

VISUAL COMFORT GROUP TEST REPORT

SCOPE OF WORK

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

MODEL NUMBER

700TDHNE13**-LED930

REPORT NUMBER

104206403CHI-054

ISSUE DATE

March 4, 2020

REVISION DATE

None

DOCUMENT CONTROL NUMBER

TBD

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TEST REPORT

TEST OF ONE HANEA GRANDE PENDANT

MODEL NO. 700TDHNE13**-LED930
LED MODEL NO. SAMSUNG SPMWH1228FD7WAVXXX
DRIVER MODEL NO. LTF DA32W900C2036-3001

RENDERED TO:

VISUAL COMFORT GROUP
7400 LINDER AVE.
SKOKIE IL 60077

STATEMENT OF LIMITATIONS

NVLAP Lab Code 600186-0. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

AUTHORIZATION

The testing performed was authorized by signed quote number Qu-01040682-1.

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 700TDHNE13**-LED930. The sample was received by Intertek on March 4, 2020 in undamaged condition and one sample was tested as received. The sample designation was AH03042020081521-001.

DATE OF TESTS

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SUMMARY

MODEL NO:	700TDHNE13**-LED930
DESCRIPTION:	Hanea Grande Pendant

CRITERIA	RESULTS	
	INTEGRATING SPHERE	GONIOPHOTOMETER
Lumen Output (lumens)	1539.1	1494.1
Input Power (W) @ 120 (VAC)	33.87	33.88
Lumen Efficacy (lm/W)	45.4	44.1
Input Power Factor @ 120 (VAC)	0.977	0.993

CRITERIA	RESULTS
Input Current ATHD (%) @ 120 (VAC)	21.38
Correlated Color Temperature (K)	2717
Color Rendering Index - Ra	94.1
Color Rendering - R9	70.5
DUV	-0.0014
Chromaticity Coordinate (x)	0.456
Chromaticity Coordinate (y)	0.406
Chromaticity Coordinate (u')	0.262
Chromaticity Coordinate (v')	0.525

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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	146957	12/2/2019	12/2/2020
Pacific, AC Power Supply	118-ACX	CHI0153	VBV	VBV
Labsphere Spectroradiometer	CDS2600	CHI0539	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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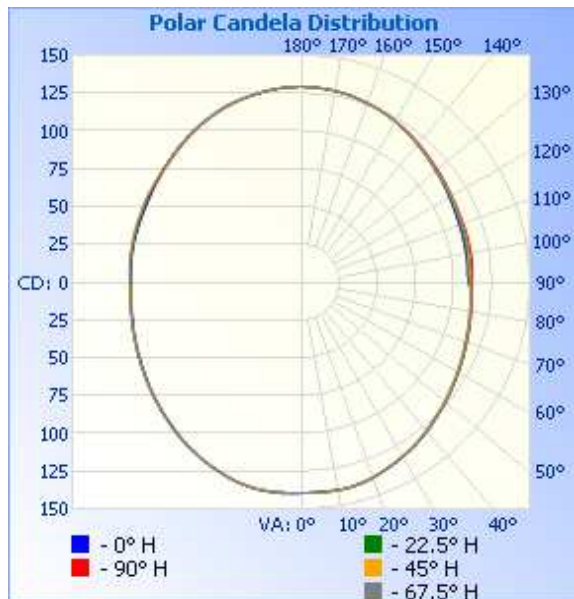
RESULTS OF TESTS

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)
AH03042020081521-001	Up/Down	120.1	284.0	33.88	0.993	1494.1	44.1

INTENSITY SUMMARY - CANDELAS

Angle	0	22.5	45	67.5	90
0	140	140	140	140	140
5	139	140	140	140	140
10	140	140	140	140	140
15	139	139	139	139	139
20	138	137	137	138	138
25	136	135	135	136	136
30	133	133	133	133	133
35	131	130	131	131	131
40	129	128	128	128	129
45	126	125	125	126	126
50	123	123	123	124	124
55	121	120	121	121	121
60	119	118	119	119	119
65	117	116	117	117	117
70	115	115	115	116	116
75	114	114	114	114	114
80	113	112	113	113	113
85	112	111	112	112	112
90	110	110	111	112	112
95	110	110	111	112	113
100	110	110	111	112	113
105	110	111	112	112	113
110	110	111	112	112	113
115	111	112	113	113	114
120	112	113	114	114	114
125	114	114	114	115	115
130	115	115	116	116	117
135	117	117	117	118	118
140	119	119	119	119	120
145	121	121	121	121	122
150	123	123	123	123	124
155	125	125	125	125	125
160	126	126	126	126	126
165	128	127	127	127	128
170	128	128	128	128	128
175	129	129	129	129	129
180	129	129	129	129	129



