



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Acuren

4692 Brate Drive, Suite 200
West Chester, OH 45011

Fulfills the requirements of

ISO/IEC 17025:2017

and national standards

ANSI/NCSL Z540-1-1994 (R2002) and

ANSI/NCSL Z540.3-2006 (R2013)

In the fields of

CALIBRATION, DIMENSIONAL MEASUREMENT and TESTING

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.

Jason Stine, Vice President

Expiry Date: 09 June 2024

Certificate Number: ACT-1108



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,
ANSI/NCSL Z540-1-1994 (R2002) AND ANSI/NCSL Z540.3-2006 (R2013)**

Acuren

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CALIBRATION, DIMENSIONAL MEASUREMENT & TESTING

Valid to: **June 9, 2024**

Certificate Number: **ACT-1108**

CALIBRATION

Electrical - DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage – Measure ³	(0 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V (100 to 1 000) V	8.8 μ V 38 μ V 47 μ V 5.1 mV 60 mV	Fluke 8846A OEM Specifications ECWI-001
DC Voltage – Source ³	(0 to 330) mV 330 mV to 3.3 V (3.3 to 33) V (33 to 330) V (330 to 1 000) V	9 μ V 47 μ V 0.52 mV 7.2 mV 24 mV	Fluke 5522A OEM Specifications ECWI-001
DC Current – Measure ³	(0 to 100) μ A 100 μ A to 1 mA (1 to 10) mA (10 to 100) mA (100 to 400) mA 400 to 1A (1 to 3) A (3 to 10) A	88 nA 0.64 μ A 8.2 μ A 64 μ A 0.26 mA 0.82 mA 2.9 mA 19 mA	Fluke 8846A OEM Specifications ECWI-001
DC Current – Source ³	(0 to 330) μ A (330 to 3.3) mA (3.3 to 33) mA (33 to 330) mA 330mA to 3 A (3 to 20) A	81 nA 0.47 μ A 4.1 μ A 42 μ A 1.4 mA 25 mA	Fluke 5522A OEM Specifications ECWI-001

Electrical - DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Resistance – Measure ³	Up to 10 Ω	5.4 m Ω	Fluke 8846A OEM Specifications ECWI-001
	(10 to 100) Ω	26 m Ω	
	100 Ω to 1 k Ω	210 m Ω	
	(1 to 10) k Ω	1.3 Ω	
	(10 to 100) k Ω	13 Ω	
	100 k Ω to 1 M Ω	130 Ω	
	(1 to 10) M Ω	4.8 k Ω	
	(10 to 100) M Ω	940 k Ω	
Resistance – Source ³	100 M Ω to 1 G Ω	24 M Ω	Fluke 5522A OEM Specifications ECWI-001
	(0 up to 11) Ω	1.7 m Ω	
	(11 to 33) Ω	2.9 m Ω	
	(33 to 110) Ω	5.2 m Ω	
	(110 to 330) Ω	13 m Ω	
	330 Ω to 1.1 k Ω	58 m Ω	
	(1.1 to 3.3) k Ω	130 m Ω	
	(3.3 to 11) k Ω	0.4 Ω	
	(11 to 33) k Ω	1.3 Ω	
	(33 to 110) k Ω	3.9 Ω	
	(110 to 330) k Ω	14 Ω	
	330 k Ω to 1.1M Ω	44 Ω	
	(1.1 to 3.3) M Ω	0.24 k Ω	
	(3.3 to 11) M Ω	1.8 k Ω	
	(11 to 33) M Ω	12 k Ω	
(33 to 110) M Ω	68 k Ω		
(110 to 330) M Ω	1.5 M Ω		
330M Ω to 1.1G Ω	20 M Ω		

