



Les Industries Spectralux Inc. Spectralux Industries Inc.

2750 Sabourin, Saint-Laurent (Quebec) H4S 1M2 Canada
Tel.: (514) 332-0082 Fax: (514) 332-3590 www.spectralux.ca

ISO/IEC 17025
NVLAP
NVLAP LAB CODE: 200899-0

Sphere Test Report

Standard(s) CIE 84-1989, IESNA LM-16-93, IESNA LM-58-94, IES LM-79-08, ANSI C82.77-2002

Customer Lumenpulse, 1751 Richardson, suite 1505, Montréal, Québec, Canada, H3K 1G6

General Information		Lamp Details: CY2944	Driver Details: CY1240	
Test Report	L1702153-C1	Description	LOGi-HO-120/277-48-40K-10x10-NO	Type Commercial
Test Date	15 February 2017	Manufacturer	Cree	Description 61W
Report Date	16 February 2017	Catalog No.	XPE2	Manufacturer Meanwell
Sphere Temperature	24.4°C	Serial No.	SRIS 2690	Catalog No. LPF 60-24
Humidity	15.0 %	Drive Current	300 mA	Voltage 120.00 V
Lamp Type	SSL	Nominal Color	4000K	Power Factor 0.9000

Stabilization Time: 1 hour 15 minutes

Tested By: Marc Viwonou Sena

Approved Signatory: Chrisnel Blot

Signature:

Notes

- 1) Field performance may differ from laboratory measurements. Results are valid for tested material only.
- 2) The original electronic file or paper report cannot be edited in whole or in part without written consent of Spectralux Industries Inc.
- 3) This test report describes the performance of a single product and does not necessarily represent the average performance of a group of the same SSL product.

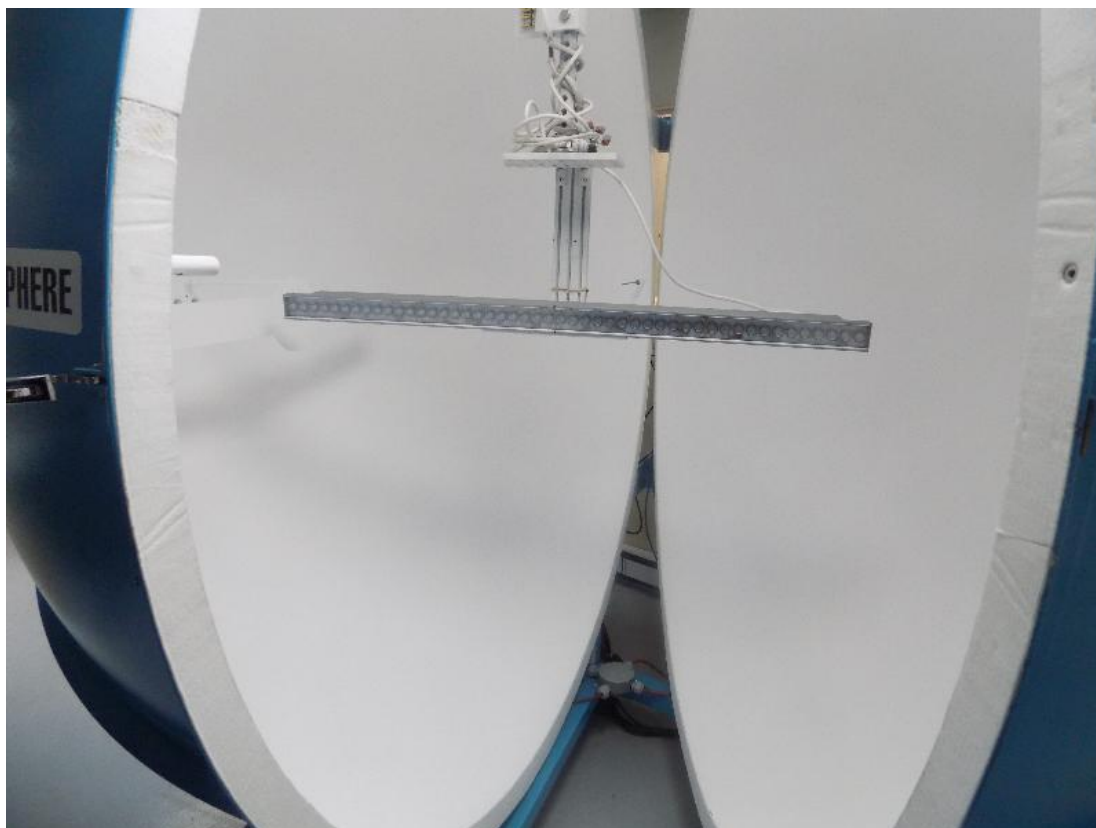


Realization of Sphere Test

A 4π sphere-spectroradiometer equipped with auxiliary lamp to correct self-absorption was used during the measurements of electrical, photometric and colorimetric properties of the sample under test. The size of the integrating sphere used is large enough to ensure that the measurement errors due to effects of baffle and self-absorption by the sample test are not significant.