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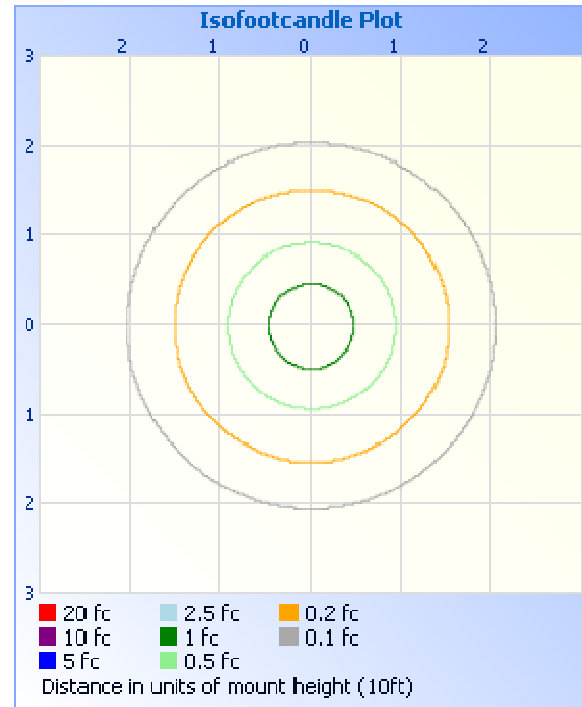
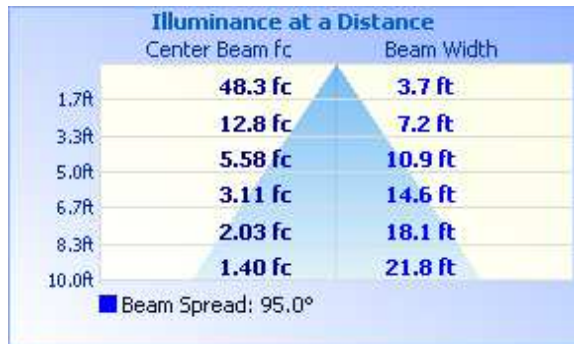
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RESULTS OF TESTS

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

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



ZONAL LUMEN SUMMARY AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	115.4	7.7
0-40	197.6	13.2
0-60	403.7	27.0
60-90	359.4	24.1
70-100	365.0	24.4
90-120	353.6	23.7
0-90	763.1	51.1
90-180	731.0	48.9
0-180	1494.1	100.0

ZONE	LUMENS	% LUMINAIRE
0-10	13.3	0.9
10-20	39.4	2.6
20-30	62.7	4.2
30-40	82.2	5.5
40-50	97.4	6.5
50-60	108.7	7.3
60-70	116.3	7.8
70-80	120.8	8.1
80-90	122.2	8.2
90-100	122.0	8.2
100-110	119.0	8.0
110-120	112.6	7.5
120-130	103.5	6.9
130-140	91.3	6.1
140-150	76.4	5.1
150-160	57.8	3.9
160-170	36.1	2.4
170-180	12.3	0.8

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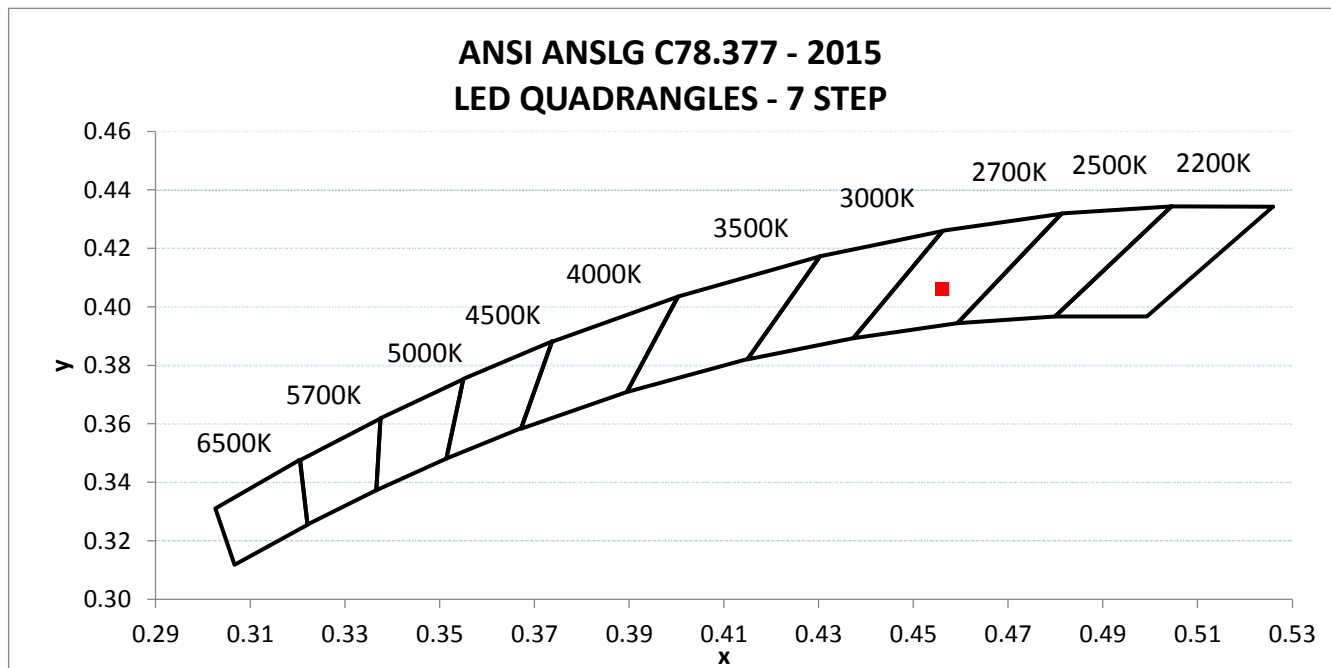
RESULTS OF TESTS