Electrical - DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	
AC Voltage - Measure ³				
(1 to 100) mV	(3 to 10) Hz 10 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	120 μ V 120 μ V 0.79 mV 1 mV 6 mV	Fluke 8846A OEM Specifications ECWI-001	
100 mV to 1 V	(3 to 10) Hz 10Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	1.1 mV 1.1 mV 2.0 mV 8.1 mV 54 mV		
(1 to 10) V	(3 to 10) Hz 10 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	11 mV 11 mV 20 mV 80 mV 210 mV		
AC Voltage – Measure ³ (cont)				
(10 to 100) V	(3 to 45) Hz 45Hz to 20kHz (20 to 50) kHz (50 to 100) kHz	110 mV 110 mV 200 mV 810 mV		Fluke 8846A OEM Specifications ECWI-001
(100 to 1 000) V	(3 to 45) Hz 45Hz to 1 kHz 1KHz to 10kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) Hz	0.97 V 0.96 V 0.96 V 0.49 V 0.89 V 3 V		

Electrical - DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Source ³			
(1 to 33) mV	(10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz	13 μ V 13 μ V 15 μ V 42 μ V 140 μ V 0.36 mV	Fluke 5522A OEM Specifications ECWI-001
(33 to 330) mV	(10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz	61 μ V 61 μ V 66 μ V 0.14 mV 0.32 mV 0.79 mV	
330mV to 3.3 V	(10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz	0.62 mV 0.62 mV 0.76 mV 1.2 mV 2.8 mV 9.1 mV	
(3.3 - 33) V	10 to 45 kHz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	6 mV 6.1 mV 9.1 mV 13 mV 33 mV	
(33 to 330) V	45 Hz to 1 kHz 1 kHz to 10 kHz (10 to 20) kHz (20 to 100) kHz	73 mV 83 mV 99 mV 120 mV	
(330 to 1020) V	45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.31 V 0.31 V 0.36 V	

Electrical - DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current - Measure ³			
(0 to 100) μ A	(3 to 5) Hz (5 to 10) Hz 10 Hz to 5 kHz 5-10 kHz	1.4 μ A 0.48 μ A 0.25 μ A 1.3 μ A	Fluke 8864A OEM Specifications ECWI-001
100 μ A to 1 mA	(3 to 5) Hz (5 to 10) Hz 10 Hz to 5 kHz 5-10 kHz	58 μ A 50 μ A 48 μ A 0.29 mA	
(1 to 10) mA	(3 to 5) Hz (5 to 10) Hz 10 Hz to 5 kHz 5-10 kHz	0.2 mA 0.11 mA 87 μ A 0.85 mA	
(10 to 100) mA	3 to 5 Hz 5 to 10 Hz 10 Hz to 5 kHz 5 to 10 kHz	1.2 mA 0.4 mA 0.17 mA 0.52 mA	
(100 to 400) mA	3 to 5 Hz 5 to 10 Hz 10 Hz to 1 kHz 1 to 10 kHz	4.8 mA 1.6 mA 0.64 mA 1.8 mA	
400 mA to 1 A	3 to 5 Hz 5 to 10 Hz 10 Hz to 5 kHz 5 to 10 kHz	12 mA 3.6 mA 1.3 mA 4.9 mA	
1 to 3 A	3 to 5 Hz 5 to 10 Hz 10 Hz to 5 kHz 5 to 10 kHz	39 mA 13 mA 5.3 mA 13 mA	
3 to 10 A	3 to 5 Hz 5 to 10 Hz 10 Hz to 5 kHz 5 to 10 kHz	130 mA 41 mA 18 mA 42 mA	

