



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

System Scale Corporation

8101 Industry Drive
North Little Rock, AR 72117

Fulfills the requirements of

ISO/IEC 17025:2017

and national standard

ANSI/NCSL Z540-1-1994 (R2002)

In the field of

CALIBRATION

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

A handwritten signature in black ink, appearing to read 'R. Douglas Leonard Jr.', is positioned above a horizontal line.

R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 01 February 2023

Certificate Number: AC-1756



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory
quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

AND

ANSI/NCSL Z540-1-1994 (R2002)

System Scale Corporation

8101 Industry Drive
North Little Rock, AR 72117
Sean Rainey 501-562-2900 srainey@system-scale.com

CALIBRATION

Valid to: **February 1, 2023**

Certificate Number: **AC-1756**

Acoustics and Vibration

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Sound Level Meter	1 kHz		Sound Calibrator
	94 dB 114 dB	0.61 dB 0.61 dB	

Chemical Quantities

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
pH Meters ¹	4 pH	0.021 pH	Accredited pH Solutions
	7 pH	0.021 pH	
	10 pH	0.021 pH	
Conductivity Meters ¹	10 µS	0.68 µS	Accredited Conductivity Solutions
	100 µS	2.2 µS	
	1 000 µS	5.5 µS	
	10 000 µS 100 000 µS	50 µS 470 µS	



ANSI National Accreditation Board

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage – Measure ¹	(0 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V (100 to 1 000) V	16 μ V/V + 0.4 μ V 17 μ V/V + 0.1 μ V 17 μ V/V + 4.4 μ V 16 μ V/V + 67 μ V 17 μ V/V + 1.2 mV	HP 3458 opt 002 8.5 Digit Multimeter
DC Voltage – Source ¹	(0 to 329.9) mV (0 to 3.299) V (0 to 32.999) V (30 to 329.999) V (100 to 1 020) V	15.5 μ V/V + 1.2 μ V 10.2 μ V/V + 2.5 μ V 10.6 μ V/V + 20 μ V 14.8 μ V/V + 0.11 mV 14 μ V/V + 1.7 mV	Fluke 5522A/6 Multiproduct Calibrator with 600 MHz Scope Option (Ranges Locked)
DC Current – Measure ¹	(10 to 100) μ A (0.1 to 1) mA (1 to 10) mA (10 to 100) mA (0.1 to 1) A	29 μ A/A + 1.4 nA 26 μ A/A + 12 nA 27 μ A/A + 0.12 μ A 47 μ A/A + 1.1 μ A 0.14 mA/A + 14 μ A	HP 3458 opt 002 8.5 Digit Multimeter
DC Current – Source ¹	(0 to 329.9) μ A (0 to 3.299 9) mA (0 to 32.999) mA (0 to 329.99) mA (0 to 1.099 9) A (1.1 to 2.999) A (0 to 10.99) A (11 to 20.5) A	0.11 mA/A + 17 nA 93.3 μ A/A + 43 nA 80 μ A/A + 0.27 μ A 88 μ A/A + 2.2 μ A 0.17 mA/A + 36 μ A 0.39 mA/A + 0.2 mA 0.39 mA/A + 0.45 mA 7.1 mA/A + 23 mA	Fluke 5522A/6 Multiproduct Calibrator with 600 MHz Scope Option (Ranges Locked)
AC Voltage – Measure ¹	(10 to 100) mV (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 100 kHz to 1 MHz (1 to 4) MHz (4 to 8) MHz (0.1 to 10) V (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz	0.33 mV/V + 3.8 μ V 0.2 mV/V + 1.9 μ V 0.31 mV/V + 1.9 μ V 1.1 mV/V + 1.9 μ V 5.7 mV/V + 1.7 μ V 47 mV/V + 2.4 μ V 14 mV/V + 5.9 μ V 80 mV/V + 17 μ V 0.24 V/V + 14 μ V 0.13 mV/V + 5.1 μ V 0.11 mV/V + 5.1 μ V 0.19 mV/V + 3 μ V 0.37 mV/V + 1 μ V 0.95 mV/V + 1 μ V 3.6 mV/V 11 mV/V + 7.1 mV	HP 3458 opt 002 8.5 Digit Multimeter

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Measure ¹	(0.1 to 10) V		HP 3458 opt 002 8.5 Digit Multimeter
	(1 to 2) MHz	17 mV/V + 6.6 mV	
	(1 to 4) MHz	1.1 mV/V + 8 mV	
	(4 to 8) MHz	1.3 mV/V + 8 mV	
	(8 to 10) MHz	1.7 mV/V + 8 mV	
	(10 to 100) V		
	(1 to 40) Hz	0.22 mV/V + 6 mV	
	40 Hz to 1 kHz	0.22 mV/V + 4 mV	
	(1 to 20) kHz	0.22 mV/V + 4 mV	
	(20 to 50) kHz	0.4 mV/V + 3.7 mV	
	(50 to 100) kHz	1.5 mV/V + 2.2 mV	
	(100 to 300) kHz	4.7 mV/V + 11 mV	
	300 kHz to 1 MHz	18 mV/V + 11 mV	
	(100 to 1 000) V		
	(1 to 40) Hz	0.46 mV/V + 48 mV	
	40 Hz to 1 kHz	0.46 mV/V + 24 mV	
	(1 to 20) kHz	0.7 mV/V + 24 mV	
	(20 to 50) kHz	1.5 mV/V + 22 mV	
(50 to 100) kHz	3.5 mV/V + 22 mV		
AC Voltage – Source ¹	(1 to 32.99) mV		Fluke 5522A/6 Multiproduct Calibrator with 600 MHz Scope Option
	(10 to 40) Hz	0.94 mV/V + 7.1 μV	
	45 Hz to 10 kHz	0.18 mV/V + 7.1 μV	
	(10 to 20) kHz	0.23 mV/V + 7.6 μV	
	(20 to 50) kHz	1.1 mV/V + 9.3 μV	
	(50 to 100) kHz	4.1 mV/V + 16.6 μV	
	(100 to 500) kHz	9.4 mV/V + 62 μV	
	(33 to 329.99) mV		
	(10 to 45) Hz	0.37 mV/V + 8.9 μV	
	45 Hz to 10 kHz	0.17 mV/V + 10 μV	
	(10 to 20) kHz	0.18 mV/V + 12 μV	
	(20 to 50) kHz	0.41 mV/V + 14 μV	
	(50 to 100) kHz	0.95 mV/V + 37 μV	
	(100 to 500) kHz	2.3 mV/V + 83 μV	
	(0.33 to 3.299) V		
	(10 to 45) Hz	0.34 mV/V + 66 μV	
	45 Hz to 10 kHz	0.18 mV/V + 72 μV	
	(10 to 20) kHz	0.21 mV/V + 0.1 mV	
	(20 to 50) kHz	0.33 mV/V + 0.1 mV	
	(50 to 100) kHz	0.79 mV/V + 0.2 mV	
	(100 to 500) kHz	2.7 mV/V + 1 mV	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Source ¹	(3.3 to 32.99) V (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz 20 to 50 kHz 50 to 100 kHz (33 to 329.99) V 45 Hz to 1 kHz (1 to 10) kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (330 to 1 020) V 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.38 mV/V + 0.66 mV 0.18 mV/V + 0.72 mV 0.27 mV/V + 1 mV 0.39 mV/V + 1.1 mV 1 mV/V + 2.4 mV 0.22 mV/V + 2.3 mV 0.24 mV/V + 7.2 mV 0.3 mV/V + 11 mV 0.32 mV/V + 26 mV 2.3 mV/V + 64 mV 0.34 mV/V + 17 mV 0.28 mV/V + 26 mV 0.34 mV/V + 17 mV	Fluke 5522A/6 Multiproduct Calibrator with 600 MHz Scope Option
AC Voltage – Source ¹ (AUX Output)	(10 to 329.99) mV (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz (0.33 to 3.299) V (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz (3.3 to 5) V (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.53 mV 0.43 mV 0.43 mV 0.52 mV 0.52 mV 1.1 mV 0.71 mV 0.55 mV 0.57 mV 1.7 mV 1.7 mV 3.3 mV 8.1 mV 0.61 mV 0.64 mV 1.7 mV 1.8 mV	Fluke 5522A/6 Multiproduct Calibrator with 600 MHz Scope Option
AC Current – Measure ¹	(10 to 100) μ A (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz	4.6 mA/A + 36 nA 1.7 mA/A + 37 nA 0.73 mA/A + 37 nA 0.73 mA/A + 37 nA	HP 3458 opt 002 8.5 Digit Multimeter

