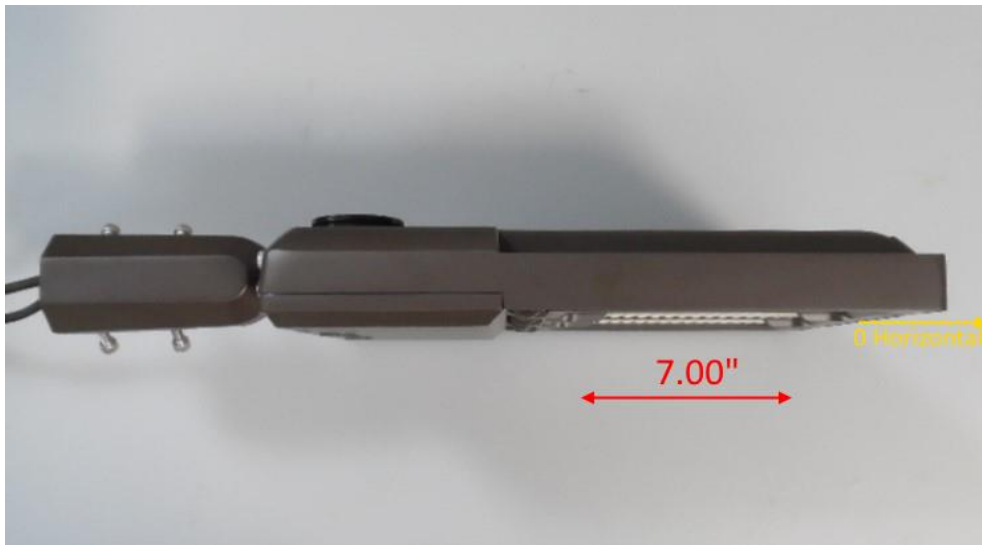


Report of Test

LLIA002251-035

Roadway/Area Light Distribution Photometry Test Report

Catalog Number: ARL-150PCS-SWO - T4 Optics - 150W - 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	20839.7 Lumens
Input Current	1.209 A	Total Efficacy	144.0 Lm/W
Input Power	144.7 W		
Frequency	60.00 Hz	Roadway Throw	Short
Power Factor	0.998	Roadway Type	Type IV
Current THD	4.2 %		

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

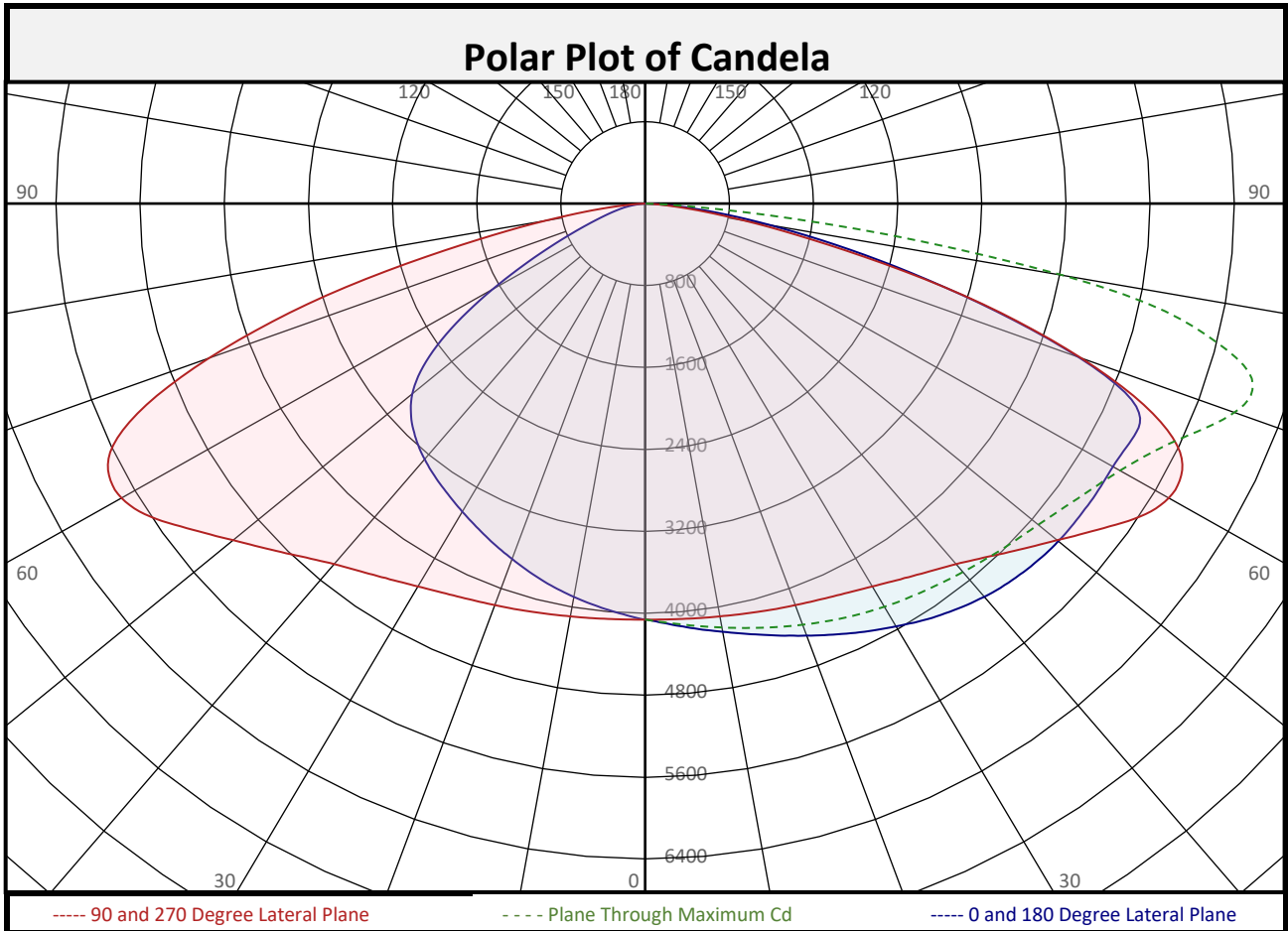
Test date: 11/01/2023
Report date: 11/06/2023

