

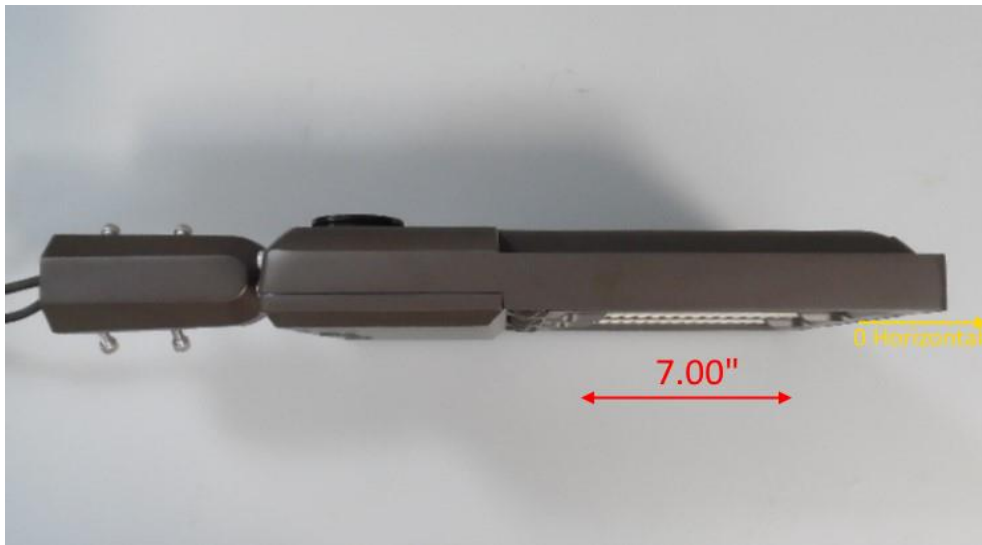


Report of Test

LLIA002251-033

Roadway/Area Light Distribution Photometry Test Report

Catalog Number: ARL-150PCS-SWO - T2 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	21281.6 Lumens
Input Current	1.209 A	Total Efficacy	147.0 Lm/W
Input Power	144.8 W		
Frequency	60.00 Hz	Roadway Throw	Medium
Power Factor	0.998	Roadway Type	Type II
Current THD	4.0 %		

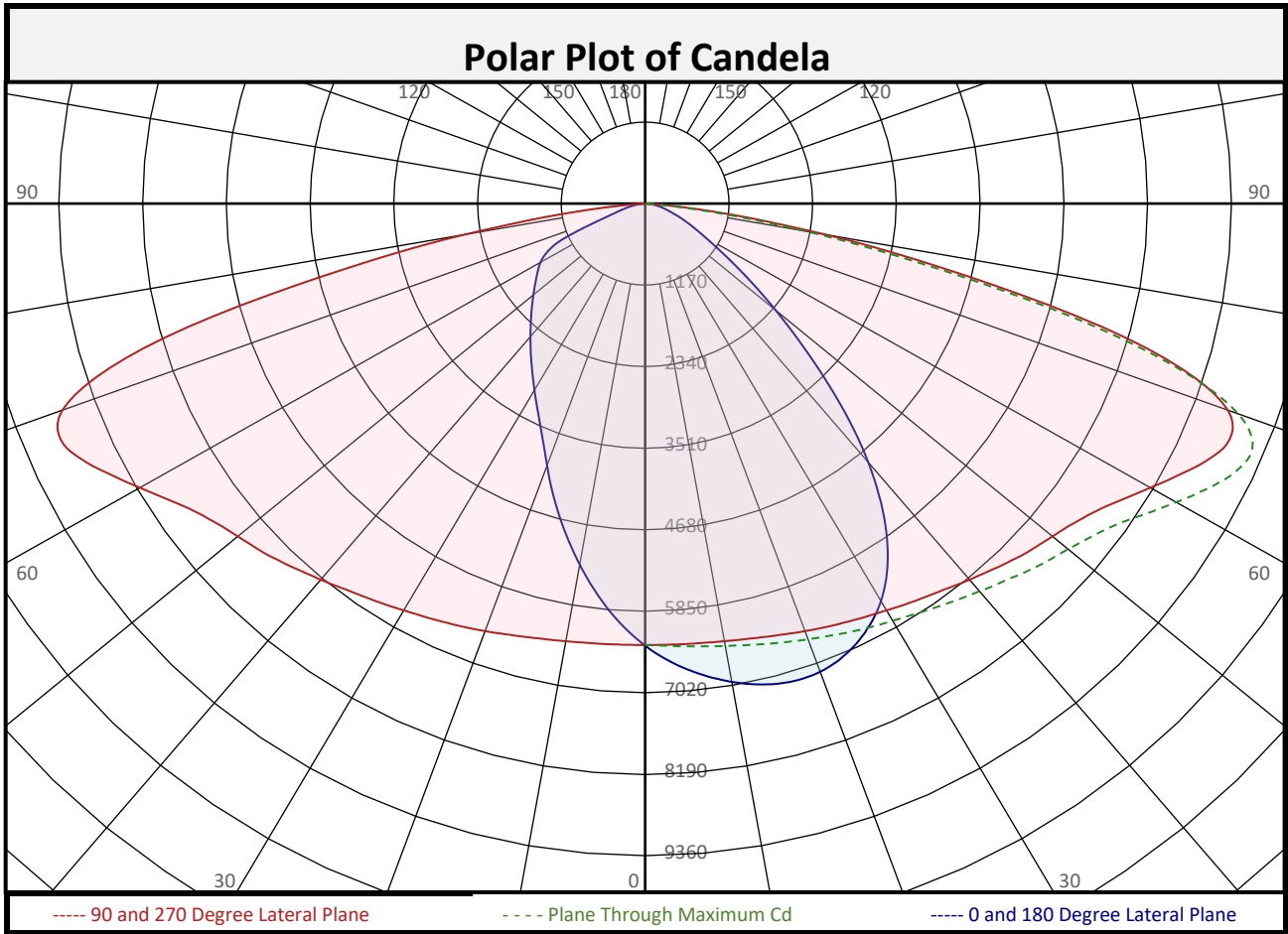
This test report was issued by LightLab International Allentown, LLC without alterations or erasures.

