



Report No.:GZE151136-C

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): LTSQ544-4090

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-C
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	L-TECH CORPORTION		
Brand Name	L-TECH CORP		
Model Number	LTSQ544-4090		
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	--	15.80	W
Input Current	--	0.1323	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9951	
Off-State Power	--	0	W

Photometric Characteristics

Total Initial Lumen Output	--	1171.3	lm
Initial Lumen Efficacy	--	74.13	lm/w
Correlated color temperature / CCT	3930	--	K
Color rendering index / CRI	92.3	--	
R9 Value	58	--	
Duv	0.0007	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	--	505	cd
Beam angle (if applicable)	--	97.1	°
Zonal lumens in the 0°-60° zone	--	86.1	%
Zonal lumens in the 60°-90° zone	--	13.9	%
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 ° vertical intervals and 22.5 ° horizontal intervals.

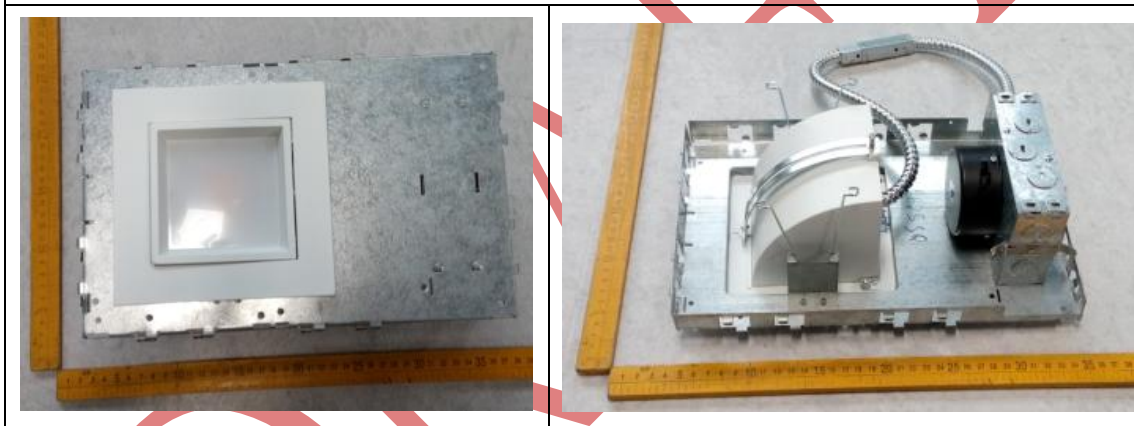
2. Photometric and Electrical Measurements – Integrating Sphere Method:

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	LTSQ544-4090
Luminaire Type	LED Lamp
Rated Voltage / Frequency	120Vac, 60Hz
Nominal Power	16W
Rated Initial Lamp Lumen	N/A
Declared CCT	4000K
LED Manufacturer	N/A
LED Model	N/A
Power Supply:	N/A
Sample Receipt Date	Nov.10,2015
Sample Number	GZE151136-C1

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	2015-11-18	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LTSQ544-4090		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE151136 -C1	120.0	60	0.1323	15.80	0.9951