Signed: _____

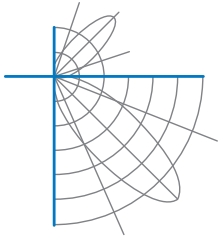


Report of Test

LLIA002251-035

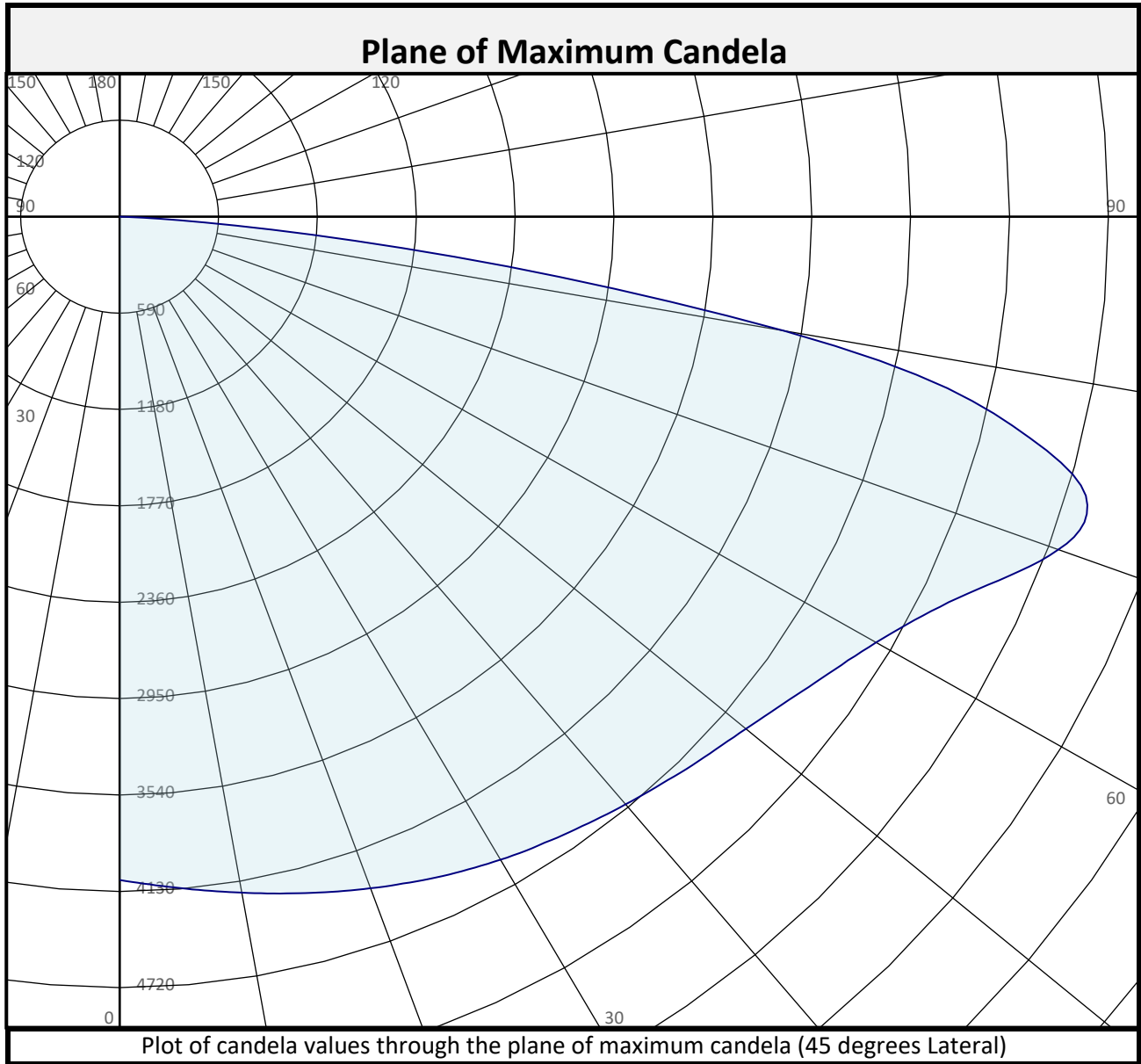


Zonal Flux Summary								
Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total
0-10	388.9	1.9%	90-100	0.0	0.0%	0-20	1553	7.5%
10-20	1165	5.6%	100-110	0.0	0.0%	0-30	3482	16.7%
20-30	1929	9.3%	110-120	0.0	0.0%	0-40	6157	29.5%
30-40	2675	12.8%	120-130	0.0	0.0%	0-60	13616	65.3%
40-50	3407	16.3%	130-140	0.0	0.0%	0-80	20383	97.8%
50-60	4053	19.4%	140-150	0.0	0.0%	10-90	20451	98.1%
60-70	4157	19.9%	150-160	0.0	0.0%	20-50	8010	38.4%
70-80	2609	12.5%	160-170	0.0	0.0%	40-90	14683	70.5%
80-90	456.9	2.2%	170-180	0.0	0.0%	60-90	7224	34.7%
0-90	20840	100.0%	90-180	0.0	0.0%	0-180	20840	100.0%

