



Report No.:GZE151136-H

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): LTSQ544-3090

Model differences: N/A

Test & Report By:

Johnson Sun

Engineer: Johnson Sun

Date:Dec.28, 2015

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

Address: Standard-Tech Building, No.6 Guanhong Road,Guangzhou Science City, 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	Dec.28, 2015
Test Report No.	GZE151136-H
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	L-TECH CORPORTION		
Brand Name	L-TECH CORP		
Model Number	LTSQ544-3090		
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	--	15.87	W
Input Current	--	0.1329	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9952	
Off-State Power	--	0	W

Photometric Characteristics

Total Initial Lumen Output	--	1140.4	lm
Initial Lumen Efficacy	--	71.86	lm/w
Correlated color temperature / CCT	3033	--	K
Color rendering index / CRI	92.2	--	
R9 Value	56	--	
Duv	0.0003	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	--	499	cd
Beam angle (if applicable)	--	95.8	°
Zonal lumens in the 0°-60° zone	--	86.2	%
Zonal lumens in the 60°-90° zone	--	13.8	%
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	: Dec.24,2015
Date of Test	: Dec.28,2015
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 ° vertical intervals and 22.5 ° horizontal intervals.

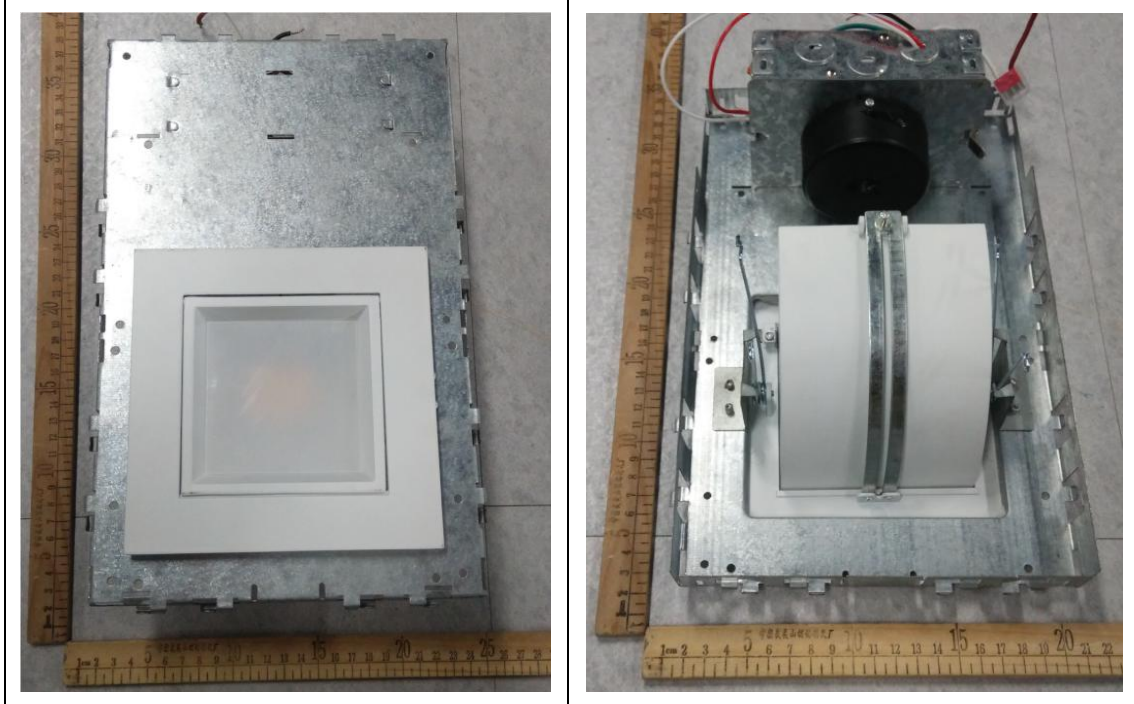
2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. 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	LTSQ544-3090
Luminaire Type	LED Lamp
Rated Voltage / Frequency	120Vac, 60Hz
Nominal Power	16W
Rated Initial Lamp Lumen	N/A
Declared CCT	3000K
LED Manufacturer	N/A
LED Model	N/A
Power Supply:	N/A
Sample Receipt Date	Dec.24,2015
Sample Number	GZE151136-H1