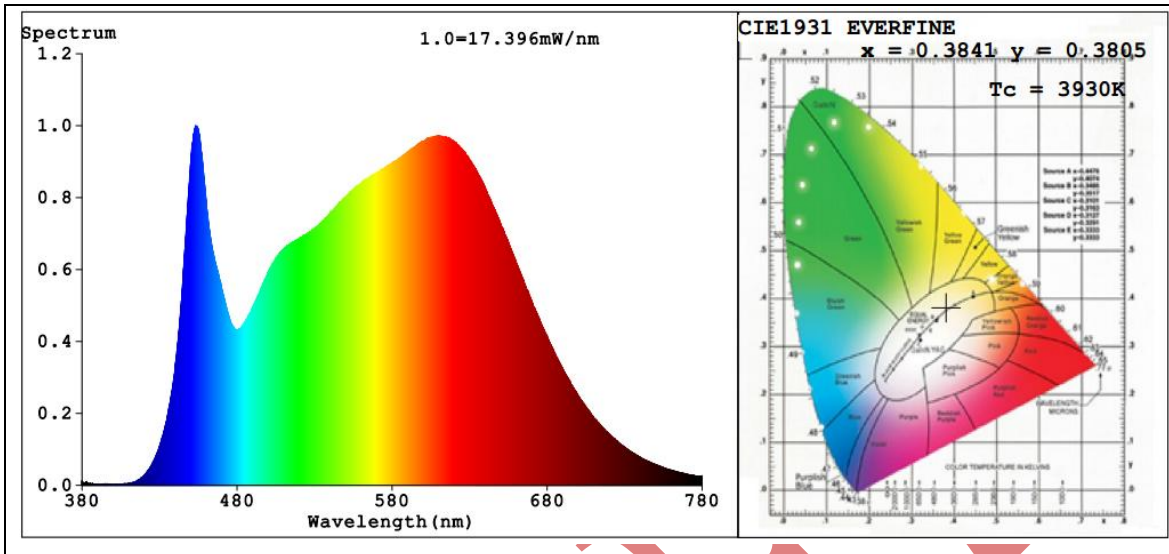
Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	93	R9	58
Frequency (Hz)	60	R2	97	R10	92
Color Rendering Index (CRI)	92.3	R3	98	R11	91
R9	58	R4	91	R12	74
CCT (K)	3930	R5	92	R13	94
Chromaticity (x, y)	x=0.3841 y=0.3805	R6	95	R14	100
Chromaticity (u', v')	u'=0.2260 v'=0.5038	R7	92	R15	89
Duv	0.0007	R8	82	--	--

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1171.3
Luminous Efficacy (lm/W)	74.13
Beam Angle °	97.1
Center Beam Candle Power (cd)	505

Spectral Power Distribution & Chromaticity Diagram



DRAFT

Zonal Lumen Tabulation:

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	381.4	32.6%
0-40	610.0	52.1%
0-60	1,008.6	86.1%
60-90	162.5	13.9%
70-100	49.8	4.3%
90-120	0.0	0%
0-90	1,171.1	100%
90-180	0.0	0%
0-180	1,171.2	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	47.7	4.1%	90-100	0.0	0%
10-20	134.9	11.5%	100-110	0.0	0%
20-30	198.9	17.0%	110-120	0.0	0%
30-40	228.6	19.5%	120-130	0.0	0%
40-50	220.3	18.8%	130-140	0.0	0%
50-60	178.3	15.2%	140-150	0.0	0%
60-70	112.7	9.6%	150-160	0.0	0%
70-80	42.7	3.6%	160-170	0.0	0%
80-90	7.1	0.6%	170-180	0.0	0%

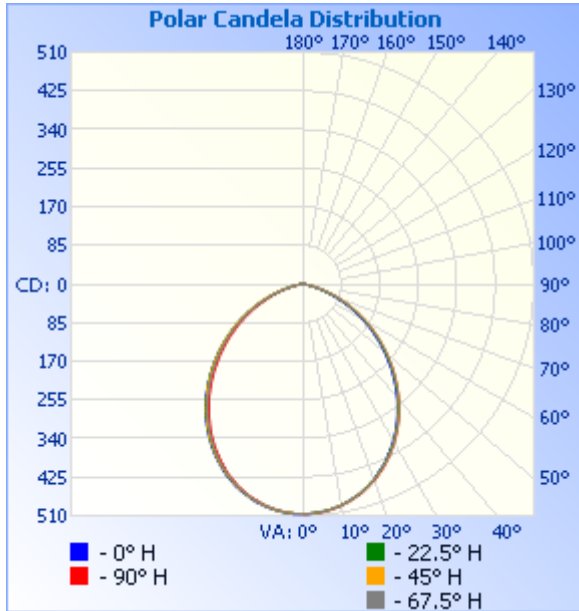
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Photometric Data



Illuminance Plots

	Center Beam fc	Beam Width	
17.0ft	1.75 fc	38.8 ft	38.2 ft
34.0ft	0.44 fc	77.6 ft	76.5 ft
51.0ft	0.19 fc	116.3 ft	114.7 ft
68.0ft	0.11 fc	155.1 ft	153.0 ft
85.0ft	0.07 fc	193.9 ft	191.2 ft
102.0ft	0.05 fc	232.7 ft	229.5 ft