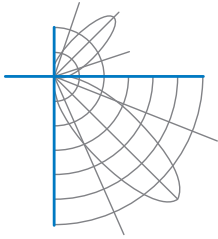


Report of Test

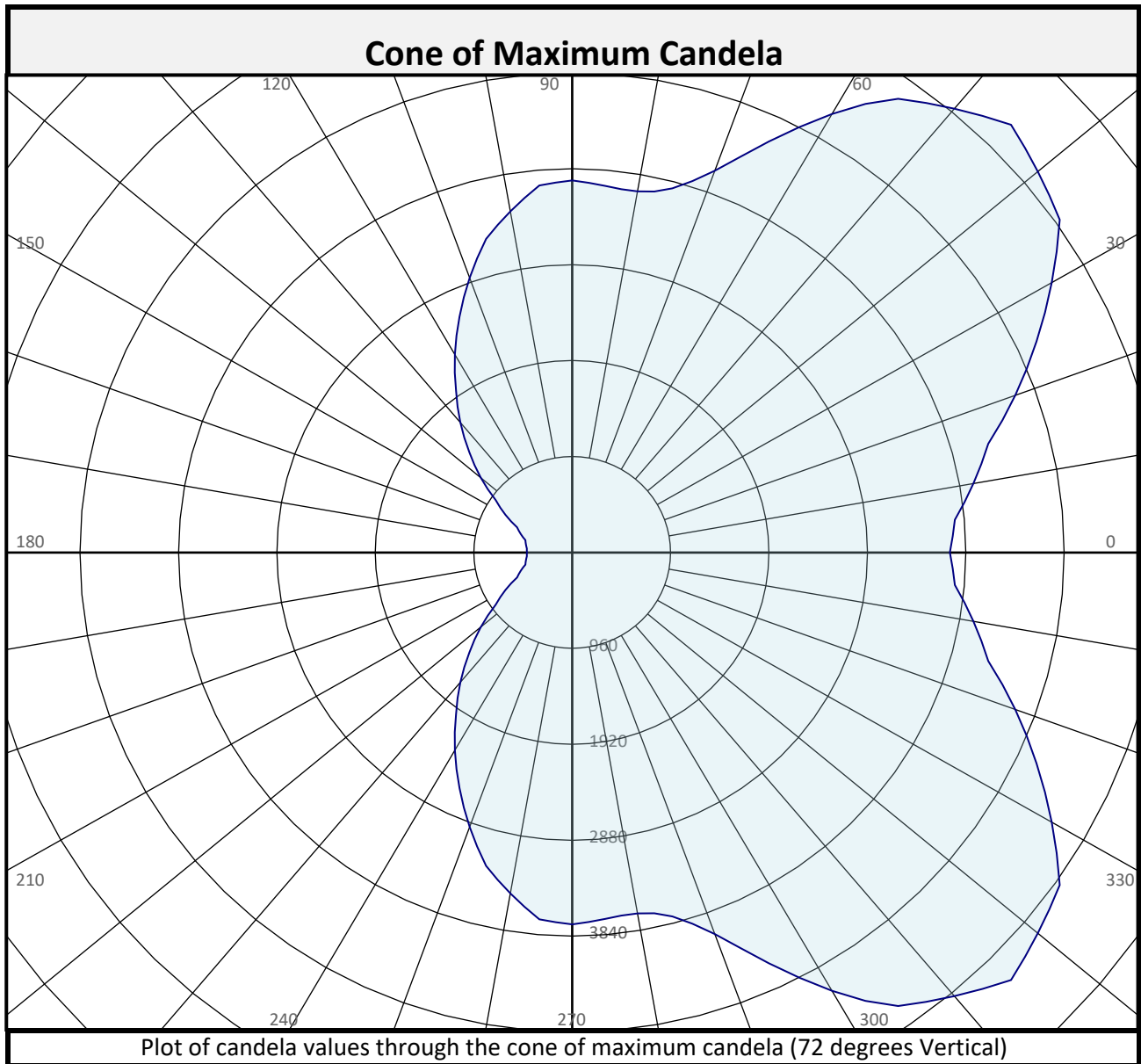
LLIA002251-035



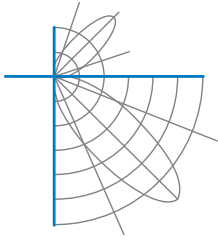
Street and House Side Flux Summary						
	Downward		Upward		Total	
	Lumens	% of Total	Lumens	% of Total	Lumens	% of Total
Street Side	12608.3	60.5%	0.0	0.0%	12608.3	60.5%
House Side	8231.4	39.5%	0.0	0.0%	8231.4	39.5%
Total	20839.7	100.0%	0.0	0.0%	20839.7	100.0%



