

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

PTS Josef Solnař, s.r.o.
Facility No. 2355, Calibration Laboratory
U Hrůbků 170/18, Nová Ves, 709 00 Ostrava

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 meas. quantity	Lowest expanded measurement uncertainty specified ²	Calibration principle	Calibration procedure identification ³	Work place
		min.	unit	max.	unit					
1*	Ultrasonic defectoscopes								A 04-55/31	
	Stability – measurement of amplitude	0 % SH	to	100 % SH			1.4 % SH	Signal generation by reference generator (ČSN EN 12668-1:2010)		
	Stability - measurement of position	0 % SW	to	100 % SW			1.1 % SW			
	Transmitter - Impulse voltage amplitude							Direct signal measurement with a reference oscilloscope (ČSN EN 12668-1:2010)		
	Transmitter – Pulse decay amplitude	1 V	to	400 V			3.2 %			
	Transmitter – Pulse rise time	0 ns	to	500 ns			2.7 % + 2.4 ns			
	Transmitter – Pulse duration	0 ns	to	500 ns			2.7 % + 2.4 ns			
	Receiver – f _{lm} , lower limit frequency							Signal generation by a reference generator (ČSN EN 12668-1:2010)		
	Receiver – f _{um} , upper limit frequency	0.1 MHz	to	25 MHz			3.3 %			
	Receiver – f ₀ , medium frequency	0.1 MHz	to	25 MHz			3.5 %			
	Receiver – Δf, bandwidth	0.1 MHz	to	25 MHz			4.7 %			
	Receiver – Equivalent input noise level							Direct signal measurement with a reference oscilloscope, Comparison with a reference attenuator (ČSN EN 12668-1:2010)		
		10 ⁻¹² V/√Hz	to	10 ⁻⁶ V/√Hz			2.7·10 ⁻⁹ V/√Hz			

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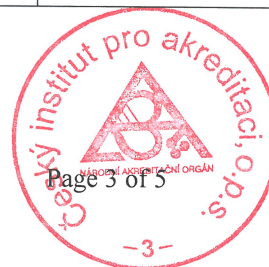
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		min.	unit	max.	unit					
	Receiver – Attenuator accuracy	0 dB	to	70 dB			2.8 % + 0.2 dB	Comparison with a reference attenuator (ČSN EN 12668-1:2010)		
	Receiver – Vertical linearity	0 dB	to	70 dB			2.8 % + 0.2 dB			
	Time base linearity for digital instruments	0.5 μs	to	2,000 μs			1.1 % + 0.05 μs	Signal generation by reference generator (ČSN EN 12668-1:2010)		
2*	Ultrasonic thickness gauges								A 04-55/01	
	Low voltage warning									
		1 V	to	20 V			0.87 %	Direct measurement of voltage and current with a reference multimeter (ČSN EN 15317)		
	Voltage operating range	1 V	to	20 V			0.87 %			
	Current operating range	20 mA	to	2,000 mA			0.43 %			
	Transmitter – Pulse repeating period							Direct signal measurement with a reference oscilloscope (ČSN EN 15317)		
		0.1 ms	to	10 ms			0.50 %			
	Transmitter – Impulse voltage amplitude	1 V	to	400 V			3.2 %			
	Transmitter – Pulse decay amplitude	1 V	to	400 V			3.2 %			
	Transmitter – Pulse rise time	0 ns	to	500 ns			2.7 % + 2.4 ns			
	Transmitter – Pulse duration	0 ns	to	500 ns			2.7 % + 2.4 ns			
	Min. and max. measurable thickness	1 mm	to	100 mm			0.04 mm	Comparison with a length standard (ČSN EN 15317)		
	Thickness resolution			0.1 mm		th (9.4 to 9.8) mm	0.04 mm			