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Measure ¹	(1 to 100) mA (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz (50 to 100) kHz 100 mA to 1 A (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz	4.7 mA/A + 23 μA 1.8 mA/A + 23 μA 0.7 mA/A + 23 μA 0.35 mA/A + 24 μA 0.7 mA/A + 23 μA 4.7 mA/A + 46 μA 6.4 mA/A + 0.17 mA 4.7 mA/A + 0.23 mA 1.9 mA/A + 0.23 mA 1 mA/A + 0.23 mA 1.2 mA/A + 0.23 mA 3.5 mA/A + 0.23 mA 11 mA/A + 0.56 mA	HP 3458 opt 002 8.5 Digit Multimeter
AC Current – Source ¹	(29 to 329.99) μA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz (0.33 to 3.299) mA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz (3.3 to 32.99) mA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	2.3 mA/A + 0.14 μA 1.7 mA/A + 0.14 μA 1.5 mA/A + 0.12 μA 3.7 mA/A + 0.19 μA 9.3 mA/A + 0.23 μA 18 mA/A + 0.55 μA 2.2 mA/A + 0.57 μA 1.4 mA/A + 0.38 μA 1.2 mA/A + 0.18 μA 2.3 mA/A + 0.23 μA 5.4 mA/A + 2.1 μA 12 mA/A + 0.8 μA 2 mA/A + 43 μA 1 mA/A + 39 μA 0.47 mA/A + 23 μA 1.2 mA/A + 58 μA 2.3 mA/A + 0.15 mA 4.7 mA/A + 0.23 mA	Fluke 5522A/6 Multiproduct Calibrator with 600 MHz Scope Option



ANSI National Accreditation Board

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Source ¹	(33 to 329.99) mA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz (0.33 to 1.099 9) A (10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (1.1 to 2.999) A (10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (3 to 10.99) A (45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz (11 to 20.5) A (45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	2 mA/A + 43 μA 1 mA/A + 39 μA 0.47 mA/A + 23 μA 1.2 mA/A + 58 μA 2.3 mA/A + 0.15 mA 4.7 mA/A + 0.23 mA 2.1 mA/A + 0.13 mA 0.6 mA/A + 0.11 mA 6.9 mA/A + 1.2 mA 28 mA/A + 6.6 mA 2.1 mA/A + 0.34 mA 0.8 mA/A + 16 μA 6.9 mA/A + 1.2 mA 29 mA/A + 6.2 mA 0.64 mA/A + 3.2 mA 1.3 mA/A + 2 mA 34 mA/A + 7.1 mA 1.3 mA/A + 7.3 mA 1.8 mA/A + 5.4 mA 34 mA/A + 11 mA	Fluke 5522A/6 Multiproduct Calibrator with 600 MHz Scope Option
Resistance – Measure ¹	(0 to 10) Ω (10 to 100) Ω (0.1 to 1) kΩ (1 to 10) kΩ (10 to 100) kΩ (0.1 to 1) MΩ (1 to 10) MΩ (10 to 100) MΩ (0.1 to 1) GΩ	21 μΩ/Ω + 0.17 mΩ 24 μΩ/Ω + 1.2 mΩ 19 μΩ/Ω + 1.3 mΩ 19 μΩ/Ω + 13 mΩ 19 μΩ/Ω + 0.13 Ω 24 μΩ/Ω + 4.7 Ω 99 μΩ/Ω + 0.11 kΩ 11 μΩ/Ω + 1.1 kΩ 17 kΩ	HP 3458 opt 002 8.5 Digit Multimeter
Resistance – Source ¹	(0 to 10.9) Ω (11 to 32.9) Ω (33 to 109.99) Ω (110 to 329.99) Ω (0.33 to 1.09) kΩ (1.1 to 3.299) kΩ (3.3 to 10.99) kΩ (11 to 32.999) kΩ	37 μΩ/Ω + 0.8 mΩ 13 μΩ/Ω + 22 μΩ 59 μΩ/Ω + 1.8 mΩ 23 μΩ/Ω + 1.6 mΩ 24 μΩ/Ω + 1.3 mΩ 28 μΩ/Ω + 10 mΩ 23 μΩ/Ω + 19 mΩ 23 μΩ/Ω + 0.16Ω	Fluke 5522A/6 Multiproduct Calibrator with 600 MHz Scope Option



ANSI National Accreditation Board

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Resistance – Source ¹	(33 to 109.99) kΩ (110 to 329.9) kΩ (0.33 to 1.09) MΩ (1.1 to 3.29) MΩ (3.3 to 10.9) MΩ (11 to 32.99) MΩ (33 to 109.99) MΩ (110 to 329.99) MΩ (330 to 1 100) MΩ	24 μΩ/Ω + 0.13 Ω 24 μΩ/Ω + 2.5 Ω 42 μΩ/Ω + 2.9 Ω 0.11 mΩ/Ω + 45 Ω 0.19 mΩ/Ω + 0.11 kΩ 0.52 mΩ/Ω + 2.1 kΩ 0.43 mΩ/Ω + 1.7 kΩ 2.3 mΩ/Ω + 82 kΩ 13 mΩ/Ω + 59 kΩ	Fluke 5522A/6 Multiproduct Calibrator with 600 MHz Scope Option
Electrical Simulation of Thermocouple Indicating Devices – Measure/Source ¹	Type E (-250 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1 000) °C Type J (-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1 200) °C Type K (-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1 000) °C (1 000 to 1 372) °C Type N (-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 410) °C (410 to 1 300) °C Type R (0 to 250) °C (250 to 400) °C (400 to 1 000) °C (1 000 to 1 767) °C	0.58 °C 0.19 °C 0.17 °C 0.19 °C 0.25 °C 0.32 °C 0.19 °C 0.17 °C 0.21 °C 0.27 °C 0.39 °C 0.22 °C 0.19 °C 0.31 °C 0.47 °C 0.47 °C 0.26 °C 0.23 °C 0.22 °C 0.32 °C 0.66 °C 0.41 °C 0.39 °C 0.47 °C	Fluke 5522A/6 Multiproduct Calibrator with 600 MHz Scope Option



