



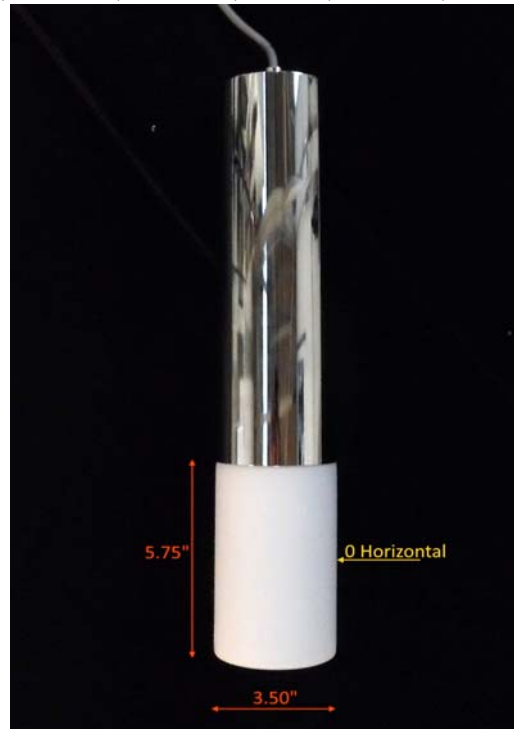
Report of Test

LLIA000824-061A

Catalog Number: 3-654-14 Opus Pendant

Pendant mounted, formed steel canopy, spun aluminum housing, cast aluminum heatsink, translucent white plastic enclosure.

12 white LEDs, one Harvard Engineering LEDENG-163-930 LED board
One L.T.F. DA6W150C2040LP010-0014 dimmable LED driver
120.0Vac, 60.00Hz, 0.0595A, 6.69W, 0.937PF, 10.1%THD(i)



Performance Summary

Total Light Output	399 lm
Luminaire Power	6.69 W
Luminous Efficacy	59.6 lm/W

PREPARED FOR : Oxygen Lighting, 201 Railhead Road, Fort Worth, TX 76106, USA



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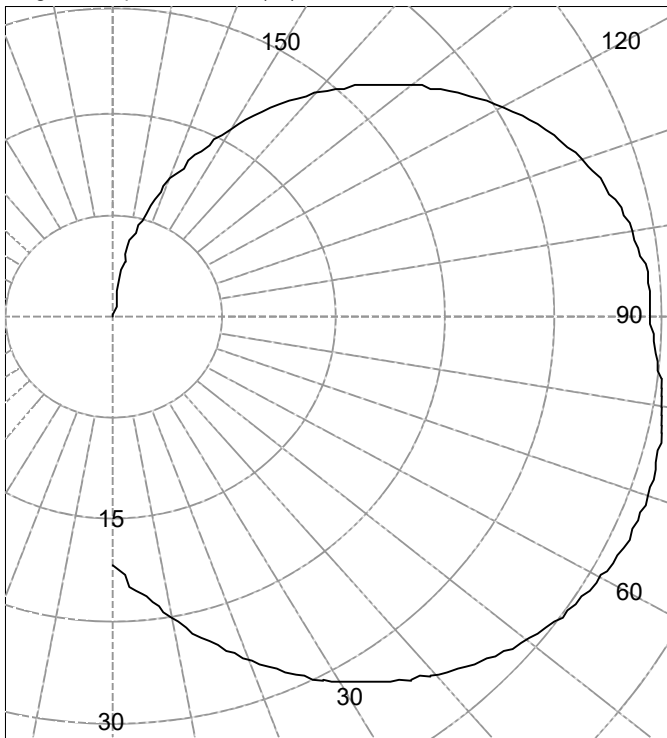
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Legend: All planes - Solid (cd)



(Rotational symmetry)

AVERAGE LUMINANCE (cd / m²)

Gamma	C0
45.0	2636
55.0	2661
65.0	2690
75.0	2725
85.0	2770

INTENSITY SUMMARY (cd)