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

Signed: _____



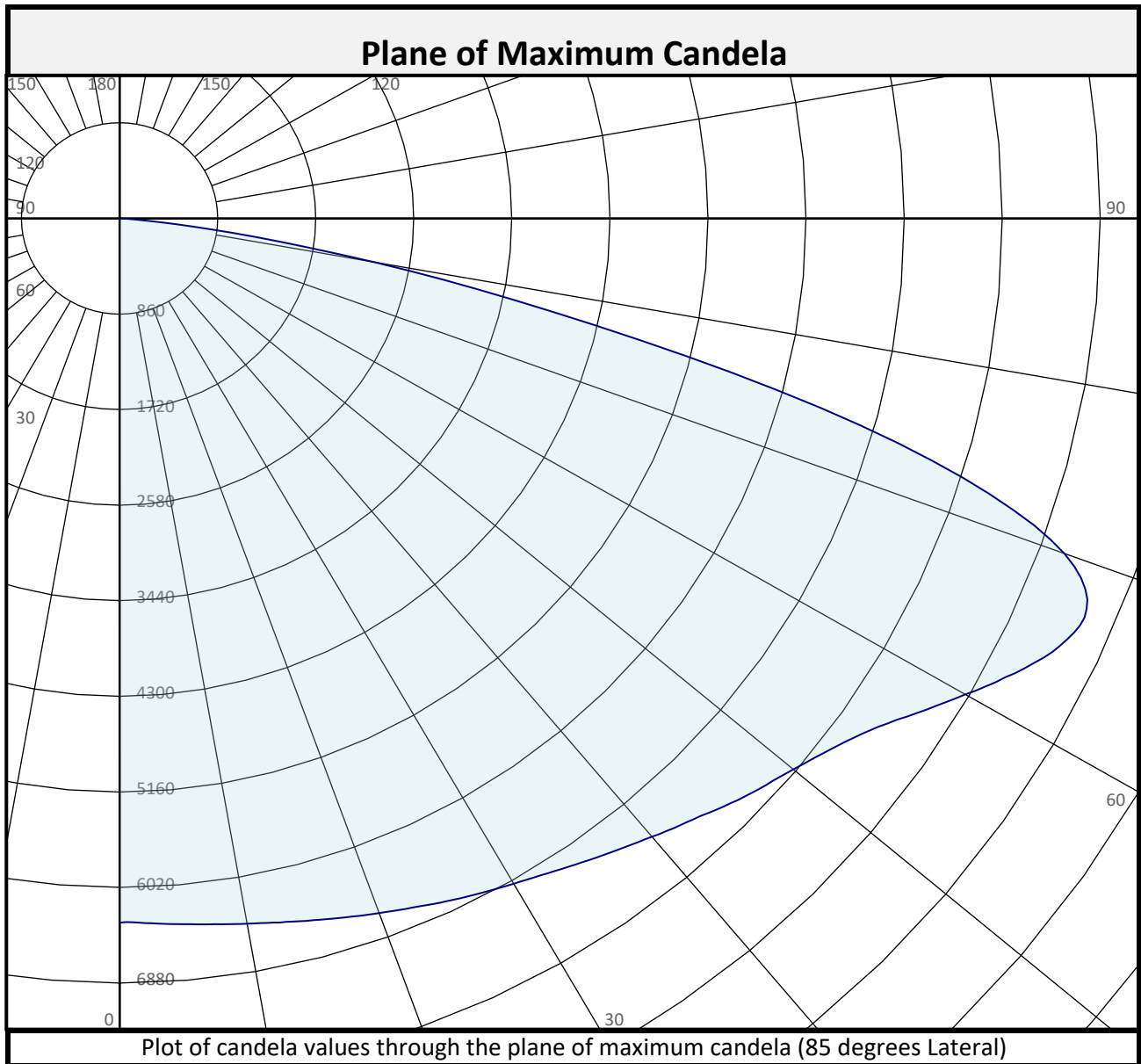
Report of Test
LLIA002251-033



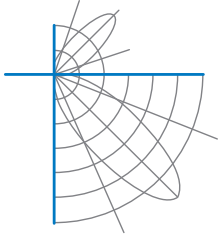
Zonal Flux Summary								
Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total
0-10	600.7	2.8%	90-100	0.0	0.0%	0-20	2341	11.0%
10-20	1740	8.2%	100-110	0.0	0.0%	0-30	5065	23.8%
20-30	2724	12.8%	110-120	0.0	0.0%	0-40	8525	40.1%
30-40	3460	16.3%	120-130	0.0	0.0%	0-60	15935	74.9%
40-50	3768	17.7%	130-140	0.0	0.0%	0-80	21034	98.8%
50-60	3642	17.1%	140-150	0.0	0.0%	10-90	20681	97.2%