ANSI National Accreditation Board

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Indicating Devices – Measure/Source ¹	Type S (0 to 250) °C (250 to 1 000) °C (1 000 to 1 400) °C (1 400 to 1 767) °C Type T (-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.55 °C 0.42 °C 0.43 °C 0.54 °C 0.73 °C 0.29 °C 0.19 °C 0.17 °C	Fluke 5522A/6 Multiproduct Calibrator with 600 MHz Scope Option
Electrical Simulation of RTD Indicating Devices – Source ¹	Pt 385, 100 Ω (-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C (630 to 800) °C	0.06 °C 0.06 °C 0.083 °C 0.11 °C 0.12 °C 0.14 °C 0.27 °C	Fluke 5522A/6 Multiproduct Calibrator with 600 MHz Scope Option
Capacitance – Source ¹	(220 to 399.9) pF (0.4 to 1.099) nF (1.1 to 3.299 9) nF (3.3 to 10.999) nF (11 to 32.999) nF (33 to 109.99) nF (110 to 329.99) nF (0.33 to 1.099 9) μF (1.1 to 3.299) μF (3.3 to 10.999) μF (11 to 32.999) μF (33 to 109.99) μF (110 to 329.99) μF (0.33 to 1.099 9) mF (1.1 to 3.299 9) mF (3.3 to 10.999) mF (11 to 32.999) mF (33 to 110) mF	5.6 pF/F + 12 pF 5 pF/F + 13 pF 5 pF/F + 17 pF 2.7 pF/F + 16 pF 2.3 pF/F + 0.17 nF 2.7 pF/F + 0.16 nF 1.8 pF/F + 1.2 nF 2.7 pF/F + 1.6 nF 1.8 pF/F + 12 nF 2.7 pF/F + 16 nF 3.6 pF/F + 0.11 μF 5.2 pF/F + 0.14 μF 4.1 pF/F + 1.1 μF 5.1 pF/F + 1.5 μF 4.1 pF/F + 11 μF 5.1 pF/F + 14 μF 7.3 pF/F + 0.1 mF 13 pF/F + 0.13 mF	Fluke 5522A/6 Multiproduct Calibrator with 600 MHz Scope Option
Oscilloscopes ¹ Amplitude – DC into 50 Ω load into 1 MΩ load	(0 to 6.6) V (0 to 130) V	3 mV/V + 47 μV 0.59 mV/V + 47 μV	Fluke 5522A/6 Multiproduct Calibrator with 600 MHz Scope Option

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Oscilloscopes ¹ Amplitude – Square Wave into 50 Ω load	10 Hz to 100 kHz ± 1 mVp-p to ± 6 Vp-p	3 mV/V + 47 μV	Fluke 5522A/6 Multiproduct Calibrator with 600 MHz Scope Option
into 1 MΩ load	± 1 mVp-p to 130 Vp-p	1.2 mV/V + 47 μV	
Amplitude – Edge	5 mV to 2.5 V	24 mV/V + 0.23 mV	
Leveled Sine Wave into 50 Ω load	5 mVp-p to 5.5 Vp-p 50 kHz	24 mV/V + 0.37 mV	
	50 kHz to 100 MHz (100 to 300) MHz	24 mV/V + 0.37 mV 47 mV/V + 0.37 mV	
	(300 to 600) MHz	71 mV/V + 0.37 mV	
Time Markers	(2 to 5) ns 10 ns (20 to 50) ns 100 ns to 20 ms 50 ms to 5 s	0.12 ns 0.12 ns 0.12 ns 11 ns 29 μs	

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Gage Blocks ³	Up to 4 in (5 to 6) in	(4.1 + 1.3L) μin (12 + 2L) μin	Master Gage Blocks, Mitutoyo Gage Block Comparator
Plain Ring Gages ³	(0.04 to 12) in	(26 + 12L) μin	LabMaster Laser Measuring System
Plug Gages ³	Up to 14 in	(9.1 + 0.7L) μin	LabMaster Laser Measuring System
Reference Spheres	Up to 4 in	(4.8 + 8.7L) μin	LabMaster Laser Measuring System
Pin Gages	Up to 1 in	9 μin	LabMaster Laser Measuring System
Indicators	Up to 1 in	120 μin	Gage Blocks, Indicator Calibrator

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Indicators ¹	Up to 1 in (1 to 5) in	60 μin 71 μin	Gage Blocks
Micrometers, Depth Micrometers ^{1,3}	Up to 20 in	(57 + 8.1L) μin	Gage Blocks
Calipers ^{1,3}	Up to 80 in	(287 + 2.8L) μin	Gage Blocks
Height Gages ^{1,3}	Up to 40 in	(13 + 8.7L) μin	Gage Blocks
Shims	Up to 250 mils	11 μin	LabMaster Laser Measuring System
Thickness Coating Gage ¹	Up to 206 mils	(12 + 48L) μin	Shims
Optical Comparators ^{1,3} Linearity Angularity Magnification	Up to 16 in Up to 180° (10 to 100) X	220 μin 47" 0.002 1 in	Inspection Master, Angle Block
Microscopes ¹	Up to 1.0 in	1 200 μin	Stage Micrometer I1110, Ruler
Precision Rules	(6 to 72) in	0.014 in	Precision Rule, Microscope
Measuring Tapes	(6 to 100) ft	0.073 in	Precision Rule, Microscope
Roughness Gage	16.1 μin Ra 119.5 μin Ra	1.9 μin 4.5 μin	Roughness Standard
Surface Plate ^{1,3} Overall Flatness Local Area Flatness	Up to 161 DL Up to 0.001 in	(5.4 – 0.97DL) μin 26 μin	Electronic Leveling System Repeat-O-Meter
60 Degree Thread Plugs Pitch Diameter	Up to 8 in	150 μin	Labmaster Laser Measuring System, Thread Wires
60 Degree Thread Plugs ^{3,4} Major Diameter Pitch Diameter Lead Pitch Flank Angles Taper	(0.118 to 3.9) in (0.118 to 3.9) in (0.118 to 3.9) in 60° (Up to 0.3 in) (0.118 to 3.9) in	110 μin 130 μin 54 μin 7' 39 μin	IAC MasterScanner

