



SCS Directory

Accreditation number: SCS 0173

International standard: ISO/IEC 17025:2017
Swiss standard: SN EN ISO/IEC 17025:2018

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Scope of accreditation see: www.sas.admin.ch
(Accredited bodies)

Scope of accreditation as of 31.10.2024

Calibration laboratory for electrical and optical measurands

Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement Uncertainty \pm ¹⁾	Remarks
Scattering parameters (complex): Reflection coefficient in coaxial line (S11)	0,01 ... 1	9 kHz ... < 100 kHz 100 kHz ... < 1 GHz 1 GHz ... < 6 GHz 6 GHz ... < 12 GHz 12 GHz ... 18 GHz	0,0246 0,0119 0,0171 0,0276 0,0353	Z _{ref} = 50 Ω, N-connector, real and imaginary quantity Including additional uncertainty for connector and cable movement according EURAMET Calibration Guide No. 12, Version 3.0
	0,0001 ... 1	9 kHz ... < 100 kHz 100 kHz ... < 1 GHz 1 GHz ... < 6 GHz 6 GHz ... < 12 GHz 12 GHz ... 18 GHz	0,0293 0,0263 0,0287 0,0401 0,0497	



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Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement Uncertainty \pm ¹⁾	Remarks
Scattering parameters (complex): Transmission coefficient in coaxial line (S21)	0,01 ... 1 (40 dB)	9 kHz ... < 100 kHz 100 kHz ... < 1 GHz 1 GHz ... < 6 GHz 6 GHz ... < 12 GHz 12 GHz ... 18 GHz	0,0247 (0,212 dB) 0,0121 (0,104 dB) 0,0193 (0,166 dB) 0,0276 (0,236 dB) 0,0355 (0,303 dB)	$Z_{ref} = 50 \Omega$, N-connector, real and imaginary quantity Including additional uncertainty for connector and cable movement according EURAMET Calibration Guide No. 12, Version 3.0
	0,0001 ... 1 (80 dB)	9 kHz ... < 100 kHz 100 kHz ... < 1 GHz 1 GHz ... < 6 GHz 6 GHz ... < 12 GHz 12 GHz ... 18 GHz	0,0294 (0,252 dB) 0,0264 (0,227 dB) 0,0287 (0,246 dB) 0,0401 (0,342 dB) 0,0498 (0,422 dB)	
Scattering parameters (derived quantity): RF Impedance	2 ... < 15 Ω	9 kHz ... < 100 kHz 100 kHz ... < 1 GHz 1 GHz ... < 6 GHz 6 GHz ... < 12 GHz 12 GHz ... 18 GHz	$(-1,8E-2 \cdot Z + 3,8E-1) \cdot Z$ $(-8,5E-3 \cdot Z + 1,8E-1) \cdot Z$ $(-1,2E-2 \cdot Z + 2,6E-1) \cdot Z$ $(-2,0E-2 \cdot Z + 4,3E-1) \cdot Z$ $(-2,5E-2 \cdot Z + 5,5E-1) \cdot Z$	$Z =$ measured RF Impedance, $Z_{ref} = 50 \Omega$, N-connector Including additional uncertainty for connector and cable movement according EURAMET Calibration Guide No. 12, Version 3.0
	15 ... < 100 Ω	9 kHz ... < 100 kHz 100 kHz ... < 1 GHz 1 GHz ... < 6 GHz 6 GHz ... < 12 GHz 12 GHz ... 18 GHz	$6,1E-2 \cdot Z$ $2,9E-2 \cdot Z$ $4,2E-2 \cdot Z$ $6,9E-2 \cdot Z$ $8,8E-2 \cdot Z$	
	100 Ω ... 1 k Ω	9 kHz ... < 100 kHz 100 kHz ... < 1 GHz 1 GHz ... < 6 GHz 6 GHz ... < 12 GHz 12 GHz ... 18 GHz	$(3,2E-4 \cdot Z + 2,5E-2) \cdot Z$ $(1,3E-4 \cdot Z + 1,4E-2) \cdot Z$ $(2,0E-4 \cdot Z + 1,9E-2) \cdot Z$ $(3,7E-4 \cdot Z + 2,7E-2) \cdot Z$ $(5,2E-4 \cdot Z + 3,0E-2) \cdot Z$	
	1 mS ... < 10 mS	9 kHz ... < 100 kHz 100 kHz ... < 1 GHz 1 GHz ... < 6 GHz 6 GHz ... < 12 GHz 12 GHz ... 18 GHz	$(-2,0E+1 \cdot Y + 2,4E-1) \cdot Y$ $(-9,6E+0 \cdot Y + 1,2E-1) \cdot Y$ $(-1,4E+1 \cdot Y + 1,7E-1) \cdot Y$ $(-2,2E+1 \cdot Y + 2,7E-1) \cdot Y$ $(-2,9E+1 \cdot Y + 3,5E-1) \cdot Y$	
Scattering parameters (derived quantity): RF Admittance	10 mS ... < 50 mS	9 kHz ... < 100 kHz 100 kHz ... < 1 GHz 1 GHz ... < 6 GHz 6 GHz ... < 12 GHz 12 GHz ... 18 GHz	$6,3E-2 \cdot Y$ $3,0E-2 \cdot Y$ $4,3E-2 \cdot Y$ $7,1E-2 \cdot Y$ $9,2E-2 \cdot Y$	$Y =$ measured RF Admittance, $Y_{ref} = 20$ mS, N-connector Including additional uncertainty for connector and cable movement according EURAMET Calibration Guide No. 12, Version 3.0
	50 mS ... 0.5 S	9 kHz ... < 100 kHz 100 kHz ... < 1 GHz 1 GHz ... < 6 GHz 6 GHz ... < 12 GHz 12 GHz ... 18 GHz	$(9,8E-1 \cdot Y + 1,7E-2) \cdot Y$ $(3,6E-1 \cdot Y + 1,2E-2) \cdot Y$ $(5,8E-1 \cdot Y + 1,5E-2) \cdot Y$ $(1,2E+0 \cdot Y + 1,6E-2) \cdot Y$ $(1,9E+0 \cdot Y + 1,1E-2) \cdot Y$	

