



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

ZETEC EUROPE (STRUERS), TECHNICAL CENTER
 Mini Parc du Verger, BAT G
 1, rue de Terre Neuve,
 Les Ulis, 91967 COURTABOEUF
 FRANCE

Francois Wlodarczyk, Calibration & Repair Manager
 Rollin Kelso, Regulatory Compliance

Phone: 00 33 1 60 92 39 39
 Phone: 425 974-2710

CALIBRATION

Valid To: February 29, 2012

Certificate Number: 2734.04

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations¹:

I. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
DC Voltage – Measure, Fixed Points ³	300 mV 3 V 30 V 300 V 1000 V	0.026 % + 20 μV 0.025 % + 200 μV 0.025 % + 2 mV 0.025 % + 20 mV 0.025 % + 200 mV	Fluke 45 “medium” refresh rate, Fluke 8846A, Agilent 34401A & 34410A
Resistance – Measure, Fixed Points ³	300 Ω 3 kΩ 30 kΩ 300 kΩ 3 MΩ 30 MΩ	0.21 % + 0.04 Ω 0.11 % + 0.2 Ω 0.057 % + 2 Ω 0.052 % + 20 Ω 0.076 % + 200 Ω 0.25 % + 3 kΩ	Fluke 45 “medium” refresh rate, Fluke 8846A, Agilent 34401A & 34410A

Parameter/Range	Frequency	CMC ^{2,4} (±)	Comments
AC Voltage – Measure, Fixed Points ³			
300 mV	(20 to 50) Hz 50 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	1.0 % + 100 μV 0.22 % + 100 μV 0.51 % + 100 μV 2.0 % + 200 μV 5 % + 500 μV	Fluke 45 “medium” refresh rate, Fluke 8846A, Agilent 34401A & 34410A
3 V	(20 to 50) Hz 50 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	1.0 % + 1 mV 0.22 % + 1 mV 0.51 % + 1 mV 2.0 % + 2 mV 5 % + 5 mV	
30 V	(20 to 50) Hz 50 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	1.0 % + 10 mV 0.22 % + 10 mV 0.51 % + 10 mV 2.0 % + 20 mV 5 % + 50 mV	
300 V	(20 to 50) Hz 50 Hz to 10 kHz	1.0 % + 100 mV 0.22 % + 100 mV	

II. Magnetic – (Eddy Current Instrumentation)

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Receiver Amplifier Linearity ³ –			
Eddy Current Instrumentation	(0 to 100) % of full scale	0.44 %	Agilent 33250A, 33120A
Receiver Quadrature ³ –			
Eddy Current Instrumentation	(0 to 360)°	0.022°	Agilent 33250A, ZETEC ACM/frequency, Tektronix TDS-3032, 3034, 3052, 3054 (A, B, or C)

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Receiver Gain ³ – Eddy Current Instrumentation	(0 to 80) dB	0.27 %	Agilent 33250A, ZETEC ACM/frequency, Tektronix TDS-3032, 3034, 3052, 3054 (A, B, or C)

Parameter/Range	Frequency	CMC ^{2,4} (±)	Comments
Coil Driver Frequency ³ – Eddy Current Instrumentation	10 Hz to 6 MHz	0.13 %	Agilent 53132A, ZETEC ACM/frequency, Tektronix TDS-3032, 3034, 3052, 3054 (A, B, or C), Fluke 45
Receiver Frequency Bandwidth ³ – Eddy Current Instrumentation	(8 to 5000) Hz	0.2 %	Agilent 33250A, ZETEC ACM/frequency, Tektronix TDS-3032, 3034, 3052, 3054 (A, B, or C)

III. Time and Frequency

Parameter/Range	Frequency	CMC ^{2,4} (±)	Comments
Frequency – Measure ³ (10 to 100) mV _{rms}	(3 to 5) Hz (5 to 10) Hz (10 to 40) Hz 40 Hz to 300 kHz	1.2 % 0.72 % 0.61 % 0.1 %	Fluke 8846A, Agilent 34401A & 34410A
> 100 mV _{rms}	(3 to 5) Hz (5 to 10) Hz (10 to 40) Hz 40 Hz to 300 kHz	0.29 % 0.2 % 0.06 % 0.01 %	Fluke 8846A, Agilent 34401A, 34410A & 53132A

