

## LM-79-08 Test Report

For

# Beyond LED Technology

(Brand Name: Beyond LED Technology)

## Architectural Flood and Spot Luminaires

Model name(s): BLTSFLD30WAT1A1

Remark: "aaK" in the model name refers to CCT as below:  
40K=4000K,50K=5000K,57K=5700K; This luminaire has three kinds  
of mounting arm as below: Type A, Type B, Type C

Representative (Tested) Model: BLTSFLD30WAT1A1

Model Different: All construction and rating are the same, except  
CCT

Test & Report By:

*Garman Mo*

Engineer: Garman Mo

Date: Jul.21,2017

Update: Sep.14,2017

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.

## Revision Details

Report No. Revision	Revised Item:	Revised Reason	Issue date
GZE1707031-B	Adding 100V Electrical Data	Adding 100V Electrical Data	Jul.21,2017
GZE1707031-B-R			Sep.14,2017

**1.1 Product Information:**

Model Number	BLTSFLD30WAT1A1	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Architectural Flood and Spot Luminaires	
Rated Voltage / Frequency	100 -277Vac, 50/60 Hz	
Nominal Power	30W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K,5000K,5700K	
LED Manufacturer	PHILHIS LUMILEDS	
LED Model	L130-xyy003000W21	
Sample Number	GZE1707031-B1(4000K),B2(5700K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

**Photo**

**SNC-FL06-30WAT1A1-40K Type A**



**SNC-FL06-30WAT1A1-40K Type B**



**SNC-FL06-30WAT1A1-40K Type C**



**1.2 Test Specifications:**

Date of Receipt	Jul.15,2017
Date of Test	Jul.16,2017
Test item	<ol style="list-style-type: none"> <li>1. Total Luminous Flux</li> <li>2. Luminous Distribution Intensity</li> <li>3. Luminous Efficacy</li> <li>4. Correlated Color Temperature</li> <li>5. Color Rendering Index</li> <li>6. Chromaticity Coordinate</li> <li>7. Electrical Parameters</li> </ol>
Reference Standard	<ol style="list-style-type: none"> <li>1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products</li> <li>2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products</li> <li>3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</li> <li>4. CIE 15-2004 Technical Report Colorimetry</li> <li>5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</li> <li>6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</li> </ol>
Reference Work Instruction	QD25

**1.3 Test Methods**

<p><b>1) Photometric and Light Distribution Measurement – Goniophotometer Method:</b>                  Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25° C ± 1° 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.</p>
<p><b>2) Chromaticity Measurement – Sphere-Spectroradiometer Method:</b>                  Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25° C ± 1° 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.</p>
<p><b>3) Electrical Measurements:</b>                  Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25° C ± 1° 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.</p>

**2.1 Electrical, Photometric and Chromaticity Measurements**

*(Refer to Work Instruction QD25)*

<b>Test date</b>	2017-07-16	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	BLTSFLD30WAT1A1		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE170703 1-B1	100.0	60	0.3096	29.33	0.9475	10.73
	120.0	60	0.2489	28.84	0.9654	10.33
	277.0	60	0.1178	28.85	0.8838	14.70
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

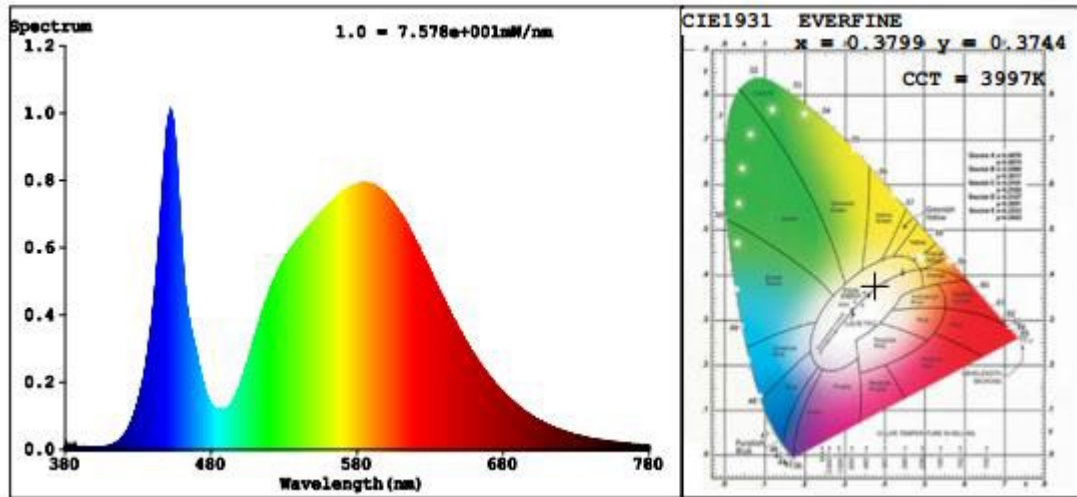
**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	72	R9	0
Frequency (Hz)	60	R2	81	R10	53
CCT (K)	3997	R3	87	R11	66
Duv	-0.0010	R4	72	R12	41
Chromaticity (x, y)	x=0.3799 y=0.3744	R5	70	R13	73
Chromaticity (u', v')	u'=0.2257 v'=0.5005	R6	72	R14	92
Color Rendering Index (CRI)	74.0	R7	83	R15	67
R9	0	R8	56	--	--

