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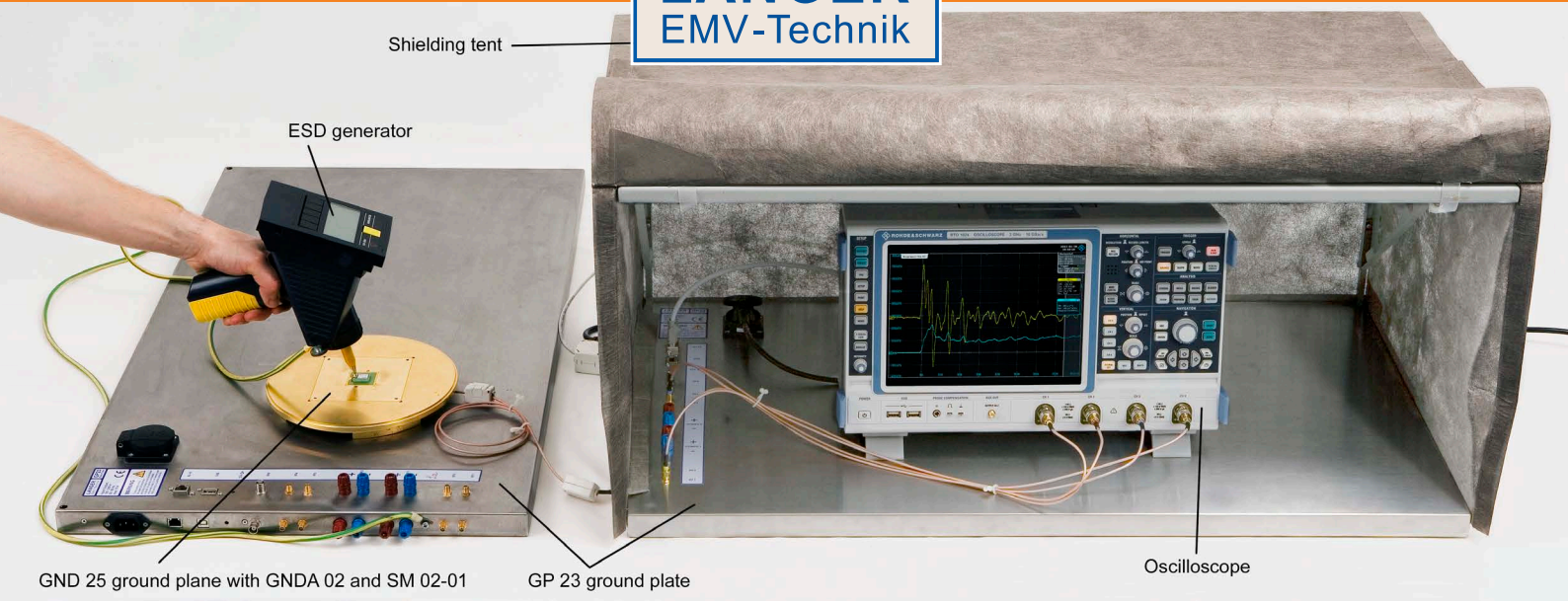

MP ESD Generator Calibration set

Measurement of the Discharge Current Waveform

The MP ESD generator calibration set measuring station measures the curve shape of an ESD generator discharge current. Furthermore, transient processes in the discharge current curve shape can be measured and visualized in the frequency range up to 3 GHz. During testings, these transient processes have influence on the testing results. The scattering between different types of ESD generators can be traced back (among others) to this phenomenon.

To achieve a reproducible testing result, the discharge current curve shape, which is generated by the ESD generator and defined by the IEC 61000-4-2, should be regularly checked.
The mobile measuring station fits on the developer`s work place and can be easily installed and removed. On request, the MP ESD generator calibration set is available in a taller work space (900 x 500 x 650) mm.

Scope of application:

» Comparison of ESD generators with regard to their curve progression and their transient processes.

Click here for more information:

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This project is co-financed from tax revenues on the basis of the budget adopted by the Saxon State Parliament.

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Shielding tent and GP 23 set

Introduction

When measuring ESD processes in electronic systems, there is a risk of the measuring device (oscilloscope) being destroyed or the measurement being influenced by interference fields and interference currents from the ESD gun.

The ESD gun can introduce conducted interference via the measurement inputs, the power supply or interface inputs in the device. Furthermore, the fields emitted by the housing of the ESD gun can be coupled into the measuring device. The conducted or field-bound interference processes that penetrate the oscilloscope can be so high that the measuring device is damaged or destroyed.

