

**LM-79-08 Test Report**

For

**LIGHT EFFICIENT DESIGN, LLC****(Brand Name: N/A)**

188 S.Northwest Highway, Cary, IL60013, USA

**LED Luminaires**

Model name(s): LED-8146M50-A

Representative (Tested) Model: LED-8146M50-A

Model Different: All construction and rating are the same, except CCT

Test &amp; Report By:

*Garman Mo*

Engineer: Garman Mo

Date: May.18,2018

Review By:

*Univ Xie*

Manager: Univ Xie

Note: 1.The results contained in this report pertain only to the tested samples.

2.This report does not imply product certification, approval, or endorsement by NVLAP, NIST,  
or any agency of the Federal Government.**Laboratory: Standard-Tech Co., Ltd Testing Center**  
**NVLAP CODE: 201011-0**

Report Format Number STD/QR4909-A/2

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**1.1 Product Information:**

Organization Name	LIGHT EFFICIENT DESIGN, LLC	
Brand Name	N/A	
Model Number	LED-8146M50-A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	120 -277Vac, 50/60 Hz	
Nominal Power	65W	
Rated Initial Lamp Lumen	--	
Declared CCT	5000K	
LED Manufacturer	SAMSUNG ELECTRONICS CO., LTD	
LED Model	SPMWH1228FD5WAR0SE	
Sample Number	GZE1801030-H-S1	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

**Photo**


**1.2 Test Specifications:**

Date of Receipt	May.01,2018
Date of Test	May.02,2018
Test item	<ol style="list-style-type: none"> <li>1. Total Luminous Flux</li> <li>2. Luminous Distribution Intensity</li> <li>3. Luminous Efficacy</li> <li>4. Correlated Color Temperature</li> <li>5. Color Rendering Index</li> <li>6. Chromaticity Coordinate</li> <li>7. Electrical Parameters</li> </ol>
Reference Standard	<ol style="list-style-type: none"> <li>1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products</li> <li>2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products</li> <li>3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</li> <li>4. CIE 15-2004 Technical Report Colorimetry</li> <li>5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</li> <li>6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</li> </ol>
Reference Work Instruction	QD25

**1.3 Test Methods****1) Photometric and Light Distribution Measurement – Goniophotometer 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 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  horizontal intervals.

**2) Chromaticity Measurement – Sphere-Spectroradiometer Method:**

Chromaticity 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 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.

**3) Electrical Measurements:**

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

**2.1 Electrical, Photometric and Chromaticity Measurements**
*(Refer to Work Instruction QD25)*

Test date	2018-05-02	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8146M50-A		

**Electrical Measurement:**

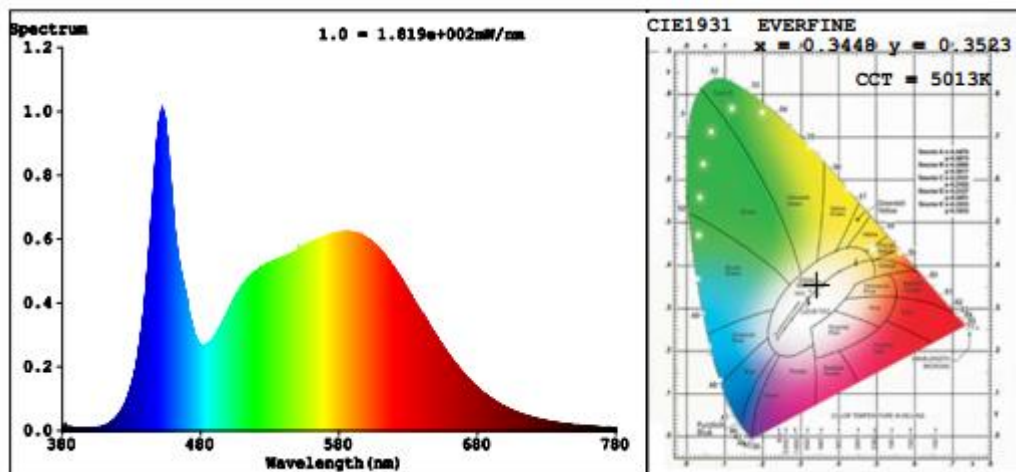
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE180103	120.0	60	0.5597	66.19	0.9855	16.75
0-H-S1	277.0	60	0.2649	67.44	0.9190	18.54