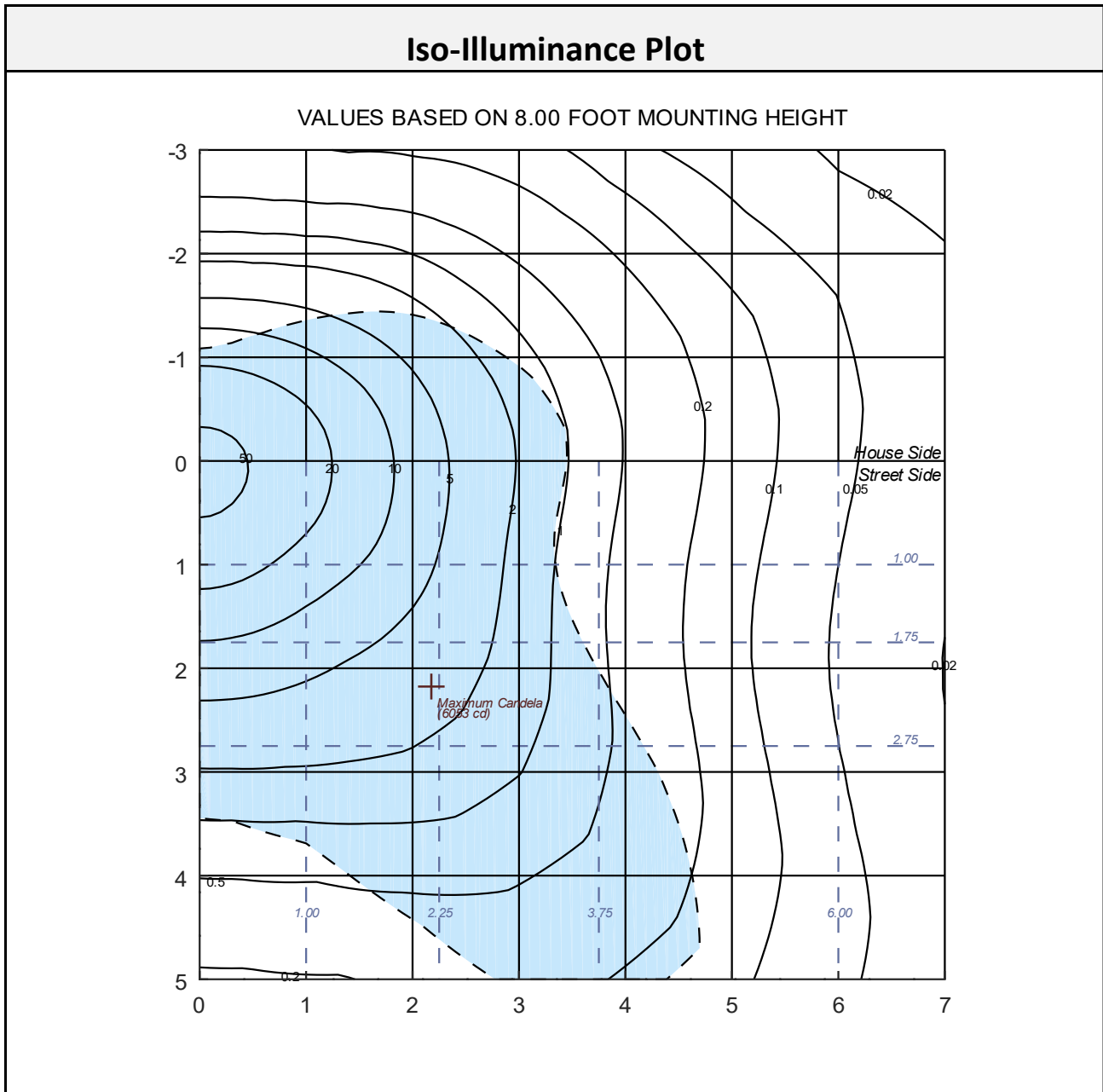
Report of Test
LLIA002251-035



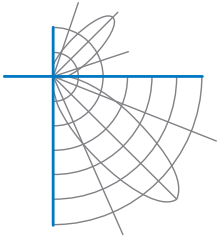
Street and House Side Flux Summary						
	Downward		Upward		Total	
	Lumens	% of Total	Lumens	% of Total	Lumens	% of Total
Street Side	12608.3	60.5%	0.0	0.0%	12608.3	60.5%
House Side	8231.4	39.5%	0.0	0.0%	8231.4	39.5%
Total	20839.7	100.0%	0.0	0.0%	20839.7	100.0%