During the test, a commercial driver was used and adjusted to nominal electrical characteristics specified by the driver manufacturer or the client. Good electrical contacts have been used to ensure the control of electrical parameters of the commercial driver and an adequate stabilization period prior to collecting data. The self-absorbance was measured and a geometrical correction factor was applied to the luminous flux value to take into account the sphere configuration.

Results of the measurements are traceable to reference standards developed and maintained by the National Institute of Standards and Technology (NIST) and National Research Council of Canada (NRC).





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Electrical Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Auxiliary Power Supply	American Reliance	SPS150-7	B10155	N.P.C.R.	N.P.C.R.
Test Power Supply	Elgar	CW801	30527	N.P.C.R.	N.P.C.R.
Input Power Meter	Yokogawa	WT210	91L236540	2016/05/18	2017/05/18
Output Power Meter	N/A	N/A	N/A	N.P.C.R.	N.P.C.R.
Shunt Resistor	Fluke	Y5020	5675013	2016/05/18	2017/05/18
Current Multimeter	HP Agilent	HP34401A	US36106747	2016/05/17	2017/05/17
Voltage Multimeter	HP Agilent	HP34401A	US36112752	2016/05/17	2017/05/17

Spectrometer Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Spectrometer	Ocean Optics	USB2000N	USB2E4034	2016/07/08	2017/07/08

Environment Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Temperature Humidity Sensor	Omega	HH311	120504178	2016/04/20	2018/04/20



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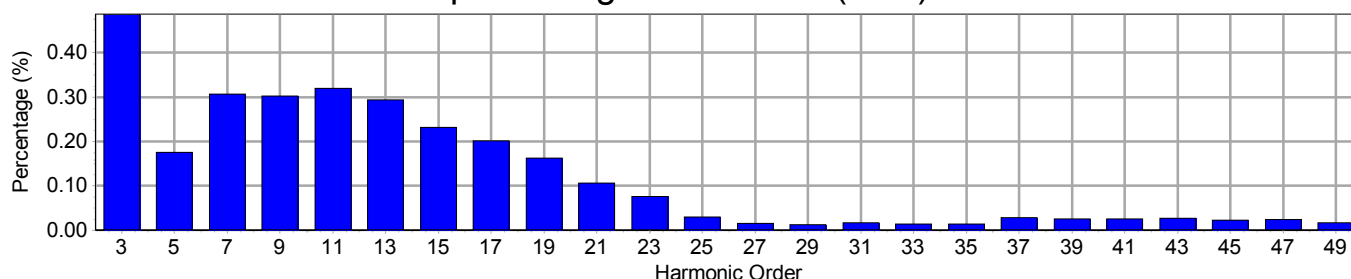
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Electrical Measurements

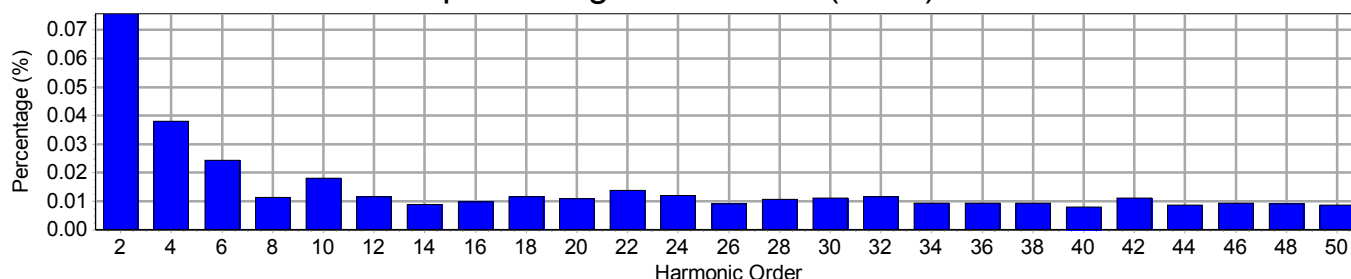
Input

Frequency	60 Hz	Active Power	62.33 W	THDV [ANSI]	0.89 %
Voltage	120.0 Vrms	Apparent Power	62.64 VA	THDA [ANSI]	5.28 %
Current	0.5220 Arms	Power Factor	0.995	Max. Harmonic At	5th order

