



Report No.:GZE151143-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): LRKT643-2790

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.	GZE151143-A
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	L-TECH CORPORTION	
Brand Name	L-TECH CORP	
Model Number	LRKT643-2790	
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	--	15.89	W
Input Current	--	0.1331	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9949	
Off-State Power	--	0	W

Photometric Characteristics

Total Initial Lumen Output	--	1075.9	lm
Initial Lumen Efficacy	--	67.71	lm/w
Correlated color temperature / CCT	2753	--	K
Color rendering index / CRI	92.7	--	
R9 Value	58	--	
Duv	-0.0021	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	--	456	cd
Beam angle (if applicable)	--	99.7	°
Zonal lumens in the 0°-60° zone	--	87.2	%
Zonal lumens in the 60°-90° zone	--	12.8	%
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	: 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.

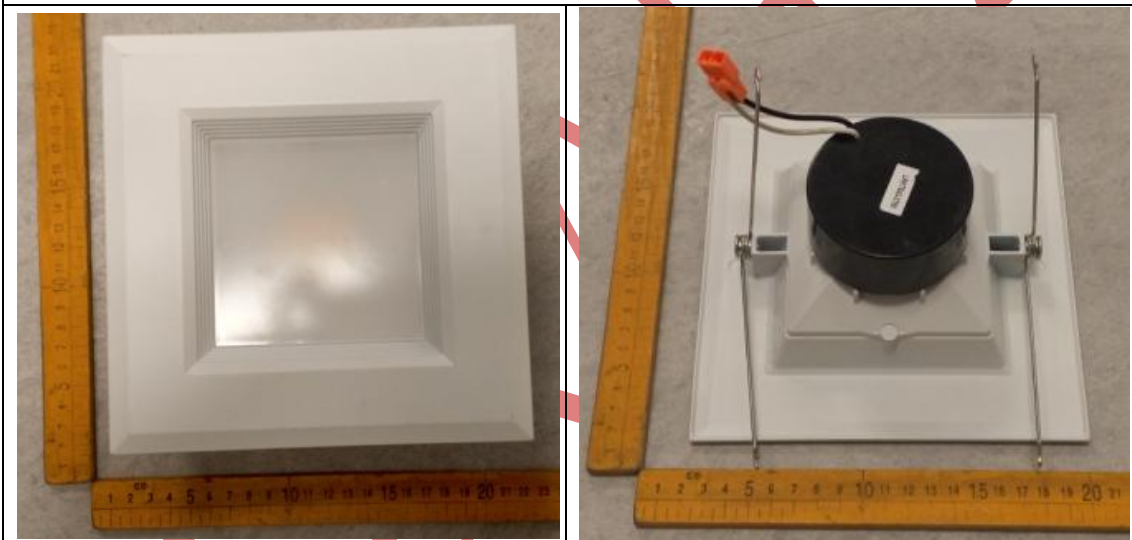
2. Photometric and Electrical Measurements – Integrating Sphere Method:

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	LRKT643-2790
Luminaire Type	LED Lamp
Rated Voltage / Frequency	120Vac, 60Hz
Nominal Power	17W
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	GZE151143-A1

Photo



2.1 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	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	LRKT643-2790		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE151143 -A1	120.0	60	0.1331	15.89	0.9949

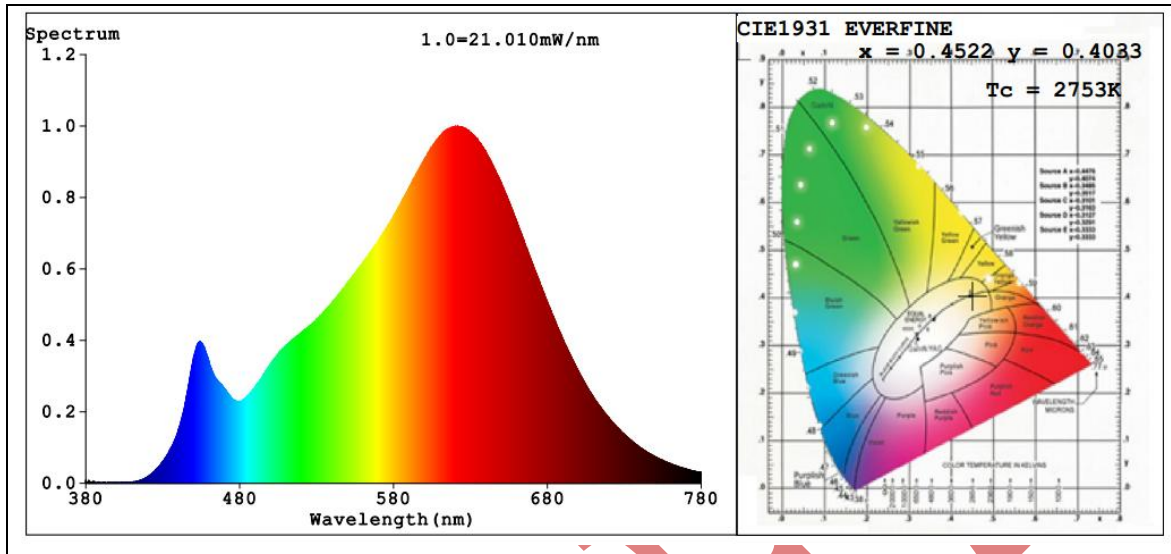
Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	94	R9	58
Frequency (Hz)	60	R2	99	R10	96
Color Rendering Index (CRI)	92.7	R3	97	R11	94
R9	58	R4	92	R12	87
CCT (K)	2753	R5	94	R13	95
Chromaticity (x, y)	x=0.4522 y=0.4033	R6	97	R14	99
Chromaticity (u', v')	u'=0.2608 v'=0.5234	R7	89	R15	89
Duv	-0.0021	R8	80	--	--