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 (%)
AH03042020081521-001	Up/Down	120.01	288.77	33.87	0.977	21.38

LIGHT OUTPUT (lm)	LUMEN EFFICACY (lm/W)	CORRELATED COLOR TEMPERATURE - CCT (K)	CRI - Ra	CRI - R9	DUV
1539.1	45.4	2717	94.1	70.5	-0.0014

CIE 1931 CHROMATICITY COORDINATE (x)	CIE 1931 CHROMATICITY COORDINATE (y)	CIE 1976 CHROMATICITY COORDINATE (u')	CIE 1976 CHROMATICITY COORDINATE (v')
0.456	0.406	0.262	0.525



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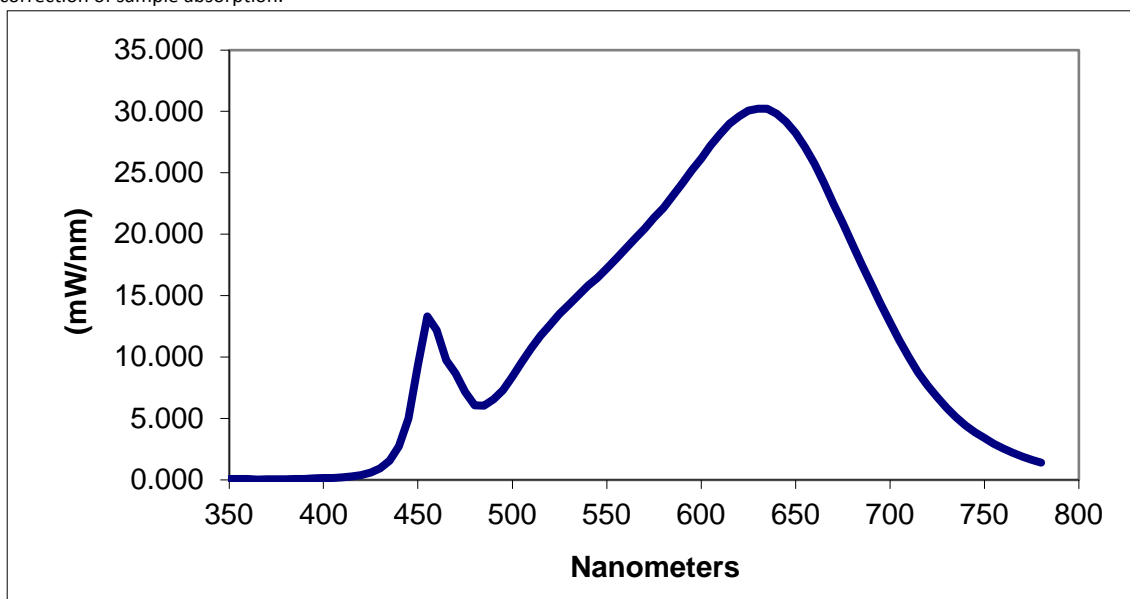
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RESULTS OF TESTS

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	0.065	460	12.190	570	20.436	680	19.195
355	0.068	465	9.742	575	21.336	685	17.556
360	0.068	470	8.662	580	22.142	690	15.931
365	0.038	475	7.172	585	23.117	695	14.350
370	0.048	480	6.071	590	24.130	700	12.808
375	0.048	485	6.042	595	25.181	705	11.351
380	0.053	490	6.550	600	26.141	710	9.979
385	0.065	495	7.301	605	27.213	715	8.728
390	0.084	500	8.416	610	28.143	720	7.660
395	0.115	505	9.589	615	28.977	725	6.750
400	0.140	510	10.719	620	29.588	730	5.864
405	0.162	515	11.743	625	30.056	735	5.093
410	0.213	520	12.636	630	30.227	740	4.437
415	0.279	525	13.511	635	30.198	745	3.883
420	0.387	530	14.272	640	29.801	750	3.396
425	0.587	535	15.036	645	29.131	755	2.930
430	0.941	540	15.805	650	28.237	760	2.562
435	1.548	545	16.425	655	27.079	765	2.223
440	2.726	550	17.211	660	25.718	770	1.900
445	5.005	555	17.986	665	24.182	775	1.631
450	9.279	560	18.835	670	22.482	780	1.411
455	13.318	565	19.643	675	20.911		

*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:

Jeff Davis
N.A. Technical Lead
Lighting Division

Attachments: IES File

REVISION HISTORY

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