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

NVLAP TESTING
NVLAP LAB CODE 200927-0

Report No: L092511809 **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-RG-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

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-RG-FW
Driver Model Number:	Custom

Test Summary	
Total Lumens:	920.00
Efficacy:	84.52
Color Redering Index:	83.5
Correlated Color Temperature:	2983
Input Voltage (VAC/60Hz):	12.03
Input Current (Amp):	0.9919
Input Power (W):	10.89
Input Power Factor:	0.9125
Current ATHD (%):	41.2%

Test Condition	
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	0:50

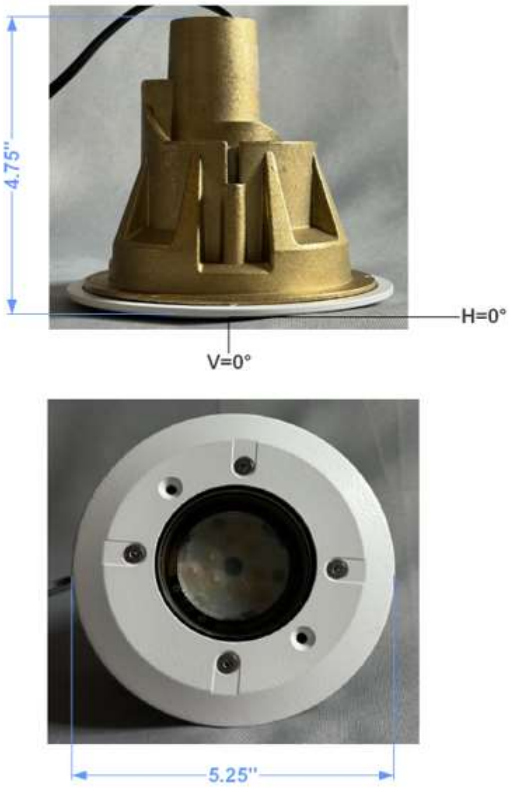


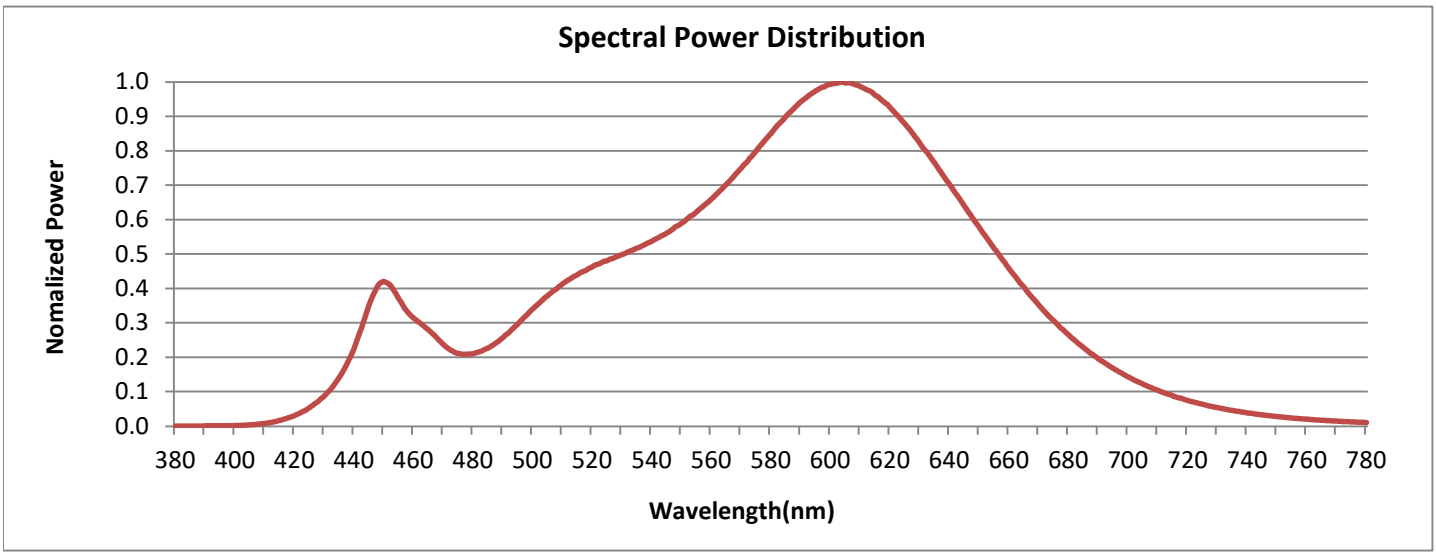
FIG. 1 LUMINAIRE

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

Report No: L092511809

NVLAP TESTING
NVLAP LAB CODE 200927-0

Colorimetry Test Results

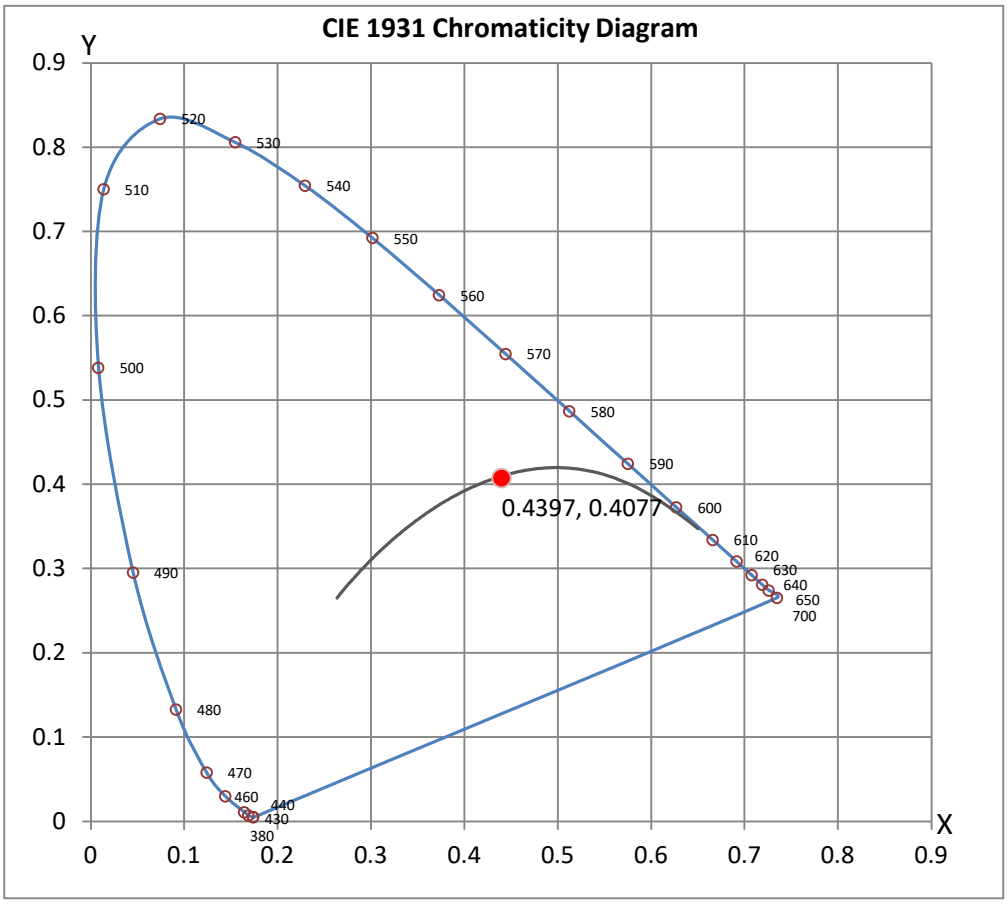


CRI & CCT

x	0.4397
y	0.4077
u'	0.2508
v'	0.5232
CRI	83.50
CCT	2983
Duv	0.00106

R Values

R1	81.85
R2	91.74
R3	96.22
R4	82.38
R5	82.90
R6	91.47
R7	82.69
R8	58.98
R9	8.10
R10	81.87
R11	82.57
R12	76.53
R13	84.20
R14	98.50
R15	73.59



