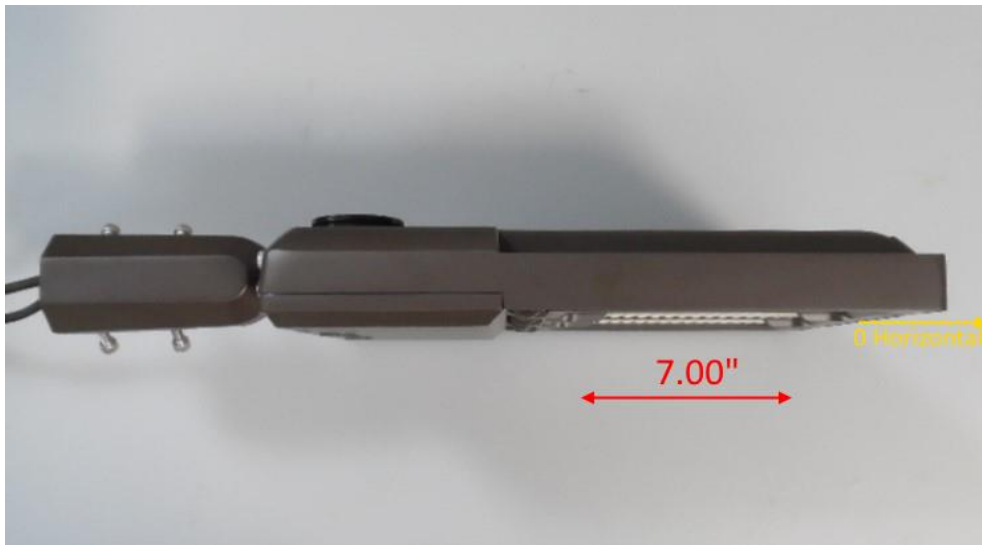


## Report of Test

LLIA002251-029

Roadway/Area Light Distribution Photometry Test Report

Catalog Number: ARL-150PCS-SWO - T2 Optics - 100W - 4000K Setting  
Pole mounted, cast aluminum housing, white LED board with  
frosted plastic enclosure with clear optic sections below each LED.  
288 white LEDs, 144 CW LEDs and 144 WW LEDs  
One Sosen SS-160NH-E260BH LED driver



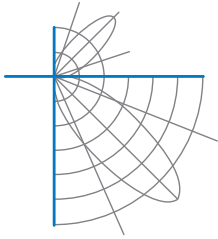
Prepared For:  
Topaz Lighting Corp  
925 Waverly Avenue  
Holtsville, NY 11742, USA

Performance Summary			
Input Voltage	120.0 Vac	Luminous Flux	15175.0 Lumens
Input Current	0.8099 A	Total Efficacy	156.5 Lm/W
Input Power	96.95 W		
Frequency	60.01 Hz	Roadway Throw	Medium
Power Factor	0.998	Roadway Type	Type II
Current THD	4.3 %		

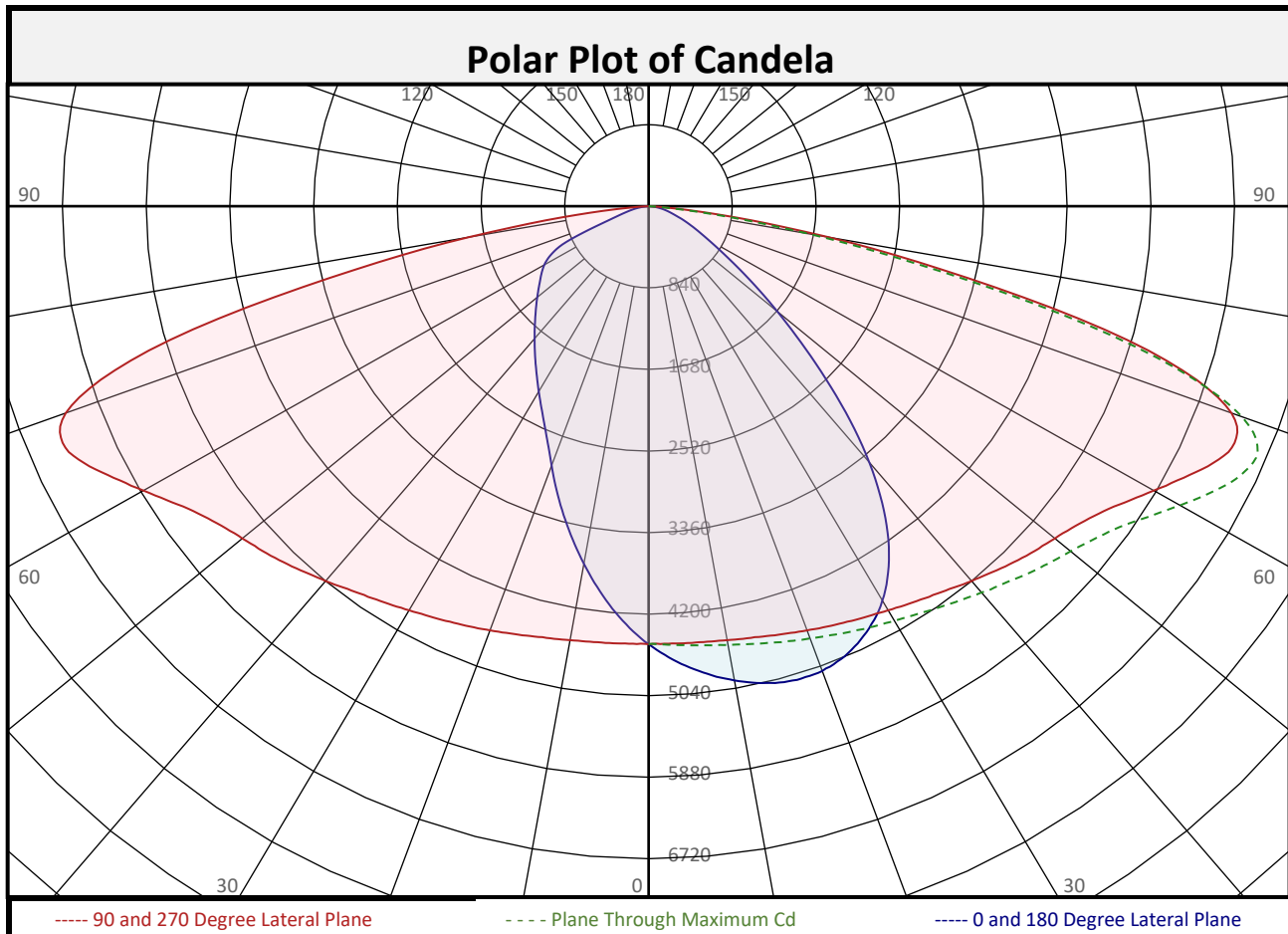
This test report was issued by LightLab International Allentown, LLC without alterations or erasures.