■ Vert. Spread: 97.5°
■ Horiz. Spread: 96.7°

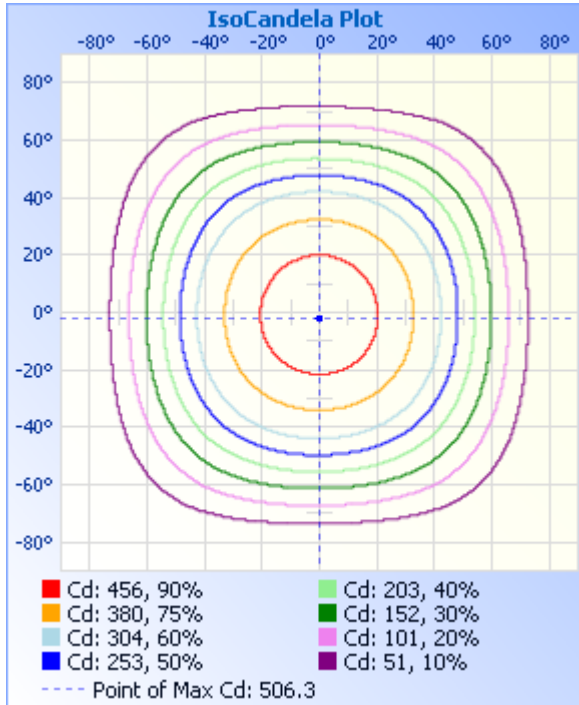
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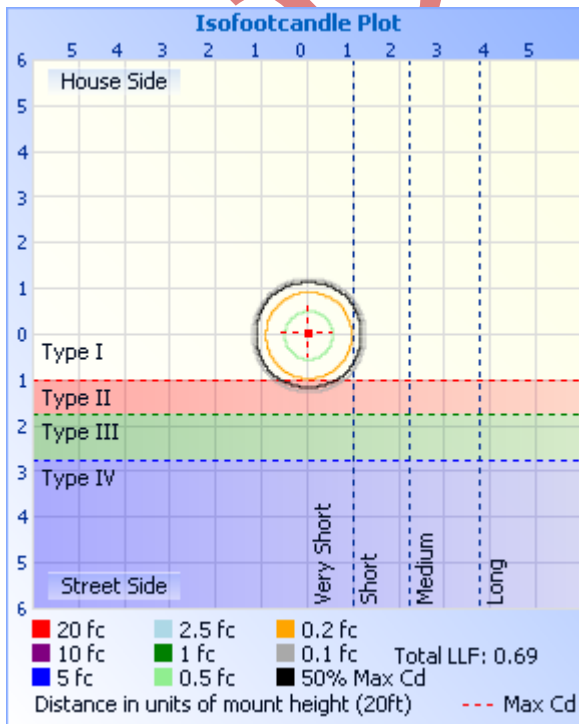
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ISOCANDELA DIAGRAM