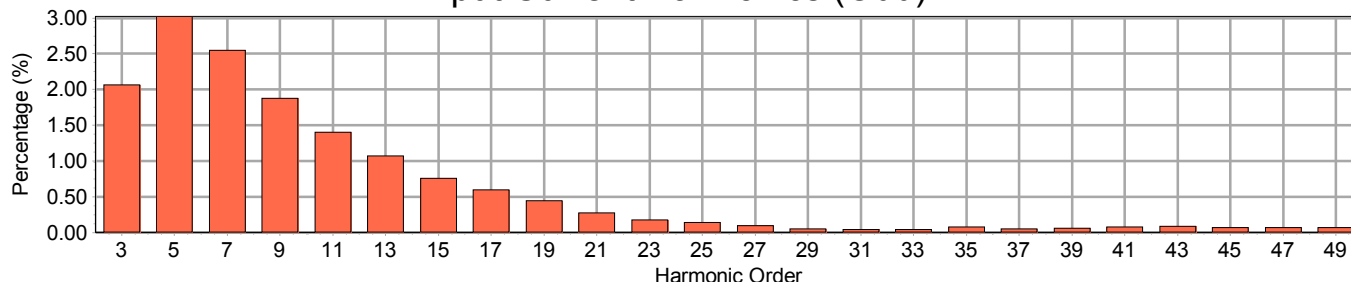
Input Voltage Harmonics (Odd)



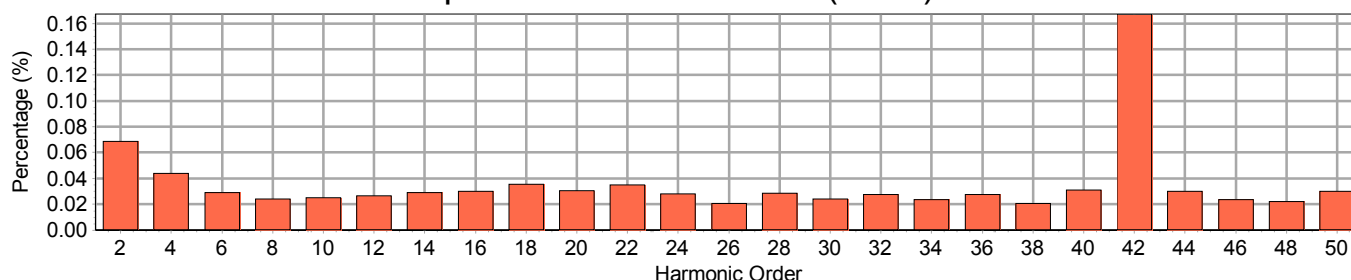
Input Voltage Harmonics (Even)



Input Current Harmonics (Odd)



Input Current Harmonics (Even)





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Harmonic Measurements

Odd Harmonics				Even Harmonics			
Harmonic Order	Frequency (HZ)	Voltage Harmonics (%)	Current Harmonics (%)	Harmonic Order	Frequency (HZ)	Voltage Harmonics (%)	Current Harmonics (%)
1	60	100.000	100.000	2	120	0.076	0.069
3	180	0.488	2.064	4	240	0.038	0.044
5	300	0.176	3.028	6	360	0.024	0.029
7	420	0.307	2.551	8	480	0.011	0.024
9	540	0.302	1.876	10	600	0.018	0.025
11	660	0.319	1.402	12	720	0.011	0.027
13	780	0.294	1.072	14	840	0.009	0.029
15	900	0.232	0.760	16	960	0.010	0.030
17	1020	0.201	0.598	18	1080	0.012	0.036
19	1140	0.162	0.441	20	1200	0.011	0.031
21	1260	0.106	0.274	22	1320	0.014	0.035
23	1380	0.076	0.178	24	1440	0.012	0.028
25	1500	0.030	0.136	26	1560	0.009	0.021
27	1620	0.015	0.093	28	1680	0.011	0.028
29	1740	0.012	0.046	30	1800	0.011	0.024
31	1860	0.017	0.043	32	1920	0.012	0.028
33	1980	0.013	0.038	34	2040	0.009	0.023
35	2100	0.014	0.072	36	2160	0.009	0.028
37	2220	0.028	0.050	38	2280	0.009	0.021
39	2340	0.026	0.057	40	2400	0.008	0.031
41	2460	0.025	0.077	42	2520	0.011	0.168
43	2580	0.027	0.086	44	2640	0.009	0.030
45	2700	0.023	0.065	46	2760	0.009	0.023
47	2820	0.024	0.064	48	2880	0.009	0.022
49	2940	0.017	0.064	50	3000	0.009	0.030