**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	12
Frequency (Hz)	60	R2	90	R10	75
CCT (K)	5013	R3	94	R11	83
Duv	0.0005	R4	84	R12	65
Chromaticity (x, y)	x=0.3448 y=0.3523	R5	84	R13	85
Chromaticity (u', v')	u'=0.2109 v'=0.4850	R6	85	R14	97
Color Rendering Index (CRI)	84.3	R7	87	R15	78
R9	12	R8	68	--	--

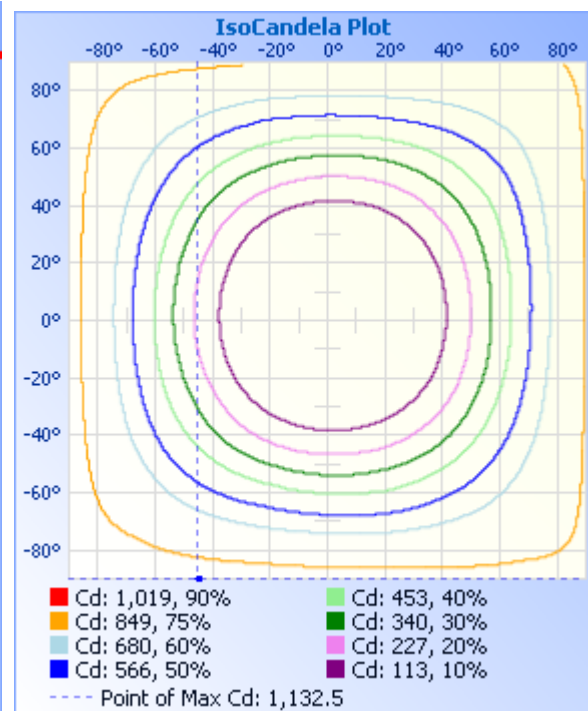
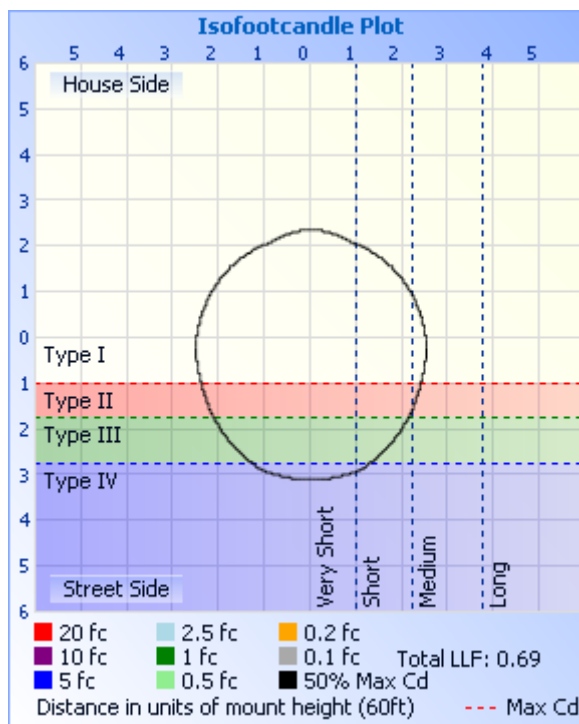
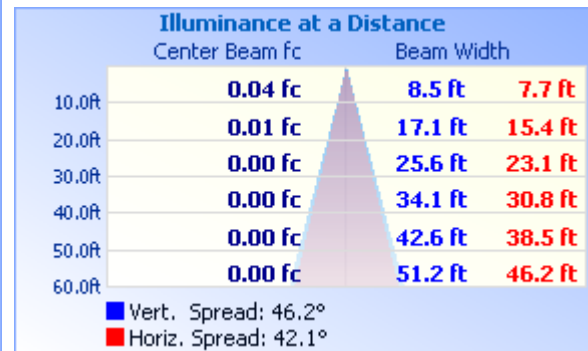
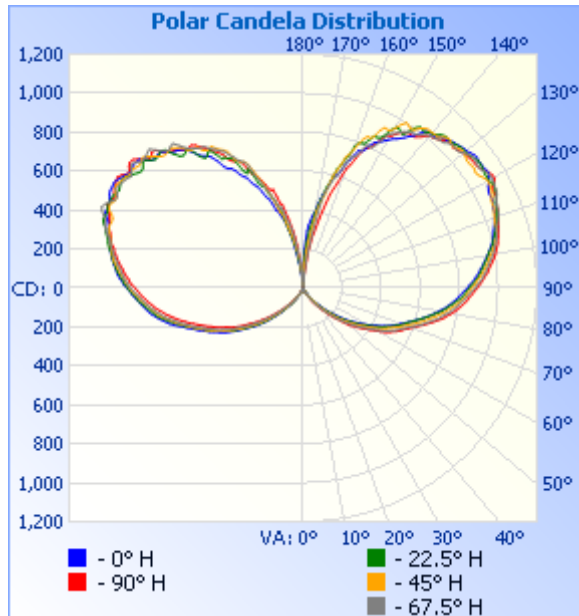
**Photometric Measurement – Goniophotometer Method:**