Test date: 11/10/2023  
Report date: 11/10/2023

Signed: \_\_\_\_\_

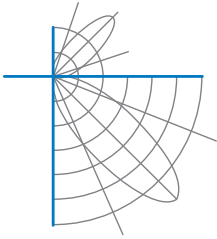


## Report of Test LLIA002251-029

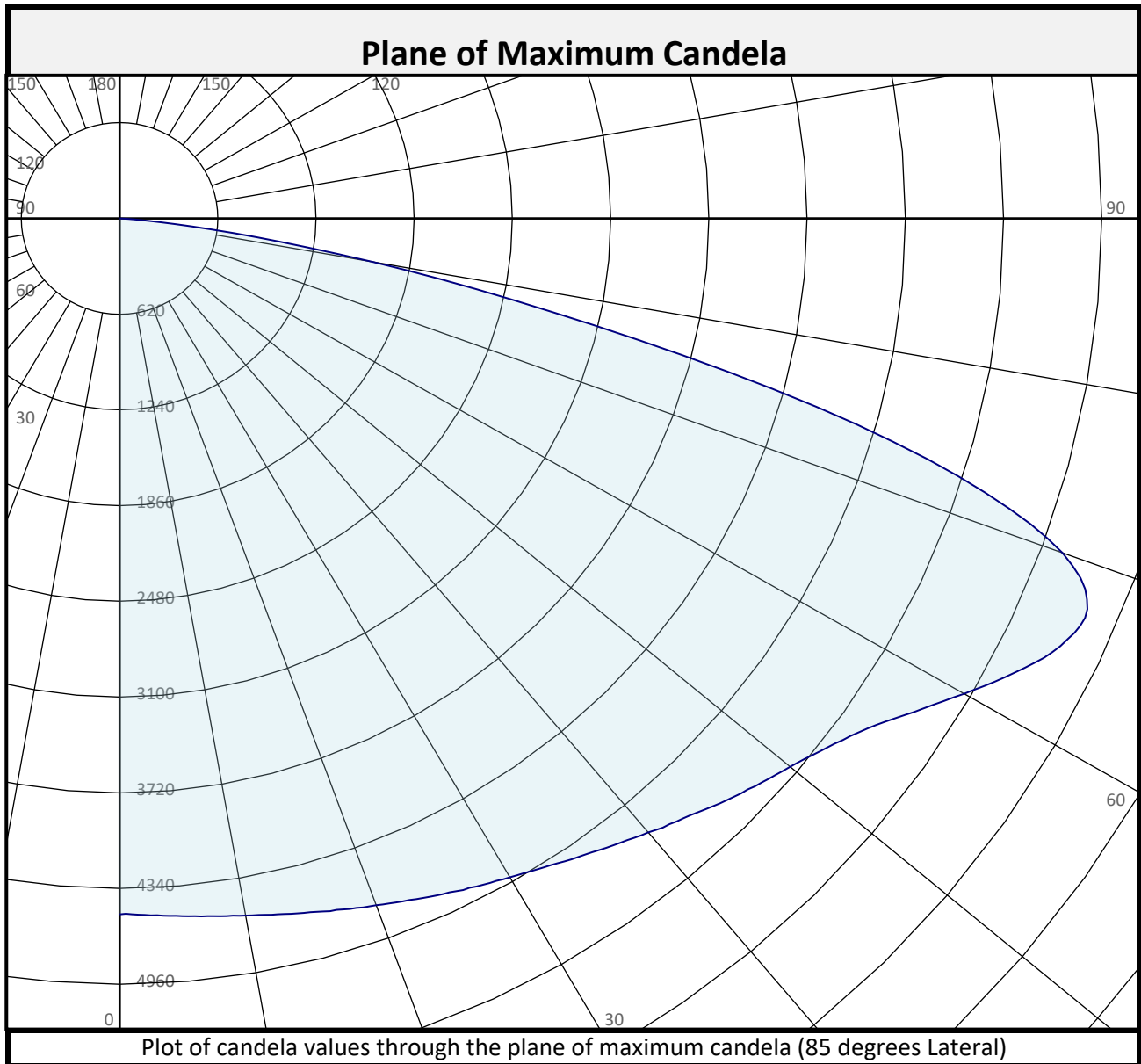


### Zonal Flux Summary

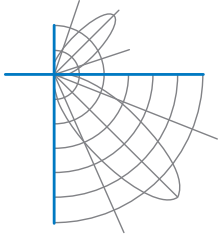
Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total
0-10	427.2	2.8%	90-100	0.0	0.0%	0-20	1665	11.0%
10-20	1238	8.2%	100-110	0.0	0.0%	0-30	3604	23.7%
20-30	1939	12.8%	110-120	0.0	0.0%	0-40	6070	40.0%
30-40	2466	16.2%	120-130	0.0	0.0%	0-60	11357	74.8%
40-50	2687	17.7%	130-140	0.0	0.0%	0-80	14999	98.8%
50-60	2601	17.1%	140-150	0.0	0.0%	10-90	14748	97.2%