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

NVLAP TESTING
NVLAP LAB CODE 200927-0

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 : L092511809.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L092511809
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
[ISSUEDATE] 10/3/2025
[MANUFAC] FX Luminaire / Lumascape
[LUMCAT] TN-60-9LED-S-RG-FW
[LUMINAIRE] TN60, 9LED, 3000K, Ring, 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

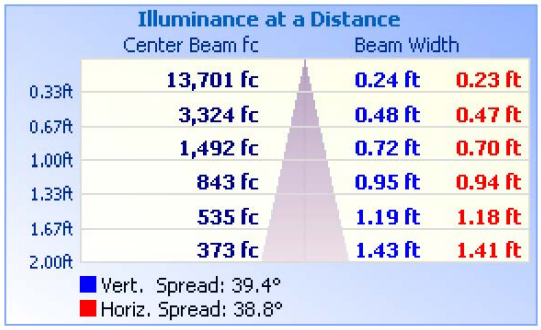
IES Classification	Type VS
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	920
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	84
Total Luminaire Watts	10.89
Ballast Factor	1.00
Upward Waste Light Ratio	0.00
Maximum Candela	1492
Maximum Candela Angle	180H 0V
Maximum Candela (<90 Degrees Vertical)	1492
Maximum Candela Angle (<90 Degrees Vertical)	180H 0V
Maximum Candela At 90 Degrees Vertical	0 (0.0% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	2 (0.2% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

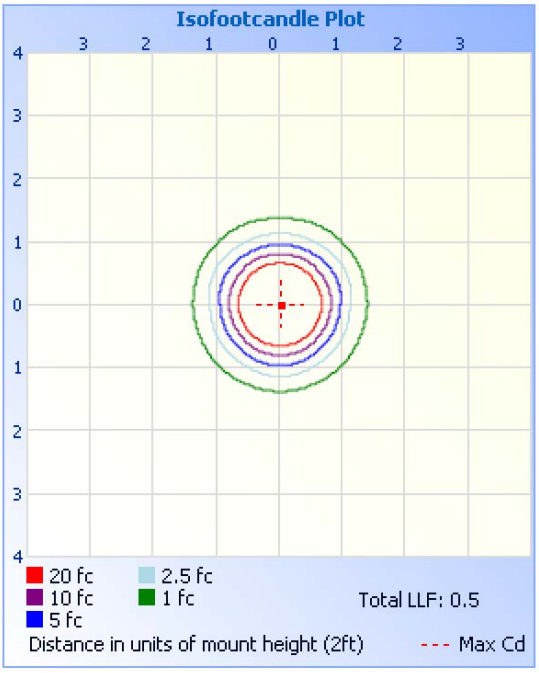
Photometric Toolbox (R) Copyright 2002-2023 by Lighting Analysts, Inc.
Calculations based on published IES Methods and recommendations, values rounded for display purposes.
Results derived from content of manufacturers photometric file.

IES ROAD REPORT
PHOTOMETRIC FILENAME : L092511809.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	299.6	N.A.	32.6
FM - Front-Medium (30-60)	119.8	N.A.	13.0
FH - Front-High (60-80)	7.8	N.A.	0.8
FVH - Front-Very High (80-90)	0.5	N.A.	0.1
BL - Back-Low (0-30)	340.1	N.A.	37.0
BM - Back-Medium (30-60)	143.0	N.A.	15.6
BH - Back-High (60-80)	8.3	N.A.	0.9
BVH - Back-Very High (80-90)	0.5	N.A.	0.1
UL - Uplight-Low (90-100)	0.0	N.A.	0.0
UH - Uplight-High (100-180)	0.0	N.A.	0.0
Total	919.6	N.A.	100.0
BUG Rating	B1-U0-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 : L092511809.IES