60-70	3246	15.3%	150-160	0.0	0.0%	20-50	9952	46.8%
70-80	1854	8.7%	160-170	0.0	0.0%	40-90	12756	59.9%
80-90	247.4	1.2%	170-180	0.0	0.0%	60-90	5347	25.1%
0-90	21282	100.0%	90-180	0.0	0.0%	0-180	21282	100.0%



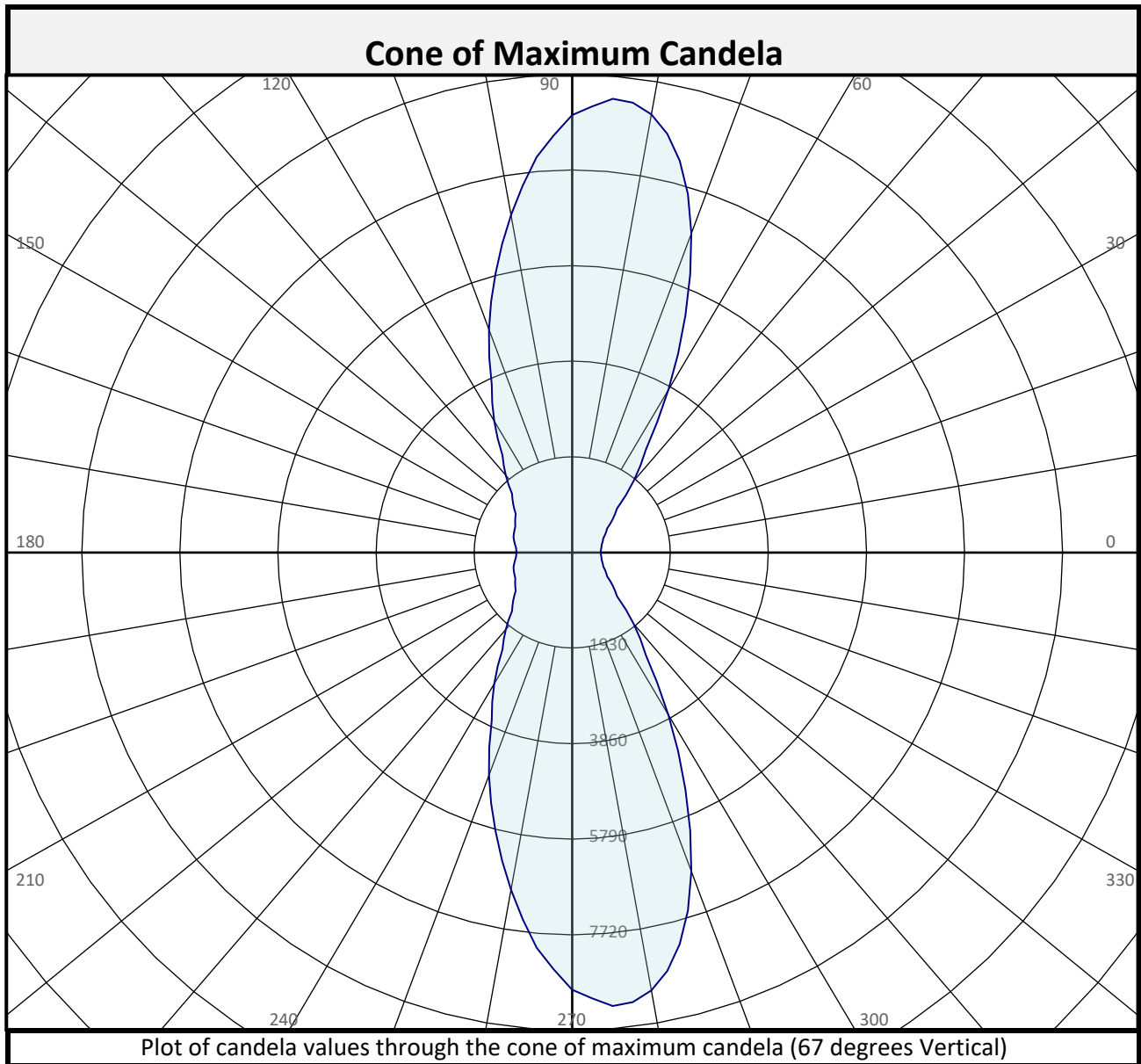
Report of Test
LLIA002251-033



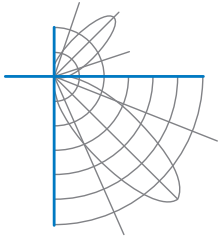
Street and House Side Flux Summary						
	Downward		Upward		Total	
	Lumens	% of Total	Lumens	% of Total	Lumens	% of Total
Street Side	12185.8	57.3%	0.0	0.0%	12185.8	57.3%
House Side	9095.7	42.7%	0.0	0.0%	9095.7	42.7%
Total	21281.6	100.0%	0.0	0.0%	21281.6	100.0%