Electrical - DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Source ³ (29 to 330) μ A	(10 to 20) Hz	0.89 μ A	Fluke 5522A OEM Specifications ECWI-001
	(20 to 45) Hz	0.60 μ A	
	45 Hz to 1 kHz	0.60 μ A	
	(1 to 5) kHz	0.31 μ A	
	(5 to 10) kHz	2.2 μ A	
	(10 to 30) kHz	6.6 μ A	
330 μ A to 3.3 mA	(10 to 20) Hz	8 μ A	
	(20 to 45) Hz	4.1 μ A	
	45 Hz to 1 kHz	4 μ A	
	(1 to 5) kHz	7.9 μ A	
	(5 to 10) kHz	20 μ A	
	(10 to 30) kHz	39 μ A	
(3.3 to 33) mA	(10 to 20) Hz	72 μ A	
	(20 to 45) Hz	19 μ A	
	45 Hz to 1 kHz	19 μ A	
	(1 to 5) kHz	34 μ A	
	(5 to 10) kHz	80 μ A	
	(10 to 30) kHz	160 μ A	
(33 to 330) mA	(10 to 20) Hz	0.72 mA	
	(20 to 45) Hz	0.19 mA	
	45 Hz to 1 kHz	0.19 mA	
	(1 to 5) kHz	0.45 mA	
	(5 to 10) kHz	0.90 mA	
	(10 to 30) kHz	1.8 mA	
(0.33 to 1.1) A	(10 to 45) Hz	25 mA	
	45 Hz to 1 kHz	7.6 mA	
	(1 to 5) kHz	7.7 mA	
	(5 to 10) kHz	380 mA	
(1.1 to 3) A	(10 to 45) Hz	24 mA	
	45 Hz to 1 kHz	24 mA	
	(1 to 5) kHz	150 mA	
	(5 to 10) kHz	920 mA	
(3 to 11) A	(45 to 100) Hz	150 mA	
	100 Hz to 1 kHz	200 mA	
	(1 to 5) kHz	3900 mA	



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Electrical - DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Source ³ (cont.) (11 to 20.5) A	(45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	350 mA 420 mA 710 mA	Fluke 5522A OEM Specifications ECWI-001
Capacitance – Source ³ 220 to 400 pF (0.4 to 1.1) nF (1.1 to 3.3) nF (3.3 to 11) nF (11 to 33) nF (33 to 110) nF (110 to 330) nF (0.33 to 1.1) μF (1.1 to 3.3) μF 3.3 to 11 μF (11 to 33) μF (33 to 110) μF (110 to 330) μF 330 μF to 1.1 mF (1.1 to 3.3) mF (3.3 to 11) mF (11 to 33) mF (33 to 110) mF	10 Hz to 10 kHz 10 Hz to 10 kHz 10 Hz to 10 kHz 10 Hz to 3 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz (10 to 600) Hz (10 to 300) Hz (10 to 150) Hz (10 to 120) Hz Up to 80 Hz Up to 50 Hz Up to 20 Hz Up to 6 Hz Up to 2 Hz Up to 0.6 Hz Up to 0.2 Hz	14 pF 18 pF 31 pF 46 pF 0.22 nF 0.44 nF 1.3 nF 4.4 nF 13 nF 45 nF 0.18 μF 0.71 μF 2.1 μF 7.1 μF 20 μF 70 μF 0.30 mF 1.6 mF	Fluke 5522A OEM Specifications ECWI-001

Electrical - DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Calibration of Thermocouple Indicators and Indicating Systems ³ -	Type B 600°C to 800°C 800°C to 1000°C 1000°C to 1550°C 1550°C to 1820°C	0.57 °C	Fluke 5522A OEM Specifications ECWI-001
		0.43 °C	
		0.41 °C	
		0.44 °C	
	Type C 0 °C to 150 °C 150 °C to 650 °C 650 °C to 1000 °C 1000 °C to 1800 °C 1800 °C to 2316 °C	0.39 °C	
		0.37 °C	
		0.43 °C	
		0.62 °C	
		0.99 °C	
	Type E -250 °C to -100 °C -100 °C to 650 °C 650 °C to 1000 °C	0.61 °C	
		0.27 °C	
		0.31 °C	
Type J -210 °C to -100 °C -100 °C to 760 °C 760 °C to 1200 °C	0.35 °C		
	0.29 °C		
	0.32 °C		
Type K -200 °C to -100 °C -100 °C to 120 °C 120 °C to 1000 °C 1000 °C to 1372 °C	0.43 °C		
	0.26 °C		
	0.34 °C		
	0.49 °C		
Type N -200 °C to -100 °C -100 °C to -25 °C -25 °C to 410 °C 410 °C to 1300 °C	0.49 °C		
	0.30 °C		
	0.31 °C		
	0.35 °C		
Type R 0 °C to 250 °C 250 °C to 400 °C 400 °C to 1000 °C 1000 °C to 1767 °C	0.68 °C		
	0.44 °C		
	0.45 °C		
	0.49 °C		
Type S 0 °C to 250 °C 250 °C to 1400 °C 1400 °C to 1767 °C	0.57 °C		
	0.47 °C		
	0.59 °C		

