



Report No.:GZE151136-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 Lamp

Model name(s): LTSQ544-2790

Model differences: N/A

Test & Report By:

Review By:

Engineer: Johnson Sun

Manager: Tommy Liang

Date:Nov.19, 2015

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

Address: 8th floor, Block B, No. 11 Caipin Road, Guangzhou Science City, Tianhe, Guangzhou 510663, China

Tel: 8620-3229 0320 Fax: 8620-32290422 <http://www.standard-tech.com>

U.S. Department of Energy

**Lighting Facts™ Uniform LM-79 Reporting Template**
**Laboratory Information:**

Name of Test Laboratory	Standard-Tech Co., Ltd.
Date of Test Report	Nov.19, 2015
Test Report No.	GZE151136-A
Laboratory Contact Name	Tommy Liang

**Product Information:**

Organization Name	L-TECH CORPORTION	
Brand Name	L-TECH CORP	
Model Number	LTSQ544-2790	
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	Goniophotometer	
	Output	Output	
Input Wattage	--	15.91	W
Input Current	--	0.1337	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9917	
Off-State Power	--	0	W

Photometric Characteristics			
Total Initial Lumen Output	--	1048.5	lm
Initial Lumen Efficacy	--	65.90	lm/w
Correlated color temperature / CCT	2707	--	K
Color rendering index / CRI	92.3	--	
R9 Value	55	--	
Duv	-0.0004	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	--	451	cd
Beam angle (if applicable)	--	97.3	°
Zonal lumens in the 0°-60° zone	--	85.9	%
Zonal lumens in the 60°-90° zone	--	14.1	%
Zonal lumens in the 90°-120° zone	--	0	%
Zonal lumens in the 120°-180° zone	--	0	%

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Test Specifications:	
Date of Receipt	: Nov.10,2015
Date of Test	: Nov.18,2015
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  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ , 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  $1\text{ }^{\circ}$  vertical intervals and  $22.5\text{ }^{\circ}$  horizontal intervals.

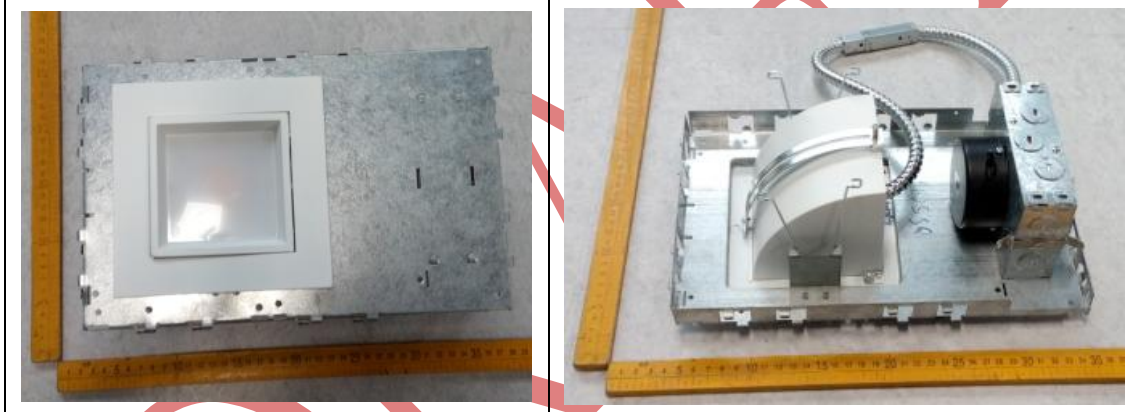
#### 2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ . 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	L-TECH CORP
Model Number	LTSQ544-2790
Luminaire Type	LED Lamp
Rated Voltage / Frequency	120Vac, 60Hz
Nominal Power	16W
Rated Initial Lamp Lumen	N/A
Declared CCT	2700K
LED Manufacturer	N/A
LED Model	N/A
Power Supply:	N/A
Sample Receipt Date	Nov.10,2015
Sample Number	GZE151136-A1

**Photo**



<b>2.1 Electrical, Photometric and Chromaticity Measurements</b> <i>(Refer to Work Instruction QD25)</i>	<b>IES LM-79 2008</b>
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<b>Test date</b>	2015-11-18	<b>Test Ambient:</b>	25.1 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	LTSQ544-2790		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE151136 -A1	120.0	60	0.1337	15.91	0.9917

