



REPORT

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

Project No. G101518786

March 9, 2015

REPORT NO. 101518786CHI-094

TEST OF ONE LED 12VAC TRACK HEAD

MODEL NO. 700FJBRK9303506S
LED MODEL NO. CITIZEN CLU024-1203B8-303H5D2

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 700FJBRK9303506S. 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: March 3, 2015 through March 4, 2015.

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

SUMMARY

Model No.:	700FJBRK9303506S
Description:	LED 12VAC Track Head

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	634.4	645.5
Total Power (W)	14.23	14.55
Luminaire Efficacy (LPW)	44.58	44.36

Criteria	Result
Power Factor	0.740
Current ATHD %	61.79
Correlated Color Temperature (CCT - K)	3022
Color Rendering Index (CRI - Ra)	92.4
Color Rendering Index (CRI - R9)	69.0
DUV	0.001
Chromaticity Coordinate (x)	0.437
Chromaticity Coordinate (y)	0.406
Chromaticity Coordinate (u')	0.249
Chromaticity Coordinate (v')	0.522

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

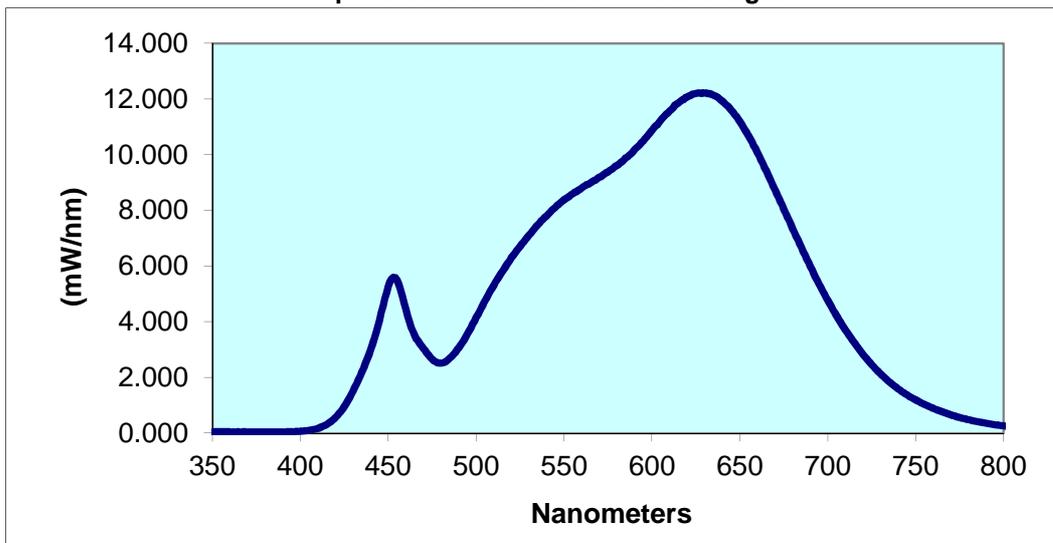
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
02232015025607	UP	12.0	1601	14.23	0.740	61.79	634.4	44.58

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')
3022	92.4	69.0	0.001	0.437	0.406	0.249	0.522

Spectral Distribution over Visible Wavelengths

nm	mW/nm								
350	0.04	440	2.995	530	7.115	620	12.07	710	3.705
355	0.044	445	4.061	535	7.474	625	12.2	715	3.244
360	0.048	450	5.272	540	7.796	630	12.22	720	2.827
365	0.044	455	5.501	545	8.112	635	12.13	725	2.457
370	0.04	460	4.445	550	8.384	640	11.93	730	2.125
375	0.039	465	3.518	555	8.601	645	11.61	735	1.838
380	0.037	470	3.04	560	8.804	650	11.18	740	1.589
385	0.037	475	2.648	565	8.992	655	10.67	745	1.376
390	0.039	480	2.509	570	9.195	660	10.08	750	1.194
395	0.049	485	2.691	575	9.387	665	9.414	755	1.03
400	0.067	490	3.06	580	9.606	670	8.734	760	0.893
405	0.102	495	3.563	585	9.883	675	8.033	765	0.766
410	0.176	500	4.149	590	10.18	680	7.343	770	0.656
415	0.317	505	4.754	595	10.5	685	6.66	775	0.562
420	0.564	510	5.311	600	10.87	690	5.989	780	0.481
425	0.958	515	5.821	605	11.25	695	5.358		
430	1.515	520	6.298	610	11.57	700	4.76		
435	2.202	525	6.711	615	11.86	705	4.207		