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
60 Degree Thread Plugs ^{3,4}			IAC MasterScanner
Major Diameter	(0.118 to 3.9) in	110 μin	
Pitch Diameter	(0.118 to 3.9) in	130 μin	
Lead Pitch	(0.118 to 3.9) in	53 μin	
Flank Angles	60° (Up to 0.3 in)	6.3'	
Taper	(0.118 to 3.9) in	38 μin	
Thread Wires	Up to 0.15 in	29 μin	LabMaster Laser Measuring System
Angle ³	Up to 90°	1.9'	Optical Comparator
Digital Protractors ³	Up to 360°	0.37'	Angle Blocks, Height Gage
Dial Protractors ^{1,3}	Up to 360°	10'	Angle Blocks
Length Measurements	Up to 100 in	(113 + 7.2L) μin	Comparison to Gage Blocks

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Balances ^{1,2}			ASTM E617 Class 1 Weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(0.000 01 g resolution)	Up to 200 g	0.27 mg	
(0.000 1 g resolution)	Up to 100 g	0.33 mg	
	Up to 210 g	0.69 mg	
	Up to 320 g	1.1 mg	
(0.001 g resolution)	Up to 100 g	1.1 mg	
	Up to 500 g	2 mg	
	Up to 1 kg	3.7 mg	
	Up to 5 kg	5.1 mg	

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Balances ^{1,2} (0.01 g resolution)	Up to 100 g Up to 500 g Up to 2 kg Up to 6 kg	9 mg 9.9 mg 15 mg 25 mg	ASTM E617 Class 1 Weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(0.1 g resolution)	Up to 1 kg Up to 5 kg Up to 10 kg	98 mg 99 mg 0.11 g	
(1 g resolution)	Up to 2 kg Up to 6 kg	1.2 g 1.5 g	
Balances ^{1,2} (0.1 g resolution)	Up to 24 kg	2.8 g	NIST Class F Weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(1 g resolution)	Up to 35 kg	2.8 g	
Scales ^{1,2} (0.001 lb resolution)	Up to 50 lb Up to 100 lb	0.007 4 lb 0.016 lb	ASTM E617 Class 6, NIST Class F Weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(0.01 lb resolution)	Up to 50 lb Up to 100 lb Up to 300 lb	0.017 lb 0.022 lb 0.052 lb	
(0.1 lb resolution)	Up to 50 lb Up to 300 lb Up to 500 lb Up to 1 000 lb Up to 5 000 lb	0.082 lb 0.11 lb 0.12 lb 0.2 lb 0.7 lb	
Scales ^{1,2} (1 lb resolution)	Up to 500 lb Up to 1 000 lb Up to 5 000 lb Up to 10 000 lb	0.82 lb 1.4 lb 1.4 lb 1.7 lb	ASTM E617 Class 6, NIST Class F Weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(10 lb resolution)	Up to 20 000 lb Up to 100 000 lb	8.3 lb 8.7 lb	
(20 lb resolution)	Up to 200 000 lb	24 lb	

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Mass Determination (ASTM E617 Classes 5, 6, 7, and NIST Class F Weights)	1 g	0.6 mg	Balance, ASTM E617 Class 1 Weights
	2 g	0.6 mg	
	5 g	0.6 mg	
	10 g	0.6 mg	
	20 g	0.6 mg	
	50 g	0.6 mg	
	100 g	0.6 mg	
	200 g	0.6 mg	
	500 g	3.4 mg	
	1 kg	3.4 mg	
2 kg	3.5 mg		
5 kg	4.6 mg		
Vacuum ¹	Up to 29 inHg	0.007 6 inHg	Master Vacuum Transducer
Pressure Gages ¹ (Pneumatic)	Up to 50 inH ₂ O	0.035 inH ₂ O	Master Pressure Transducer
Pressure Gages ¹ (Pneumatic)	Up to 30 psig	0.012 psi	Master Pressure Transducer
	Up to 100 psig	0.016 psi	
Pressure Gages ¹ (Pneumatic)	Up to 500 psig	0.064 psi	Deadweight Tester
	Up to 1 000 psig	0.13 psi	
	Up to 3 000 psig	0.39 psi	
	(5.8 to 1 000) psig	0.015 % of reading + 0.019 psi	
Pressure Gages ¹ (Hydraulic)	Up to 10 000 psig	3.2 psi	Master Pressure Transducer
Air Velocity	492 ft/min	25 ft/min	Master Anemometer, Open Jet Wind Tunnel
	984 ft/min	27 ft/min	
	1969 ft/min	30 ft/min	
	2953 ft/min	35 ft/min	
Force Gages ¹ (Compression and Tension)	Up to 100 lbf	0.17 lbf	Load Cells, Master Weights
	(100 to 500) lbf	0.26 lbf	
	(500 to 1 000) lbf	0.84 lbf	
	(1 000 to 10 000) lbf	2.1 lbf	
	(1 000 to 100 000) lbf	4.5 lbf	
Force Gages (Compression and Tension)	Up to 1 000 lbf	0.024 lbf	Ultra-precision Load Cells
	Up to 10 000 lbf	0.17 lbf	

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Durometers			Direct verification to ASTM D2240 Optical Projection
Indenter Dimensions			
Extension	Up to 0.1 in	280 μin	
Diameter/Length	Up to 0.15 in	280 μin	
Radius	Up to 0.05 in	280 μin	
Angle	(25 to 40)°	0.001 4°	
Spring Force			
Types A, B, E, O	Up to 8.05 N	0.098 N	Master Weights
Types D, C, DO	Up to 44.45 N	0.58 N	
Brinell Hardness Testers ¹	(72 to 277) HBW	3.4 HBW	Indirect verification per ASTM E10 using Hardness Blocks.
Rockwell Hardness Testers ¹	HRA		Indirect verification per ASTM E18 using Hardness Blocks.
	Low	1.2 HRA	
	Middle	1.3 HRA	
	High	1.2 HRA	
Rockwell Hardness Testers ¹	HRBW		Indirect verification per ASTM E18 using Hardness Blocks.
	Low	1.9 HRBW	
	Middle	1.2 HRBW	
	High	1.2 HRBW	
	HRC		
	Low	1.3 HRC	
	Middle	1.3 HRC	
	High	0.66 HRC	
	HREW		
	Low	1.3 HREW	
	Middle	1.3 HREW	
	High	1.5 HREW	



