

VISUAL COMFORT GROUP TEST REPORT

SCOPE OF WORK

Electrical and Photometric tests as required to the IESNA LM-79 test standard.

MODEL NUMBER
700KLE6xx-LED930

REPORT NUMBER
104203293CHI-004

ISSUE DATE
January 7, 2020

REVISION DATE
None

DOCUMENT CONTROL NUMBER
TBD
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REPORT DATE: January 7, 2020

TEST REPORT

TEST OF ONE KLEE 6-LIGHT CHANDELIER

MODEL NO. 700KLE6XX-LED930
LED MODEL NO. SAMSUNG SPMWH1228FD5WWS2
DRIVER MODEL NO. LTF DA45W1200C2036-3001

RENDERED TO:

VISUAL COMFORT GROUP
7400 LINDER AVE.
SKOKIE IL 60077

AUTHORIZATION

The testing performed was authorized by signed quote number Qu-00981438-2.

STANDARDS USED

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting
ANSI NEMA ANSLG C78.377: 2015: Specifications of the Chromaticity of Solid State Lighting Products

DESCRIPTION OF SAMPLE

The client submitted one production sample of model number 700KLE6xx-LED930. The sample was received by Intertek on December 23, 2019 in undamaged condition and one sample was tested as received. The sample designation was AH12232019065911-004.

DATE OF TESTS

January 3, 2020

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SUMMARY

MODEL NO:	700KLE6xx-LED930
DESCRIPTION:	Klee 6-Light Chandelier

CRITERIA	RESULTS	
	INTEGRATING SPHERE	GONIOPHOTOMETER
Lumen Output (lumens)	3490.3	3339.7
Input Power (W) @ 120 (VAC)	45.57	45.56
Lumen Efficacy (lm/W)	76.6	73.3
Input Power Factor @ 120 (VAC)	0.992	0.996

CRITERIA	RESULTS
Input Current ATHD (%) @ 120 (VAC)	12.77
Correlated Color Temperature (K)	2931
Color Rendering Index - Ra	94.0
Color Rendering - R9	63.9
DUV	-0.0015
Chromaticity Coordinate (x)	0.440
Chromaticity Coordinate (y)	0.401
Chromaticity Coordinate (u')	0.254
Chromaticity Coordinate (v')	0.521

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EQUIPMENT LIST

EQUIPMENT USED	MODEL NO.	CONTROL NO.	LAST CAL DATE	CAL DUE DATE
Yokogawa Power Meter	WT210	146919	7/1/2019	7/1/2020
Omega Thermometer	DPI8-C24	146920	10/3/2019	10/3/2020
LSI High Speed Mirror Goniometer	6440T	146928	VBV	VBV
Newport Thermohygrometer	iServer	146956	10/11/2019	10/11/2020
Elgar, AC Power Supply	CW1251	146111	VBV	VBV
Labsphere Spectroradiometer	CDS1100	CHI0091	VBV	VBV
3 Meter Sphere	SPR600	CHI0088	VBV	VBV
Elgar AC Power Supply	CW1251	146112	VBV	VBV
Sorenson DC Power Supply	XFR150-8	146846	VBV	VBV
Newport Humidity Recorder	iTHX-SD	146382	4/17/2019	4/17/2020
Yokogawa Power Meter	WT1600	146769	4/3/2019	4/3/2020
Extech K Temperature Meter	SD200	CHI0207	4/3/2019	4/3/2020

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TEST METHODS

SEASONING IN SAMPLE ORIENTATION - LED PRODUCTS

No seasoning was performed in accordance with IESNA LM-79.

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - INTEGRATING SPHERE METHOD

A Spectroradiometer and integrating sphere was used to measure correlated color temperature, chromaticity coordinates, and the color rendering index for each SSL unit.

Ambient temperature was measured at a position inside the sphere. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation. Each SSL unit was allowed to stabilize for at least thirty minutes before measurements were made. Stabilization procedures to LM-79 were followed. Electrical measurements including voltage, current, and power were measured using a power analyzer.