60-70	2321	15.3%	150-160	0.0	0.0%	20-50	7092	46.7%
70-80	1321	8.7%	160-170	0.0	0.0%	40-90	9105	60.0%
80-90	176.3	1.2%	170-180	0.0	0.0%	60-90	3818	25.2%
0-90	15175	100.0%	90-180	0.0	0.0%	0-180	15175	100.0%



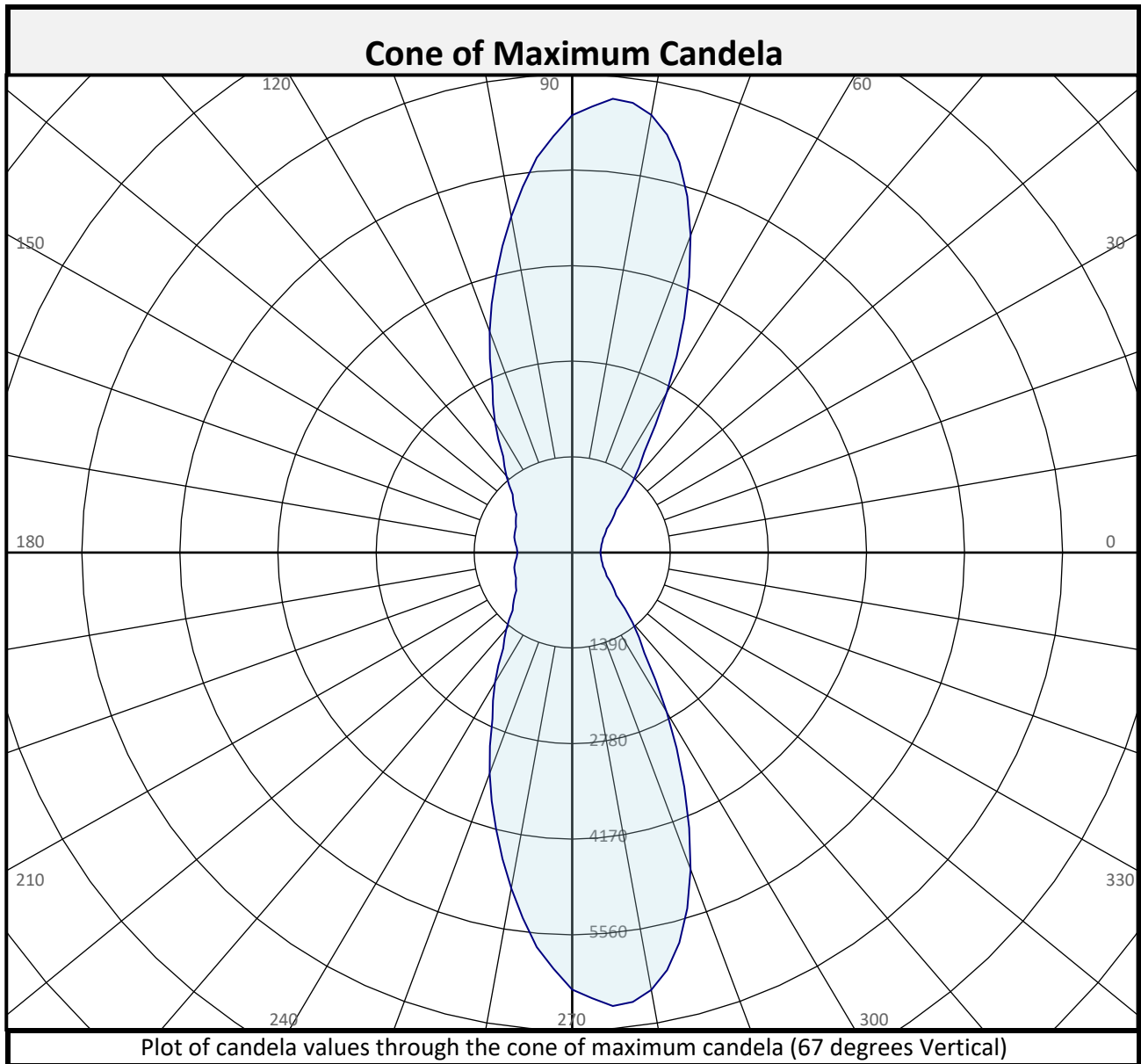
Report of Test  
LLIA002251-029



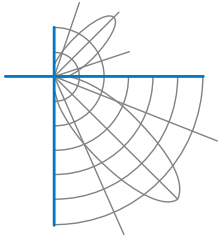
Street and House Side Flux Summary						
	Downward		Upward		Total	
	Lumens	% of Total	Lumens	% of Total	Lumens	% of Total
Street Side	8693.5	57.3%	0.0	0.0%	8693.5	57.3%
House Side	6481.5	42.7%	0.0	0.0%	6481.5	42.7%
<b>Total</b>	<b>15175.0</b>	<b>100.0%</b>	<b>0.0</b>	<b>0.0%</b>	<b>15175.0</b>	<b>100.0%</b>



