

VERBATIM AMERICAS

TEST REPORT

SCOPE OF WORK

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

MODEL NUMBER

LED HIGHBAY UHB-100W-C50-P

PROJECT NUMBER

G102710907

REPORT NUMBER

102710907CRT-033

ISSUE DATE

March 7, 2018

REVISION DATE

None

PAGES

10

DOCUMENT CONTROL NUMBER

TBD

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TEST REPORT**REPORT NO.: 102710907CRT-033****REPORT DATE: March 7, 2018**

TEST OF (1) ROUND HIGH BAY

MODEL NO. LED HIGHBAY UHB-100W-C50-P

RENDERED TO:

VERBATIM AMERICAS
8210 UNIVERSITY EXECUTIVE PARK DRIVE, SUITE 300
CHARLOTTE, NC 28262**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-00707669.

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
CRT1802281548-002	LED HIGHBAY UHB-100W-C50-P	Luminaire	Production	02/28/18

DATE OF TESTS

March 5, 2018 through March 6, 2018.

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SUMMARY

MODEL NO:	LED HIGHBAY UHB-100W-C50-P
DESCRIPTION:	Round High Bay
PART NO:	70167

CRITERIA	RESULTS	
	INTEGRATING SPHERE	GONIOPHOTOMETER
Lumen Output (lumens)	12430	12763
Input Power (W) @ 100 (VAC)	97.18	96.64
Lumen Efficacy (lm/W)	127.9	132.1
Input Power Factor () @ 100 (VAC)	0.998	0.999

CRITERIA	RESULTS
Input Current ATHD (%) @ 100 (VAC)	3.73
Correlated Color Temperature (K)	5111
Color Rendering Index - Ra ()	83.1
Color Rendering - R9 ()	4.0
DUV ()	0.0014
Chromaticity Coordinate (x)	0.342
Chromaticity Coordinate (y)	0.353
Chromaticity Coordinate (u')	0.209
Chromaticity Coordinate (v')	0.485
Input Power Factor () @ 277 (VAC)	0.963
Input Current ATHD (%) @ 277 (VAC)	12.49

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EQUIPMENT LIST

EQUIPMENT USED	MODEL NO.	CONTROL NO.	LAST CAL DATE	CAL DUE DATE
LSI High Speed Mirror Goniometer	6440	---	02/09/18	03/09/18
Elgar AC Power Supply	CW1251	---	VBV	VBV
Sorenson DC Power Supply	XG 150-10	---	VBV	VBV
Yokogawa Power Analyzer	WT210	E464	05/02/17	05/02/18
Omega Thermometer	DPi8-C24	M263	05/02/17	05/02/18
M-D Building Products Digital Level	Smart Tool	L112	04/04/17	04/04/18
NIST Luminous Intensity Standard Source	NBS10322	N1427	01/09/17	01/09/19
NIST Luminous Intensity Standard Source	NBS10332	N1435	01/09/17	01/09/19
NIST Luminous Intensity Standard Source	NBS10265	N1437	01/09/17	01/09/19
NIST Luminous Flux Standard Source	NBS10428	N1424	01/11/17	01/11/19
Elgar AC Power Supply	CW1251	---	VBV	VBV
Sorenson DC Power Supply	XFR 150-8	---	VBV	VBV
Yokogawa Power Analyzer	WT1600	E474	05/04/17	05/04/18
Fluke Thermometer	53 II	T1318	03/31/17	03/31/18
Fluke Multimeter	87V	D590	04/28/17	04/28/18
3M Integrating Sphere Spectrometer System	CDS 1100	---	03/01/18	04/01/18
Fisher Scientific Stopwatch	14-649-9	N1132	02/15/18	02/15/19
Secondary Spectral Intensity Standard Source	BS5186	RF5186	01/28/18	01/28/19
Secondary Luminous Flux Standard Source	BS3616	--	01/28/18	01/28/19
Secondary Luminous Flux Standard Source	BS4116	--	01/28/18	01/28/19
Secondary Luminous Flux Standard Source	6836	--	01/28/18	01/28/19