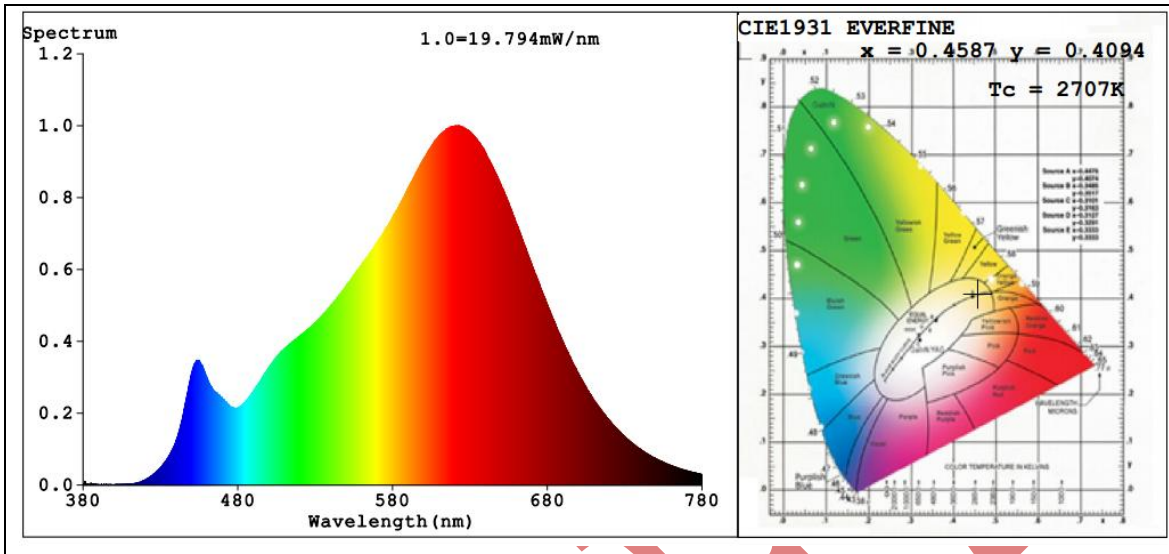
**Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	93	R9	55
Frequency (Hz)	60	R2	98	R10	95
Color Rendering Index (CRI)	92.3	R3	97	R11	93
R9	55	R4	92	R12	87
CCT (K)	2707	R5	93	R13	94
Chromaticity (x, y)	x=0.4587 y=0.4094	R6	97	R14	99
Chromaticity (u', v')	u'=0.2623 v'=0.5267	R7	90	R15	88
Duv	-0.0004	R8	79	--	--

**Goniophotometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1048.5
Luminous Efficacy (lm/W)	65.90
Beam Angle °	97.3
Center Beam Candle Power (cd)	451

**Spectral Power Distribution & Chromaticity Diagram**



DRAFT

**Zonal Lumen Tabulation:**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	340.0	32.4%
0-40	544.0	51.9%
0-60	900.8	85.9%
60-90	147.6	14.1%
70-100	45.9	4.4%
90-120	0.0	0%
0-90	1,048.4	100%
90-180	0.0	0%
0-180	1,048.4	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	42.5	4.1%	90-100	0.0	0%
10-20	120.2	11.5%	100-110	0.0	0%
20-30	177.3	16.9%	110-120	0.0	0%
30-40	204.0	19.5%	120-130	0.0	0%
40-50	196.9	18.8%	130-140	0.0	0%
50-60	159.8	15.2%	140-150	0.0	0%
60-70	101.7	9.7%	150-160	0.0	0%
70-80	39.6	3.8%	160-170	0.0	0%
80-90	6.3	0.6%	170-180	0.0	0%

