



UL Verification Services

7036 Snowdrift Road Suite 200

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Integrating Sphere Test Report

Relevant Standards

IES LM-79-2008

ANSI C78.377-2011, ANSI C82.77-2002

CIE 13.3-1995, CIE 15-2004

Prepared For

LED Waves, LLC

Nancy Ahn

The Esquire Building

41st Street, 4100 1st Avenue 3rd Floor North

Brooklyn, NY 11232

Catalog Number

IP65 50W

Project Number

10017853

Test Number

339642

Test Date

2013-10-07

Prepared By

A handwritten signature in black ink, appearing to read 'Bethann Miller'.

Bethann Miller, Project Coordinator

Approved By

A handwritten signature in black ink, appearing to read 'Jeffrey M. Lockner'.

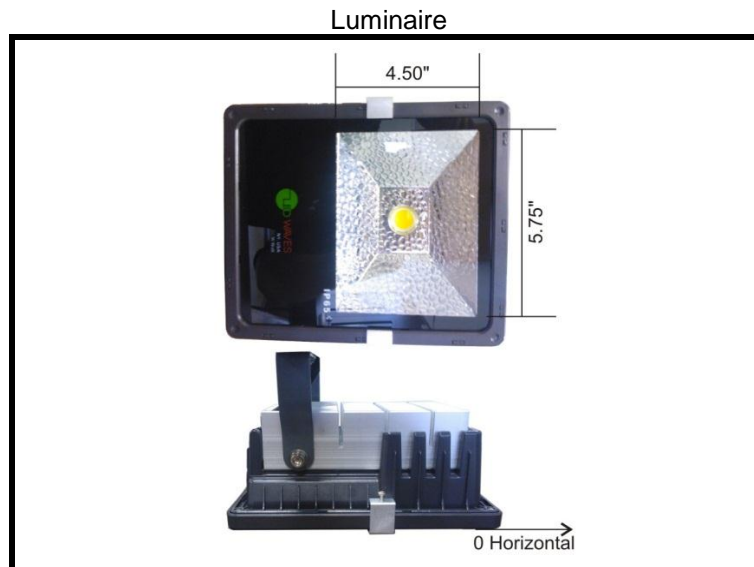
Jeffrey Lockner, Engineer

The results contained in this report pertain only to the tested sample.

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Luminaire Description: Molded plastic housing, cast aluminum heatsink, patterned specular reflector, clear glass enclosure
Catalog Number: IP65 50W
Lamp: One white LED array
Mounting: Surface Wall



Summary of Results

Radiant Flux: 14280 mW
Luminous Flux: 4623 Lumens
Luminaire Efficacy: 91.0 Lumens/Watt
CCT: 5033 K
CRI (Ra): 72.6
Chromaticity (x): 0.3444
Chromaticity (y): 0.3546
Chromaticity (u): 0.2098
Chromaticity (v): 0.3240
Duv: 0.0010

Test Conditions

Test Temperature: 24.9 °C
Voltage: 120.0 VAC
Current: 0.4324 A
Power: 50.79 W
Power Factor: 0.979
Frequency: 60 Hz
Current THD: 18.6 %

Testing was performed in a 2-meter integrating sphere using the 4 π geometry method.

Absorption correction was employed for this measurement.