**Photometric Measurement - Goniophotometer Method:**

Parameter	Result		DLC V4.2 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	3736.9	3770.0	>=1000(-10%)	
Luminous Efficacy (lm/W)	129.57	130.68	Standard: >= 90(-3%)	Premium: >= 110(-3%)
Most worst Luminous/Highest Watts	129.53			
Zonal lumens in the 0-90° zone (%)	99.9	--	>=85(-3)	
Beam Angle (°)	108.3	--	--	
Center Beam Candle Power (cd)	1434	--	--	

**Spectral Power Distribution & Chromaticity Diagram**

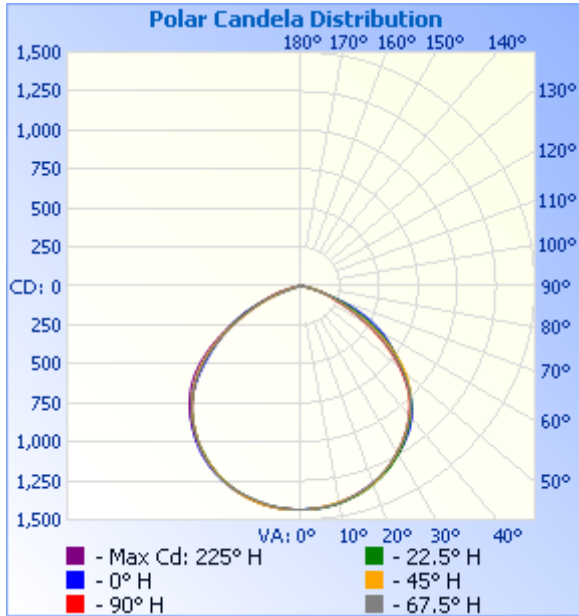


**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,129.8	30.2%
0-40	1,863.2	49.9%
0-60	3,243.2	86.8%
60-90	489.2	13.1%
70-100	129.5	3.5%
90-120	0.2	0%
0-90	3,732.4	99.9%
90-180	4.1	0.1%
0-180	3,736.4	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	136.0	3.6%	90-100	0.0	0%
10-20	392.2	10.5%	100-110	0.0	0%
20-30	601.5	16.1%	110-120	0.2	0%
30-40	733.5	19.6%	120-130	0.6	0%
40-50	757.1	20.3%	130-140	0.9	0%
50-60	622.8	16.7%	140-150	0.9	0%
60-70	359.7	9.6%	150-160	0.7	0%
70-80	114.1	3.1%	160-170	0.5	0%
80-90	15.4	0.4%	170-180	0.2	0%

**Photometric Data**



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
17.0ft	4.96 fc	47.6 ft	46.4 ft
34.0ft	1.24 fc	95.2 ft	92.8 ft
51.0ft	0.55 fc	142.8 ft	139.3 ft
68.0ft	0.31 fc	190.4 ft	185.7 ft
85.0ft	0.20 fc	238.0 ft	232.1 ft
102.0ft	0.14 fc	285.5 ft	278.5 ft