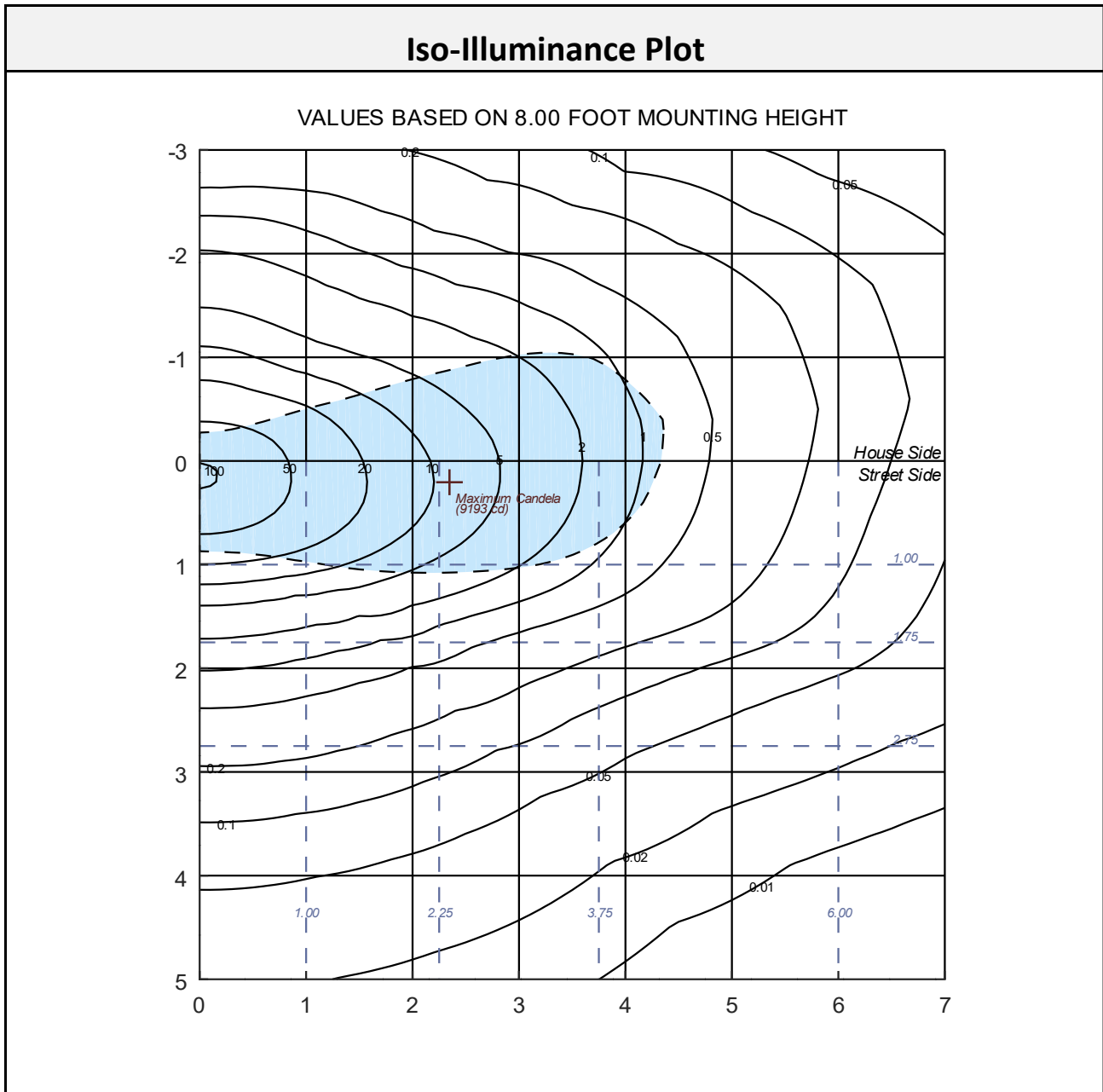
Report of Test
LLIA002251-033



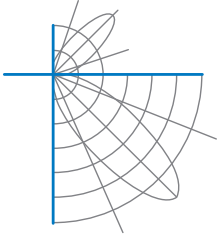
Street and House Side Flux Summary						
	Downward		Upward		Total	
	Lumens	% of Total	Lumens	% of Total	Lumens	% of Total
Street Side	12185.8	57.3%	0.0	0.0%	12185.8	57.3%
House Side	9095.7	42.7%	0.0	0.0%	9095.7	42.7%
Total	21281.6	100.0%	0.0	0.0%	21281.6	100.0%