1) The given extended measurement uncertainty is the standard uncertainty of the measurement multiplied by an extension factor $k = 2$, which corresponds to a confidence level of about 95% for a normal distribution.



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Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement Uncertainty \pm ¹⁾	Remarks
Scattering parameters (derived quantity): Voltage Standing Wave Ratio (VSWR)	1,06 ... < 5	9 kHz ... < 100 kHz 100 kHz ... < 1 GHz 1 GHz ... < 6 GHz 6 GHz ... < 12 GHz 12 GHz ... 18 GHz	$(1,17E-2 \cdot V + 3,80E-2) \cdot V$ $(0,53E-2 \cdot V + 1,85E-2) \cdot V$ $(0,79E-2 \cdot V + 2,65E-2) \cdot V$ $(1,34E-2 \cdot V + 4,26E-2) \cdot V$ $(1,79E-2 \cdot V + 5,44E-2) \cdot V$	V = measured VSWR $Z_{ref} = 50 \Omega$, N-connector Including additional uncertainty for connector and cable movement according EURAMET Calibration Guide No. 12, Version 3.0
	5 ... 10	9 kHz ... < 100 kHz 100 kHz ... < 1 GHz 1 GHz ... < 6 GHz 6 GHz ... < 12 GHz 12 GHz ... 18 GHz	$(1,53E-2 \cdot V + 2,00E-2) \cdot V$ $(0,65E-2 \cdot V + 1,25E-2) \cdot V$ $(0,99E-2 \cdot V + 1,60E-2) \cdot V$ $(1,77E-2 \cdot V + 2,11E-2) \cdot V$ $(2,46E-2 \cdot V + 2,09E-2) \cdot V$	According IEC 61000-4-6
CDN parameters:				
Impedance, Z_{CM} (common mode)	80 ... 220 Ω	150 kHz ... < 80 MHz 80 MHz ... < 200 MHz 200 MHz ... 230 MHz	5,0 Ω 7,0 Ω 25,0 Ω	CDN type Mx, Sx, Tx, AFx
Insertion loss (common mode)	8 ... 10.5 dB	150 kHz ... 230 MHz	0,4 dB	CDN adapter
AMN parameters:				
Impedance, Z_{CM} (common mode)	1 ... 65 Ω (Magnitude)	9 kHz ... < 100 kHz 100 kHz ... 30 MHz	0,5 Ω 1,0 Ω	According CISPR 16-1-2 for V-AN (V-AMN, LISN)
	-15° ... 90° (Phase)	9 kHz ... 30 MHz	3,0°	
Coupling factor (VDF) (common mode)	0 ... 50 dB	9 kHz ... < 30 kHz 30 kHz ... 30 MHz	0,6 dB 0,5 dB	
Decoupling factor (Isolation, common mode)	20 ... < 50 dB	9 kHz ... 30 MHz	4,0 dB	According CISPR 16-1-2 for AAN (asymmetric artificial network, Y-network, unshielded symmetric signals) and AN (Artificial network for coaxial and other screened cables)
	50 ... 75 dB	9 kHz ... 30 MHz	11,8 dB	
AAN parameters:				
Impedance, Z_{CM} (common mode)	5 ... 300 Ω (Magnitude)	150 kHz ... 30 MHz	5,0 Ω	
	-40 ... 40° (Phase)	150 kHz ... 30 MHz	3,0°	
Coupling factor (VDF) (common mode)	0 ... 50 dB	150 kHz ... 30 MHz	0,3 dB	
Decoupling factor (Isolation, common mode)	50 ... 75 dB	150 kHz ... 30 MHz	13,7 dB	



