



**Accreditation number**                    **SCS 114**  
**Numero d'accreditamento**

## SCS Directory Registro SCS

Accreditation Standard ISO/IEC 17025:2005  
Norma d'accreditamento ISO/IEC

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### Calibration Laboratory for electrical quantities

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First accreditation (d,m,y)        : 22.06.2009  
Last accreditation (d,m,y)        : 22.06.2009  
Actual version                        : <http://www.sas.ch/>

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Last accreditation (d,m,y)        : 22.06.2009  
Actual version                        : <http://www.sas.ch/>

#### Measured Quantities:

DC voltage	Resistance
DC current	Inductance
DC high voltage	Capacitance
AC voltage	Frequency
AC current	Burst
ESD	Surge
Power Fail/Variation	Damped Oscillatory Waves
Ringwave	RF Parameters

#### Mutations:

Staff :  
Scope extension :  
Address :  
Edition : **SCS114/A**

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.

Measured Quantity Instrument	Range	Measurement conditions at (22 ± 3) °C	Best Measurement Capability (CMC) ±	Remarks
DC Voltage	1 mV ... 1000 V		0,20 %	Output Voltage of Arbitrary Generators and Voltage Sources ISO 7637-2
DC High Voltage	100 V ... 30 kV		1,05 %	Output Voltage of Test Generators and Charging Voltages of Pulse Circuits IEC 61000-4-x ISO 7637-2
AC Voltage	1 mV ... 1000 V		0,22 %	Arbitrary Generators, Power Fail Generators, Variacs IEC 61000-4-x ISO 7637-2
DC Current	1 mA ... 100 A		0,20 %	
AC Current	1 mA ... 100 A		0,22 %	



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Measured Quantity Instrument	Range	Measurement conditions at (22 ± 3) °C	Best Measurement Capability (CMC) ±	Remarks
<b>Frequency, Sine</b>	DC ... 1 MHz 10 kHz ... 4 GHz		2·10 <sup>-3</sup> 18·10 <sup>-6</sup>	
<b>DC Resistance</b>	1 mΩ ... 10 MΩ		0,24 %	
<b>Inductance</b>	1 μH ... 1000 H	f=1 kHz	0,19 %	
<b>Capacitance</b>	100 pF ... 100 μF	f=1 kHz	0,28 %	
<b>ESD</b> Voltage Current Peak Current	100 V ... 30 kV 0 A ... 120 A Current	DC  @30 ns @60 ns @60-800 ns	1,05 % 4,8 % 4,8 % + (8 %)* 4,8 % + (16 %)* 4,8 % + (16 %)* (%)* Reproducibility device setup	IEC 61000-4-2 ISO 10605
Rise Time	500 ps ... 1 μs		41 ps	
<b>Burst into 50 Ω</b> Voltage  Rise Time Pulse Duration Repetition Frequency	20 V ... 6000 V 200 V ... 8000 V 20 V ... 8000 V 1 ns ... 1 μs 10 ns ... 10 μs 1 Hz ... 1 MHz	Common Mode	2,6 % 2,6 % 6,4 % 110 ps 110 ps 2·10 <sup>-3</sup>	IEC 61000-4-4 ISO 7637-2
<b>Burst into 1000 Ω</b> Voltage  Rise Time Pulse Duration Repetition Frequency	20 V ... 6000 V 200 V ... 8000 V 25 V ... 1000 V 1 ns ... 1 μs 10 ns ... 10 μs 1 Hz ... 1 MHz	Common Mode	2,8 % 3,2 % 6,5 % 110 ps 110 ps 2·10 <sup>-3</sup>	IEC 61000-4-4 ISO 7637-2
<b>Pulses μs range</b> Voltage  Rise Time  Pulse Duration  Current	100 V ... 12000 V 1000 V ... 20000V 100 ns ... 100 μs  1 μs ... 1000 μs  1 A ... 1000 A 100 A ... 20'000 A	Voltage Current Voltage Current	5,7 % 5,7 % 4,1 ns 0,33 ns 4,1 % 0,33 ns 3,9 % 8,2 %	ISO 7637-2 IEC 61000-4-5
<b>Pulses ms range</b> Voltage Rise Time Pulse Duration Current	10 V ... 1000 V 50 μs ... 50 ms 1000 μs ... 1500 ms 1 A ... 5000 A		4,5 % 1,7 ns 1,7 ns 8,2 %	ISO 7637-2
<b>Damped Oscillatory</b> Voltage Current Rise Time  Frequency	200 V ... 4000V 1 A ... 120A 0,05 μs ... 5 μs  DC ... 1 MHz	Voltage Current	4,6 % 3,9 % 6,4 ns 0,33 ns 2·10 <sup>-3</sup>	IEC 61000-4-12