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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 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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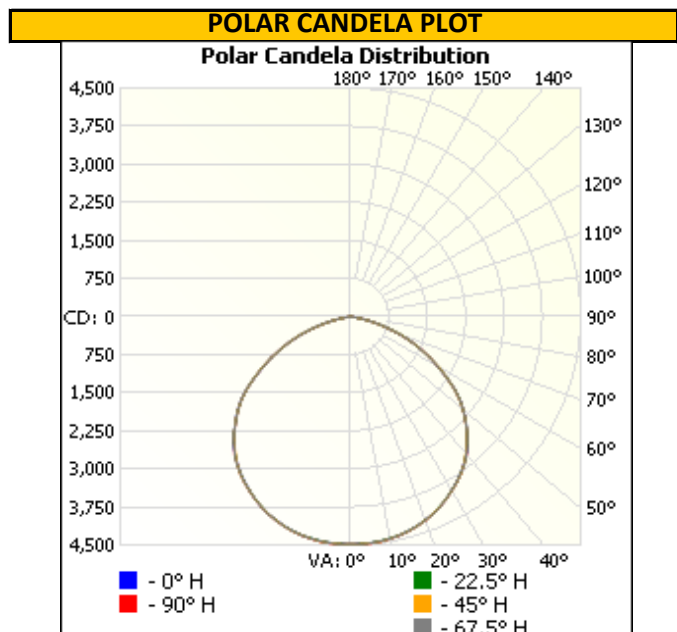
RESULTS OF TESTS

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)
Select One	Base Up	100.08	966.9	96.64	0.999	12763	132.1

INTENSITY SUMMARY - CANDELAS

Angle	0	22.5	45	67.5	90
0	4487	4487	4487	4487	4487
5	4472	4472	4475	4477	4483
10	4440	4434	4441	4439	4444
15	4367	4366	4375	4374	4376
20	4261	4264	4267	4271	4271
25	4132	4126	4131	4132	4131
30	3952	3952	3957	3958	3958
35	3758	3758	3766	3761	3763
40	3521	3516	3505	3522	3528
45	3219	3219	3213	3214	3214
50	2887	2879	2883	2880	2877
55	2477	2477	2468	2473	2479
60	1979	1989	1991	1978	1984
65	1520	1511	1516	1516	1519
70	1045	1058	1043	1046	1046
75	578	576	567	578	574
80	202	201	197	204	206
85	10	10	9	11	11
90	0	0	0	0	0



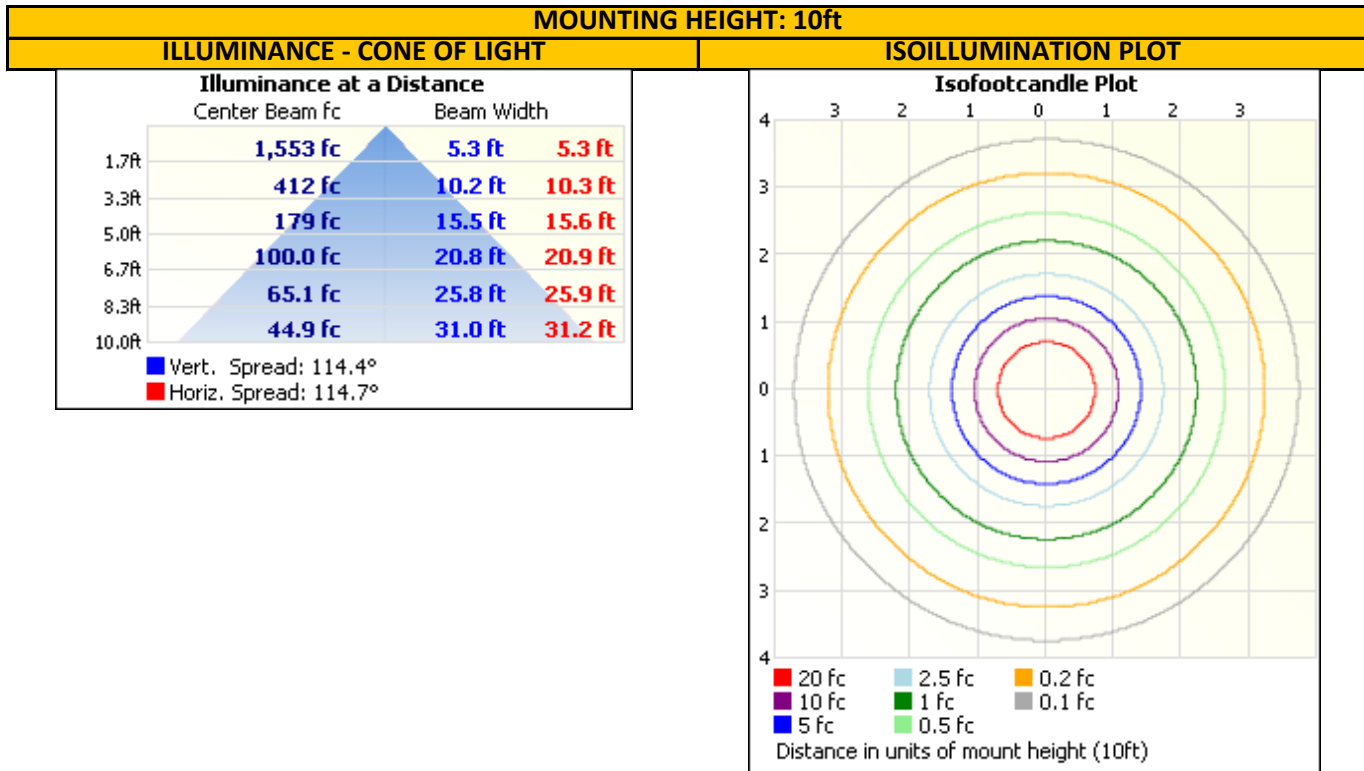
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RESULTS OF TESTS