Report of Test  
LLIA002251-029

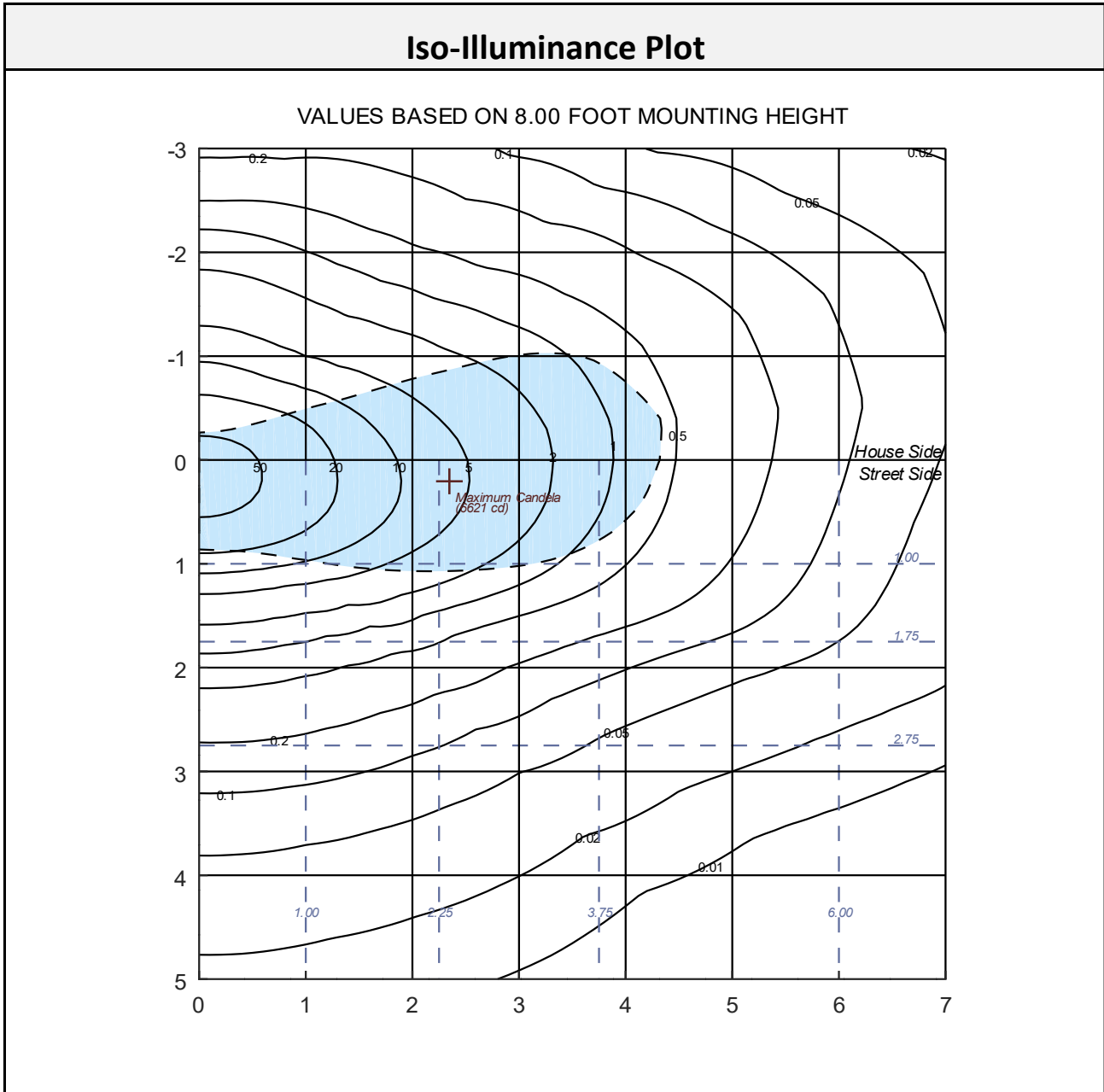


Street and House Side Flux Summary						
	Downward		Upward		Total	
	Lumens	% of Total	Lumens	% of Total	Lumens	% of Total
Street Side	8693.5	57.3%	0.0	0.0%	8693.5	57.3%
House Side	6481.5	42.7%	0.0	0.0%	6481.5	42.7%
<b>Total</b>	<b>15175.0</b>	<b>100.0%</b>	<b>0.0</b>	<b>0.0%</b>	<b>15175.0</b>	<b>100.0%</b>