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3*	Tangential magnetic field / Hand magnets	1.5 kA/m		to	15 kA/m	50 Hz	7.7 %	Measurement by a teslameter (ČSN EN ISO 9934-3)	A 04-53/41a	
4*	AC current / Current generators	0 A		to	2,000 A	50 Hz	4.9 % + 8 A	Comparison with a clamp ammeter (ČSN EN ISO 9934-3)	A 04-53/51a	
5*	Stationary magnetization equipment								A 04-53/61a	
	Tangential magnetic field	2 kA/m		to	6 kA/m	50 Hz	7.7 %	Measurement by a teslameter (ČSN EN ISO 9934-3)		
	AC current	0 A		to	2,000 A	50 Hz	4.9 % + 8 A	Comparison with a clamp ammeter (ČSN EN ISO 9934-3)		
6*	Meters of magnetic field intensity (teslameters, gaussmeters, magnetometers)								A 04-53/32	
	DC tangential magnetic field							Comparison with coil magnetic induction standard (ČSN EN ISO 9934-3)		
	AC tangential magnetic field	0.5 kA/m		to	1.5 kA/m	50 Hz	2.0 %			
	DC tangential magnetic field	0.5 kA/m		to	1.5 kA/m	50 Hz	3.0 %			
	DC tangential magnetic field	1.5 kA/m		to	30 kA/m		0.8 %			
	AC tangential magnetic field	1.5 kA/m		to	30 kA/m	50 Hz	1.2 %			



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7*	Eddy current defectoscopes								A 04-51/29	
	Generator frequency									
	Receiver – f_{lm} , lower limit frequency	0.1 kHz		to	1,000 kHz		0.011 %	Direct signal measurement with a reference counter (ČSN EN 15548-1:2010) Signal generation by a reference generator (ČSN EN ISO 15548-1)		
	Receiver – f_{um} , upper limit frequency	1 kHz		to	100 kHz		2.4 %			
	Receiver – f_0 , medium frequency	1 kHz		to	100 kHz		2.4 %			
	Receiver – Δf , bandwidth	1 kHz		to	100 kHz		2.5 %			
	Receiver - attenuator accuracy	1 kHz		to	100 kHz		5.7 %			
		0 dB		to	30 dB	1 kHz to 100 kHz	0.43 dB	Comparison with a reference attenuator (ČSN EN ISO 15548-1)		
8*	Digital ultrasonic defectoscopes								A 04-55/21	
	Transmitter – Impulse voltage amplitude							Direct signal measurement with a reference oscilloscope (ČSN EN ISO 22232-1)		
	Transmitter – Pulse rise time	1 V		to	400 V		3.2 %			
	Transmitter – Pulse duration	0 ns		to	500 ns		2.7 % + 2.4 ns			
	Receiver – f_{lm} , lower limit frequency	0 ns		to	500 ns		2.7 % + 2.4 ns			
	Receiver – f_{um} , upper limit frequency	0.1 MHz		to	25 MHz		3.3 %	Signal generation by a reference generator (ČSN EN ISO 22232-1)		
	Receiver – f_0 , medium frequency	0.1 MHz		to	25 MHz		3.3 %			
	Receiver – Δf , bandwidth	0.1 MHz		to	25 MHz		3.5 %			
		0.1 MHz		to	25 MHz		4.7 %			



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	Receiver – noise level							Direct signal measurement with a reference oscilloscope, Comparison with a reference attenuator (ČSN EN ISO 22232-1)		
	Receiver – gain linearity	10-12 V/√Hz		to	10-6 V/√Hz		2.7·10-9 V/√Hz	Comparison with a reference attenuator (ČSN EN ISO 22232-1)		
	Receiver – display vertical linearity	0 dB		to	70 dB		2.8 % + 0.2 dB			
	Time base deviation	0 dB		to	70 dB		2.8 % + 0.2 dB	Signal generation by a reference generator (ČSN EN ISO 22232-1)		
		0.5 μs		to	2,000 μs		1.1 % + 0.05 μs			

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 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 value measured. 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).

Explanatory notes:

SW Screen Width

SH Screen Height