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Measured Quantity Instrument	Range	Measurement conditions at (22 ± 3) °C	Best Measurement Capability (CMC) ±	Remarks
<b>Ringwave</b> Voltage Current Rise Time Frequency	200 V ... 6000 V 5,3 A ... 500 A 0,1 µs ... 5µs DC ... 250 kHz	Voltage Current	5,7 % 3,92 % 6 ns 0,33 ns $2 \cdot 10^{-3}$	ANSI C62.41 IEC 61000-4-12
<b>Power Fail</b> Voltage (cont.) Peak Voltage (Overshoot) Rise Time/Fall Time (Overshoot) Current Peak Current (Inrush) Phase	-400 V ... 400 V -20 V ... 270 V 0,1 µs ... 10 µs 10 A ... 50 A 200 A ... 1000 A 0° ... 360°	With or without load 100 Ω load 100 Ω load 100 Ω load	0,1 % 0,41 % 6,4 ns 3,9 % 3,9 % 0,2 %	IEC 61000-4-11
<b>ESD- target</b> Input Impedance Transfer Impedance Insertion Loss	0,1 Ω ... 50 Ω 0,1 Ω ... 50 Ω 20 dB ... 60 dB	DC DC 20 kHz ... 4 GHz	1,2 % 0,1 % 0,26 dB	IEC 61000-4-2 ISO 10605
<b>ESD target adapter</b> Return Loss (low reflect) Insertion Loss	-60dB ... -20dB -40dB ... -5dB 0 dB ... 10dB	20 kHz ... 1 GHz >1 GHz ... 4 GHz 20 kHz ... 4 GHz	0,02 0,03 0,07 dB	IEC 61000-4-2 ISO 10605
<b>Burst adapter (High Imp)</b> Input Impedance Insertion loss	100 Ω ... 100 kΩ 45 dB ... 65dB	DC 20 kHz ... 400 MHz	0,2 % 0,52 dB	IEC 61000-4-4
<b>Burst adapter (Match)</b> Input Impedance Insertion loss	40 Ω ... 60 Ω 35 dB ... 55 dB	DC 20 kHz ... 400 MHz	0,2 % 0,28 dB	IEC 61000-4-4
<b>RF-voltage (50 Ω)</b>	200 µV ... 10 V 0,01 V ... 100 V	9 kHz ... 3 GHz 100 kHz ... 2 GHz	1,4 % 1,5 %	IEC 61000-4-6
<b>Amplitude Modulation</b> Frequency Modulation Index	100 Hz ... 10 MHz 10 % ... 95 %	Carrier f = 100 kHz ... 300 MHz Carrier f = 100 kHz ... 300 MHz	$18 \cdot 10^{-6}$ 1,1 %	IEC 61000-4-6
<b>Spurious emissions</b>	0 dBc ... 50 dBc	Carrier f = 100 kHz ... 300 MHz	0,69 dB	IEC 61000-4-6
<b>150-50Ω-Adapter</b> Insertion Loss	5 dB ... 12 dB 5 dB ... 12 dB	20 kHz ... 300 MHz >300 MHz ... 1 GHz	0,29 dB 0,47 dB	IEC 61000-4-6
<b>Matching attenuator</b> Attenuation	0 dB ... 40 dB 0 dB ... 40 dB	20 kHz ... 300 MHz >300 MHz ... 1 GHz	0,12 dB 0,21 dB	Coaxial Connector
<b>CDN</b> Output Impedance	90 Ω ... 210 Ω	20 kHz ... 300 MHz	8,4 Ω	IEC 61000-4-6
<b>50 Ohm load</b> Impedance	40 Ω ... 60 Ω	20 kHz ... 300 MHz >300 MHz ... 1 GHz	1,6 Ω 2,9 Ω	IEC 61000-4-6
S11	≤ 0.2	20 kHz ... 1 GHz	0,02	