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1075.9
Luminous Efficacy (lm/W)	67.71
Beam Angle °	99.7
Center Beam Candle Power (cd)	456

Spectral Power Distribution & Chromaticity Diagram



DRAFT

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Zonal Lumen Tabulation:

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	348.1	32.4%
0-40	560.3	52.1%
0-60	938.0	87.2%
60-90	137.8	12.8%
70-100	36.0	3.3%
90-120	0.0	0%
0-90	1,075.8	100%
90-180	0.0	0%
0-180	1,075.8	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	43.1	4.0%	90-100	0.0	0%
10-20	122.5	11.4%	100-110	0.0	0%
20-30	182.5	17.0%	110-120	0.0	0%
30-40	212.3	19.7%	120-130	0.0	0%
40-50	207.8	19.3%	130-140	0.0	0%
50-60	169.9	15.8%	140-150	0.0	0%
60-70	101.7	9.5%	150-160	0.0	0%
70-80	31.5	2.9%	160-170	0.0	0%
80-90	4.5	0.4%	170-180	0.0	0%

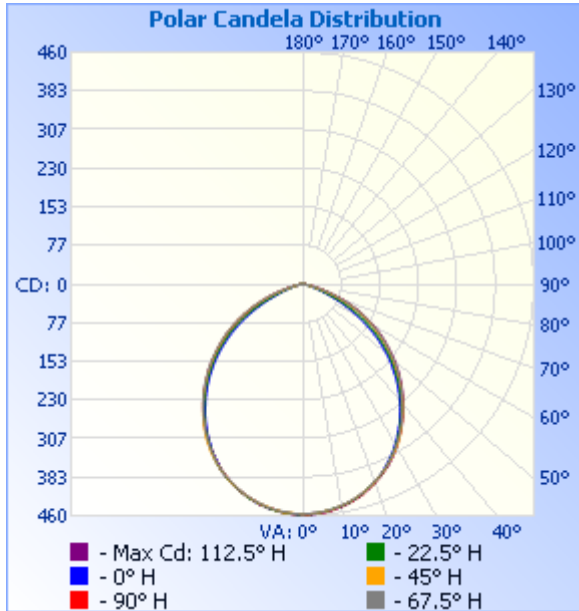
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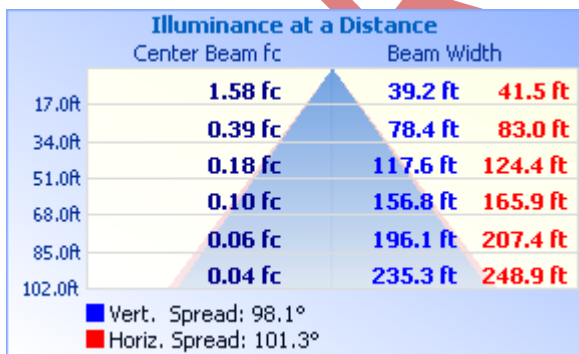
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Photometric Data