Electrical - DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Calibration of Thermocouple Indicators and Indicating Systems ³ - (cont.)			
Type T	-250 °C to -150 °C -150 °C to 0 °C 0 °C to 120 °C 120 °C to 400 °C	0.76 °C 0.32 °C 0.24 °C 0.26 °C	Fluke 5522A OEM Specifications ECWI-001
Type U	-200 °C to 0 °C 0 °C to 120 °C	0.67 °C 0.35 °C	

Time and Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Stop Watches ³	(1 to 10,800) sec	0.33 sec	US National Time Clock NIST Special Publication 960-12 (5-A)
Frequency - Measure ³	(3 to 5) Hz (5 to 10) Hz (10 to 40) Hz (0.04 to 300) kHz (0.3 to 1) MHz	7.8 mHz 6.8 mHz 15.0 mHz 5.80 kHz 2000.0 kHz	Fluke 8846A
Frequency - Source ³	(0.01 to 119.99) Hz (120.0 to 1199.9) Hz (1.200 to 11.999) kHz (12.00 to 119.99) kHz (120.0 to 1199.9) kHz (1.200 to 2.000) MHz	4.7 mHz 3120.0 mHz 370.0 mHz 3.6 kHz 100.0 kHz 45.0 kHz	Fluke 5522A



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Thermodynamics

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Temperature – Measuring Equipment ³	(-10 to 122) °C	0.27 °C	Fluke 1552A, Fluke 9102A OEM Specifications ECWI-003
Temperature - Measure ³	(-30 to 280) °C	0.18 °C	Fluke 1552A OEM Specifications ECWI-003

Mass and Mass Related

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Wrench ³	Up to 25 lbf in. (10 to 500) lbf in Up to 250 lbf ft (250 to 750) lbf ft	1.2 lbf in 4.6 lbf in 2.2 lbf ft 3.0 lbf ft	Torque Tester 21253-1 Per ASME B107.29-2005 CTP-35
Force ³ (Tension / compression)	Up to 550 lbf	1.4 lbf	CT-91 Mecmesin OEM Specifications CTP-38
Pressure ³	Up to 1,000 psi Up to 10,000 psi	2.8 psi 13 psi	CT-74 Crystal CT-73 Crystal OEM Specifications CTP-39a
Vacuum ³	(-13.2 to 0) psi (-26.8 to 0) in Hg	0.79 psi 1.6 in Hg	CT-74 Crystal OEM Specifications CTP-39b



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Length - Dimensional Metrology

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Angle Block	2.5 in Length Block	190 μin	LVDT, Gage Blocks and Sine Bar OEM Specifications CTP-01
Single Point Type Bore Gage	Up to 12 in	95μin	DMS 680 and Gage Blocks OEM Specifications CTP-02
Calipers ³	Up to 24 in	(700 + 8.3L) μin	Surface Plate, Gage Blocks and Accessory Kit OEM Specifications CTP-03
Caliper Master	Up to 12 in	(127.7+5.43L) μin	Gage Blocks, Surface Plate, LVDT OEM Specifications CTP-04
Coordinate Measurement Systems ³	Up to 96 in	(155.85+8.29L) μin	Step Gage and Ball Bar ASME B89.4.1a-1998 OEM Specifications CTP-05
Crest Gage NPTF (Step Height)	(0.0625 to 3.0) in	460 μin	Digital Indicator and Optical Comparator ASME B1.20.5-1991 CTP-06
Depth Micrometer & In-Side Micrometers ³	Up to 24 in	(96+3.19L) μin	Gage Blocks OEM Specifications CTP-07
Depth Micrometer Master	Up to 24 in	(127.19+5.46L) μin	Surface Plate, LVDT and Gage Blocks OEM Specifications CTP-08
External Diameters (Pin / Plug / Disc)	Up to 12 in	(14.07+5.72L) μin	Helios DMS 680 ASME B89.1.5-2004 CTP-09a CTP-09b
Feeler Gage (Thickness)	Up to 4 in	(20.66+2.23L) μin	Helios DMS 680 OEM Specifications CTP-10