Report of Test
LLIA002251-033

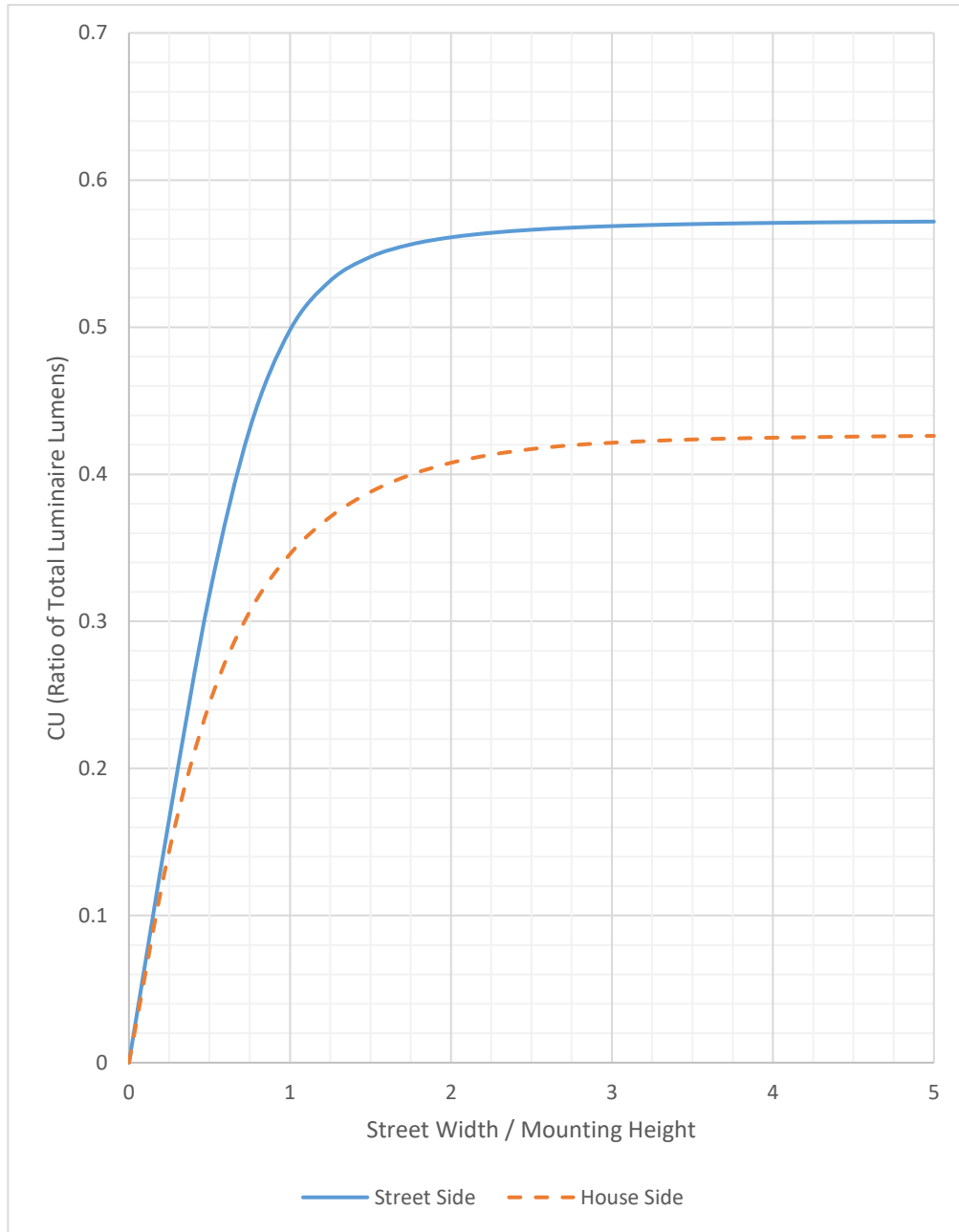


The isofootcandle values shown in the plot above are based on a mounting height of $h = 8.0$ feet. Grid values show multiples of mounting height. The isoilluminance contour lines are expressed in units of footcandles. The values expressed are based on the direct light from a single unit without the contribution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



