

AMERICAN GAS LAMP WORKS TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

Model 3000 Coachman Lamp

PROJECT NUMBER

G105724524

REPORT NUMBER

105724524CRT-001

ISSUE DATE

2/26/2024

REVISION DATE

None

TEST DATES

2/21/2024

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

105724524CRT-001

MODEL NUMBER(s)

MODEL 3000 COACHMAN LAMP

REPORT RENDERED TO:

AMERICAN GAS LAMP WORKS
1299 4TH AVE
NEW KENSINGTON, PA 15068

STATEMENT OF LIMITATION

NVLAP Lab Code 100402-0. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. government.

AUTHORIZATION

The testing performed was authorized by signed quote number QU-01416591.

TEST STANDARDS

ANSI/IES LM-79-19: Optical and Electrical Measurements of Solid State Lighting Products

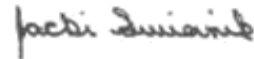
IES LM-79-08: Electrical and Photometric Measurements of Solid State Lighting

ANSI NEMA ANSLG C78.377: 2017: Specifications for the Chromaticity of Solid State Lighting (SSL) Products

ANSI/UL 1598-2018: Standard for Safety - Luminaires

In Charge of Testing:

Reviewer:



Melanie Brittain
Senior Associate Engineer
Lighting Division

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SAMPLE INFORMATION

REPORT NO. 105724524CRT-001

ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received Date	Sampling Date
1	CRT2402191502-004	Model 3000 Coachman Lamp	4 Sided Outdoor Lamp with Frosted Poly Lens	Production	2/19/2024	N/A
2		CS15761_STRADA-2x2MX-8-SCL	Type II Lens			
3		CS15751_STRADA-2x2MX-8-DWC	Type III Lens			
4		CS15750_STRADA-2x2MX-8-T4-B	Type IV Lens			
5		CS15763_STRADA-2x2MX-8-VSM	Type V Lens			

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	Model 3000 Coachman Lamp Type II	1, 2
2	Model 3000 Coachman Lamp Type III	1, 3
3	Model 3000 Coachman Lamp Type IV	1, 4
4	Model 3000 Coachman Lamp Type V	1, 5

SUMMARY

REPORT NO. 105724524CRT-001

PRODUCT INFORMATION AND SUMMARY OF DATA

Test Configurations	
Product Model No.:	Model 3000 Coachman Lamp
Product Description:	4 Sided Outdoor Lamp with Frosted Poly Lens
LED Model No.:	Lumileds XR-7070
Driver Model No.:	Inventronics EUM-050S150DT

TEST METHODS

SEASONING IN SAMPLE ORIENTATION - LED PRODUCTS

No seasoning was performed in accordance with ANSI/IES LM-79-19

DUT SAMPLING METHOD

For testing plans, program requirements, or shipments requiring sampling of DUTs or components, the selections for each test were random. All samples are marked with control numbers regardless of being tested.

TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING

A Type C Mirror Goniophotometer system was used to measure the luminous intensity (candela) at each angle of distribution for the DUT. Electrical measurements of the unit were measured using a power analyzer. Each DUT was operated at the rated input voltage of the system in its designated orientation. The ambient temperature and relative humidity was measured at 25°C ± 1.2°C and 10-65% respectively at a position within 1.5m and at equal height of the DUT. Stabilization procedures to LM-79-19 were followed. The test distance was ≥ 5x the longest luminous dimension of the DUT.

INSITU TEMPERATURE MEASUREMENT TESTING*

Thermal measurements were taken on the DUT using a thermocouple and temperature meter. The DUT was allowed to reach thermal equilibrium for three and a half to seven and a half hours before measurements were taken. Temperatures were measured at the TMPps or Ts point as indicated by the included diagram in accordance with manufacturers declared thermal test point location, or at a thermal test point location found with a thermal camera when no diagram from the manufacturer is given. The maximum temperature was recorded for the sample. A simulated ceiling or other enclosure may be used in accordance to UL 1598, UL 153, or UL 1993 as applicable.

* = Not a NVLAP Accredited Test

ANSI/IES Technical Memorandums (TM) reported are not NVLAP accredited

TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING

REPORT NO. 105724524CRT-001

Test Configuration	Tested Model No.	Pass/Fail/NA
1	Model 3000 Coachman Lamp Type II	NA

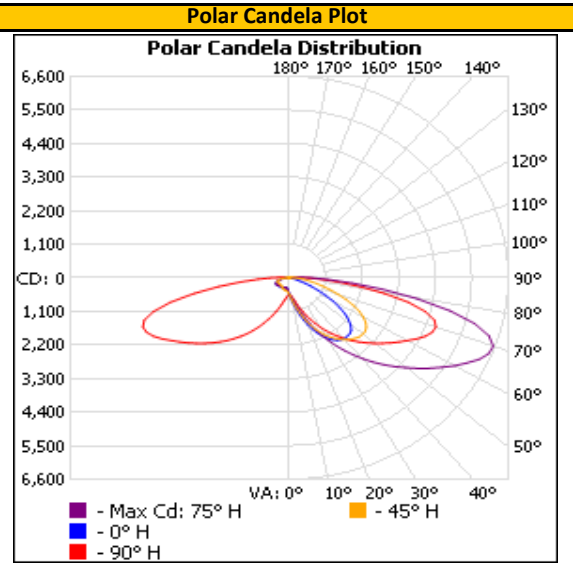
PHOTOMETRIC AND ELECTRICAL MEASUREMENTS

Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Down	120.1	907.8	109.0	0.999

