

Date

Reference

2024-12-20

2023/1057

**Scope of accreditation**

**Calibration according to SS-EN ISO/IEC 17025:2018**

RISE Research Institutes of Sweden AB

Borås

Accreditation number

1002

Mätteknik

A002626-055

**Acoustics, ultrasound and vibration**

<i>Technology area</i>	<i>Method</i>	<i>Parameter</i>	<i>Material</i>	<i>Measuring range</i>	<i>Best measuring ability (CMC) +/-</i>	<i>Technique</i>	<i>Flex</i>	<i>Type of flex</i>	<i>Field</i>	<i>Note</i>
Power	ISO 6926		Reference sound source	10 kHz	0,8 dB		Yes	2	No	
			Reference sound source	12,5 kHz	1,0 dB		Yes	2	No	
			Reference sound source	125 - 160 Hz	0,7 dB		Yes	2	No	
			Reference sound source	16 - 20 kHz	1,2 dB		Yes	2	No	
			Reference sound source	200 - 400 Hz	0,6 dB		Yes	2	No	
			Reference sound source	50 Hz	3 dB		Yes	2	No	
			Reference sound source	500 Hz - 5 kHz	0,5 dB		Yes	2	No	
			Reference sound source	6,3 kHz	0,6 dB		Yes	2	No	
			Reference sound source	63 Hz	2 dB		Yes	2	No	
			Reference sound source	8 kHz	0,7 dB		Yes	2	No	
			Reference sound source	80 - 100 Hz	0,9 dB		Yes	2	No	
			Reference sound source	A-vägt	0,4 dB		Yes	2	No	

**Electricity and Magnetism**

<i>Technology area</i>	<i>Method</i>	<i>Parameter</i>	<i>Material</i>	<i>Measuring range</i>	<i>Best measuring ability (CMC) +/-</i>	<i>Technique</i>	<i>Flex</i>	<i>Type of flex</i>	<i>Field</i>	<i>Note</i>
Electric charge	Inhouse method; SP 4854		Charge amplifier	0,5 pC	0,7 %		Yes	2	No	1-10000 Hz
			Charge amplifier	1 pC	0,4 %		Yes	2	No	1-10000 Hz
			Charge amplifier	2 pC	0,3 %		Yes	2	No	1-10000 Hz

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<i>Technology area</i>	<i>Method</i>	<i>Parameter</i>	<i>Material</i>	<i>Measuring range</i>	<i>Best measuring ability (CMC) +/-</i>	<i>Technique</i>	<i>Flex</i>	<i>Type of flex</i>	<i>Field</i>	<i>Note</i>
Electric charge	Inhouse method; SP 4854		Charge amplifier	5-5000 pC	0,2 %		Yes	2	No	1-10000 Hz

**Length related quantities**

<i>Technology area</i>	<i>Method</i>	<i>Parameter</i>	<i>Material</i>	<i>Measuring range</i>	<i>Best measuring ability (CMC) +/-</i>	<i>Technique</i>	<i>Flex</i>	<i>Type of flex</i>	<i>Field</i>	<i>Note</i>
Length	Inhouse method; SP 2339		Larger objects such as machines, fixtures, robots etc.	Dimension upp till 200 x 200 x 200 m	Down to 0,01 mm +2,5 ppm	Optical Portable Coordinate Measuring Machine (OPCMM)	Yes	2	Yes	
	ISO 10140-5		Tapping machine	29 - 31 mm	0,03 mm		Yes	2	No	Annex E
		Angle	Tapping machine	89 - 91°	0,1°		Yes	2	No	Annex E
		Radie	Tapping machine	300 - 700 mm	20 mm		Yes	2	No	Annex E
	ISO 16283-2		Tapping machine	29 - 31 mm	0,03 mm		Yes	2	No	Annex A
		Angle	Tapping machine	89 - 91°	0,1°		Yes	2	No	Annex A
Radie		Tapping machine	300 - 700 mm	20 mm		Yes	2	No	Annex A	
Speed	ISO 10140-5		Tapping machine	0,5 -1 m/s	0,0064 m/s		Yes	2	No	Annex E
	ISO 16283-2		Tapping machine	0,5 -1 m/s	0,0064 m/s		Yes	2	No	Annex A

**Mass related quantities**

<i>Technology area</i>	<i>Method</i>	<i>Parameter</i>	<i>Material</i>	<i>Measuring range</i>	<i>Best measuring ability (CMC) +/-</i>	<i>Technique</i>	<i>Flex</i>	<i>Type of flex</i>	<i>Field</i>	<i>Note</i>
Density	Inhouse method; SP 2319		Areometer	0,6-2 g/cm <sup>3</sup>	0,0001 g/cm <sup>3</sup>		Yes	2	No	
	Inhouse method; SP 2931		Density meter	675 – 1250 kg/m <sup>3</sup>	0,4 kg/m <sup>3</sup>		Yes	2	Yes	
Force	Inhouse method; SP 1301		Force measuring device	1 N - 250 N	0,01 % of measured value		Yes	2	Yes	