CANDELA TABULATION

Vert. Angles	Horizontal Angles									
	0	**5**	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**
0	1492	1492	1492	1492	1492	1492	1492	1492	1492	1492
5	1346	1352	1357	1358	1368	1367	1368	1373	1375	1374
10	1132	1133	1138	1141	1144	1147	1155	1161	1163	1165
15	879	881	879	887	890	891	893	899	905	908
20	638	636	638	642	646	650	654	659	666	670
25	436	438	439	442	446	448	454	458	462	469
30	306	307	308	312	314	315	316	318	321	324
35	209	209	211	212	214	215	217	218	218	217
40	135	135	135	136	138	139	138	137	135	134
45	91	91	90	88	86	83	81	80	80	81
50	56	56	55	54	53	52	52	52	53	52
55	32	32	32	32	32	33	34	33	34	34
60	15	15	16	17	17	18	19	19	20	21
65	7	6	7	7	8	8	10	11	12	12
70	4	4	5	5	5	5	5	5	6	6
75	3	3	3	3	3	3	3	3	4	4
80	1	2	2	2	2	2	2	2	2	2
85	1	1	1	1	1	1	1	1	1	1
90	0	0	0	0	0	0	0	0	0	0
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	0
110	0	0	0	0	0	0	0	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	0
135	0	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0

Vert. Angles	Horizontal Angles									
	50	**55**	**60**	**65**	**70**	**75**	**80**	**85**	**90**	**95**
0	1492	1492	1492	1492	1492	1492	1492	1492	1492	1492
5	1377	1380	1379	1383	1389	1393	1393	1397	1397	1403
10	1171	1170	1174	1183	1188	1195	1198	1203	1214	1222
15	914	917	921	933	936	940	948	956	968	978
20	674	679	686	690	695	700	707	710	716	724
25	477	484	490	492	495	497	497	497	498	502
30	326	330	333	336	338	340	341	342	345	349
35	216	215	215	217	222	227	232	235	239	242
40	131	130	131	134	136	138	143	148	154	157
45	83	85	86	86	86	85	85	85	87	93
50	52	51	52	53	54	55	55	55	56	57
55	34	34	34	34	34	34	35	36	37	37

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.

CANDELA TABULATION - (Cont.)

60	22	22	23	23	22	22	21	21	20	20
65	13	13	13	13	13	13	13	12	12	11
70	6	7	7	7	7	7	6	6	6	5
75	4	4	4	4	4	4	4	4	4	4
80	2	2	2	2	2	2	2	2	2	2
85	1	1	1	1	1	1	1	1	1	1
90	0	0	0	0	0	0	0	0	0	0
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	0
110	0	0	0	0	0	0	0	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	0
135	0	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0

Vert. Angles	**Horizontal Angles**									
	100	**105**	**110**	**115**	**120**	**125**	**130**	**135**	**140**	**145**
0	1492	1492	1492	1492	1492	1492	1492	1492	1492	1492
5	1412	1423	1434	1441	1447	1454	1452	1455	1461	1464
10	1232	1243	1257	1265	1275	1284	1290	1297	1301	1307
15	992	1005	1012	1021	1030	1040	1053	1055	1066	1072
20	736	745	755	763	774	782	788	794	799	807
25	509	515	523	529	536	542	547	551	555	561
30	353	359	366	370	374	376	377	382	383	385
35	245	248	250	254	258	260	262	263	265	268
40	158	159	161	162	163	164	165	167	171	174
45	100	105	108	109	110	111	110	109	107	104
50	60	65	68	70	72	72	71	69	66	64
55	38	37	38	40	41	40	39	40	41	41
60	21	21	21	21	21	21	22	22	22	22
65	10	10	8	8	8	8	8	10	11	12
70	5	5	5	5	5	5	5	5	5	6
75	3	3	3	3	3	3	3	3	3	4
80	2	2	2	2	2	2	2	2	2	2
85	1	1	1	1	1	1	1	1	1	1
90	0	0	0	0	0	0	0	0	0	0
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	0
110	0	0	0	0	0	0	0	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	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 : L092511809.IES

CANDELA TABULATION - (Cont.)

