

LM-79-08 Test Report

For

ASD LIGHTING CORP

(Brand Name:ASD)

120 SHAWMUT RD CANTON,MA 02021 UNITED STATES OF AMERICA

LED LAMP

Model name(s):ASD-SFL2040

Representative (Tested)Model: ASD-SFL2040

Model Different: N/A

U.S. Department of Energy

Lighting Facts™ Uniform LM-79 Reporting Template

Product Information:

Organization Name	ASD LIGHTING CORP	
Brand Name	ASD	
Model Number	ASD-SFL2040	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED LAMP	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Electrical Measurements:	Integrating Sphere Output	Goniophotometer Output	
Input Wattage	--	20.0	W
Input Current	--	0.1685	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9892	
Off-State Power	--	0	W

Photometric Characteristics

Total Initial Lumen Output	--	1554.8	lm
Initial Lumen Efficacy	--	77.74	lm/w
Correlated color temperature / CCT	3950	--	K
Color rendering index / CRI	71.3	--	
R9 Value	0	--	
Duv	0.0012	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	-----	787.2	cd
Beam angle (if applicable)		91.3	°
Zonal lumens in the 0°-60° zone		94.5	%
Zonal lumens in the 60°-90° zone		5.5	%
Zonal lumens in the 90°-120° zone		0	%
Zonal lumens in the 120°-180° zone		0	%

Test Specifications:	
Date of Receipt	: Apr.27,2015
Date of Test	: Apr.29,2015
Test item	: Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters
Reference Standard	IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources CIE 15-2004 Technical Report Colorimetry IESNA LM-16-93 Practical Guide to Colorimetry of Light Source IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

Test Methods

1. Photometric and Electrical measurements – Light Distribution Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.

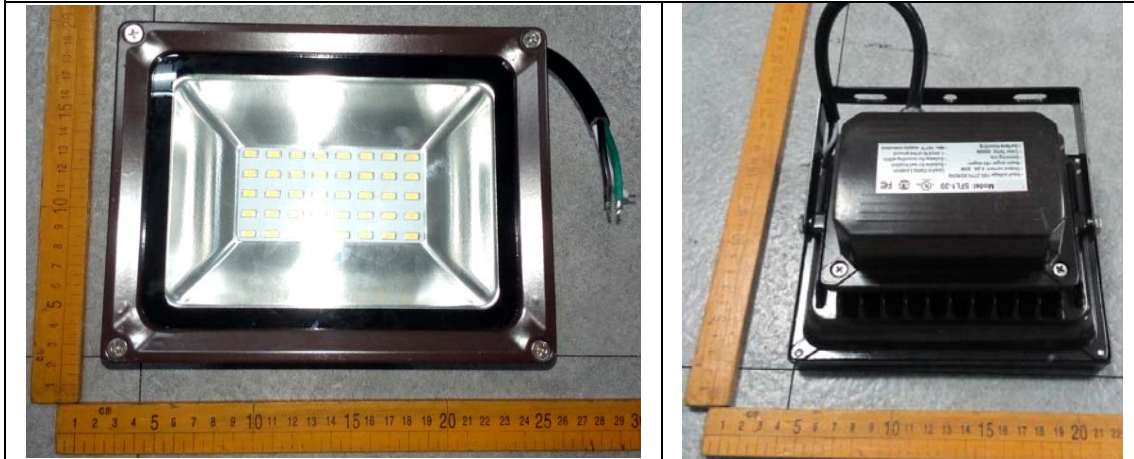
2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at least 5 nm intervals over the range of 380 to 780 nm.

1. Product Information:

Brand Name	ASD
Model Number	ASD-SFL2040
Luminaire Type	LED LAMP
Rated Voltage / Frequency	100-277Vac, 50/60 Hz
Nominal Power	20W
Rated Initial Lamp Lumen	--
Declared CCT	4000K
LED Manufacturer	CTLED
LED Model	5730
Sample Receipt Date	Apr.27,2015
Sample Number	STD150416NB-G2

Photo



2.1 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
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Test date	2015-04-29	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	ASD-SFL2040		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD150416	120.0	60	0.1685	20.0	0.9892	8.26
NB-G2	277.0	60	0.0844	20.0	0.8553	15.72

Sphere-Spectroradiometer Method in:

