

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

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

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

Ord. number <sup>1</sup>	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified <sup>2</sup>	Calibration principle	Calibration procedure identification <sup>3</sup>	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	1 V	to	400 V		3.2 %				
	Transmitter – Pulse duration	0 ns	to	500 ns		2.7 % + 2.4 ns				
	Receiver – f <sub>lm</sub> , lower limit frequency	0 ns	to	500 ns		2.7 % + 2.4 ns				
	Receiver – f <sub>um</sub> , upper limit frequency	0.1 MHz	to	25 MHz		3.3 %	Signal generation by a reference generator (ČSN EN 12668-1:2010)			
	Receiver – f <sub>0</sub> , medium frequency	0.1 MHz	to	25 MHz		3.3 %				
	Receiver – Δf, bandwidth	0.1 MHz	to	25 MHz		3.5 %				
	Receiver – Equivalent input noise level	0.1 MHz	to	25 MHz		4.7 %				
		10 <sup>-12</sup> V/√Hz	to	10 <sup>-6</sup> V/√Hz		2.7·10 <sup>-9</sup> V/√Hz	Direct signal measurement with a reference oscilloscope, Comparison with a reference attenuator (ČSN EN 12668-1:2010)			

**The Appendix is an integral part of  
Certificate of Accreditation No. 565/2022 of 29/11/2022**

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	Receiver – Attenuator accuracy	0 dB	to	70 dB		2.8 % + 0.2 dB	Comparison with a reference attenuator (ČSN EN 12668-1:2010)  Signal generation by reference generator (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				
2*	Ultrasonic thickness gauges						Direct measurement of voltage and current with a reference multimeter (ČSN EN 15317)	A 04-55/01		
	Low voltage warning	1 V	to	20 V		0.87 %				
	Voltage operating range	1 V	to	20 V		0.87 %	Direct signal measurement with a reference oscilloscope (ČSN EN 15317)			
	Current operating range	20 mA	to	2,000 mA		0.43 %				
	Transmitter – Pulse repeating period	0.1 ms	to	10 ms		0.50 %				
	Transmitter – Impulse voltage amplitude	1 V	to	400 V		3.2 %	Comparison with a length standard (ČSN EN 15317)			
	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				
	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)							Comparison with coil magnetic induction standard (ČSN EN ISO 9934-3)	A 04-53/32	
	DC tangential magnetic field	0.5 kA/m	to	1.5 kA/m			2.0 %			
	AC 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									
	Generator frequency	0.1 kHz	to	1,000 kHz		0.011 %	Direct signal measurement with a reference counter (ČSN EN 15548-1:2010)	A 04-51/29		
	Receiver – $f_{lm}$ , lower limit frequency	1 kHz	to	100 kHz		2.4 %	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		2.5 %				
	Receiver – $\Delta f$ , bandwidth	1 kHz	to	100 kHz		5.7 %				
	Receiver - attenuator accuracy	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									
	Transmitter – Impulse voltage amplitude	1 V	to	400 V		3.2 %	Direct signal measurement with a reference oscilloscope (ČSN EN ISO 22232-1)	A 04-55/21		
	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	0.1 MHz	to	25 MHz		3.3 %	Signal generation by a reference generator (ČSN EN ISO 22232-1)			
	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 – $\Delta f$ , bandwidth	0.1 MHz	to	25 MHz		4.7 %				

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

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

<sup>2</sup> 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.

<sup>3</sup> 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