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

Lighting Services Inc

TEST REPORT

SCOPE OF WORK
Electrical and Photometric tests as required to the IESNA test standard.

MODEL NUMBER
BPM-C0618-8030N-00-TE120B

PROJECT NUMBER
G103906489

REPORT NUMBER
103906489CRT-002

ISSUE DATE
April 22, 2019

REVISION DATE
None

DOCUMENT CONTROL NUMBER
RTTDS-R-AMER-Test-3407

PAGES
10

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TEST REPORT

REPORT NO.: 103906489CRT-002
REPORT DATE: April 22, 2019

TEST OF (1) LED TRACK SPOT LIGHT - WIDE FOCUS

MODEL NO. BPM-C0618-8030N-00-TE120B

RENDERED TO:

LIGHTING SERVICES INC
2 HOLT DRIVE
STONY POINT, NY 10980

STATEMENT OF LIMITATION

NVLAP Lab Code 100402-0. 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-00970760-0.

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

SAMPLE INFORMATION

CONTROL NO.	MODEL/SERIAL NO.	DESCRIPTION	TYPE	RECEIVED
CRT1904111510-001-2	BPM-C0618-8030N-00-TE120B	LED Track Spot Light - Wide Focus	Production	4/11/2019

DATE OF TESTS

April 16, 2019 through April 16, 2019.

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TEST REPORT

REPORT NO.: 103906489CRT-002
REPORT DATE: April 22, 2019

SUMMARY

MODEL NO:	BPM-C0618-8030N-00-TE120B
DESCRIPTION:	LED Track Spot Light - Wide Focus
LED MODEL NO:	Cree CXB1310
DRIVER MODEL NO:	Magtech MD22

CRITERIA	RESULTS	
	INTEGRATING SPHERE	GONIOPHOTOMETER
Lumen Output (lumens)	511.2	547.6
Input Power (W) @ 120 (VAC)	19.50	19.32
Lumen Efficacy (lm/W)	26.2	28.3
Input Power Factor ( ) @ 120 (VAC)	0.996	0.993

CRITERIA	RESULTS
Correlated Color Temperature (K)	3026
Color Rendering Index - Ra ( )	81.1
Color Rendering - R9 ( )	1.2
DUV ( )	0.0023
Chromaticity Coordinate (x)	0.438
Chromaticity Coordinate (y)	0.411
Chromaticity Coordinate (u')	0.249
Chromaticity Coordinate (v')	0.524
Input Current ATHD (%) @ 120 (VAC)	3.5

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TEST REPORT

REPORT NO.: 103906489CRT-002
REPORT DATE: April 22, 2019

EQUIPMENT LIST

EQUIPMENT USED	MODEL NO.	CONTROL NO.	CAL DUE DATE	DATE USED
LSI High Speed Mirror Goniometer	6440	---	5/5/2019	4/16/2019
Elgar AC Power Supply	CW1251	---	VBU	4/16/2019
Sorenson DC Power Supply	XG 150-10	---	VBU	4/16/2019
Yokogawa Power Analyzer	WT210	E464	5/3/2019	4/16/2019
Omega Thermometer	DPi8-C24	M263	5/3/2019	4/16/2019
M-D Building Products Digital Level	Smart Tool	L112	4/21/2019	4/16/2019
NIST Luminous Intensity Standard Source	NBS10322	N1427	2/11/2021	4/16/2019
NIST Luminous Intensity Standard Source	NBS10332	N1435	2/11/2021	4/16/2019
NIST Luminous Intensity Standard Source	NBS10265	N1437	2/11/2021	4/16/2019
NIST Luminous Flux Standard Source	NBS10428	N1424	1/3/2021	4/16/2019
Elgar AC Power Supply	CW1251	---	VBU	4/16/2019
Sorenson DC Power Supply	XFR 150-8	---	VBU	4/16/2019
Yokogawa Power Analyzer	WT1600	E440	9/24/2019	4/16/2019
Fluke Thermometer	53 II	N1324	3/15/2020	4/16/2019
Fluke Multimeter	87V	D590	6/1/2019	4/16/2019
3M Integrating Sphere Spectrometer System	CDS 1100	---	5/1/2019	4/16/2019
Fisher Scientific Stopwatch	14-649-9	N1132	3/15/2020	4/16/2019
Secondary Spectral Intensity Standard Source	BS5186	RF5186	11/14/2019	4/16/2019
Secondary Luminous Flux Standard Source	BS3616	--	11/14/2019	4/16/2019
Secondary Luminous Flux Standard Source	BS4116	--	11/14/2019	4/16/2019
Secondary Luminous Flux Standard Source	6836	--	11/14/2019	4/16/2019

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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 were used to measure light output, correlated color temperature, chromaticity coordinates, color rendering index, and the spectral distribution 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-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 (candela) 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.

