



NVLAP LAB CODE 201011-0

Report No.: GZE160820-D

LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN

(Brand Name:N/A)

188 S. Northwest HighwayCary, IL60013

LED Lamp

Model name(s): LED-7312-27A

Representative (Tested) Model: LED-7312-27A

Model Different: N/A

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Aug 19,2016

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


Address: Standard-Tech Building, No.6 Guanhong Road,Guangzhou Science City, Guangzhou 510663, China

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<http://www.standard-tech.com>

1.1 Product Information:

Organization Name	LIGHT EFFICIENT DESIGN	
Brand Name	N/A	
Model Number	LED-7312-27A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Lamp	
Rated Voltage / Frequency	120-277Vac, 50/60 Hz	
Nominal Power	7W	
Rated Initial Lamp Lumen	--	
Declared CCT	2700K	
LED Manufacturer	Samsung Electronics LED Business	
LED Model	SPMWHT327F*****	
Sample Number	GZE160820-D1(2700K)	
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 13,2016
Date of Test	Aug.14,2016
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

1) Photometric and Light Distribution Measurement – Goniophotometer Method:

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.

2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

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.

3) Electrical Measurements:

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.

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-08-14	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-7312-27A		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160820-D1	120.0	60	0.0623	6.75	0.9024	18.59

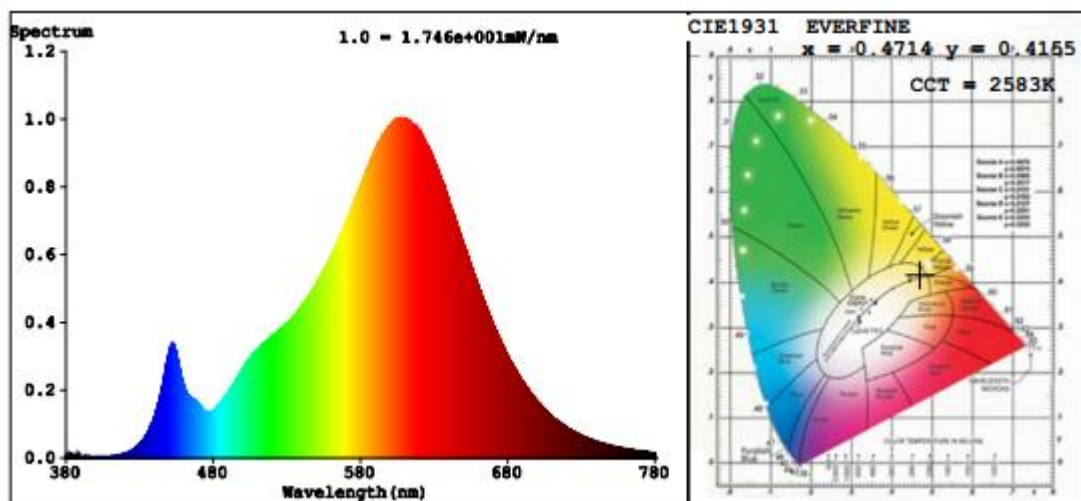
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	6
Frequency (Hz)	60	R2	92	R10	82
CCT (K)	2583	R3	95	R11	79
Duv	0.0009	R4	79	R12	76
Chromaticity (x, y)	x=0.4714 y=0.4155	R5	81	R13	83
Chromaticity (u', v')	u'=0.2677 v'=0.5309	R6	91	R14	98
Color Rendering Index (CRI)	81.9	R7	81	R15	72
R9	6	R8	56	--	--

Photometric Measurement – Goniophotometer Method :

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	801.51
Luminous Efficacy (lm/W)	118.74
Beam Angle (°)	108.5
Center Beam Candle Power (cd)	269

