



**National Voluntary
Laboratory Accreditation Program**



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

VLSI Standards, Inc.
5 Technology Drive
Milpitas, CA 95035-7916
Mr. Yu Guan
Phone: 408-428-1800 x149 Fax: 408-428-9555
E-mail: yu.guan@vlsistd.com
URL: http://www.vlsistandards.com

CALIBRATION LABORATORIES

NVLAP LAB CODE 200302-0
Scope Revised: 2010-06-07

NVLAP Code: 20/A01 ANSI/NCSL Z540-1-1994; Part 1 Compliant

DIMENSIONAL

NVLAP Code: 20/D05
Length & Diameter

Nano Lattice Standards (NLS)

<i>Nominal Pitch in nm</i>	<i>Best Uncertainty (±) in nm^{note 1}</i>	<i>Percentage Uncertainty in %^{note 2}</i>
100	0.51	0.51
200	1.02	0.51
400	2.04	0.51
800	4.08	0.51
1000	5.10	0.51

NVLAP Code: 20/D12
Surface Texture

Step Height Standards (SHS) - Thin

<i>Nominal Height</i>	<i>Best Uncertainty (±)^{note 1}</i>	<i>Percentage Uncertainty (±)^{note 2}</i>
8 nm	0.41 nm	5.2
18 nm	0.66 nm	3.7
44 nm	0.57 nm	1.3

2010-07-01 through 2011-06-30

Sally S. Bruce

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88 nm	1.04 nm	1.2
180 nm	1.72 nm	1.0
450 nm	2.32 nm	0.5
940 nm	4.71 nm	0.5

Step Height Standards (SHS) - Thick

1.8 µm	0.01 µm	0.6
4.5 µm	0.05 µm	1.1
8.0 µm	0.06 µm	0.8
14.5 µm	0.08 µm	0.6
19.5 µm	0.10 µm	0.5
24 µm	0.12 µm	0.5
41 µm	0.19 µm	0.5
50 µm	0.23 µm	0.5
76 µm	0.35 µm	0.5
100 µm	0.46 µm	0.5

NVLAP Code: 20/D17

Film Thickness Standards (FTS)

SiO₂ films

<i>Nominal Thickness in nm</i>	<i>Best Uncertainty (±) in nm^{note 1}</i>	<i>Percentage Uncertainty (±)^{note 2}</i>
2.0	0.05	2.6
4.5	0.05	1.2
7.5	0.05	0.68
12	0.07	0.59
25	0.10	0.40
50	0.14	0.28
100	0.3	0.30
125	0.3	0.24
200	0.3	0.15
400	0.3	0.08

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675	0.4	0.06
1010	0.7	0.07

Si₃N₄ Films

<i>Nominal Thickness in nm</i>	<i>Best Uncertainty (±) in nm^{note 1}</i>	<i>Percentage Uncertainty (±)^{note 2}</i>
20	0.15	0.73
90	0.13	0.14
120	0.17	0.14
200	0.14	0.07

NVLAP Code: 20/O07
Optical Radiation

Photovoltaic Devices
DC Current

<i>Range</i>	<i>Best Uncertainty (±)^{note 1}</i>	<i>Remarks</i>
(3 to 10) mA	6.8% of rdg	Keithley 2420 Source, Thermocouples
(>10 to 50) mA	2.5% of rdg	Keithley 2420 Source, Thermocouples
>50 mA to 1 A	1.5% of rdg	Keithley 2420 Source, Thermocouples
(>1 to 3) A	1.9% of rdg	Keithley 2420 Source, Thermocouples
1 mA to 15 A	1.2% of rdg	Wacom NIV100

DC Voltage (0.3 to 60)V

<i>Range in DC Current</i>	<i>Best Uncertainty (±)^{note 1}</i>	<i>Remarks</i>
(3 to 10) mA	2.6% of rdg	Keithley 2420 Source, Thermocouples
(>10 to 50) mA	1.1% of rdg	Keithley 2420 Source, Thermocouples
>50 mA to 1 A	0.90% of rdg	Keithley 2420 Source, Thermocouples
(>1 to 3) A	1.0% of rdg	Keithley 2420 Source, Thermocouples

DC Voltage

<i>Range</i>	<i>Best Uncertainty (±)^{note 1}</i>	<i>Remarks</i>
(0.1 to 20)V	1.0% of rdg	Wacom NIV100

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Power – (0.3 to 180) W

Range in DC Current

(3 to 10) mA
(>10 to 50) mA

Best Uncertainty (\pm)^{note 1}

7.3% of rdg
2.7% of rdg

Remarks

Keithley 2420 Source, Thermocouples
Keithley 2420 Source, Thermocouples

>50 mA to 1 A
(>1 to 3) A

1.8% or rdg
2.2% or rdg

Keithley 2420 Source, Thermocouples
Keithley 2420 Source, Thermocouples

Power

Range

0.1 mW to 300 W

Best Uncertainty (\pm)^{note 1}

1.7% of rdg

Remarks

Wacom NIV100

Open Circuit Voltage

Range

(0.3 to 60)V
(0.1 to 20)V

Best Uncertainty (\pm)^{note 1}

0.6% of rdg
0.85% of rdg

Remarks

Keithley 2420 Source, Thermocouples
Wacom NIV100

Fill Factor – (0 to 100)%

In DC Current Range

(3 to 10) mA
(>10 to 50) mA
>50 mA to 1 A
(>1 to 3) A

Best Uncertainty (\pm)^{note 1}

12% of rdg
3.8% of rdg
1.2% of rdg
1.1% of rdg

Remarks

Keithley 2420 Source, Thermocouples
Keithley 2420 Source, Thermocouples
Keithley 2420 Source, Thermocouples
Keithley 2420 Source, Thermocouples

Fill Factor

Range

0 to 100%

Best Uncertainty (\pm)^{note 1}

1.4% of rdg

Remarks

Wacom NIV100

Area

Range

(1.0 to 400) cm²
(25 to 156) cm²
(156 to 245) cm²

Best Uncertainty (\pm)^{note 1}

0.35% or rdg
0.41% or rdg
0.25% or rdg

Remarks

Measuring Microscope
Optical Scanner
Optical Scanner

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Efficiency – (0 to 100)%

<i>Range</i>	<i>Best Uncertainty (±) ^{note 1}</i>	<i>Remarks</i>
(3 to 10) mA	7.3% of rdg	Keithley 2420 Source, Thermocouples
(>10 to 50) mA	2.8% of rdg	Keithley 2420 Source, Thermocouples
>50 mA to 1 A	1.8% of rdg	Keithley 2420 Source, Thermocouples
(>1 to 3) A	2.2% of rdg	Keithley 2420 Source, Thermocouples

Efficiency – (0 to 100)%

<i>Range In Area</i>	<i>Best Uncertainty (±) ^{note 1}</i>	<i>Remarks</i>
(25 to 156) cm ²	1.9% of rdg	Wacom NIV100, optical scanner
(156 to 245) cm ²	1.6% of rdg	Wacom NIV100, optical scanner

1. Represents an expanded uncertainty using a coverage factor, k = 2, at an approximate level of confidence of 95 %.
2. Normalized to the nominal value.

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