ANSI National Accreditation Board

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Rockwell Superficial Hardness Testers ¹	HR15N		Indirect verification per ASTM E18 using Hardness Blocks.
	Low	1.3 HR15N	
	Middle	1.3 HR15N	
	High	0.92 HR15N	
	HR30N		
	Low	1.3 HR30N	
	Middle	1.3 HR30N	
	High	1.3 HR30N	
	HR45N		
	Low	1.3 HR45N	
	Middle	1.3 HR45N	
	High	0.89 HR45N	
	HR15TW		
	Low	1.8 HR15TW	
	Middle	1.3 HR15TW	
	High	1.3 HR15TW	
	HR30TW		
	Low	1.8 HR30TW	
Middle	1.8 HR30TW		
High	1.3 HR30TW		
Torque Tools ¹	(5 to 50) lbf-in	0.29 lbf-in	Torque Transducers
	(10 to 100) lbf-in	0.29 lbf-in	
	(10 to 100) lbf-ft	0.3 lbf-ft	
	(25 to 250) lbf-ft	0.73 lbf-ft	
	(100 to 1 000) lbf-ft	2.9 lbf-ft	
Torque Transducers	(5 to 50) lbf-in	0.03% of reading + 0.006 lbf-in	Torque Arm, Master Weights
	(10 to 100) lbf-in	0.026% of reading + 0.017 lbf-in	
	(10 to 100) lbf-ft	0.047% of reading + 0.011 lbf-ft	
	(25 to 250) lbf-ft	0.048 lbf-ft	
	(80 to 800) lbf-ft	0.028% of reading + 0.2 lbf-ft	
(100 to 1 000) lbf-ft	0.18 lbf-ft		

Thermodynamic

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Infrared Devices ¹	50 °C 125 °C 250 °C 375 °C 500 °C	0.52 °C 0.8 °C 1.4 °C 1.9 °C 2.5 °C	Blackbody Source (Flat Plate) $\epsilon = 0.95, \lambda = (8 \text{ to } 14) \mu\text{m}$
	600 °C 800 °C 1 000 °C 1 200 °C	8.4 °C 9.6 °C 10.8 °C 12 °C	Blackbody Source (Cavity) $\epsilon = 0.99, \lambda = (0.9 \text{ to } 14) \mu\text{m}$
Temperature – Measure ¹	(-200 to 1 372) °C	0.26 °C	Thermocouple Calibrator, Datalogger, Temperature Probe
Temperature Probes (Source)	(-45 to 125) °C (0 to 1 200) °C	0.14 °C 0.054 % of reading + 0.32 °C	Dry-well, PRT, Type S Thermocouple, Environmental Chamber
Chart Recorders Relative Humidity	(20 to 90) %RH	1.8 %RH	Environmental Chamber, Datalogger
Temperature	(-17 to 177) °C	0.53 °C	

Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency – Measure ¹	(1 to 40) Hz 40 Hz to 10 MHz	0.06 % of reading + 0.7 mHz 0.012 % of reading + 1.2 Hz	HP 3458 opt 002 8.5 Digit Multimeter
Frequency – Source ¹	10 mHz to 119.99 Hz (120 to 1199.9) Hz (1.2 to 11.999) kHz (12 to 119.99) kHz (120 to 1199.9) kHz (1.2 to 2) MHz	1.3 mHz 12 mHz 0.12 Hz 1.2 Hz 12 Hz 0.12 kHz	Fluke 5522A/6 Multiproduct Calibrator with 600 MHz Scope Option
Stopwatches	5 ms to 24 h	0.87 s	Stopwatch Calibrator
Optical Tachometers	(1 to 100 000) rpm	0.002 2 % of reading + 0.21 rpm	Fluke 5522A/6 Multiproduct Calibrator with 600 MHz Scope Option

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ($k=2$), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. Scale calibration performed on-site only.
3. L = length in inches; DL = diagonal length in inches; ' = arc-minute; " = arc-second.
4. This value is an approximate value. The actual value will be used in the calculation of the Measurement Uncertainty (MU).
5. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-1756.



R. Douglas Leonard Jr., VP, PILR SBU





CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

System Scale Corporation

4808 Alma Highway
Van Buren, AR 72956

Fulfills the requirements of

ISO/IEC 17025:2017

and national standard

ANSI/NCSL Z540-1-1994 (R2002)

In the field of

CALIBRATION

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

A handwritten signature in black ink, appearing to read 'R. Douglas Leonard Jr.', is positioned above a horizontal line.

R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 01 February 2023
Certificate Number: AC-1756.01



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory
quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
AND ANSI/NCSL Z540-1-1994 (R2002)**

System Scale Corporation
4808 Alma Highway
Van Buren, AR 72956
Sean Rainey 501-562-2900 srainey@system-scale.com

CALIBRATION

Valid to: **February 1, 2023**

Certificate Number: **AC-1756.01**

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Balances ¹ (0.000 01 g resolution)	Up to 210 g	0.69 mg	ASTM E617 Class 1 Weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(0.000 1 g resolution)	Up to 100 g	0.33 mg	
	Up to 210 g	0.69 mg	
	Up to 320 g	1.1 mg	
(0.001 g resolution)	Up to 100 g	1.1 mg	
	Up to 500 g	2 mg	
	Up to 1 kg	3.7 mg	
	Up to 5 kg	15 mg	
(0.01 g resolution)	Up to 100 g	9 mg	
	Up to 500 g	9.9 mg	
	Up to 2 kg	15 mg	
	Up to 6 kg	25 mg	
(0.1 g resolution)	Up to 1 kg	98 mg	
	Up to 5 kg	99 mg	
	Up to 10 kg	0.11 g	
(1 g resolution)	Up to 2 kg	1.2 g	
	Up to 6 kg	1.5 g	

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	
Balances ^{1,2} (0.1 g resolution)	Up to 24 kg	2.8 g	NIST Class F Weights and NIST Handbook 44 utilized for the calibration of the weighing system.	
	Up to 35 kg	2.8 g		
Scales ¹	Up to 50 lb	0.007 4 lb	ASTM E617 Class 6 weights, NIST Class F weights and NIST Handbook 44 utilized for the calibration of the weighing system.	
	Up to 100 lb	0.016 lb		
	(0.01 lb resolution)	Up to 50 lb		0.017 lb
		Up to 100 lb		0.022 lb
		Up to 300 lb		0.052 lb
	(1 lb resolution)	Up to 50 lb		0.082 lb
		Up to 300 lb		0.11 lb
		Up to 500 lb		0.12 lb
		Up to 1 000 lb		0.2 lb
		Up to 5 000 lb		0.7 lb
	(10 lb resolution)	Up to 500 lb		0.82 lb
		Up to 1 000 lb		1.4 lb
		Up to 5 000 lb		1.4 lb
		Up to 10 000 lb		1.7 lb
(20 lb resolution)	Up to 20 000 lb	8.3 lb		
	Up to 100 000 lb	8.7 lb		
(20 lb resolution)	Up to 200 000 lb	24 lb		

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ($k=2$), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-1756.01.



R. Douglas Leonard Jr., VP, PILR SBU



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

System Scale Corporation

2212 N. Yellowwood Avenue
Broken Arrow, OK 74012

Fulfills the requirements of

ISO/IEC 17025:2017

and national standard

ANSI/NCSL Z540-1-1994 (R2002)

In the field of

CALIBRATION

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

A handwritten signature in black ink, appearing to read 'R. Douglas Leonard Jr.', is positioned above a horizontal line.

