



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: CY2603	Driver Details: CY1101	
Test Report	L1606233-C1	Description	Clusters of CREE XPE2 LED's	Type Commercial
Test Date	23 June 2016	Manufacturer	Cree	Description 71W
Report Date	7 July 2016	Catalog No.	LOG-HO-120-48-40K-90x90-SI-NO	Manufacturer Mean Well
Sphere Temperature	25.2°C	Serial No.	SRIS 2441	Catalog No. LPF-60-24
Humidity	33.7 %	Drive Current	300 mA	Voltage 120.00 V
Lamp Type	SSL	Color	White	Power Factor 0.9900

Stabilization Time: 55 minutes

Tested By: George Hedrei

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 Spectra Lux 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).





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

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	iRDC	CIF-3000A	974997	N.P.C.R.	N.P.C.R.
Input Power Meter	Yokogawa	WT210	27E224420	2016/05/06	2017/05/06
Output Power Meter	N/A	N/A	N/A	N.P.C.R.	N.P.C.R.
Shunt Resistor	Fluke	Y5020	6010009	2015/07/08	2016/07/08
Current Multimeter	HP Agilent	HP34401A	MY41025831	2016/05/05	2017/05/05
Voltage Multimeter	HP Agilent	HP34401A	US36010444	2016/05/05	2017/05/05

Spectrometer Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Spectrometer	Ocean Optics	USB2000N	USB2E3364	2016/05/30	2017/05/30

Environment Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Temperature Humidity Sensor	Omega	HH311	091203915	2014/10/30	2016/10/30



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



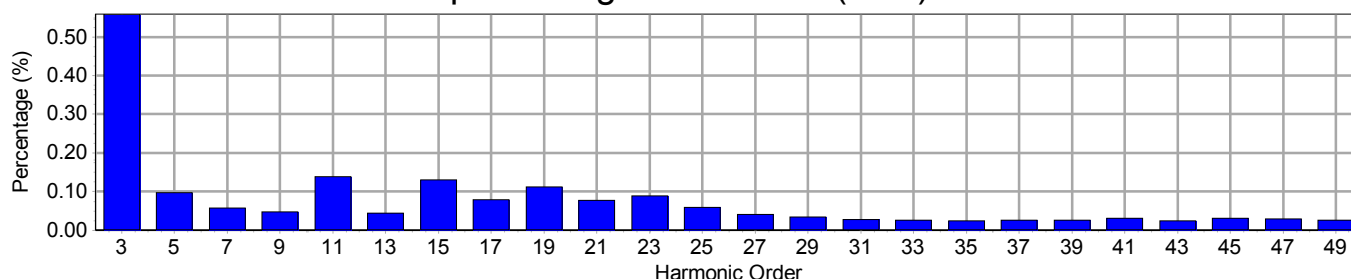
NVLAP LAB CODE: 200899-0

Electrical Measurements

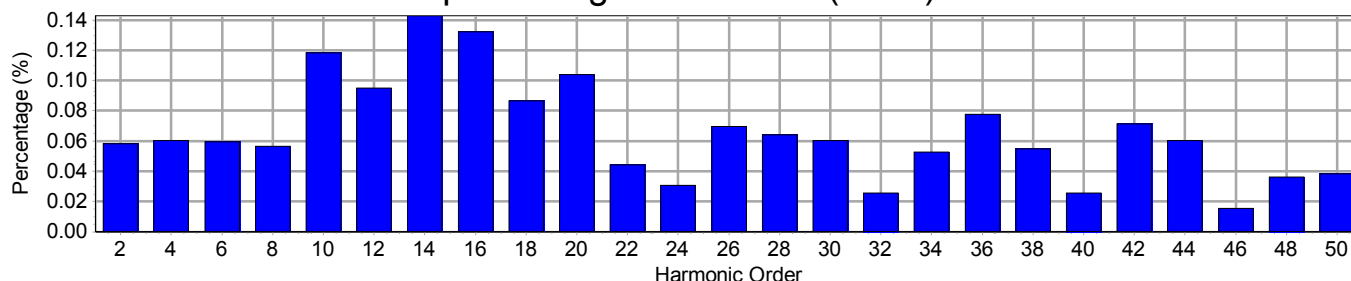
Input

Frequency	60 Hz	Active Power	61.93 W	THDV [ANSI]	0.73 %
Voltage	118.8 V(rms)	Apparent Power	62.33 VA	THDA [ANSI]	5.15 %
Current	0.5249 A(rms)	Power Factor	0.994	Max. Harmonic At	5th order