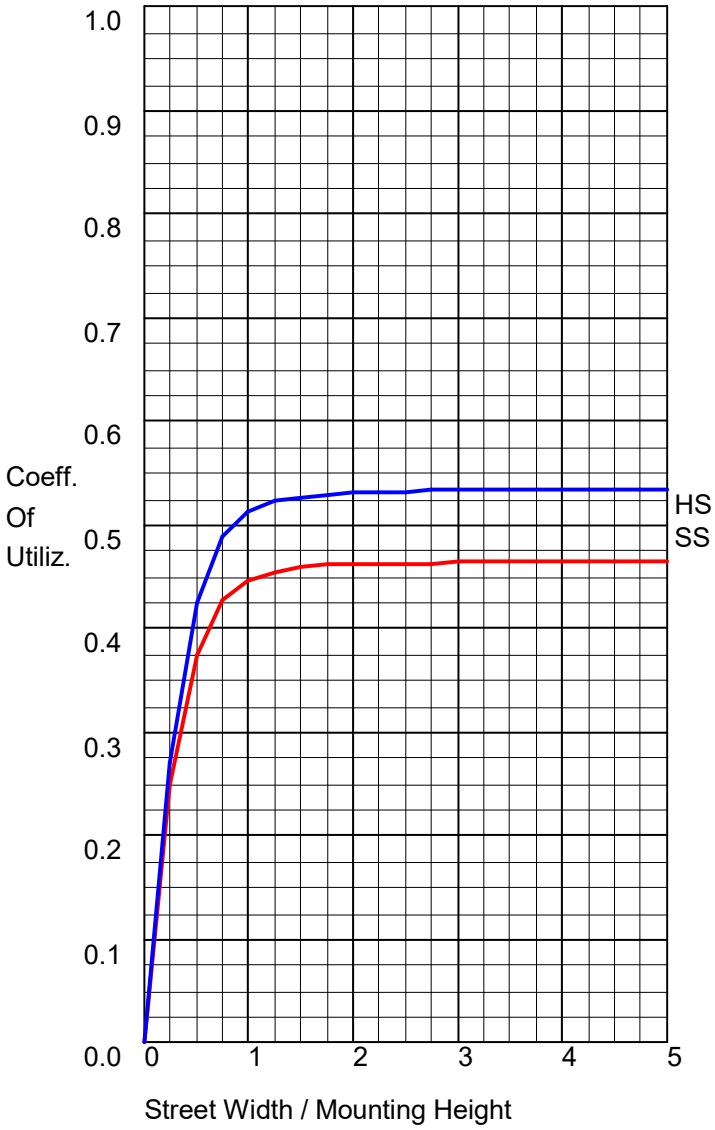
135	0	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0

Vert. Angles	**Horizontal Angles**						
	150	**155**	**160**	**165**	**170**	**175**	**180**
0	1492	1492	1492	1492	1492	1492	1492
5	1469	1471	1473	1470	1466	1464	1459
10	1310	1317	1323	1320	1315	1313	1314
15	1075	1078	1079	1082	1080	1076	1076
20	812	819	823	825	826	822	820
25	569	576	583	587	588	591	590
30	390	395	399	400	403	404	402
35	271	272	271	269	266	262	261
40	176	175	170	165	163	161	160
45	101	100	100	101	102	103	103
50	64	64	64	64	64	63	63
55	41	41	40	39	38	38	39
60	23	24	25	25	25	27	27
65	13	14	14	14	15	15	15
70	6	6	7	7	8	8	8
75	4	4	4	4	5	5	5
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	0	0	0	0	0	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	0	0
125	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0
180	0	0	0	0	0	0	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 : L092511809.IES

