



Report No.:GZE160876-A

NVLAP LAB CODE 201011-0

LM-79-08 Test Report

For

L-TECH CORPORTION

(Brand Name: L-TECH CORP)

SHAOGANGTOU DISTRICT.QIAOTOU TOWN.DONGGUAN
CITY.GUANGDONG PROVINCE,CHINA

LED Luminaires

Model name(s): LTSQ5540-3090

Representative (Tested) Model: LTSQ5540-3090

Model Different: N/A

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Sept.02,2016

Review By:

Tommy Liang

Manager: Tommy Liang

Note: 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

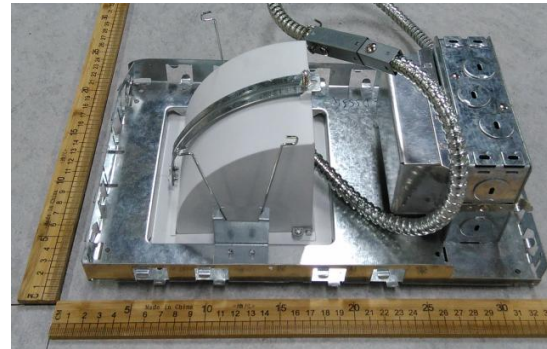
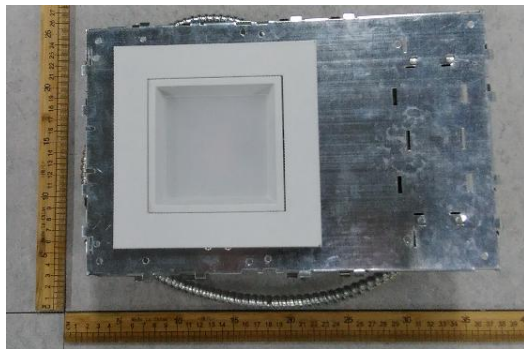
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1.1 Product Information:

Organization Name	L-TECH CORPORTION	
Brand Name	L-TECH CORP	
Model Number	LTSQ5540-3090	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	120Vac, 50/60 Hz	
Nominal Power	30W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K	
LED Manufacturer	N/A	
LED Model	N/A	
Sample Number	GZE160876-A1	
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	Aug 24,2016
Date of Test	Aug.25,2016
Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

1.3 Test Methods

<p>1) Photometric and Light Distribution Measurement – Goniophotometer Method:</p> <p>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° vertical intervals and 22.5° horizontal intervals.</p>
<p>2) Chromaticity Measurement – Sphere-Spectroradiometer Method:</p> <p>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.</p>
<p>3) Electrical Measurements:</p> <p>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.</p>

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-08-26	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LTSQ5540-3090		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160876-A1	120	60	0.2506	29.84	0.9922	9.51

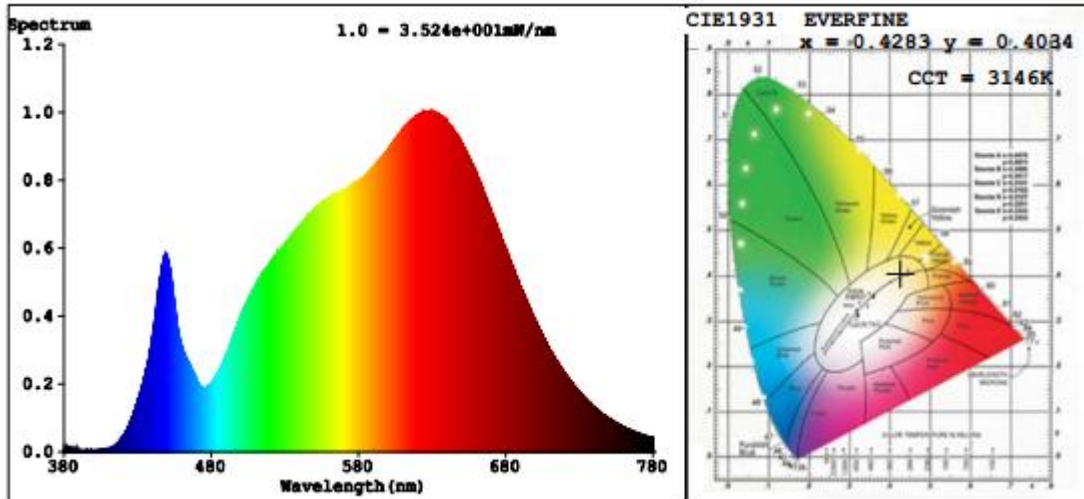
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	93	R9	72
Frequency (Hz)	60	R2	94	R10	84
CCT (K)	3146	R3	92	R11	94
Duv	0.0010	R4	94	R12	78
Chromaticity (x, y)	x=0.4283 y=0.4034	R5	92	R13	93
Chromaticity (u', v')	u'=0.2453 v'=0.5198	R6	91	R14	95
Color Rendering Index (CRI)	92.6	R7	95	R15	92
R9	72	R8	89	--	--