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Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Gage Blocks	Up to 20 in	(12.38+4.67L) μ in	DMS 680 Helios and Gage Blocks Surface Plate, Gage Blocks, LVDT ASME B89.1.9 CTP-11a CTP-11b
Height Gage ³	Up to 24 in	(541.67+5.83L) μ in	Surface Plate Gage Blocks OEM Specifications CTP-13
Height Master	Up to 12 in	170 μ in	LVDT Gage Block OEM Specifications CTP-14
Indicators, Working Indicators, Plunger ³	Up to 0.035 in Up to 2 in	81 μ in 80.4 μ in	Surface Plate, Height Master or Gage Blocks OEM Specifications CTP-15
Internal Diameters (Ring Gages)	Up to 12 in	(42 + 2.5L) μ in	Helios Gage Blocks DMS 680 ASME B89.1.6-2002 CTP-16a
Length Standards	Up to 96 in	(41.01+3.86L) μ in	LVDT Gage Block, or DMS 680 CMM OEM Specifications CTP-17a
Levels	Up to 700 Arc Seconds	1.3 Arc Second	Sine Bar, Gage Blocks OEM Specifications CTP-18
Measuring Wires	(5 to 80) TPI	14 μ in	Helios and precision roll DMS 680 ANSI / ASME B1.2-1983 CTP-19
Micrometers ³	Up to 24 in	(57 + 4.2L) μ in	Gage Blocks OEM Specifications



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Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
			CTP-20
Micrometer Master	Up to 4 in (4 to 12) in	46 μin 79 μin	DMS 680 OEM Specifications CTP-21a CTP-21b
Optical Comparator ³	Up to 30 in	(276.12+0.82L) μin	Ball Checker and Magnification Scales Acu-Rite Scale OEM Specifications CTP-22
Parallels and Straight Edges	Up to 24 in	200 μin	Surface Plate and LVDT OEM Specifications CTP-23
Pipe Thread Plugs (Pitch Diameter)	Up to 3.5 in	160 μin	DMS 680 Helios, Thread Wires and Optical Comparator ASME B1.20.5-1991 CTP-24
Pipe Thread Rings (Pitch Diameter)	Up to 3.5 in	200 μin	DMS 680 Helios ASME B1.20.5-1991 CTP-25
Radius Gag	Up to 1 in	440 μin	Optical Comparator OEM Specifications CTP-26
Sine Plate	Up to 12 in	(66.86+1.42L) μin	Mitutoyo CMM OEM Specifications CTP-27
Set Thread Plug (Pitch Diameter)	Up to 3 in	69 μin	DMS 680 Helios and Thread Wires ASME B1.2-1983 ASME B1.13M CTP-28
Square and Protractors	Up to 60 in	91 μin	Mitutoyo CMM OEM Specifications CTP-29
Steel Rule	Up to 300 in	420 μin	Optical Comparator OEM Specifications CTP-30
Surface Plates ³ Flatness Repeat reading	Up to 156 in Diagonal	(10.39+12.44L) μin (19.34+12.38L) μin	Level System Repeat-O-Meter Federal Spec. GGG-P- 463c CTP-31



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Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Taper Gage	Up to 4 in	420 μin	DMS 680 DI-05 MicroVu OEM Specifications CTP-32
Thread Plug	Up to 3 in.	69 μin	DMS 680 Helios and Thread Wires ASME B1.2-1983 ASME B1.16M-1984 CTP-33
Thread Ring	Up to 3 in.	160 μin	Helios and DMS 680 ASME B1.2-1983 ASME B1.16M-1984, CTP-34
Vee-Blocks	Up to 6 x 6 in 12 x 12 in.	120 μin 120 μin	Mitutoyo CMM OEM Specifications CTP-36
Video Measuring System ³	Up to 48 in	(113.91+3.16L) μin	Acu-Rite Scale or Gage Blocks or OEM Specifications CTP-37