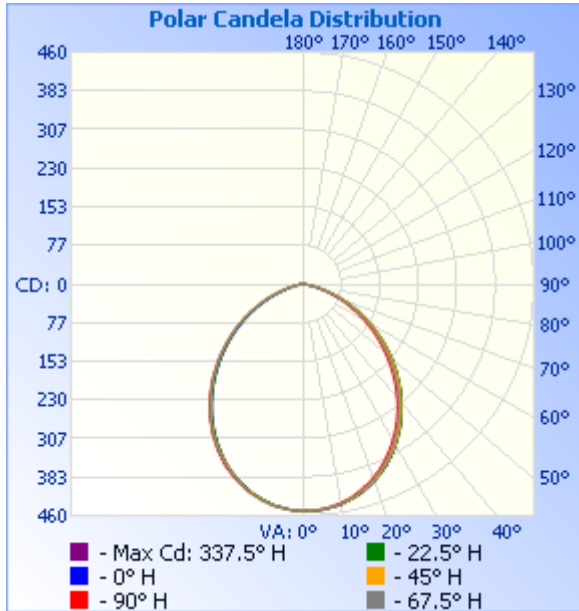
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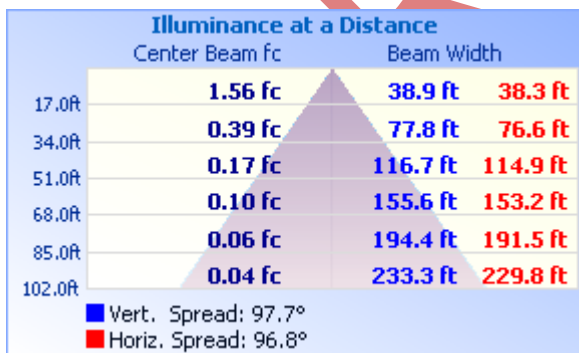
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### Photometric Data



### Illuminance Plots



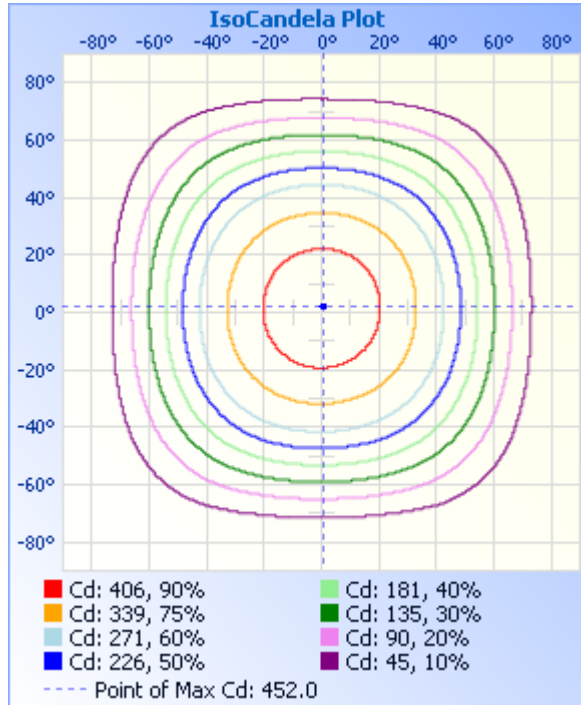
**Illuminance at a Distance**

	Center Beam fc	Beam Width	
17.0ft	1.56 fc	38.9 ft	38.3 ft
34.0ft	0.39 fc	77.8 ft	76.6 ft
51.0ft	0.17 fc	116.7 ft	114.9 ft
68.0ft	0.10 fc	155.6 ft	153.2 ft
85.0ft	0.06 fc	194.4 ft	191.5 ft
102.0ft	0.04 fc	233.3 ft	229.8 ft

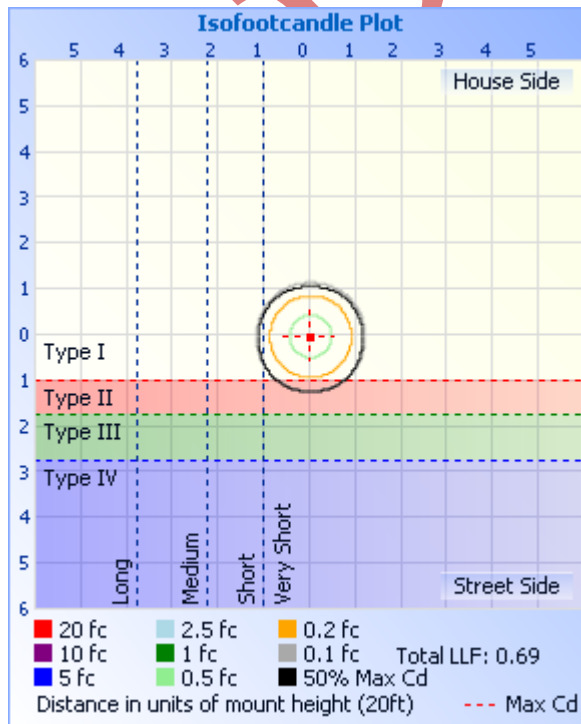
- Vert. Spread: 97.7°
- Horiz. Spread: 96.8°