Gamma	All Planes	Flux (lm)	Gamma	C0	Flux (lm)
0	18.4		90	36.6	
5	20.6	2	95	36.6	40
10	22.6		100	35.9	
15	24.8	7	105	35.1	37
20	27.1		110	33.9	
25	29.2	14	115	32.5	32
30	31.1		120	30.8	
35	32.9	21	125	28.8	26
40	34.4		130	26.5	
45	35.8	28	135	24.1	19
50	36.9		140	21.5	
55	37.8	34	145	18.7	12
60	38.4		150	15.9	
65	38.7	38	155	13.1	6
70	38.8		160	10.2	
75	38.6	41	165	7.4	2
80	38.1		170	4.6	
85	37.4	41	175	0.9	0
90	36.6		180	0.0	

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	%Lamp	%Luminaire
0-30	23	N / A	5.7
0-40	43	N / A	10.9
0-60	105	N / A	26.3
0-90	225	N / A	56.4
40-90	182	N / A	45.5
60-90	120	N / A	30.1
90-180	174	N / A	43.6
0-180	399	N / A	100.0

Total Light Output = 399 lm

Signed:

Authorized Signatory

Date of test 13-Sep-2017
Date of report 14-Sep-2017



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Intensity (cd) and Flux (lm) data

Gamma	Intensity	Flux	Gamma	Intensity	Flux
0.0	18.4		90.0	36.6	
2.5	19.5		92.5	36.7	
5.0	20.6	2	95.0	36.6	
7.5	21.4		97.5	36.2	40
10.0	22.6		100.0	35.9	
12.5	23.7		102.5	35.5	
15.0	24.8	7	105.0	35.1	
17.5	26.0		107.5	34.6	37
20.0	27.1		110.0	33.9	
22.5	28.1		112.5	33.2	
25.0	29.2	14	115.0	32.5	
27.5	30.2		117.5	31.7	32
30.0	31.1		120.0	30.8	
32.5	32.0		122.5	29.8	
35.0	32.9	21	125.0	28.8	
37.5	33.7		127.5	27.7	26
40.0	34.4		130.0	26.5	
42.5	35.1		132.5	25.3	
45.0	35.8	28	135.0	24.1	
47.5	36.4		137.5	22.8	19
50.0	36.9		140.0	21.5	
52.5	37.4		142.5	20.1	
55.0	37.8	34	145.0	18.7	
57.5	38.2		147.5	17.3	12
60.0	38.4		150.0	15.9	
62.5	38.6		152.5	14.5	
65.0	38.7	38	155.0	13.1	
67.5	38.8		157.5	11.6	6
70.0	38.8		160.0	10.2	
72.5	38.7		162.5	8.8	
75.0	38.6	41	165.0	7.4	
77.5	38.4		167.5	6.0	2
80.0	38.1		170.0	4.6	
82.5	37.8		172.5	3.2	
85.0	37.4	41	175.0	0.9	
87.5	36.9		177.5	0.0	0
90.0	36.6		180.0	0.0	



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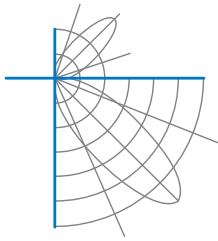
One L.T.F. DA6W150C2040LP010-0014 dimmable LED driver

120.0Vac, 60.00Hz, 0.0595A, 6.69W, 0.937PF, 10.1%THD(i)

Coefficients Of Utilization - Zonal Cavity Method																		
Effective Floor Cavity Reflectance 0.20																		
RC	80				70				50			30			10			0
	RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	
0	109	109	109	109	101	101	101	101	87	87	87	74	74	74	62	62	62	56
1	94	87	82	76	87	81	76	71	68	64	61	57	54	51	47	44	42	37
2	84	74	65	58	77	68	60	54	57	51	46	47	43	39	38	35	32	27
3	75	63	54	46	69	58	50	43	49	42	37	40	35	31	32	28	25	20
4	68	55	45	38	62	50	42	35	42	35	30	35	29	25	28	23	20	16
5	62	48	38	31	57	44	36	29	37	30	25	31	25	21	24	20	16	13
6	57	43	33	26	52	39	31	25	33	26	21	27	22	17	22	17	14	11
7	52	38	29	23	48	35	27	21	30	23	18	25	19	15	20	15	12	9
8	48	34	26	20	44	32	24	18	27	20	16	22	17	13	18	14	10	8
9	45	31	23	17	41	29	21	16	24	18	14	20	15	11	16	12	9	7
10	42	28	20	15	38	26	19	14	22	16	12	19	14	10	15	11	8	6