DIMENSIONAL MEASUREMENT

Dimensional Measurement – 1D, 2D, 3D

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
3D Dimensional	XYZ Range 35"x59"x31" Aluminum Part Composite Part Plastic Part Steel Part	580 μin 390 μin 1600 μin 320 μin	Hexagon Global 9.15.8 Blue Print or Customer Specification DIP-1
3D Dimensional	XYZ Range 47"x78"x39" Aluminum Part Composite Part Plastic Part Steel Part	1200 μin 1100 μin 2300 μin 770 μin	Mitutoyo CRTAS122010 Blue Print or Customer Specification DIP-1



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Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
3D Dimensional	XYZ Range 35"x39"x23" Aluminum Part Composite Part Plastic Part Steel Part	960 μin 940 μin 1200 μin 940 μin	Mitutoyo CRTAS9106 Blue Print or Customer Specification DIP-1
3D Dimensional	XYZ Range 27"x39"x26" Aluminum Part Composite Part Plastic Part Steel Part	1100 μin 960 μin 1400 μin 950 μin	Hexagon SF7107 Blue Print or Customer Specification DIP-1
2D Dimensional	XY Range 6"x12"	380 μin	Optical Comparator DI-05 Blue Print or Customer Specification DIP-1
1D Dimensional ³	Up to 12 in	(1278.6+17.86L) μin	Calipers DI-10 / DI-22 Blue Print or Customer Specification DIP-1
1D Dimensional ³	Up to 4 in	(135+4L) μin	Micrometers DI-04 / DI-15 / DI-16 / DI-17 Blue Print or Customer Specification DIP-1
1D Dimensional ³	(0.062 5 to 0.5) in	5800 μin	Radius Gages DI-11 Blue Print or Customer Specification DIP-1
Surface Finish ³	Up to 250 μin Ra	6.1 μin RA or Metric Equivalent	Roughness Tester Tester & Patch DI-13 / CT-92 Blue Print or Customer Specification DIP-1
1D Dimensional	Up to 4 in	(70+0.7L) μin	Helios-UMG CT-01 Blue Print or Customer Specification DIP-1



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Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
1D Dimensional	Up to 2 in	140 μ in	Mitutoyo Plunger Indicators DI-18 / DI-19 Blue Print or Customer Specification DIP-1
3D Dimensional	XYZ Range 6"x8"x2.5"	140 μ in	Mitutoyo Video Measuring System DI-12 Blue Print or Customer Specification DIP-1
3D Dimensional	XYZ Range 108"x108"x108" Aluminum Part Composite Part Plastic Part Steel Part	2300 μ in 2100 μ in 3200 μ in 2100 μ in	Faro Edge Arm with Laser Line Probe Blue Print or Customer Specification DIP-1

TESTING

Mechanical - Non-Destructive Testing

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Radiography	ASTM E94, E1030, E1032, E1742, E2104 ASME Sections: III, V, Art. 2; AWS D1.1, D1.2, D1.4, D1.5, D1.6, D14.1, D14.6; MIL-STD 453, AMS2175, ASME: B31.1, B31.3; API 1104, 620/650, 653, T9074-AS-GIB-010/271, General Electric, Rolls Royce, Safran, Hamilton Sundstrand, Eaton Aerospace. Digital Radiography (CR, DR, CT) – Eaton, GE, Rolls Royce, Pratt & Whitney, GE Power	Metals, Plastics, Composites, etc.	X-ray Iridium 192 Cobalt 60 Digital Radiography Carestream GE BladeLine GE Tome C450