Spectral Data Over Visible Wavelengths



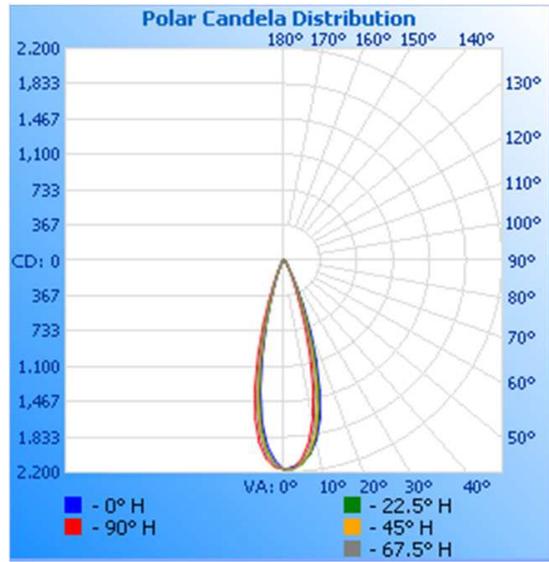
RESULTS OF TEST (cont'd)

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	1584	14.55	0.763	645.5	44.36

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	2167	2167	2167	2167	2167
5	2106	2120	2110	2092	2064
10	1887	1862	1825	1754	1670
15	1395	1321	1257	1138	1006
20	778	704	632	531	445
25	334	297	268	225	195
30	121	113	105	94	89
35	62	62	62	59	58
40	45	46	47	45	43
45	33	32	33	31	30
50	22	22	23	22	21
55	14	15	16	15	15
60	8	9	9	9	8
65	5	5	5	5	5
70	3	3	3	3	3
75	1	1	1	1	1
80	0	0	0	0	0
85	0	0	0	0	0
90	0	0	0	0	0

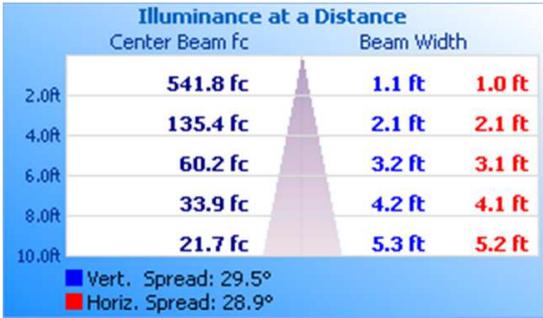


RESULTS OF TEST (cont'd)

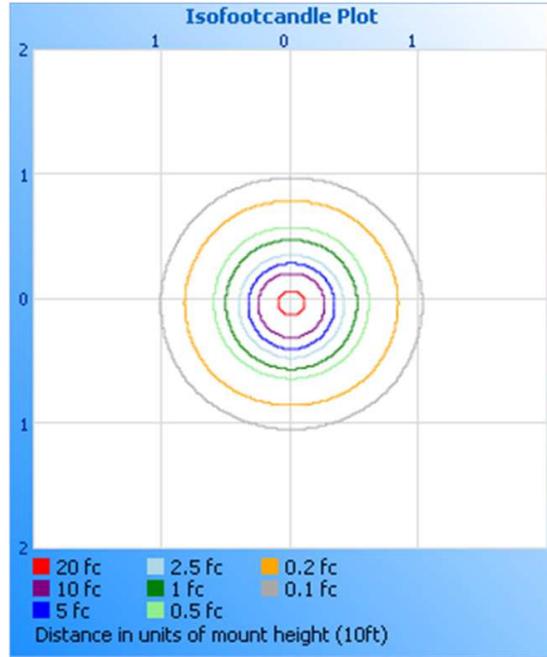
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	564.5	87.4
0-40	602.6	93.4
0-60	639.1	99.0
60-90	6.4	1.0
0-90	645.5	100.0
90-180	0.0	0.0
0-180	645.5	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	182.5	28.3
10-20	275.8	42.7
20-30	106.1	16.4
30-40	38.2	5.9
40-50	23.6	3.7
50-60	12.9	2.0
60-70	5.1	0.8
70-80	1.1	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:



Lester Irabagon
Engineer
Lighting Division

Attachment: None

Report Reviewed By:



Tim Quigley
Engineer
Lighting Division