



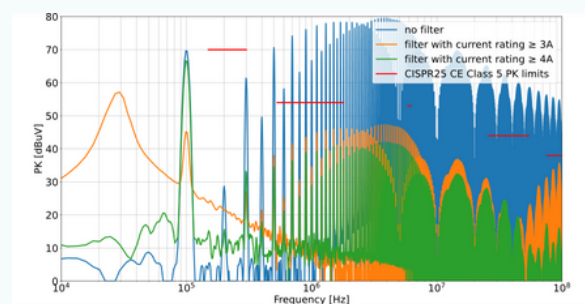
Electromagnetic Compatibility (EMC)

Service Portfolio

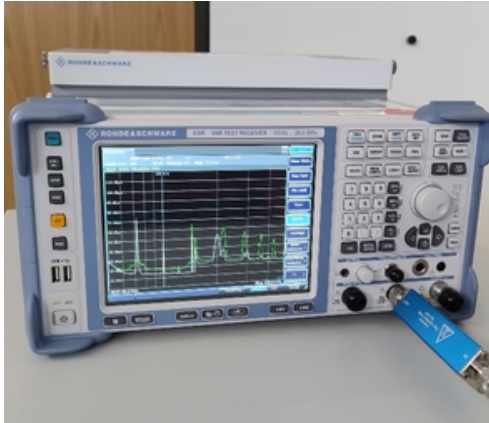
Electromagnetic Compatibility (EMC) is crucial to ensure that electronic devices do not disturb other devices by Electromagnetic Interference (EMI). Additionally, electronic devices should be able to withstand interferences from the outside as well as from the inside.

We offer many services that are needed to fulfill the necessary EMC standards for your product, be it in measurement or in modelling & simulation. Our measurement services are pre-compliance.

- Conducted Emission Measurements
- Radiated Emission Measurements
- Bulk Current Injection Tests
- Vector Network Analysis with De-Embedding
- Impedance Analysis with De-Embedding
- Simulation of EMC for electronic circuits
- Model creation of your components and electronic circuits considering EMC



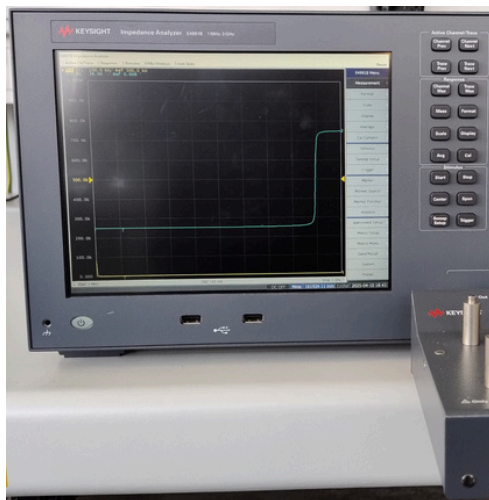
Electromagnetic Compatibility (EMC)



Conducted and Radiated Emission Measurement

We offer to measure Electromagnetic Interference (EMI) of your power electronic Device Under Test (DUT).

- Conducted EMI in-house
- Radiated EMI together with our partners
- Signal Integrity
- Power Integrity



Impedance and Vector Network Analysis

Precise Modeling and Simulation requires well defined and established measurement procedures including component biasing and de-embedding of fixtures.

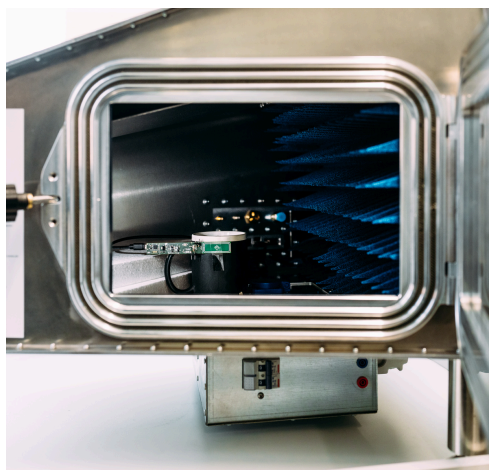
- High precision Impedance Analysis 20 Hz ... 120 MHz (Autobalancing Bridge)
- High precision Impedance Analysis 1 MHz ... 3 GHz (RF-IV Analyzer)
- 2-port Vector Network Analyzer (VNA) 9 kHz ... 8.5 GHz



Bulk Current Injection Tests

Bulk Current Injection (BCI) is a conducted immunity test often applied for automotive products. Common test standards include IEC 61000-4-6 and ISO 11452-4. We can offer a pre-compliant measurement setup with the necessary Line Impedance Stabilization networks, signal generation, amplification and coupling devices.