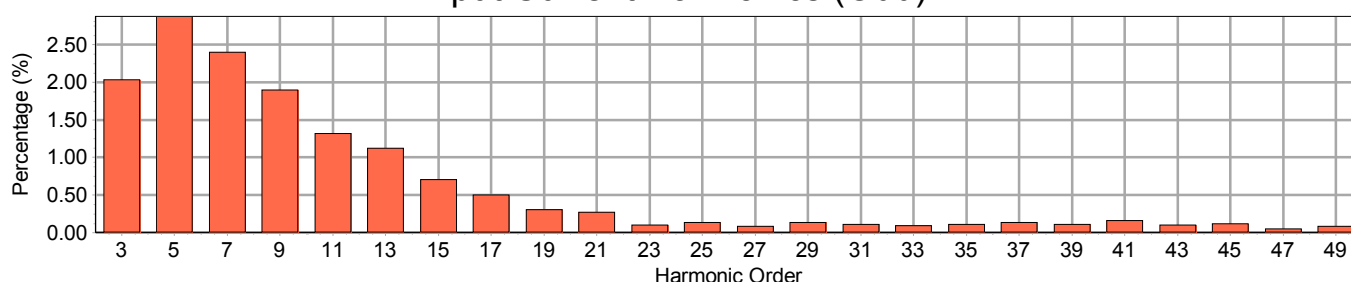
Input Voltage Harmonics (Odd)



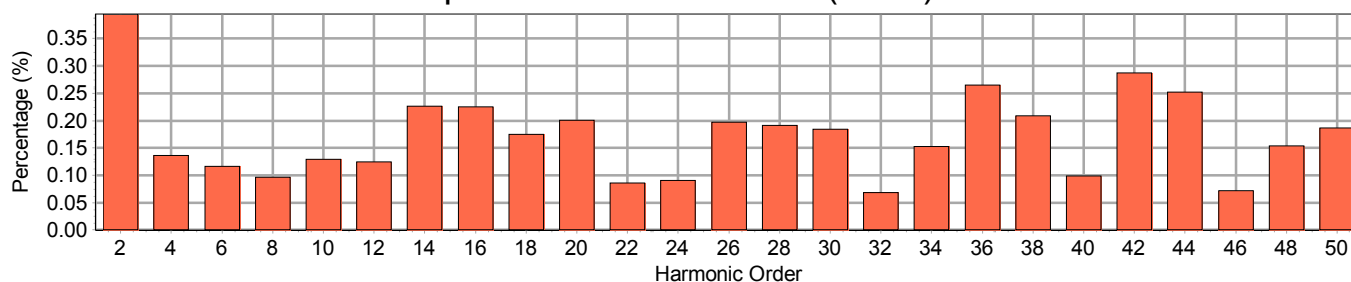
Input Voltage Harmonics (Even)



Input Current Harmonics (Odd)



Input Current Harmonics (Even)





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 LAB CODE: 200899-0

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	0.058	0.395
3	180	0.560	2.037	4	240	0.060	0.137
5	300	0.097	2.883	6	360	0.059	0.116
7	420	0.057	2.401	8	480	0.057	0.096
9	540	0.048	1.902	10	600	0.118	0.130
11	660	0.138	1.318	12	720	0.095	0.125
13	780	0.043	1.125	14	840	0.143	0.226
15	900	0.131	0.704	16	960	0.132	0.225
17	1020	0.079	0.497	18	1080	0.087	0.175
19	1140	0.111	0.302	20	1200	0.104	0.201
21	1260	0.077	0.266	22	1320	0.044	0.085
23	1380	0.088	0.100	24	1440	0.031	0.091
25	1500	0.059	0.132	26	1560	0.070	0.197
27	1620	0.041	0.079	28	1680	0.064	0.191
29	1740	0.034	0.136	30	1800	0.060	0.184
31	1860	0.027	0.108	32	1920	0.026	0.068
33	1980	0.026	0.091	34	2040	0.053	0.153
35	2100	0.024	0.109	36	2160	0.077	0.265
37	2220	0.026	0.130	38	2280	0.055	0.209
39	2340	0.026	0.106	40	2400	0.026	0.099
41	2460	0.031	0.155	42	2520	0.071	0.288
43	2580	0.025	0.095	44	2640	0.060	0.252
45	2700	0.031	0.118	46	2760	0.016	0.071
47	2820	0.029	0.050	48	2880	0.036	0.154
49	2940	0.025	0.077	50	3000	0.038	0.186



Les Industries Spectralux Inc. Spectralux Industries Inc.