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	8587.5	8865.7
Luminous Efficacy (lm/W)	129.74	131.46
Most worst Luminous/Highest Watts	127.34	
Beam Angle (°)	321.9	--
Center Beam Candle Power (cd)	4	--

**Spectral Power Distribution & Chromaticity Diagram**

**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	12.5	0.1%
0-40	56.8	0.7%
0-60	498.2	5.8%
60-90	2,081.1	24.2%
70-100	2,605.0	30.3%
90-120	3,171.6	36.9%
0-90	2,579.2	30%
90-180	6,008.6	70%
0-180	8,587.8	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	0.4	0.0%	90-100	1,017.8	11.9%
10-20	2.5	0.0%	100-110	1,082.3	12.6%
20-30	9.5	0.1%	110-120	1,071.5	12.5%
30-40	44.4	0.5%	120-130	966.2	11.3%
40-50	141.3	1.6%	130-140	793.4	9.2%
50-60	300.0	3.5%	140-150	577.8	6.7%
60-70	493.8	5.8%	150-160	346.1	4%
70-80	700.1	8.2%	160-170	135.0	1.6%
80-90	887.2	10.3%	170-180	18.5	0.2%

**Photometric Data**


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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	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
3	4	4	4	4	4	4	4	5	4	4	4	4	4	4	4	4	4
4	4	4	4	4	4	4	5	5	4	4	4	4	4	4	4	4	4
5	4	4	4	4	4	5	5	5	5	5	5	4	4	4	4	4	4
6	4	4	4	5	5	5	5	5	5	5	5	5	5	4	4	4	4
7	4	4	4	5	5	5	5	5	5	5	5	5	5	4	4	4	4
8	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4
9	4	5	5	5	5	6	6	6	6	6	5	5	5	5	5	5	4
10	5	5	5	6	6	6	6	6	6	6	6	6	5	5	5	5	5
11	5	5	6	6	6	7	7	7	6	6	6	6	6	6	5	5	5
12	5	6	6	6	7	7	7	7	7	7	7	6	6	6	6	5	5
13	6	6	6	7	7	8	8	8	7	7	7	7	7	6	6	6	6
14	6	7	7	8	8	8	8	8	8	8	8	8	7	7	6	6	6
15	7	7	8	8	9	9	9	9	9	9	8	8	8	8	7	7	7
16	7	8	9	9	10	10	10	10	10	9	9	9	9	8	8	7	7
17	8	8	9	10	11	11	11	11	11	10	10	10	10	9	8	8	8
18	9	9	10	12	12	11	12	12	12	11	11	11	10	10	9	9	9
19	10	10	11	13	13	12	13	13	13	12	12	12	12	11	10	10	10
20	11	11	13	14	14	13	14	14	14	14	13	13	13	12	11	11	11
21	12	12	14	15	15	15	15	15	15	15	14	14	14	13	12	12	12
22	13	14	15	16	16	16	16	16	16	16	15	16	15	14	13	13	13
23	15	15	16	17	18	17	18	18	18	18	17	17	16	15	15	15	15
24	16	16	17	19	19	19	19	20	20	19	19	18	18	17	16	16	16
25	17	18	19	20	21	20	21	21	22	21	20	19	20	18	17	17	17
26	18	19	21	22	22	23	23	23	24	23	22	20	21	19	18	18	18
27	20	20	22	23	24	24	25	25	26	25	24	22	22	21	20	20	20
28	21	22	24	25	27	27	28	28	28	27	26	24	23	22	21	21	21