- Frequency range: 9kHz ... 400 MHz
- Power up to 100W



Radiated EMI and GTEM Measurements

Quick radiated tests without the need of an anechoic chamber can be done in the Gigahertz Transversal Electromagnetic (GTEM) Cell. The GTEM Cell can be used for radiated emission tests as well as for immunity tests, including signal generators and power amplifiers.

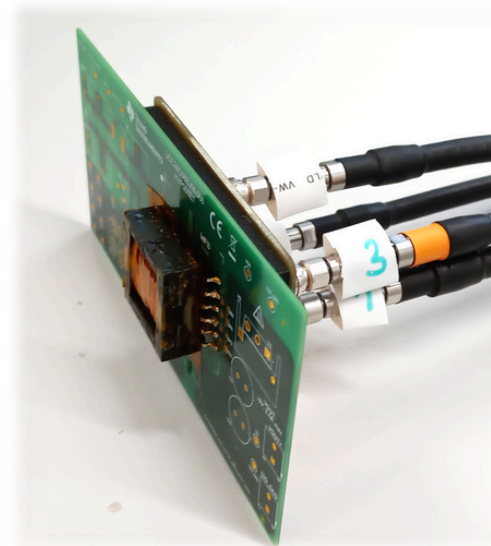
- Measure radiated Electromagnetic Interference of a DUT
- Measure radiated Immunity of DUTs
- Measure influence of high field strengths on DUTs with the cutout close to the GTEM cell septum



Simulation of Electromagnetic Interference (EMI)

Simulation of Electromagnetic Interference (EMI) and Immunity is the future key driver for predictable Time To Market of new products. By employing these simulations companies can predict the EMC behavior of their products without having physical prototypes at hand. In this sense, the electronic design can be tweaked easily until it fulfills regulations. We offer all necessary tools for modelling and simulation of components, sub-systems and systems.

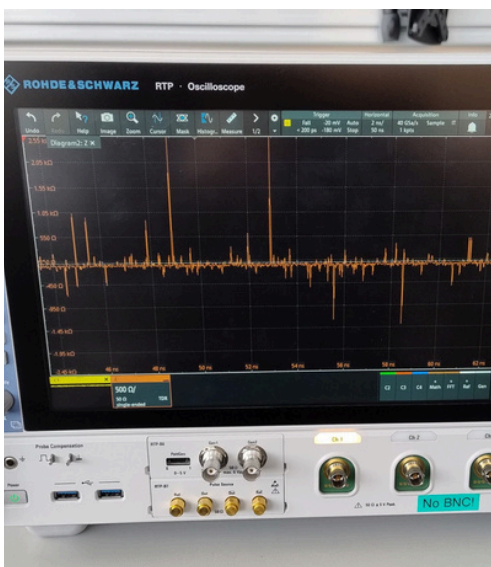
- Simulate EMI of power electronic circuits
- Create framework for: filter optimization, emission reduction, optimizing Bill of Material (BOM), simulate design variants and exchanged components



Model creation of passive components and material characterization for EMC

For proper emission and immunity simulations in Electromagnetic Compatibility, precise component models are necessary. Biasing of components can significantly change the nominal values and the parasitic behavior of the components.

- Impedance measurement of components
- Vector Signal Analysis
- Creating Fixtures for proper measurement incl. biasing
- De-Embedding of the fixtures to have component characteristics only