R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 01 February 2023

Certificate Number: AC-1756.02



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory
quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
AND ANSI/NCSL Z540-1-1994 (R2002)**

System Scale Corporation
2212 N. Yellowwood Avenue
Broken Arrow, OK 74012
Sean Rainey 501-562-2900 srainey@system-scale.com

CALIBRATION

Valid to: **February 1, 2023**

Certificate Number: **AC-1756.02**

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Balances ¹ (0.000 01 g resolution)	Up to 210 g	0.69 mg	ASTM E617 Class 1 Weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(0.000 1 g resolution)	Up to 100 g	0.33 mg	
	Up to 210 g	0.69 mg	
	Up to 320 g	1.1 mg	
(0.001 g resolution)	Up to 100 g	1.1 mg	
	Up to 500 g	2 mg	
	Up to 1 kg	3.7 mg	
	Up to 5 kg	15 mg	
(0.01 g resolution)	Up to 100 g	9 mg	
	Up to 500 g	9.9 mg	
	Up to 2 kg	15 mg	
	Up to 6 kg	25 mg	
(0.1 g resolution)	Up to 1 kg	98 mg	
	Up to 5 kg	99 mg	
	Up to 10 kg	0.11 g	
(1 g resolution)	Up to 2 kg	1.2 g	
	Up to 6 kg	1.5 g	

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	
Balances ¹ (0.1 g resolution)	Up to 24 kg	2.8 g	NIST Class F Weights and NIST Handbook 44 utilized for the calibration of the weighing system.	
	Up to 35 kg	2.8 g		
Scales ¹	(0.001 lb resolution)	Up to 50 lb	0.007 4 lb	ASTM E617 Class 6 weights, NIST Class F weights and NIST Handbook 44 utilized for the calibration of the weighing system.
		Up to 100 lb	0.016 lb	
	(0.01 lb resolution)	Up to 50 lb	0.017 lb	
		Up to 100 lb	0.022 lb	
		Up to 300 lb	0.052 lb	
	(1 lb resolution)	Up to 50 lb	0.082 lb	
		Up to 300 lb	0.11 lb	
		Up to 500 lb	0.12 lb	
		Up to 1 000 lb	0.2 lb	
		Up to 5 000 lb	0.7 lb	
	(10 lb resolution)	Up to 500 lb	0.82 lb	
		Up to 1 000 lb	1.4 lb	
		Up to 5 000 lb	1.4 lb	
		Up to 10 000 lb	1.7 lb	
(20 lb resolution)	Up to 20 000 lb	8.3 lb		
	Up to 100 000 lb	8.7 lb		
(20 lb resolution)	Up to 200 000 lb	24 lb		

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ($k=2$), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-1756.02.



R. Douglas Leonard Jr., VP, PILR SBU



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

System Scale Corporation

6759 Reese Road
Memphis, TN 38133

Fulfills the requirements of

ISO/IEC 17025:2017

and national standard

ANSI/NCSL Z540-1-1994 (R2002)

In the field of

CALIBRATION

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

A handwritten signature in black ink, appearing to read 'R. Douglas Leonard Jr.', is positioned above a horizontal line.

R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 01 February 2023

Certificate Number: AC-1756.04



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory
quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
AND ANSI/NCSL Z540-1-1994 (R2002)**

System Scale Corporation
6759 Reese Road
Memphis, TN 38133
Sean Rainey 501-562-2900 srainey@system-scale.com

CALIBRATION

Valid to: **February 1, 2023**

Certificate Number: **AC-1756.04**

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Balances ¹ (0.000 01 g resolution)	Up to 210 g	0.69 mg	ASTM E617 Class 1 Weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(0.000 1 g resolution)	Up to 100 g	0.33 mg	
	Up to 210 g	0.69 mg	
	Up to 320 g	1.1 mg	
(0.001 g resolution)	Up to 100 g	1.1 mg	
	Up to 500 g	2 mg	
	Up to 1 kg	3.7 mg	
	Up to 5 kg	15 mg	
(0.01 g resolution)	Up to 100 g	9 mg	
	Up to 500 g	9.9 mg	
	Up to 2 kg	15 mg	
	Up to 6 kg	25 mg	
(0.1 g resolution)	Up to 1 kg	98 mg	
	Up to 5 kg	99 mg	
	Up to 10 kg	0.11 g	
(1 g resolution)	Up to 2 kg	1.2 g	
	Up to 6 kg	1.5 g	

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	
Balances ¹ (0.1 g resolution)	Up to 24 kg	2.8 g	NIST Class F Weights and NIST Handbook 44 utilized for the calibration of the weighing system.	
	Up to 35 kg	2.8 g		
Scales ¹	(0.001 lb resolution)	Up to 50 lb	0.007 4 lb	ASTM E617 Class 6 weights, NIST Class F weights and NIST Handbook 44 utilized for the calibration of the weighing system.
		Up to 100 lb	0.016 lb	
	(0.01 lb resolution)	Up to 50 lb	0.017 lb	
		Up to 100 lb	0.022 lb	
		Up to 300 lb	0.052 lb	
	(1 lb resolution)	Up to 50 lb	0.082 lb	
		Up to 300 lb	0.11 lb	
		Up to 500 lb	0.12 lb	
		Up to 1 000 lb	0.2 lb	
		Up to 5 000 lb	0.7 lb	
	(10 lb resolution)	Up to 500 lb	0.82 lb	
		Up to 1 000 lb	1.4 lb	
		Up to 5 000 lb	1.4 lb	
		Up to 10 000 lb	1.7 lb	
(20 lb resolution)	Up to 20 000 lb	8.3 lb		
	Up to 100 000 lb	8.7 lb		
(20 lb resolution)	Up to 200 000 lb	24 lb		

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ($k=2$), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-1756.04.



R. Douglas Leonard Jr., VP, PILR SBU



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

System Scale Corporation

1420 Donelson Pike, Suite B7
Nashville, TN 37217

Fulfills the requirements of

ISO/IEC 17025:2017

and national standard

ANSI/NCSL Z540-1-1994 (R2002)

In the field of

CALIBRATION

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

A handwritten signature in black ink, appearing to read 'R. Douglas Leonard Jr.', is positioned above a horizontal line.