Light Output (lm)	Efficacy (lm/W)
9952.7	91.3

LUMINOUS INTENSITY SUMMARY (candela)

Vertical Angle (°)	Horizontal				
	0	30	45	65	90
0	546	546	546	546	546
5	734	715	695	652	587
10	972	939	909	837	700
15	1277	1216	1180	1117	903
20	1634	1531	1516	1497	1176
25	1981	1828	1851	1931	1494
30	2278	2088	2157	2412	1862
35	2494	2278	2423	2927	2233
40	2593	2414	2629	3435	2597
45	2578	2471	2797	3945	2962
50	2413	2421	2879	4452	3330
55	2050	2232	2828	4941	3711
60	1514	1844	2578	5396	4100
65	949	1339	2132	5660	4518
70	510	858	1563	5490	4701
75	247	510	1054	4528	4241
80	126	310	678	2948	2919
85	67	191	408	1434	1466
90	39	123	234	553	580
95	27	83	135	207	231
100	21	60	87	99	112
105	18	45	60	59	65
110	16	34	43	38	40
115	15	26	32	26	28
120	14	20	22	19	21
125	14	15	16	13	17
130	12	11	10	9	13
135	10	7	6	6	10
140	7	3	2	3	6
145	4	0	0	0	3
150	1	0	0	0	0
155	0	0	0	0	0
160	0	0	0	0	0
165	0	0	0	0	0
170	0	0	0	0	0
175	0	0	0	0	0
180	0	0	0	0	0



Full luminous intensity matrix found in .IES file

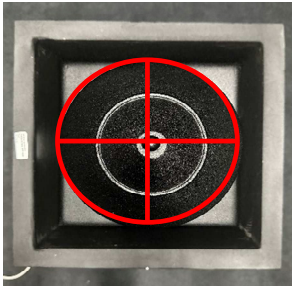
REPORT NO. 105724524CRT-001

ORIENTATION AND ALIGNMENT OF DUT

Luminous Opening		
Length (ft)	Width (ft)	Height (ft)
1.31	1.31	1.29
0°-180° H	90°-270° H	0°-180° V

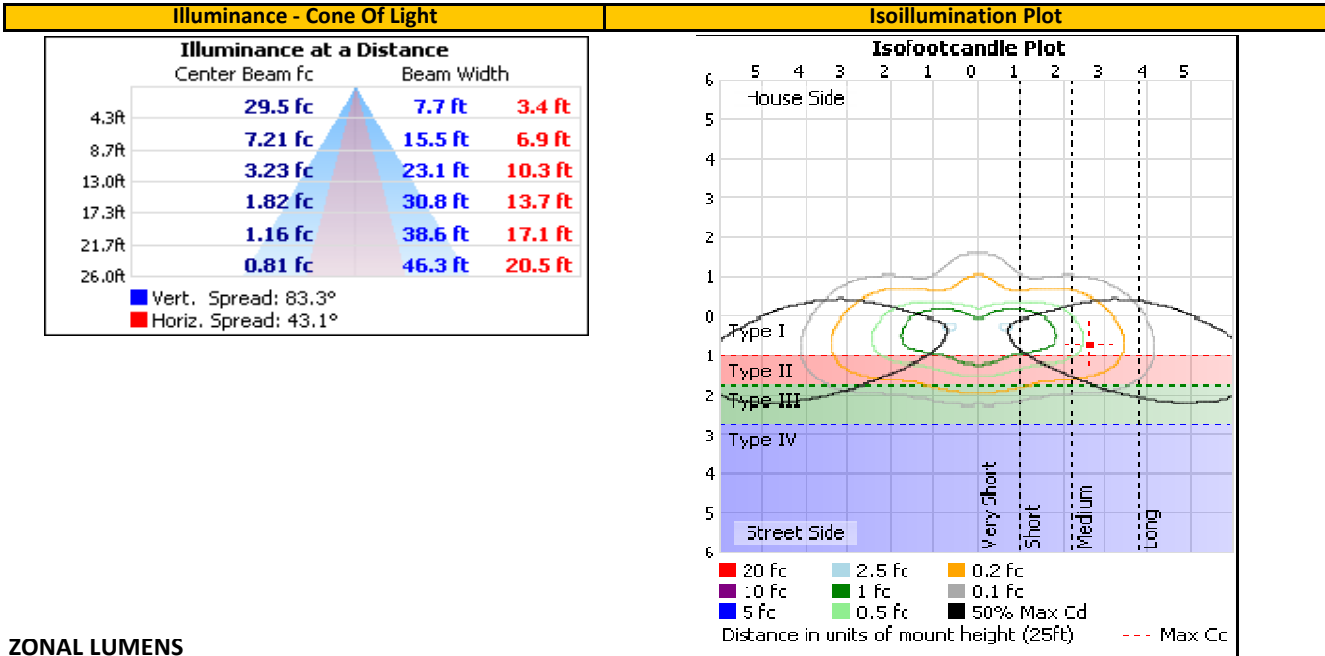
Test Distance (ft)
29.2

PHOTOMETRIC CENTER OF DUT



REPORT NO. 105724524CRT-001

ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary

Zone (°)	Lumens	Luminaire
0-30	874.0	8.8%
0-40	1,892.0	19.0%
0-60	5,256.5	52.8%
60-90	4,439.3	44.6%
70-100	2,546.6	25.6%
90-120	236.7	2.4%
0-90	9,695.8	97.4%
90-180	256.9	2.6%
0-180	9,952.7	100.0%

