

Date

Reference

2024-06-28

2022/2581

Scope of accreditation

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

nok9AB

Malmö

Accreditation number

10255

A013479-001

Electricity and Magnetism

<i>Technology area</i>	<i>Method</i>	<i>Parameter</i>	<i>Material</i>	<i>Measure</i>	<i>Best measuring ability (CMC) +/-</i>	<i>Technique</i>	<i>Flex</i>	<i>Type of flex</i>	<i>Field</i>	<i>Note</i>
Current	Inhouse method; PROC-TC-012	AC	Precision Power Analyzer	1 000 - 10 000 mA	14 mA		Yes	2	No	205 kHz - 350 kHz
		AC	Precision Power Analyzer	1 000 - 10 000 mA	20 mA		Yes	2	No	350 kHz - 370 kHz
		AC	Precision Power Analyzer	1 000 - 10 000 mA	20 mA		Yes	2	No	370 kHz - 500 kHz
		AC	Precision Power Analyzer	1 000 - 10 000 mA	5,1 mA		Yes	2	No	50 Hz - 85kHz
		AC	Precision Power Analyzer	1 000 - 10 000 mA	8,5 mA		Yes	2	No	85 Hz - 205kHz
		AC	Precision Power Analyzer	10 - 100 mA	0,35 mA		Yes	2	No	50 Hz - 85kHz
		AC	Precision Power Analyzer	10 - 100 mA	15 mA		Yes	2	No	350 kHz - 370 kHz
		AC	Precision Power Analyzer	10 - 100 mA	16 mA		Yes	2	No	370 kHz - 500 kHz
		AC	Precision Power Analyzer	10 - 100 mA	3,8 mA		Yes	2	No	85 Hz - 205kHz
		AC	Precision Power Analyzer	10 - 100 mA	8,6 mA		Yes	2	No	205 kHz - 350 kHz
		AC	Precision Power Analyzer	100 - 1 000 mA	0,8 mA		Yes	2	No	50 Hz - 85kHz
		AC	Precision Power Analyzer	100 - 1 000 mA	15 mA		Yes	2	No	350 kHz - 370 kHz
		AC	Precision Power Analyzer	100 - 1 000 mA	16 mA		Yes	2	No	370 kHz - 500 kHz
		AC	Precision Power Analyzer	100 - 1 000 mA	9,0 mA		Yes	2	No	205 kHz - 350 kHz
		AC	Precision Power Analyzer	100 -1 000 mA	4,2 mA		Yes	2	No	85 Hz - 205kHz
		DC	Multimeter	1 - 10 mA	0,25 µA		Yes	2	No	
		DC	Multimeter	1 000 - 10 000 mA	16 mA		Yes	2	No	
		DC	Multimeter	1 000-1 500 mA	0,53 mA		Yes	2	No	

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Current	Inhouse method; PROC-TC-012	DC	Multimeter	10 - 100 mA	4,0 µA		Yes	2	No	
		DC	Multimeter	100 - 1 000 mA	130 µA		Yes	2	No	
	Inhouse method; PROC-TC-013	AC	Precision Power Analyzer	1 000 - 10 000 mA	14 mA		Yes	2	No	205 kHz - 350 kHz
		AC	Precision Power Analyzer	1 000 - 10 000 mA	20 mA		Yes	2	No	350 kHz - 370 kHz
		AC	Precision Power Analyzer	1 000 - 10 000 mA	20 mA		Yes	2	No	370 kHz - 500 kHz
		AC	Precision Power Analyzer	1 000 - 10 000 mA	5,1 mA		Yes	2	No	50 Hz - 85kHz
		AC	Precision Power Analyzer	1 000 - 10 000 mA	8,5 mA		Yes	2	No	85 Hz - 205kHz
		AC	Precision Power Analyzer	10 - 100 mA	0,35 mA		Yes	2	No	50 Hz - 85kHz
		AC	Precision Power Analyzer	10 - 100 mA	15 mA		Yes	2	No	350 kHz - 370 kHz
		AC	Precision Power Analyzer	10 - 100 mA	16 mA		Yes	2	No	370 kHz - 500 kHz
		AC	Precision Power Analyzer	10 - 100 mA	3,8 mA		Yes	2	No	85 Hz - 205kHz
		AC	Precision Power Analyzer	10 - 100 mA	8,6 mA		Yes	2	No	205 kHz - 350 kHz
		AC	Precision Power Analyzer	100 - 1 000 mA	0,8 mA		Yes	2	No	50 Hz - 85kHz
		AC	Precision Power Analyzer	100 - 1 000 mA	15 mA		Yes	2	No	350 kHz - 370 kHz
		AC	Precision Power Analyzer	100 - 1 000 mA	16 mA		Yes	2	No	370 kHz - 500 kHz
		AC	Precision Power Analyzer	100 - 1 000 mA	9,0 mA		Yes	2	No	205 kHz - 350 kHz
		AC	Precision Power Analyzer	100 -1 000 mA	4,2 mA		Yes	2	No	85 Hz - 205kHz
		DC	Multimeter	1 000-1 500 mA	0,53 mA		Yes	2	No	
		DC	Multimeter	1 500 - 10 000 mA	16 mA		No		No	
		DC	Multimeter	10 - 100 mA	4,0 µA		Yes	2	No	
DC	Multimeter	100 - 1 000 mA	130 µA		Yes	2	No			
DC	Multimeter	1-10 mA	0,25 µA		No		No			