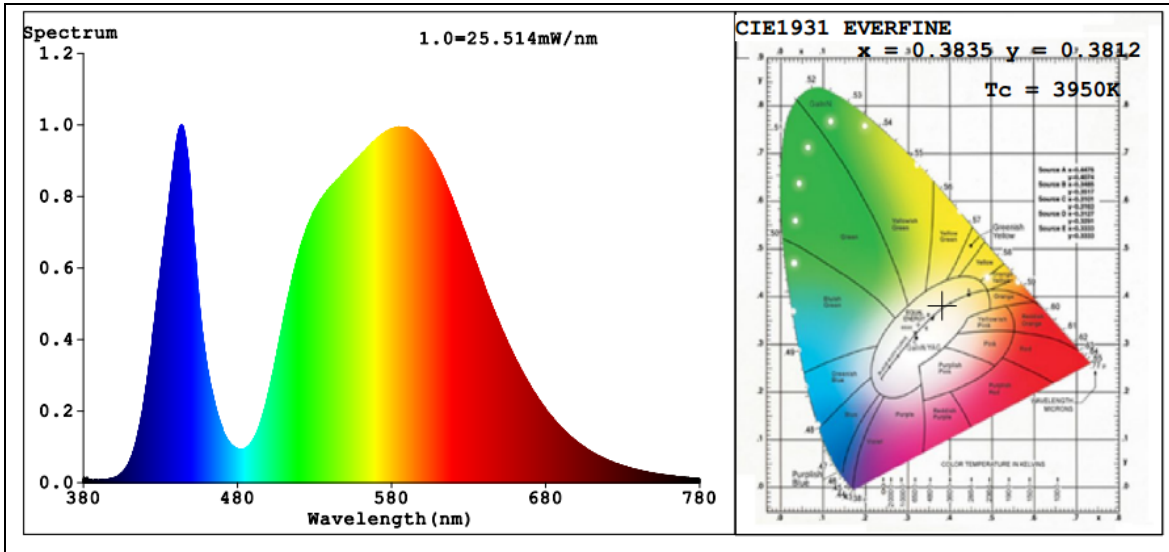
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	71.3
R9	0
CCT (K)	3950
Chromaticity (x, y)	x=0.3835 y=0.3812
Chromaticity (u', v')	u'=0.2254 v'=0.5040
Duv	0.0012

Special Color Rendering Indices			
R1	70	R9	0
R2	76	R10	43
R3	81	R11	69
R4	73	R12	43
R5	69	R13	70
R6	67	R14	89
R7	80	R15	64
R8	55	--	--

Goniophotometer Method in:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1554.8
Luminous Efficacy (lm/W)	77.74
Beam Angle°	91.3
Center Beam Candle Power (cd)	787.2
S/MH(C0/180)	1.21
S/MH(C90/270)	1.15