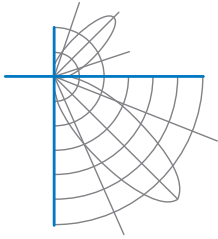


## Report of Test

LLIA002251-029

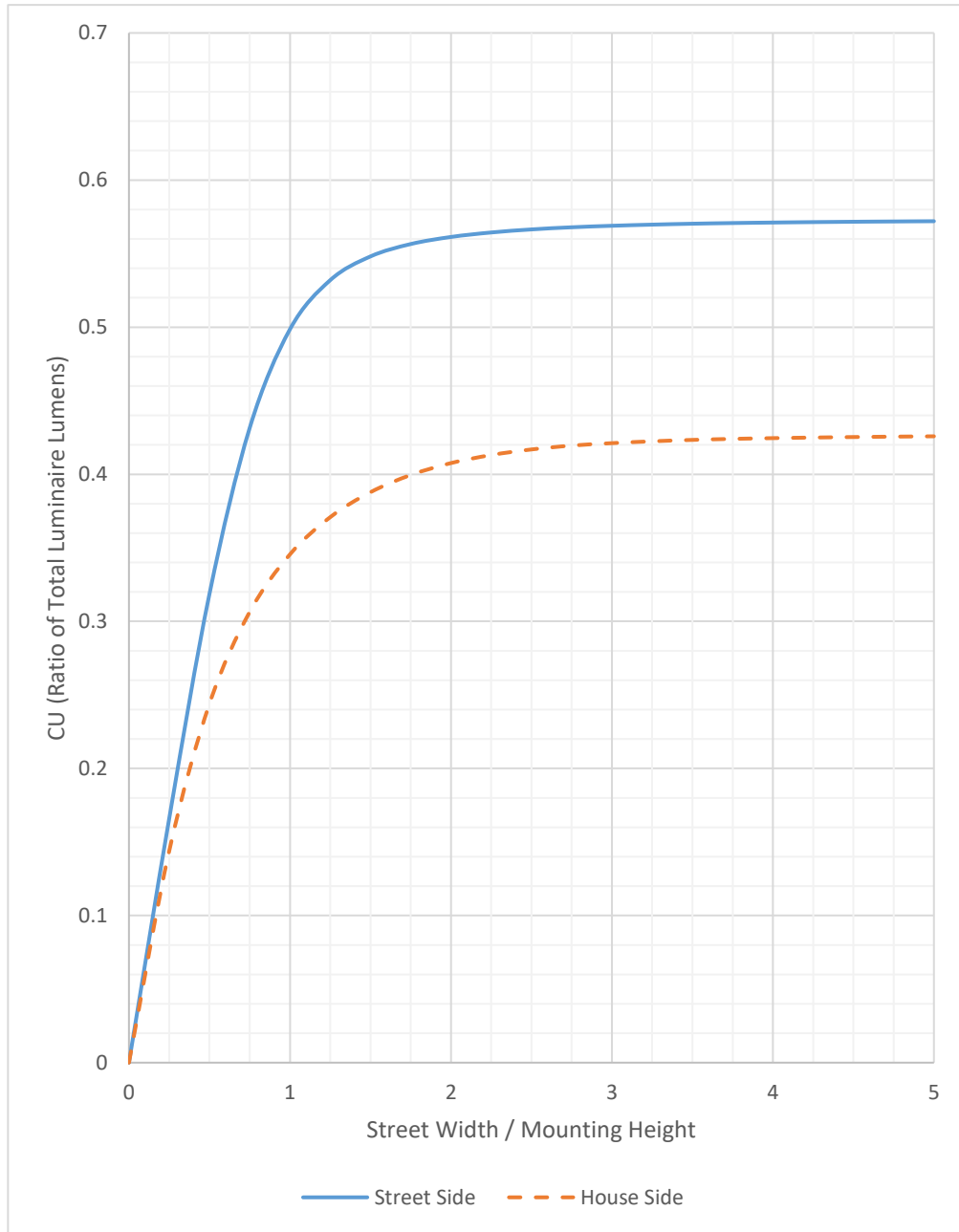


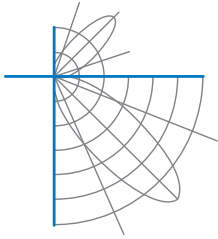
The isofootcandle values shown in the plot above are based on a mounting height of  $h = 8.0$  feet. Grid values show multiples of mounting height. The isoilluminance contour lines are expressed in units of footcandles. The values expressed are based on the direct light from a single unit without the contribution of room reflections.



## Report of Test LLIA002251-029

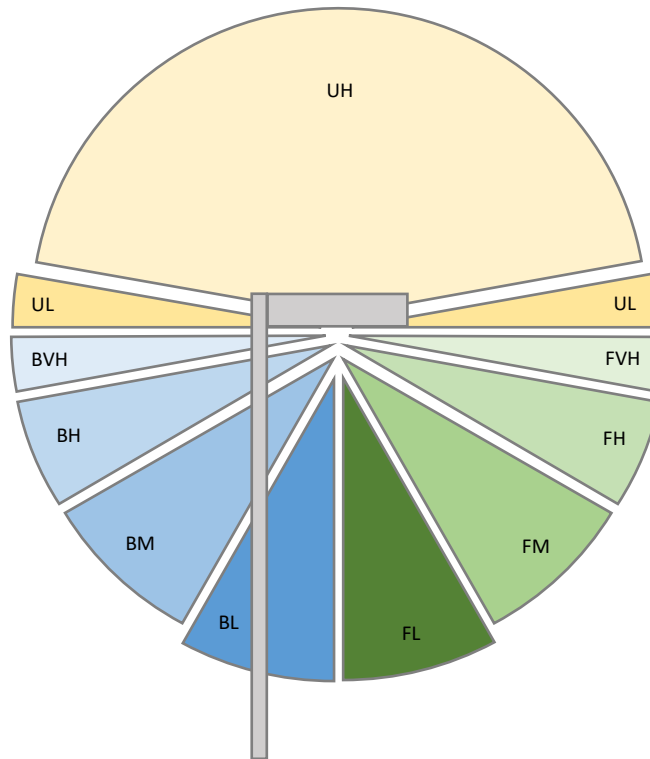
### Coefficients of Utilization Plot





Report of Test  
LLIA002251-029

LCS Tables and Bug Classification



**Back Light**

BL - Back Low (0°-30°)	1508.0 Lm
BM - Back Mid (30°-60°)	3073.0 Lm
BH - Back High (60°-80°)	1795.4 Lm
BVH - Back Very High (80°-90°)	105.0 Lm