Photometric Measurement – Goniophotometer Method :

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2166.3
Luminous Efficacy (lm/W)	72.60
Beam Angle (°)	93.8
Center Beam Candle Power (cd)	980

Spectral Power Distribution & Chromaticity Diagram

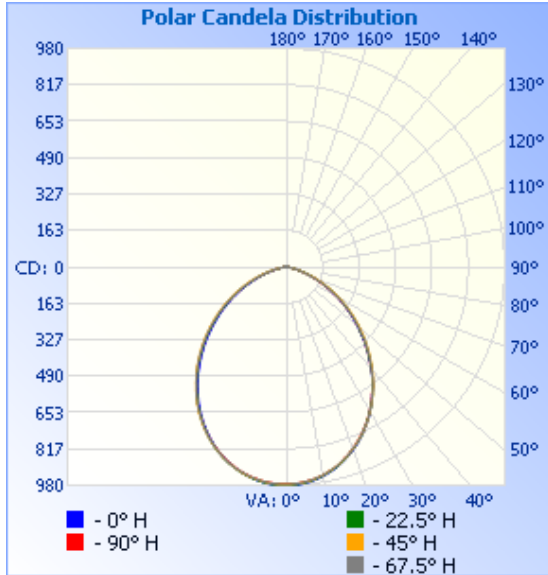


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	727.5	33.6%
0-40	1,154.8	53.3%
0-60	1,877.0	86.7%
60-90	285.9	13.2%
70-100	89.1	4.1%
90-120	1.3	0.1%
0-90	2,162.9	99.8%
90-180	3.3	0.2%
0-180	2,166.2	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	91.8	4.2%	90-100	0.5	0%
10-20	258.4	11.9%	100-110	0.4	0%
20-30	377.4	17.4%	110-120	0.4	0%
30-40	427.3	19.7%	120-130	0.4	0%
40-50	403.3	18.6%	130-140	0.4	0%
50-60	318.9	14.7%	140-150	0.4	0%
60-70	197.3	9.1%	150-160	0.4	0%
70-80	74.8	3.5%	160-170	0.2	0%
80-90	13.7	0.6%	170-180	0.1	0%