■ Vert. Spread: 108.9°  
■ Horiz. Spread: 107.6°

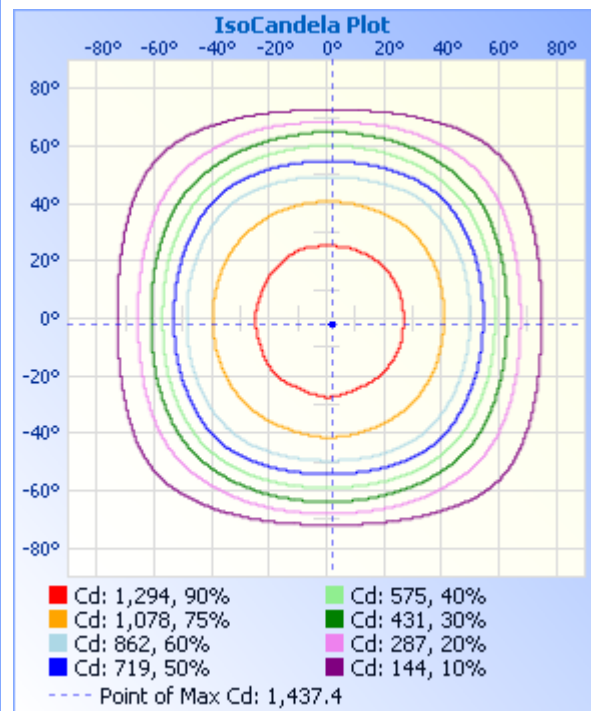
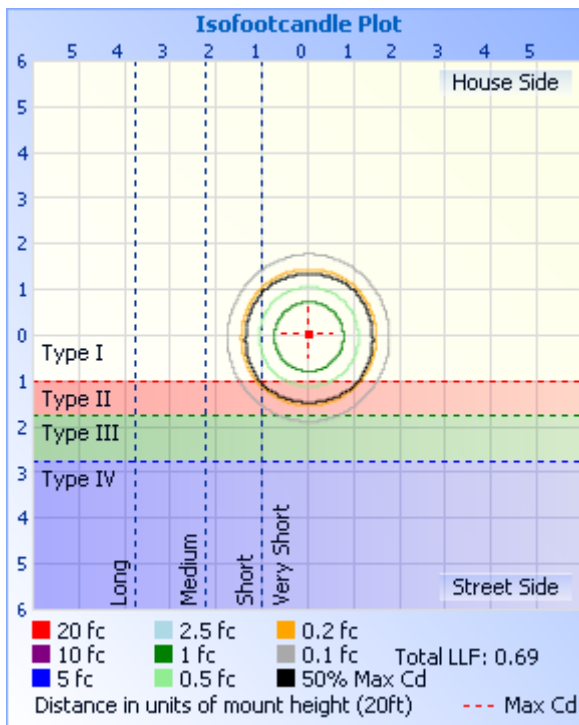