COEFFICIENTS OF UTILIZATION



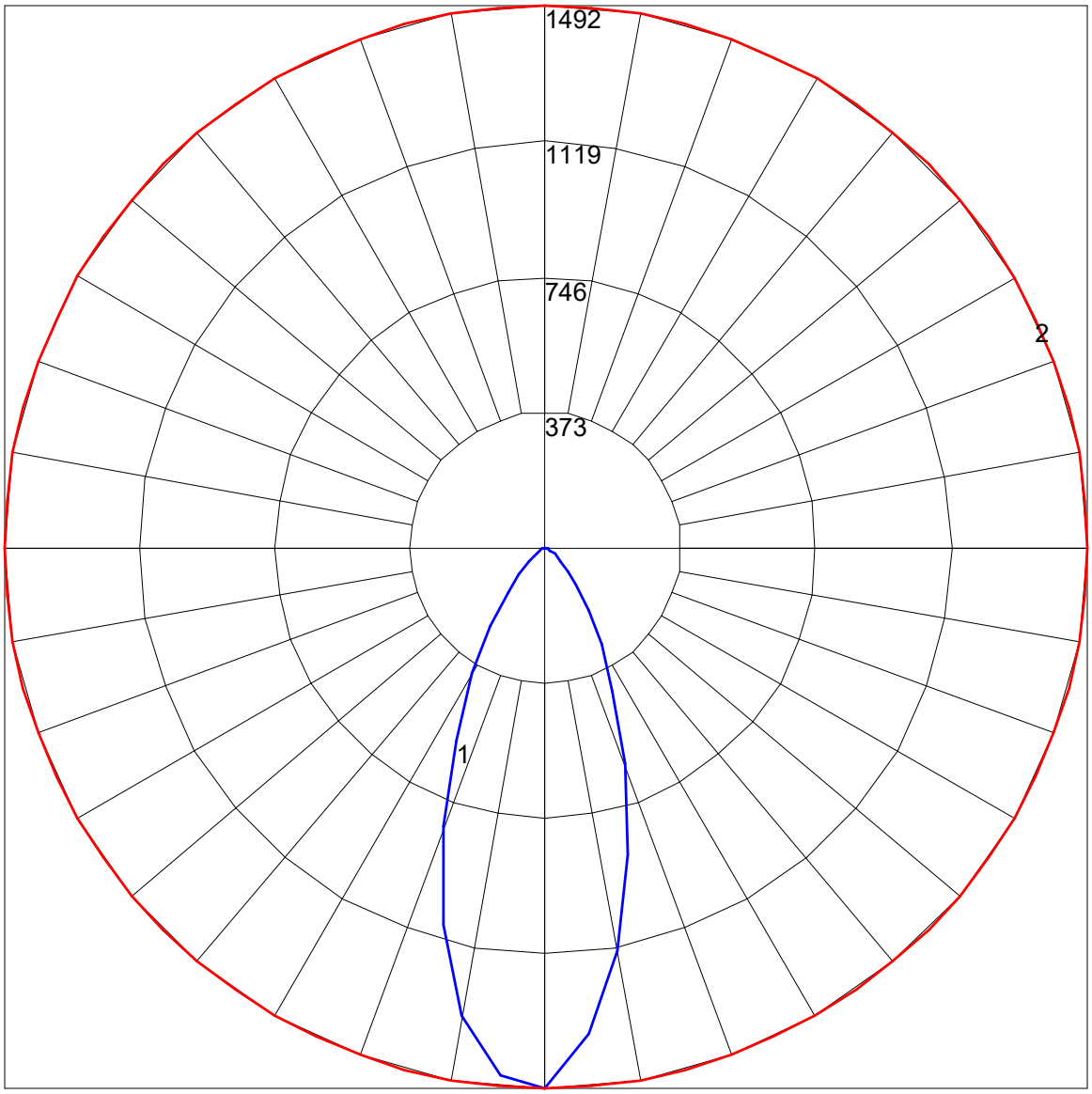
FLUX DISTRIBUTION

	Lumens	Percent Of Luminaire
Downward Street Side	427.7	46.5
Downward House Side	491.9	53.5
Downward Total	919.6	100.0
Upward Street Side	0.0	0.0
Upward House Side	0.0	0.0
Upward Total	0.0	0.0
Total Flux	919.6	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 : L092511809.IES

