

Accredited entity according to ČSN EN ISO/IEC 17025:2018:

Evident Service Center Europe s.r.o.
 CAB number 2371, NDT Calibration Laboratory
 Evropská 16/176, Vokovice, 160 00 Praha 6

CMC for the field of measured quantity: Length

Ord. number ₁	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Work-place
		min	unit	max	unit					
1	Ultrasonic thickness gauges	0.150 mm	to	5.100 mm		0.005 mm	Comparison with the value of a standard	DOC-23-00018		
		1.00 mm	to	100.00 mm		0.01 mm				
2	Magnamike thickness gauges	0.250 mm	to	25.340 mm		0.005 mm	Comparison with the value of a standard	DOC-23-00018		

¹ Asterisk at the ordinal number identifies the calibrations, which the Laboratory is qualified to carry out outside the permanent laboratory premises.

² The expanded measurement uncertainty is in accordance with ILAC-P14 and EA-4/02 M a part of CMC and it is the lowest value of the respective uncertainty. If not stated otherwise, its coverage probability is approx. 95 %. If not stated otherwise, the uncertainty values stated without a unit are relative to the measured value. The uncertainty value stated herein is based on the best conditions achievable by the laboratory; the uncertainty value of a specific calibration may be higher depending on the conditions of such a calibration. For identical extreme values of adjacent ranges, the lower uncertainty value always applies.

³ If the document identifying the calibration procedure is dated only these specific procedures are used. If the document identifying the calibration procedure is not dated, the latest edition of the specified procedure is used (including any changes).

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CMC for the field of measured quantity: Testing of properties and defects of materials

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Work-place
		min	unit	max	unit					
1	Olympus ultrasonic thickness gauges by automatic method								DOC-23-00018	
	Pulse repetition frequency	3 Hz		to	34 Hz		1 %	Signal measurement with an oscilloscope (ČSN EN 15317)		
	Transmit pulse voltage	2 V		to	500 V		2 %	Measurement with an oscilloscope (ČSN EN 15317)		
	Pulse tail	2 V		to	500 V		2 %			
	Pulse rise time	2 ns		to	1000 ns		0.8 %			
	Pulse duration	2 ns		to	1000 ns		0.8 %			
	Current operating range	0.1 A		to	0.3 A		1.5 %	Reading from the power supply (ČSN EN 15317)		
	Precision and resolution	0.25 mm		to	100 mm		0.15 %	Comparison with reference standard value (ČSN EN 15317)		
2	Olympus ultrasonic flaw detectors by automatic method								DOC-23-00019	
	Stability after heating							Instrument display reading (ČSN EN 12668-1)		
	- signal amplitude	5 % SH		to	100 % SH		0.14 % SH			
	- signal position	5 % SW		to	100 % SW		0.12 % SW			
	Display instability									
	- signal amplitude	5 % SH		to	100 % SH		0.14 % SH			
	- signal position	5 % SW		to	100 % SW		0.12 % SW			
Stability at voltage fluctuation										
- signal amplitude	5 % SH		to	100 % SH		0.14 % SH				
- signal position	5 % SW		to	100 % SW		0.12 % SW				
	Transmit pulse voltage	2 V		to	500 V		3 %			
	Pulse tail	2 V		to	500 V		3 %			
	Pulse rise time	2 ns		to	1100 ns		2 %			
	Pulse duration	2 ns		to	1100 ns		2 %			