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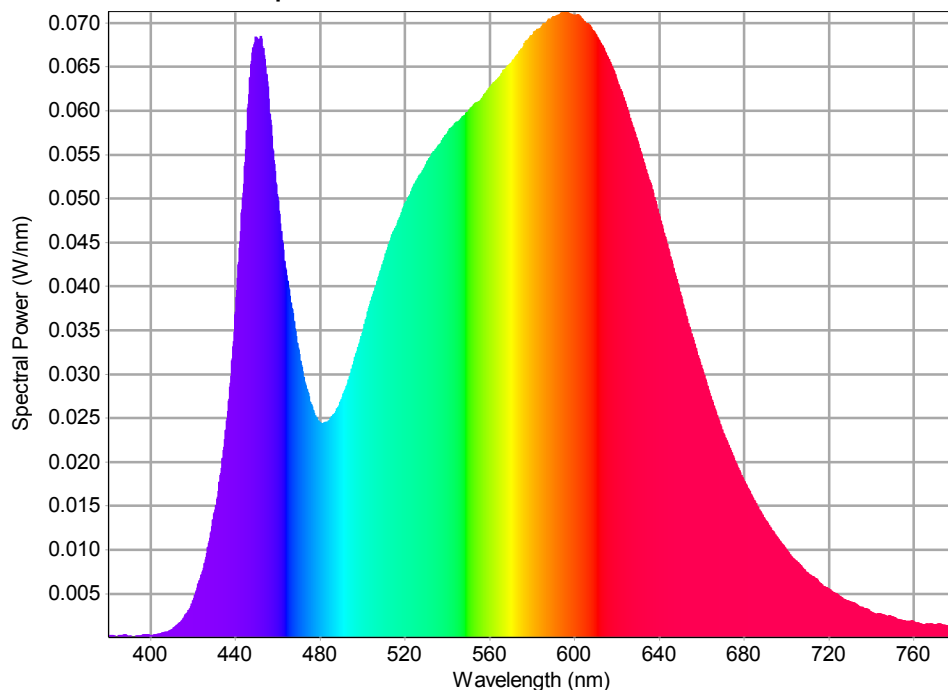
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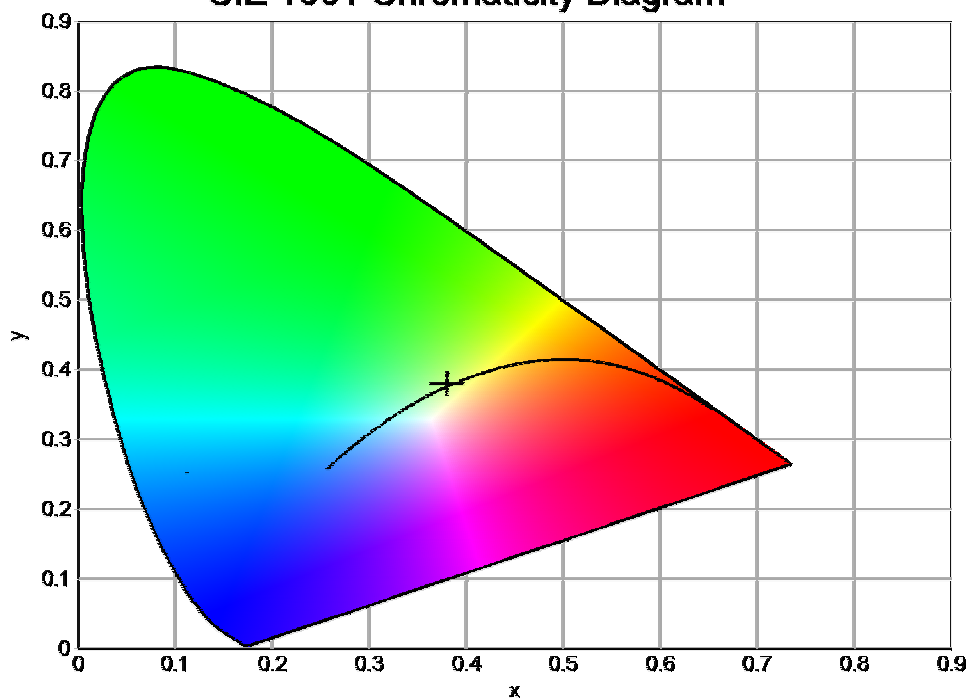
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Spectral Power Distribution