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<i>Technology area</i>	<i>Method</i>	<i>Parameter</i>	<i>Material</i>	<i>Measuring range</i>	<i>Best measuring ability (CMC) +/-</i>	<i>Technique</i>	<i>Flex</i>	<i>Type of flex</i>	<i>Field</i>	<i>Note</i>	
Force	Inhouse method; SP 1301		Force measuring device	1 kN - 100 kN	0,005 % of measured value		Yes	2	No		
			Force measuring device	1 kN - 100 kN	0,1 % of measured value		Yes	2	Yes		
			Force measuring device	1 N - 250 N	0,01 % of measured value		Yes	2	No		
			Force measuring device	100 kN - 1000 kN	0,01 % of measured value		Yes	2	No		
			Force measuring device	100 kN - 1000 kN	0,1 % of measured value		Yes	2	Yes		
			Force measuring device	1000 kN - 6000 kN	0,05 % of measured value		Yes	2	No	Compression loading only	
			Force measuring device	1000 kN - 6000 kN	0,1 % of measured value		Yes	2	Yes	Compression loading only	
			Force measuring device	250 N - 1000 N	0,005 % of measured value		Yes	2	No		
			Force measuring device	250 N - 1000 N	0,01 % of measured value		Yes	2	Yes		
		Inhouse method; SP 2843		Impact sensor	0,1 kN - 25 kN	0,1 % of measured value		Yes	2	No	
		ISO 376		Force measuring device	0,25 kN - 100 kN	0,005 % of measured value		Yes	2	No	
			Force measuring device	1 N - 250 N	0,01 % of measured value		Yes	2	No		
			Force measuring device	100 kN - 1000 kN	0,01 % of measured value		Yes	2	No		
	Force measuring device		1000 kN - 6000 kN	0,05 % of measured value		Yes	2	No	Compression loading only		
Mass	ISO 10140-5		Tapping machine	490 - 510 g	1 g		Yes	2	No	Annex E	

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Mass	ISO 16283-2		Tapping machine	490 - 510 g	1 g		Yes	2	No	Annex A
Torque	Inhouse method; SP 1302		Torque measuring device	0,1 Nm - 1 Nm	0,0012 Nm		Yes	2	No	
			Torque measuring device	0,1 Nm - 1 Nm	0,002 Nm		Yes	2	Yes	
			Torque measuring device	1 Nm - 250 Nm	0,1 % of measured value		Yes	2	No	
			Torque measuring device	1 Nm - 2500 Nm	0,2 % of measured value		Yes	2	Yes	
			Torque measuring device	250 Nm - 5000 Nm	0,15 % of measured value		Yes	2	No	
Volume	Inhouse method; SP 2048		Vertical cylindrical storage tanks	> 2m2	0,05 % of area		Yes	2	Yes	
	Inhouse method; SP 2049		Tanks	10 - 200 000 m3	0,1 % of total volume		Yes	2	Yes	Non vertical cylindrical tanks

**Photometer and radiometer**

<i>Technology area</i>	<i>Method</i>	<i>Parameter</i>	<i>Material</i>	<i>Measuring range</i>	<i>Best measuring ability (CMC) +/-</i>	<i>Technique</i>	<i>Flex</i>	<i>Type of flex</i>	<i>Field</i>	<i>Note</i>
Optical Quantities	Inhouse method; SP 1810		OTDR length scale	1 ns - 1ms	1,1 ns	Fixed delay time	Yes	2	No	IEC 61746-1 SM, IEC 61746-2 MM
	Inhouse method; SP 1811		OTDR loss deviation	0-23 dB	0,017 dB		Yes	2	No	IEC 61746-1 SM 1310 nm, 1550 nm
			OTDR loss deviation	0-23 dB	0,049 dB			Yes	2	No

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**Time and Frequency**

<i>Technology area</i>	<i>Method</i>	<i>Parameter</i>	<i>Material</i>	<i>Measuring range</i>	<i>Best measuring ability (CMC) +/-</i>	<i>Technique</i>	<i>Flex</i>	<i>Type of flex</i>	<i>Field</i>	<i>Note</i>
Time	ISO 10140-5		Tapping machine	50 - 1000 ms	1 ms		Yes	2	No	Annex E
	ISO 16283-2		Tapping machine	50 - 1000 ms	1 ms		Yes	2	No	Annex A

Calibration and measurement capability, CMC, is the smallest uncertainty the calibration laboratory can provide, expressed as the expanded uncertainty having a coverage probability of approximately 95%.

Changes in the scope of accreditation are in bold.

Type of flexible scope

- 1: - Introduce new version of standard method and make editorial changes to non-standard method
- 2: - Introduce new version of standard method and make editorial changes to non-standard method, - Introduce new version and modifications of non-standard method. The procedure must be equivalent.

The changes introduced through accreditation with flexible scope must not involve new measurement principles, changes in measurement range, CMC (best measurement capability), or new quantities other than those included in the accreditation decision for calibration laboratories.