	4	4	4	4	4	4	4	4
155	5	5	5	5	5	5	5	5	5	5
160	5	5	5	5	5	5	5	5	5	5
165	6	6	6	6	6	6	6	6	6	6
170	6	6	6	6	6	6	6	6	6	6
175	6	6	6	6	6	6	6	6	6	6
180	6	6	6	6	6	6	6	6	6	6

Vert. Angles	**Horizontal Angles**									
	100	**105**	**110**	**115**	**120**	**125**	**130**	**135**	**140**	**145**
0	1143	1143	1143	1143	1143	1143	1143	1143	1143	1143
5	1093	1097	1094	1091	1091	1096	1098	1098	1102	1099
10	950	942	938	935	936	938	943	950	956	960
15	738	734	726	723	729	740	750	767	779	783
20	534	533	531	531	537	549	565	586	604	615
25	364	365	370	375	379	386	394	403	412	421
30	255	262	269	273	273	268	261	258	261	268
35	175	178	179	177	171	166	165	170	177	186
40	105	103	102	100	100	103	106	107	110	116
45	70	72	73	72	72	80	85	77	70	69
50	51	55	54	53	55	59	59	53	46	47
55	37	39	38	37	40	39	36	35	35	34
60	24	24	24	23	23	24	24	24	24	24
65	17	16	16	16	16	16	15	15	16	16
70	13	13	13	13	13	13	13	12	12	12
75	11	11	11	11	11	11	10	10	10	10
80	6	6	6	6	6	6	6	6	6	6
85	3	3	3	3	3	3	3	3	3	3
90	1	1	1	1	1	1	1	1	1	1
95	1	1	1	1	1	1	1	1	1	1
100	1	1	1	1	1	1	1	1	0	1
105	1	1	1	1	1	1	1	1	1	1
110	1	1	1	1	1	1	1	1	1	1
115	1	1	1	1	1	1	1	1	1	1
120	1	1	1	0	1	1	1	1	1	1
125	1	1	1	1	1	1	1	1	1	1
130	1	1	1	1	1	1	1	1	1	1

Photometric Toolbox (R) Copyright 2002-2023 by Lighting Analysts, Inc.
Calculations based on published IES Methods and recommendations, values rounded for display purposes.
Results derived from content of manufacturers photometric file.

IES ROAD REPORT
PHOTOMETRIC FILENAME : L092511810.IES

CANDELA TABULATION - (Cont.)

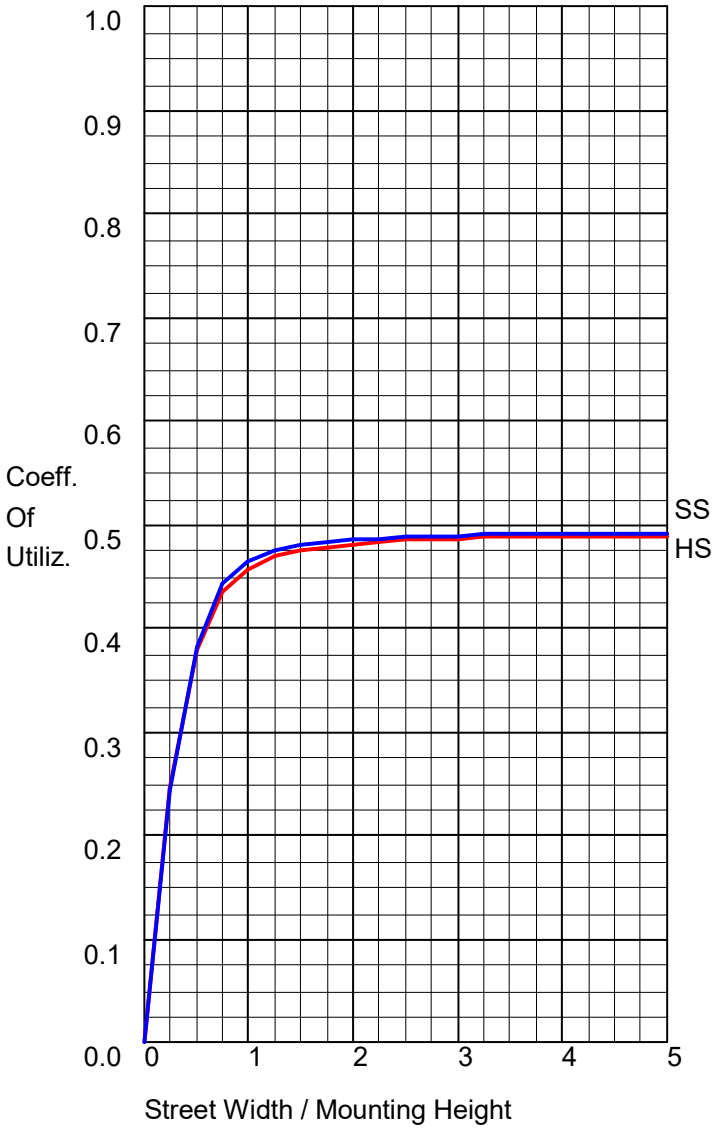
135	1	1	1	1	1	1	1	1	1	1
140	2	2	2	2	2	2	2	2	2	2
145	3	3	3	3	3	3	3	3	3	3
150	4	4	4	4	4	4	4	4	4	4
155	5	4	5	5	5	5	5	5	5	5
160	5	5	5	5	5	5	5	5	5	5
165	6	6	6	6	6	6	6	6	6	6
170	6	6	6	6	6	6	6	6	6	6
175	6	6	6	6	6	6	6	6	6	6
180	6	6	6	6	6	6	6	6	6	6