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29	23	23	26	28	31	30	31	32	31	30	29	26	25	24	23	23	23
30	25	25	28	31	37	39	39	38	40	34	32	28	27	25	25	25	25
31	27	28	31	36	44	46	48	47	46	42	36	32	29	26	27	26	27
32	29	30	36	43	54	58	58	59	57	53	42	36	32	29	29	28	29
33	32	35	45	53	62	67	69	70	67	60	52	43	36	33	32	31	32
34	37	44	53	62	73	76	78	80	76	71	64	53	44	37	35	35	37
35	44	52	63	74	84	86	86	90	83	81	74	62	53	44	41	41	44
36	54	63	72	84	92	99	97	97	94	91	81	73	64	54	50	51	54
37	66	72	80	92	101	105	109	108	103	101	92	83	73	66	61	60	66
38	75	79	89	104	112	119	118	120	114	110	102	93	83	74	70	71	75
39	85	90	99	114	120	130	128	131	125	119	112	104	92	83	81	82	85
40	93	100	108	124	133	145	140	145	135	132	122	111	103	93	91	90	93
41	102	109	118	134	145	156	154	155	148	143	133	121	115	103	98	99	102
42	112	120	130	149	155	168	168	169	164	159	145	132	121	113	109	108	112
43	123	131	142	161	170	189	186	185	177	172	160	147	134	125	119	117	123
44	134	143	156	172	185	200	197	200	191	182	173	154	150	133	127	127	134
45	146	157	172	186	197	215	212	214	204	197	185	170	163	148	143	141	146
46	162	172	183	202	214	229	230	227	219	213	200	184	173	160	156	153	162
47	173	184	197	217	228	247	246	243	237	228	217	201	188	173	168	165	173
48	189	196	213	231	239	266	260	261	254	245	233	215	203	187	181	179	189
49	200	212	228	248	260	281	277	281	270	262	250	229	219	198	193	193	200
50	216	227	248	263	276	298	295	295	284	278	263	245	236	217	211	210	216
51	231	245	258	278	295	311	312	313	302	292	278	261	248	235	227	223	231
52	246	259	273	294	311	326	327	328	318	305	296	279	264	248	239	238	246
53	264	276	289	309	323	342	341	343	332	321	314	297	280	263	255	253	264
54	279	290	304	328	342	360	357	355	346	339	327	310	296	274	268	270	279
55	294	302	322	341	354	374	375	373	362	355	343	328	312	291	284	285	294
56	310	323	334	358	370	393	392	393	381	370	363	347	325	311	301	300	310
57	324	338	351	372	385	411	412	414	401	389	382	363	342	326	317	316	324
58	342	353	366	390	404	423	429	431	418	405	396	377	363	344	333	331	342
59	357	365	385	404	419	439	448	453	435	423	414	397	382	353	348	348	357
60	374	386	401	426	440	457	464	473	453	437	434	421	397	372	367	363	374