The calibration of the sphere photometer-spectroradiometer system is traceable to the National Institute of Standards and Technology.

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - DISTRIBUTION METHOD

A Type C Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for the SSL sample.

Ambient temperature was measured equal to the height of the sample mounted on the goniometer equipment. The SSL sample was operated on the client provided driver at rated input volts in its designated orientation. The SSL sample was allowed to stabilize for at least thirty minutes before measurements were made. Stabilization procedures to LM-79 were followed. Electrical measurements including voltage, current, and power were measured using a power analyzer.

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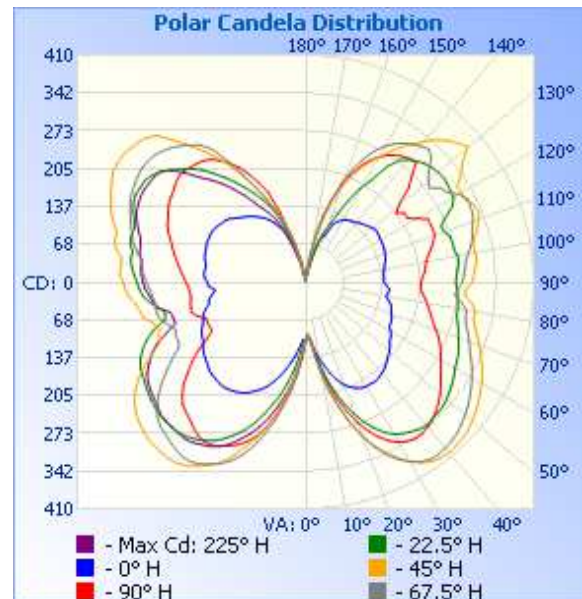
RESULTS OF TESTS

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - DISTRIBUTION METHOD (25°C +/- 1°C)

INTERTEK CONTROL NO.	BASE POSITION	INPUT VOLTAGE (VAC)	INPUT CURRENT (mA)	INPUT POWER (W)	INPUT POWER FACTOR	LIGHT OUTPUT (lm)	LUMEN EFFICACY (lm/W)
AH12232019065911-004	Select One	120.0	381.0	45.56	0.996	3339.7	73.3

INTENSITY SUMMARY - CANDELAS

Angle	0	22.5	45	67.5	90
0	104	104	104	104	104
5	110	110	112	110	104
10	139	156	173	172	160
15	170	207	236	235	218
20	196	253	292	297	268
25	211	291	340	344	309
30	218	317	374	375	334
35	219	330	396	391	345
40	214	337	402	391	342
45	205	335	399	386	331
50	196	330	391	374	316
55	185	321	379	360	297
60	176	310	365	345	280
65	170	303	349	328	266
70	164	292	332	313	249
75	159	283	316	299	233
80	147	278	310	293	222
85	151	274	288	269	210
90	141	270	300	282	208
95	141	274	306	288	215
100	144	277	310	296	220
105	149	274	314	310	233
110	152	265	331	321	247
115	154	277	333	327	248
120	155	306	324	318	230
125	157	311	342	296	217
130	154	310	381	288	219
135	148	303	362	320	269
140	141	289	333	321	291
145	136	255	299	306	280
150	129	196	259	284	261
155	115	137	223	246	230
160	88	96	177	192	187
165	58	46	112	126	122
170	17	20	34	58	48
175	2	2	2	2	2
180	2	2	2	2	2