**ISOCANDELA DIAGRAM**



**ISOLUX DIAGRAM**



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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	451	451	451	451	451	451	451	451	451	451	451	451	451	451	451	451	451
1	451	450	451	450	450	450	450	451	451	450	451	450	450	451	451	451	451
2	451	451	451	451	450	450	450	450	450	449	450	450	449	451	451	452	451
3	452	450	450	450	449	449	449	450	449	448	449	449	449	450	450	451	452
4	451	450	450	450	449	449	448	448	448	447	448	448	448	450	449	451	451
5	450	449	450	449	447	447	446	447	446	445	447	447	446	449	449	450	450
6	449	448	448	448	447	446	445	445	445	444	445	446	445	447	448	449	449
7	447	447	447	446	446	445	444	444	443	443	444	444	444	446	447	448	447
8	446	446	446	445	443	443	442	442	441	440	441	443	442	445	445	447	446
9	446	445	445	444	443	442	440	440	438	438	439	440	441	443	443	446	446
10	444	443	443	442	440	440	438	437	437	436	437	438	438	440	442	443	444
11	442	441	442	440	438	437	436	435	433	433	434	436	436	439	440	442	442
12	440	439	440	437	436	434	433	431	430	430	432	433	433	436	438	440	440
13	437	437	437	435	433	431	429	429	428	427	428	430	431	434	436	437	437
14	436	435	434	432	430	429	426	426	425	424	425	427	428	430	433	435	436
15	433	432	432	429	427	426	424	423	422	420	422	423	424	427	430	433	433
16	430	430	428	426	423	422	420	419	417	417	419	420	421	425	427	430	430
17	427	426	426	423	420	419	417	415	413	413	415	417	417	421	424	426	427
18	424	422	422	420	417	415	413	412	410	410	411	413	413	417	421	423	424
19	420	419	419	416	413	412	409	407	406	406	407	408	409	413	417	420	420
20	417	416	415	412	409	407	404	403	401	400	402	404	406	410	413	416	417
21	412	413	411	408	404	402	400	398	397	396	398	400	401	405	409	412	412
22	409	408	408	404	401	398	395	394	392	392	393	395	397	401	405	408	409
23	405	404	402	399	396	393	391	389	387	387	388	390	393	397	400	404	405
24	400	399	398	394	391	389	386	384	381	382	383	385	387	392	396	399	400
25	396	395	393	390	386	383	380	378	376	376	378	380	382	387	391	395	396
26	390	390	389	384	380	378	376	373	371	370	372	374	376	382	387	389	390
27	386	386	384	379	375	373	371	368	365	364	367	369	371	377	381	385	386
28	380	380	379	374	369	368	365	361	359	360	361	364	365	371	376	379	380