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

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TEST REPORT

REPORT NO.: 103906489CRT-002
REPORT DATE: April 22, 2019

RESULTS OF TESTS

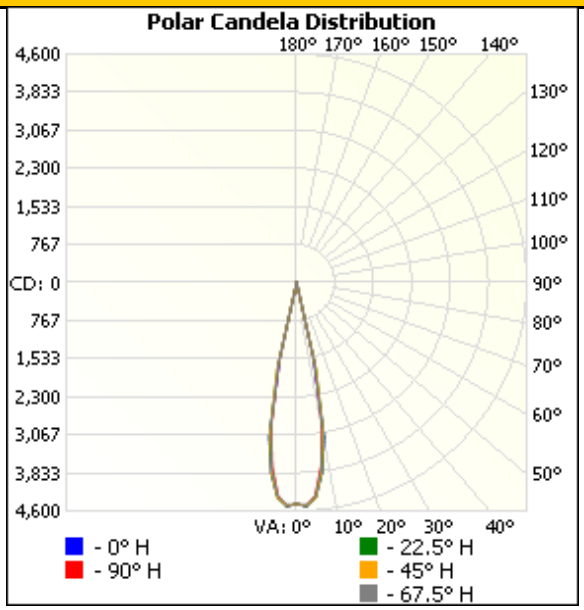
PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - DISTRIBUTION METHOD (25°C +/- 1°C)

INTERTEK CONTROL NO.	BASE POSITION	INPUT VOLTAGE (VAC)	INPUT CURRENT (mA)	INPUT POWER (W)	INPUT POWER FACTOR ( )	LIGHT OUTPUT (lm)	LUMEN EFFICACY (lm/W)
CRT1904111510-001-2	Base Up	120.05	162.2	19.32	0.993	547.6	28.3

INTENSITY SUMMARY - CANDELA

Angle	0	22.5	45	67.5	90
0	4456	4456	4456	4456	4456
5	4348	4355	4351	4309	4300
10	3164	3140	3032	2950	2921
15	8	12	12	10	9
20	1	4	2	2	2
25	0	0	0	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

POLAR CANDELA PLOT



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TEST REPORT

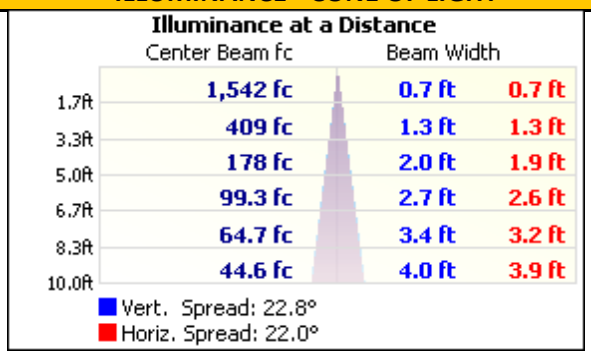
REPORT NO.: 103906489CRT-002
REPORT DATE: April 22, 2019

RESULTS OF TESTS

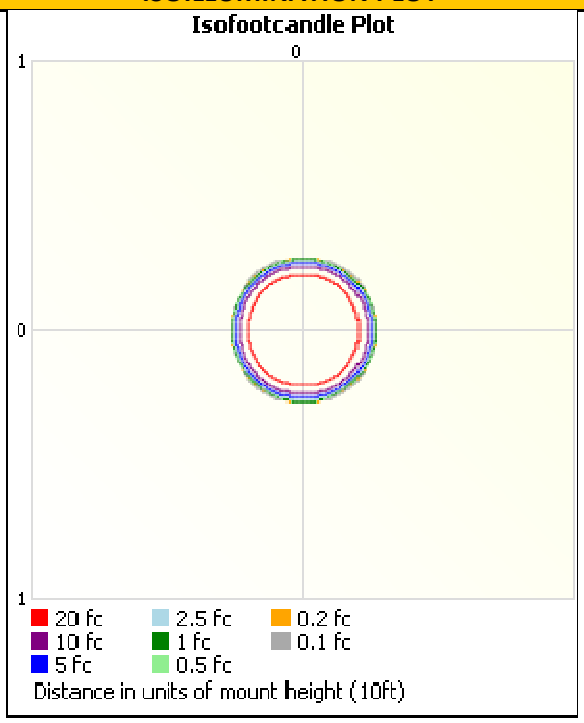
PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - DISTRIBUTION METHOD (25°C +/- 1°C)