Table--1

UNIT: cd

C(DEG) γ (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338	
0	1434	1434	1434	1434	1434	1434	1434	1434	1434	1434	1434	1434	1434	1434	1434	1434	
5	1431	1429	1432	1428	1429	1430	1425	1428	1426	1429	1428	1431	1432	1430	1436	1430	
10	1419	1414	1418	1416	1411	1415	1406	1412	1412	1414	1412	1414	1418	1417	1422	1411	
15	1394	1393	1393	1394	1381	1390	1383	1381	1381	1384	1385	1389	1394	1391	1397	1389	
20	1358	1359	1357	1356	1345	1353	1349	1342	1345	1348	1349	1350	1362	1356	1360	1361	
25	1311	1314	1309	1305	1301	1306	1295	1292	1296	1294	1305	1303	1318	1307	1307	1314	
30	1248	1253	1249	1248	1244	1246	1234	1231	1233	1236	1249	1243	1259	1244	1249	1253	
35	1172	1186	1181	1178	1180	1173	1164	1163	1162	1162	1174	1170	1187	1172	1172	1175	
40	1086	1101	1102	1096	1101	1092	1085	1080	1078	1077	1079	1080	1100	1086	1087	1086	
45	980	996	1010	993	990	992	987	985	977	973	976	976	985	984	985	983	
50	850	869	894	866	856	866	876	848	836	839	855	845	837	852	862	850	
55	690	709	736	727	724	722	718	681	666	671	698	688	678	691	707	687	
60	517	537	551	581	600	568	530	502	487	489	509	528	538	530	520	510	
65	349	364	371	421	450	404	346	330	315	317	320	361	388	364	334	342	
70	225	231	228	247	252	236	207	206	197	191	177	191	196	199	194	218	
75	136	128	112	105	98.3	100	106	116	115	96.9	77.1	67.3	64.0	72.9	86.8	118	
80	48.1	43.2	45.4	45.0	39.6	42.3	40.1	38.5	40.5	33.5	31.1	26.4	26.6	29.1	35.5	40.5	
85	20.2	15.8	12.6	16.5	16.3	15.0	11.8	14.7	16.7	11.9	7.44	6.87	5.34	7.21	8.55	14.9	
90	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
110	0.00	0.00	0.00	0.15	0.30	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	
115	0.00	0.00	0.00	0.71	1.28	0.51	0.00	0.00	0.05	0.00	0.00	0.26	0.57	0.30	0.00	0.00	
120	0.10	0.00	0.10	0.87	1.90	0.81	0.30	0.30	0.25	0.20	0.15	0.46	0.57	0.46	0.20	0.15	
125	0.35	0.41	0.51	1.43	0.82	1.17	0.51	0.61	0.50	0.46	0.41	0.71	0.42	0.76	0.40	0.20	
130	0.55	0.56	0.51	1.43	2.11	1.37	0.61	0.96	0.66	0.76	0.77	1.07	1.44	1.22	0.71	0.56	
135	0.85	0.76	0.61	1.63	2.16	1.52	0.81	1.21	0.96	0.97	1.02	1.22	1.44	1.52	0.91	0.86	
140	1.06	1.12	0.86	1.63	2.06	1.63	1.01	1.21	1.16	1.12	1.22	1.43	1.23	1.73	1.11	0.96	
145	1.21	1.12	1.17	1.68	2.00	1.63	1.16	1.21	1.36	1.22	1.38	1.73	1.95	2.03	1.32	1.11	
150	1.21	1.12	1.53	1.89	2.06	1.93	1.27	1.37	1.36	1.27	1.43	1.73	1.90	1.83	1.87	1.22	
155	1.31	1.17	1.68	2.04	2.21	1.93	1.52	1.52	1.31	0.01	1.43	1.73	1.70	1.73	1.97	1.42	
160	1.11	1.22	1.94	1.89	2.06	1.83	1.67	1.62	1.31	1.37	1.43	1.84	1.59	1.58	1.72	1.42	
165	1.16	1.27	2.04	1.84	1.90	1.83	1.72	1.87	1.66	1.42	1.53	1.94	1.65	1.63	1.77	1.77	
170	1.36	1.57	2.35	2.04	2.06	2.08	2.23	1.92	2.01	1.73	1.94	2.50	2.57	2.44	2.38	2.53	
175	1.56	1.88	2.60	2.24	2.72	2.29	2.68	2.07	1.91	1.73	2.04	2.65	2.42	2.80	2.43	2.78	
180	1.56	1.98	2.65	2.24	2.98	2.44	2.63	1.92	1.71	1.57	1.99	2.60	2.26	2.59	2.43	2.58	

**BUG Rating: B2-U1-G0**

IESNA Luminaire Flux Distribution Table:

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	564.6	15.1
FM - Front-Medium(30-60)	1066.1	28.5
FH - Front-High(60-80)	251.96	6.7
FVH - Front-Very High(80-90)	9.0654	0.2
Total Forward Light	1893.9	50.7

BL - Back-Low(0-30)	565.17	15.1
BM - Back-Medium(30-60)	1047.8	28.0
BH - Back-High(60-80)	221.78	5.9
BVH - Back-Very High(80-90)	6.3773	0.2
Total Back Light	1843	49.3

UL - Uplight-Low(90-100)	0.00017231	0.0
UH - Uplight-High(100-180)	4.0405	0.1
Total Up Light	4.0407	0.1

BUG(Back,Up,Glare) Rating	B2-U1-G0
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Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	1841.1	1.8786	1843
Street Side	1891.7	2.1621	1893.9

**2.2 Electrical, Photometric and Chromaticity Measurements**

*(Refer to Work Instruction QD25)*

<b>Test date</b>	2017-07-16	<b>Test Ambient:</b>	25.2 ° C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	BLTSFLD30WAT1A1		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE170703 1-B2	100.0	60	0.3112	29.71	0.9546	10.38
	120.0	60	0.2461	29.18	0.9879	10.17
	277.0	60	0.1190	29.20	0.8857	14.56
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