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61	389	401	422	445	458	475	481	487	472	456	454	439	414	386	381	384	389
62	408	420	439	467	479	489	496	501	483	471	469	453	428	402	398	402	408
63	422	434	456	486	497	507	511	515	497	487	485	470	441	414	414	422	422
64	445	453	473	499	509	521	523	531	513	501	500	488	460	430	431	435	445
65	459	466	484	515	524	535	540	546	531	515	514	500	479	445	445	450	459
66	477	482	499	527	541	546	556	559	543	532	530	516	493	465	463	464	477
67	492	499	514	540	551	560	567	577	559	545	546	534	507	479	476	483	492
68	507	514	531	552	563	575	584	593	578	560	563	552	524	492	491	501	507
69	523	531	545	569	579	590	603	607	591	578	575	566	542	505	508	515	523
70	534	542	562	583	592	610	621	624	609	595	593	586	556	524	525	531	534
71	550	556	575	602	611	631	638	641	629	611	612	602	575	539	538	545	550
72	565	567	594	619	626	649	658	657	644	631	626	616	591	554	556	566	565
73	583	586	610	638	647	668	678	676	666	652	644	636	612	569	573	581	583
74	598	600	629	653	663	689	694	697	689	668	663	654	628	588	593	598	598
75	618	619	644	671	683	712	715	720	708	689	681	670	646	604	607	615	618
76	636	637	662	686	701	729	734	735	722	706	695	687	664	621	622	629	636
77	650	655	677	707	719	747	752	752	739	724	712	705	680	636	638	649	650
78	669	674	696	721	738	767	770	769	756	742	730	724	696	656	658	663	669
79	684	689	712	734	750	782	785	779	770	760	748	737	714	672	671	680	684
80	702	710	730	754	767	797	798	791	786	773	760	752	727	692	688	693	702
81	717	727	747	767	783	811	809	803	799	784	772	768	743	706	703	712	717
82	735	741	759	780	798	821	822	812	809	799	785	779	760	719	721	726	735
83	749	756	776	791	810	835	834	828	820	812	796	794	772	733	735	742	749
84	765	774	792	806	824	845	843	842	833	825	810	807	786	753	750	756	765
85	776	788	808	816	835	857	857	853	843	839	824	818	801	770	765	771	776
86	791	806	821	830	847	868	872	865	856	853	839	832	812	786	784	784	791
87	801	819	835	840	856	882	882	875	868	862	852	845	826	797	795	799	801
88	815	831	842	854	869	894	895	886	880	875	865	857	838	808	808	810	815
89	826	840	854	866	880	905	909	901	891	889	879	871	850	820	822	824	826
90	843	853	864	883	893	916	920	911	904	900	889	886	862	831	832	835	843
91	854	864	878	894	905	929	931	923	918	913	902	897	878	847	846	847	854
92	867	878	888	906	915	937	945	933	928	924	912	907	890	859	858	860	867

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93	882	893	901	920	927	949	955	944	941	933	920	919	899	871	873	869	882
94	891	903	914	929	938	961	967	955	954	944	932	927	912	879	884	886	891
95	906	913	925	939	952	971	978	963	960	957	945	937	923	891	900	898	906
96	914	922	937	949	959	982	988	972	968	966	956	945	931	899	908	910	914
97	927	932	946	958	971	995	998	982	977	974	968	957	945	911	917	917	927
98	937	941	958	968	982	1004	1006	988	985	984	979	965	956	925	929	930	937
99	949	953	966	978	992	1012	1009	997	992	991	988	977	967	935	939	942	949
100	961	963	976	989	1002	1019	1015	1006	1001	998	995	987	975	945	952	949	961
101	971	972	988	998	1008	1025	1016	1010	1006	1007	1000	995	989	955	961	957	971
102	982	987	997	1007	1017	1032	1022	1018	1012	1019	1008	1006	993	963	971	969	982
103	993	998	1011	1013	1025	1039	1026	1028	1015	1028	1013	1016	1009	973	981	980	993
104	1002	1007	1019	1022	1029	1047	1033	1033	1020	1032	1019	1024	1016	981	988	987	1002
105	1009	1014	1029	1028	1036	1057	1037	1043	1029	1043	1024	1037	1022	991	999	994	1009
106	1017	1023	1034	1036	1041	1066	1040	1054	1038	1053	1036	1051	1031	999	1007	1004	1017
107	1023	1035	1039	1043	1049	1065	1042	1061	1042	1058	1042	1063	1041	1008	1013	1013	1023
108	1030	1040	1039	1049	1053	1068	1046	1065	1050	1077	1045	1071	1047	1016	1017	1022	1030
109	1038	1052	1041	1056	1060	1064	1051	1070	1060	1086	1040	1072	1050	1027	1024	1027	1038
110	1045	1060	1045	1064	1067	1066	1056	1077	1075	1082	1041	1088	1058	1035	1027	1033	1045
111	1053	1067	1050	1075	1073	1080	1063	1083	1087	1077	1052	1106	1064	1038	1035	1040	1053
112	1057	1072	1055	1077	1077	1086	1072	1092	1086	1082	1075	1115	1083	1042	1042	1048	1057
113	1060	1077	1064	1082	1080	1080	1078	1098	1084	1088	1082	1105	1093	1061	1043	1061	1060
114	1068	1082	1063	1087	1087	1069	1076	1096	1085	1087	1076	1088	1088	1074	1040	1076	1068
115	1073	1092	1067	1095	1093	1062	1067	1086	1095	1087	1065	1069	1078	1091	1046	1087	1073
116	1072	1102	1077	1106	1097	1063	1054	1078	1105	1085	1065	1063	1076	1098	1057	1089	1072
117	1071	1108	1086	1112	1095	1069	1052	1080	1110	1075	1078	1072	1087	1100	1072	1090	1071
118	1076	1112	1092	1114	1104	1077	1049	1086	1109	1069	1094	1089	1095	1096	1080	1095	1076
119	1085	1111	1095	1119	1122	1077	1050	1088	1112	1075	1096	1083	1097	1093	1078	1104	1085
120	1100	1102	1097	1121	1133	1071	1050	1083	1107	1082	1089	1077	1109	1089	1068	1112	1100
121	1112	1101	1091	1121	1131	1063	1052	1077	1095	1084	1081	1070	1110	1095	1065	1104	1112
122	1122	1102	1080	1115	1123	1066	1051	1059	1087	1078	1075	1064	1096	1102	1072	1089	1122
123	1118	1104	1068	1108	1111	1077	1051	1043	1075	1062	1067	1053	1077	1091	1085	1072	1118
124	1113	1109	1067	1094	1097	1081	1046	1031	1067	1048	1065	1063	1075	1079	1095	1068	1113