Time domain measurements and reflectometry

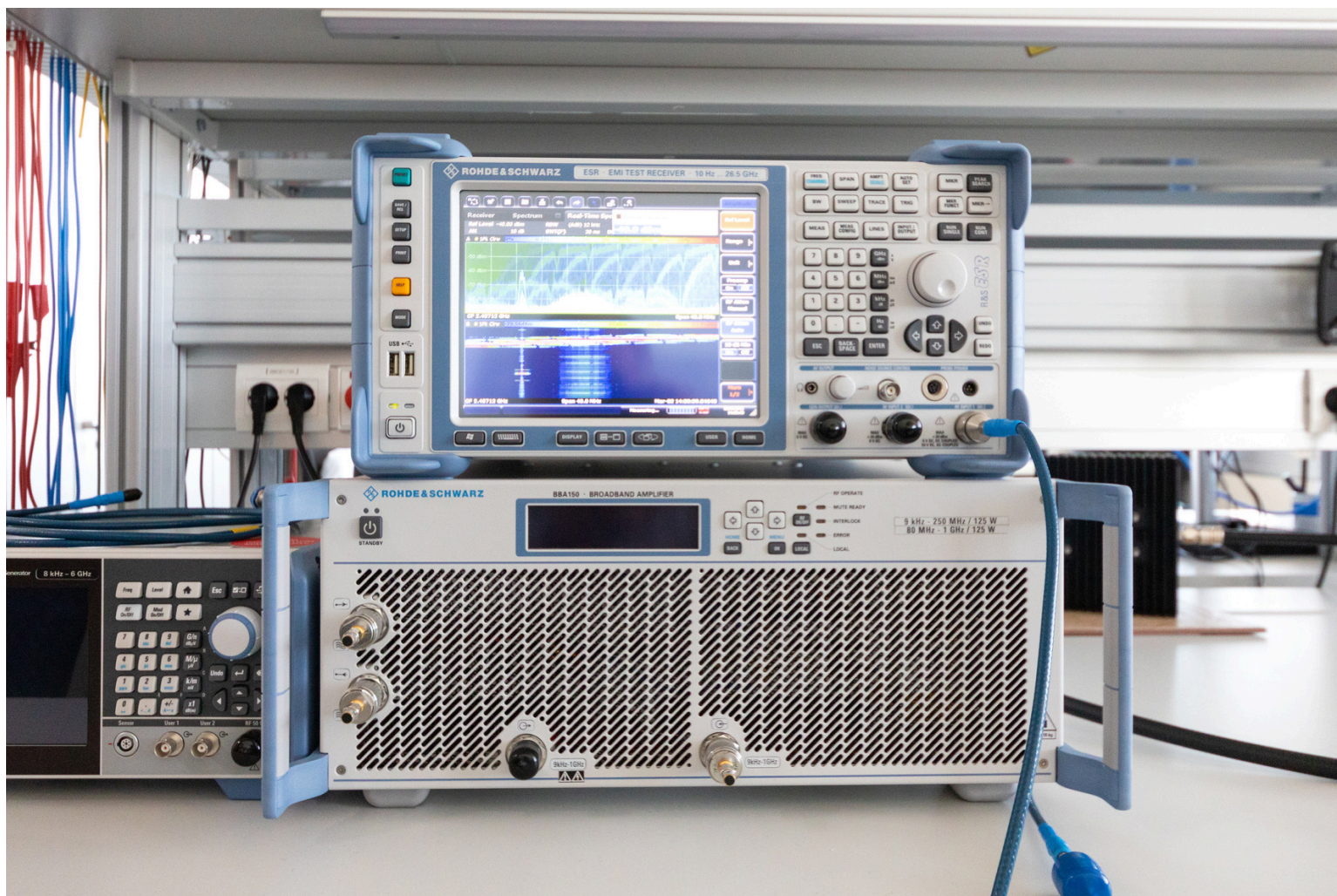
Fast time domain measurements can be crucial for debugging electronic systems and transmission quality. Time Domain Reflectometry (TDR) is an important procedure to characterize and localize discontinuities in electrical systems like printed circuit boards, connectors, or any other electrical path.

- Fast data acquisition
- Measure transmission data quality and signal integrity
- Discover discontinuities in impedance controlled cabling and measurement systems by TDR
- 16 GHz bandwidth, 40 Gsamples/s sampling rate, 16 bit resolution



Key equipment and infrastructure

- Vector Network Analyzer
- Impedance Analyzer (20 Hz-120 MHz) incl. fixtures
- Impedance Analyzer up to 3 GHz incl. fixtures
- Time Domain Reflectometry up to 16 GHz
- GTEM Cell & TEM Cell
- Keysight Pathwave ADS
- Ansys HFSS, Q3D and Maxwell
- EMI Receiver (26.5 GHz)
- Bulk Current Injection Test Setup
- Vector Signal Generator and Broadband Amplifier



ABOUT SAL

Silicon Austria Labs (SAL) is a top European research center for Electronics and Software Based Systems (ESBS). The application-oriented center offers cooperative research & services at three locations – Graz, Linz and Villach – in the pioneering research areas of Sensor Systems, Microsystems, Intelligent Wireless Systems, Power Electronics and Embedded Systems. | www.silicon-austria-labs.com

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Coexistence & Electromagnetic Compatibility

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