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Effect	Inhouse method; PROC-TC-012	AC	Power meter	0 - 1 000 mW	1,1 mW		Yes	2	No	50 Hz - 500 kHz
		AC	Power meter	1 000 - 5 000 mW	2,7 mW		Yes	2	No	50 Hz - 500 kHz
		AC	Power meter	5 000 - 8 000 mW	3,6 mW		Yes	2	No	50 Hz - 500 kHz
		DC	Power meter	1 000 - 5 000 mW	1,1 mW		Yes	2	No	CATS I BST
		DC	Power meter	100 - 1 000 mW	0,2 mW		Yes	2	No	CATS I BST
		DC	Power meter	15 000 - 20 000 mW	7,6 mW		Yes	2	No	CATS I BST
		DC	Power meter	5 000 - 15 000 mW	5,2 mW		Yes	2	No	CATS I BST
	Inhouse method; PROC-TC-013	AC	Power meter	16 000 - 32 000 mW	2,5 mW		Yes	2	No	50 Hz - 500 Hz
		AC	Power meter	32 000 - 48 000 mW	3,4 mW		Yes	2	No	50 Hz - 500 Hz
		AC	Power meter	48 000 - 72 000 mW	4,7 mW		Yes	2	No	50 Hz - 500 Hz
		AC	Power meter	5 - 8 000 mW	1,0 mW		Yes	2	No	50 Hz - 500 Hz
		AC	Power meter	72 000 - 96 000 mW	6,0 mW		Yes	2	No	50 Hz - 500 Hz
		AC	Power meter	8 000 - 16 000 mW	1,6 mW		Yes	2	No	50 Hz - 500 Hz
		AC	Power meter	96 000 - 200 000 mW	12 mW		Yes	2	No	50 Hz - 500 Hz
		DC	Power meter	1 - 150 W	0,052 W		Yes	2	No	10V ≤ VDC ≤ 100V and 10mA ≤ IDC ≤ 100mA
		DC	Power meter	1,5 - 100 W	0,16 W		Yes	2	No	10V ≤ VDC ≤ 100V and 100mA ≤ IDC ≤ 1500mA
		DC	Power meter	10 - 1 000 mW	2,0 mW		Yes	2	No	1V ≤ VDC ≤ 10V and 10mA ≤ IDC ≤ 100mA