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	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505
1	506	505	506	506	506	506	506	506	506	505	506	506	505	506	505	505	506
2	506	505	505	504	505	506	505	505	506	505	505	505	505	505	504	504	506
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4	504	503	504	504	504	504	504	504	505	504	503	504	503	504	503	503	504
5	503	501	503	503	503	503	502	503	504	503	503	502	502	502	501	502	503
6	501	501	501	502	502	502	502	502	503	501	502	501	501	500	500	501	501
7	500	499	500	500	501	501	500	500	501	500	500	499	499	499	498	499	500
8	497	497	498	498	499	500	498	498	499	498	498	497	497	497	496	497	497
9	496	495	495	496	497	497	496	497	497	496	496	496	495	494	494	494	496
10	494	493	494	494	495	494	495	495	495	494	494	493	493	492	492	491	494
11	491	490	491	492	492	492	492	493	493	491	492	491	489	490	489	489	491
12	488	488	488	489	490	490	490	490	491	489	489	488	486	486	486	487	488
13	485	485	486	486	487	487	487	487	488	486	486	485	484	483	483	484	485
14	482	481	483	483	484	484	484	484	484	483	482	481	481	480	480	480	482
15	479	478	479	479	480	480	480	480	480	479	479	478	476	477	477	477	479
16	474	474	475	476	477	477	477	477	477	475	475	474	473	472	473	473	474
17	471	471	472	472	474	473	474	473	474	472	472	470	469	469	468	469	471
18	467	467	468	468	469	469	469	470	470	468	467	466	464	464	465	465	467
19	462	462	463	463	465	465	465	465	465	464	463	462	460	460	460	461	462
20	458	458	458	459	460	461	461	461	461	459	459	457	455	455	455	456	458
21	452	453	454	454	456	456	456	457	456	455	454	452	450	450	450	451	452
22	447	447	449	449	450	452	452	451	452	450	449	447	445	445	445	446	447
23	441	443	444	444	446	447	447	447	447	444	444	442	439	440	440	441	441
24	436	437	438	439	440	441	441	441	441	439	439	436	433	433	435	435	436
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26	425	426	427	428	429	430	430	430	430	428	427	424	421	422	422	423	425
27	418	419	421	421	423	424	424	424	424	422	421	419	415	416	417	417	418
28	412	413	416	415	416	418	418	419	418	416	415	413	409	409	411	411	412

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29	405	407	409	409	410	412	413	412	411	410	408	405	402	403	404	405	405
30	399	400	402	402	403	405	407	406	405	403	402	399	395	396	398	398	399
31	392	393	396	395	397	398	400	399	398	397	396	392	389	389	391	391	392
32	385	386	389	388	390	391	393	392	391	389	389	385	381	382	384	384	385
33	378	380	382	382	383	384	386	385	384	383	381	378	374	375	376	377	378
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35	363	365	367	367	369	370	372	372	369	369	367	363	359	360	362	362	363
36	355	357	360	360	361	363	365	364	362	361	360	356	351	352	355	355	355
37	348	350	353	352	353	356	358	356	355	354	353	348	343	345	347	347	348
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40	323	326	329	328	329	332	334	334	331	330	329	325	319	321	323	323	323
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42	307	310	313	312	313	316	319	317	315	314	313	308	302	304	307	307	307
43	299	302	305	304	304	308	311	309	307	306	305	300	294	296	299	299	299
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45	281	285	288	287	287	291	294	293	290	290	288	283	277	279	282	282	281
46	273	277	280	279	279	282	286	284	281	281	279	274	268	270	274	274	273
47	264	268	271	270	270	274	277	276	273	273	271	266	259	262	265	265	264
48	255	259	263	261	261	265	269	267	264	264	263	257	251	253	256	256	255
49	246	250	254	253	253	257	260	259	255	256	255	248	242	245	248	247	246
50	238	242	246	244	244	248	252	250	247	247	246	240	233	236	240	239	238
51	229	233	237	235	235	239	243	241	238	238	237	231	225	227	231	230	229
52	220	224	228	226	226	230	235	232	229	229	229	222	216	218	222	221	220
53	211	216	220	218	218	222	226	224	220	221	220	214	207	210	214	212	211
54	202	207	211	209	209	213	218	215	212	212	212	205	198	201	205	204	202
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56	185	189	194	192	192	196	201	198	194	195	194	188	181	184	188	186	185
57	176	181	185	183	183	187	192	189	186	186	186	179	172	175	179	177	176
58	167	172	177	174	175	178	184	181	177	178	178	171	163	166	170	168	167
59	158	163	168	166	166	170	175	172	168	169	169	162	155	157	162	160	158

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60	149	154	160	157	157	162	167	163	159	160	161	154	146	149	153	151	149
61	141	145	151	149	149	153	158	154	151	151	152	145	138	140	145	142	141
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87	3	3	3	4	4	5	4	4	4	4	3	3	3	2	2	3	3
88	1	2	2	3	3	3	3	3	3	2	2	2	1	1	1	1	1
89	0	1	1	1	2	2	2	2	1	1	1	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
154	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
156	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
158	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
160	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
162	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
164	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
166	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
168	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
170	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
172	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
174	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
176	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
178	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
180	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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