MOUNTING HEIGHT: 10ft

ILLUMINANCE - CONE OF LIGHT



ISOILLUMINATION PLOT



ZONAL LUMEN SUMMARY AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	547.6	100.0
0-40	547.6	100.0
0-60	547.6	100.0
60-90	0.0	0.0
0-90	547.6	100.0
90-180	0.0	0.0
0-180	547.6	100.0

ZONE	LUMENS	% LUMINAIRE
0-10	368.5	67.3
10-20	178.9	32.7
20-30	0.2	0.0
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

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TEST REPORT

REPORT NO.: 103906489CRT-002
REPORT DATE: April 22, 2019

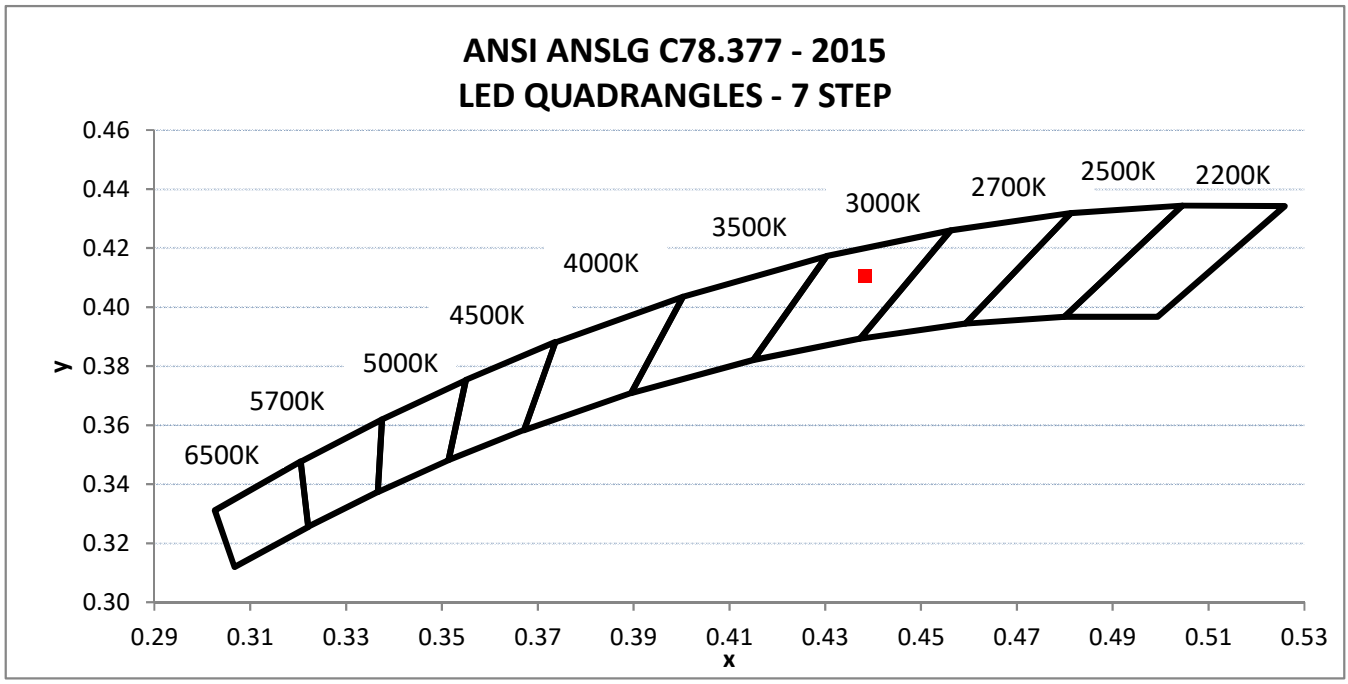
RESULTS OF TESTS

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 (%)
CRT1904111510-001-2	Base Up	120.02	163.2	19.50	0.996	3.46

LIGHT OUTPUT (lm)	LUMEN EFFICACY (lm/W)	CORRELATED COLOR TEMPERATURE - CCT (K)	CRI - Ra ( )	CRI - R9 ( )	DUV ( )
511.2	26.2	3026	81.1	1.2	0.0023