Report of Test
LLIA002251-035

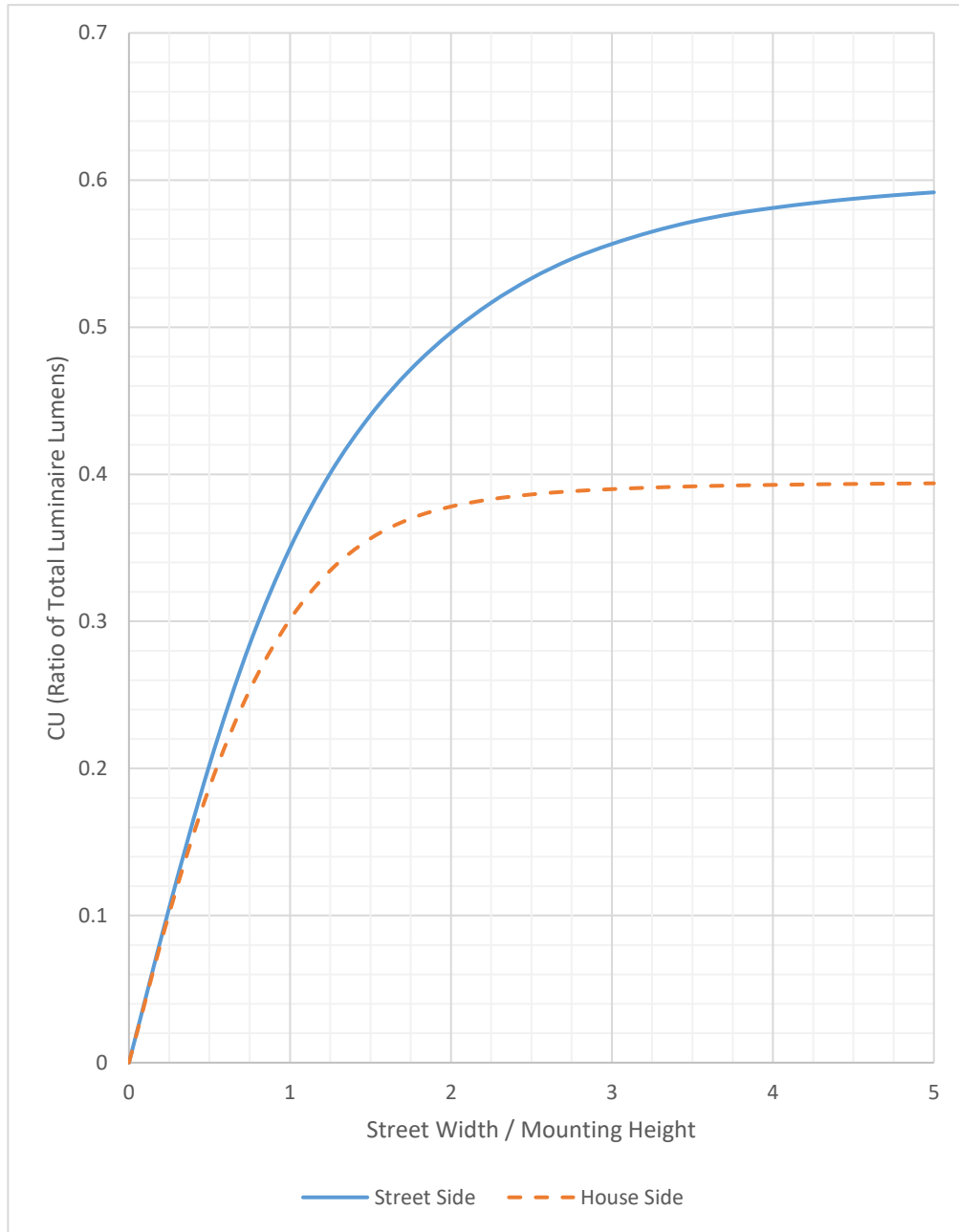


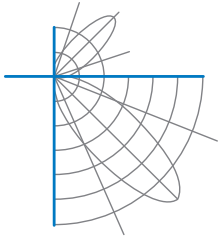
The isofootcandle values shown in the plot above are based on a mounting height of $h = 8.0$ feet. Grid values show multiples of mounting height. The isoilluminance contour lines are expressed in units of footcandles. The values expressed are based on the direct light from a single unit without the contribution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



Report of Test LLIA002251-035

Coefficients of Utilization Plot

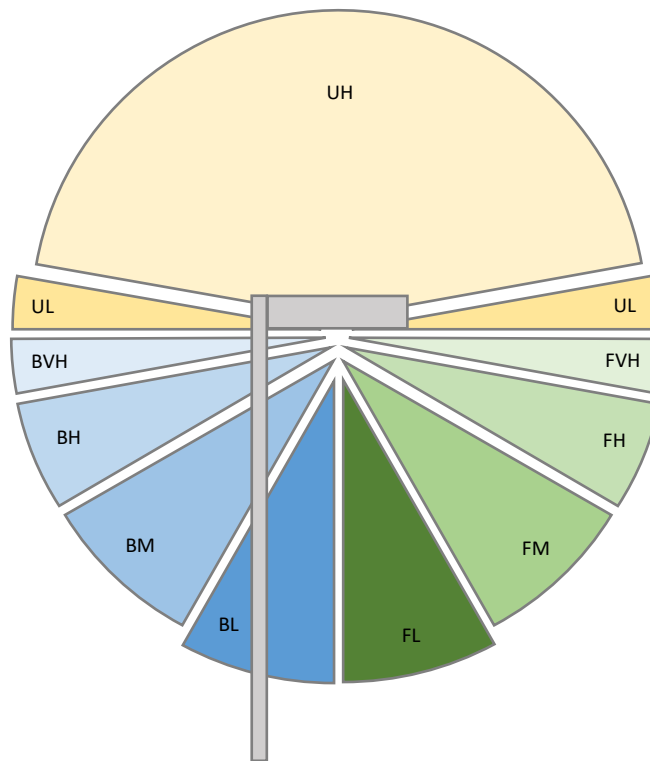




Report of Test

LLIA002251-035

LCS Tables and Bug Classification



Back Light

BL - Back Low (0°-30°)	1643.8 Lm
BM - Back Mid (30°-60°)	4430.1 Lm
BH - Back High (60°-80°)	2083.5 Lm
BVH - Back Very High (80°-90°)	74.0 Lm