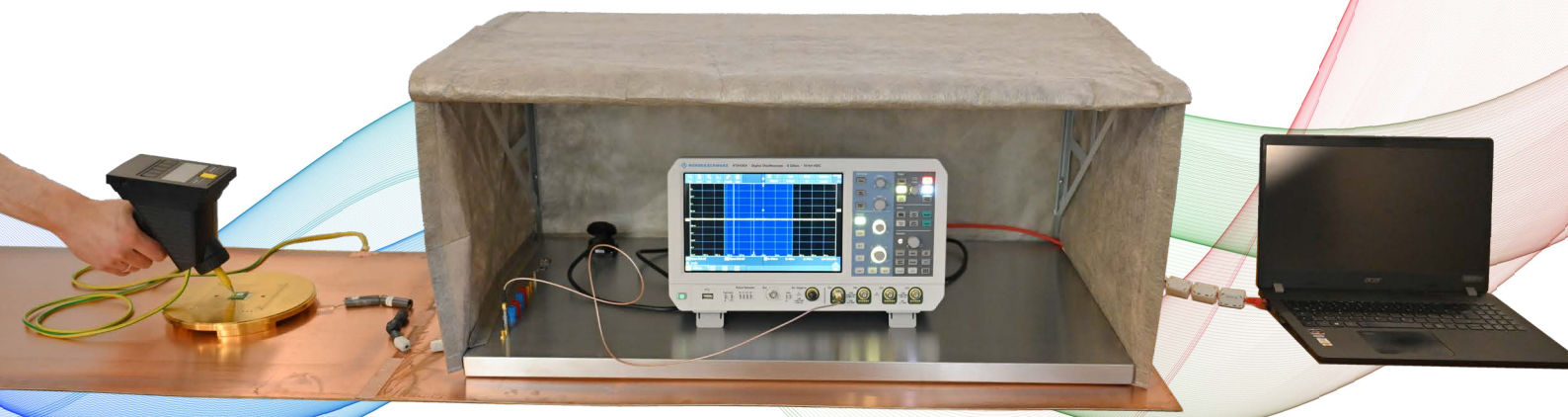

Figure 1 Measuring set-up for interference-free oscillography of ESD processes.

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The ESD gun can also significantly interfere with the recording of the measurement process. The measurement result can be completely altered so that the measurement does not contain any useful information. Measuring the processes in the electronic device (DUT) can become almost impossible.

To control these situations, measurements are carried out in specially shielded cabins at great expense. The measurement set-up shown in Figure 1 reduces the measurement effort considerably. A shielded tent is used as the central element to protect the sensitive oscilloscope.

Set-up

The measurement inputs are routed on the ground plate of the shielding tent via solid metal shielded feedthroughs (SMA connectors) into the interior of the shielding tent. The electronic assembly to be tested will contain a system for measuring the ESD processes. This measuring system could measure the current, voltage, electric field, or magnetic field of the ESD process (e.g. EPM 02 dE/dt Field Meter, BPM 02 dB/dt Field Meter, SM 02-1 Shunt 1 Ohm from Langer EMV-Technik GmbH).

These measuring systems must limit their measurement to the physical quantities to be measured and must not allow any further coupling. They must be extremely well shielded. The measuring systems must be connected to the measurement input of the shielded tent using RF cables with solid metal shielding (semi-rigid). Cable shields made of braided shielding are unsuitable. In the shielded tent, the connection to the oscilloscope inputs can be made with double-shielded cables.

The oscilloscope's power supply is routed to the outside via a mains filter integrated in the ground plate of the shielding tent. The interface connections of the oscilloscope to a PC or laptop are routed opposite the ESD side of the shielding tent (on the right-hand side) through the magnetic closure of the shielding tent. Inside and outside the shielding tent, these cables must be fitted with several ferrites (hinged ferrite) to block the interference. The laptop is positioned directly to the right of the shielding tent (not necessarily on the common metal plate; this must be tested when the measuring station is commissioned). The interface cable of the oscilloscope is connected to the laptop. The laptop's power supply is routed via several ferrites.

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If ESD processes are generated, the shielding tent must be closed, and the oscilloscope can no longer be operated directly. The oscilloscope is therefore remote-controlled via the laptop.

If the shielding tent is closed for a longer period, the oscilloscope can become unacceptably hot. To prevent this, a fan insert can be placed behind the shielding tent, which draws air through the shielding tent and thus cools the inside of the shielding tent. This is an advantage over solid shielding.

The permissible voltage at 50 ohm oscilloscope inputs is approx. 5 V. Output voltages in the range of 1000 V can functionally occur at the outputs of the measuring system during ESD processes. If no appropriate attenuators are connected upstream, the oscilloscope input can be destroyed.

Attenuators with sufficient attenuation values must be used. Attenuators with values of up to 50 dB attenuation may be required.

It is advisable to start the ESD measurements with a very low ESD voltage value to see whether the attenuators are correctly dimensioned.

Product reference

MP ESD Generator Calibration set

The MP ESD Generator Calibration set is used to measure the waveform of the discharge current of an ESD generator. In addition, transient processes in the waveform of the discharge current can be measured and visualized in the frequency range up to 3 GHz. These transient processes have an influence on the test result when testing devices. The variations between different types of ESD generators can be attributed to this, among other things.