Spectral Power Distribution & Chromaticity Diagram

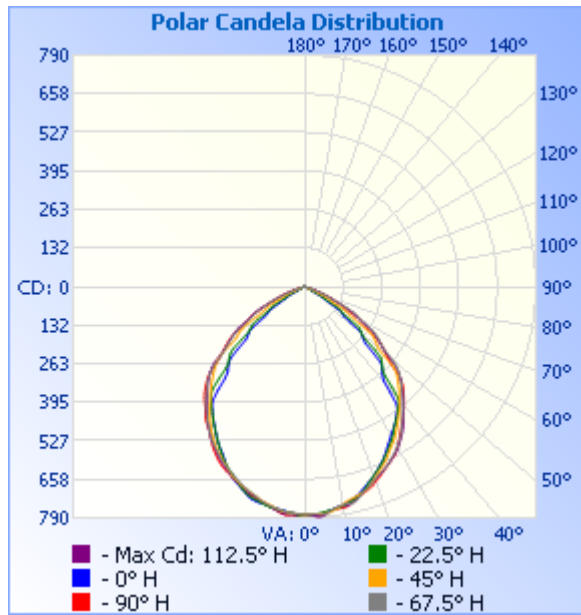


Zonal Lumen Tabulation

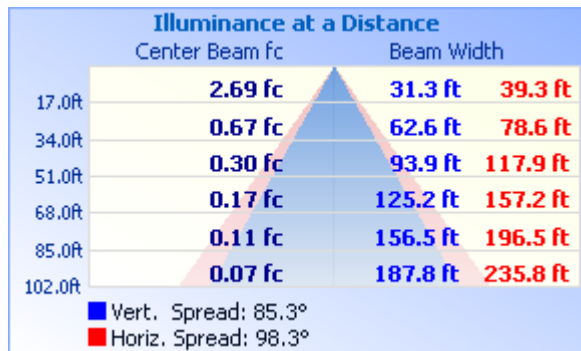
Zonal Lumen Summary			
Zone	Lumens	% Lamp	% Luminaire
0-30	582.0	37.4%	37.4%
0-40	932.4	60%	60%
0-60	1,469.3	94.5%	94.5%
60-90	85.0	5.5%	5.5%
70-100	11.1	0.7%	0.7%
90-120	0	0%	0%
0-90	1,554.3	100%	100%
90-180	0.2	0%	0%
0-180	1,554.5	100%	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	73.3	4.7%	90-100	0	0%
10-20	206.2	13.3%	100-110	0	0%
20-30	302.4	19.5%	110-120	0	0%
30-40	350.4	22.5%	120-130	0	0%
40-50	325.3	20.9%	130-140	0.0	0%
50-60	211.7	13.6%	140-150	0.0	0%
60-70	73.9	4.8%	150-160	0.1	0%
70-80	10.3	0.7%	160-170	0.1	0%
80-90	0.8	0.1%	170-180	0.0	0%