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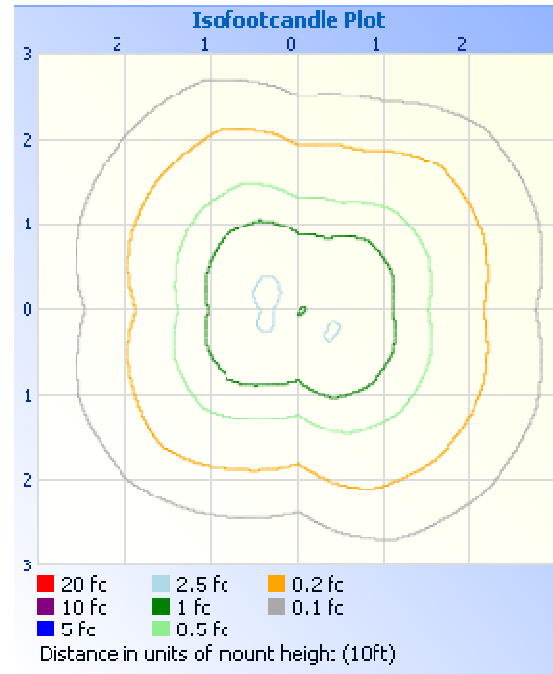
TEST REPORT

RESULTS OF TESTS

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - DISTRIBUTION METHOD (25°C +/- 1°C)

MOUNTING HEIGHT: 10ft	
ILLUMINANCE - CONE OF LIGHT	ISOILLUMINATION PLOT

Illuminance at a Distance		
	Center Beam fc	Beam Width
1.7ft	36.0 fc	
3.3ft	9.54 fc	
5.0ft	4.16 fc	
6.7ft	2.31 fc	
8.3ft	1.51 fc	
10.0ft	1.04 fc	



ZONAL LUMEN SUMMARY AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	216.1	6.5
0-40	423.2	12.7
0-60	951.7	28.5
60-90	814.9	24.4
70-100	827.2	24.8
90-120	857.1	25.7
0-90	1766.6	52.9
90-180	1573.1	47.1
0-180	3339.7	100.0

ZONE	LUMENS	% LUMINAIRE
0-10	13.9	0.4
10-20	64.4	1.9
20-30	137.7	4.1
30-40	207.1	6.2
40-50	254.2	7.6
50-60	274.3	8.2
60-70	271.8	8.1
70-80	269.3	8.1
80-90	273.8	8.2
90-100	284.1	8.5
100-110	288.7	8.6
110-120	284.3	8.5
120-130	258.4	7.7
130-140	215.2	6.4
140-150	146.9	4.4
150-160	74.4	2.2
160-170	20.4	0.6
170-180	0.8	0.0

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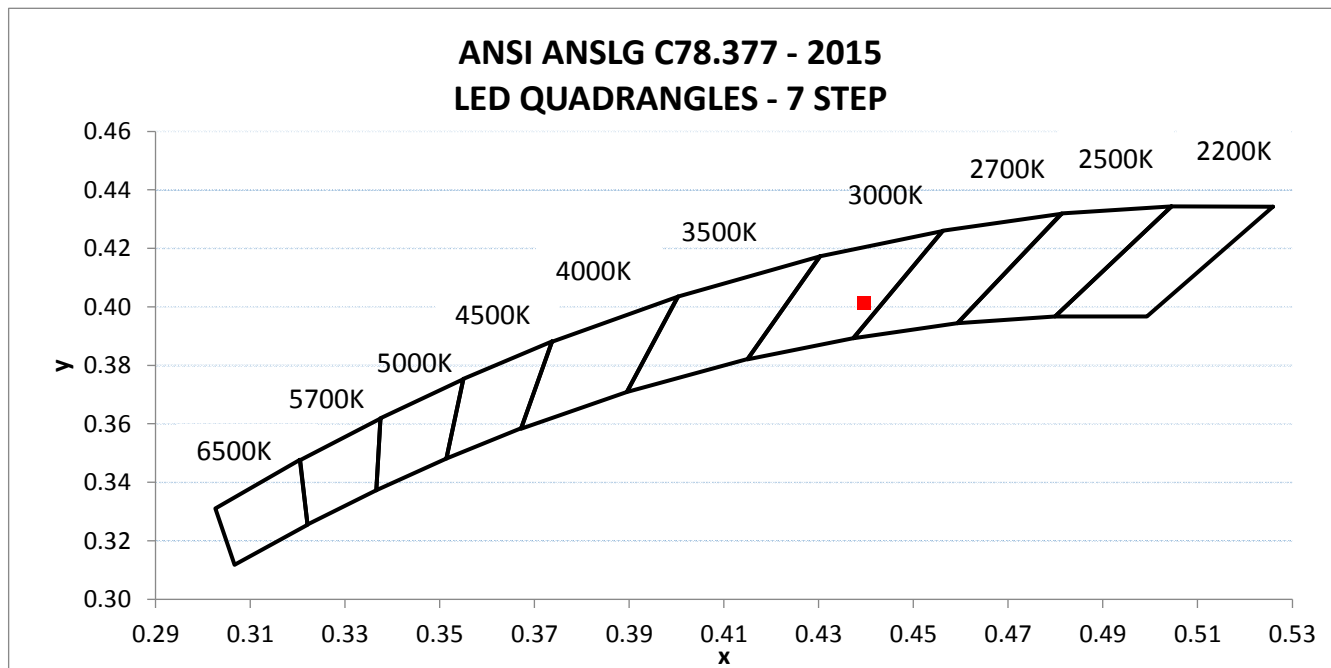
RESULTS OF TESTS