Photo



2.1 Electrical, Photometric and Chromaticity Measurements <i>(Refer to Work Instruction QD25)</i>	IES LM-79 2008
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Test date	2015-12-28	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LTSQ544-3090		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE151136 -H1	120.0	60	0.1329	15.87	0.9952

Sphere-Spectroradiometer Method:

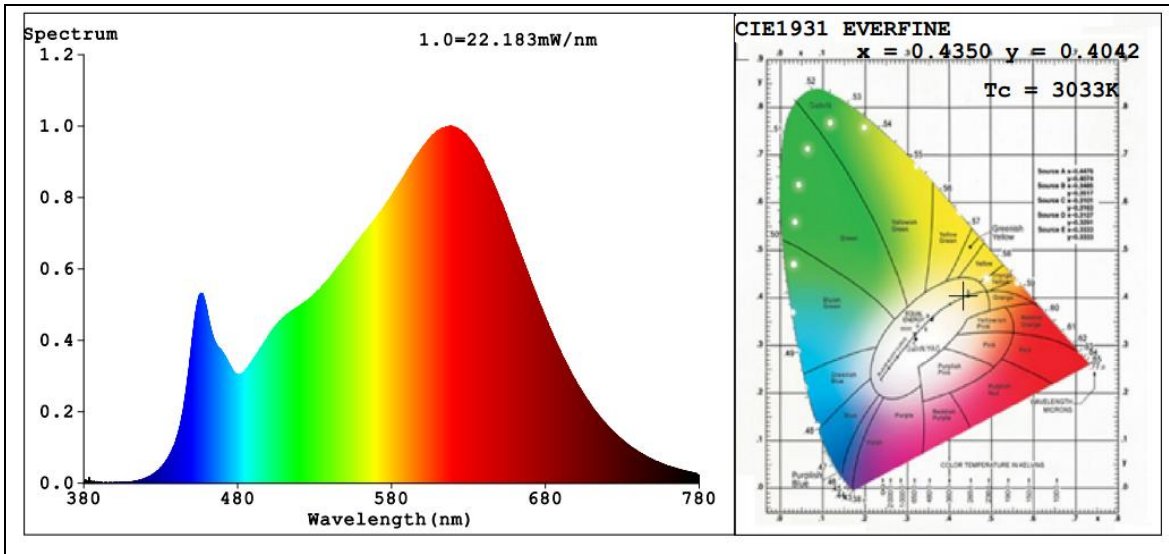
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	92.2
R9	56
CCT (K)	3033
Chromaticity (x, y)	x=0.4350 y=0.4042
Chromaticity (u', v')	u'=0.2493 v'=0.5211
Duv	0.0003

Special Color Rendering Indices			
R1	93	R9	56
R2	99	R10	96
R3	96	R11	92
R4	91	R12	81
R5	93	R13	95
R6	97	R14	99
R7	89	R15	88
R8	79	--	--

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1140.4
Luminous Efficacy (lm/W)	71.86
Beam Angle °	95.8
Center Beam Candle Power (cd)	499

Spectral Power Distribution & Chromaticity Diagram



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Zonal Lumen Tabulation:

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	374.6	32.9%
0-40	597.2	52.4%
0-60	982.4	86.2%
60-90	157.8	13.8%
70-100	48.8	4.3%
90-120	0.0	0%
0-90	1,140.2	100%
90-180	0.1	0%
0-180	1,140.2	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	47.0	4.1%	90-100	0.0	0%
10-20	132.7	11.6%	100-110	0.0	0%
20-30	194.8	17.1%	110-120	0.0	0%
30-40	222.6	19.5%	120-130	0.0	0%
40-50	213.2	18.7%	130-140	0.0	0%
50-60	172.0	15.1%	140-150	0.0	0%
60-70	109.1	9.6%	150-160	0.0	0%
70-80	41.9	3.7%	160-170	0.0	0%
80-90	6.9	0.6%	170-180	0.0	0%