Report of Test LLIA002251-033

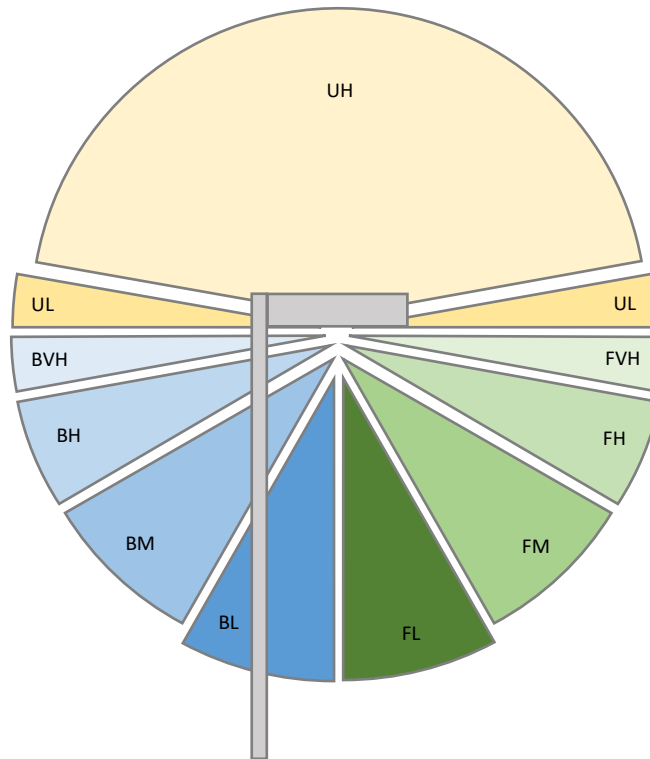
Coefficients of Utilization Plot





Report of Test
LLIA002251-033

LCS Tables and Bug Classification



Back Light

BL - Back Low (0°-30°)	2121.7 Lm
BM - Back Mid (30°-60°)	4309.4 Lm
BH - Back High (60°-80°)	2516.7 Lm
BVH - Back Very High (80°-90°)	148.0 Lm

Forward Light

FL - Forward Low (0°-30°)	2943.2 Lm
FM - Forward Mid (30°-60°)	6560.3 Lm
FH - Forward High (60°-80°)	2583.0 Lm
FVH - Forward Very High (80°-90°)	99.4 Lm

Uplight

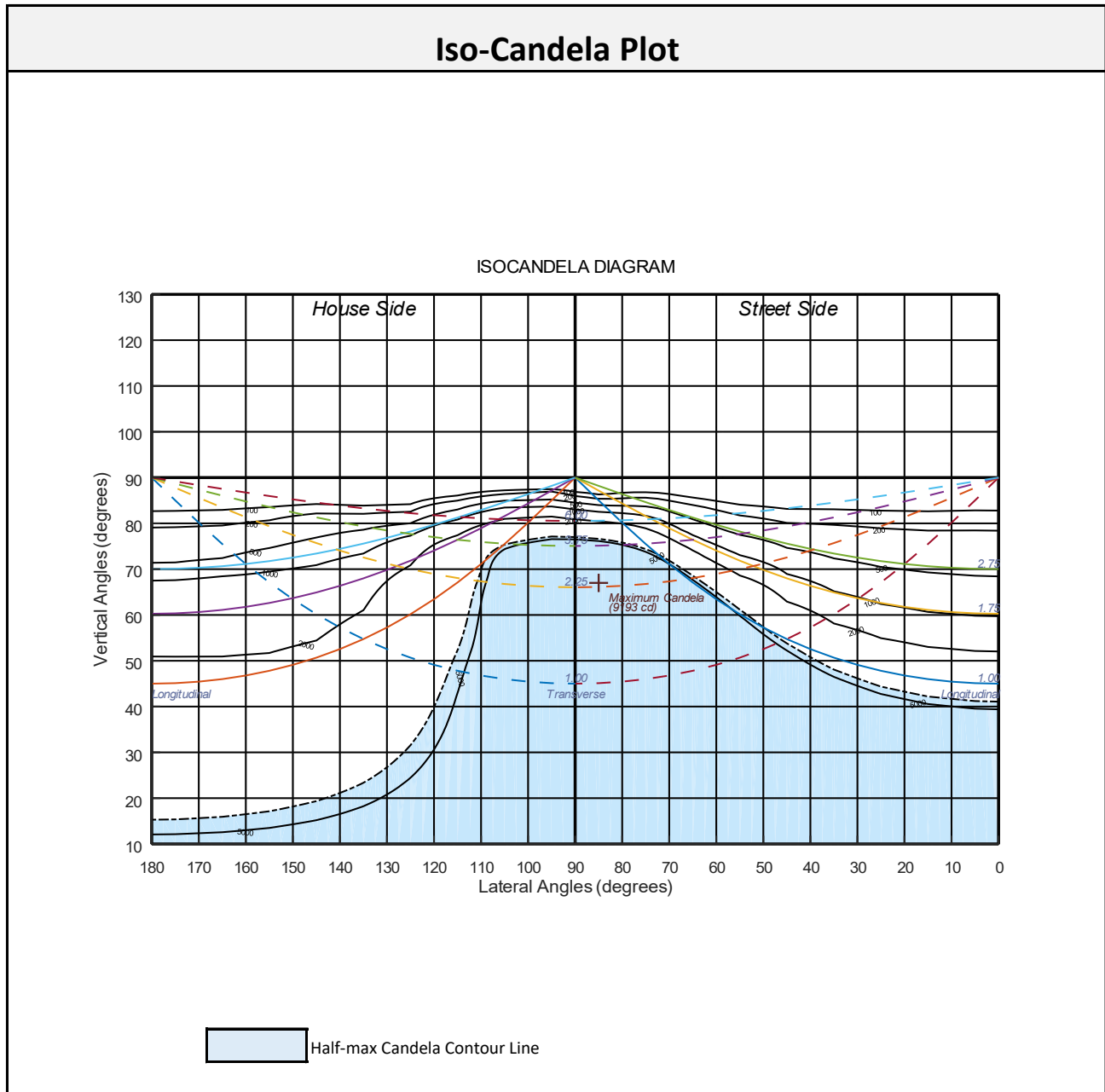
UL - Upward Low (90°-100°)	0.0 Lm
UH - Upward High (100°-180°)	0.0 Lm

