REPORT

545 E. Algonquin Rd., Arlington Heights, IL 60005

Project No. G101518786 March 9, 2015

REPORT NO. 101518786CHI-093

TEST OF ONE LED 12VAC TRACK HEAD

MODEL NO. 700FJBRK8303506S
LED MODEL NO. CITIZEN CLU024-1203B8-303M1A2

RENDERED TO

GENERATION BRANDS
7400 LINDER AVE.
SKOKIE, IL 60077

TEST: Electrical and Photometric tests as required to the IESNA test standard.

STATEMENT OF LIMITATION: 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 500506211.

STANDARDS USED: The following American National Standards or Illuminating Engineering Society of North America Test Guides were used in part or totally to test each specimen:

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

ANSI NEMA ANSLG C78.377: 2012: Specifications of the Chromaticity of Solid State Lighting Products

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number 700FJBRK8303506S. The sample was received by Intertek on February 23, 2015, in undamaged condition and one sample was tested as received. The sample designation was 02232015025607.

DATES OF TESTS: February 27, 2015 through March 4, 2015.

SUMMARY

Model No.:	700FJBRK8303506S
Description:	LED 12VAC Track Head

	Result	
Criteria	Sphere	Goniometer
Total Lumen Output (Lumens)	737.1	731.0
Total Power (W)	15.14	14.98
Luminaire Efficacy (LPW)	48.69	48.8

Criteria	Result
Power Factor	0.711
Current ATHD %	70.14
Correlated Color Temperature (CCT - K)	2944
Color Rendering Index (CRI - Ra)	82.5
Color Rendering Index (CRI - R9)	3.8
DUV	0.001
Chromaticity Coordinate (x)	0.443
Chromaticity Coordinate (y)	0.409
Chromaticity Coordinate (u')	0.252
Chromaticity Coordinate (v')	0.524

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU
3 Meter Sphere	SPR600	CHI0088	VBU	VBU
Elgar AC Power Supply	CW1251M	146112	VBU	VBU
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU
Newport Humidity Recorder	iTHX-SD	146382	07/02/14	07/02/15
Yokogawa Power Meter	WT1600	146770	04/10/14	04/10/15
Omega Temperature Meter	MDSi8	146139	04/02/14	04/02/15
Yokogawa Power Meter	WT210	146919	07/16/14	07/16/15
Omega Thermometer	DPI8-C24	146920	10/09/14	10/09/15
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU
Newport Hygrometer	iServer	146956	01/06/15	01/06/16
Elgar, AC Power Supply	CW1251P	146918	VBU	VBU
Cole-Parmer Triple Timer	94440-00	CHI0041	04/01/14	04/01/15

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 Labsphere Model CDS 1100 CCD Array Spectroradiometer and Three Meter 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. Electrical measurements including voltage, current, and power were measured using the Xitron or Yokogawa 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 LSI Type C High Speed Model 6440 Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for each sample.

Ambient temperature was measured equal to the height of the sample mounted on the Goniometer equipment. Each sample was operated at input rated voltage in its designated orientation. Each sample was allowed to stabilize for at least thirty minutes before measurements were made. Electrical measurements including voltage, current, and power were measured using the Xitron or Yokogawa Power Analyzer.

Some graphics were created with Photometrics Plus software.

RESULTS OF TEST

Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) - Integrating Sphere Method

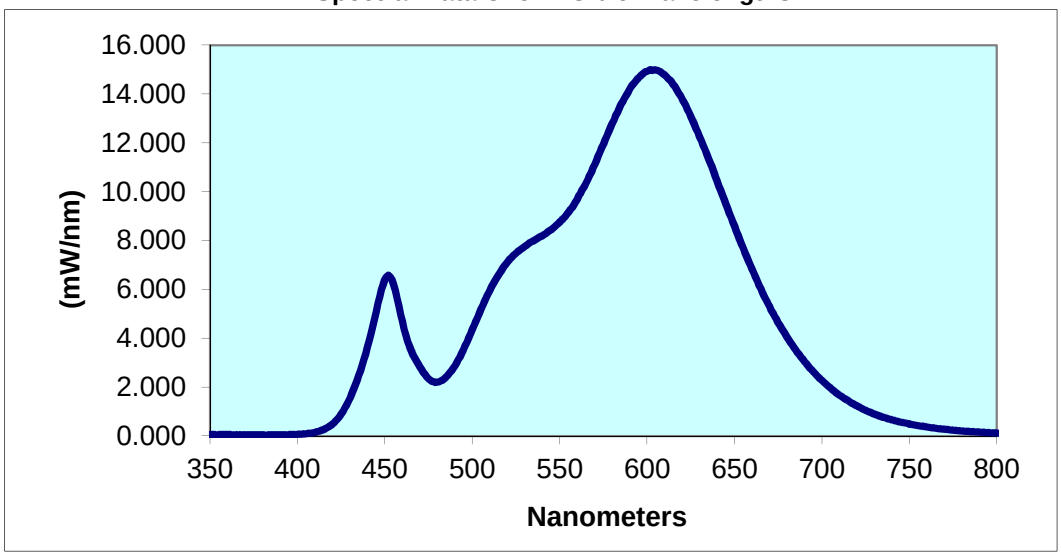
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
02232015025607	UP	12.0	1773	15.14	0.711	70.14	737.1	48.69

Correlated Color Temperature (K)	CRI -Ra	CRI -R9	DUV	CIE 31' Chromaticity Coordinate	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
2944	82.5	3.8	0.001	0.443	0.409	0.252	0.524