Spectral Power Distribution & Chromaticity Diagram

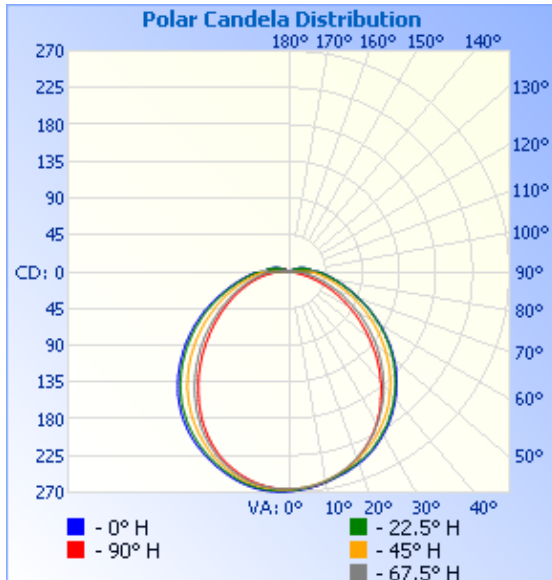


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	205.9	25.7%
0-40	335.8	41.9%
0-60	587.4	73.3%
60-90	193.4	24.1%
70-100	109.3	13.6%
90-120	19.5	2.4%
0-90	780.8	97.4%
90-180	20.7	2.6%
0-180	801.5	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	25.2	3.1%	90-100	8.5	1.1%
10-20	72.0	9.0%	100-110	8.1	1%
20-30	108.7	13.6%	110-120	2.9	0.4%
30-40	129.9	16.2%	120-130	0.5	0.1%
40-50	132.9	16.6%	130-140	0.2	0%
50-60	118.7	14.8%	140-150	0.2	0%
60-70	92.6	11.6%	150-160	0.2	0%
70-80	63.0	7.9%	160-170	0.1	0%
80-90	37.7	4.7%	170-180	0.0	0%

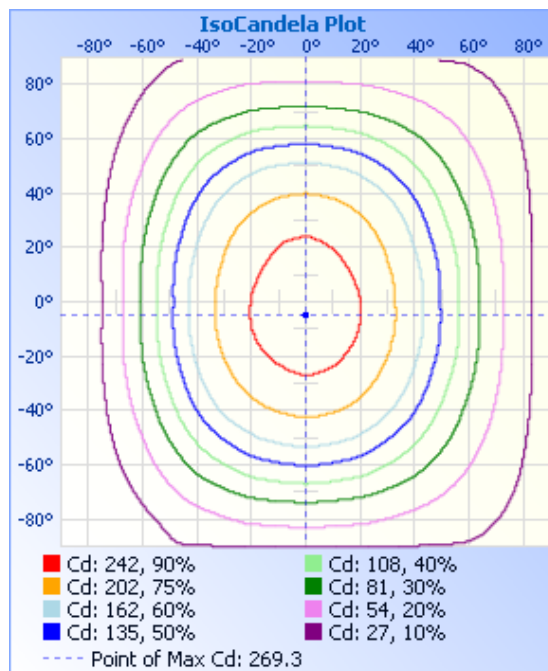
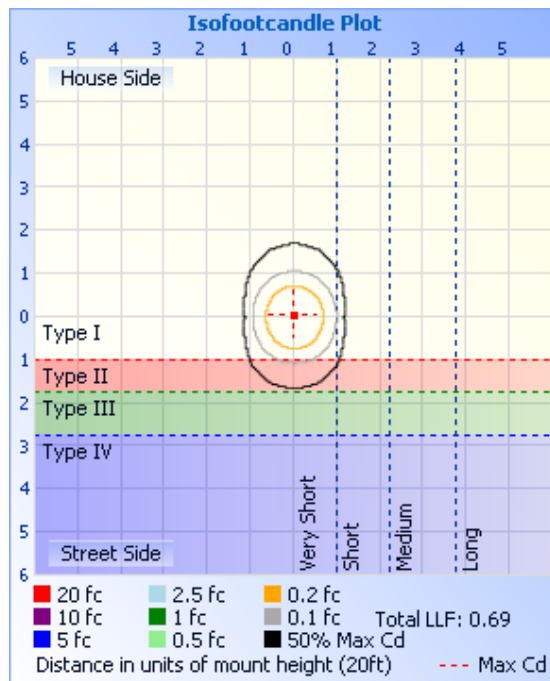
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width
17.0ft	0.93 fc	57.1 ft 39.4 ft
34.0ft	0.23 fc	114.2 ft 78.9 ft
51.0ft	0.10 fc	171.3 ft 118.3 ft
68.0ft	0.06 fc	228.4 ft 157.8 ft
85.0ft	0.04 fc	285.5 ft 197.2 ft
102.0ft	0.03 fc	342.5 ft 236.6 ft

■ Vert. Spread: 118.4°
■ Horiz. Spread: 98.5°



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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	269	268	266	266	266	266	266	266	269	268	266	266	266	266	266	266	269
1	268	267	266	266	266	266	266	266	269	268	266	266	266	266	265	266	268
2	268	267	266	265	266	266	266	266	269	268	267	266	266	265	265	265	268
3	267	266	265	265	266	266	266	267	269	268	266	266	265	265	264	264	267
4	267	266	264	265	266	266	266	267	269	268	266	265	265	264	264	264	267
5	266	265	264	264	265	266	266	267	269	268	266	265	265	263	263	263	266
6	265	264	263	264	265	265	266	267	269	268	266	264	264	263	262	262	265
7	264	263	262	263	264	265	265	266	269	267	265	264	263	262	261	262	264
8	263	262	262	262	263	264	265	266	268	267	265	263	262	261	260	261	263
9	262	261	260	261	262	263	264	265	268	266	264	262	261	260	259	260	262
10	261	261	259	260	261	263	264	264	267	265	263	261	260	258	258	259	261
11	260	259	258	259	260	261	263	264	266	265	262	260	259	257	257	257	260
12	259	258	257	257	259	260	262	263	265	264	261	259	257	256	256	256	259
13	258	257	256	256	257	259	261	262	264	263	260	257	256	254	254	255	258
14	257	256	254	254	256	258	259	261	263	261	258	256	254	253	252	254	257
15	256	255	252	252	254	256	258	259	262	260	257	254	252	251	251	253	256
16	255	254	251	251	252	255	257	258	261	259	255	253	250	249	249	252	255
17	254	252	249	249	250	253	255	256	259	257	254	251	248	247	247	250	254
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19	251	250	246	245	246	249	252	253	256	254	250	247	244	243	244	248	251
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22	247	245	241	238	238	243	246	249	251	249	244	239	237	235	238	243	247
23	245	243	238	235	236	240	243	246	249	247	242	237	234	232	237	241	245
24	243	242	236	233	233	237	242	244	247	245	240	234	231	230	234	240	243
25	242	240	235	230	230	235	239	243	246	243	237	232	228	227	232	238	242
26	240	238	232	227	228	232	236	241	244	241	235	229	225	224	230	236	240
27	237	235	230	225	224	229	234	238	242	239	232	226	221	221	227	234	237
28	235	234	228	222	222	226	232	236	240	237	229	223	218	218	225	232	235