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



ZONAL LUMEN SUMMARY AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	3564.4	27.9
0-40	5915.9	46.4
0-60	10589.4	83.0
60-90	2173.3	17.0
0-90	12762.7	100.0
90-180	0.0	0.0
0-180	12762.7	100.0

ZONE	LUMENS	% LUMINAIRE
0-10	426.1	3.3
10-20	1234.5	9.7
20-30	1903.8	14.9
30-40	2351.5	18.4
40-50	2478.0	19.4
50-60	2195.4	17.2
60-70	1499.2	11.7
70-80	623.0	4.9
80-90	51.1	0.4

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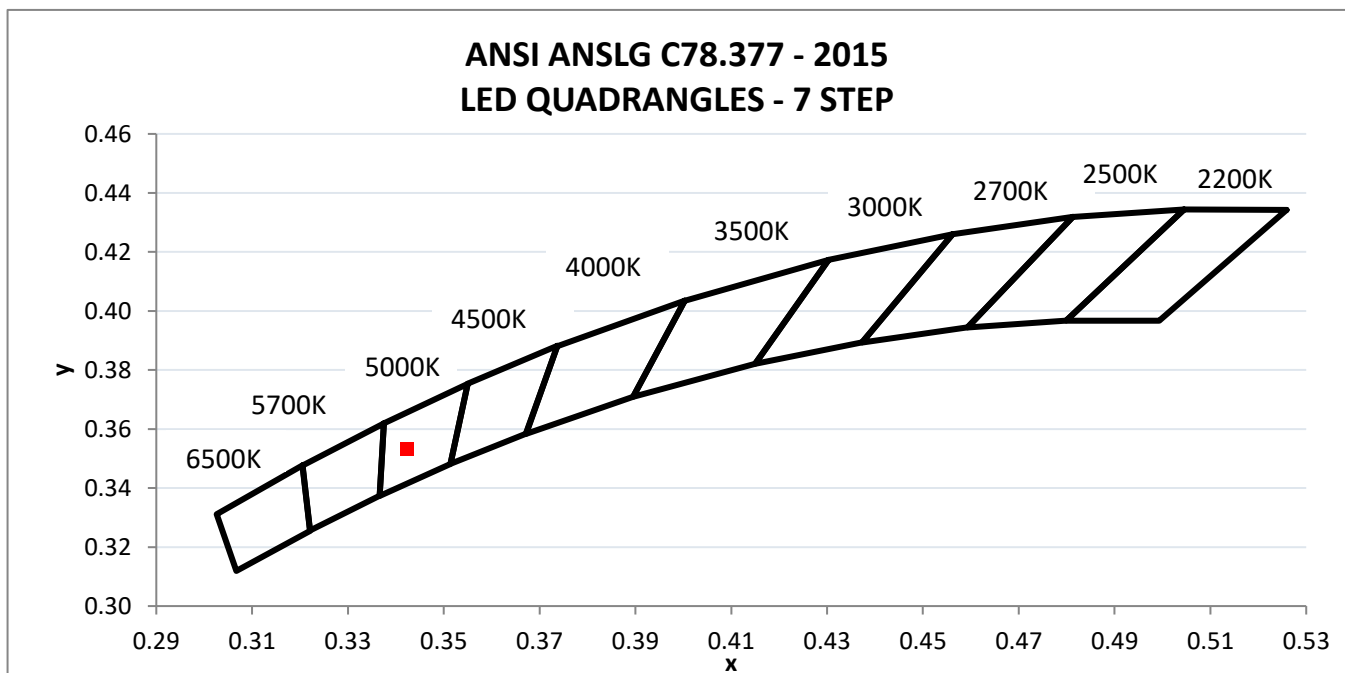
RESULTS OF TESTS

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 (%)
CRT1802281548-002	Base Up	100.00	973.5	97.18	0.998	3.73
		277.04	356.0	94.93	0.963	12.49

LIGHT OUTPUT (lm)	LUMEN EFFICACY (lm/W)	CORRELATED COLOR TEMPERATURE - CCT (K)	CRI - Ra ()	CRI - R9 ()	DUV ()
12430	127.9	5111	83.1	4.0	0.0014