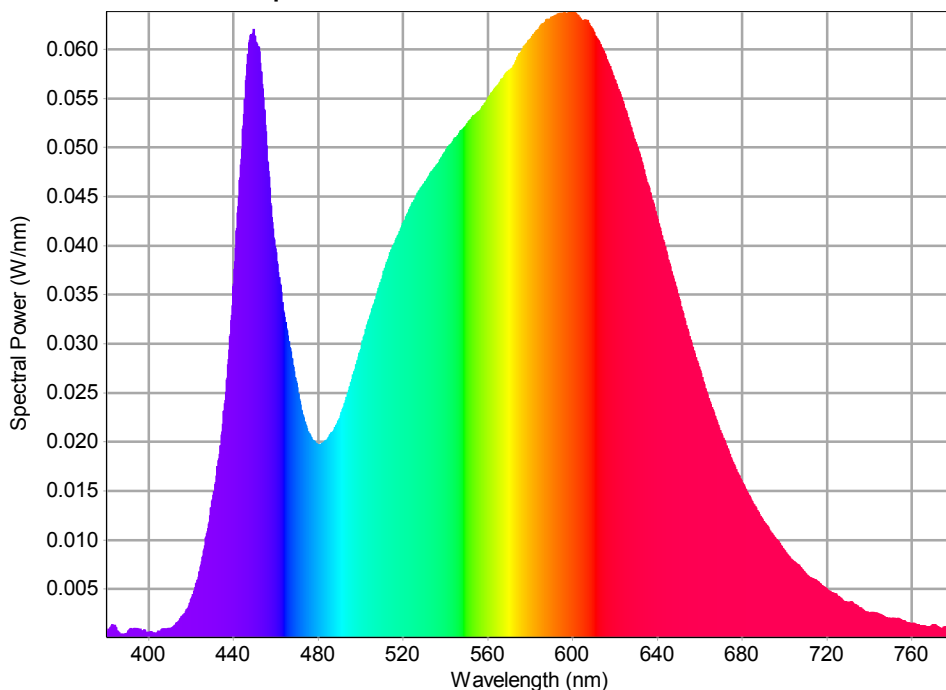
2750 Sabourin, Saint-Laurent (Quebec) H4S 1M2 Canada
Tel.: (514) 332-0082 Fax: (514) 332-3590 www.spectralux.ca