**Forward Light**

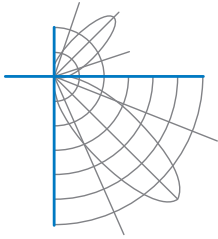
FL - Forward Low (0°-30°)	2096.0 Lm
FM - Forward Mid (30°-60°)	4680.2 Lm
FH - Forward High (60°-80°)	1846.1 Lm
FVH - Forward Very High (80°-90°)	71.3 Lm

**Uplight**

UL - Upward Low (90°-100°)	0.0 Lm
UH - Upward High (100°-180°)	0.0 Lm

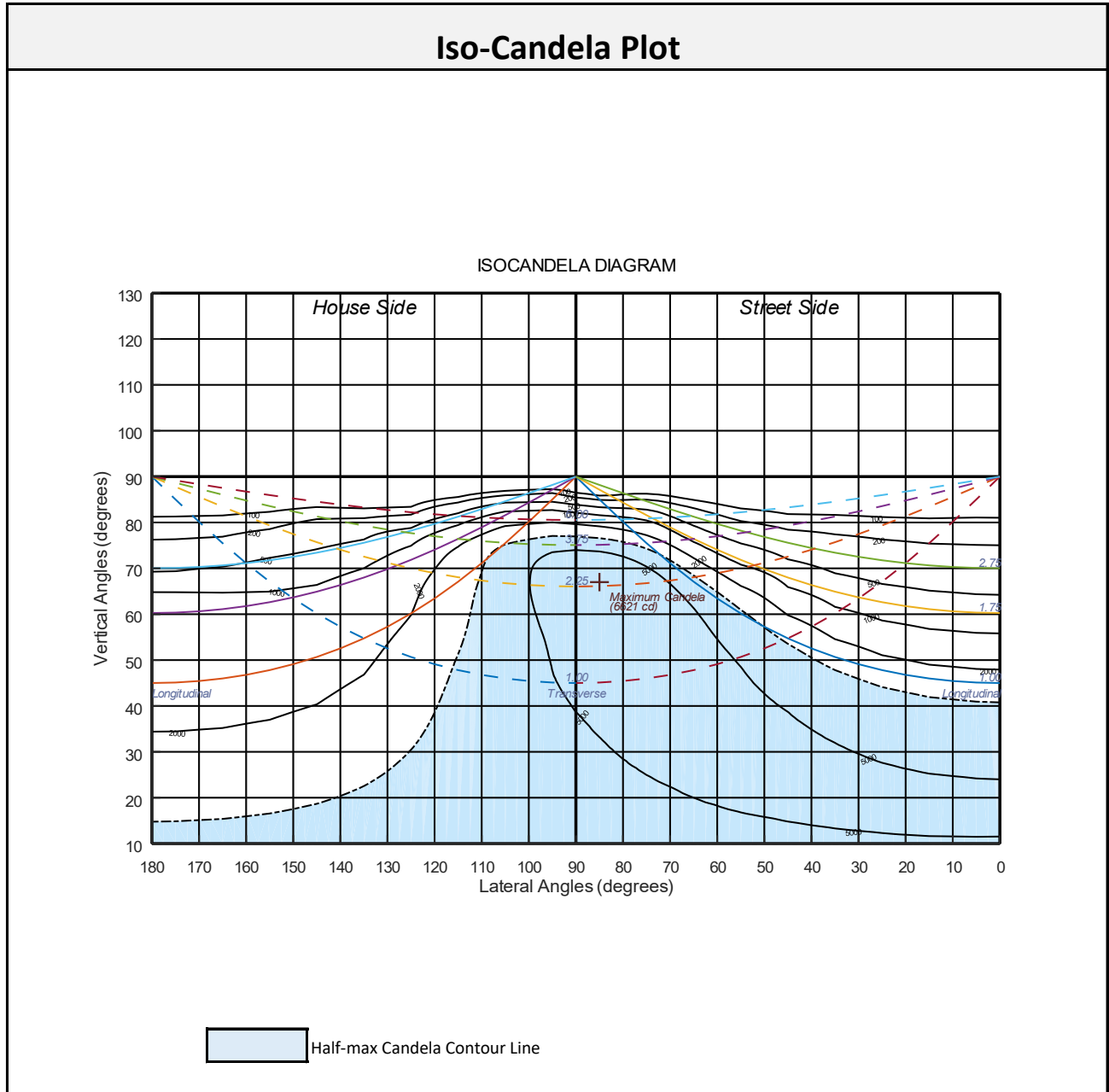
BUG Rating: Asymmetrical Luminaire (Type I, II, III, and IV) B3 - U0 - G3