For absolute test reports, CUs are expressed as a percentage of total lumen output. Calculations were based on published IES procedures, and are based on the zonal cavity method. Basic assumptions: 1) Room surfaces are lambertian reflectors. 2) Incident flux on each surface is uniformly distributed. 3) The room is spectrally neutral. When luminaires are not evenly distributed throughout the room, or do not exhibit lateral symmetry, CU values may differ from actual performance.

Height(ft)	Illuminance at Nadir (fc)	Beam Width (across 50% Nadir Illum)	
		0-180	90-270
6.0	0.5	14.88	14.88
8.0	0.3	19.84	19.84
10.0	0.2	24.80	24.80
12.0	0.1	29.76	29.76
14.0	0.1	34.72	34.72
16.0	0.1	39.68	39.68



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120.0Vac, 60.00Hz, 0.0595A, 6.69W, 0.937PF, 10.1%THD(i)

Test Distance 9.5 m
Test Temperature 25.1 °C

Notes

The laboratory has not participated in the selection of samples to be tested. All testing is performed on the understanding that the significance of the report is limited to the extent that the test sample is representative of production units.

Tested in accordance with the applicable sections of publications: IES LM-79-08 (Sec. 12), IES LM-16-93, IES LM-58-13, CIE 13.3:1995, CIE 15:2004, ANSI C78.377:2015, ANSI C82.77-10:2014.

The luminous intensity values, and other derived quantities, contained in this report are based on the absolute data, as measured.

Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results.

This report is free of erasures and corrections.

Photometric intensity values are reported using the CIE Gamma coordinate system as defined in CIE publication number 121.

This report may contain data that are not covered by the NVLAP accreditation. Quantities marked with * are not covered.

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the Federal Government.



Report of Test

LLIA000824-061B

Integrating Sphere Report

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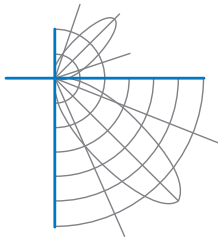


Performance Summary

Voltage	120.0 Vac
Current	0.0595 A
Power	6.69 W
Frequency	60.00 Hz
Power Factor	0.938
Current THD	10.0 %
Total Luminous Flux	400.2 lm
Efficacy	59.8 lm/W
Chromaticity (x,y)	(0.4369, 0.4008)
(u',v')	(0.2520, 0.5201)
Duv	-0.0013
CCT	2974 K
CRI (Ra)	97
R9	86