Vert. Angles	**Horizontal Angles**						
	150	**155**	**160**	**165**	**170**	**175**	**180**
0	1143	1143	1143	1143	1143	1143	1143
5	1094	1097	1095	1095	1091	1088	1087
10	964	971	974	972	970	968	962
15	791	795	797	799	796	791	788
20	622	629	630	630	626	623	621
25	434	454	467	479	488	490	490
30	279	292	310	330	347	359	364
35	193	199	204	208	213	220	224
40	123	124	121	117	116	120	123
45	66	63	66	71	73	74	76
50	46	43	47	50	48	41	38
55	34	33	32	34	33	31	29
60	22	22	23	25	24	24	25
65	16	17	17	16	16	17	17
70	12	12	12	12	12	12	12
75	10	8	8	8	8	8	8
80	5	5	5	5	5	5	5
85	3	3	2	2	2	2	2
90	1	1	1	1	1	1	1
95	1	1	1	1	1	1	1
100	1	1	0	1	1	0	1
105	1	1	1	1	1	1	1
110	1	1	1	1	1	1	1
115	1	1	1	1	1	0	1
120	1	1	1	1	1	1	1
125	1	1	1	1	1	1	1
130	1	1	1	1	1	1	1
135	1	1	1	1	1	1	1
140	2	2	2	2	2	2	2
145	3	3	3	3	3	3	3
150	4	4	4	4	4	4	4
155	5	4	5	5	5	5	5
160	5	5	5	5	5	5	5
165	6	6	6	6	6	6	6
170	6	6	6	6	6	6	6
175	6	6	6	6	6	6	6
180	6	6	6	6	6	6	6

Photometric Toolbox (R) Copyright 2002-2023 by Lighting Analysts, Inc.
Calculations based on published IES Methods and recommendations, values rounded for display purposes.
Results derived from content of manufacturers photometric file.