ISO/IEC 17025



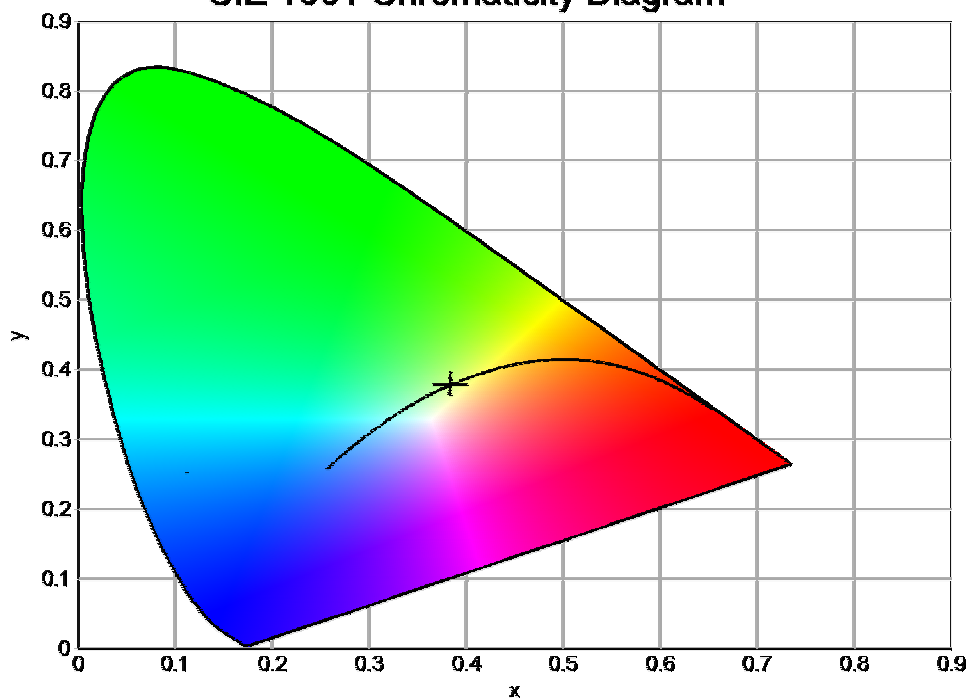
NVLAP LAB CODE: 200899-0

Spectral Power Distribution



Peak Wavelength	600 nm
Luminous Flux	3715 lm
Input Power	61.93 W
Lumens/Watt	60.0
Full Width/Half Maximum	150.76
Center Wavelength	578 nm
Centroid Wavelength	369 nm
Dominant Wavelength	487 nm
Excitation Purity	0.1651
Colorimetric Purity	0.1037

CIE 1931 Chromaticity Diagram



x	0.3833	CCT	3942 K
y	0.3795	CRI	84
u	0.2259	L*	25.67
v	0.3355	a*	-4.95
u'	0.2259	b*	-14.83
v'	0.5032	Duv	0.0004
R1	82.4	R9	14.2
R2	89.2	R10	73.6
R3	94.0	R11	81.8
R4	83.2	R12	64.5
R5	82.2	R13	83.9
R6	84.9	R14	96.5
R7	87.1		
R8	67.0		



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 LAB CODE: 200899-0

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	0.00065	405	0.00071	430	0.01400	455	0.05233
381	0.00098	406	0.00095	431	0.01498	456	0.04868
382	0.00112	407	0.00096	432	0.01658	457	0.04591
383	0.00142	408	0.00097	433	0.01815	458	0.04289
384	0.00137	409	0.00106	434	0.01962	459	0.04083
385	0.00081	410	0.00104	435	0.02183	460	0.03930
386	0.00060	411	0.00112	436	0.02396	461	0.03729
387	0.00044	412	0.00132	437	0.02638	462	0.03616
388	0.00039	413	0.00154	438	0.02944	463	0.03426
389	0.00050	414	0.00174	439	0.03244	464	0.03275
390	0.00057	415	0.00203	440	0.03588	465	0.03158
391	0.00091	416	0.00226	441	0.03980	466	0.03028
392	0.00093	417	0.00252	442	0.04337	467	0.02920
393	0.00106	418	0.00291	443	0.04667	468	0.02787
394	0.00097	419	0.00333	444	0.04990	469	0.02662
395	0.00101	420	0.00400	445	0.05342	470	0.02555
396	0.00098	421	0.00448	446	0.05689	471	0.02442
397	0.00072	422	0.00520	447	0.05953	472	0.02331
398	0.00090	423	0.00592	448	0.06142	473	0.02254
399	0.00067	424	0.00677	449	0.06152	474	0.02177
400	0.00067	425	0.00785	450	0.06141	475	0.02109
401	0.00075	426	0.00896	451	0.06059	476	0.02077
402	0.00054	427	0.01025	452	0.06023	477	0.02029
403	0.00056	428	0.01125	453	0.05780	478	0.02013
404	0.00060	429	0.01254	454	0.05511	479	0.01987



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 LAB CODE: 200899-0

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	0.01975	505	0.03323	530	0.04633	555	0.05357
481	0.01976	506	0.03391	531	0.04666	556	0.05372
482	0.01988	507	0.03447	532	0.04703	557	0.05402
483	0.02008	508	0.03532	533	0.04744	558	0.05431
484	0.02019	509	0.03597	534	0.04765	559	0.05459
485	0.02049	510	0.03660	535	0.04797	560	0.05499
486	0.02091	511	0.03745	536	0.04827	561	0.05532
487	0.02106	512	0.03808	537	0.04850	562	0.05565
488	0.02150	513	0.03860	538	0.04895	563	0.05598
489	0.02191	514	0.03932	539	0.04931	564	0.05619
490	0.02235	515	0.03983	540	0.04961	565	0.05639
491	0.02303	516	0.04024	541	0.05002	566	0.05677
492	0.02364	517	0.04079	542	0.05029	567	0.05704
493	0.02424	518	0.04123	543	0.05044	568	0.05740
494	0.02496	519	0.04176	544	0.05087	569	0.05772
495	0.02566	520	0.04232	545	0.05105	570	0.05788
496	0.02644	521	0.04268	546	0.05125	571	0.05805
497	0.02718	522	0.04322	547	0.05169	572	0.05835
498	0.02789	523	0.04369	548	0.05183	573	0.05869
499	0.02871	524	0.04421	549	0.05207	574	0.05922
500	0.02938	525	0.04450	550	0.05236	575	0.05959
501	0.03031	526	0.04494	551	0.05269	576	0.05989
502	0.03101	527	0.04539	552	0.05288	577	0.06035
503	0.03187	528	0.04574	553	0.05325	578	0.06054
504	0.03251	529	0.04603	554	0.05337	579	0.06088



