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Report No: L101605910

Date: 10/31/2016



NVLAP LAB CODE 200927-0

**Report No:** L101605910

**Report Prepared For:** Revolution Lighting Technologies (RVLT)  
 4139 Guardian Street, Simi Valley, CA 93063

**Model Number:** 113012-204

**Test:** Electrical and Photometric tests

**Standards Used:** Appropriate part or all test guidelines were used for test performed:  
*IESNA LM79: 2008* Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products  
*ANSI NEMA ANSLG C78.377: 2008* Specification of the Chromaticity of Solid State Lighting Products  
*ANSI C82.77:2002:* Harmonic Emission Limits-Related Quality Requirements for Lighting Equipment

**Description of Sample:** Client submitted the sample. Catalog number is 113012-204 . Received in working and undamaged condition. No modifications were necessary.

**Testing Condition:** Fixture is tested with no special conditions.

**Sample Arrival Date:** 10/26/16

**Date of Tests:** 10/27/16 - 10/31/16

**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-S1	11/18/16
Xitron Power Analyzer	2503AH	MT-EL01	11/30/16
ITECH DC Power Supply	IT6122	PSDC-03-S1	11/17/16
Fluke Digital Thermometer	52k/J	MT-TP02-GC	11/24/16
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

\*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

**Test Summary**

<b>Manufacturer:</b>	Revolution Lighting Technologies (RVL)
<b>Model Number:</b>	113012-204
<b>Driver Model Number:</b>	EXCELLENT LED DRIVER LY150W-25-C5950
<b>Total Lumens:</b>	16580.70
<b>Input Voltage (VAC/60Hz):</b>	120.00
<b>Input Current (Amp):</b>	1.23
<b>Input Power (W):</b>	146.62
<b>Input Power Factor:</b>	1.00
<b>Current ATHD @ 120V(%):</b>	5%
<b>Current ATHD @ 277V(%):</b>	N/A
<b>Efficacy:</b>	113
<b>Color Rendering Index (CRI):</b>	83
<b>Correlated Color Temperature (K):</b>	5084
<b>Chromaticity Coordinate x:</b>	0.3432
<b>Chromaticity Coordinate y:</b>	0.3550
<b>Ambient Temperature (°C):</b>	25.0
<b>Stabilization Time (Hours):</b>	1:35
<b>Total Operating Time (Hours):</b>	3:20
<b>Off State Power(W):</b>	0.00

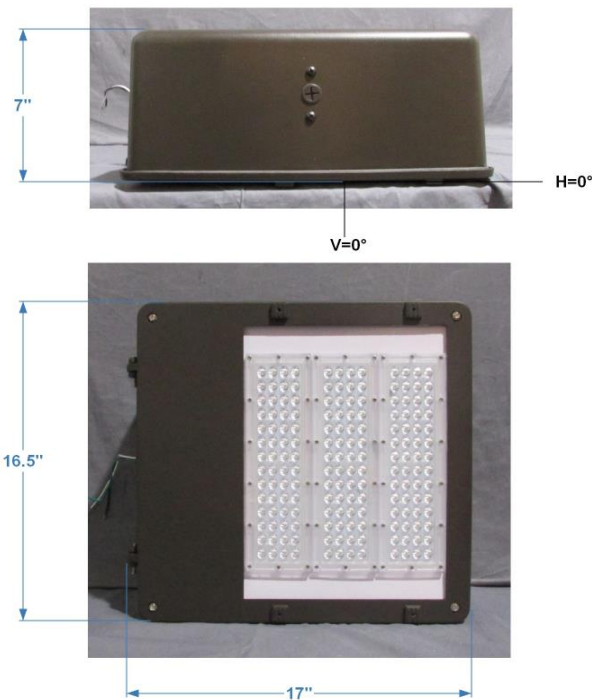
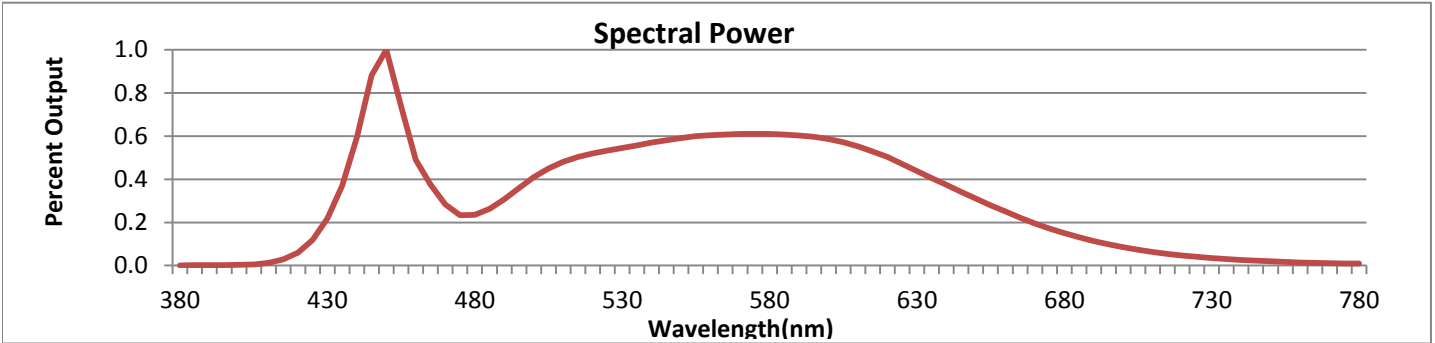


FIG. 1 LUMINAIRE

\*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.