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<i>Technology area</i>	<i>Method</i>	<i>Parameter</i>	<i>Material</i>	<i>Measure</i>	<i>Best measuring ability (CMC) +/-</i>	<i>Technique</i>	<i>Flex</i>	<i>Type of flex</i>	<i>Field</i>	<i>Note</i>
Effect	Inhouse method; PROC-TC-013	DC	Power meter	10 - 10 000 mA	21 mW		Yes	2	No	1V ≤ VDC ≤ 10V and 100mA ≤ IDC ≤ 1500mA
		DC	Power meter	100 - 15 000 mW	5,2 mW		Yes	2	No	1V ≤ VDC ≤ 10V and 1A ≤ IDC ≤ 10A
		DC	Power meter	100 - 5 000 mW	1,1 mW		Yes	2	No	CATS II BST
		DC	Power meter	15 - 1 000 W	1,6 W		Yes	2	No	10V ≤ VDC ≤ 100V and 1A ≤ IDC ≤ 10A
		DC	Power meter	5 000 - 20 000 mW	7,6 mW		Yes	2	No	CATS II BST
Inductance	Inhouse method; PROC-TC-012		LCR meter	0,1-1 μH	2 nH		Yes	2	No	ESR: 1mR-10R f: 1 kHz-1MHz
			LCR meter	100-200 μH	170 nH		Yes	2	No	ESR: 1mR-10R f: 1 kHz-1MHz
			LCR meter	10-20 μH	24 nH		Yes	2	No	ESR: 1mR-10R f: 1 kHz-1MHz
			LCR meter	1-10 μH	12 nH		Yes	2	No	ESR: 1mR-10R f: 1 kHz-1MHz
			LCR meter	200-500 μH	420 nH		Yes	2	No	ESR: 1mR-10R f: 1 kHz-1MHz
			LCR meter	20-50 μH	42 nH		Yes	2	No	ESR: 1mR-10R f: 1 kHz-1MHz
			LCR meter	50-100 μH	83 nH		Yes	2	No	ESR: 1mR-10R f: 1 kHz-1MHz
	Inhouse method; PROC-TC-013		LCR meter	0,1-1 μH	2 nH		Yes	2	No	ESR: 1mR-10R f: 1 kHz-1MHz
			LCR meter	100-200 μH	170 nH		Yes	2	No	ESR: 1mR-10R f: 1 kHz-1MHz

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Inductance	Inhouse method; PROC-TC-013		LCR meter	10-20 μ H	24 nH		Yes	2	No	ESR: 1mR-10R f: 1 kHz-1MHz
			LCR meter	1-10 μ H	12 nH		Yes	2	No	ESR: 1mR-10R f: 1 kHz-1MHz
			LCR meter	200-500 μ H	420 nH		Yes	2	No	ESR: 1mR-10R f: 1 kHz-1MHz
			LCR meter	20-50 μ H	42 nH		Yes	2	No	ESR: 1mR-10R f: 1 kHz-1MHz
			LCR meter	50-100 μ H	83 nH		Yes	2	No	ESR: 1mR-10R f: 1 kHz-1MHz
Q-factor	Inhouse method; PROC-TC-012		LCR meter	0-10	0,01		Yes	2	No	
			LCR meter	100-150	0,87		Yes	2	No	
			LCR meter	10-50	0,03		Yes	2	No	
			LCR meter	150-200	2,1		Yes	2	No	
			LCR meter	50-100	0,26		Yes	2	No	
	Inhouse method; PROC-TC-013		LCR meter	0-10	0,01		Yes	2	No	
			LCR meter	100-150	0,87		Yes	2	No	
			LCR meter	10-50	0,03		Yes	2	No	
			LCR meter	150-200	2,1		Yes	2	No	
			LCR meter	50-100	0,26		Yes	2	No	
Resistance							Yes	2	No	
	Inhouse method; PROC-TC-012	ESR	LCR meter	Z < 6.8 Ω	10 mohm		Yes	2	No	
		ESR	LCR meter	Z 34,2 Ω - 68,5 Ω	57 mohm		Yes	2	No	
		ESR	LCR meter	Z 6.3 – 34.2 Ω	29 mohm		Yes	2	No	