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EM clamp parameters:				
Impedance, Z_{CM} (common mode)	20 ... 1000 Ω	150 kHz ... < 80 MHz 80 kHz ... 230 MHz	20,0 Ω 40,0 Ω	According IEC 61000-4-6, Annex A (ABCD transformation) for EM and decoupling clamps
Coupling factor (VDF) (common mode)	0 ... 20 dB	150 kHz ... 230 MHz	1,7 dB	
Decoupling factor (Isolation, common mode)	0 ... 30 dB	150 kHz ... 230 MHz	3,0 dB	
CMAD parameters:				
Insertion loss S21 (common mode)	0.05 ... 0.5	30 MHz ... 300 MHz	0.02 (0.17 dB)	According CISPR16-1-4, Section 8.5 and CISPR TR 16-3, Section 4.9.3.4 for Common Mode Absorbing Devices (CMAD)
Impedance S11 (common mode)	0.3 ... 1.0	30 MHz ... 300 MHz	0.12 (1.04 dB)	
SVSWR:				
TD-SVSWR acc. ANSI C63.25.1				According ANSI C63.25.1 for fully anechoic room (FAR) and semi anechoic chamber (SAC)
Time Domain (TD), frequency stepping 1 MHz	2,0 ... 10,0 dB	1 GHz ... < 6 GHz	1,46 dB	Direct VNA measurement
	2,5 ... 10,0 dB	6 GHz ... 18 GHz	1,86 dB	
Moving Average (MA), frequency stepping 120 MHz	1,5 ... 10,0 dB	1 GHz ... < 6 GHz	1,04 dB	Moving Average (MA) and correlation according standard
	2,0 ... 10,0 dB	6 GHz ... 18 GHz	1,47 dB	
Rod Antenna: Antenna factor (ECSM):	0 ... 80 dB	9 kHz ... 36 MHz	0,44 dB	According CISPR 16-1-6, Clause 5.1
Current Probe parameters:				
Insertion loss (common mode)	0 ... 60 dB (Flat)	9 kHz ... 500 MHz	1,11 dB	According CISPR 16-1-2, RTCA DO-160, MIL-STD-461, IEC 61000-4-6, ISO 11452-4
	0 ... 60 dB (Rise/Fall)	9 kHz ... 500 MHz	1,60 dB	
Transfer impedance (common mode)	-60 ... 30 dB Ω (Flat)	9 kHz ... 500 MHz	1,11 dB	
	-60 ... 30 dB Ω (Rise/Fall)	9 kHz ... 500 MHz	1,60 dB	
AC Resistance: (Complex Impedance)	10 Ω ... 10 k Ω	3 Hz ... 150 kHz	3,34 %	According RF I-V measurement method
AC Capacitance: (Complex Impedance)	1 nF ... 10 μ F	3 Hz ... 150 kHz	3,52 %	According RF I-V measurement method
AC Inductance: (Complex Impedance)	100 μ H ... 1 H	3 Hz ... 150 kHz	3,34 %	According RF I-V measurement method



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Radiometric Parameters:				
Wavelength	250 ... 1000 nm		0,48 nm	According CIE 223, Clause 6.1.
	900 ... 1900 nm		5,62 nm	
Radiometric Parameters:				
Spectral Irradiance (Responsivity of Array Spectroradiometers)				According CIE 223, Clause 6.2.3 for specific input optics:
VIS	0,044 ... 1,11 $\mu\text{W}/\text{cm}^2/\text{nm}$	390 ... 800 nm	16 %	Cosine Diffuser: CC-3-UV-S
IR-A (NIR)	1,112 ... 2,48 $\mu\text{W}/\text{cm}^2/\text{nm}$	800 ... 1000 nm	16 %	

1) The dimensionless parts of the measurement uncertainty are relative values, related to the measured value.

In case of contradictions in the language versions of the directories, the German version shall apply.

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