BUG Rating: Asymmetrical Luminaire (Type I, II, III, and IV) B4 - U0 - G4
BUG Rating: Quadrilateral Symmetrical Luminaire (Type V, Type VS) B4 - U0 - G2



Report of Test
LLIA002251-033

Iso-Candela Plot





Report of Test

LLIA002251-033

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	6338	6338	6338	6338	6338	6338	6338	6338	6338	6338	6338	6338	6338	6338	6338
2.5	6540	6538	6535	6522	6502	6484	6459	6452	6443	6436	6429	6419	6411	6404	6394
5	6707	6703	6699	6676	6648	6613	6568	6556	6545	6531	6515	6499	6484	6468	6451
7.5	6850	6847	6838	6815	6778	6732	6673	6655	6642	6621	6599	6578	6559	6538	6512
10	6969	6964	6958	6933	6895	6842	6773	6752	6731	6708	6684	6659	6633	6607	6577
12.5	7064	7060	7057	7031	6997	6941	6868	6846	6823	6799	6769	6740	6712	6678	6644
15	7133	7130	7130	7113	7083	7036	6958	6938	6913	6885	6853	6821	6788	6752	6713
17.5	7163	7162	7169	7170	7155	7121	7047	7026	6999	6970	6937	6901	6867	6825	6788
20	7149	7151	7168	7193	7209	7195	7134	7111	7085	7056	7020	6985	6948	6905	6861
22.5	7088	7088	7124	7177	7231	7256	7217	7191	7167	7138	7105	7069	7029	6985	6939
25	6973	6978	7028	7117	7225	7298	7290	7271	7249	7222	7190	7151	7112	7065	7018
27.5	6811	6823	6893	7021	7182	7316	7352	7345	7331	7306	7273	7240	7196	7149	7100
30	6590	6603	6704	6881	7103	7305	7410	7412	7403	7383	7357	7325	7283	7234	7181
32.5	6288	6307	6443	6690	6986	7263	7447	7464	7466	7462	7444	7411	7370	7321	7269
35	5899	5925	6096	6418	6819	7192	7465	7502	7520	7527	7518	7497	7462	7416	7365
37.5	5421	5451	5658	6061	6580	7085	7458	7519	7560	7585	7591	7578	7553	7512	7460
40	4859	4888	5128	5607	6261	6920	7420	7511	7579	7628	7656	7659	7641	7608	7563
42.5	4226	4258	4518	5060	5850	6693	7352	7476	7579	7657	7709	7732	7733	7709	7672
45	3555	3588	3848	4430	5343	6387	7241	7407	7551	7667	7753	7805	7825	7819	7785
47.5	2930	2957	3189	3747	4749	5994	7084	7298	7492	7654	7781	7870	7919	7929	7910
50	2385	2409	2603	3084	4083	5515	6860	7135	7383	7596	7773	7906	7988	8026	8028
52.5	1916	1935	2095	2494	3380	4934	6545	6889	7202	7478	7719	7909	8045	8117	8140
55	1523	1538	1666	1988	2712	4264	6126	6551	6944	7301	7621	7886	8080	8212	8279
57.5	1212	1223	1321	1568	2132	3514	5597	6113	6601	7054	7466	7825	8110	8310	8435
60	977	986	1058	1240	1660	2763	4949	5541	6123	6678	7201	7673	8068	8370	8576
62.5	800	808	861	991	1290	2098	4158	4807	5458	6104	6737	7336	7869	8299	8623
65	660	667	709	802	1015	1571	3260	3906	4595	5305	6031	6753	7439	8033	8504
67.5	541	547	579	648	803	1179	2359	2919	3578	4303	5070	5877	6684	7433	8071
70	427	434	469	522	631	887	1610	1994	2514	3169	3918	4730	5582	6421	7182
72.5	345	349	368	417	493	658	1089	1305	1615	2071	2700	3451	4257	5056	5809
75	280	282	290	323	378	478	749	874	1042	1284	1652	2195	2872	3554	4174
77.5	221	222	223	241	276	333	499	574	674	805	986	1270	1702	2207	2654
80	163	164	161	170	190	204	299	352	420	502	605	751	976	1282	1567
82.5	106	107	103	107	115	119	163	190	226	273	333	409	514	655	775
85	54	54	50	51	53	52	70	81	95	113	133	160	196	242	275
87.5	7	7	7	7	8	9	16	19	21	24	27	32	38	44	46
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)

LightLab International Allentown, LLC
905 Harrison Street, Suite 135
Allentown, PA 18103 USA
Ph: +1 484-273-0705
Fx: +1 484-209-5779
www.lightlaballentown.com

Australasia & S.E. Asia

LightLab International
50 Redcliffe Gardens Drive
Clontarf - Queensland, 4019, Australia
Ph : +61 7 3283 7862
Fx : +61 7 3283 8751
www.lightlabint.com