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Ord. number 1	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Work-place
		min	unit	max	unit					
	Amplifier frequency response	0.1 MHz		to	26.5 MHz		2 %	Calculation from measured values (ČSN EN 12668-1) Comparison with a reference standard (ČSN EN 12668-1) Simulation by el. signal (ČSN EN 12668-1) Measurement with an oscilloscope (ČSN EN ISO 22232-1) Instrument display reading (ČSN EN ISO 22232-1) Calculation from measured values (ČSN EN ISO 22232-1) Comparison with a reference standard (ČSN EN ISO 22232-1) Simulation by el. signal (ČSN EN ISO 22232-1)		
	Equivalent input noise level	1 nV/√Hz		to	80 nV/√Hz		7 %			
	Calibrated attenuator accuracy	0 dB		to	110 dB		0.7 dB			
	Display unit vertical linearity	5 % SH		to	100 % SH		1 % SH			
	Time base linearity	5 % SW		to	100 % SW		0.0004 % SW			
	Time resolution	50 ns		to	150 ns		2 ns			
	Transmit pulse voltage	2 V		to	500 V		3 %			
	Pulse rise time	2 ns		to	1100 ns		2 %			
	Pulse duration	2 ns		to	1100 ns		2 %			
	Amplifier frequency response	0.1 MHz		to	26.5 MHz		2 %			
Equivalent input noise level	1 nV/√Hz		to	80 nV/√Hz		7 %				
Calibrated attenuator accuracy	0 dB		to	110 dB		0.7 dB				
Display unit vertical linearity	5 % SH		to	100 % SH		1 % SH				
Time base linearity	5 % SW		to	100 % SW		0.0004 % SW				
3	Ultrasonic flaw detectors by manual method according to ČSN EN 12668-1:2010							DOC-23-00020		
	Stability after heating - signal amplitude - signal position	5 % SH		to	100 % SH		0.43 % SH 0.29 % SW	Instrument display reading		
	Display instability - signal amplitude	5 % SH		to	100 % SH		0.43 % SH			

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		min	unit	max	unit					
	- signal position	5 % SW		to	100 % SW		0.29 % SW	Measurement by an oscilloscope		
	Instability at fluctuation									
	- signal amplitude	5 % SH		to	100 % SH		0.43 % SH			
	- signal position	5 % SW		to	100 % SW		0.29 % SW			
	Transmit pulse voltage	2 V		to	500 V		1.20 V			
	Pulse tail	2 V		to	500 V		0.43 % V			
	Pulse rise time	2 ns		to	1100 ns		0.9 ns			
	Pulse duration	2 ns		to	1100 ns		0.9 ns			
	Amplifier frequency response	0.2 MHz		to	26.5 MHz		0.46 %			
	Calibrated attenuator accuracy	0 dB		to	110 dB		0.7 dB			
Display unit vertical linearity	5 % SH		to	100 % SH		0.72 % SH	Comparison with a reference standard Instrument display reading Calculation from measured values			
Equivalent input noise level	0 nV/√Hz		to	80 nV/√Hz		5.4 %				
Time base linearity	5 % SW		to	100 % SW		0.14 % SW		Electrical signal simulation		
4	Olympus Nortec 500 series eddy current flaw detectors							DOC-23-00021		
Instrument current demand	550 mA		to	850 mA		0.006 mA	Power supply reading			
Instrument switching-off	7.0 V		to	8.0 V		0.06 V	Power supply reading			
Instrument charging current	1.0 A		to	1.7 A		0.5 mA	Power supply reading			
Output signal amplitude	0.4 V		to	4.2 V		0.05 mV	Measurement by a multimeter			
Instrument driving pulse	8.20 V _{p-p}		to	10.27 V _{p-p}		0.06 V _{p-p}				
Instrument output frequency				100 Hz 12 MHz		0.1 Hz 12·10 ⁻⁶ MHz				
Filter test	2 Hz		to	8 Hz		0.057 Hz	Instrument display reading			
Scanner output frequency							Measurement by an oscilloscope			
- for 1200 (RPM)				20 Hz		0.02 Hz				
- for 3000 (RPM)				50 Hz		0.05 Hz				
Instrument conductivity	30 % IACS		to	60 % IACS		0.17 % IACS	Comparison with a reference standard			