Prepared For:
Oxygen Lighting
201 Railhead Road
Fort Worth, TX 76106, USA

Test date: 09/13/2017
Report date: 09/14/2017



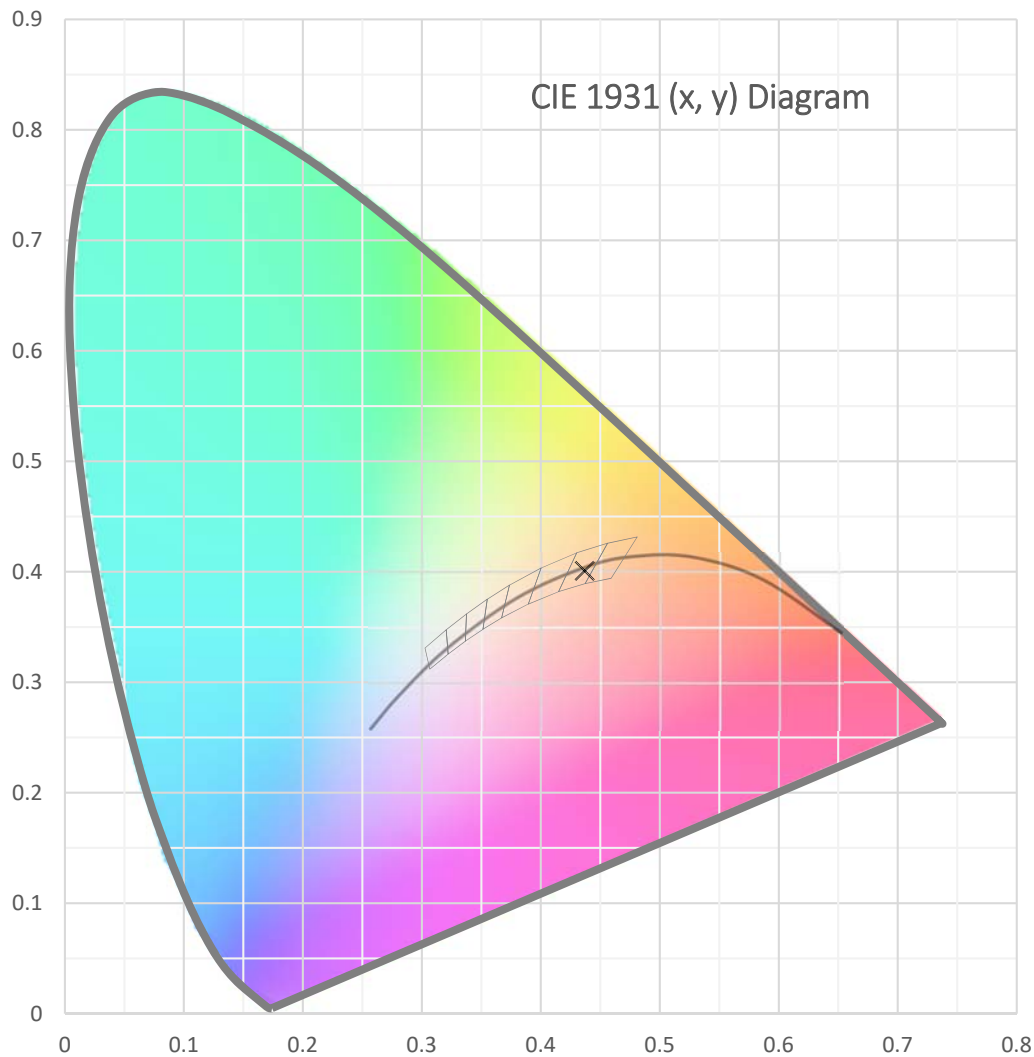
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