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.05	440	3.626	530	7.766	620	13.79	710	1.672
355	0.049	445	5.092	535	7.988	625	13.08	715	1.438
360	0.052	450	6.417	540	8.193	630	12.25	720	1.228
365	0.049	455	6.204	545	8.449	635	11.36	725	1.049
370	0.043	460	4.68	550	8.759	640	10.44	730	0.898
375	0.042	465	3.504	555	9.165	645	9.499	735	0.767
380	0.039	470	2.831	560	9.694	650	8.567	740	0.658
385	0.035	475	2.338	565	10.35	655	7.676	745	0.566
390	0.041	480	2.198	570	11.12	660	6.832	750	0.49
395	0.048	485	2.417	575	11.94	665	6.023	755	0.423
400	0.061	490	2.872	580	12.79	670	5.294	760	0.366
405	0.092	495	3.551	585	13.56	675	4.635	765	0.316
410	0.153	500	4.362	590	14.21	680	4.047	770	0.272
415	0.269	505	5.192	595	14.65	685	3.515	775	0.235
420	0.491	510	5.948	600	14.93	690	3.04	780	0.202
425	0.893	515	6.598	605	14.98	695	2.635		
430	1.543	520	7.111	610	14.78	700	2.266		
435	2.472	525	7.492	615	14.38	705	1.949		

Spectral Data Over Visible Wavelengths



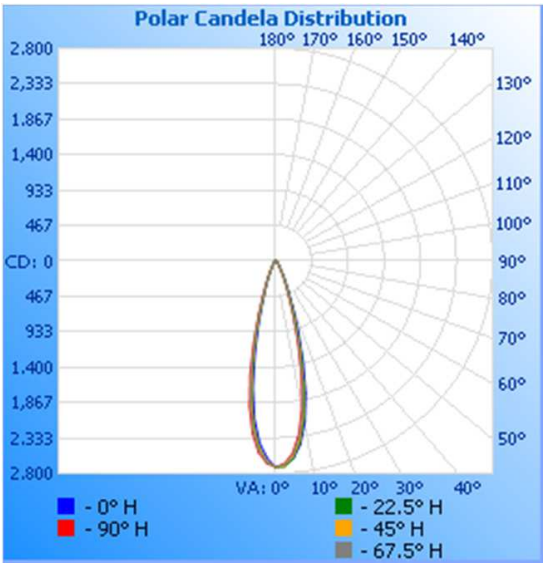
RESULTS OF TEST (cont'd)

Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Absolute Luminous Flux (Lumens)	Lumen Efficacy (Lumens Per Watt)
02232015025607	UP	12.1	1709	14.98	0.726	731.0	48.8

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	2715	2715	2715	2715	2715
5	2613	2610	2584	2560	2534
10	2158	2101	2057	2001	1948
15	1364	1274	1202	1143	1095
20	648	586	531	503	489
25	300	273	254	243	238
30	139	123	119	116	111
35	76	72	70	72	70
40	53	52	51	52	50
45	36	35	36	36	35
50	24	23	25	26	25
55	16	16	18	18	17
60	10	10	12	12	11
65	6	6	6	7	6
70	3	3	4	4	3
75	1	1	2	2	1
80	0	0	0	0	0
85	0	0	0	0	0
90	0	0	0	0	0

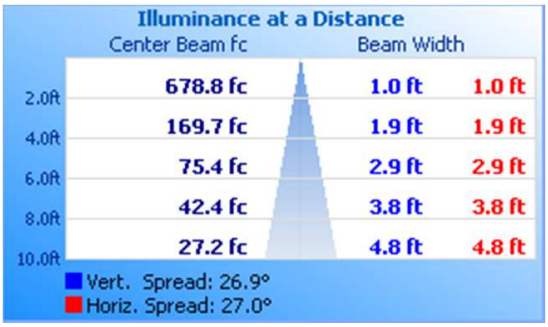


RESULTS OF TEST (cont'd)

Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



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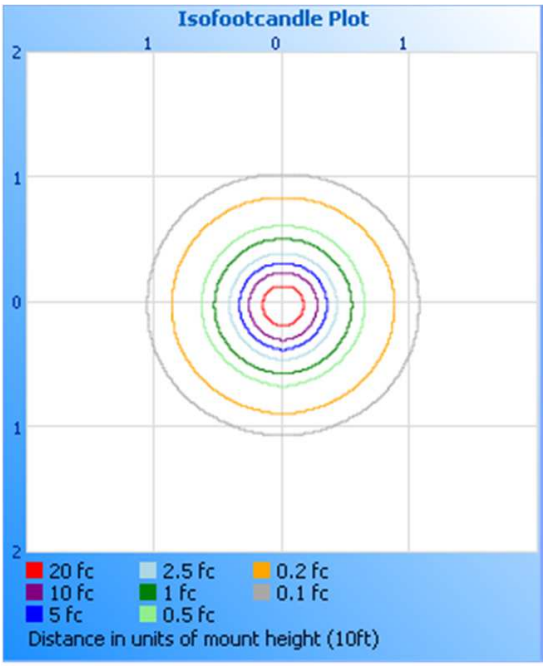

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	635.7	87.0
0-40	680.8	93.1
0-60	723.3	98.9
60-90	7.7	1.1
0-90	731.0	100.0
90-180	0.0	0.0
0-180	731.0	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	221.6	30.3
10-20	300.0	41.0
20-30	114.1	15.6
30-40	45.1	6.2
40-50	27.3	3.7
50-60	15.2	2.1
60-70	6.1	0.8
70-80	1.4	0.2
80-90	0.2	0.0

PICTURE (not to scale)

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:

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Report Reviewed By:

Tim Quigley
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Attachment: None