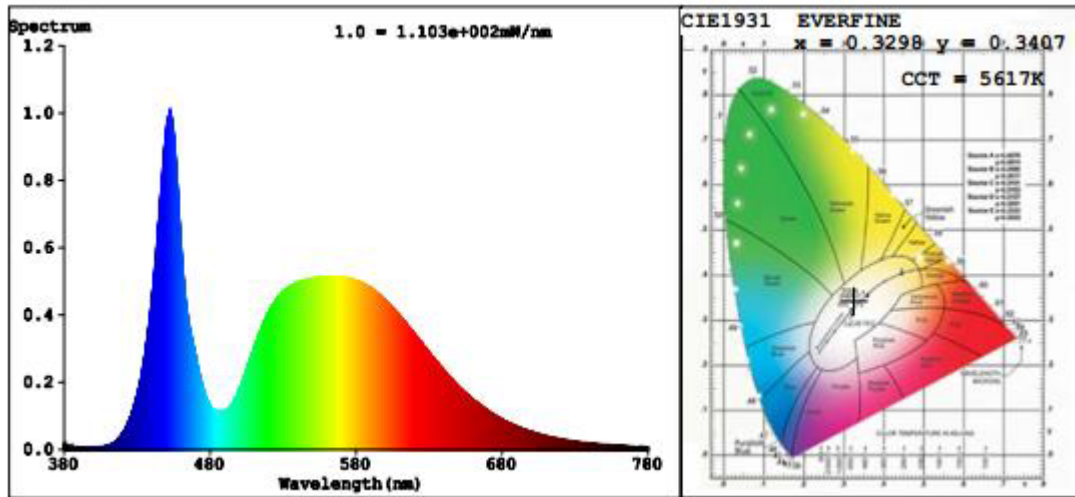
**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	73	R9	0
Frequency (Hz)	60	R2	80	R10	49
CCT (K)	5617	R3	82	R11	72
Duv	0.0010	R4	76	R12	43
Chromaticity (x, y)	x=0.3298 y=0.3407	R5	74	R13	75
Chromaticity (u', v')	u'=0.2052 v'=0.4770	R6	71	R14	89
Color Rendering Index (CRI)	75.2	R7	84	R15	70
R9	0	R8	62	--	--

**Photometric Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result		DLC V4.2 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	3860	3889	>=1000(-10%)	
Luminous Efficacy (lm/W)	132.29	133.20	Standard: >=	Premium: >=
Most worst Luminous/Highest Watts	132.19		90(-3%)	110(-3%)

**Spectral Power Distribution & Chromaticity Diagram**



**2.3 Performance Assessment:**

Model name	CCT(K)	Total Luminous (lm)	Power (W)	Luminous Efficacy (lm/W)
BLTSFLD30WAT1A1	4000K	3736.9	28.84	129.57
BLTSFLD30WAT1A2	5000K	3819 <sup>*1</sup>	29.01 <sup>*2</sup>	131.64 <sup>*3</sup>
BLTSFLD30WAT1A3	5700K	3860	29.18	132.29

- \*1: This value is calculated and the calculation formula is as below:  
 $3819 = (3860 - 3736.9) / 3 * 2 + 3736.9$
- \*2: This value is calculated and the calculation formula is as below:  
 $29.01 = (28.84 + 29.18) / 2$
- \*3: This value is calculated and the calculation formula is as below:  
 $131.64 = 3819 / 29.01$

**3. Test Equipment**

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-331	2 meter Integrating Sphere	2017-07-01	2018-06-30
ST-R-327	Spectral analysis system HAAS-2000	2017-07-01	2018-06-30
D204	Standard Lamp	2017-07-12	2018-07-11
PF2010	Power Meter for Integrating Sphere	2017-07-01	2018-06-30
GO-R5000	Goniophotometer system	2017-07-01	2018-06-30
D908S	Standard Lamp	2017-07-12	2018-07-11
PF210	Power Meter for Goniophotometer	2017-07-07	2018-07-06

Expand Uncertainty:

Photometric Measurement (Sphere):2.04%, k=2

Chromaticity Measurement(Sphere):28.8K, k=2

Photometric Measurement(Goniophotometer):2.36%, k=2

**\*\*\*\*\* END OF REPORT \*\*\*\*\***