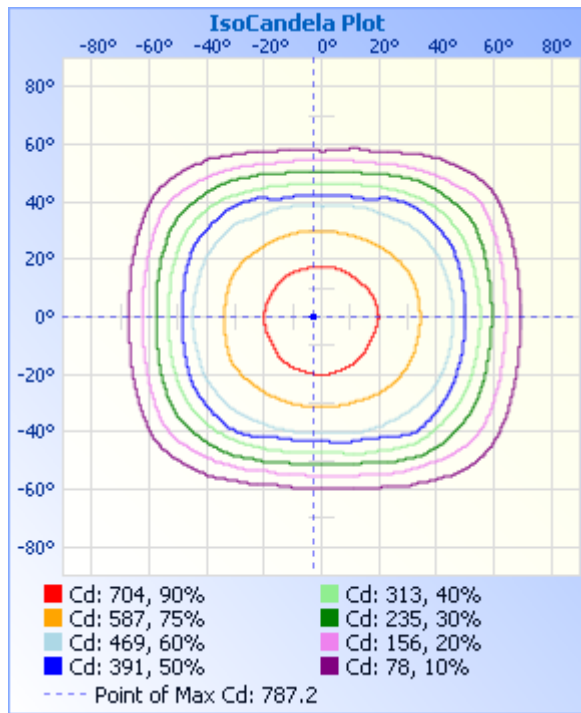
Photometric Data



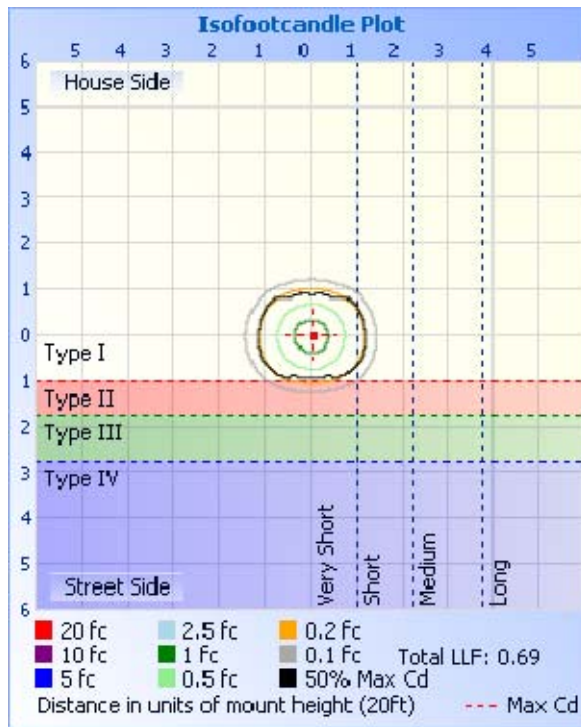
Illuminance Plots



ISOCANDELA DIAGRAM



ISOLUX DIAGRAM



Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	779	779	779	779	779	779	779	779	779	779	779	779	779	779	779	779	779
1	780	777	778	778	778	778	777	778	777	780	778	777	781	781	778	779	780
2	781	777	777	777	780	781	777	778	776	778	776	775	781	781	775	779	781
3	781	777	776	778	784	785	776	776	774	775	775	775	780	779	773	778	781
4	778	775	778	780	784	787	776	774	771	772	774	774	782	780	772	775	778
5	774	772	777	780	779	783	776	774	769	770	773	771	781	780	773	771	774
6	771	770	776	775	773	775	776	772	766	769	769	768	777	776	773	769	771
7	768	767	772	768	769	768	774	771	764	765	765	764	770	771	771	767	768
8	764	765	768	762	766	763	768	769	762	763	760	761	763	766	765	764	764
9	760	762	761	758	766	760	762	765	760	761	755	757	757	760	758	761	760
10	756	759	754	757	766	760	755	763	756	758	751	753	752	755	750	758	756
11	752	755	748	756	764	761	748	760	754	753	747	748	748	750	744	753	752
12	747	751	743	757	757	759	742	759	753	750	741	741	744	746	739	748	747
13	742	746	740	755	747	752	739	755	751	746	735	735	741	741	736	741	742
14	736	739	737	748	740	743	738	751	747	742	729	729	737	735	732	735	736
15	729	733	733	739	736	736	739	746	741	738	724	724	734	729	726	729	729
16	720	726	729	730	732	729	737	739	733	732	719	718	728	722	718	721	720
17	711	716	724	723	727	722	732	730	725	723	715	712	722	717	709	711	711
18	704	706	717	716	723	715	724	719	717	714	709	706	715	712	702	703	704
19	696	696	708	709	717	707	715	709	710	704	704	699	708	705	696	694	696
20	688	687	698	701	708	701	706	701	703	695	698	692	701	698	691	686	688
21	679	679	688	694	701	695	698	693	694	687	691	686	695	691	684	677	679
22	671	671	679	688	694	689	688	685	685	679	682	679	689	685	675	667	671
23	662	663	671	683	686	683	678	677	675	670	674	673	683	679	664	658	662
24	652	654	663	677	679	677	669	667	662	662	665	667	678	671	655	648	652
25	641	644	655	671	672	671	660	657	649	652	657	660	672	664	645	638	641
26	630	635	645	663	665	665	652	646	637	641	649	653	665	656	637	629	630
27	619	626	634	655	658	658	645	636	628	631	640	645	657	649	630	619	619
28	609	616	625	648	652	650	636	626	619	620	633	636	647	639	622	609	609
29	598	607	616	639	644	644	627	615	609	609	625	629	638	631	612	600	598
30	588	598	608	631	633	637	617	604	598	598	615	622	628	623	603	590	588
31	580	587	598	623	622	627	605	591	586	587	605	614	616	615	593	579	580
32	572	576	588	613	610	617	593	580	576	577	595	604	606	606	584	569	572

33	563	565	577	603	599	607	582	569	565	566	585	594	595	595	574	561	563
34	554	556	567	591	588	597	571	559	555	557	574	585	585	585	563	553	554
35	545	548	557	580	576	585	560	549	545	546	562	574	578	575	552	544	545
36	535	539	546	568	567	573	549	540	535	536	550	565	571	564	541	535	535
37	526	529	536	557	558	560	536	531	524	526	538	555	562	553	531	526	526
38	511	521	526	544	549	548	526	521	514	517	526	544	551	542	521	517	511
39	464	511	514	533	538	536	514	511	498	507	513	534	538	530	509	508	464
40	422	497	503	522	527	525	503	500	459	497	500	523	529	520	498	495	422
41	406	455	492	511	517	513	492	480	415	487	490	512	520	509	487	463	406
42	397	410	483	500	506	501	481	436	393	469	479	502	511	497	477	415	397
43	388	391	472	489	495	489	469	395	384	428	468	491	501	487	468	390	388
44	379	382	461	479	484	478	458	380	375	386	457	481	489	477	459	380	379
45	369	374	450	467	472	467	446	371	365	369	446	470	477	467	449	373	369
46	328	365	439	455	457	457	435	362	352	360	435	458	464	457	438	365	328
47	282	356	428	443	433	443	424	351	312	350	423	446	451	445	427	356	282
48	270	323	407	431	401	428	408	334	270	341	411	432	431	432	414	334	270
49	263	274	360	417	381	410	370	287	258	324	401	412	400	419	380	283	263
50	255	257	330	395	367	382	330	256	251	280	388	382	379	400	339	259	255
51	246	249	318	364	353	355	312	247	243	247	362	359	364	370	318	250	246
52	198	241	309	342	340	338	301	237	223	237	319	343	351	347	307	242	198
53	168	233	300	329	327	324	291	228	174	229	293	331	338	330	297	233	168
54	161	190	289	318	314	310	281	194	159	221	282	317	325	318	289	204	161
55	156	158	274	306	292	297	262	154	151	194	270	302	311	306	279	162	156
56	141	151	225	292	262	286	217	145	143	152	255	289	296	293	248	151	141
57	92	143	197	277	246	272	192	138	104	141	233	273	268	281	204	144	92
58	85	123	179	253	234	243	174	123	82	132	192	247	244	267	183	131	85
59	81	81	165	226	221	220	160	81	77	119	162	226	230	239	168	87	81
60	42	75	154	214	205	207	145	73	67	79	153	212	219	218	158	76	42
61	27	70	114	203	173	197	106	67	27	70	143	200	205	205	126	71	27
62	25	28	101	192	162	185	96	34	24	64	133	188	190	195	103	36	25
63	23	23	94	163	152	158	90	22	22	36	102	174	163	184	96	24	23
64	22	21	82	140	136	132	76	20	20	21	84	150	150	166	89	22	22
65	20	20	48	118	110	109	45	19	19	19	72	135	139	131	61	20	20
66	19	19	43	104	103	99	38	17	18	18	63	125	125	111	44	19	19