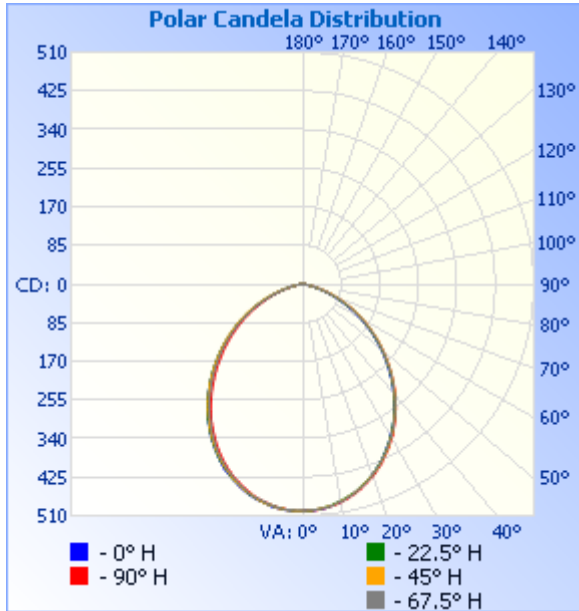
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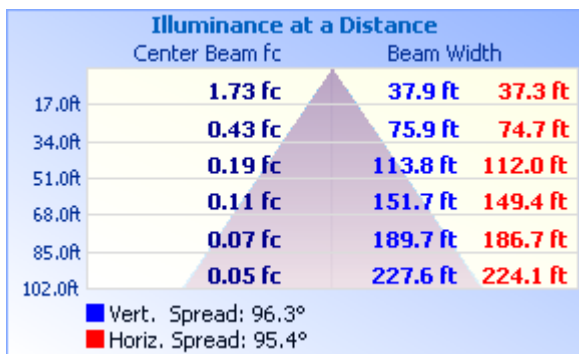
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Photometric Data



Illuminance Plots



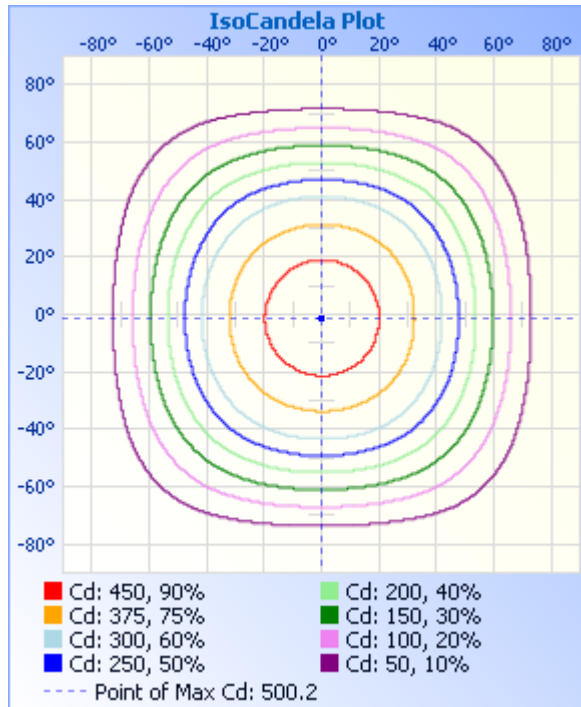
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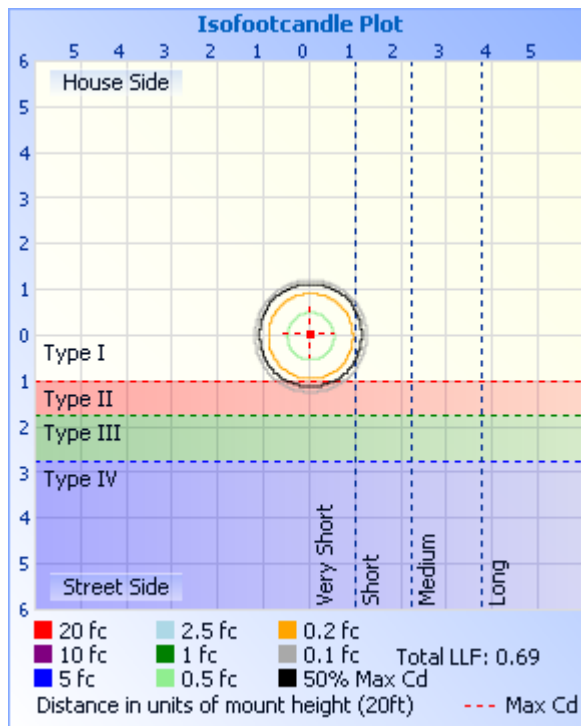
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ISOCANDELA DIAGRAM