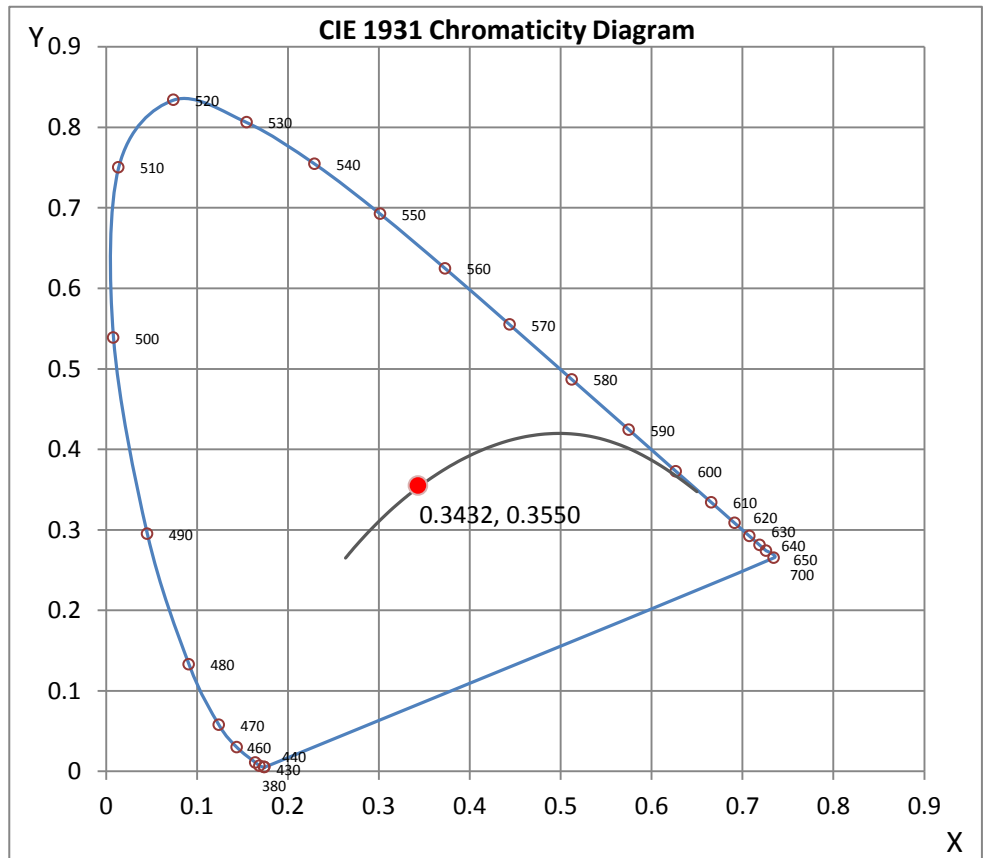
Wavelength	W/m <sup>2</sup> nm	440	0.5936	510	0.4820	580	0.6099	650	0.3101	720	0.0466
380	#VALUE!	450	1.0000	520	0.5195	590	0.6031	660	0.2506	730	0.0347
390	0.0014	460	0.4905	530	0.5448	600	0.5862	670	0.1954	740	0.0258
400	0.0028	470	0.2837	540	0.5698	610	0.5532	680	0.1500	750	0.0193
410	0.0123	480	0.2352	550	0.5915	620	0.5028	690	0.1132	760	0.0145
420	0.0602	490	0.3070	560	0.6044	630	0.4388	700	0.0845	770	0.0108
430	0.2183	500	0.4103	570	0.6099	640	0.3740	710	0.0627	780	0.0095

**CRI & CCT**

x	0.3432
y	0.3550
u'	0.2088
v'	0.4860
CRI	83.40
CCT	5084
Duv	0.00248

**R Values**

R1	82.04
R2	87.04
R3	90.81
R4	84.41
R5	82.96
R6	82.32
R7	87.31
R8	70.32
R9	14.39
R10	69.51
R11	84.36
R12	65.30
R13	82.95
R14	94.73



\*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

## 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:

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Government.