Illuminance Plots



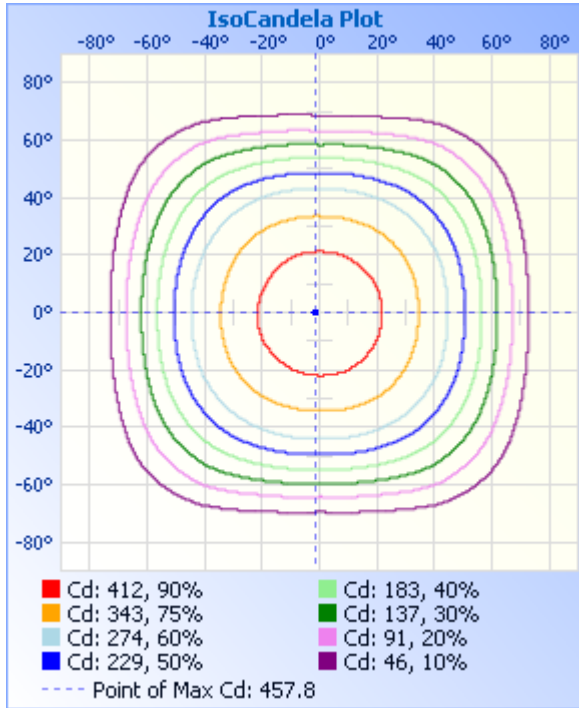
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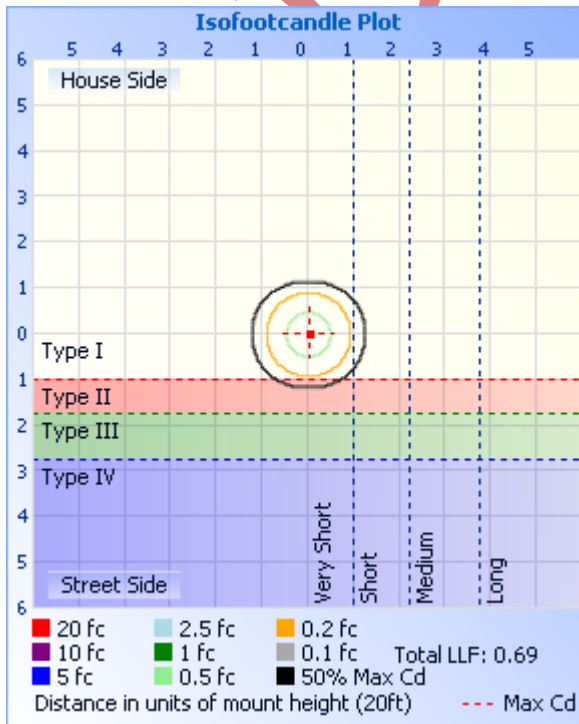
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ISOCANDELA DIAGRAM



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	456	456	456	456	456	456	456	456	456	456	456	456	456	456	456	456	456
1	456	456	456	456	457	458	455	455	457	457	456	456	456	457	455	456	456
2	456	457	456	455	457	458	455	455	456	456	456	456	457	456	455	455	456
3	455	456	455	455	456	457	454	455	456	456	454	455	456	457	454	455	455
4	455	455	455	455	456	456	454	455	456	455	455	454	456	456	453	454	455
5	454	454	454	453	454	455	453	454	454	455	455	453	454	455	453	453	454
6	453	453	452	452	455	454	452	453	453	453	452	453	453	454	452	452	453
7	451	451	452	451	453	454	450	452	451	452	451	451	452	451	450	451	451
8	451	449	450	449	452	451	449	450	450	451	449	449	449	451	448	449	451
9	448	448	448	448	450	450	448	448	449	449	447	448	449	449	448	448	448
10	446	447	446	446	448	448	446	446	446	447	445	446	446	447	446	446	446
11	444	445	444	444	446	446	443	445	445	444	445	443	445	446	443	444	444
12	442	443	442	442	444	445	442	443	443	443	442	441	441	443	441	441	442
13	439	440	440	440	442	441	439	440	440	440	439	439	439	440	439	439	439
14	437	438	437	437	439	439	437	437	437	438	437	436	437	437	435	436	437
15	435	435	434	434	437	436	434	434	434	435	434	434	434	435	432	434	435
16	431	432	431	432	434	433	432	431	432	432	431	430	432	431	430	431	431
17	428	428	428	428	430	430	428	428	428	428	428	427	428	429	428	427	428
18	425	424	425	425	426	427	425	425	425	425	424	424	424	425	423	424	425
19	422	422	422	421	424	422	421	422	422	422	421	420	420	423	420	421	422
20	418	419	418	417	420	420	418	418	417	418	418	417	417	417	416	418	418
21	414	415	414	414	416	416	414	414	413	415	414	413	414	414	412	414	414
22	409	410	410	410	411	412	410	410	410	410	410	410	409	410	409	409	409
23	405	406	406	405	407	407	405	406	405	406	405	406	404	406	405	405	405
24	400	402	402	401	403	403	402	401	401	401	401	400	401	401	401	401	400
25	395	397	398	397	398	400	397	396	395	397	397	396	395	397	396	396	395
26	390	392	393	393	394	394	392	391	389	392	393	391	390	392	391	391	390
27	385	387	388	387	389	390	388	386	385	387	387	386	385	387	386	385	385
28	380	381	383	382	383	385	383	380	380	381	383	381	379	381	382	379	380