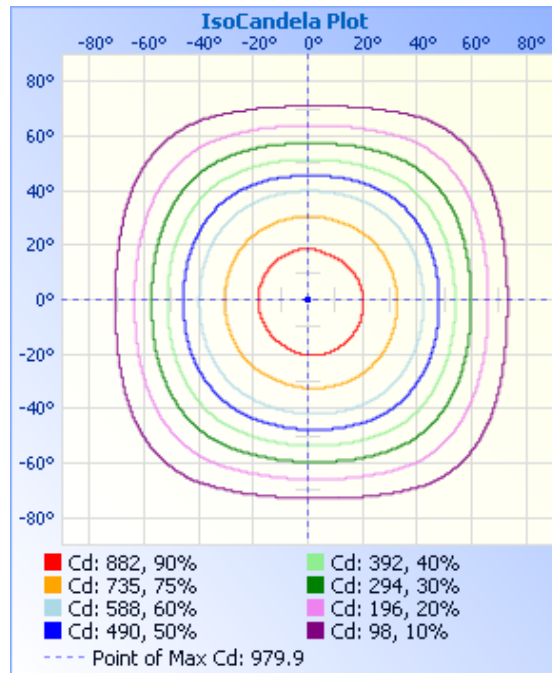
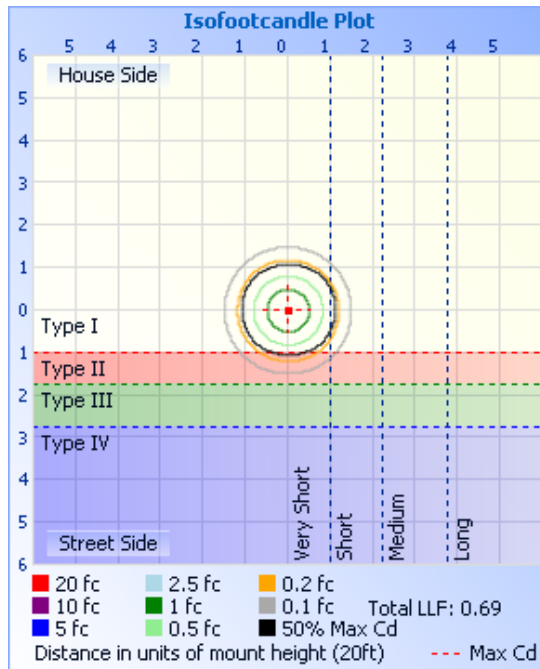
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	3.39 fc	36.0 ft	36.3 ft
34.0ft	0.85 fc	72.1 ft	72.6 ft
51.0ft	0.38 fc	108.1 ft	108.9 ft
68.0ft	0.21 fc	144.1 ft	145.1 ft
85.0ft	0.14 fc	180.1 ft	181.4 ft
102.0ft	0.09 fc	216.2 ft	217.7 ft

■ Vert. Spread: 93.3°
■ Horiz. Spread: 93.7°



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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	980	978	975	975	974	971	970	968	980	978	975	975	974	971	970	968	980
1	980	978	975	974	973	971	970	968	980	978	975	975	974	971	970	968	980
2	978	977	974	973	972	970	969	968	979	978	975	974	973	971	969	967	978
3	977	975	972	972	971	969	968	967	978	977	974	973	972	969	968	965	977
4	975	973	970	970	969	967	967	966	976	976	973	972	971	968	966	963	975
5	972	971	968	967	967	965	965	963	974	973	971	970	969	965	964	961	972
6	970	968	965	964	964	961	961	961	972	971	968	968	966	963	961	957	970
7	966	964	962	961	960	959	958	958	968	968	965	964	964	960	958	954	966
8	962	960	957	956	957	954	954	954	965	964	962	960	960	955	954	949	962
9	957	956	952	952	952	950	950	950	960	960	957	957	956	952	950	946	957
10	952	950	948	947	948	945	944	945	956	955	954	952	951	947	944	941	952
11	947	944	942	941	942	939	940	940	950	951	949	948	947	942	939	936	947
12	940	939	935	935	935	934	933	934	945	944	944	942	941	936	933	930	940
13	934	931	929	928	930	927	928	927	938	939	938	937	936	932	927	924	934
14	926	925	922	922	922	919	920	922	932	932	933	931	929	925	921	916	926
15	918	917	915	914	916	913	913	914	924	926	925	925	922	919	913	910	918
16	911	910	906	905	905	904	906	907	917	919	919	918	915	911	906	901	911
17	901	901	897	898	895	897	897	898	910	911	910	911	906	904	899	892	901
18	893	891	889	888	888	887	887	891	901	903	903	902	899	895	889	884	893
19	883	880	880	878	878	877	879	881	893	894	894	894	890	887	882	874	883
20	874	872	871	869	869	868	869	873	883	886	884	884	882	877	871	865	874
21	863	860	860	858	858	857	860	860	874	875	876	874	871	868	863	855	863
22	853	851	848	849	846	848	849	851	863	866	865	865	862	858	851	845	853
23	841	839	839	837	836	837	837	839	851	855	856	854	853	846	842	836	841
24	828	828	826	827	823	826	827	830	841	845	844	845	841	836	830	825	828
25	817	815	816	814	813	813	817	817	828	833	835	832	828	824	820	811	817
26	803	801	802	803	799	802	804	806	817	819	822	822	818	813	807	797	803
27	792	790	791	789	788	789	790	792	803	809	812	809	805	800	794	786	792
28	777	775	777	777	774	777	779	781	792	795	798	795	794	789	783	773	777
29	765	763	763	763	762	762	764	766	777	783	784	784	780	775	768	761	765