Report Prepared by : Keyur Patel

Test Report Released by:



Jeff Ahn  
Engineering Manager

Test Report Reviewed by:



Steve Kang  
Quality Assurance

*\*Attached are photometric data reports. Total number of pages: 13*



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# Photometric Test Report

**IES ROAD REPORT**  
**PHOTOMETRIC FILENAME : L101605910.IES**

## DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002  
 [TEST] L101605910  
 [TESTLAB] LIGHT LABORATORY, INC.  
 [ISSUEDATE] 10/31/2016  
 [MANUFAC] REVOLUTION LIGHTING TECHNOLOGIES (RVLT)  
 [LUMCAT] 113012-204  
 [LUMINAIRE] 150W 5000K G3 SHOEBOX  
 [BALLASTCAT] EXCELLENT LED DRIVER LY150W-25-C5950  
 [LAMPPOSITION] 0,0  
 [LAMPCAT] N/A  
 [OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND  
 [MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.  
 [\_INPUT] 120VAC, 146.62  
 [\_TEST PROCEDURE] IESNA:LM-79-08

## CHARACTERISTICS

IES Classification	Type I
Longitudinal Classification	Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	16581
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	113
Total Luminaire Watts	146.62
Ballast Factor	1.00
Upward Waste Light Ratio	0.00
Maximum Candela	11943
Maximum Candela Angle	80H 55V
Maximum Candela (<90 Degrees Vertical)	11943
Maximum Candela Angle (<90 Degrees Vertical)	80H 55V
Maximum Candela At 90 Degrees Vertical	0 (0.0% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	245 (1.5% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

**IES ROAD REPORT**  
**PHOTOMETRIC FILENAME : L101605910.IES**

**LUMINAIRE CLASSIFICATION SYSTEM (LCS)**

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	2312.9	N.A.	13.9
FM - Front-Medium (30-60)	6494.9	N.A.	39.2
FH - Front-High (60-80)	822.9	N.A.	5.0
FVH - Front-Very High (80-90)	50.4	N.A.	0.3
BL - Back-Low (0-30)	1488.2	N.A.	9.0
BM - Back-Medium (30-60)	3998.2	N.A.	24.1
BH - Back-High (60-80)	1354.2	N.A.	8.2
BVH - Back-Very High (80-90)	59.0	N.A.	0.4
UL - Uplight-Low (90-100)	0.0	N.A.	0.0
UH - Uplight-High (100-180)	0.0	N.A.	0.0
Total	16580.7	N.A.	100.0
BUG Rating	B3-U0-G3		

**ZONAL LUMEN SUMMARY**

Zone	%
0-20	9.7
0-30	22.9
0-40	41.7
0-60	86.2
0-80	99.3
0-90	100
10-90	97.7
20-40	32
20-50	54.9
40-70	55.5
60-80	13.1
70-80	2.1
80-90	0.7
90-110	0
90-120	0
90-130	0
90-150	0
90-180	0
110-180	0
0-180	100

**IES ROAD REPORT**  
**PHOTOMETRIC FILENAME : L101605910.IES**

**CANDELA TABULATION**

Vert. Angles	Horizontal Angles									
	<u>0</u>	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>25</u>	<u>30</u>	<u>35</u>	<u>40</u>	<u>45</u>
0.0	3963	3963	3963	3963	3963	3963	3963	3963	3963	3963
5.0	4381	4401	4385	4373	4365	4352	4339	4319	4302	4281
10.0	4899	4880	4887	4861	4837	4812	4787	4751	4714	4666
15.0	5393	5393	5391	5390	5378	5358	5327	5282	5222	5151
20.0	5695	5713	5725	5750	5766	5765	5766	5758	5740	5713
25.0	5675	5696	5749	5840	5933	6024	6123	6221	6306	6345
30.0	5265	5295	5396	5529	5701	5888	6141	6434	6715	6958
35.0	4886	4921	5001	5137	5333	5588	5918	6309	6752	7206
37.5	4554	4580	4667	4783	4977	5236	5583	6053	6605	7184
40.0	4185	4213	4278	4389	4556	4805	5161	5643	6263	6993
42.5	3758	3784	3847	3943	4096	4318	4648	5106	5744	6538
45.0	3356	3380	3430	3525	3665	3875	4186	4610	5212	6027
47.5	2773	2797	2841	2920	3047	3243	3517	3899	4450	5218
50.0	2137	2154	2194	2262	2373	2542	2785	3117	3597	4274
52.5	1521	1536	1566	1621	1707	1842	2031	2309	2717	3271
55.0	998	1008	1029	1066	1123	1214	1347	1544	1827	2266
57.5	632	639	653	674	704	750	819	931	1113	1391
60.0	390	399	423	457	482	498	519	559	634	770
62.5	322	323	328	341	367	387	395	401	420	465
65.0	290	291	294	299	306	315	319	317	316	320
67.5	264	265	270	284	293	293	289	284	278	278
70.0	239	240	245	261	274	286	276	259	249	246
72.5	218	219	223	231	244	262	290	233	221	216
75.0	197	198	195	202	209	233	272	207	201	189
77.5	177	177	172	177	184	193	214	191	182	164
80.0	158	158	153	151	153	162	172	174	173	148
85.0	116	119	112	101	100	107	116	124	146	146
90.0	0	0	0	0	0	0	0	0	0	0