BUG Rating: Quadrilateral Symmetrical Luminaire (Type V, Type VS) B3 - U0 - G2

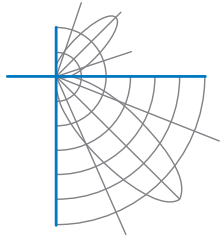


Report of Test  
LLIA002251-029

**Iso-Candela Plot**







## Report of Test

LLIA002251-029

Luminous Intensity (Candela) Table

	Lateral (C-Plane) Angles															
	0	5	15	25	35	45	55	57.5	60	62.5	65	67.5	70	72.5	75	
0	4508	4508	4508	4508	4508	4508	4508	4508	4508	4508	4508	4508	4508	4508	4508	
2.5	4648	4649	4647	4637	4624	4608	4594	4586	4583	4580	4573	4567	4558	4555	4548	
5	4767	4768	4766	4750	4729	4700	4671	4662	4654	4645	4635	4623	4612	4604	4591	
7.5	4870	4870	4867	4847	4821	4790	4747	4734	4723	4709	4696	4680	4664	4651	4636	
10	4956	4957	4951	4935	4906	4868	4818	4803	4790	4776	4757	4738	4720	4702	4679	
12.5	5026	5026	5024	5005	4980	4939	4888	4872	4854	4835	4817	4798	4773	4752	4729	
15	5075	5077	5075	5066	5043	5005	4953	4938	4919	4901	4880	4855	4827	4806	4779	
17.5	5097	5100	5103	5107	5096	5068	5016	5002	4983	4963	4941	4914	4883	4860	4833	
20	5091	5092	5107	5125	5135	5121	5076	5063	5046	5023	5000	4972	4944	4918	4884	
22.5	5045	5050	5075	5113	5152	5167	5140	5122	5106	5085	5063	5035	5003	4975	4942	
25	4965	4971	5009	5075	5149	5198	5193	5180	5165	5145	5123	5095	5064	5035	5001	
27.5	4845	4860	4912	5004	5120	5212	5240	5233	5222	5207	5186	5161	5127	5098	5063	
30	4689	4705	4775	4907	5061	5209	5283	5284	5277	5268	5246	5223	5190	5160	5123	
32.5	4471	4495	4591	4767	4979	5180	5313	5324	5327	5323	5311	5288	5256	5224	5188	
35	4195	4218	4341	4573	4861	5129	5329	5355	5367	5372	5367	5352	5326	5296	5258	
37.5	3849	3878	4025	4314	4689	5051	5324	5369	5399	5419	5421	5413	5392	5367	5330	
40	3446	3475	3644	3989	4457	4934	5298	5367	5416	5450	5471	5472	5457	5439	5407	
42.5	2994	3023	3208	3597	4164	4768	5250	5341	5414	5476	5509	5529	5527	5516	5487	
45	2516	2543	2729	3146	3798	4548	5168	5293	5398	5483	5548	5583	5595	5596	5576	
47.5	2073	2095	2259	2656	3371	4267	5059	5215	5357	5477	5569	5632	5667	5678	5662	
50	1688	1706	1844	2186	2894	3921	4901	5098	5276	5435	5567	5660	5720	5754	5752	
52.5	1355	1371	1483	1766	2393	3505	4673	4921	5147	5354	5531	5670	5765	5821	5833	
55	1078	1090	1180	1409	1918	3023	4370	4679	4964	5227	5461	5654	5792	5892	5939	
57.5	859	868	937	1112	1508	2489	3988	4361	4715	5045	5348	5612	5817	5964	6056	
60	693	700	752	880	1175	1955	3518	3947	4369	4776	5156	5501	5787	6011	6161	
62.5	569	575	613	705	915	1482	2951	3415	3887	4358	4819	5255	5642	5960	6193	
65	470	476	505	571	720	1112	2307	2766	3265	3778	4305	4831	5327	5764	6107	
67.5	386	390	414	463	571	836	1666	2059	2532	3055	3612	4192	4778	5323	5788	
70	305	310	335	373	450	631	1138	1404	1774	2243	2780	3365	3978	4582	5131	
72.5	247	250	263	298	352	469	772	922	1142	1464	1911	2448	3027	3594	4136	
75	200	202	208	232	270	341	533	620	740	911	1172	1557	2039	2526	2973	
77.5	158	159	160	173	197	238	356	409	479	573	702	902	1210	1571	1891	
80	117	118	116	122	136	146	214	251	300	359	433	536	697	915	1118	
82.5	76	77	74	77	83	86	117	136	162	196	239	293	369	469	554	
85	39	39	36	37	38	38	51	59	69	82	96	115	142	173	197	
87.5	5	5	5	5	6	7	11	13	16	18	20	24	28	31	33	
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

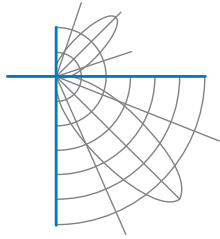
Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.