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30	750	748	750	747	747	747	752	752	765	769	773	770	768	761	756	746	750
31	735	736	735	735	732	735	737	740	750	757	761	758	753	749	741	734	735
32	722	720	722	720	719	720	724	724	735	742	746	743	742	734	729	718	722
33	705	707	706	704	703	707	708	712	722	729	734	731	726	722	713	705	705
34	688	690	693	691	686	691	695	696	706	714	718	715	710	706	697	690	688
35	674	674	677	677	673	678	679	680	693	698	702	703	697	693	685	674	674
36	657	660	663	660	659	661	662	666	676	684	689	686	680	677	668	660	657
37	642	642	646	647	641	647	649	650	662	667	672	670	667	660	655	643	642
38	625	628	629	629	627	630	632	636	644	654	659	656	649	647	638	629	625
39	610	610	615	611	609	612	618	618	630	636	642	639	636	629	624	611	610
40	592	596	598	594	591	594	601	601	612	622	629	625	618	615	607	597	592
41	573	578	584	579	573	580	587	587	594	605	612	607	604	598	594	580	573
42	559	559	566	561	558	562	570	569	580	590	598	593	586	584	576	565	559
43	540	544	551	546	540	548	552	554	562	572	580	575	571	566	559	547	540
44	525	526	533	528	525	529	537	536	547	554	562	561	553	552	544	529	525
45	507	511	515	513	506	514	519	522	529	540	548	543	535	534	526	515	507
46	492	494	500	494	491	496	501	504	514	521	530	525	520	515	512	496	492
47	473	479	482	480	473	481	487	489	495	507	515	510	502	501	494	482	473
48	454	459	467	461	458	463	469	471	480	488	497	492	487	482	480	463	454
49	439	439	449	442	439	444	454	456	461	473	482	477	468	468	462	449	439
50	420	426	434	427	424	429	436	438	443	455	464	459	450	450	447	430	420
51	406	412	416	409	405	411	421	423	428	436	446	444	435	435	429	412	406
52	387	393	401	394	390	396	403	405	409	421	432	425	416	417	411	398	387
53	372	379	383	375	372	378	389	390	395	403	413	410	402	402	397	380	372
54	354	360	368	360	357	363	371	372	377	389	399	392	383	384	380	365	354
55	340	346	350	342	338	345	357	358	362	370	381	374	369	366	365	348	340
56	322	328	336	328	320	330	339	340	344	356	367	359	350	352	348	334	322
57	307	313	318	310	306	312	325	322	326	338	349	341	336	334	334	316	307
58	290	296	301	295	288	298	308	308	311	320	334	326	318	319	316	299	290
59	272	282	287	277	274	280	294	290	294	306	317	309	300	302	299	285	272
60	259	264	269	263	256	266	276	277	280	288	299	294	286	288	286	268	259