Vert. Angles	Horizontal Angles									
	<u>50</u>	<u>55</u>	<u>60</u>	<u>65</u>	<u>70</u>	<u>75</u>	<u>80</u>	<u>85</u>	<u>90</u>	<u>95</u>
0.0	3963	3963	3963	3963	3963	3963	3963	3963	3963	3963
5.0	4253	4231	4202	4169	4137	4109	4064	4032	4005	3964
10.0	4615	4549	4485	4421	4370	4299	4238	4167	4082	4030
15.0	5080	4990	4897	4796	4689	4593	4490	4385	4271	4172
20.0	5663	5579	5469	5349	5211	5050	4930	4793	4660	4501
25.0	6329	6283	6195	6099	5975	5834	5698	5583	5441	5254
30.0	7130	7210	7205	7089	6948	6810	6570	6362	6113	5849
35.0	7581	7820	7900	7782	7511	7206	6836	6448	6054	5699
37.5	7765	8200	8436	8439	8140	7729	7305	6812	6329	5911
40.0	7727	8434	8912	9082	8899	8398	7892	7282	6686	6192
42.5	7469	8397	9207	9651	9670	9229	8598	7880	7125	6534
45.0	7042	8162	9228	9999	10262	9951	9253	8426	7537	6838
47.5	6252	7546	8936	10149	10880	10834	10105	9120	8065	7206
50.0	5233	6580	8235	9888	11125	11504	10926	9789	8598	7596
52.5	4101	5364	7100	9118	10907	11902	11611	10425	9076	7986
55.0	2940	3978	5604	7752	10099	11735	11943	10876	9407	8338
57.5	1832	2630	3911	5938	8520	10764	11566	10813	9432	8376
60.0	1015	1459	2337	3957	6346	8870	10258	9997	8856	7997
62.5	557	767	1240	2234	4204	6524	8140	8400	7685	7123
65.0	338	382	500	849	1809	3351	4514	4929	4876	5070
67.5	288	298	331	423	782	1499	2033	2186	2367	2957

**IES ROAD REPORT**  
**PHOTOMETRIC FILENAME : L101605910.IES**

**CANDELA TABULATION - (Cont.)**

<b>70.0</b>	254	262	275	307	397	598	697	655	785	1292
<b>72.5</b>	219	231	238	255	293	331	322	300	313	468
<b>75.0</b>	184	196	203	211	242	269	260	247	238	258
<b>77.5</b>	151	158	167	181	203	231	231	209	202	206
<b>80.0</b>	127	127	135	148	168	185	183	170	169	184
<b>85.0</b>	97	81	82	87	91	95	95	97	103	114
<b>90.0</b>	0	0	0	0	0	0	0	0	0	0

**Vert. Horizontal Angles**  
**Angles**

	<u><b>100</b></u>	<u><b>105</b></u>	<u><b>110</b></u>	<u><b>115</b></u>	<u><b>120</b></u>	<u><b>125</b></u>	<u><b>130</b></u>	<u><b>135</b></u>	<u><b>140</b></u>	<u><b>145</b></u>
<b>0.0</b>	3963	3963	3963	3963	3963	3963	3963	3963	3963	3963
<b>5.0</b>	3933	3904	3870	3846	3810	3785	3757	3730	3706	3683
<b>10.0</b>	3968	3893	3832	3772	3718	3663	3614	3566	3517	3478
<b>15.0</b>	4069	3977	3874	3786	3688	3594	3503	3423	3348	3277
<b>20.0</b>	4360	4196	4053	3910	3751	3593	3448	3313	3197	3088
<b>25.0</b>	5023	4758	4485	4205	3922	3666	3429	3223	3046	2902
<b>30.0</b>	5513	5108	4698	4330	3927	3587	3311	3074	2873	2698
<b>35.0</b>	5340	4957	4613	4205	3832	3498	3198	2961	2751	2585
<b>37.5</b>	5486	5065	4653	4220	3821	3459	3146	2886	2673	2480
<b>40.0</b>	5710	5256	4781	4321	3867	3462	3109	2821	2592	2395
<b>42.5</b>	5983	5490	4972	4461	3943	3480	3081	2772	2507	2306
<b>45.0</b>	6258	5715	5157	4600	4023	3511	3066	2728	2450	2234
<b>47.5</b>	6592	6027	5435	4803	4155	3551	3048	2671	2368	2134
<b>50.0</b>	6917	6318	5705	5023	4295	3606	3031	2604	2274	2026
<b>52.5</b>	7258	6641	5983	5222	4432	3661	3021	2524	2165	1889
<b>55.0</b>	7575	6966	6259	5426	4551	3696	2980	2425	2015	1723
<b>57.5</b>	7721	7174	6477	5587	4629	3689	2902	2283	1831	1511
<b>60.0</b>	7509	7088	6475	5628	4626	3613	2751	2067	1601	1269
<b>62.5</b>	6872	6631	6147	5398	4456	3436	2508	1808	1343	1025
<b>65.0</b>	5283	5314	5086	4575	3761	2851	1993	1390	976	718
<b>67.5</b>	3475	3707	3709	3433	2874	2106	1471	1006	692	511
<b>70.0</b>	1852	2144	2223	2140	1829	1366	941	646	477	386
<b>72.5</b>	785	1023	1135	1135	1007	766	541	409	359	321
<b>75.0</b>	337	441	525	566	489	365	311	298	289	275
<b>77.5</b>	238	277	303	299	259	223	217	230	237	233
<b>80.0</b>	201	220	223	202	182	174	168	178	194	194
<b>85.0</b>	130	129	120	108	106	103	100	103	114	119
<b>90.0</b>	0	0	0	0	0	0	0	0	0	0