R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 01 February 2023
Certificate Number: AC-1756.05



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory
quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
AND ANSI/NCSL Z540-1-1994 (R2002)**

System Scale Corporation
1420 Donelson Pike, Suite B7
Nashville, TN 37217
Sean Rainey 501-562-2900 srainey@system-scale.com

CALIBRATION

Valid to: **February 1, 2023**

Certificate Number: **AC-1756.05**

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Balances ¹ (0.000 01 g resolution)	Up to 210 g	0.69 mg	ASTM E617 Class 1 Weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(0.000 1 g resolution)	Up to 100 g	0.33 mg	
	Up to 210 g	0.69 mg	
	Up to 320 g	1.1 mg	
(0.001 g resolution)	Up to 100 g	1.1 mg	
	Up to 500 g	2 mg	
	Up to 1 kg	3.7 mg	
	Up to 5 kg	15 mg	
(0.01 g resolution)	Up to 100 g	9 mg	
	Up to 500 g	9.9 mg	
	Up to 2 kg	15 mg	
	Up to 6 kg	25 mg	
(0.1 g resolution)	Up to 1 kg	98 mg	
	Up to 5 kg	99 mg	
	Up to 10 kg	0.11 g	
(1 g resolution)	Up to 2 kg	1.2 g	
	Up to 6 kg	1.5 g	


Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	
Balances ¹ (0.1 g resolution)	Up to 24 kg	2.8 g	NIST Class F Weights and NIST Handbook 44 utilized for the calibration of the weighing system.	
	Up to 35 kg	2.8 g		
Scales ¹ (0.001 lb resolution)	Up to 50 lb	0.007 4 lb	ASTM E617 Class 6 weights, NIST Class F weights and NIST Handbook 44 utilized for the calibration of the weighing system.	
	Up to 100 lb	0.016 lb		
	(0.01 lb resolution)	Up to 50 lb		0.017 lb
		Up to 100 lb		0.022 lb
		Up to 300 lb		0.052 lb
	(1 lb resolution)	Up to 50 lb		0.082 lb
		Up to 300 lb		0.11 lb
		Up to 500 lb		0.12 lb
		Up to 1 000 lb		0.2 lb
		Up to 5 000 lb		0.7 lb
	(10 lb resolution)	Up to 500 lb		0.82 lb
		Up to 1 000 lb		1.4 lb
		Up to 5 000 lb		1.4 lb
		Up to 10 000 lb		1.7 lb
(20 lb resolution)	Up to 20 000 lb	8.3 lb		
	Up to 100 000 lb	8.7 lb		
(20 lb resolution)	Up to 200 000 lb	24 lb		

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ($k=2$), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-1756.05.



R. Douglas Leonard Jr., VP, PILR SBU



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

System Scale Corporation
595 Pearl Park Plaza
Jackson, MS 39208

Fulfills the requirements of

ISO/IEC 17025:2017

and national standard

ANSI/NCSL Z540-1-1994 (R2002)

In the field of

CALIBRATION

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

A handwritten signature in black ink, appearing to read 'R. Douglas Leonard Jr.', is positioned above a horizontal line.

R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 01 FEBRUARY 2023

Certificate Number: AC-1756.06



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory
quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
AND ANSI/NCSL Z540-1-1994 (R2002)**

System Scale Corporation
595 Peal Park Plaza
Jackson, MS 39208
Sean Rainey 501-562-2900 srainey@system-scale.com

CALIBRATION

Valid to: **February 1, 2023**

Certificate Number: **AC-1756.06**

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Balances ¹ (0.000 01 g resolution)	Up to 210 g	0.69 mg	ASTM E617 Class 1 Weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(0.000 1 g resolution)	Up to 100 g	0.33 mg	
	Up to 210 g	0.69 mg	
	Up to 320 g	1.1 mg	
(0.001 g resolution)	Up to 100 g	1.1 mg	
	Up to 500 g	2 mg	
	Up to 1 kg	3.7 mg	
	Up to 5 kg	15 mg	
(0.01 g resolution)	Up to 100 g	9 mg	
	Up to 500 g	9.9 mg	
	Up to 2 kg	15 mg	
	Up to 6 kg	25 mg	
(0.1 g resolution)	Up to 1 kg	98 mg	
	Up to 5 kg	99 mg	
	Up to 10 kg	0.11 g	
(1 g resolution)	Up to 2 kg	1.2 g	
	Up to 6 kg	1.5 g	


Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Balances ¹ (0.1 g resolution)	Up to 24 kg	2.8 g	NIST Class F Weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(1 g resolution)	Up to 35 kg	2.8 g	
Scales ¹ (0.001 lb resolution)	Up to 50 lb Up to 100 lb	0.007 4 lb 0.016 lb	ASTM E617 Class 6 weights, NIST Class F weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(0.01 lb resolution)	Up to 50 lb Up to 100 lb Up to 300 lb	0.017 lb 0.022 lb 0.052 lb	
(0.1 lb resolution)	Up to 50 lb Up to 300 lb Up to 500 lb Up to 1 000 lb Up to 5 000 lb	0.082 lb 0.11 lb 0.12 lb 0.2 lb 0.7 lb	
(1 lb resolution)	Up to 500 lb Up to 1 000 lb Up to 5 000 lb Up to 10 000 lb	0.82 lb 1.4 lb 1.4 lb 1.7 lb	
(10 lb resolution)	Up to 20 000 lb Up to 100 000 lb	8.3 lb 8.7 lb	
(20 lb resolution)	Up to 200 000 lb	24 lb	

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ($k=2$), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-1756.06.



R. Douglas Leonard Jr., VP, PILR SBU



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

System Scale Corporation
6215-120 Rangeline Road
Theodore, AL 36582

Fulfills the requirements of

ISO/IEC 17025:2017

and national standard

ANSI/NCSL Z540-1-1994 (R2002)

In the field of

CALIBRATION

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

A handwritten signature in black ink, appearing to read 'R. Douglas Leonard Jr.', is positioned above a horizontal line.

R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 01 FEBRUARY 2023

Certificate Number: AC-1756.07



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory
quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
AND ANSI/NCSL Z540-1-1994 (R2002)**

System Scale Corporation
6215-120 Rangeline Road
Theodore, AL 36582
Sean Rainey 501-562-2900 srainey@system-scale.com

CALIBRATION

Valid to: **February 1, 2023**

Certificate Number: **AC-1756.07**

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Balances ¹ (0.000 01 g resolution)	Up to 210 g	0.69 mg	ASTM E617 Class 1 Weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(0.000 1 g resolution)	Up to 100 g	0.33 mg	
	Up to 210 g	0.69 mg	
	Up to 320 g	1.1 mg	
(0.001 g resolution)	Up to 100 g	1.1 mg	
	Up to 500 g	2 mg	
	Up to 1 kg	3.7 mg	
	Up to 5 kg	15 mg	
(0.01 g resolution)	Up to 100 g	9 mg	
	Up to 500 g	9.9 mg	
	Up to 2 kg	15 mg	
	Up to 6 kg	25 mg	
(0.1 g resolution)	Up to 1 kg	98 mg	
	Up to 5 kg	99 mg	
	Up to 10 kg	0.11 g	
(1 g resolution)	Up to 2 kg	1.2 g	
	Up to 6 kg	1.5 g	


Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	
Balances ¹ (0.1 g resolution)	Up to 24 kg	2.8 g	NIST Class F Weights and NIST Handbook 44 utilized for the calibration of the weighing system.	
	Up to 35 kg	2.8 g		
Scales ¹	Up to 50 lb	0.007 4 lb	ASTM E617 Class 6 weights, NIST Class F weights and NIST Handbook 44 utilized for the calibration of the weighing system.	
	Up to 100 lb	0.016 lb		
	(0.01 lb resolution)	Up to 50 lb		0.017 lb
		Up to 100 lb		0.022 lb
		Up to 300 lb		0.052 lb
	(0.1 lb resolution)	Up to 50 lb		0.082 lb
		Up to 300 lb		0.11 lb
		Up to 500 lb		0.12 lb
		Up to 1 000 lb		0.2 lb
		Up to 5 000 lb		0.7 lb
	(1 lb resolution)	Up to 500 lb		0.82 lb
		Up to 1 000 lb		1.4 lb
		Up to 5 000 lb		1.4 lb
		Up to 10 000 lb		1.7 lb
(10 lb resolution)	Up to 20 000 lb	8.3 lb		
	Up to 100 000 lb	8.7 lb		
(20 lb resolution)	Up to 200 000 lb	24 lb		

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ($k=2$), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-1756.07.



R. Douglas Leonard Jr., VP, PILR SBU



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

System Scale Corporation

**4393 West 96th Street
Indianapolis, IN 46268**

Fulfills the requirements of

ISO/IEC 17025:2017

and national standard

ANSI/NCSL Z540-1-1994 (R2002)

In the field of

CALIBRATION

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

A handwritten signature in black ink, appearing to read 'R. Douglas Leonard Jr.', is positioned above a horizontal line.

R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 01 FEBRUARY 2023

Certificate Number: AC-1756.08



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory
quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
AND ANSI/NCSL Z540-1-1994 (R2002)**

System Scale Corporation
4393 West 96th Street
Indianapolis, IN 46268
Sean Rainey 501-562-2900 srainey@system-scale.com

CALIBRATION

Valid to: **February 1, 2023**

Certificate Number: **AC-1756.08**

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Balances ¹ (0.000 01 g resolution)	Up to 210 g	0.69 mg	ASTM E617 Class 1 Weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(0.000 1 g resolution)	Up to 100 g	0.33 mg	
	Up to 210 g	0.69 mg	
	Up to 320 g	1.1 mg	
(0.001 g resolution)	Up to 100 g	1.1 mg	
	Up to 500 g	2 mg	
	Up to 1 kg	3.7 mg	
	Up to 5 kg	15 mg	
(0.01 g resolution)	Up to 100 g	9 mg	
	Up to 500 g	9.9 mg	
	Up to 2 kg	15 mg	
	Up to 6 kg	25 mg	
(0.1 g resolution)	Up to 1 kg	98 mg	
	Up to 5 kg	99 mg	
	Up to 10 kg	0.11 g	
(1 g resolution)	Up to 2 kg	1.2 g	
	Up to 6 kg	1.5 g	


Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Balances ¹ (0.1 g resolution)	Up to 24 kg	2.8 g	NIST Class F Weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(1 g resolution)	Up to 35 kg	2.8 g	
Scales ¹ (0.001 lb resolution)	Up to 50 lb Up to 100 lb	0.007 4 lb 0.016 lb	ASTM E617 Class 6 weights, NIST Class F weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(0.01 lb resolution)	Up to 50 lb Up to 100 lb Up to 300 lb	0.017 lb 0.022 lb 0.052 lb	
(0.1 lb resolution)	Up to 50 lb Up to 300 lb Up to 500 lb Up to 1 000 lb Up to 5 000 lb	0.082 lb 0.11 lb 0.12 lb 0.2 lb 0.7 lb	
(1 lb resolution)	Up to 500 lb Up to 1 000 lb Up to 5 000 lb Up to 10 000 lb	0.82 lb 1.4 lb 1.4 lb 1.7 lb	
(10 lb resolution)	Up to 20 000 lb Up to 100 000 lb	8.3 lb 8.7 lb	
(20 lb resolution)	Up to 200 000 lb	24 lb	

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ($k=2$), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-1756.08.



R. Douglas Leonard Jr., VP, PILR SBU



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

System Scale Corporation

10157 Williams Lane
Walker, LA 70785

Fulfills the requirements of

ISO/IEC 17025:2017

and national standard

ANSI/NCSL Z540-1-1994 (R2002)

In the field of

CALIBRATION

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

A handwritten signature in black ink, appearing to read 'R. Douglas Leonard Jr.', is positioned above a horizontal line.

R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 01 FEBRUARY 2023

Certificate Number: AC-1756.09



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory
quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
AND ANSI/NCSL Z540-1-1994 (R2002)**

System Scale Corporation
10157 Williams Lane
Walker, LA 70785
Sean Rainey 501-562-2900 srainey@system-scale.com

CALIBRATION

Valid to: **February 1, 2023**

Certificate Number: **AC-1756.09**

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Balances ¹			
(0.000 01 g resolution)	Up to 210 g	0.69 mg	ASTM E617 Class 1 Weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(0.000 1 g resolution)	Up to 100 g	0.33 mg	
	Up to 210 g	0.69 mg	
	Up to 320 g	1.1 mg	
(0.001 g resolution)	Up to 100 g	1.1 mg	
	Up to 500 g	2 mg	
	Up to 1 kg	3.7 mg	
	Up to 5 kg	15 mg	
(0.01 g resolution)	Up to 100 g	9 mg	
	Up to 500 g	9.9 mg	
	Up to 2 kg	15 mg	
	Up to 6 kg	25 mg	
(0.1 g resolution)	Up to 1 kg	98 mg	
	Up to 5 kg	99 mg	
	Up to 10 kg	0.11 g	
(1 g resolution)	Up to 2 kg	1.2 g	
	Up to 6 kg	1.5 g	


Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Balances ¹ (0.1 g resolution)	Up to 24 kg	2.8 g	NIST Class F Weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(1 g resolution)	Up to 35 kg	2.8 g	
Scales ¹ (0.001 lb resolution)	Up to 50 lb Up to 100 lb	0.007 4 lb 0.016 lb	ASTM E617 Class 6 weights, NIST Class F weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(0.01 lb resolution)	Up to 50 lb Up to 100 lb Up to 300 lb	0.017 lb 0.022 lb 0.052 lb	
(0.1 lb resolution)	Up to 50 lb Up to 300 lb Up to 500 lb Up to 1 000 lb Up to 5 000 lb	0.082 lb 0.11 lb 0.12 lb 0.2 lb 0.7 lb	
(1 lb resolution)	Up to 500 lb Up to 1 000 lb Up to 5 000 lb Up to 10 000 lb	0.82 lb 1.4 lb 1.4 lb 1.7 lb	
(10 lb resolution)	Up to 20 000 lb Up to 100 000 lb	8.3 lb 8.7 lb	
(20 lb resolution)	Up to 200 000 lb	24 lb	

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ($k=2$), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-1756.09.



R. Douglas Leonard Jr., VP, PILR SBU