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125	1114	1110	1072	1095	1092	1075	1042	1027	1073	1032	1067	1078	1092	1081	1108	1074	1114
126	1111	1111	1070	1098	1089	1056	1039	1026	1078	1024	1057	1086	1099	1086	1103	1083	1111
127	1117	1105	1066	1101	1087	1046	1041	1029	1073	1029	1050	1075	1096	1088	1091	1089	1117
128	1112	1097	1066	1101	1085	1045	1053	1024	1071	1045	1054	1053	1076	1081	1076	1085	1112
129	1103	1090	1072	1093	1082	1045	1055	1012	1049	1046	1063	1052	1049	1070	1064	1071	1103
130	1096	1089	1078	1079	1076	1048	1053	1003	1020	1024	1054	1054	1032	1062	1057	1059	1096
131	1093	1087	1081	1065	1069	1049	1047	1000	1011	1007	1029	1060	1031	1065	1053	1058	1093
132	1088	1083	1073	1060	1063	1036	1037	994	1013	1005	1009	1065	1045	1073	1050	1064	1088
133	1081	1078	1061	1062	1056	1021	1027	996	1013	1010	993	1042	1037	1071	1041	1087	1081
134	1076	1070	1059	1062	1063	1014	1025	978	1008	1014	985	1016	1009	1057	1038	1091	1076
135	1071	1068	1068	1053	1060	1013	1032	959	990	1004	985	995	989	1047	1038	1082	1071
136	1059	1069	1072	1039	1055	1012	1027	940	970	959	987	988	975	1036	1036	1066	1059
137	1053	1068	1059	1035	1038	1011	1011	929	961	926	985	997	968	1020	1019	1060	1053
138	1044	1059	1041	1030	1031	1002	993	929	955	917	968	1000	957	1010	1001	1054	1044
139	1029	1044	1038	1024	1021	978	989	931	944	921	958	970	941	1004	995	1058	1029
140	1028	1034	1038	1017	1018	957	989	917	925	931	928	941	926	1005	996	1059	1028
141	1032	1030	1036	1013	1009	954	990	902	897	907	910	920	930	1003	996	1043	1032
142	1021	1018	1037	999	986	963	973	884	866	858	910	911	932	984	983	1024	1021
143	994	1018	1026	985	972	967	955	869	849	835	906	900	918	961	967	1004	994
144	969	1022	1013	978	962	915	932	856	841	838	875	892	894	946	953	988	969
145	952	1006	993	978	963	881	906	833	821	851	864	886	880	945	956	982	952
146	933	971	986	969	962	877	896	810	788	852	863	868	858	954	972	959	933
147	917	941	995	959	952	878	884	784	742	819	867	850	837	962	971	928	917
148	904	944	1001	945	941	860	849	754	723	780	848	839	823	934	953	903	904
149	894	955	981	928	924	825	831	743	717	783	829	821	801	907	933	902	894
150	880	952	950	917	902	802	801	726	697	767	818	811	762	895	917	906	880
151	866	928	924	903	897	801	778	689	666	764	800	781	745	887	902	884	866
152	853	887	921	861	870	777	757	676	648	736	749	762	740	889	893	862	853
153	842	865	925	827	842	739	728	680	637	676	733	738	736	894	895	851	842
154	831	862	902	802	815	715	659	648	602	655	718	724	715	874	903	843	831
155	808	862	857	804	795	689	633	597	582	674	716	714	674	835	875	838	808
156	780	834	843	806	789	642	615	577	567	650	695	688	643	814	847	810	780