**Vert. Horizontal Angles**  
**Angles**

	<u><b>150</b></u>	<u><b>155</b></u>	<u><b>160</b></u>	<u><b>165</b></u>	<u><b>170</b></u>	<u><b>175</b></u>	<u><b>180</b></u>
<b>0.0</b>	3963	3963	3963	3963	3963	3963	3963
<b>5.0</b>	3666	3649	3640	3630	3631	3615	3628
<b>10.0</b>	3437	3408	3382	3362	3346	3340	3328
<b>15.0</b>	3219	3161	3122	3093	3073	3054	3045
<b>20.0</b>	2999	2927	2864	2819	2784	2764	2757
<b>25.0</b>	2779	2683	2608	2549	2506	2490	2478
<b>30.0</b>	2562	2455	2364	2301	2259	2233	2230
<b>35.0</b>	2429	2319	2230	2164	2123	2095	2090
<b>37.5</b>	2334	2227	2134	2072	2030	2010	2000
<b>40.0</b>	2245	2127	2040	1979	1942	1922	1917
<b>42.5</b>	2145	2032	1940	1883	1849	1828	1825
<b>45.0</b>	2066	1948	1856	1795	1762	1744	1739
<b>47.5</b>	1964	1834	1737	1670	1631	1610	1610

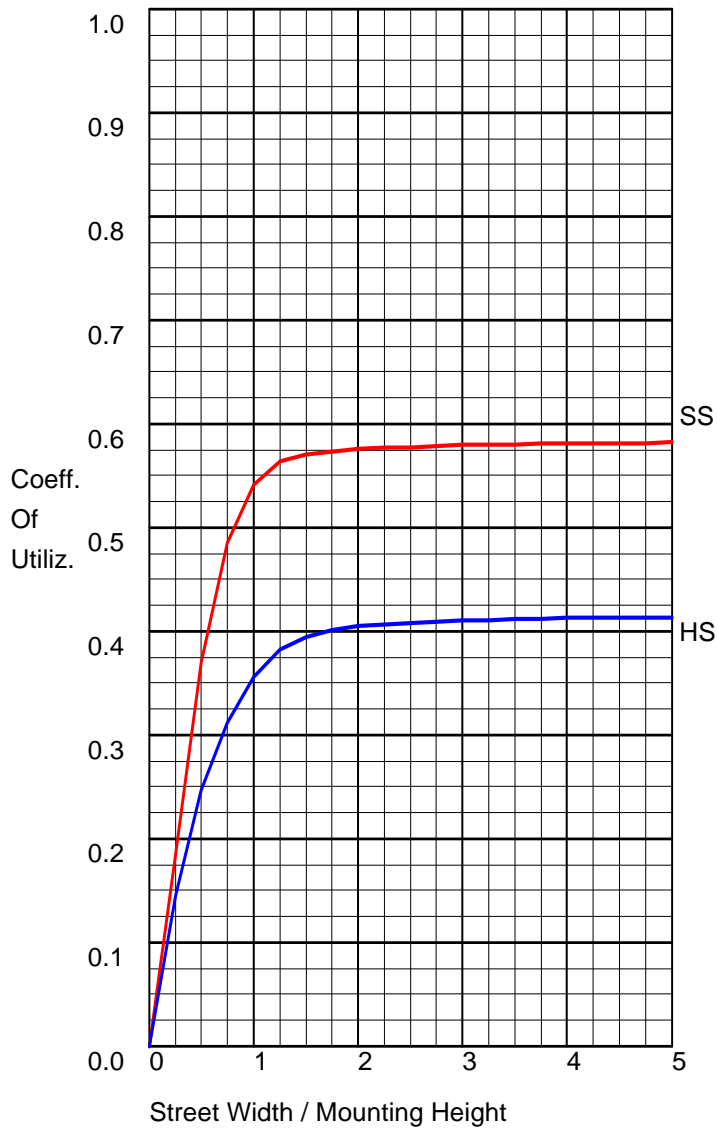


**IES ROAD REPORT**  
**PHOTOMETRIC FILENAME : L101605910.IES**

**CANDELA TABULATION - (Cont.)**

<b>50.0</b>	1841	1700	1591	1516	1467	1447	1442
<b>52.5</b>	1690	1534	1416	1329	1272	1249	1245
<b>55.0</b>	1498	1330	1205	1112	1052	1023	1016
<b>57.5</b>	1274	1104	976	882	812	773	763
<b>60.0</b>	1035	872	742	628	558	528	520
<b>62.5</b>	817	664	525	446	418	407	405
<b>65.0</b>	553	422	366	355	357	361	363
<b>67.5</b>	398	337	328	338	349	354	355
<b>70.0</b>	325	304	312	328	343	341	336
<b>72.5</b>	287	281	291	315	342	330	318
<b>75.0</b>	258	253	266	296	337	327	311
<b>77.5</b>	224	221	232	260	298	303	302
<b>80.0</b>	187	185	191	206	221	234	245
<b>85.0</b>	121	124	123	122	129	138	142
<b>90.0</b>	0	0	0	0	0	0	0

