



FOR THE SCOPE OF  
ACCREDITATION UNDER NVLAP LAB  
CODE 100402-0.

# REPORT

3933 US ROUTE 11, CORTLAND, NEW YORK 13045

Project No. G102585025

Date: May 26, 2016

REPORT NO. 102585024CRT-001

TEST OF ONE LED TRACK LUMINAIRE

MODEL NO. LX2020-ZE103-903004  
LED MODEL NO. LUMILEDS Z ES  
DRIVER MODEL NO. LTF DA5W1200C

RENDERED TO:

LIGHTING SERVICES INC.  
2 HOLT DR  
STONY POINT, NY 10980-1920

TESTS: 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 Qu-00694949.

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 LX2020-ZE103-903004. The sample was received by Intertek on May 11, 2016 in undamaged condition and one sample was tested as received. The sample designation was CRT1605111157-001A.

DATE OF TESTS: May 25, 2016 through May 26, 2016.

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SUMMARY:

MODEL NO. LX2020-ZE103-903004
DESCRIPTION: LED TRACK LUMINAIRE

Criteria	Integrating Sphere	Goniophotometer
Light Output (Lumens)	116.3	116.2
Total Power (W)	5.40	5.39
Lumen Efficacy (Lm/W)	21.5	21.6
Power Factor ( )	0.899	0.905

Criteria	Results
Current ATHD (%)	32.15
Correlated Color Temp. (CCT-K)	3086
Color Rendering Index (CRI - Ra)	93.1
CRI - R9	73.2
DUV ( )	0.000
Chromaticity Coordinate (x)	0.432
Chromaticity Coordinate (y)	0.405
Chromaticity Coordinate (u')	0.247
Chromaticity Coordinate (v')	0.521

EQUIPMENT LIST

Equipment Used	Model No.	Control No.	Last Cal.	Cal. Due
LSI High Speed Mirror Goniometer	6440	---	5/4/2016	6/4/2016
Elgar AC Power Supply	CW1251	---	VBU	VBU
Sorenson DC Power Supply	XG 150-10	---	VBU	VBU
Yokogawa Power Analyzer	WT210	E464	5/2/2016	5/2/2017
Omega Thermometer	DPi8-C24	M263	5/2/2016	5/2/2017
M-D Building Products Digital Level	Smart Tool	L112	4/8/2016	4/8/2017
NIST Luminous Intensity Standard Source	NBS10322	N1427	12/12/2014	12/12/2016
NIST Luminous Intensity Standard Source	NBS10215	N1432	12/12/2014	12/12/2016
NIST Luminous Intensity Standard Source	960629-3	N1428	12/12/2014	12/12/2016
NIST Luminous Flux Standard Source	NBS10428	N1424	12/17/2014	12/17/2016
2M Integrating Sphere Spectrometer System	CDS 1100	N308	5/9/2016	6/9/2016
Yokogawa Power Analyzer	WT1600	E536	12/18/2015	12/18/2016
Fluke Temperature Meter	53II	D588	5/6/2016	5/6/2017
Extech Hygro-thermometer	445715	T1550	1/8/2016	1/8/2017
Elgar AC Power Supply	CW1251	--	VBU	VBU
Secondary Spectral Flux Standard Source	BS5186	RF5186	1/27/2016	1/27/2017
Secondary Luminous Flux Standard Source	6836	--	1/27/2016	1/27/2017
Secondary Luminous Flux Standard Source	BS4116	--	1/27/2016	1/27/2017
Secondary Luminous Flux Standard Source	BS3616	--	1/27/2016	1/27/2017
Sorenson DC Power Supply	XG 150-10	--	VBU	VBU



## 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 two meter or ten foot 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 LSI Type C High Speed Model 6440 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.