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	499	499	499	499	499	499	499	499	499	499	499	499	499	499	499	499	499
1	498	499	499	499	499	498	499	500	500	499	499	498	500	497	500	499	498
2	499	499	499	498	499	499	499	499	500	499	500	498	499	497	499	499	499
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4	497	497	496	496	498	497	498	497	499	498	499	497	497	497	496	497	497
5	496	494	495	496	496	497	497	497	498	497	496	497	495	496	495	495	496
6	495	493	494	494	495	494	495	496	497	495	497	494	495	493	493	494	495
7	493	492	492	493	493	492	495	494	495	494	495	494	493	493	492	492	493
8	491	489	491	491	492	491	493	493	494	492	491	491	491	489	490	490	491
9	488	487	488	487	490	491	490	492	491	490	490	489	488	487	487	487	488
10	486	484	485	485	487	488	488	488	488	488	488	487	486	485	484	485	486
11	483	481	483	484	484	485	485	486	486	486	486	484	483	482	482	482	483
12	480	478	479	479	482	483	483	483	484	484	484	481	481	480	479	479	480
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14	473	473	473	473	476	475	477	477	478	478	476	477	473	474	473	472	473
15	469	468	469	469	472	471	473	474	475	474	473	472	470	469	468	469	469
16	466	464	465	465	468	468	470	470	472	471	470	468	465	465	464	466	466
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21	443	443	443	443	446	447	449	450	450	448	448	445	443	443	443	442	443
22	437	437	439	438	440	442	444	444	446	444	443	442	439	437	438	436	437
23	431	431	433	433	436	437	438	439	442	439	438	434	432	431	432	431	431
24	425	426	427	426	430	432	434	434	435	433	433	429	427	426	427	425	425
25	420	419	421	421	423	425	427	428	429	429	427	425	421	420	421	419	420
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27	407	407	410	409	412	414	416	417	417	416	415	413	409	407	409	407	407
28	400	401	404	402	405	407	410	410	411	410	409	406	402	402	402	401	400

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29	394	394	396	396	399	401	404	404	404	404	402	399	395	395	395	395	394
30	387	388	389	390	392	395	397	398	398	397	396	391	388	388	389	388	387
31	380	381	384	383	386	387	390	391	391	391	389	386	381	382	382	381	380
32	373	374	376	376	378	380	384	385	385	384	382	377	374	374	374	374	373
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37	336	337	339	338	341	345	348	348	348	347	346	341	337	337	337	337	336
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41	304	305	308	307	309	313	317	317	316	316	315	310	304	305	306	305	304
42	296	297	300	299	301	304	308	309	308	308	307	301	295	296	298	296	296
43	287	288	291	291	292	296	301	300	300	300	300	293	286	289	290	289	287
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47	254	255	258	257	259	263	268	268	266	266	266	260	253	255	257	256	254
48	245	248	251	249	250	254	259	259	257	258	257	251	244	246	249	247	245
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52	211	214	217	215	216	221	225	225	223	224	224	218	211	212	215	213	211
53	202	205	208	206	208	212	217	217	214	215	216	210	202	204	207	205	202
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57	168	171	175	173	174	179	184	183	180	182	182	176	169	171	174	172	168
58	160	163	167	165	166	170	176	174	172	173	174	168	160	162	166	163	160
59	152	155	159	156	158	162	167	166	163	165	166	160	152	154	157	155	152

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60	143	147	151	148	149	154	159	158	155	156	158	151	144	146	149	146	143
61	135	138	143	140	141	145	151	149	146	148	149	143	136	137	141	137	135
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89	0	0	0	1	1	1	1	2	2	1	1	1	1	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
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106	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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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
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111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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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 *******