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29	373	376	378	376	377	378	378	375	374	375	378	376	374	376	376	374	373
30	367	370	373	371	372	373	373	369	367	369	372	370	369	370	371	368	367
31	362	364	368	365	366	368	367	363	361	363	367	364	362	365	366	362	362
32	355	358	362	360	360	361	361	357	355	357	361	358	357	358	361	357	355
33	348	352	356	354	355	356	355	351	349	351	355	352	350	352	353	350	348
34	342	346	349	348	348	350	349	345	342	345	348	346	344	347	347	345	342
35	336	339	343	342	342	344	343	337	335	339	342	339	337	340	341	338	336
36	329	332	336	335	336	337	336	331	328	332	335	333	331	334	333	330	329
37	322	326	329	329	329	331	330	325	322	325	328	327	324	328	327	324	322
38	315	319	324	323	323	324	323	318	315	318	321	321	317	321	321	318	315
39	307	311	317	316	315	318	316	311	307	311	315	314	310	315	314	311	307
40	300	305	310	309	309	311	309	303	300	304	308	307	304	308	307	304	300
41	293	298	302	302	302	305	302	296	293	297	300	300	297	301	299	296	293
42	285	291	295	296	294	298	295	289	285	290	294	294	290	294	293	289	285
43	278	283	289	288	288	291	288	282	278	282	286	287	283	287	285	280	278
44	270	276	280	281	280	284	280	275	270	275	279	280	276	280	278	273	270
45	262	268	274	274	274	277	273	267	262	267	272	273	268	273	271	266	262
46	253	260	267	267	267	270	265	259	254	259	264	265	261	265	263	258	253
47	245	252	258	260	259	263	258	252	245	251	257	258	253	258	256	251	245
48	237	244	251	253	251	255	250	244	238	243	250	251	245	251	248	243	237
49	228	236	243	246	244	247	243	236	229	236	241	243	238	243	240	234	228
50	220	228	236	238	237	240	235	227	220	227	234	236	231	235	232	226	220
51	211	220	228	230	229	232	228	219	212	219	226	228	222	228	225	218	211
52	202	211	220	222	221	225	220	211	203	211	218	220	215	219	217	209	202
53	193	202	212	215	213	216	212	203	194	202	211	212	207	212	209	200	193
54	184	193	205	207	206	209	204	194	185	193	202	204	199	204	201	191	184
55	174	185	197	199	198	201	196	185	176	184	195	197	191	196	193	182	174
56	164	176	189	191	190	193	189	176	166	176	187	189	183	188	185	173	164
57	155	166	180	183	182	186	181	167	156	167	179	181	175	180	177	164	155
58	145	157	172	175	174	178	173	158	147	157	171	173	167	172	169	154	145
59	135	148	164	167	166	170	165	148	137	148	163	164	158	163	160	145	135

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60	125	138	156	159	158	162	157	139	127	138	155	156	150	155	152	135	125
61	115	128	148	151	149	153	149	129	117	129	146	148	141	147	144	125	115
62	105	119	140	143	141	145	140	119	107	119	138	139	132	138	136	116	105
63	96	109	131	134	132	137	132	110	98	109	129	131	124	130	127	106	96
64	86	99	122	126	123	128	123	100	88	100	120	122	115	121	118	96	86
65	78	90	114	117	114	119	114	90	79	90	112	114	106	112	109	87	78
66	69	81	105	108	106	110	105	81	70	80	103	105	98	103	100	78	69
67	60	72	96	100	97	102	96	72	61	71	94	96	89	95	91	69	60
68	53	63	87	91	88	93	87	63	53	62	85	87	81	86	83	60	53
69	46	55	78	82	79	84	78	55	46	54	76	79	72	78	73	53	46
70	39	47	69	74	71	76	69	47	40	46	67	70	64	69	64	45	39
71	34	40	60	66	63	67	60	40	34	40	58	62	56	61	56	38	34
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73	26	29	43	50	47	51	43	29	26	29	41	46	41	45	39	28	26
74	22	25	36	42	40	43	36	25	22	25	34	39	35	38	32	24	22
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83	5	6	6	7	8	7	7	6	5	6	6	7	7	6	6	5	5
84	4	4	5	6	6	6	5	4	4	4	5	5	6	5	4	4	4
85	2	3	4	5	5	5	4	3	2	3	3	4	4	4	3	2	2
86	2	2	2	3	4	3	2	2	2	2	2	3	3	2	2	2	2
87	2	2	1	2	3	2	1	2	2	2	1	1	2	1	1	2	2
88	1	1	1	1	2	1	1	1	0	0	1	1	0	1	1	1	1
89	0	0	0	0	0	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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