Mechanical - Non-Destructive Testing

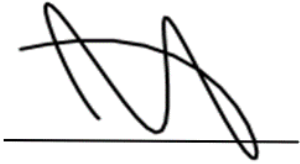
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Liquid Penetrant	ASTM E165, E1209, E1219, E1220, E1417, E1418; ASME Sections: V, Art. 6; AMS2644, MIL-STD 6866; NAVSEA T9074-AS-GIB-010/271; ASME/ANSI: B31.1, B31.3, API 1104; AWS D1.1, D1.2, D1.5, D1.6; T9074-AS-GIB-010/271; General Electric, Rolls Royce, Bell Helicopter, Hamilton Sundstrand, Eaton Aerospace, Northrop Grumman.	Metals, Plastics, Composites, etc.	Black light
Magnetic Particle	ASTM A275, E709, E1444; ASME Sections: V, Art.7; AWS: D1.1, D1.5, D14.1; NAVSEA T9074-AS-GIB-010/271 ASME: B31.1, B31.3 API-1104, 620/650, 653, T9074-AS-GIB-010/271 General Electric, , Safran, Hamilton Sundstrand, Northrop Grumman, Textron	Metals	Magnetic Particle Unit Yoke Black light Gauss Meters
Ultrasonic	ASTM A388, A435, A577, A578, A609, A745, E494, E797, E1001, E2223, E2580, SA 745, ASME Section V, Art.5; AWS D1.1, D1.5, D1.6, D14.1, D14.4, D15.1; ASME: B31.1, B31.3, T9074-AS-GIB-010/271, AMS-STD-2154, API-1104, DOD-STD-2183, General Electric, Lockheed Martin, Bell Helicopter, Hamilton Sundstrand	Metals, Plastics, Composites, etc.	UT Immersion and Portable Equipment
Eddy Current	ASTM E690, E543, E2096; ASME Sections: V, Art.8 & 30; ASME: B31.1, B31.3 General Electric General Industry Specifications	Metals	Automated Inspection Equipment And Portable Instruments
Visual	ASME: V, ART.9; AWS D1.1, D.2, D1.5 SPVT-1, VT-1 Customer Specified, Northrop Grumman	Metals	Hand Tools

Mechanical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Tension Testing, Bend Testing, Load Testing	ASTM E 8 ASTM A 370 Per Customer Requirements	Ferrous and Non-ferrous materials.	Satec/Instron 60BTE 5500R
Weld Procedure Qualification	AWS D1.1, D1.2, D1.3, D1.4, D1.5, D1.6, B4.0, ASME Section IX, API 1104, ASME B31.3, ASTM E290, E190	Ferrous and Non-ferrous materials.	Satec/Instron 60BTE 5500R
Weld Operator Qualification	AWS D1.1, D1.2, D1.3, D1.4, D1.5, D1.6, B4.0, ASME Section IX, API 1104, ASME B31.3, ASTM E290, E190	Ferrous and Non-ferrous materials.	Satec/Instron 60BTE 5500R
Rockwell, Rockwell Superficial, Brinell, Microhardness, Portable PTC,	ASTM E 18 ASTM E 10 ASTM E 384	Ferrous and Non-ferrous materials	Wilson 5TT Wilson 4JSBB Leco M400 Krautkramer MIC10 Barber Colman Portable PTC Portable Satec/Instron 60BTE 5500R
Metallographic Sample Preparation, Grain Size (Comparison), Grain Size (Intercept Method), Duplex Grain Sizes, Non Metallic Inclusion Content Decarburization Depth, Micro-Etching Metals, Macro-Etching Metals, Rapid Screen Test for IGA, Production of Metallographic Replicas	ASTM E 3 ASTM E 112 ASTM E 1181 ASTM E 45 ASTM E 1077 ASTM E 407 ASTM E 340 ASTM A 262 Practice A ASTM E 1351	Ferrous and Non-ferrous materials	Olympus BX51M Olympus SZX12 LECO PAXIT system
Positive Material Identification (PMI)	ASTM E 1476	Ferrous and Non-ferrous materials	SpectroPort PFC-07 XRF XL5

Notes:

1. Calibration and Measurement Capability (Expanded Uncertainty) are based on approximately a 95% confidence interval, using a coverage of $k=2$
2. D = length of diagonal in inches for surface plates.
3. 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.
4. This scope is part of and must be included with the Certificate of Accreditation No.ACT-1108



Jason Stine, Vice President