CIE 1931 CHROMATICITY COORDINATE (x)	CIE 1931 CHROMATICITY COORDINATE (y)	CIE 1976 CHROMATICITY COORDINATE (u')	CIE 1976 CHROMATICITY COORDINATE (v')
0.342	0.353	0.209	0.485



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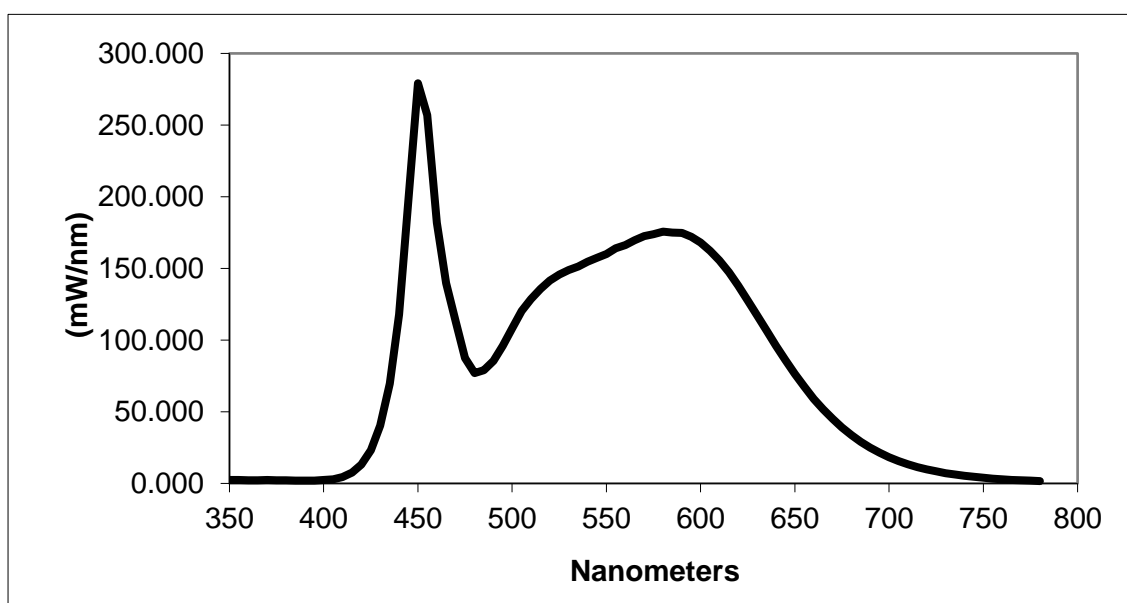
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RESULTS OF TESTS

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	2.404	460	181.863	570	172.453	680	33.600
355	2.458	465	139.792	575	173.929	685	28.967
360	2.307	470	112.960	580	175.604	690	25.018
365	2.221	475	87.441	585	175.027	695	21.300
370	2.343	480	77.049	590	174.709	700	18.180
375	2.260	485	78.980	595	172.169	705	15.647
380	2.274	490	85.453	600	168.012	710	13.314
385	2.069	495	95.978	605	162.340	715	11.421
390	2.081	500	107.914	610	155.555	720	9.767
395	2.091	505	120.224	615	147.276	725	8.394
400	2.326	510	128.588	620	137.856	730	7.174
405	2.955	515	135.623	625	127.517	735	6.190
410	4.438	520	141.460	630	117.174	740	5.258
415	7.626	525	145.736	635	106.384	745	4.556
420	13.117	530	148.908	640	95.927	750	3.914
425	23.203	535	151.365	645	86.147	755	3.353
430	40.360	540	154.672	650	76.404	760	2.929
435	69.526	545	157.455	655	67.523	765	2.507
440	117.816	550	160.062	660	58.908	770	2.177
445	197.416	555	164.034	665	51.663	775	1.874
450	279.173	560	166.229	670	44.977	780	1.625
455	256.921	565	169.716	675	38.938		

*Without correction of sample absorption.



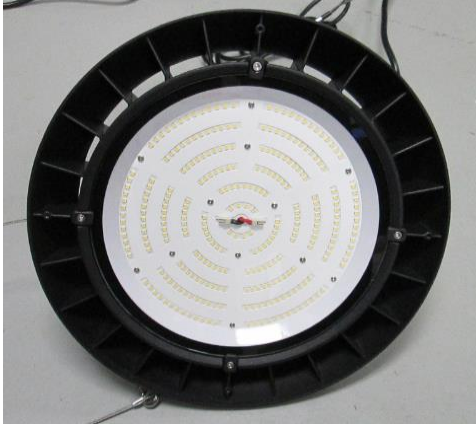
End Of Test Results

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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:

Melanie Brittain

Melanie Brittain
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Report Reviewed By:

Ryan Siddon

Ryan Siddon
Project Engineer
Lighting Division

Attachments: IES File

REVISION HISTORY

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