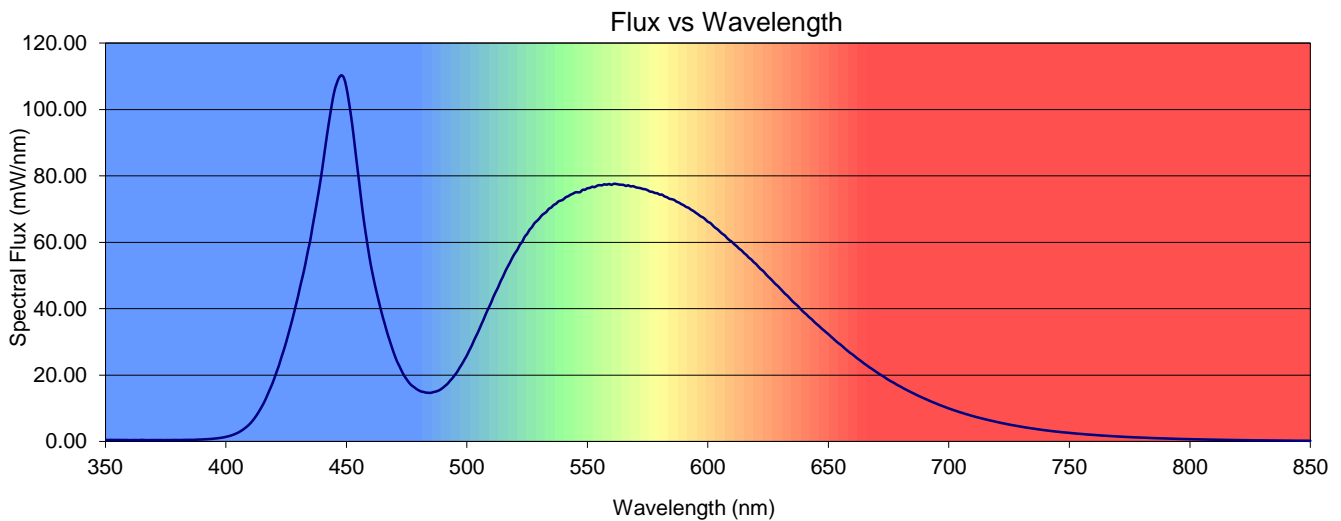
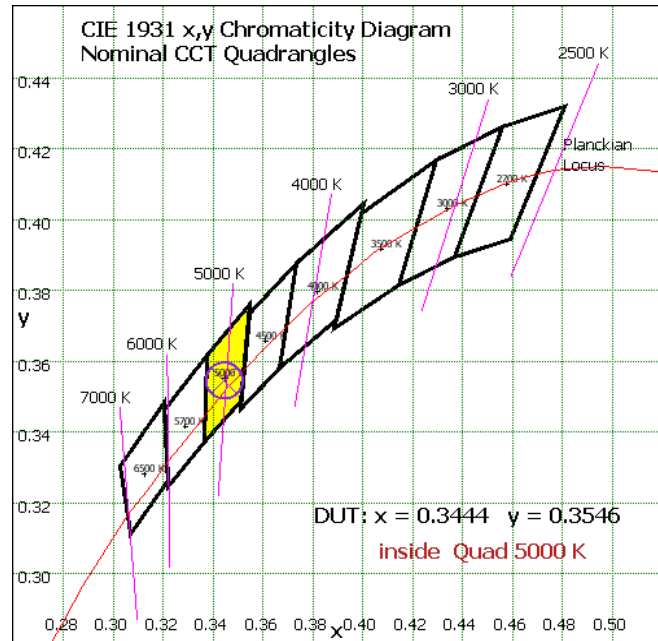
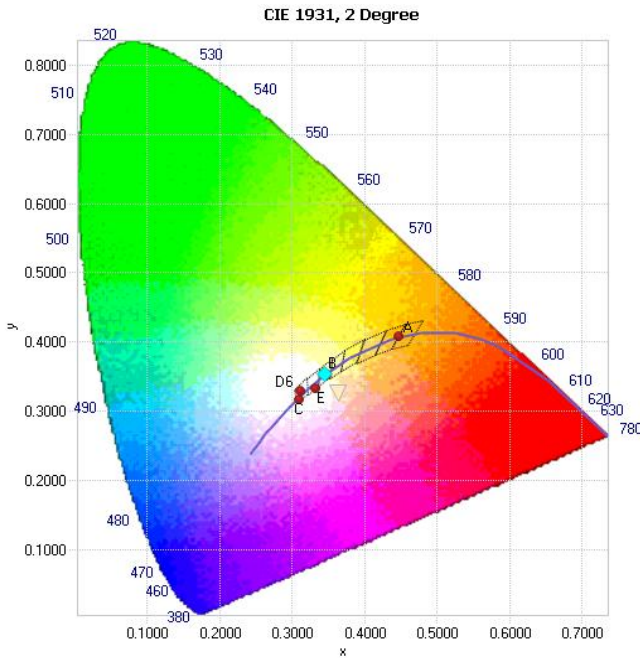