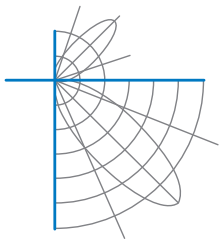
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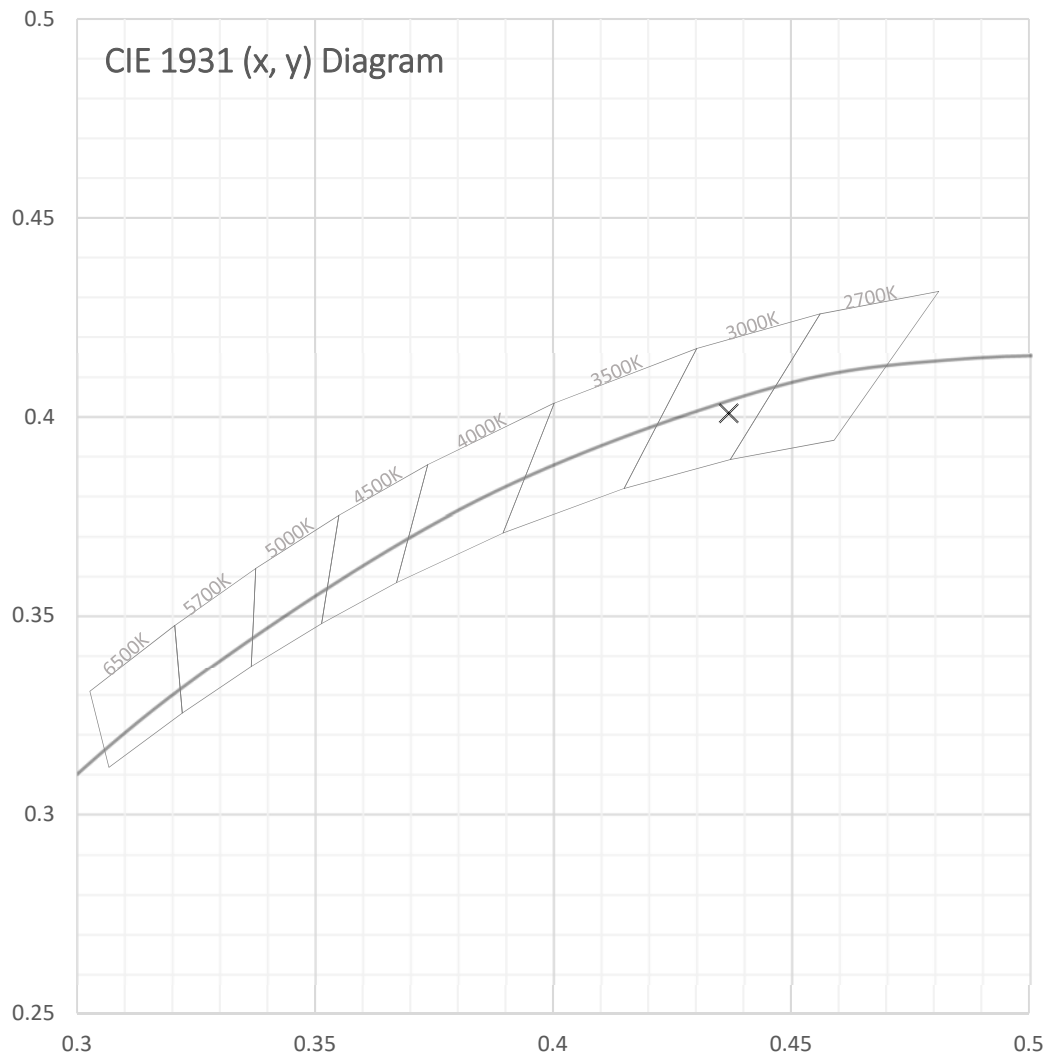
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Spectral Data