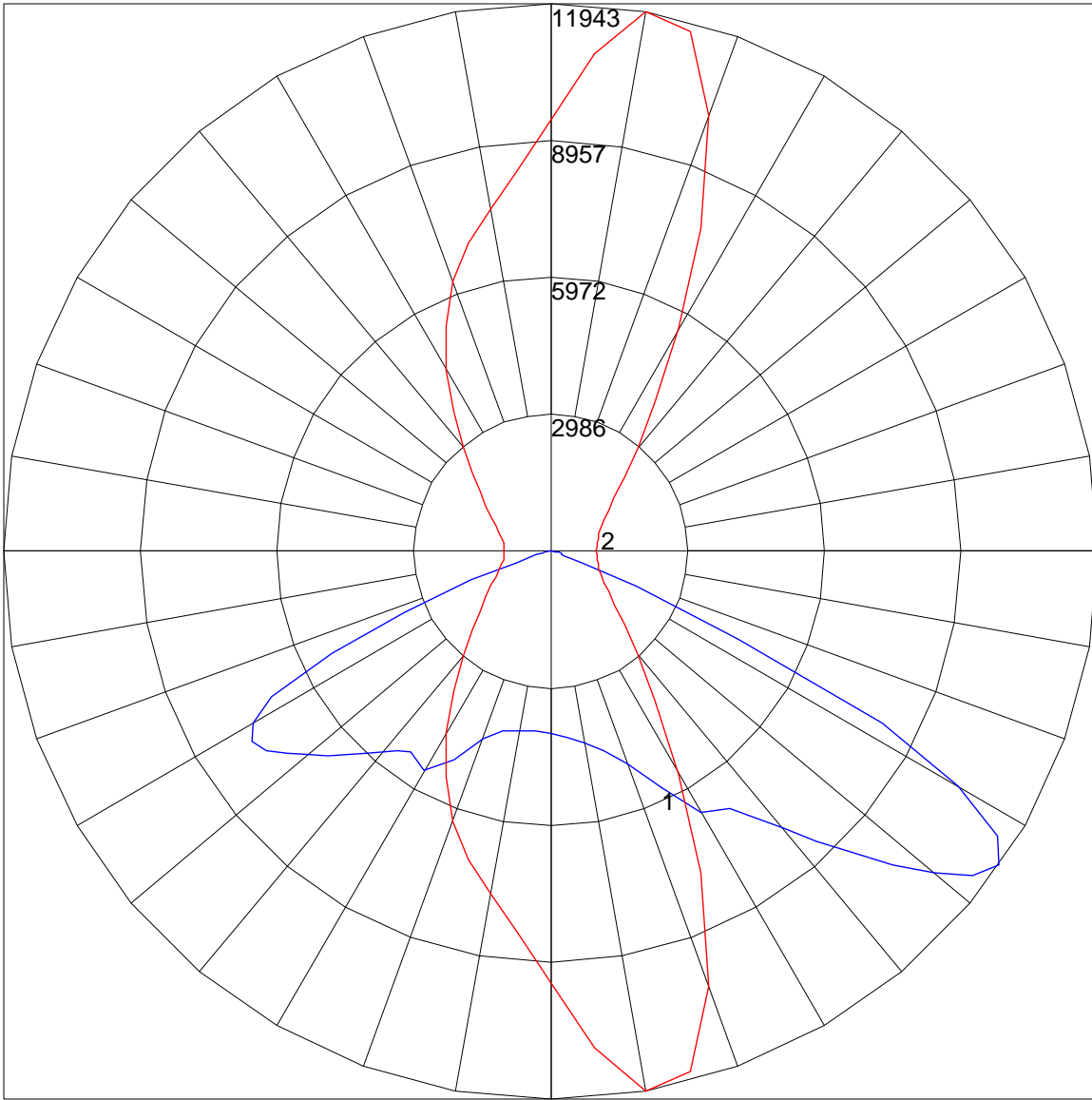
**COEFFICIENTS OF UTILIZATION**



**FLUX DISTRIBUTION**

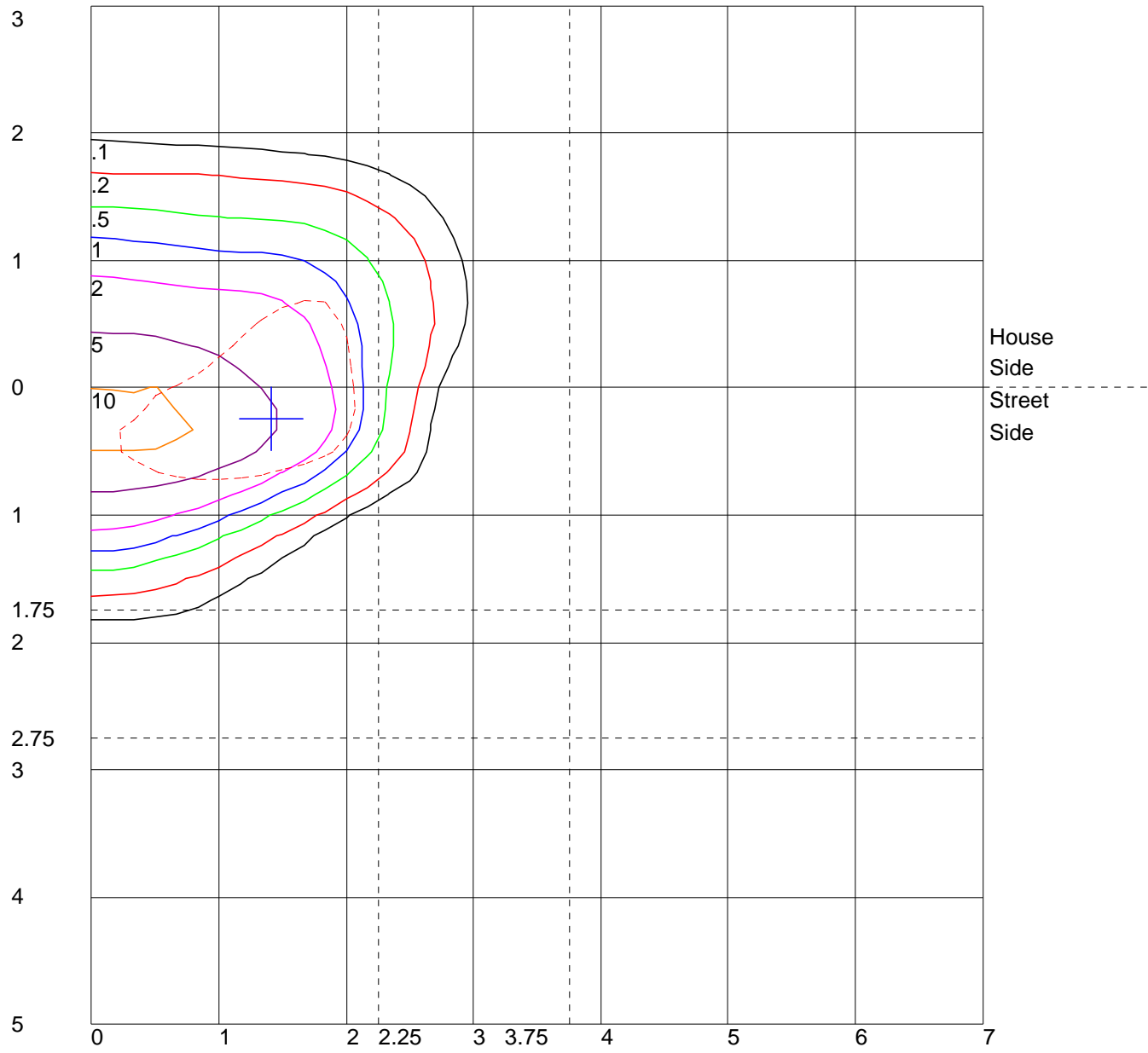
	Lumens	Percent Of Luminaire
Downward Street Side	9681.1	58.4
Downward House Side	6899.6	41.6
Downward Total	16580.7	100.0
Upward Street Side	0.0	0.0
Upward House Side	0.0	0.0
Upward Total	0.0	0.0
<b>Total Flux</b>	<b>16580.7</b>	<b>100.0</b>