CIE 1931 CHROMATICITY COORDINATE (x)	CIE 1931 CHROMATICITY COORDINATE (y)	CIE 1976 CHROMATICITY COORDINATE (u')	CIE 1976 CHROMATICITY COORDINATE (v')
0.438	0.411	0.249	0.524



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TEST REPORT

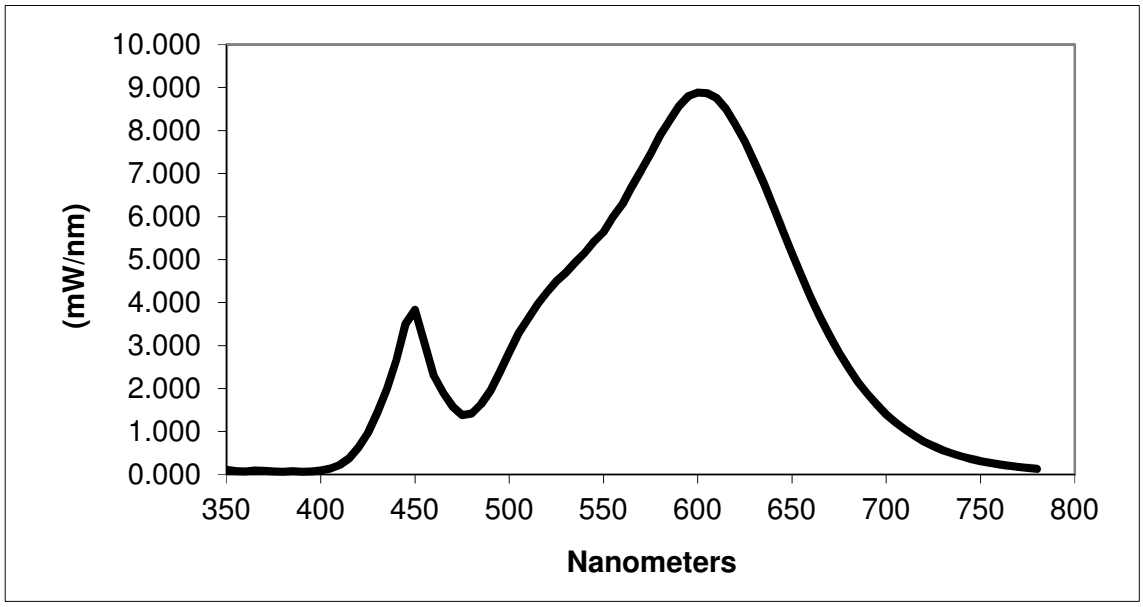
REPORT NO.: 103906489CRT-002
REPORT DATE: April 22, 2019

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	0.111	460	2.291	570	7.087	680	2.474
355	0.082	465	1.899	575	7.466	685	2.152
360	0.072	470	1.578	580	7.897	690	1.878
365	0.099	475	1.385	585	8.232	695	1.627
370	0.087	480	1.423	590	8.573	700	1.397
375	0.076	485	1.633	595	8.802	705	1.213
380	0.065	490	1.960	600	8.884	710	1.045
385	0.083	495	2.385	605	8.870	715	0.896
390	0.067	500	2.838	610	8.759	720	0.763
395	0.076	505	3.296	615	8.501	725	0.661
400	0.097	510	3.627	620	8.141	730	0.563
405	0.139	515	3.965	625	7.742	735	0.488
410	0.223	520	4.238	630	7.268	740	0.420
415	0.379	525	4.501	635	6.768	745	0.361
420	0.630	530	4.698	640	6.235	750	0.315
425	0.977	535	4.937	645	5.692	755	0.273
430	1.440	540	5.159	650	5.140	760	0.239
435	1.990	545	5.413	655	4.627	765	0.206
440	2.655	550	5.641	660	4.104	770	0.177
445	3.507	555	5.990	665	3.654	775	0.157
450	3.832	560	6.284	670	3.224	780	0.136
455	3.076	565	6.693	675	2.831		

*Without correction of sample absorption.



End Of Test Results

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TEST REPORT

REPORT NO.: 103906489CRT-002
REPORT DATE: April 22, 2019

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:

Gerald Gray
Associate Engineer
Lighting Division

Report Reviewed By:

Jacki Swiernik
Staff Engineer
Lighting Division

Attachments: .IES File

REVISION HISTORY

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