Zone (°)	Lumens	Total	Zone (°)	Lumens	Total
0-10	58.7	0.6%	90-100	156.7	1.6%
10-20	241.6	2.4%	100-110	54.5	0.5%
20-30	573.7	5.8%	110-120	25.5	0.3%
30-40	1018.0	10.2%	120-130	13.0	0.1%
40-50	1487.0	14.9%	130-140	5.8	0.1%
50-60	1877.4	18.9%	140-150	1.4	0.0%
60-70	2049.5	20.6%	150-160	0.0	0.0%
70-80	1698.3	17.1%	160-170	0.0	0.0%
80-90	691.6	6.9%	170-180	0.0	0.0%

LUM. CLASSIFICATION SYSTEM (LCS)

CS Zone	Lumens	% Lamp	% Lum
FL (0-30)	641.5	N.A.	6.4
FM (30-60)	3454.5	N.A.	34.7
FH (60-80)	2683.5	N.A.	27.0
FVH (80-90)	441.3	N.A.	4.4
BL (0-30)	231.2	N.A.	2.3
BM (30-60)	927.0	N.A.	9.3
BH (60-80)	1064.5	N.A.	10.7
BVH (80-90)	250.3	N.A.	2.5
UL (90-100)	156.7	N.A.	1.6
UH (100-180)	100.1	N.A.	1.0
Total	9950.6	N.A.	100.0
BUG Rating	B3-U3-G3		

TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING

REPORT NO. 105724524CRT-001

Test Configuration	Tested Model No.	Pass/Fail/NA
2	Model 3000 Coachman Lamp Type III	NA

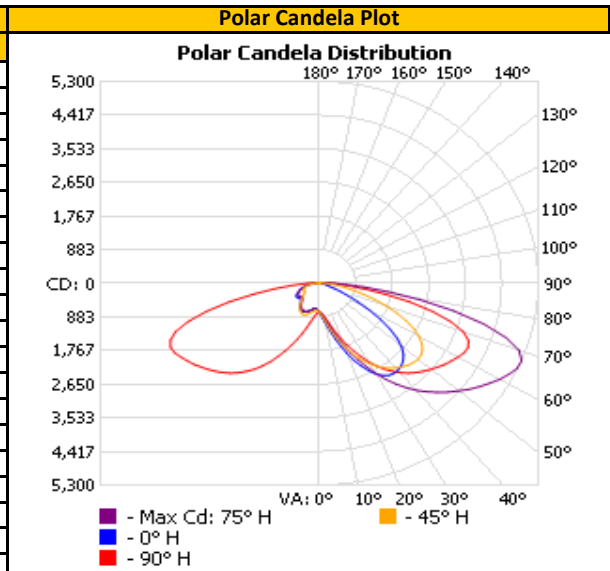
PHOTOMETRIC AND ELECTRICAL MEASUREMENTS

Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Down	120.1	906.1	108.8	0.999

Light Output (lm)	Efficacy (lm/W)
10016.5	92.1

LUMINOUS INTENSITY SUMMARY (candela)

Vertical Angle (°)	Horizontal				
	0	30	45	65	90
0	752	752	752	752	752
5	922	906	889	855	804
10	1167	1132	1107	1052	954
15	1520	1441	1404	1364	1213
20	1960	1792	1761	1774	1556
25	2387	2148	2126	2226	1953
30	2747	2440	2435	2711	2371
35	2944	2642	2700	3166	2753
40	2967	2767	2889	3574	3060
45	2864	2805	3038	3923	3306
50	2604	2729	3109	4235	3515
55	2086	2459	3045	4519	3710
60	1390	1935	2784	4769	3872
65	775	1332	2315	4869	3973
70	386	829	1715	4587	3709
75	209	492	1112	3565	2828
80	127	310	652	2121	1622
85	78	205	357	947	716
90	48	129	199	363	301
95	33	85	122	153	158
100	26	62	84	88	98
105	22	48	61	59	63
110	19	37	45	41	42
115	17	29	34	30	30
120	17	23	25	22	24
125	16	18	19	17	20
130	14	13	13	13	17
135	12	9	8	9	13
140	9	5	4	5	10
145	5	2	0	2	6
150	2	0	0	0	2
155	0	0	0	0	0
160	0	0	0	0	0
165	0	0	0	0	0
170	0	0	0	0	0
175	0	0	0	0	0
180	0	0	0	0	0



Full luminous intensity matrix found in .IES file

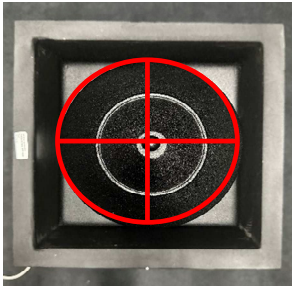
REPORT NO. 105724524CRT-001

ORIENTATION AND ALIGNMENT OF DUT

Luminous Opening		
Length (ft)	Width (ft)	Height (ft)
1.31	1.31	1.29
0°-180° H	90°-270° H	0°-180° V