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157	763	805	847	771	759	614	569	559	537	586	651	625	639	802	834	785	763
158	763	804	824	735	719	563	535	522	505	566	610	598	613	817	832	768	763
159	729	797	794	722	678	520	508	496	492	562	576	561	590	827	839	742	729
160	702	774	757	714	656	482	461	464	462	518	531	532	564	782	823	719	702
161	685	718	726	681	612	460	414	415	422	493	501	504	538	728	774	694	685
162	635	695	709	635	565	423	376	391	414	471	456	483	526	696	738	676	635
163	609	658	662	614	535	358	344	374	390	442	409	444	531	689	718	653	609
164	601	638	630	586	501	305	288	332	371	409	398	426	485	658	703	632	601
165	584	593	600	568	453	224	243	288	350	358	381	429	448	593	643	603	584
166	545	553	544	536	406	195	195	247	312	316	328	392	443	568	616	588	545
167	511	530	498	509	367	172	150	233	282	289	298	353	398	531	600	565	511
168	495	485	461	478	323	130	120	205	247	260	278	340	370	503	527	528	495
169	464	458	435	395	286	90	112	175	193	230	246	310	325	490	495	510	464
170	439	423	403	322	271	78	87	160	162	202	223	270	301	463	469	481	439
171	397	395	351	260	218	67	66	134	133	152	199	232	264	425	437	449	397
172	385	346	295	211	204	48	42	74	120	122	171	183	227	397	403	414	385
173	369	319	265	166	139	30	33	52	81	103	140	149	160	392	358	376	369
174	345	297	238	141	107	17	25	40	49	73	96	119	132	356	330	345	345
175	323	253	197	79	97	10	16	26	27	50	64	94	82	327	315	301	323
176	296	224	161	63	63	8	8	10	13	20	31	48	44	278	264	264	296
177	242	189	127	67	55	9	9	9	11	10	13	20	18	263	227	227	242
178	204	151	104	39	20	23	32	32	29	31	14	9	8	189	180	203	204
179	146	127	68	32	11	57	59	68	57	62	34	13	8	146	144	152	146
180	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77

**3. Test Equipment**

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-331	2 meter Integrating Sphere	2017-07-01	2018-06-30
ST-R-327	Spectral analysis system HAAS-2000	2017-07-01	2018-06-30
D204	Standard Lamp	2017-07-12	2018-07-11
PF2010	Power Meter for Integrating Sphere	2017-07-01	2018-06-30
GO-R5000	Goniophotometer system	2017-07-01	2018-06-30
D908S	Standard Lamp	2017-07-12	2018-07-11
PF210	Power Meter for Goniophotometer	2017-07-07	2018-07-06
Expand Uncertainty: Photometric Measurement (Sphere):2.04%, k=2 Chromaticity Measurement(Sphere):28.8K, k=2 Photometric Measurement(Goniophotometer):2.36%, k=2			

**\*\*\*\*\* END OF REPORT \*\*\*\*\***