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		min	unit	max	unit					
	Additional outputs Frequency No. 1 & No. 2			5 V		0.06 V	Measurement by an oscilloscope			
5	Olympus Nortec 600 series eddy current flaw detectors Excitation frequency	10·10 ⁻⁶ MHz	to	10 MHz		2 %	Measurement with an oscilloscope (ČSN EN ISO 15548-1)	DOC-23-00021		
	Harmonic distortion	10·10 ⁻⁶ MHz	to	10 MHz		0.3 %				
	Maximum output voltage	1.8 V _{p-p}	to	2.2 V _{p-p}		0.3 %				
	Maximum permissible output voltage	0.1 V _{p-p}	to	14.4 V _{p-p}		0.5 %				
	Signal processing frequency response	0.1 kHz	to	2 kHz		0.1 %				
	Phase linearity			360 °		0.002°	Instrument display reading (ČSN EN ISO 15548-1) Comparison with a reference standard (ČSN EN ISO 15548-1) Calculation from measured values (ČSN EN ISO 15548-1)			
	Gain setting accuracy			100 dB		0.07 dB				
	Instrument maximum noise	1.8 μV	to	15.0 μV		0.5 %				
	Olympus BondMaster 600 series eddy current flaw detectors									
	Excitation frequency	1 kHz	to	500 kHz		2 %	Measurement by an oscilloscope			
	Harmonic distortion	10·10 ⁻⁶ MHz	to	10 MHz		0.3 %				
	Maximum output voltage of TX generator (MIA, RESONANCE) and HV generator (MIA)	0.9 V _{p-p}	to	140 V _{p-p}		0.3 %				
	Output voltage linearity	0.01 %	to	0.75 %		0.5 %				
	Signal processing frequency response	70 Hz	to	80 Hz		0.1 %				
	Phase linearity			360 °		0.002°	Instrument display reading Comparison with a reference standard Calculation from measured values			
	Gain setting accuracy			100 dB		0.07 dB				
	Instrument maximum noise	1.8 μV	to	15 μV		0.5 %				

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6	Olympus Omniscan series ultrasonic flaw detectors							DOC-23-00022		
	Stability after heating (mm)								Instrument display signal reading (ČSN EN 12668-1)	
	- signal amplitude	5 % SH	to	100 % SH		0.14 % SH				
	- signal position	5 % SW	to	100 % SW		0.12 % SW				
	Display unit instability							Instrument display signal reading (ČSN EN 12668-1)		
	- signal amplitude (mm)	5 % SH	to	100 % SH		0.14 % SH				
	- signal position (mm)	5 % SW	to	100 % SW		0.12 % SW				
	Stability at voltage variations							Instrument display signal reading (ČSN EN 12668-1)		
	- signal amplitude (mm)	5 % SH	to	100 % SH		0.14 % SH				
	- signal position (mm)	5 % SW	to	100 % SW		0.12 % SW				
Transmit pulse voltage							Measurement with an oscilloscope (ČSN EN 12668-1)			
Pulse tail	2 V	to	500 V		3 %					
Pulse rise time	2 ns	to	1100 ns		2 %					
Pulse duration	2 ns	to	1100 ns		2 %					
Amplifier frequency response	0.1 MHz	to	26.5 MHz		2 %		Instrument display reading (ČSN EN 12668-1)			
Equivalent input noise level			80 nV/√Hz		7 %					
Calibrated attenuator accuracy			110 dB		0.7 dB		Comparison with a reference standard (ČSN EN 12668-1)			
Display unit vertical linearity (mm)	5 % SH	to	100 % SH		1.0 % SH					
Time base linearity			5,125 μs		0.004 μs		Simulation by el. signal (ČSN EN 12668-1)			
Transmit pulse voltage (PA)	2 V	to	500 V		3 %					
Pulse rise time (PA)	2 ns	to	1100 ns		2 %		Transmit pulse voltage			
Pulse duration (PA)	2 ns	to	1100 ns		2 %					
Emission delay (PA)			5 ns		0.08 ns		Measurement by an oscilloscope			