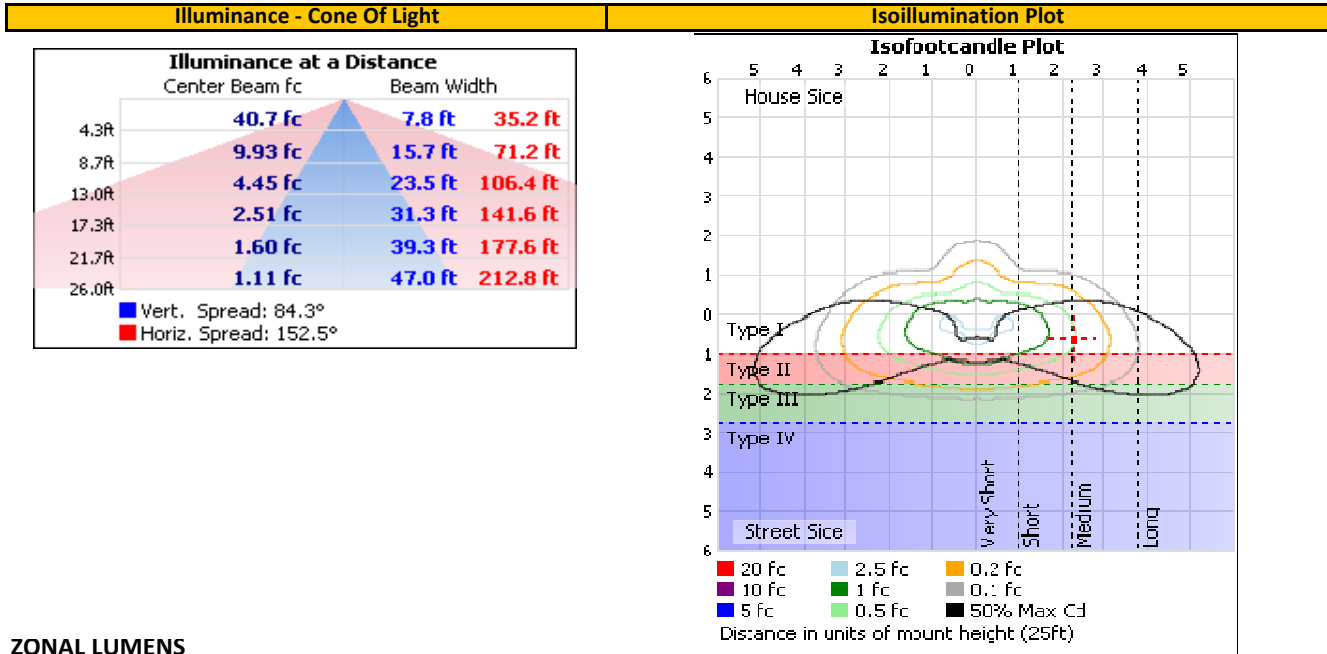
Test Distance (ft)
29.2

PHOTOMETRIC CENTER OF DUT



REPORT NO. 105724524CRT-001

ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary

Zone (°)	Lumens	Luminaire
0-30	1,173.8	11.7%
0-40	2,450.6	24.5%
0-60	6,092.8	60.8%
60-90	3,686.6	36.8%
70-100	1,916.7	19.1%
90-120	210.7	2.1%
0-90	9,779.4	97.6%
90-180	237.1	2.4%
0-180	10,016.5	100.0%

Zone (°)	Lumens	Total	Zone (°)	Lumens	Total
0-10	80.8	0.8%	90-100	125.9	1.3%
10-20	329.5	3.3%	100-110	56.0	0.6%
20-30	763.5	7.6%	110-120	28.8	0.3%
30-40	1276.9	12.7%	120-130	16.0	0.2%
40-50	1697.9	17.0%	130-140	7.9	0.1%
50-60	1944.2	19.4%	140-150	2.4	0.0%
60-70	1895.8	18.9%	150-160	0.1	0.0%
70-80	1329.0	13.3%	160-170	0.0	0.0%
80-90	461.8	4.6%	170-180	0.0	0.0%

LUM. CLASSIFICATION SYSTEM (LCS)

CS Zone	Lumens	% Lamp	% Lum	
FL	(0-30)	763.4	N.A.	7.6
FM	(30-60)	3617.8	N.A.	36.1
FH	(60-80)	2283.2	N.A.	22.8
FVH	(80-90)	298.0	N.A.	3.0
BL	(0-30)	408.8	N.A.	4.1
BM	(30-60)	1300.7	N.A.	13.0
BH	(60-80)	941.9	N.A.	9.4
BVH	(80-90)	163.8	N.A.	1.6
UL	(90-100)	125.8	N.A.	1.3
UH	(100-180)	111.2	N.A.	1.1
Total	-----	10014.6	N.A.	100.0
BUG Rating		B2-U3-G3		

TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING

REPORT NO. 105724524CRT-001

Test Configuration	Tested Model No.	Pass/Fail/NA
3	Model 3000 Coachman Lamp Type IV	NA

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS

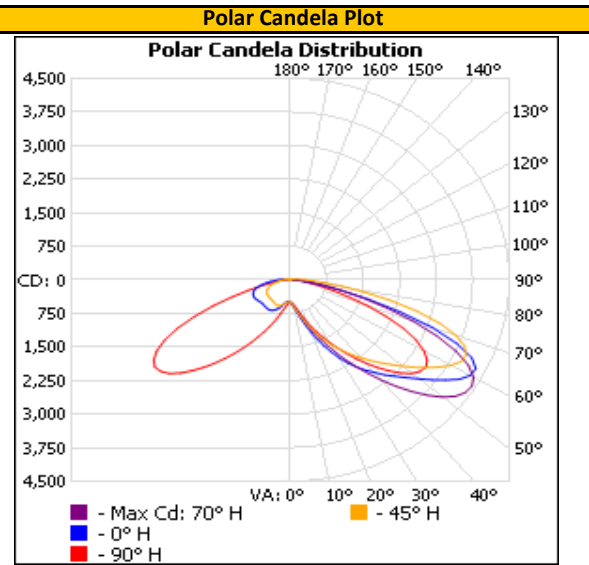
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Down	120.1	906.2	108.8	0.999

Light Output (lm)	Efficacy (lm/W)
9834.7	90.4

LUMINOUS INTENSITY SUMMARY (candela)

Vertical Angle (°)	Horizontal				
	0	30	45	65	90
0	501	501	501	501	501
5	580	575	569	555	533
10	716	702	691	671	623
15	940	893	872	855	782
20	1240	1135	1104	1121	1002
25	1618	1418	1377	1447	1278
30	2007	1697	1656	1845	1611
35	2378	1983	1964	2312	2005
40	2699	2262	2270	2829	2435
45	3039	2553	2617	3384	2871
50	3434	2898	2992	3919	3251
55	3898	3327	3412	4302	3400
60	4266	3762	3814	4379	3171
65	4114	4004	3984	3986	2568
70	3097	3684	3625	3040	1686
75	1641	2610	2696	1853	891
80	648	1403	1530	920	421
85	226	603	712	415	219
90	88	248	310	199	144
95	47	122	155	116	105
100	32	78	97	79	73
105	23	56	68	56	49
110	18	41	49	38	32
115	15	30	36	27	23
120	13	22	25	19	18
125	12	16	17	13	15
130	10	11	11	9	12
135	8	7	6	6	10
140	6	3	2	3	7
145	3	0	0	1	4
150	0	0	0	0	1
155	0	0	0	0	0
160	0	0	0	0	0
165	0	0	0	0	0
170	0	0	0	0	0
175	0	0	0	0	0
180	0	0	0	0	0

Full luminous intensity matrix found in .IES file



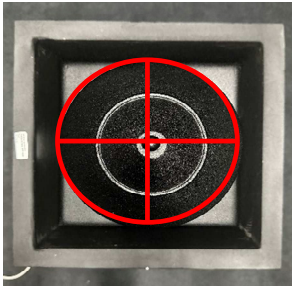
REPORT NO. 105724524CRT-001

ORIENTATION AND ALIGNMENT OF DUT

Luminous Opening		
Length (ft)	Width (ft)	Height (ft)
1.31	1.31	1.29
0°-180° H	90°-270° H	0°-180° V