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - INTEGRATING SPHERE METHOD (25°C +/- 1°C)

INTERTEK CONTROL NO.	BASE POSITION	INPUT VOLTAGE (VAC)	INPUT CURRENT (mA)	INPUT POWER (W)	INPUT POWER FACTOR ()	INPUT CURRENT ATHD (%)
AH12232019065911-004	Select One	120.02	382.90	45.57	0.992	12.77

LIGHT OUTPUT (lm)	LUMEN EFFICACY (lm/W)	CORRELATED COLOR TEMPERATURE - CCT (K)	CRI - Ra	CRI - R9	DUV
3490.3	76.6	2931	94.0	63.9	-0.0015

CIE 1931 CHROMATICITY COORDINATE (x)	CIE 1931 CHROMATICITY COORDINATE (y)	CIE 1976 CHROMATICITY COORDINATE (u')	CIE 1976 CHROMATICITY COORDINATE (v')
0.440	0.401	0.254	0.521



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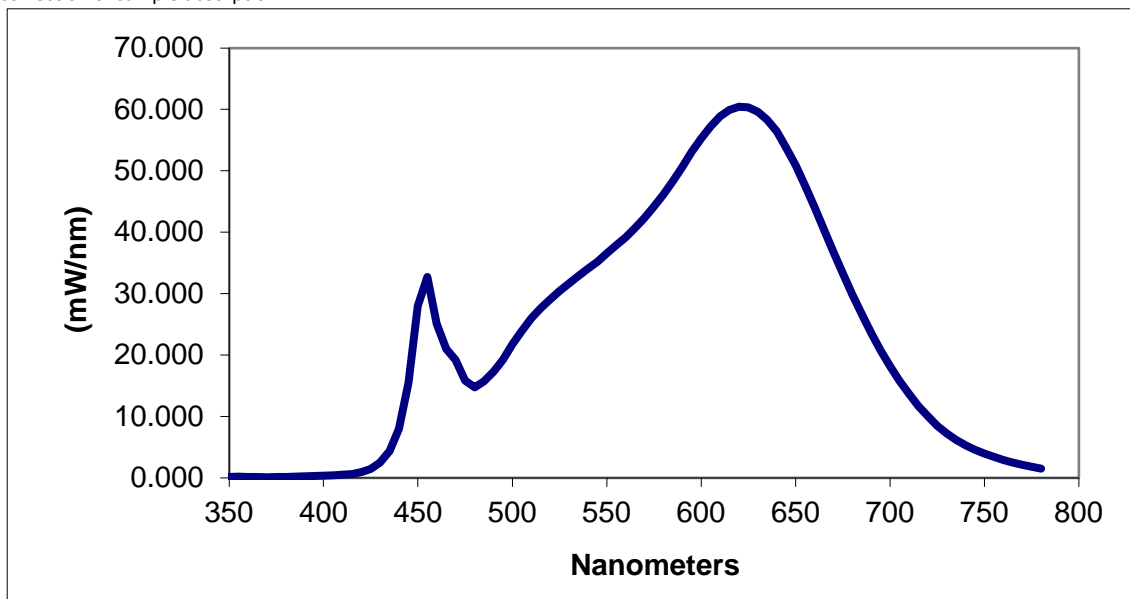
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RESULTS OF TESTS