67	17	17	38	82	90	79	30	16	16	16	39	112	102	100	40	18	17
68	16	16	15	74	69	70	13	15	15	15	34	82	93	83	27	16	16
69	15	15	12	64	62	53	12	13	13	14	25	68	79	71	14	15	15
70	14	13	11	40	42	38	10	12	12	12	12	57	61	62	12	14	14
71	12	12	10	35	37	31	9	11	11	11	10	44	55	40	11	13	12
72	11	11	8	24	21	22	8	10	10	10	9	36	38	33	10	12	11
73	10	10	8	17	12	12	7	9	9	9	8	21	32	24	8	11	10
74	9	9	7	10	6	9	6	7	8	8	6	17	18	17	8	10	9
75	8	8	6	5	5	5	5	6	6	7	6	11	9	10	7	8	8
76	7	7	5	4	4	4	4	5	6	6	5	5	5	6	6	7	7
77	6	6	4	3	3	3	3	4	5	5	4	4	4	4	5	7	6
78	5	5	3	3	2	2	3	3	4	4	3	3	3	3	4	6	5
79	5	4	3	2	1	1	2	3	3	3	2	2	2	3	4	5	5
80	4	3	2	1	1	1	1	2	2	2	2	1	2	2	3	4	4
81	3	2	2	1	0	0	1	1	2	2	1	1	1	2	3	3	3
82	3	2	2	1	0	0	0	1	1	1	1	0	1	1	2	3	3
83	3	2	1	0	0	0	0	1	1	1	1	0	0	1	2	2	3
84	2	2	1	0	0	0	0	1	1	1	0	0	0	0	1	2	2
85	2	2	1	0	0	0	0	1	1	1	0	0	0	0	1	2	2
86	2	2	1	0	0	0	0	1	1	1	0	0	0	0	1	2	2
87	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2	1
88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
89	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
94	0	0	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	0	0
96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99	0	0	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	0	0

101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
104	0	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	0
106	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
109	0	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	0
111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
114	0	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	0
116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
117	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
119	0	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	0
121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
124	0	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	0
126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
129	0	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	0
131	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
134	0	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	0
136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
139	0	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	0
141	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
142	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
143	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
144	0	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	0
146	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
149	0	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	0
151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
153	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
159	0	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	0
161	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
164	0	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	0
166	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
167	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0

169	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
170	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
171	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
172	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
173	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
174	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
175	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
176	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
177	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
178	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
179	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2014-07-01	2015-06-30
ST-R-331	Spectral analysis system HAAS-2000	2014-07-01	2015-06-30
D204	Standard Lamp	2014-07-01	2015-06-30
PF2010	Power Meter for Integrating Sphere	2014-07-01	2015-06-30
EE-09	Goniophotometer system	2014-07-01	2015-06-30
D908S	Standard Lamp	2014-07-01	2015-06-30
PF210	Power Meter for Goniophotometer	2014-07-01	2015-06-30
ST-R-181A	Temperature Tester	2014-07-01	2015-06-30
Uncertainty Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

******* END OF DATASHEET PACKAGE *******