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29	375	374	373	368	364	362	359	356	353	353	356	358	359	365	371	374	375
30	370	368	367	363	358	356	353	350	347	347	350	351	353	360	365	368	370
31	364	363	362	356	352	350	347	344	341	340	344	346	348	354	360	363	364
32	358	357	356	350	346	344	340	338	335	334	338	340	341	348	353	357	358
33	352	351	350	344	340	337	334	331	328	328	331	333	334	342	348	351	352
34	346	346	344	338	333	331	328	324	321	322	324	326	328	335	341	345	346
35	339	340	337	332	327	324	321	318	315	315	318	320	321	329	335	339	339
36	333	333	331	325	320	317	315	311	307	308	311	313	314	322	328	332	333
37	326	327	324	318	313	311	307	305	300	301	304	306	308	315	322	326	326
38	320	320	318	311	306	304	301	297	293	294	297	299	301	309	315	319	320
39	313	313	311	304	299	297	294	289	286	287	290	292	294	301	308	312	313
40	306	306	304	298	291	289	287	282	278	279	283	285	286	294	301	305	306
41	299	299	297	290	284	282	280	275	271	272	275	277	279	287	295	299	299
42	292	292	290	283	277	275	272	268	264	265	268	270	272	280	288	291	292
43	285	285	283	276	269	267	265	260	256	257	261	263	264	273	280	284	285
44	277	278	276	268	262	260	258	253	248	250	254	255	257	265	273	277	277
45	270	270	268	261	254	252	250	245	240	242	246	248	249	258	266	269	270
46	262	263	261	253	246	245	242	238	233	234	239	240	241	250	259	262	262
47	255	256	254	245	239	237	235	230	225	227	231	233	233	243	252	255	255
48	247	248	246	238	231	229	227	222	217	220	223	225	226	235	244	247	247
49	239	241	238	230	224	222	220	214	210	212	215	217	218	227	236	239	239
50	232	233	231	223	215	214	212	206	202	204	208	209	210	219	229	232	232
51	224	226	223	215	208	206	205	199	194	196	200	201	203	212	221	224	224
52	216	217	216	207	200	198	197	191	186	188	193	194	195	204	213	217	216
53	208	210	209	200	192	191	189	183	178	181	185	187	187	196	205	208	208
54	200	202	201	192	185	183	182	175	171	173	178	179	180	189	198	201	200
55	192	195	193	184	177	176	174	168	163	165	170	171	172	181	190	193	192
56	184	187	186	176	170	168	166	160	155	158	163	164	164	173	182	185	184
57	177	179	178	169	162	160	159	152	147	150	155	156	157	166	175	177	177
58	169	171	170	161	154	152	151	144	139	142	148	148	149	158	167	169	169
59	161	163	163	153	146	144	143	136	131	134	140	141	141	150	160	162	161

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60	153	156	155	145	139	137	136	129	124	127	133	133	134	142	152	154	153
61	145	148	147	138	131	129	128	121	116	119	125	125	126	135	145	146	145
62	137	140	140	130	123	121	120	113	108	111	117	118	119	127	137	138	137
63	130	132	132	123	116	114	113	106	101	104	110	110	111	120	129	131	130
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66	107	109	110	100	94	92	91	83	79	82	88	88	89	98	107	107	107
67	99	102	102	93	87	85	84	76	71	74	81	81	83	90	100	100	99
68	91	94	95	86	80	78	76	69	64	67	74	74	76	83	92	92	91
69	84	87	88	79	73	71	69	62	58	61	67	68	69	76	85	85	84
70	77	80	81	72	66	64	62	55	51	54	60	61	62	70	78	78	77
71	70	73	74	66	59	57	56	48	45	47	54	54	56	63	71	71	70
72	63	66	67	59	53	51	49	42	39	41	47	48	49	56	65	64	63
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84	9	9	9	8	7	6	5	5	5	5	5	6	6	8	8	9	9
85	7	7	7	7	6	5	4	4	3	4	4	5	5	6	7	7	7
86	5	5	6	5	5	4	3	2	2	2	3	3	4	5	5	5	5
87	3	3	4	4	3	3	2	1	1	1	1	2	3	4	3	3	3
88	1	2	2	3	2	1	1	0	0	0	0	1	1	2	1	1	1
89	0	0	1	1	1	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

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91	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
93	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
95	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
97	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
99	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
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

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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

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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	0	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	0	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	0	0	0	0	0	0	0	0	0
167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
171	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
173	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	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	0	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	0	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

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**3. Test Equipment**

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2015-07-01	2016-06-30
ST-R-331	Spectral analysis system HAAS-2000	2015-07-01	2016-06-30
D204	Standard Lamp	2015-07-01	2016-06-30
PF2010	Power Meter for Integrating Sphere	2015-07-01	2016-06-30
EE-09	Goniophotometer system	2015-07-01	2016-06-30
D908S	Standard Lamp	2015-07-01	2016-06-30
PF210	Power Meter for Goniophotometer	2015-07-01	2016-06-30
ST-R-181A	Temperature Tester	2015-07-01	2016-06-30
Uncertainty Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

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

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