POLAR GRAPH



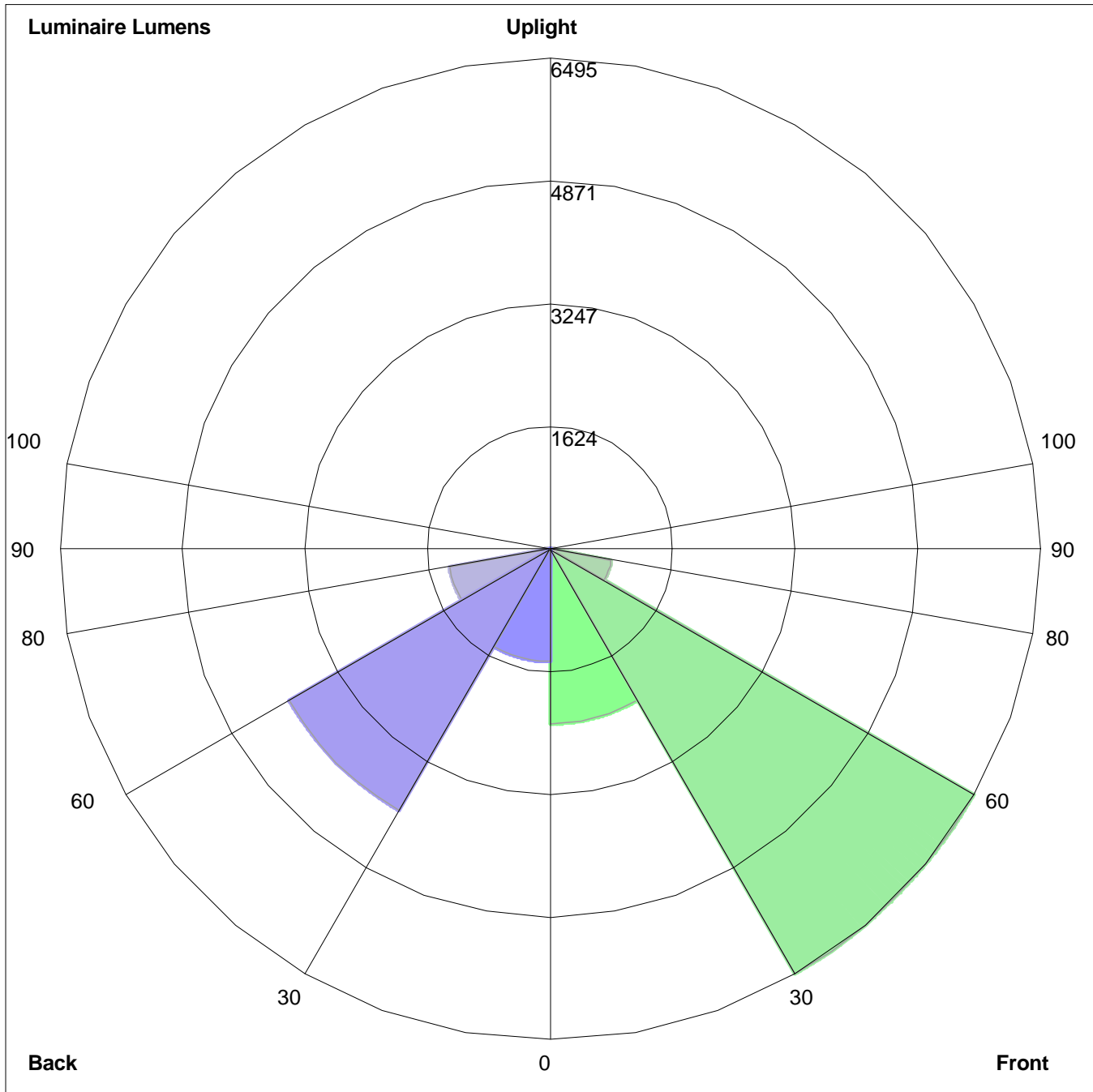
Maximum Candela = 11943 Located At Horizontal Angle = 80, Vertical Angle = 55  
# 1 - Vertical Plane Through Horizontal Angles (80 - 260) (Through Max. Cd.)  
# 2 - Horizontal Cone Through Vertical Angle (55) (Through Max. Cd.)

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



Distance In Units Of Mounting Height  
 Values Based On 20 Foot Mounting Height  
 1/2 Maximum Candela Trace Shown As Dashed Curve  
 (+) = Maximum Candela Point

LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:  
Front: Low=2312.9, Medium=6494.9, High=822.9, Very High=50.4  
Back: Low=1488.2, Medium=3998.2, High=1354.2, Very High=59.0  
Uplight: Low=0.0, High=0.0

BUG Rating : B3-U0-G3