Report of Test

LLIA002251-033

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	6338	6338	6338	6338	6338	6338	6338	6338	6338	6338	6338	6338	6338	6338	6338	
2.5	6382	6371	6360	6349	6337	6316	6283	6245	6213	6182	6155	6133	6120	6112	6112	
5	6432	6414	6396	6376	6345	6304	6233	6155	6082	6012	5950	5903	5869	5852	5852	
7.5	6486	6459	6434	6407	6355	6299	6186	6065	5944	5829	5726	5650	5593	5565	5561	
10	6545	6513	6478	6445	6376	6300	6147	5975	5805	5640	5496	5383	5303	5264	5260	
12.5	6605	6569	6530	6491	6403	6311	6111	5887	5663	5447	5259	5110	5008	4955	4949	
15	6671	6631	6585	6539	6437	6328	6081	5805	5524	5252	5018	4835	4707	4643	4634	
17.5	6742	6693	6644	6596	6481	6349	6057	5724	5385	5058	4777	4556	4406	4328	4317	
20	6813	6761	6708	6653	6527	6379	6038	5649	5246	4861	4533	4277	4100	4012	4003	
22.5	6890	6832	6774	6713	6578	6411	6024	5576	5107	4665	4287	3997	3811	3723	3715	
25	6966	6907	6843	6781	6627	6449	6014	5505	4970	4465	4042	3739	3561	3485	3476	
27.5	7045	6983	6917	6847	6682	6488	6010	5433	4830	4261	3804	3508	3346	3280	3273	
30	7129	7066	6993	6914	6739	6528	6005	5366	4687	4057	3581	3301	3155	3096	3091	
32.5	7215	7146	7072	6988	6808	6579	6005	5298	4543	3855	3375	3113	2981	2929	2923	
35	7303	7232	7159	7073	6877	6637	6009	5231	4396	3654	3181	2937	2819	2773	2770	
37.5	7400	7330	7249	7166	6955	6699	6018	5163	4246	3464	3002	2774	2668	2628	2627	
40	7506	7432	7352	7264	7048	6772	6032	5093	4094	3282	2830	2620	2526	2492	2491	
42.5	7615	7544	7461	7368	7139	6849	6046	5016	3936	3103	2669	2475	2394	2367	2365	
45	7736	7668	7586	7488	7239	6923	6047	4928	3775	2931	2513	2336	2270	2249	2248	
47.5	7867	7798	7709	7603	7338	6988	6040	4832	3613	2766	2366	2205	2151	2139	2138	
50	7987	7919	7824	7714	7429	7044	6013	4720	3453	2607	2227	2080	2040	2036	2037	
52.5	8119	8061	7970	7853	7541	7118	5978	4586	3289	2457	2095	1963	1936	1939	1941	
55	8283	8239	8156	8033	7693	7218	5958	4452	3118	2316	1973	1858	1840	1849	1854	
57.5	8491	8476	8409	8287	7903	7367	5956	4325	2949	2181	1862	1759	1751	1767	1773	
60	8691	8723	8681	8566	8152	7540	5957	4197	2797	2051	1760	1662	1660	1681	1686	
62.5	8833	8936	8944	8859	8419	7729	5947	4062	2658	1930	1645	1549	1547	1562	1567	
65	8843	9055	9137	9100	8684	7911	5906	3908	2523	1802	1501	1398	1380	1383	1386	
67.5	8571	8931	9132	9180	8839	8026	5804	3698	2352	1637	1314	1190	1136	1017	999	
70	7825	8326	8655	8817	8663	7952	5702	3473	2102	1410	1085	946	759	628	618	
72.5	6483	7055	7481	7748	7842	7409	5456	3220	1792	1110	848	687	494	438	434	
75	4735	5239	5657	5968	6241	6124	4751	2755	1402	826	641	471	353	325	323	
77.5	3032	3372	3665	3906	4220	4352	3582	1972	964	601	460	328	260	245	242	
80	1787	1968	2129	2272	2561	2825	2447	1255	503	363	320	225	185	176	174	
82.5	850	907	951	1010	1230	1503	1367	605	204	174	182	135	112	106	104	
85	277	262	253	263	373	552	488	197	68	59	66	52	43	39	37	
87.5	45	42	37	31	43	95	67	30	14	6	3	3	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.

North America (issuing laboratory)

LightLab International Allentown, LLC
905 Harrison Street, Suite 135
Allentown, PA 18103 USA
Ph: +1 484-273-0705
Fx: +1 484-209-5779
www.lightlaballentown.com

Australasia & S.E. Asia

LightLab International
50 Redcliffe Gardens Drive
Clontarf - Queensland, 4019, Australia
Ph : +61 7 3283 7862
Fx : +61 7 3283 8751
www.lightlabint.com



Report of Test

LLIA002251-033

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	

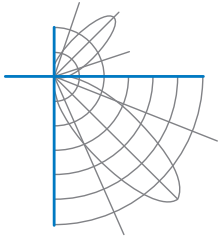


Report of Test

LLIA002251-033

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
LLIA002251-033

Additional Pictures of Test Subject





Report of Test

LLIA002251-033

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.