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Resistance	Inhouse method; PROC-TC-012	ESR	LCR meter	Z 68.5 Ω - 171,2 Ω	140 mohm		Yes	2	No	
	Inhouse method; PROC-TC-013	ESR	LCR meter	Z < 6.8 Ω	10 mohm		Yes	2	No	
		ESR	LCR meter	Z 34,2 Ω - 68,5 Ω	57 mohm		Yes	2	No	
		ESR	LCR meter	Z 6.3 – 34.2 Ω	29 mohm		Yes	2	No	
		ESR	LCR meter	Z 68.5 Ω - 171,2 Ω	140 mohm		Yes	2	No	
Voltage	Inhouse method; PROC-TC-012	AC	Precision Power Analyzer	0,1 - 1 V	14 mV		Yes	2	No	205 kHz - 350 kHz
		AC	Precision Power Analyzer	0,1 - 1 V	20 mV		Yes	2	No	350 kHz - 370 kHz
		AC	Precision Power Analyzer	0,1 - 1 V	21 mV		Yes	2	No	370 kHz - 500 kHz
		AC	Precision Power Analyzer	0,1 - 1 V	5,5 mV		Yes	2	No	50 Hz - 85 kHz
		AC	Precision Power Analyzer	0,1 - 1 V	8,9 mV		Yes	2	No	85 kHz - 205 kHz
		AC	Precision Power Analyzer	1 - 10 V	18 mV		Yes	2	No	205 kHz - 350 kHz
		AC	Precision Power Analyzer	1 - 10 V	24 mV		Yes	2	No	350 kHz - 370 kHz
		AC	Precision Power Analyzer	1 - 10 V	25 mV		Yes	2	No	370 kHz - 500 kHz
		AC	Precision Power Analyzer	1 - 10 V	9,8 mV		Yes	2	No	50 Hz - 85 kHz
		AC	Precision Power Analyzer	1 - 10 V	14 mV		Yes	2	No	85 kHz - 205 kHz
		AC	Precision Power Analyzer	10 - 25 V	19 mV		Yes	2	No	50 Hz - 85 kHz
		AC	Precision Power Analyzer	10 - 25 V	23 mV		Yes	2	No	85 kHz - 205 kHz
		AC	Precision Power Analyzer	10 - 25 V	28 mV		Yes	2	No	205 kHz - 350 kHz
		AC	Precision Power Analyzer	10 - 25 V	33 mV		Yes	2	No	350 kHz - 370 kHz
		AC	Precision Power Analyzer	10 - 25 V	34 mV		Yes	2	No	370 kHz - 500 kHz
		AC	Precision Power Analyzer	25 - 50 V	48 mV		Yes	2	No	50 Hz - 85 kHz
		AC	Precision Power Analyzer	25 - 50 V	52 mV		Yes	2	No	85 kHz - 205 kHz

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Voltage	Inhouse method; PROC-TC-012	AC	Precision Power Analyzer	25 - 50 V	57 mV		Yes	2	No	205 kHz - 350 kHz
		AC	Precision Power Analyzer	25 - 50 V	62 mV		Yes	2	No	350 kHz - 370 kHz
		AC	Precision Power Analyzer	25 - 50 V	63 mV		Yes	2	No	370 kHz - 500 kHz
		AC	Precision Power Analyzer	50 - 100 V	53 mV		Yes	2	No	50 Hz - 85 kHz
		AC	Precision Power Analyzer	50 - 100 V	57 mV		Yes	2	No	85kHz - 205 kHz
		AC	Precision Power Analyzer	50 - 100 V	62 mV		Yes	2	No	205 kHz - 350 kHz
		AC	Precision Power Analyzer	50 - 100 V	67 mV		Yes	2	No	350 kHz - 370 kHz
		AC	Precision Power Analyzer	50 - 100 V	68 mV		Yes	2	No	370 kHz - 500 kHz
		DC	Multimeter	0 - 1 V	3,8 µV		Yes	2	No	
		DC	Multimeter	1 - 10 V	22 µV		Yes	2	No	
	DC	Multimeter	10 - 100 V	480 µV		Yes	2	No		
	Inhouse method; PROC-TC-013	AC	Precision Power Analyzer	0,1 - 1 V	14 mV		Yes	2	No	205 kHz - 350 kHz
		AC	Precision Power Analyzer	0,1 - 1 V	20 mV		Yes	2	No	350 kHz - 370 kHz
		AC	Precision Power Analyzer	0,1 - 1 V	21 mV		Yes	2	No	370 kHz - 500 kHz
		AC	Precision Power Analyzer	0,1 - 1 V	5,5 mV		Yes	2	No	50 Hz - 85 kHz
		AC	Precision Power Analyzer	0,1 - 1 V	8,9 mV		Yes	2	No	85 kHz - 205 kHz
		AC	Precision Power Analyzer	1 - 10 V	13,2 mV		Yes	2	No	85 kHz - 205 kHz
		AC	Precision Power Analyzer	1 - 10 V	18 mV		Yes	2	No	205 kHz - 350 kHz
		AC	Precision Power Analyzer	1 - 10 V	24 mV		Yes	2	No	350 kHz - 370 kHz
		AC	Precision Power Analyzer	1 - 10 V	25 mV		Yes	2	No	370 kHz - 500 kHz
AC		Precision Power Analyzer	1 - 10 V	9,8 mV		Yes	2	No	50 Hz - 85 kHz	
AC	Precision Power Analyzer	10 - 25 V	19 mV		Yes	2	No	50 Hz - 85 kHz		