Peak Wavelength	596 nm
Luminous Flux	4232 lm
Input Power	62.33 W
Lumens/Watt	67.9
Full Width/Half Maximum	152.71
Center Wavelength	577 nm
Centroid Wavelength	368 nm
Dominant Wavelength	488 nm
Excitation Purity	0.1729
Colorimetric Purity	0.1147

CIE 1931 Chromaticity Diagram



x	0.3797	CCT	4048 K
y	0.3807	CRI	84
u	0.2231	L*	25.67
v	0.3355	a*	-5.68
u'	0.2231	b*	-15.04
v'	0.5032	Duv	0.0020
R1	82.7	R9	15.7
R2	89.6	R10	74.5
R3	94.5	R11	81.9
R4	83.3	R12	63.4
R5	82.4	R13	84.3
R6	85.4	R14	96.9
R7	87.9		
R8	67.8		



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Spectral Power Distribution Table (1/4)

Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)
380	0.00031	405	0.00053	430	0.01415	455	0.06337
381	0.00027	406	0.00060	431	0.01512	456	0.05977
382	0.00030	407	0.00066	432	0.01673	457	0.05718
383	0.00024	408	0.00069	433	0.01855	458	0.05443
384	0.00015	409	0.00086	434	0.02044	459	0.05187
385	0.00029	410	0.00098	435	0.02261	460	0.04981
386	0.00033	411	0.00115	436	0.02472	461	0.04720
387	0.00034	412	0.00139	437	0.02701	462	0.04527
388	0.00040	413	0.00156	438	0.02987	463	0.04292
389	0.00024	414	0.00174	439	0.03321	464	0.04130
390	0.00021	415	0.00202	440	0.03686	465	0.03990
391	0.00020	416	0.00240	441	0.04102	466	0.03819
392	0.00018	417	0.00278	442	0.04443	467	0.03698
393	0.00022	418	0.00317	443	0.04840	468	0.03520
394	0.00021	419	0.00358	444	0.05166	469	0.03364
395	0.00023	420	0.00423	445	0.05562	470	0.03228
396	0.00035	421	0.00487	446	0.06040	471	0.03107
397	0.00038	422	0.00568	447	0.06377	472	0.02975
398	0.00036	423	0.00648	448	0.06662	473	0.02873
399	0.00040	424	0.00718	449	0.06759	474	0.02800
400	0.00028	425	0.00797	450	0.06836	475	0.02689
401	0.00030	426	0.00893	451	0.06791	476	0.02637
402	0.00036	427	0.01031	452	0.06856	477	0.02561
403	0.00038	428	0.01137	453	0.06718	478	0.02511
404	0.00048	429	0.01267	454	0.06507	479	0.02471



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Spectral Power Distribution Table (2/4)

Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)
480	0.02448	505	0.03916	530	0.05390	555	0.06111
481	0.02442	506	0.03988	531	0.05442	556	0.06139
482	0.02452	507	0.04059	532	0.05476	557	0.06171
483	0.02460	508	0.04147	533	0.05522	558	0.06205
484	0.02470	509	0.04214	534	0.05545	559	0.06233
485	0.02500	510	0.04291	535	0.05580	560	0.06267
486	0.02537	511	0.04374	536	0.05615	561	0.06300
487	0.02557	512	0.04449	537	0.05639	562	0.06331
488	0.02609	513	0.04517	538	0.05687	563	0.06348
489	0.02651	514	0.04591	539	0.05723	564	0.06375
490	0.02712	515	0.04643	540	0.05748	565	0.06397
491	0.02777	516	0.04688	541	0.05794	566	0.06439
492	0.02837	517	0.04757	542	0.05814	567	0.06474
493	0.02899	518	0.04814	543	0.05833	568	0.06498
494	0.02975	519	0.04884	544	0.05872	569	0.06523
495	0.03063	520	0.04945	545	0.05880	570	0.06546
496	0.03149	521	0.04981	546	0.05898	571	0.06581
497	0.03239	522	0.05029	547	0.05937	572	0.06611
498	0.03308	523	0.05083	548	0.05951	573	0.06642
499	0.03398	524	0.05151	549	0.05982	574	0.06682
500	0.03472	525	0.05182	550	0.06000	575	0.06705
501	0.03571	526	0.05230	551	0.06035	576	0.06740
502	0.03653	527	0.05275	552	0.06053	577	0.06797
503	0.03759	528	0.05304	553	0.06085	578	0.06810
504	0.03834	529	0.05345	554	0.06096	579	0.06847