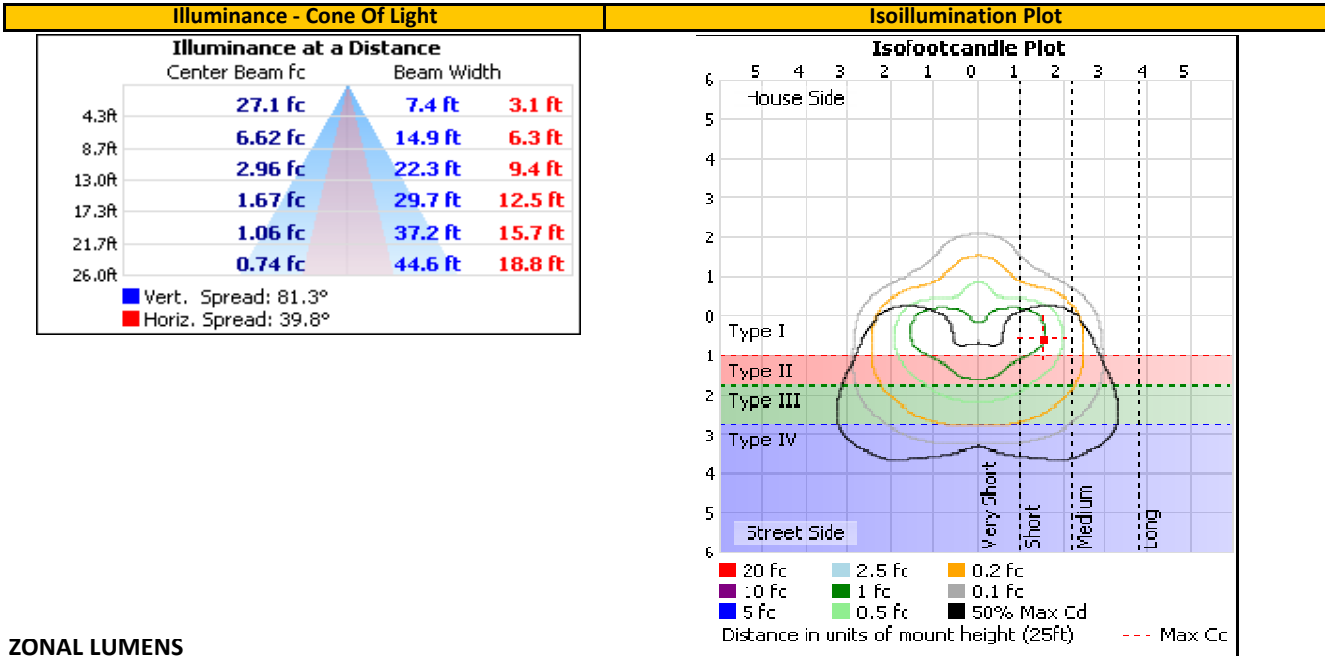
Test Distance (ft)
29.2

PHOTOMETRIC CENTER OF DUT



REPORT NO. 105724524CRT-001

ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary

Zone (°)	Lumens	Luminaire
0-30	790.3	8.0%
0-40	1,758.2	17.9%
0-60	5,473.7	55.7%
60-90	4,118.5	41.9%
70-100	1,933.4	19.7%
90-120	221.4	2.3%
0-90	9,592.2	97.5%
90-180	242.5	2.5%
0-180	9,834.7	100.0%

Zone (°)	Lumens	Total	Zone (°)	Lumens	Total
0-10	0.0	0.0%	90-100	0.0	0.0%
10-20	53.5	0.5%	100-110	133.3	1.4%
20-30	217.2	2.2%	110-120	60.1	0.6%
30-40	519.5	5.3%	120-130	28.0	0.3%
40-50	967.9	9.8%	130-140	13.6	0.1%
50-60	1546.6	15.7%	140-150	5.9	0.1%
60-70	2168.9	22.1%	150-160	1.5	0.0%
70-80	2318.4	23.6%	160-170	0.0	0.0%
80-90	1375.9	14.0%	170-180	0.0	0.0%

LUM. CLASSIFICATION SYSTEM (LCS)

CS Zone	Lumens	% Lamp	% Lum
FL (0-30)	498.1	N.A.	5.1
FM (30-60)	3524.5	N.A.	35.8
FH (60-80)	2947.8	N.A.	30.0
FVH (80-90)	279.1	N.A.	2.8
BL (0-30)	291.1	N.A.	3.0
BM (30-60)	1157.4	N.A.	11.8
BH (60-80)	747.1	N.A.	7.6
BVH (80-90)	145.2	N.A.	1.5
UL (90-100)	133.3	N.A.	1.4
UH (100-180)	109.1	N.A.	1.1
Total	9832.7	N.A.	100.0
BUG Rating	B2-U3-G3		

TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING

REPORT NO. 105724524CRT-001

Test Configuration	Tested Model No.	Pass/Fail/NA
4	Model 3000 Coachman Lamp Type V	NA

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS

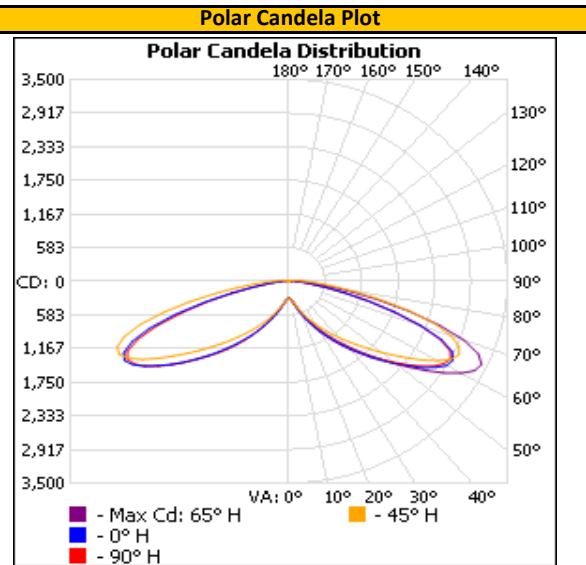
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Down	120.1	905.3	108.7	0.999

Light Output (lm)	Efficacy (lm/W)
10500.1	96.6

LUMINOUS INTENSITY SUMMARY (candela)

Vertical Angle (°)	Horizontal				
	0	30	45	65	90
0	293	293	293	293	293
5	314	315	313	312	309
10	371	367	364	363	359
15	477	455	444	451	451
20	622	577	557	580	587
25	802	731	699	742	765
30	1018	893	863	946	992
35	1265	1098	1057	1188	1249
40	1537	1346	1285	1472	1531
45	1862	1647	1564	1807	1834
50	2215	2015	1903	2218	2181
55	2608	2476	2309	2700	2562
60	2920	2932	2753	3184	2858
65	2886	3170	3007	3404	2853
70	2257	2813	2765	2991	2246
75	1325	1931	2030	1995	1326
80	609	1023	1144	1010	613
85	270	471	558	437	271
90	153	232	276	205	153
95	105	139	161	123	106
100	72	97	110	87	72
105	46	70	79	62	46
110	29	50	57	43	29
115	20	35	41	30	20
120	15	24	28	21	15
125	13	17	20	15	12
130	11	11	13	10	10
135	9	8	7	7	8
140	6	5	4	4	5
145	4	2	2	2	3
150	2	1	0	1	1
155	0	0	0	0	0
160	0	0	0	0	0
165	0	0	0	0	0
170	0	0	0	0	0
175	0	0	0	0	0
180	0	0	0	0	0