Chromaticity Coordinates

x	y	u	v	u'	v'	Duv
0.3444	0.3546	0.2098	0.3240	0.2098	0.4860	0.0010

Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
72.6	71.1	76.4	79.0	73.8	71.5	67.3	80.7	61.1	-16.7	42.8	70.6	45.4	71.1	87.9





Spectral Power Distribution

λ (nm)	mW/nm	λ (nm)	mW/nm	λ (nm)	mW/nm	λ (nm)	mW/nm	λ (nm)	mW/nm	λ (nm)	mW/nm	λ (nm)	mW/nm
350	0.463	422	22.9	494	19.1	566	77.0	638	40.3	710	7.66	782	1.11
351	0.461	423	25.3	495	20.0	567	77.2	639	39.5	711	7.44	783	1.08
352	0.480	424	27.5	496	21.0	568	76.8	640	38.8	712	7.25	784	1.06
353	0.469	425	29.9	497	22.2	569	76.9	641	38.2	713	7.08	785	1.03
354	0.461	426	32.6	498	23.4	570	76.6	642	37.5	714	6.90	786	1.01
355	0.471	427	35.2	499	24.7	571	76.4	643	36.9	715	6.72	787	0.980
356	0.458	428	38.0	500	25.9	572	76.3	644	36.1	716	6.53	788	0.954
357	0.452	429	41.0	501	27.4	573	76.1	645	35.5	717	6.36	789	0.933
358	0.465	430	43.9	502	28.8	574	76.0	646	34.9	718	6.20	790	0.913
359	0.452	431	47.3	503	30.5	575	75.7	647	34.2	719	6.04	791	0.884
360	0.408	432	50.2	504	32.0	576	75.3	648	33.6	720	5.87	792	0.864
361	0.438	433	53.5	505	33.5	577	75.2	649	32.9	721	5.71	793	0.843
362	0.450	434	57.3	506	35.3	578	74.8	650	32.3	722	5.55	794	0.819
363	0.416	435	60.6	507	36.9	579	74.8	651	31.6	723	5.41	795	0.799
364	0.437	436	64.9	508	38.6	580	74.4	652	31.0	724	5.26	796	0.768
365	0.480	437	68.9	509	40.2	581	74.3	653	30.3	725	5.12	797	0.760
366	0.455	438	73.1	510	41.7	582	73.8	654	29.7	726	4.98	798	0.738
367	0.408	439	77.4	511	43.5	583	73.6	655	29.2	727	4.85	799	0.722
368	0.424	440	82.3	512	45.1	584	73.1	656	28.6	728	4.72	800	0.705
369	0.441	441	87.4	513	46.5	585	73.0	657	27.9	729	4.59	801	0.685
370	0.440	442	92.5	514	48.3	586	72.8	658	27.3	730	4.47	802	0.671
371	0.431	443	97.2	515	49.7	587	72.2	659	26.7	731	4.34	803	0.652
372	0.448	444	102	516	51.3	588	71.9	660	26.2	732	4.22	804	0.641
373	0.440	445	105	517	52.7	589	71.5	661	25.6	733	4.11	805	0.621
374	0.423	446	108	518	54.1	590	71.1	662	25.0	734	4.00	806	0.610
375	0.434	447	110	519	55.5	591	70.6	663	24.5	735	3.90	807	0.594
376	0.442	448	110	520	56.7	592	70.4	664	24.0	736	3.79	808	0.576
377	0.432	449	109	521	57.8	593	69.8	665	23.4	737	3.69	809	0.565
378	0.451	450	107	522	59.3	594	69.4	666	22.9	738	3.58	810	0.554
379	0.466	451	102	523	60.2	595	68.9	667	22.4	739	3.48	811	0.539
380	0.443	452	97.7	524	61.7	596	68.4	668	21.9	740	3.39	812	0.524
381	0.444	453	92.0	525	62.5	597	67.8	669	21.4	741	3.29	813	0.517
382	0.466	454	85.8	526	63.8	598	67.5	670	20.9	742	3.20	814	0.499