IES ROAD REPORT
PHOTOMETRIC FILENAME : L092511810.IES

COEFFICIENTS OF UTILIZATION



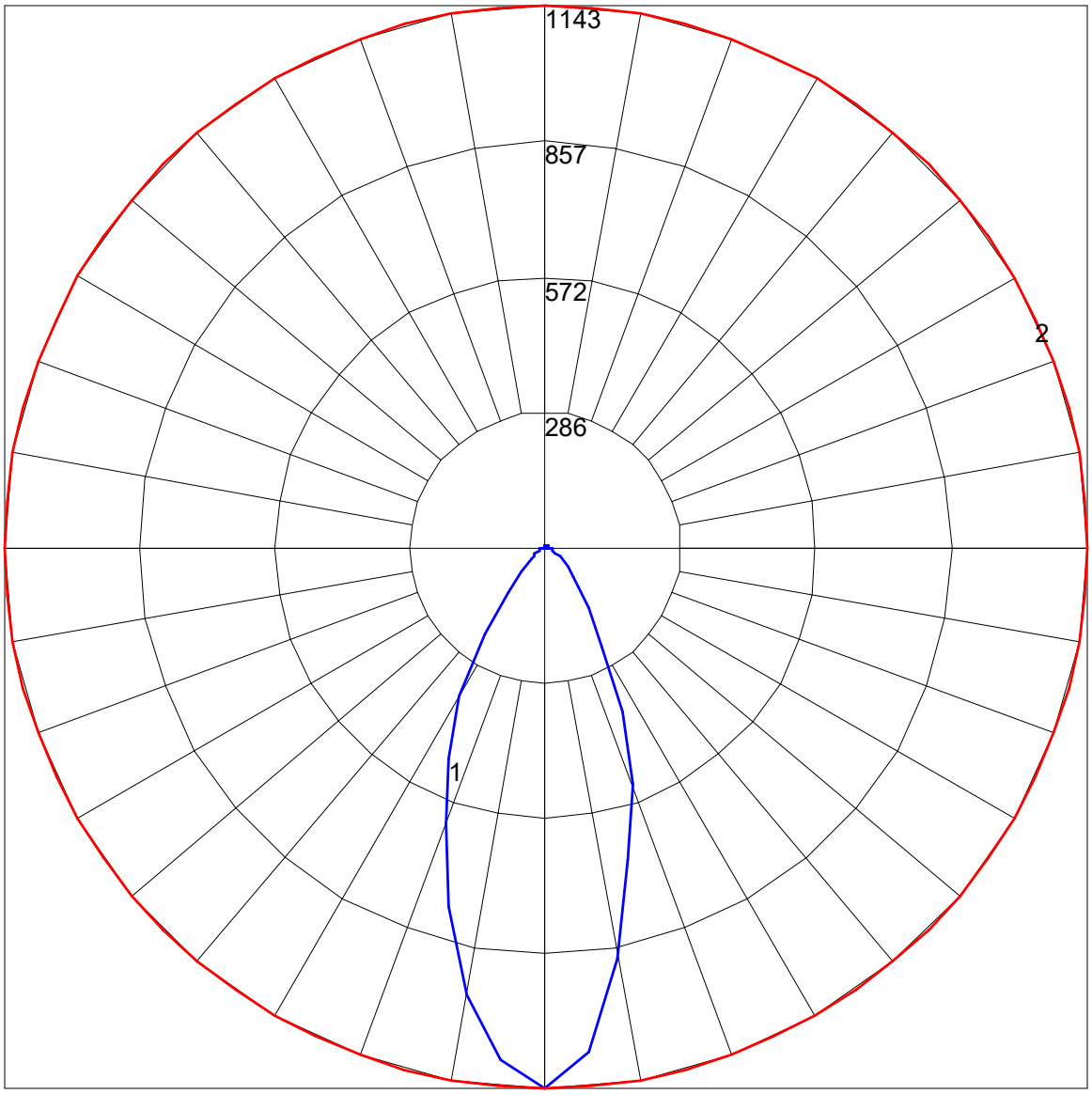
FLUX DISTRIBUTION

	Lumens	Percent Of Luminaire
Downward Street Side	371.7	49.2
Downward House Side	373.1	49.4
Downward Total	744.8	98.6
Upward Street Side	5.4	0.7
Upward House Side	5.5	0.7
Upward Total	10.9	1.4
Total Flux	755.7	100.0

Photometric Toolbox (R) Copyright 2002-2023 by Lighting Analysts, Inc.
Calculations based on published IES Methods and recommendations, values rounded for display purposes.
Results derived from content of manufacturers photometric file.