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Spectral Power Distribution Table (3/4)

Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)
580	0.06862	605	0.07007	630	0.05620	655	0.03464
581	0.06902	606	0.07001	631	0.05541	656	0.03388
582	0.06919	607	0.06981	632	0.05461	657	0.03307
583	0.06935	608	0.06932	633	0.05375	658	0.03216
584	0.06944	609	0.06909	634	0.05296	659	0.03145
585	0.06986	610	0.06873	635	0.05217	660	0.03068
586	0.06993	611	0.06827	636	0.05156	661	0.02995
587	0.07014	612	0.06781	637	0.05064	662	0.02909
588	0.07054	613	0.06747	638	0.04984	663	0.02829
589	0.07043	614	0.06689	639	0.04884	664	0.02757
590	0.07079	615	0.06636	640	0.04799	665	0.02682
591	0.07082	616	0.06594	641	0.04711	666	0.02611
592	0.07093	617	0.06532	642	0.04613	667	0.02540
593	0.07101	618	0.06482	643	0.04535	668	0.02471
594	0.07121	619	0.06425	644	0.04444	669	0.02405
595	0.07125	620	0.06339	645	0.04347	670	0.02336
596	0.07134	621	0.06275	646	0.04260	671	0.02281
597	0.07120	622	0.06224	647	0.04164	672	0.02225
598	0.07104	623	0.06153	648	0.04087	673	0.02169
599	0.07097	624	0.06081	649	0.03993	674	0.02113
600	0.07097	625	0.06006	650	0.03904	675	0.02049
601	0.07091	626	0.05921	651	0.03805	676	0.01992
602	0.07090	627	0.05839	652	0.03715	677	0.01939
603	0.07063	628	0.05772	653	0.03629	678	0.01886
604	0.07027	629	0.05699	654	0.03545	679	0.01832



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Spectral Power Distribution Table (4/4)

Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)	Wavelength (nm)	Spectral Power (W/nm)
680	0.01783	706	0.00840	732	0.00394	758	0.00194
681	0.01737	707	0.00814	733	0.00378	759	0.00197
682	0.01690	708	0.00785	734	0.00358	760	0.00184
683	0.01641	709	0.00756	735	0.00353	761	0.00170
684	0.01593	710	0.00737	736	0.00345	762	0.00176
685	0.01552	711	0.00719	737	0.00339	763	0.00164
686	0.01504	712	0.00705	738	0.00331	764	0.00157
687	0.01463	713	0.00688	739	0.00311	765	0.00152
688	0.01425	714	0.00674	740	0.00297	766	0.00160
689	0.01375	715	0.00643	741	0.00283	767	0.00158
690	0.01341	716	0.00621	742	0.00270	768	0.00165
691	0.01306	717	0.00595	743	0.00276	769	0.00158
692	0.01265	718	0.00582	744	0.00281	770	0.00154
693	0.01230	719	0.00574	745	0.00267	771	0.00157
694	0.01195	720	0.00558	746	0.00261	772	0.00159
695	0.01161	721	0.00538	747	0.00253	773	0.00156
696	0.01130	722	0.00521	748	0.00250	774	0.00150
697	0.01093	723	0.00509	749	0.00253	775	0.00143
698	0.01064	724	0.00496	750	0.00246	776	0.00138
699	0.01036	725	0.00474	751	0.00233	777	0.00133
700	0.01002	726	0.00460	752	0.00214	778	0.00128
701	0.00968	727	0.00440	753	0.00212	779	0.00123
702	0.00934	728	0.00425	754	0.00206	780	0.00127
703	0.00907	729	0.00422	755	0.00201		
704	0.00885	730	0.00407	756	0.00191		
705	0.00865	731	0.00401	757	0.00193		