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 LAB CODE: 200899-0

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	0.06107	605	0.06295	630	0.05033	655	0.03081
581	0.06138	606	0.06303	631	0.04968	656	0.03010
582	0.06162	607	0.06299	632	0.04902	657	0.02938
583	0.06193	608	0.06249	633	0.04821	658	0.02863
584	0.06206	609	0.06220	634	0.04729	659	0.02803
585	0.06249	610	0.06181	635	0.04650	660	0.02738
586	0.06265	611	0.06127	636	0.04592	661	0.02663
587	0.06278	612	0.06098	637	0.04503	662	0.02589
588	0.06310	613	0.06055	638	0.04438	663	0.02518
589	0.06305	614	0.06005	639	0.04355	664	0.02448
590	0.06333	615	0.05960	640	0.04275	665	0.02389
591	0.06341	616	0.05903	641	0.04193	666	0.02333
592	0.06353	617	0.05849	642	0.04106	667	0.02268
593	0.06363	618	0.05796	643	0.04035	668	0.02206
594	0.06372	619	0.05742	644	0.03954	669	0.02149
595	0.06369	620	0.05684	645	0.03860	670	0.02094
596	0.06378	621	0.05621	646	0.03791	671	0.02044
597	0.06366	622	0.05572	647	0.03702	672	0.01991
598	0.06375	623	0.05515	648	0.03636	673	0.01938
599	0.06378	624	0.05443	649	0.03557	674	0.01880
600	0.06388	625	0.05379	650	0.03474	675	0.01821
601	0.06381	626	0.05312	651	0.03387	676	0.01774
602	0.06354	627	0.05230	652	0.03311	677	0.01724
603	0.06334	628	0.05165	653	0.03233	678	0.01679
604	0.06300	629	0.05092	654	0.03155	679	0.01633



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 LAB CODE: 200899-0

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	0.01588	706	0.00758	732	0.00368	758	0.00160
681	0.01547	707	0.00737	733	0.00347	759	0.00160
682	0.01503	708	0.00711	734	0.00336	760	0.00153
683	0.01464	709	0.00684	735	0.00315	761	0.00155
684	0.01416	710	0.00660	736	0.00311	762	0.00146
685	0.01380	711	0.00637	737	0.00291	763	0.00144
686	0.01347	712	0.00621	738	0.00273	764	0.00133
687	0.01306	713	0.00614	739	0.00272	765	0.00131
688	0.01267	714	0.00604	740	0.00263	766	0.00132
689	0.01235	715	0.00592	741	0.00271	767	0.00126
690	0.01197	716	0.00573	742	0.00266	768	0.00126
691	0.01167	717	0.00554	743	0.00264	769	0.00128
692	0.01141	718	0.00532	744	0.00255	770	0.00143
693	0.01099	719	0.00521	745	0.00249	771	0.00142
694	0.01068	720	0.00501	746	0.00238	772	0.00126
695	0.01040	721	0.00486	747	0.00222	773	0.00111
696	0.01012	722	0.00472	748	0.00216	774	0.00104
697	0.00991	723	0.00462	749	0.00212	775	0.00117
698	0.00954	724	0.00458	750	0.00202	776	0.00126
699	0.00923	725	0.00433	751	0.00207	777	0.00106
700	0.00891	726	0.00417	752	0.00207	778	0.00097
701	0.00862	727	0.00401	753	0.00202	779	0.00080
702	0.00838	728	0.00379	754	0.00204	780	0.00088
703	0.00809	729	0.00373	755	0.00192		
704	0.00791	730	0.00366	756	0.00184		
705	0.00774	731	0.00375	757	0.00172		