IES ROAD REPORT
PHOTOMETRIC FILENAME : L092511810.IES

POLAR GRAPH

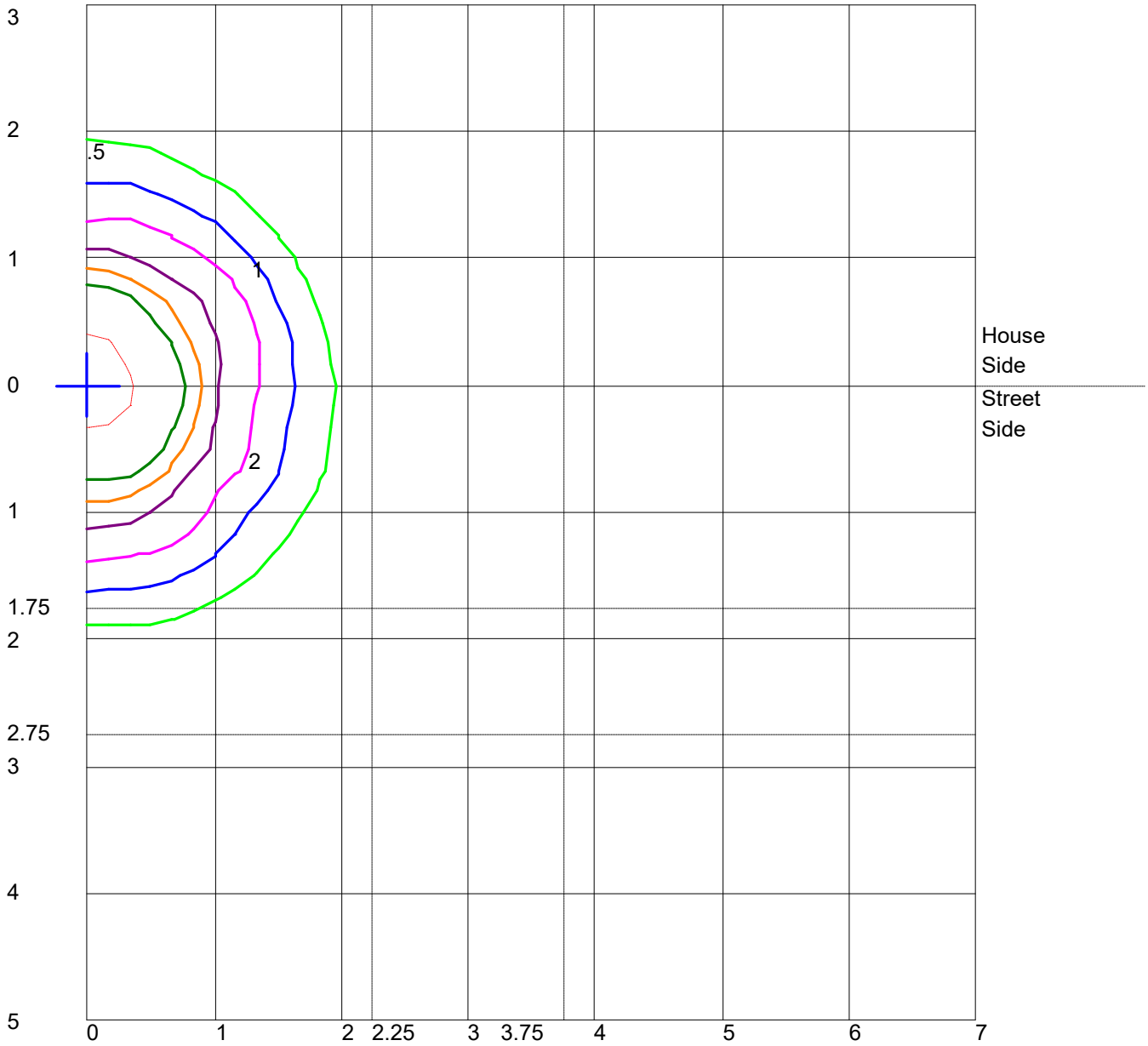


Maximum Candela = 1143 Located At Horizontal Angle = 180, Vertical Angle = 0
1 - Vertical Plane Through Horizontal Angles (180 - 0) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)

Photometric Toolbox (R) Copyright 2002-2023 by Lighting Analysts, Inc.
Calculations based on published IES Methods and recommendations, values rounded for display purposes.
Results derived from content of manufacturers photometric file.

IES ROAD REPORT
PHOTOMETRIC FILENAME : L092511810.IES

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

Photometric Toolbox (R) Copyright 2002-2023 by Lighting Analysts, Inc.
Calculations based on published IES Methods and recommendations, values rounded for display purposes.
Results derived from content of manufacturers photometric file.