Forward Light

FL - Forward Low (0°-30°)	1838.1 Lm
FM - Forward Mid (30°-60°)	5703.9 Lm
FH - Forward High (60°-80°)	4683.4 Lm
FVH - Forward Very High (80°-90°)	382.9 Lm

Uplight

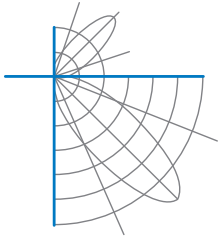
UL - Upward Low (90°-100°)	0.0 Lm
UH - Upward High (100°-180°)	0.0 Lm

BUG Rating: Asymmetrical Luminaire (Type I, II, III, and IV)

B3 - U0 - G3

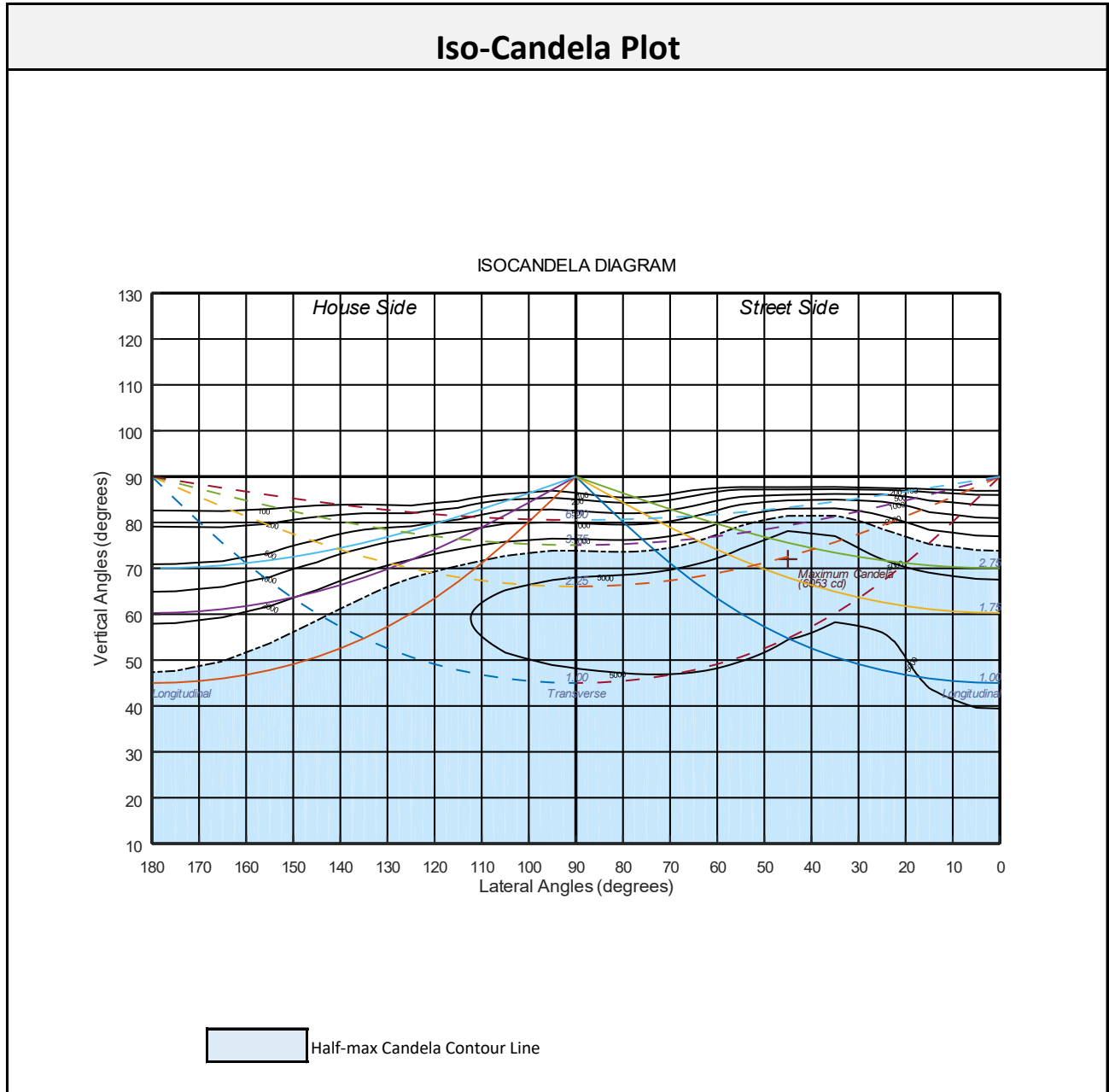
BUG Rating: Quadrilateral Symmetrical Luminaire (Type V, Type VS)