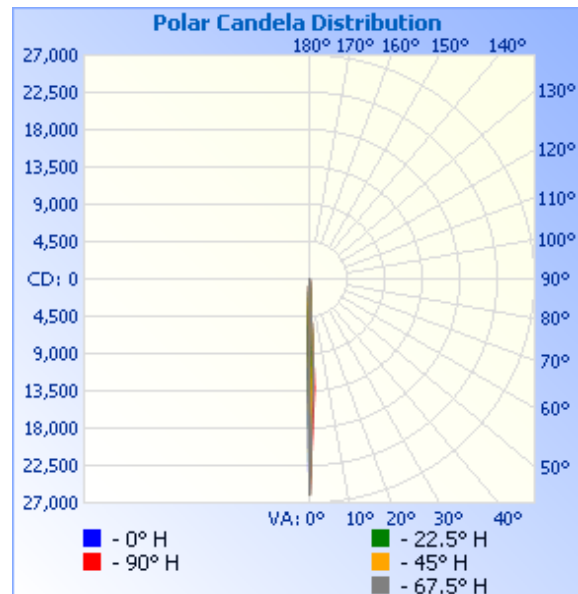
**RESULTS:**

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

Intertek Control No.	Base Orientation	Input Voltage (VAC)	Input Current (mA)	Input Power (W)	Input Power Factor ( )	Light Output (Lumens)	Lumen Efficacy (lm/W)
CRT1605111157-001A	Base Up	120.08	49.6	5.39	0.905	116.2	21.6

**Intensity (Candlepower) Summary at 25°C - Candelas**

Angle	0	22.5	45	67.5	90
0	26016	26016	26016	26016	26016
5	49	52	65	128	244
10	11	10	11	11	12
15	6	6	5	4	5
20	4	4	4	4	4
25	0	1	1	0	0
30	0	0	0	0	0
35	0	0	0	0	0
40	0	0	0	0	0
45	0	0	0	0	0
50	0	0	0	0	0
55	0	0	0	0	0
60	0	0	0	0	0
65	0	0	0	0	0
70	0	0	0	0	0
75	0	0	0	0	0
80	0	0	0	0	0
85	0	0	0	0	0
90	0	0	0	0	0





**RESULTS:**

Illumination Plots

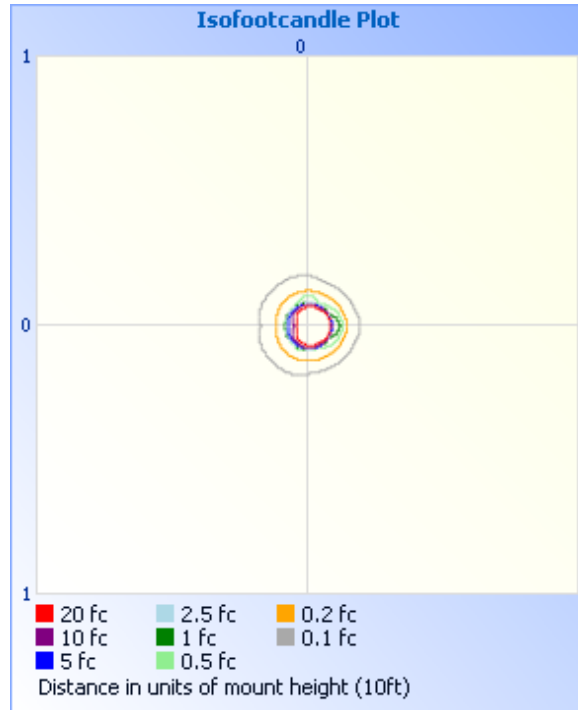
Mounting Height: 10ft

Illuminance - Cone of Light

Illuminance at a Distance			
	Center Beam fc	Beam Width	
1.7ft	9,002 fc	0.1 ft	0.1 ft
3.3ft	2,389 fc	0.2 ft	0.2 ft
5.0ft	1,041 fc	0.3 ft	0.3 ft
6.7ft	580 fc	0.4 ft	0.4 ft
8.3ft	378 fc	0.5 ft	0.6 ft
10.0ft	260 fc	0.6 ft	0.7 ft