**North America (issuing laboratory)**

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www.lightlabint.com



## Report of Test

LLIA002251-029

Luminous Intensity (Candela) Table

	Lateral (C-Plane) Angles															
	77.5	80	82.5	85	90	95	105	115	125	135	145	155	165	175	180	
0	4508	4508	4508	4508	4508	4508	4508	4508	4508	4508	4508	4508	4508	4508	4508	
2.5	4539	4533	4524	4518	4507	4492	4468	4442	4422	4395	4376	4364	4350	4346	4346	
5	4578	4564	4550	4536	4513	4484	4433	4380	4327	4273	4230	4196	4170	4159	4160	
7.5	4618	4597	4578	4558	4520	4482	4397	4314	4227	4143	4071	4014	3972	3953	3951	
10	4659	4636	4608	4585	4535	4483	4370	4248	4125	4006	3906	3825	3767	3739	3736	
12.5	4701	4674	4647	4616	4555	4488	4343	4184	4025	3869	3734	3631	3556	3518	3514	
15	4750	4718	4686	4652	4579	4501	4323	4126	3925	3731	3565	3433	3343	3298	3292	
17.5	4800	4764	4730	4693	4611	4517	4306	4068	3825	3591	3391	3235	3129	3072	3066	
20	4853	4816	4776	4734	4646	4534	4293	4015	3728	3451	3217	3036	2912	2848	2841	
22.5	4907	4865	4825	4778	4682	4563	4284	3964	3629	3313	3042	2839	2706	2648	2641	
25	4964	4919	4875	4829	4718	4590	4277	3913	3529	3168	2869	2656	2532	2480	2473	
27.5	5023	4980	4927	4878	4759	4620	4274	3864	3432	3025	2702	2494	2382	2335	2331	
30	5084	5038	4986	4927	4802	4650	4272	3814	3330	2878	2543	2348	2247	2207	2202	
32.5	5146	5100	5044	4984	4853	4687	4273	3766	3224	2735	2399	2216	2124	2089	2083	
35	5214	5163	5110	5049	4908	4733	4279	3720	3120	2595	2263	2092	2008	1978	1976	
37.5	5286	5236	5179	5118	4963	4778	4286	3672	3016	2461	2136	1977	1903	1875	1873	
40	5369	5317	5254	5191	5037	4836	4298	3624	2908	2332	2016	1869	1802	1780	1778	
42.5	5448	5397	5338	5269	5106	4896	4312	3571	2796	2207	1901	1765	1709	1691	1690	
45	5538	5488	5428	5358	5181	4951	4316	3509	2682	2085	1792	1667	1620	1607	1606	
47.5	5634	5585	5519	5443	5253	4997	4307	3439	2568	1968	1686	1574	1538	1530	1529	
50	5721	5677	5607	5525	5320	5039	4288	3358	2453	1857	1589	1486	1458	1457	1457	
52.5	5820	5783	5714	5630	5402	5095	4265	3264	2338	1750	1495	1404	1384	1388	1390	
55	5945	5913	5849	5761	5515	5169	4253	3170	2219	1651	1409	1328	1317	1325	1327	
57.5	6094	6087	6033	5948	5671	5280	4253	3078	2099	1557	1332	1259	1254	1266	1270	
60	6246	6270	6235	6157	5853	5402	4254	2988	1991	1465	1259	1189	1189	1204	1207	
62.5	6348	6428	6430	6370	6053	5545	4246	2893	1894	1379	1175	1106	1106	1117	1120	
65	6360	6517	6577	6553	6251	5683	4223	2785	1798	1286	1071	996	983	987	988	
67.5	6161	6422	6573	6613	6363	5768	4149	2638	1675	1165	935	845	807	721	708	
70	5604	5968	6211	6335	6223	5705	4074	2473	1495	1001	770	670	537	446	438	
72.5	4629	5041	5349	5549	5614	5299	3889	2286	1268	786	601	485	351	312	309	
75	3378	3741	4043	4269	4463	4374	3378	1950	990	585	454	334	252	233	231	
77.5	2165	2407	2616	2790	3014	3101	2538	1389	682	426	326	233	186	175	174	
80	1277	1407	1520	1624	1828	2010	1728	882	356	258	227	160	133	126	125	
82.5	609	648	680	720	876	1068	968	427	145	124	129	96	80	76	75	
85	199	188	181	188	267	393	349	140	48	42	47	37	31	28	27	
87.5	32	31	27	22	31	68	48	22	10	5	2	2	1	0	0	
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

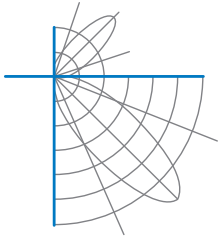
Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.

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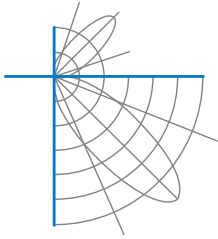


## Report of Test

LLIA002251-029

Luminous Intensity (Candela) Table

	Lateral (C-Plane) Angles															
	0	5	15	25	35	45	55	57.5	60	62.5	65	67.5	70	72.5	75	
Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	92.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	97.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	102.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	107.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	112.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	117.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	122.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	127.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	132.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	137.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	142.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	147.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	152.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	157.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	162.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
167.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
172.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
177.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

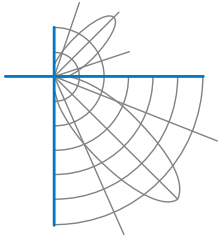


## Report of Test

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Luminous Intensity (Candela) Table

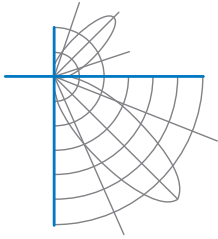
	Lateral (C-Plane) Angles															
	77.5	80	82.5	85	90	95	105	115	125	135	145	155	165	175	180	
Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	92.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	97.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	102.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	107.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	112.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	117.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	122.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	127.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	132.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	137.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	142.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	147.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	152.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	157.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	162.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
167.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
172.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
177.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



Report of Test  
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**Additional Pictures of Test Subject**





## Report of Test

### LLIA002251-029

Test Distance                    9.5 m  
Ambient Temperature        24.9 °C

#### Notes

The laboratory has not participated in the selection of samples to be tested. All testing is performed on the understanding that the significance of the report is limited to the extent that the test sample is representative of production units.

Tested in accordance with the applicable sections of publications: IES LM-79-19. Format of reports and angular increments based on IES LM-31-20 and LM-10-20.

The luminous intensity values, and other derived quantities, contained in this report are based on absolute data.

Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results.

This report is free of erasures and corrections.

Photometric intensity values are reported using the IES C-Type spherical coordinate system as defined in IES LM-75-19.

This report may contain data that are not covered by the NVLAP accreditation. Quantities marked with † are not covered.

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.

The device under test emits no detectable uplight, as defined by ANSI/IES LM-31-20. For the purpose of this report, certain non-zero uplight readings, attributable to instrument artifacts, have been assigned a zero value.