Total Radiant Flux	1.500 W
Total Luminous Flux	400.2 Lm
Chromaticity CIE 1931 (x, y)	(0.4369, 0.4008)
Chromaticity CIE 1976 (u', v')	(0.2520, 0.5201)
Correlated Color Temperature (CCT)	2974 K
Color Rendering Index (Ra)	97
R1	98
R2	98
R3	96
R4	98
R5	97
R6	97
R7	97
R8	94
R9	86
R10	94
R11	97
R12	84
R13	99
R14	97
Distance from Planckian Locus (Duv)	-0.0013
Scotopic/Photopic Ratio *	1.431

Electrical Data

Voltage	120.0 Vac
Current	0.0595 A
Power	6.69 W
Frequency	60.00 Hz
Power Factor	0.938
Current THD	10.0 %



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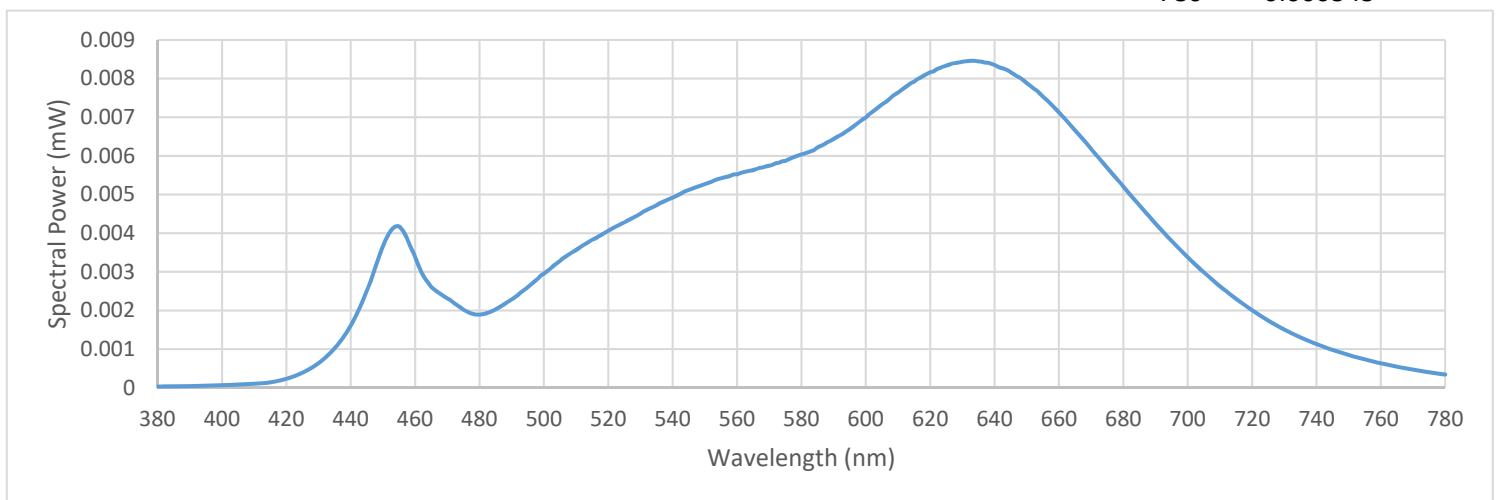
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Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

380	0.000035	480	0.001893	580	0.006036	680	0.005208
385	0.000036	485	0.002032	585	0.006219	685	0.004728
390	0.000043	490	0.002286	590	0.006439	690	0.004249
395	0.000054	495	0.002600	595	0.006693	695	0.003792
400	0.000067	500	0.002955	600	0.006994	700	0.003382
405	0.000083	505	0.003283	605	0.007331	705	0.002993
410	0.000102	510	0.003561	610	0.007639	710	0.002621
415	0.000139	515	0.003833	615	0.007923	715	0.002304
420	0.000233	520	0.004067	620	0.008164	720	0.002006
425	0.000390	525	0.004277	625	0.008334	725	0.001735
430	0.000643	530	0.004504	630	0.008434	730	0.001507
435	0.001025	535	0.004723	635	0.008445	735	0.001303
440	0.001614	540	0.004917	640	0.008353	740	0.001129
445	0.002515	545	0.005115	645	0.008165	745	0.000980
450	0.003664	550	0.005269	650	0.007882	750	0.000848
455	0.004175	555	0.005422	655	0.007536	755	0.000732
460	0.003383	560	0.005524	660	0.007133	760	0.000635
465	0.002611	565	0.005630	665	0.006657	765	0.000546
470	0.002312	570	0.005745	670	0.006178	770	0.000467
475	0.002019	575	0.005870	675	0.005693	775	0.000401
						780	0.000343





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Test Equipment Configuration:	LightLab International Allentown 2m Integrating Sphere Measurements acquired using a Labsphere CDS 2600 spectroradiometer Testing was performed using 4 π geometry
Test Temperature:	24.9 °C
Test Procedure:	Tested in accordance with the applicable sections of: LM-79-08, LM-78-07, LM-58-13, ANSI_ANSLG C78.377-2015, ANSI C82-77-10:2014
Significance:	The laboratory has not participated in the selection of samples to be tested. All testing is performed on the understanding that the significance of the report is limited to the extent that the test sample is representative of production units.
Notes:	The measurements and other derived quantities contained in this report are based on the absolute data as measured. Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results. This report is free of erasures and corrections This report may contain data that are not covered by the NVLAP accreditation. Quantities marked with * are not covered.