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61	242	251	256	246	242	249	259	259	263	274	286	277	268	271	269	255	242
62	228	234	239	229	225	232	246	246	245	257	269	259	255	253	256	238	228
63	212	217	225	215	208	218	229	229	232	244	255	246	237	240	239	222	212
64	199	204	209	198	195	202	216	212	215	227	238	229	220	223	223	208	199
65	183	188	192	185	178	188	200	199	202	210	222	215	207	210	210	193	183
66	170	175	180	169	166	172	187	183	186	197	208	198	190	193	194	180	170
67	155	159	163	156	150	159	171	171	170	181	192	182	178	177	181	165	155
68	140	144	151	140	138	144	155	155	158	165	179	169	162	165	166	150	140
69	128	132	136	125	123	129	143	143	142	153	164	153	146	149	150	138	128
70	114	118	124	114	108	117	128	128	131	138	148	138	134	134	138	124	114
71	104	107	109	100	98	103	116	114	116	126	136	126	119	122	124	113	104
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74	70	71	72	65	64	68	78	80	80	88	95	87	82	84	85	77	70
75	60	61	63	57	56	59	66	68	71	75	82	75	73	72	75	66	60
76	52	53	52	47	47	50	57	57	60	66	72	66	62	63	64	58	52
77	44	44	42	41	40	43	47	49	50	56	60	55	54	53	55	49	44
78	36	38	36	34	34	35	40	41	44	46	50	48	46	46	45	41	36
79	31	31	29	28	28	30	32	35	36	40	42	40	38	38	37	35	31
80	26	26	25	24	24	25	26	29	31	33	35	33	33	32	32	29	26
81	21	22	21	20	19	21	23	25	25	28	29	28	27	27	26	25	21
82	18	18	17	17	16	17	19	20	20	23	24	24	22	23	22	20	18
83	16	16	14	14	14	15	16	17	18	19	21	20	19	19	18	17	16
84	13	13	12	12	12	13	13	15	15	17	17	17	16	16	15	15	13
85	10	11	10	10	10	10	10	12	13	14	14	14	14	14	13	12	10
86	8	8	7	7	7	8	8	10	11	12	12	12	12	11	10	9	8
87	6	6	5	5	5	6	6	7	8	9	9	9	9	9	8	7	6
88	4	3	3	2	3	3	4	5	6	6	7	7	7	6	5	5	4
89	1	1	1	1	1	1	1	2	3	4	4	4	4	4	3	2	1
90	0	0	0	0	1	1	1	1	1	1	2	1	1	1	1	1	0
91	0	0	0	0	0	0	1	0	1	1	1	1	1	1	1	1	0

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92	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0
93	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0
94	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0
95	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0
96	0	0	0	0	0	0	0	0	1	1	1	0	1	1	1	1	0
97	0	0	0	0	0	0	0	0	1	1	0	1	0	1	1	1	0
98	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0
99	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	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	1	0	0	0	0	0
102	0	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	1	0	0
104	0	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	1	0
106	0	0	0	0	0	0	0	0	1	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	0
108	0	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	0
110	0	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	0
112	0	0	0	0	0	0	0	0	1	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	0
114	0	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	0
116	0	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	0
118	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
119	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
121	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
122	0	0	0	0	0	0	0	0	1	1	0	1	0	0	1	0	0

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123	0	0	0	0	0	0	0	0	1	0	1	0	1	1	0	1	0
124	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	1	0
125	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	0	0
126	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	0
127	0	0	0	0	0	0	0	0	1	1	1	0	1	1	0	1	0
128	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0
129	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1	0
130	0	0	0	0	0	1	0	0	1	1	1	0	1	1	1	1	0
131	1	0	0	0	0	1	0	0	1	1	1	1	1	0	1	1	1
132	1	1	0	0	0	1	1	0	1	1	1	1	1	1	1	1	1
133	1	1	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1
134	1	0	0	1	1	0	1	0	1	1	1	1	1	1	1	1	1
135	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0
136	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1
137	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
138	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1
139	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
140	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
141	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
142	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
143	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
144	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
145	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
146	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
147	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
148	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
149	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
150	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
151	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
152	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
153	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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154	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
155	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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158	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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163	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
164	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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168	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
169	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
170	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
171	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
172	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
173	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
174	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
175	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
176	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
177	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
178	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
179	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
180	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2016-07-01	2017-06-30
ST-R-331	Spectral analysis system HAAS-2000	2016-07-01	2017-06-30
D204	Standard Lamp	2016-07-01	2017-06-30
PF2010	Power Meter for Integrating Sphere	2016-07-01	2017-06-30
EE-09	Goniophotometer system	2016-07-01	2017-06-30
D908S	Standard Lamp	2016-07-01	2017-06-30
PF210	Power Meter for Goniophotometer	2016-07-01	2017-06-30
ST-R-181A	Temperature Tester	2016-07-01	2017-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

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

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