Full luminous intensity matrix found in .IES file



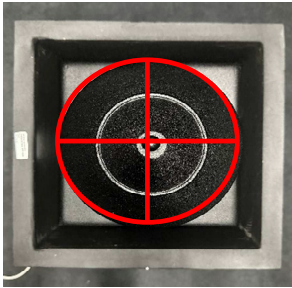
REPORT NO. 105724524CRT-001

ORIENTATION AND ALIGNMENT OF DUT

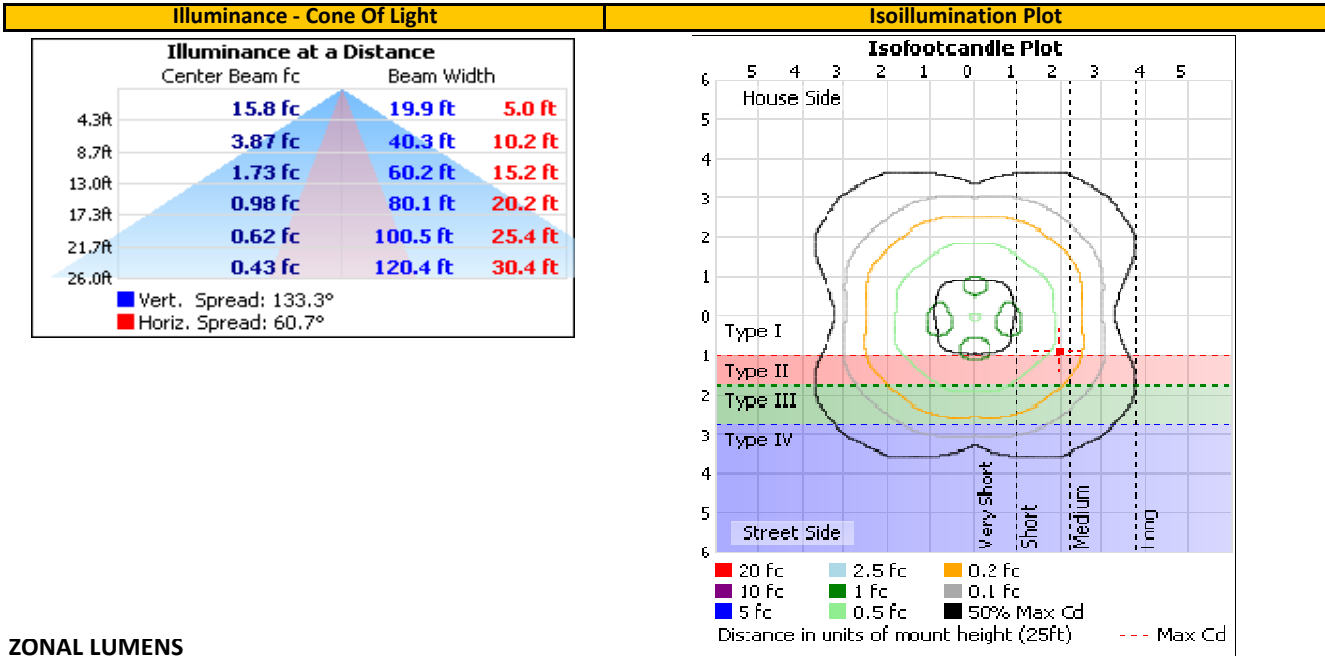
Luminous Opening		
Length (ft)	Width (ft)	Height (ft)
1.31	1.31	1.29
0°-180° H	90°-270° H	0°-180° V

Test Distance (ft)
29.2

PHOTOMETRIC CENTER OF DUT



ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary

Zone (°)	Lumens	Luminaire
0-30	510.6	4.9%
0-40	1,241.1	11.8%
0-60	4,853.0	46.2%
60-90	5,382.0	51.3%
70-100	2,556.4	24.3%
90-120	243.8	2.3%
0-90	10,235.0	97.5%
90-180	265.1	2.5%
0-180	10,500.1	100.0%

Zone (°)	Lumens	Total	Zone (°)	Lumens	Total
0-10	31.5	0.3%	90-100	146.8	1.4%
10-20	132.8	1.3%	100-110	67.1	0.6%
20-30	346.4	3.3%	110-120	29.9	0.3%
30-40	730.5	7.0%	120-130	13.7	0.1%
40-50	1345.9	12.8%	130-140	5.8	0.1%
50-60	2265.9	21.6%	140-150	1.7	0.0%
60-70	2972.3	28.3%	150-160	0.1	0.0%
70-80	1901.3	18.1%	160-170	0.0	0.0%
80-90	508.4	4.8%	170-180	0.0	0.0%

LUM. CLASSIFICATION SYSTEM (LCS)