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29	233	231	225	219	218	223	229	234	238	235	227	220	215	215	222	229	233
30	230	228	222	215	215	220	226	232	236	232	224	216	211	211	219	227	230
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36	215	213	206	196	191	199	209	216	221	216	206	194	188	190	202	211	215
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42	196	194	185	172	167	175	188	198	203	198	186	171	164	167	181	192	196
43	193	191	182	168	162	171	185	194	199	194	182	167	159	164	178	189	193
44	190	188	179	164	158	167	181	191	195	191	178	164	156	160	174	185	190
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50	168	167	155	139	130	141	158	169	174	169	155	139	131	136	151	163	168
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54	153	151	140	122	111	123	142	154	158	153	140	123	115	120	136	149	153
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60	129	127	116	96	85	97	117	130	134	129	116	100	93	98	112	124	129

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61	125	123	112	93	80	92	114	127	130	125	111	96	89	94	109	121	125
62	120	119	108	88	77	89	109	122	126	121	108	93	86	91	105	116	120
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91	17	17	8	6	0	2	2	5	7	5	2	3	3	6	9	16	17
92	2	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	2

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93	1	1	1	0	0	0	1	1	1	1	1	1	0	1	1	1	1
94	1	1	3	0	0	0	2	1	1	1	5	1	0	1	1	1	1
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97	26	26	5	6	0	5	3	25	26	26	7	12	6	9	9	25	26
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105	18	17	3	0	0	0	1	16	18	17	4	1	1	0	4	17	18
106	17	16	3	0	0	0	1	15	17	16	4	1	2	1	4	16	17
107	16	15	2	0	0	0	1	14	16	15	4	1	3	1	3	15	16
108	15	14	2	0	0	0	1	13	15	14	3	1	4	1	3	14	15
109	14	13	2	0	0	0	1	12	14	13	3	0	4	1	2	13	14
110	13	11	1	0	0	0	1	11	13	12	2	1	4	1	2	11	13
111	12	10	1	0	0	0	1	10	13	12	2	0	4	1	1	10	12
112	10	9	1	0	0	0	0	9	12	10	1	1	4	1	1	9	10
113	9	8	1	0	0	0	0	8	11	9	1	1	4	1	1	8	9
114	8	6	0	0	0	0	0	7	10	8	1	1	4	1	0	6	8
115	7	5	0	0	0	0	0	5	8	6	1	0	4	1	0	5	7
116	6	4	0	0	0	0	0	5	7	6	0	1	4	1	0	4	6
117	5	3	0	0	0	0	0	3	6	4	0	0	5	1	0	3	5
118	3	2	0	0	0	0	0	2	5	4	0	0	5	0	0	2	3
119	3	1	0	0	0	0	0	2	4	3	0	0	5	1	0	1	3
120	2	0	0	0	0	0	0	1	3	2	0	0	5	0	0	0	2
121	1	0	0	0	0	0	0	0	2	1	0	0	5	0	0	0	1
122	0	0	0	0	0	0	0	0	2	0	0	0	4	0	0	0	0
123	0	0	0	0	0	0	0	0	1	0	0	0	4	0	0	0	0
124	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0

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125	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0
126	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0
127	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0
128	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
129	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
130	0	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	0
132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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134	0	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	0
136	0	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	0
138	0	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	0
140	0	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	0
142	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
143	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
144	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
146	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
147	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
148	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
149	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
150	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
151	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
152	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
153	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
154	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
155	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
156	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0

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157	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
158	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
159	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
160	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
161	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
162	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
163	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
164	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0
166	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
167	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
168	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
169	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
170	0	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	1	0	0	0	0	0
172	0	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	0
174	0	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	0
176	0	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	0
178	0	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	0
180	0	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	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 *******