POLAR GRAPH

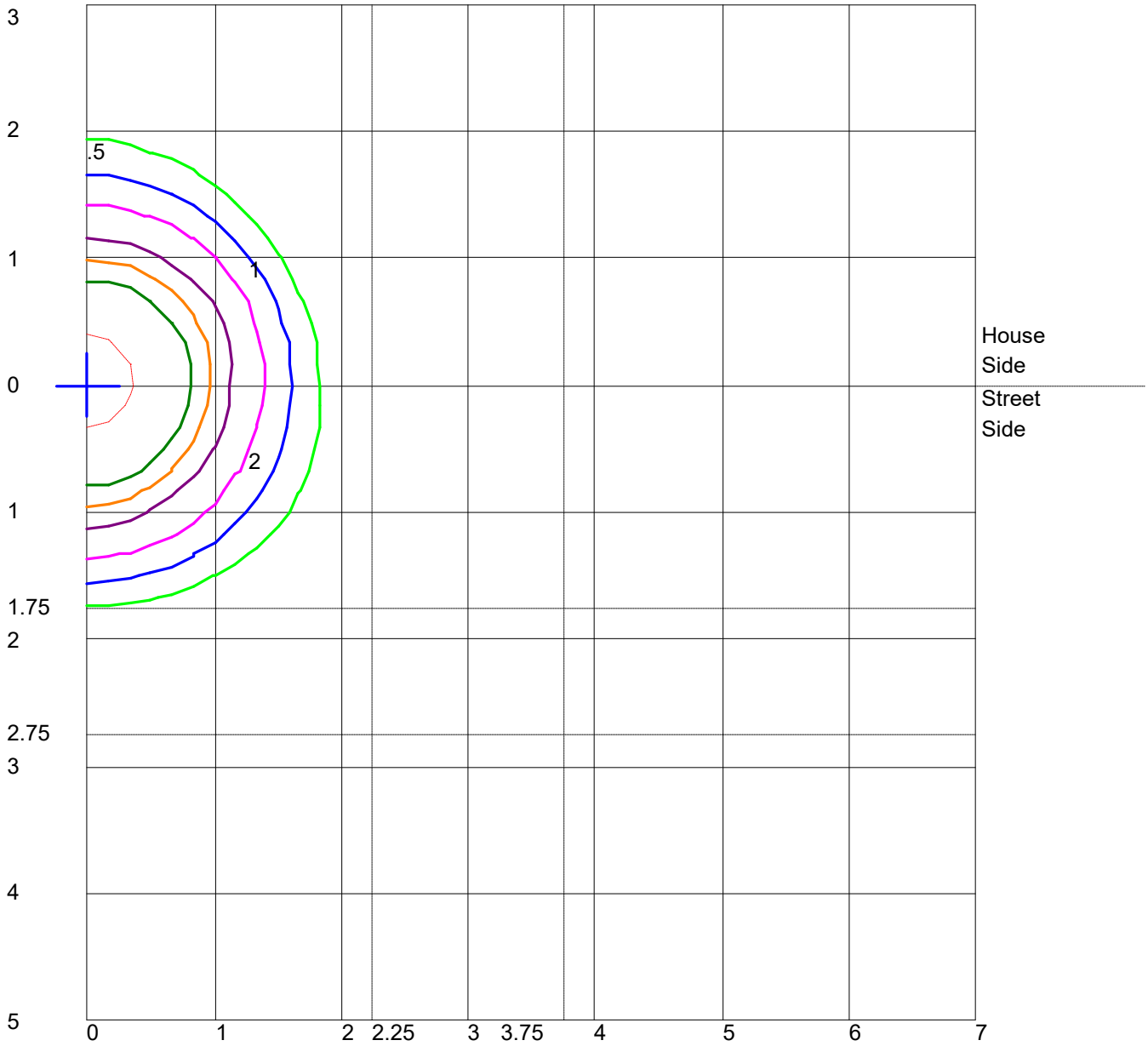


Maximum Candela = 1492 Located At Horizontal Angle = 180, Vertical Angle = 0
1 - Vertical Plane Through Horizontal Angles (180 - 0) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)

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 : L092511809.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.