IV. Time and Frequency (Ultrasound Instrumentation)

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Time Base – Ultrasound Instrumentation ³			
Accuracy	(0.001 to 10) ms	0.03 %	Agilent 33250A, ZETEC ABUXE127A
Delay	(0.001 to 10) ms	0.03 %	
Linearity	(0.001 to 10) ms	0.03 %	
Pulser – Ultrasound Instrumentation ³			Agilent 33250A, Tektronix TDS-3032, 3034, 3052, 3054 (A, B, or C), ZETEC ABUXE127A, ZETEC TESET037C
Amplitude	(25 to 250) V	1.8 %	
Overshoot	(0 to 10) %	1 %	
Rise Time	(0 to 50) ns	1.1 ns	
Width	(25 to 1000) ns	0.5 ns	
Delay	(0 to 50) ns	1.0 ns	
Receiver – Ultrasound Instrumentation ³			
Delay	(0 to 50) ns	4.0 ns	Agilent 33250A, ZETEC ABUXE127A, ZETEC TESET037C
Gain Accuracy	(0 to 20) dB (0 to 60) dB	0.54 dB 0.54 dB	Agilent 33250A, ZETEC ABUXE127A, ZETEC TESET037C
Vertical Linearity	≤ 50 % > 50 %	2.2 % 2.9 %	Agilent 33250A, ZETEC ABUXE127A, attenuator 50BR-10-017
Noise	(0 to 200) nV _{pp} /Hz ^{0.5}	17 nV _{pp} /Hz ^{0.5}	ZETEC ABUXE127A, ZETEC OPUX062A

Parameter/Range	Frequency	CMC ^{2, 4} (±)	Comments
Pulse Rate Frequency – Ultrasound Instrumentation ³	0.1 Hz to 40 kHz	0.03 %	Tektronix TDS-3032, 3034, 3052, 3054 (A, B, or C), ZETEC ABUXE127A
Receiver Filter – Ultrasound Instrumentation ³			
Low Cutoff	(0 to 1) MHz (>1 to 15) MHz	4.0 % 2.0 %	Agilent 33250A, Tektronix TDS-3032, 3034, 3052, 3054 (A, B, or C), ZETEC ABUXE127A, ZETEC TESET037C
High Cutoff	(0 to 25) MHz	1.5 %	
Bandwidth	(0 to 25) MHz	2.0 %	
Center	(0 to 20) MHz	2.0 %	

¹ This laboratory offers commercial and field calibration service.

² Calibration and Measurement Capability (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. Calibration and Measurement Capabilities represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

³ Field calibration service is available for this calibration and this laboratory meets A2LA R104 – *General Requirements: Accreditation of Field Testing and Field Calibration Laboratories* for these calibrations. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the CMC found on the A2LA Scope. Allowance must be made for aspects such as the environment at the place of calibration and for other possible adverse effects such as those caused by transportation of the calibration equipment. The usual allowance for the actual uncertainty introduced by the item being calibrated, (e.g. resolution) must also be considered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC.

⁴ In the statement of CMC, percentages are to be read as percent of reading unless otherwise noted.



World Class Accreditation

The American Association for Laboratory Accreditation

Accredited Laboratory

A2LA has accredited

ZETEC EUROPE (STRUERS), TECHNICAL CENTER

Les Ulis COURTABOEUF Cedex, FRANCE

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General Requirements for the Competence of Testing and Calibration Laboratories*. This laboratory also meets additional program requirements in the field of calibration. 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 8 January 2009).

Presented this 11th day of December 2009.





President & CEO

For the Accreditation Council
Certificate Number 2734.04
Valid to February 29, 2012
Revised on November 1, 2010

For the calibrations to which this accreditation applies, please refer to the laboratory's Calibration Scope of Accreditation.