■ Vert. Spread: 3.2°  
■ Horiz. Spread: 3.8°

Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	116.2	100.0
0-40	116.2	100.0
0-60	116.2	100.0
60-90	0.0	0.0
0-90	116.2	100.0
90-180	0.0	0.0
0-180	116.2	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	114.1	98.2
10-20	1.7	1.5
20-30	0.4	0.3
30-40	0.0	0.0
40-50	0.0	0.0
50-60	0.0	0.0
60-70	0.0	0.0
70-80	0.0	0.0
80-90	0.0	0.0



**RESULTS:**

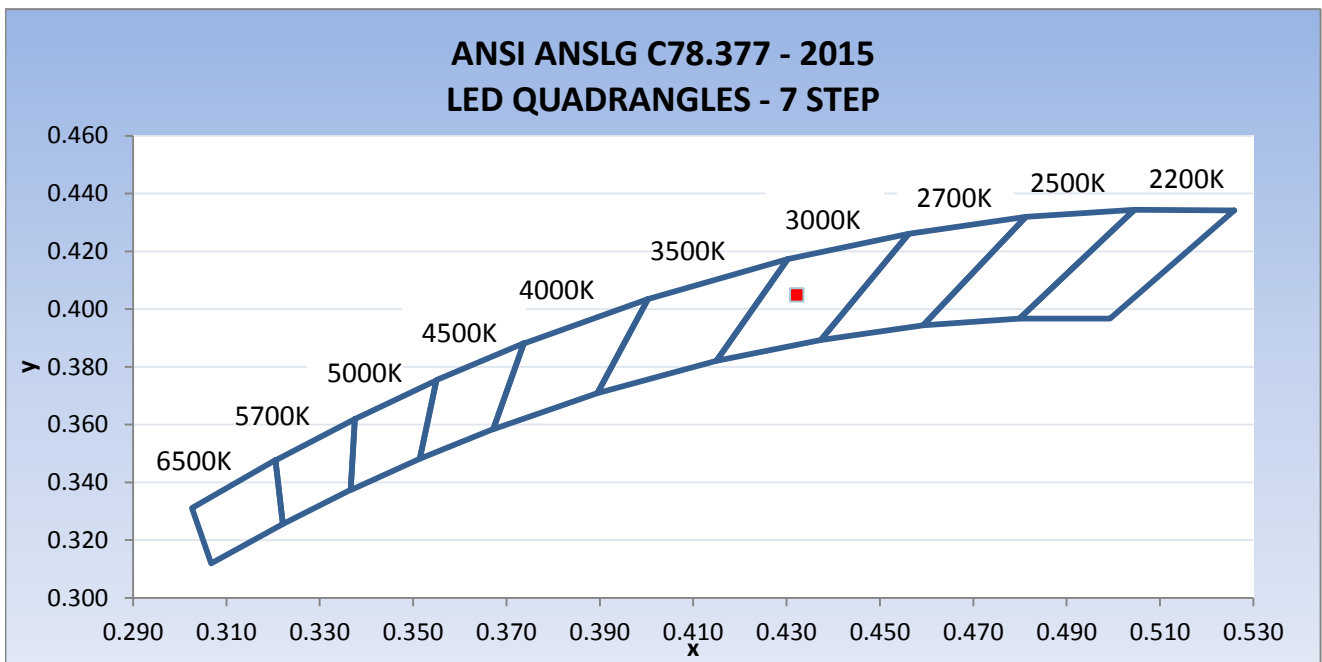
**Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Sphere Method**

Intertek Control No.	Base Orientation	Input Voltage (VAC)	Input Current (mA)	Input Power (W)	Input Power Factor ( )	Current ATHD (%)
CRT1605111157-001A	Base Up	120.01	50.0	5.40	0.899	32.15

Light Output (Lumens)	Lumen Efficacy (lm/W)	Correlated Color Temperature - CCT (K)	CRI -Ra	CRI -R9	DUV ( )
116.3	21.5	3086	93.1	73.2	0.000

CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
0.432	0.405	0.247	0.521

**ANSI C78.377 SSL Chromaticity (2015 Version)**



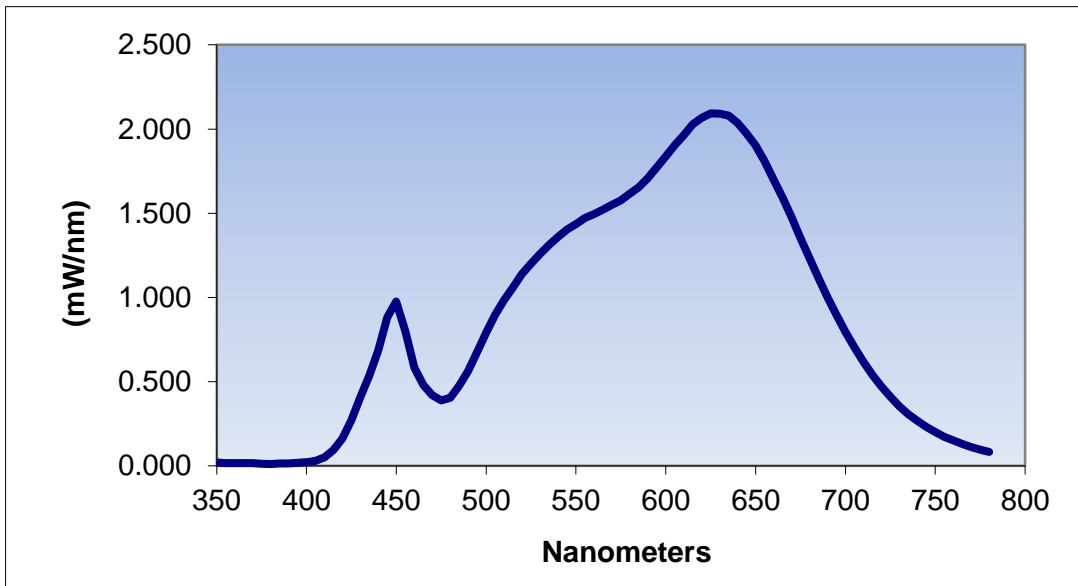


**RESULTS:**

**Spectral Distribution Over Visible Wavelengths**

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.019	460	0.582	570	1.549	680	1.232
355	0.016	465	0.480	575	1.577	685	1.114
360	0.016	470	0.419	580	1.616	690	1.001
365	0.016	475	0.388	585	1.654	695	0.896
370	0.015	480	0.404	590	1.708	700	0.794
375	0.012	485	0.475	595	1.774	705	0.704
380	0.010	490	0.564	600	1.839	710	0.619
385	0.014	495	0.676	605	1.905	715	0.541
390	0.014	500	0.789	610	1.965	720	0.472
395	0.017	505	0.895	615	2.029	725	0.410
400	0.021	510	0.983	620	2.066	730	0.354
405	0.029	515	1.060	625	2.093	735	0.307
410	0.050	520	1.139	630	2.091	740	0.266
415	0.093	525	1.202	635	2.079	745	0.231
420	0.162	530	1.259	640	2.036	750	0.200
425	0.270	535	1.313	645	1.974	755	0.172
430	0.407	540	1.360	650	1.903	760	0.150
435	0.535	545	1.402	655	1.810	765	0.130
440	0.684	550	1.435	660	1.701	770	0.111
445	0.881	555	1.471	665	1.591	775	0.096
450	0.975	560	1.495	670	1.475	780	0.083
455	0.797	565	1.521	675	1.350		

**Spectral Data Over Visible Wavelengths**



PRODUCT PICTURE:



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:



Jeffrey Davis  
Engineering Supervisor  
Lighting Division

Report Reviewed By:



Ryan Siddon  
Engineer  
Lighting Division

Attachments: IES File - CRT1605111157-001A