383	0.489	455	79.9	527	64.5	599	66.9	671	20.4	743	3.12	815	0.491
384	0.490	456	73.7	528	65.7	600	66.2	672	19.9	744	3.03	816	0.475
385	0.506	457	67.9	529	66.4	601	65.8	673	19.5	745	2.96	817	0.464
386	0.490	458	62.8	530	67.1	602	65.1	674	19.0	746	2.88	818	0.455
387	0.522	459	58.1	531	68.0	603	64.4	675	18.5	747	2.80	819	0.442
388	0.558	460	53.7	532	68.6	604	63.9	676	18.1	748	2.73	820	0.426
389	0.593	461	50.0	533	69.1	605	63.2	677	17.7	749	2.67	821	0.422
390	0.600	462	46.7	534	70.1	606	62.6	678	17.3	750	2.60	822	0.411
391	0.669	463	43.6	535	70.5	607	62.1	679	16.9	751	2.53	823	0.398
392	0.689	464	40.6	536	71.2	608	61.3	680	16.5	752	2.46	824	0.396
393	0.750	465	37.8	537	71.6	609	60.6	681	16.1	753	2.38	825	0.385
394	0.784	466	35.2	538	72.3	610	60.1	682	15.7	754	2.33	826	0.372
395	0.866	467	32.6	539	72.6	611	59.4	683	15.3	755	2.27	827	0.363
396	0.934	468	30.4	540	72.9	612	58.8	684	15.0	756	2.21	828	0.356
397	1.03	469	28.1	541	73.6	613	58.1	685	14.6	757	2.15	829	0.353
398	1.13	470	26.0	542	73.9	614	57.5	686	14.3	758	2.09	830	0.345
399	1.26	471	24.2	543	74.3	615	56.7	687	13.9	759	2.04	831	0.339
400	1.40	472	22.7	544	74.6	616	56.2	688	13.5	760	2.00	832	0.329
401	1.58	473	21.2	545	75.0	617	55.4	689	13.2	761	1.94	833	0.318
402	1.78	474	19.8	546	75.1	618	54.8	690	12.9	762	1.88	834	0.312
403	2.03	475	18.7	547	75.1	619	54.0	691	12.6	763	1.83	835	0.306
404	2.32	476	17.7	548	75.8	620	53.4	692	12.3	764	1.78	836	0.300
405	2.66	477	16.9	549	75.8	621	52.6	693	11.9	765	1.74	837	0.293
406	3.07	478	16.4	550	76.3	622	51.9	694	11.7	766	1.69	838	0.283
407	3.53	479	15.9	551	76.4	623	51.3	695	11.4	767	1.64	839	0.278
408	4.07	480	15.4	552	76.7	624	50.5	696	11.0	768	1.60	840	0.273
409	4.67	481	15.1	553	76.6	625	49.7	697	10.8	769	1.56	841	0.267
410	5.37	482	14.9	554	77.0	626	49.0	698	10.5	770	1.52	842	0.264
411	6.19	483	14.7	555	77.2	627	48.2	699	10.2	771	1.48	843	0.252
412	7.14	484	14.7	556	77.1	628	47.5	700	9.96	772	1.44	844	0.244
413	8.20	485	14.7	557	77.5	629	46.8	701	9.71	773	1.40	845	0.242
414	9.38	486	14.9	558	77.3	630	46.1	702	9.45	774	1.36	846	0.239
415	10.7	487	15.0	559	77.5	631	45.3	703	9.22	775	1.33	847	0.233
416	12.0	488	15.3	560	77.3	632	44.5	704	8.96	776	1.30	848	0.229
417	13.6	489	15.6	561	77.6	633	43.9	705	8.74	777	1.26	849	0.222
418	15.3	490	16.2	562	77.5	634	43.1	706	8.51	778	1.23	850	0.216
419	16.9	491	16.8	563	77.4	635	42.3	707	8.28	779	1.20		
420	18.8	492	17.4	564	77.3	636	41.6	708	8.07	780	1.17		
421	20.9	493	18.3	565	77.3	637	41.0	709	7.85	781	1.15		