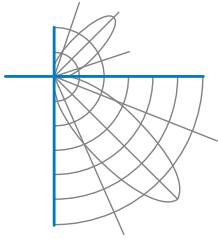
B3 - U0 - G3



Report of Test
LLIA002251-035

Iso-Candela Plot





Report of Test

LLIA002251-035

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	4060	4060	4060	4060	4060	4060	4060	4060	4060	4060	4060	4060	4060	4060	4060	
2.5	4100	4102	4101	4099	4094	4090	4084	4083	4082	4080	4079	4077	4073	4073	4073	
5	4145	4145	4145	4140	4133	4125	4114	4111	4107	4105	4101	4099	4093	4092	4089	
7.5	4197	4195	4193	4185	4174	4162	4148	4142	4138	4134	4127	4124	4118	4113	4110	
10	4246	4246	4243	4232	4218	4201	4182	4175	4170	4163	4156	4151	4143	4138	4132	
12.5	4301	4299	4296	4282	4264	4243	4218	4210	4204	4196	4189	4180	4174	4166	4159	
15	4360	4357	4352	4335	4311	4286	4255	4246	4239	4232	4223	4212	4203	4194	4185	
17.5	4425	4422	4413	4392	4361	4331	4294	4284	4276	4266	4256	4246	4235	4225	4215	
20	4489	4488	4476	4447	4411	4374	4333	4323	4312	4302	4291	4280	4268	4258	4248	
22.5	4558	4559	4540	4506	4464	4417	4373	4363	4350	4340	4328	4316	4304	4293	4282	
25	4628	4627	4603	4563	4515	4463	4414	4403	4392	4379	4366	4354	4343	4331	4317	
27.5	4699	4697	4667	4616	4562	4504	4456	4444	4432	4421	4409	4397	4385	4371	4358	
30	4767	4766	4729	4669	4605	4544	4500	4488	4476	4467	4456	4444	4431	4418	4405	
32.5	4838	4834	4793	4719	4641	4583	4543	4533	4525	4517	4507	4497	4485	4474	4461	
35	4903	4900	4849	4767	4678	4618	4591	4586	4579	4573	4567	4559	4549	4540	4526	
37.5	4961	4956	4901	4807	4711	4656	4642	4642	4642	4639	4636	4629	4622	4612	4602	
40	5014	5007	4946	4845	4745	4695	4702	4707	4712	4712	4710	4708	4703	4696	4686	
42.5	5054	5047	4984	4876	4776	4737	4766	4775	4784	4792	4795	4797	4795	4788	4782	
45	5088	5079	5011	4903	4809	4782	4835	4852	4867	4884	4892	4901	4904	4904	4899	
47.5	5112	5104	5034	4923	4837	4825	4914	4941	4967	4991	5009	5022	5030	5033	5032	
50	5127	5117	5051	4943	4864	4877	5012	5048	5085	5112	5137	5154	5167	5170	5176	
52.5	5135	5125	5064	4962	4894	4941	5117	5166	5210	5246	5280	5304	5322	5333	5335	
55	5138	5129	5075	4987	4934	5019	5237	5298	5354	5403	5444	5474	5493	5508	5517	
57.5	5138	5131	5088	5022	4980	5107	5375	5451	5520	5578	5623	5661	5684	5698	5708	
60	5136	5135	5109	5068	5050	5212	5542	5628	5705	5765	5811	5841	5858	5865	5864	
62.5	5156	5155	5149	5135	5150	5347	5725	5809	5879	5924	5947	5956	5952	5941	5923	
65	5176	5182	5209	5228	5280	5521	5875	5937	5976	5991	5985	5960	5927	5890	5849	
67.5	5006	5032	5189	5338	5456	5745	5940	5947	5931	5890	5823	5735	5635	5541	5454	
70	4384	4443	4800	5294	5687	5959	5832	5736	5605	5445	5264	5067	4875	4721	4598	
72.5	3501	3567	4029	4889	5803	6051	5441	5192	4910	4621	4344	4086	3858	3690	3568	
75	2620	2676	3124	4189	5520	5815	4803	4420	4027	3653	3321	3041	2820	2663	2550	
77.5	1846	1892	2280	3394	4853	5210	3897	3425	2963	2562	2241	1990	1810	1690	1603	
80	1200	1235	1533	2517	3861	4030	2658	2247	1880	1582	1352	1182	1059	978	931	
82.5	703	726	946	1664	2356	2335	1533	1275	1035	849	713	608	527	472	438	
85	323	333	455	846	996	912	650	549	448	361	288	232	189	160	142	
87.5	41	41	66	103	145	138	140	123	98	77	60	46	35	28	23	
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

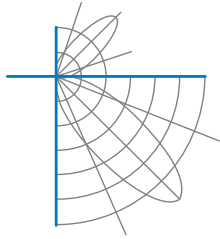
Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.

North America (issuing laboratory)