CS Zone	Lumens	% Lamp	% Lum
FL (0-30)	259.4	N.A.	2.5
FM (30-60)	2205.1	N.A.	21.0
FH (60-80)	2435.3	N.A.	23.2
FVH (80-90)	254.1	N.A.	2.4
BL (0-30)	250.4	N.A.	2.4
BM (30-60)	2134.9	N.A.	20.3
BH (60-80)	2438.8	N.A.	23.2
BVH (80-90)	254.3	N.A.	2.4
UL (90-100)	146.8	N.A.	1.4
UH (100-180)	118.3	N.A.	1.1
Total	10497.4	N.A.	100.0
BUG Rating	B3-U3-G3		

INSITU TEMPERATURE MEASUREMENT TESTING

REPORT NO. 105724524CRT-001

Test Configuration	Tested Model No.	Pass/Fail/NA
4	Model 3000 Coachman Lamp Type V	NA

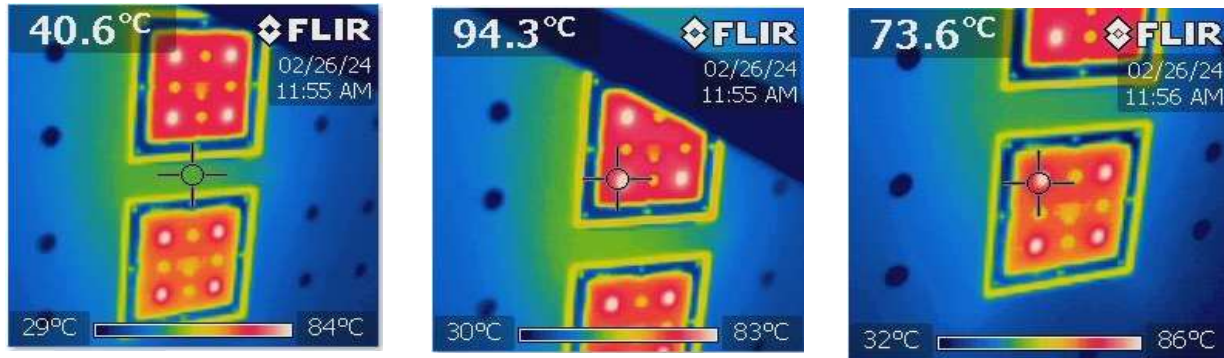
LED MEASUREMENTS AND RATINGS

Mounting Type	Input Voltage (Vac)
Pole or Post	120.00

LED Model No.	Lumileds XR-7070
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Measured LED Current (mA)	Measured LED Temp - Ts (°C)
243.3	64.8

Thermal Images



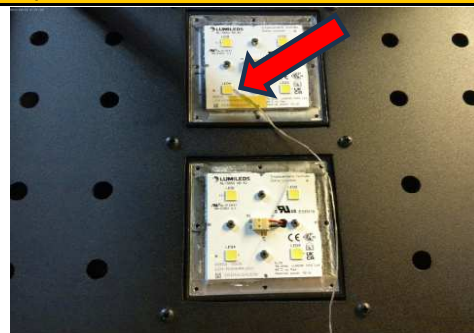
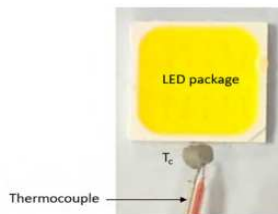
ISTMT Photos - Ts (LEDs)



ISTMT Photos - Ts Locations (Full Optical View)

Temperature (T_c or t_c) Measurement

The location of T_c , also known as t_c , for each LED module is shown in Figure 1 (labeled as T_c in the drawing).



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DRIVER MEASUREMENTS AND RATINGS

Driver Model No.	Inventronics EUM-050S150DT
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Measured Case Temp - Td (°C)	Max Rated Case Temp - Td Max (°C)
56.2	90.0
54.5	

ISTMT Photo - Td



DRIVER MANUFACTURER'S SUPPORTING DOCUMENTATION (Supplied by client)



EQUIPMENT LIST

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#	Equipment	Model No	Control No.	Last Cal	Cal Due
1	LSI Type C Goniophotometer System	6440	---	2/1/2024	5/1/2024
2	Elgar AC Power Supply	CW1251	---	VBU	VBU
3	Yokogawa Power Analyzer	WT210	E464	6/21/2023	6/21/2024
4	Traceable Hygrothermometer	4800	L206	3/7/2023	3/7/2024
5	Omega Thermometer	DPI8-C24	M263	3/9/2023	3/9/2024
6	Tape Measure	Crescent	---	9/21/2021	9/21/2024
7	Fluke Temperature Meter	53II	T1318	6/28/2023	6/28/2024
8	Fluke Multimeter	87V	D590	9/5/2023	9/5/2024
9	Fluke Multimeter	87V	D589	4/10/2023	4/10/2024
10	Traceable Hygrothermometer	608-H1	L252	5/17/2023	5/17/2024
11	FLIR Thermal Imaging Camera	iX Series	iX Series	VBU	VBU

The AC power supplies used for testing have a crest factor capable of 0-3.5

REVISION HISTORY

#	Revision Date	Updated By	Reviewed By	Description of Change
---	None	---	---	---
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