



STS Directory

Accreditation number: STS 0059

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

Empa
Center for
Electronics & Reliability
Überlandstrasse 129
8600 Dübendorf

Head: Marcel Held
Responsible for MS: Daniel Aepli
Telephone: +41 58 765 42 82
E-Mail: marcel.held@empa.ch
Internet: www.empa.ch
Initial accreditation: 22.04.1994
Current accreditation: 01.12.2024 to 30.11.2029
Scope of accreditation see: www.sas.admin.ch
(Accredited bodies)

Scope of accreditation as of 01.12.2024

Testing laboratory for physical qualification, reliability and non-destructive testing as well as analysis of materials, components and systems

| Group of products or materials, field of activity | Principle of measurement ³⁾ (characteristics, measuring ranges, type of test) | Test methods, remarks (national, international standards, in-house test methods) |
|--|--|--|
| Temperature of solid, liquid and gaseous media, on devices and equipment | Thermocouple and Resistance Thermometry Measuring range: -200°C to +660°C Smallest measurement uncertainty: ±0.05 °C (k =2) | SOP 2560 |
| | Thermography Measuring range: -10°C to +1200°C Smallest measurement uncertainty: ±2 °C or 2% (k =2) | SOP 4125 Based on VDI/VDE 3511 |



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|---|--|--|
| Qualification (reliability, failure, availability) of components, devices and systems | Environmental and reliability testing, individually or combined | Based on IEC 60'068 |
| | Constant thermal load | SOP 5151 |
| | Thermal cycling | SOP 5152 |
| | Climatic test, steady state | SOP 5153 |
| | Climatic test, cyclic | SOP 5154 |
| | Mechanical load (static, dynamic) | SOP 3980 |
| | Vibration, mechanical shock | SOP 3983 |
| Qualification (reliability, failure, availability) of components, devices and systems | Failure Analysis | SOP 3976 |
| | Detection of failure | |
| | Non-destructive analysis | |
| | Semi-destructive analysis | |
| | Destructive analysis | |
| | Investigation of failure mechanisms | |
| Qualification (reliability, failure, availability) of components, devices and systems | Reliability and availability analyses | Based on IEC 60'300 IEC 60'605 IEC 60'812 IEC 60'863 IEC 61'025 IEC 61'078 IEC 61'709 |
| | 1. Failure rate analysis | |
| | - Evaluation of the predicted failure rate | SOP 3984 |
| | - Evaluation of predicted reliability | SOP 3985 |
| | - Statistical quality control, reliability tests and goodness-of-fit tests | SOP 3986 |
| | 2. Risk analyses of technical systems: FMEA / FMECA, FTA, ETA | SOP 3987 |



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|---|--|--|
| Electrical components, devices and systems | Conductivity and resistance measurement Measuring range 40 $\mu\Omega$ to 10 $P\Omega$ ($4 \cdot 10^{-5}$ - 10^{16} Ω) | SOP 2853 |
| Electrical components, devices and systems | Measurement of R-, C-, L-, f-characteristics (tracking generator) U, I, Q, P (S, $\cos \varphi$), U-I-characteristics | SOP 2854 SOP 2855 |
| Electrical components, devices and systems | Testing of electrical energy storage | SOP 5081 |
| Electrical energy storage systems | Batteries - Failure analysis - Electrical characterisation - Altitude simulation - Temperature - Vibration - Shock - External short circuit - Impact / Crushing - Overcharging - Forced discharge - Overdischarging - Drop test - Immersion in water - Fire exposure - Failure of temperature control - Internal short circuit - Propagation | Empa-SOP 5081 and other Empa-SOPs used therein UN 38.3; ECE R100; ISO 12405-1,2,3; DIN EN 15194; DIN EN 50604-1; DIN EN 61960; IEC/DIN EN 62133-2; IEC/DIN EN 62281; IEC/DIN EN 62619; IEC/DIN EN 62660-1,2,3 |

The testing laboratory maintains a list with detailed information on the activities within the scope of accreditation. It is available upon request at the laboratory.

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

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