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Report of Test

LLIA002251-035

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	4060	4060	4060	4060	4060	4060	4060	4060	4060	4060	4060	4060	4060	4060	4060	
2.5	4072	4067	4065	4063	4062	4060	4049	4044	4039	4033	4028	4025	4023	4022	4021	
5	4086	4081	4076	4074	4068	4062	4043	4032	4019	4009	3998	3989	3986	3983	3980	
7.5	4105	4097	4092	4087	4078	4068	4044	4024	4003	3986	3969	3955	3948	3942	3940	
10	4126	4119	4110	4103	4090	4076	4048	4021	3992	3966	3941	3921	3907	3899	3898	
12.5	4150	4142	4132	4124	4106	4089	4054	4019	3982	3947	3912	3885	3864	3853	3852	
15	4177	4167	4157	4145	4125	4104	4062	4019	3972	3927	3882	3845	3819	3804	3802	
17.5	4205	4194	4183	4171	4148	4122	4075	4021	3965	3907	3850	3805	3770	3751	3748	
20	4236	4223	4211	4198	4170	4143	4090	4029	3960	3885	3818	3761	3718	3696	3691	
22.5	4269	4255	4241	4227	4197	4168	4108	4036	3955	3867	3785	3716	3667	3640	3638	
25	4305	4290	4275	4261	4229	4195	4133	4050	3953	3849	3751	3672	3615	3586	3582	
27.5	4346	4332	4317	4301	4267	4232	4164	4070	3953	3831	3719	3629	3563	3532	3526	
30	4394	4379	4364	4344	4315	4279	4202	4094	3960	3820	3690	3585	3514	3477	3474	
32.5	4449	4433	4417	4400	4371	4336	4248	4124	3970	3807	3662	3547	3466	3426	3420	
35	4514	4498	4483	4467	4436	4398	4305	4163	3986	3802	3638	3509	3419	3374	3369	
37.5	4589	4574	4557	4543	4509	4470	4369	4210	4007	3800	3616	3473	3372	3322	3316	
40	4675	4660	4647	4631	4593	4555	4447	4267	4037	3804	3597	3436	3324	3266	3259	
42.5	4775	4762	4748	4731	4701	4662	4542	4338	4077	3811	3579	3395	3270	3203	3194	
45	4892	4881	4871	4856	4826	4785	4655	4423	4125	3820	3557	3350	3206	3126	3117	
47.5	5029	5019	5006	4994	4961	4917	4777	4517	4178	3828	3526	3293	3122	3033	3020	
50	5175	5167	5153	5139	5110	5068	4909	4617	4229	3831	3486	3214	3013	2904	2890	
52.5	5338	5332	5324	5307	5278	5232	5047	4710	4272	3817	3419	3099	2850	2709	2692	
55	5520	5514	5504	5495	5463	5406	5190	4795	4283	3770	3310	2920	2605	2433	2414	
57.5	5710	5704	5693	5680	5640	5573	5318	4859	4249	3666	3135	2651	2277	2086	2066	
60	5856	5842	5822	5803	5746	5662	5371	4852	4151	3476	2866	2292	1888	1700	1679	
62.5	5901	5878	5851	5819	5744	5639	5289	4712	3952	3188	2493	1871	1484	1322	1305	
65	5805	5761	5718	5675	5577	5446	5035	4397	3606	2800	2049	1450	1123	999	987	
67.5	5381	5322	5274	5227	5129	4987	4534	3876	3104	2324	1594	1075	830	747	738	
70	4515	4471	4446	4436	4415	4321	3857	3185	2483	1815	1182	779	607	557	553	
72.5	3496	3470	3470	3489	3543	3518	3093	2462	1860	1329	851	556	446	421	420	
75	2484	2461	2465	2487	2547	2565	2265	1775	1322	920	596	396	330	320	320	
77.5	1552	1535	1543	1563	1621	1659	1497	1134	797	601	399	279	242	241	242	
80	904	896	902	917	966	1007	946	608	389	346	257	191	169	172	173	
82.5	426	428	438	455	507	549	522	261	164	173	145	113	99	102	103	
85	132	133	146	162	204	236	195	84	52	62	58	45	37	38	39	
87.5	20	18	18	21	38	52	31	17	11	8	6	4	3	2	1	
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

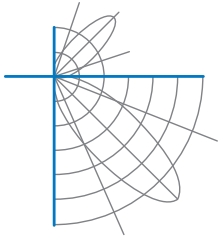
Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.

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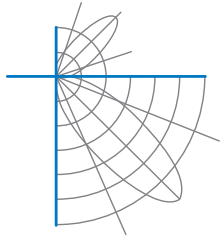


Report of Test

LLIA002251-035

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	

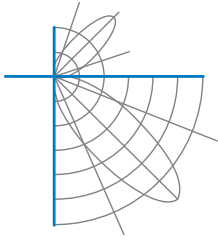


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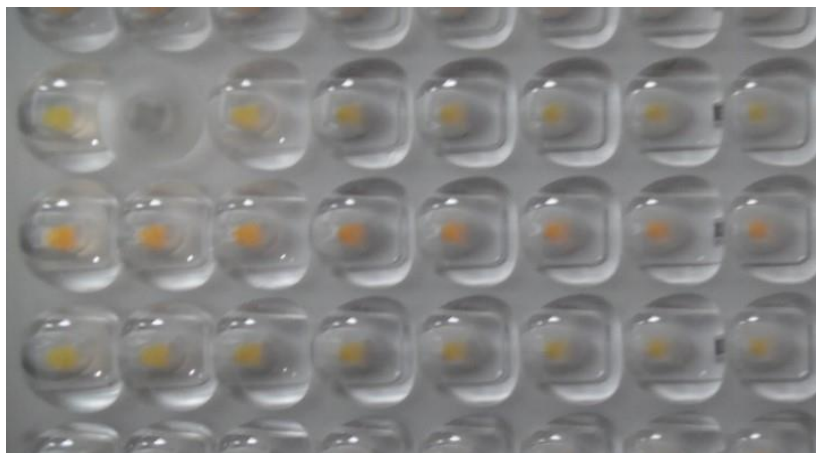
Luminous Intensity (Candela) Table

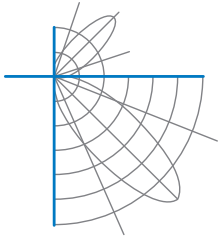
	Lateral (C-Plane) Angles															
	77.5	80	82.5	85	90	95	105	115	125	135	145	155	165	175	180	
Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	92.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	97.5	0	0	0	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	



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Additional Pictures of Test Subject





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Test Distance 9.5 m
Ambient Temperature 25.0 °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.