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - INTEGRATING SPHERE METHOD (25°C +/- 1°C)

SPECTRAL DISTRIBUTION OVER VISIBLE WAVELENGTHS*							
nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.142	460	25.123	570	42.335	680	29.867
355	0.179	465	20.992	575	44.143	685	26.701
360	0.144	470	19.207	580	46.132	690	23.608
365	0.158	475	15.824	585	48.300	695	20.790
370	0.133	480	14.710	590	50.604	700	18.154
375	0.136	485	15.743	595	53.056	705	15.825
380	0.134	490	17.264	600	55.257	710	13.717
385	0.184	495	19.199	605	57.179	715	11.716
390	0.251	500	21.763	610	58.860	720	10.028
395	0.304	505	23.912	615	59.886	725	8.492
400	0.376	510	25.983	620	60.466	730	7.224
405	0.404	515	27.617	625	60.323	735	6.177
410	0.492	520	29.065	630	59.590	740	5.302
415	0.634	525	30.433	635	58.300	745	4.561
420	0.927	530	31.639	640	56.433	750	3.977
425	1.464	535	32.843	645	53.753	755	3.436
430	2.489	540	34.071	650	50.908	760	2.921
435	4.345	545	35.176	655	47.613	765	2.503
440	7.979	550	36.552	660	44.046	770	2.126
445	15.443	555	37.847	665	40.486	775	1.810
450	27.980	560	39.171	670	36.794	780	1.524
455	32.722	565	40.692	675	33.337		

*Without correction of sample absorption.



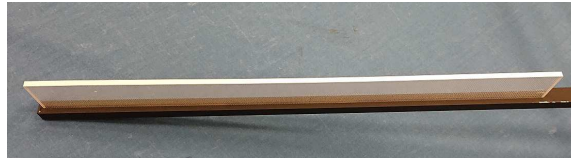
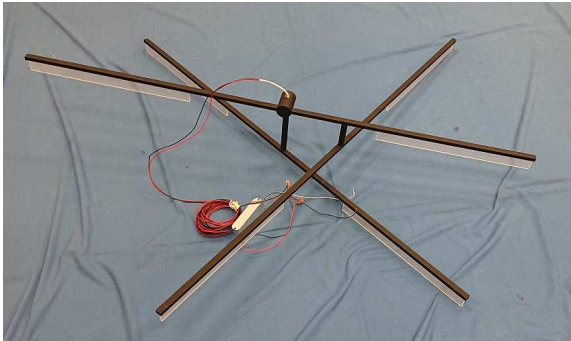
End Of Test Results

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PICTURES



CONCLUSION

The results tabulated in this report are representative of the actual test samples submitted for this report only. The data is provided to the client for further evaluation. Compliance to the referenced specification requirements was not determined in this report.

In Charge Of Tests:

Timothy Quigley
Project Engineer
Lighting Division

Report Reviewed By:

Jeffrey Davis
N.A. Technical Lead
Lighting Division

Attachments: IES File

REVISION HISTORY

JOB NUMBER	DATE OF REVISION	PROJECT HANDLER	REVIEWED BY	REVISION NOTE
None				