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	Bandwidth (PA)	0.2 MHz		26.5 MHz		2 %	Instrument display reading			
	Display linearity (PA)	5 % SH		100 % SH		0.23 % SH				
	Instrument absolute gain (PA)	5 % SH	to	100 % SH		0.23 % SH	Measurement by an oscilloscope			
	Display linearity delay (PA)	0.01 μs	to	10.01 μs		0.001 μs	Electrical signal simulation			
	Transmit pulse voltage (UT)	2 V	to	500 V		3 %	Transmit pulse voltage			
	Pulse rise time (UT)	2 ns	to	1100 ns		2 %	Pulse rise time			
	Pulse duration (UT)	2 ns	to	1100 ns		2 %	Pulse duration			
	Instrument absolute gain (UT)	5 % SH	to	100 % SH		0.23 % SH	Measurement by an oscilloscope			
	Bandwidth (UT)	0.2 MHz	to	26.5 MHz		2 %	Instrument display reading			
	Display linearity delay	0.01 μs	to	10.01 μs		0.001 μs	Electrical signal simulation			
	Display linearity	5 % SH	to	100 % SH		0.23 % SH	Instrument display reading			
	Transmit pulse voltage (UT)	2 V	to	500 V		3 %	Transmit pulse voltage			
	Pulse rise time (UT)	2 ns	to	1100 ns		2 %	Pulse rise time			
	Pulse duration (UT)	2 ns	to	1100 ns		2 %	Pulse duration			
	Amplifier frequency response	0.2 MHz	to	26.5 MHz		2 %	(ČSN EN ISO 22232-1) Signal generation			
	Equivalent input noise level			80 nV/√Hz		7 %	(ČSN EN ISO 22232-1) Calculation from measured values			
	Calibrated attenuator accuracy			110 dB		0.7 dB	(ČSN EN ISO 22232-1) Comparison with a reference standard			
	Display unit vertical linearity (mm)	5 % SH	to	100 % SH		1.0 % SH	Instrument display reading (ČSN EN ISO 22232-1)			
	Channel gain deviation	5 % SH	to	100 % SH		0.2 % SH	Instrument display reading			
	Transmit pulse voltage	2 V	to	500 V		3 %	Transmit pulse voltage			
	Pulse rise time	2 ns	to	1100 ns		2 %	Pulse rise time			
	Pulse duration	2 ns	to	1100 ns		2 %	Pulse duration			
	Delay linearity			55 ns		0.07 ns	(ČSN EN ISO 18563-1) Simulation by el. signal (ČSN EN ISO 18563-1)			

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	Transmit channel position deviation			5 ns		0.07 ns	Electrical signal simulation Signal generation (ČSN EN ISO 18563-1) Instrument display reading (ČSN EN ISO 18563-1) Calculation from measured values (ČSN EN ISO 18563-1) Comparison with a reference standard (ČSN EN ISO 18563-1) Instrument display reading (ČSN EN ISO 18563-1) Simulation by el. signal (ČSN EN ISO 18563-1) Measurement by an oscilloscope Comparison with a reference standard			
	Amplifier frequency response	0.2 MHz	to	26.5 MHz		2 %				
	Channel gain deviation	5 % SH	to	100 % SH		0.2 % SH				
	Equivalent input noise level			80 nV/√Hz		7 %				
	Calibrated attenuator accuracy			110 dB		0.7 dB				
	Vertical display linearity (mm)	5 % SH	to	100 % SH		1 % SH				
	Linearity of individual transmit pulses			55 ns		0.07 ns				
	Instrument absolute gain (ECA)			1.5 V		0.01 V				
	Gain linearity (ECA)	0.1	to	3.0 %		0.7 %				
	Generator excitation frequency (ECA)	0.1 MHz	to	6.1 MHz		2.0 %				
	Output voltage verification (ECA)						Measurement by an oscilloscope			
	- voltage	1 V	to	10 V		0.7 %				
	- frequency	1 Hz	to	20 Hz		2.0 %				
	General test (ECA)						0.08 V			
	- voltage on a connector			12 V						
	- voltage on a BNC connector			12 V		0.08 V				

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Explanatory notes:

IACS International Annealed Copper Standard

RPM Revolutions per minute

SH Screen Height

SW Screen Width