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Electricity and Magnetism

<i>Technology area</i>	<i>Method</i>	<i>Parameter</i>	<i>Material</i>	<i>Measure</i>	<i>Best measuring ability (CMC) +/-</i>	<i>Technique</i>	<i>Flex</i>	<i>Type of flex</i>	<i>Field</i>	<i>Note</i>
Voltage	Inhouse method; PROC-TC-013	AC	Precision Power Analyzer	10 - 25 V	23 mV		Yes	2	No	85 kHz - 205 kHz
		AC	Precision Power Analyzer	10 - 25 V	28 mV		Yes	2	No	205 kHz - 350 kHz
		AC	Precision Power Analyzer	10 - 25 V	33 mV		Yes	2	No	350 kHz - 370 kHz
		AC	Precision Power Analyzer	10 - 25 V	34 mV		Yes	2	No	370 kHz - 500 kHz
		AC	Precision Power Analyzer	25 - 50 V	48 mV		Yes	2	No	50 Hz - 85 kHz
		AC	Precision Power Analyzer	25 - 50 V	52 mV		Yes	2	No	85 kHz - 205 kHz
		AC	Precision Power Analyzer	25 - 50 V	57 mV		Yes	2	No	205 kHz - 350 kHz
		AC	Precision Power Analyzer	25 - 50 V	62 mV		Yes	2	No	350 kHz - 370 kHz
		AC	Precision Power Analyzer	25 - 50 V	63 mV		Yes	2	No	370 kHz - 500 kHz
		AC	Precision Power Analyzer	50 - 100 V	53 mV		Yes	2	No	50 Hz - 85 kHz
		AC	Precision Power Analyzer	50 - 100 V	57 mV		Yes	2	No	85 kHz - 205 kHz
		AC	Precision Power Analyzer	50 - 100 V	62 mV		Yes	2	No	205 kHz - 350 kHz
		AC	Precision Power Analyzer	50 - 100 V	67 mV		Yes	2	No	350 kHz - 370 kHz
		AC	Precision Power Analyzer	50 - 100 V	68 mV		Yes	2	No	370 kHz - 500 kHz
		DC	Multimeter	0,1 - 1 v	3,8 μV		Yes	2	No	
		DC	Multimeter	1 - 10 V	22 μV		Yes	2	No	
		DC	Multimeter	10 - 100 V	480 μV		Yes	2	No	

Temperature

<i>Technology area</i>	<i>Method</i>	<i>Parameter</i>	<i>Material</i>	<i>Measure</i>	<i>Best measuring ability (CMC) +/-</i>	<i>Technique</i>	<i>Flex</i>	<i>Type of flex</i>	<i>Field</i>	<i>Note</i>
Temperature	Inhouse method; PROC-TC-012		Temperature gauge	20-80 °C	1,3 °C		Yes	2	No	

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Temperature

<i>Technology area</i>	<i>Method</i>	<i>Parameter</i>	<i>Material</i>	<i>Measure</i>	<i>Best measuring ability (CMC) +/-</i>	<i>Technique</i>	<i>Flex</i>	<i>Type of flex</i>	<i>Field</i>	<i>Note</i>
Temperature	Inhouse method; PROC-TC-013		Temperature gauge	20-80 °C	1,3 °C		Yes	2	No	

Time and Frequency

<i>Technology area</i>	<i>Method</i>	<i>Parameter</i>	<i>Material</i>	<i>Measure</i>	<i>Best measuring ability (CMC) +/-</i>	<i>Technique</i>	<i>Flex</i>	<i>Type of flex</i>	<i>Field</i>	<i>Note</i>
Frequency	Inhouse method; PROC-TC-012		LCR meter	50 - 2 000 kHz	1,0 kHz		Yes	2	No	
			LCR meter	95 - 105 kHz	0,1 kHz		Yes	2	No	
	Inhouse method; PROC-TC-013		LCR meter	50 - 2 000 kHz	1,0 kHz		Yes	2	No	
			LCR meter	95 - 105 kHz	0,1 kHz		Yes	2	No	

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