To obtain a reproducible test result, it is advisable to regularly check the waveform of the discharge current generated by the ESD generator and defined by the IEC 61000-4-2 standard. The mobile measuring station fits on a developer's workstation and can be set up and dismantled quickly. The MP ESD Generator Calibration set measuring station is also available with a larger working area of (900 x 500 x 650) mm.

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EMC Experimental Seminars

Register now!

EMC Experimental Seminar dates 2025

Immunity *Fee per person*	***Basics & Troubleshooting*** *3 days*	***Emission***	***Basics & Troubleshooting*** *3 days*
February	**04. - 06.**	**February**	**11. - 13.**
May	**13. - 15.**	**May**	**20. - 22.**
June	**03. - 05.**	**June**	**24. - 26.**
September	**16. - 18.**	**September**	**23. - 25.**
October	21. - 23.	October	28. - 30.

Basic Seminars as a weekly block

Immunity *Monday 13 pm to Wednesday 12 p.m.* *2 days*		***Emission*** *Wednesday 13.30 pm to Friday 12 p.m.* *2 days*	
March	17. - 19.	March	19. - 21.
April - English	**07. - 09.**	**April - English**	**09. - 11.**
November - English	**10. - 12.**	**November - English**	**12. - 14.**
December	01. - 03.	December	03. - 05.

- The scope of services includes seminar documents and catering for the participants
- Event location: Rosentitzer Straße 73, 01728 Bannewitz (near Dresden)
- Event time: 8.30 a.m. - 5 p.m. (except basic seminars in the weekly block)

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Mission

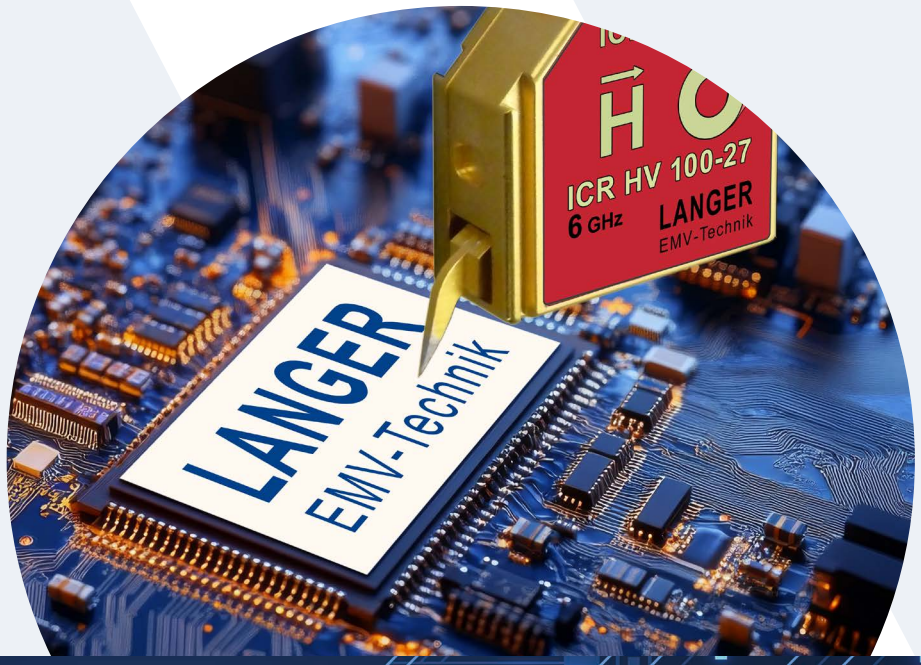
Langer EMV-Technik GmbH offers high-quality, expert support in the development of products with a focus on EMC optimization during development. We continuously invest in research and development to provide innovative solutions that meet the latest technical standards.

We support our customers from the very beginning to develop the best solutions together so that our customers' products function smoothly and are developed efficiently.

Our portfolio comprises three pillars for success: **EMC consulting, EMC experimental seminars** and **EMC measurement and test equipment** for interference emission and immunity during development.

„First time right and - for a development free of interference"

Our customers benefit considerably from the cost optimization of their development projects because our three pillars enable them to evaluate and optimize EMC right from the start.



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EMC right from the start: Success factor and cost optimization for your project

Langer EMV-Technik GmbH is a leading company in the field of electromagnetic compatibility (EMC). We enable our customers to take EMC into account in all development phases to develop products efficiently.

An essential part of our services is comprehensive advice on identifying and solving EMC problems. Seminars and training courses are also offered regularly to impart specialist knowledge and expand our customers' expertise.

Another highlight is our high-quality test equipment. Langer EMV-Technik GmbH develops and sells innovative measuring and testing systems that offer maximum precision and reliability. These devices play a key role in ensuring the electromagnetic compatibility of products at an early stage of development. Our specialized test equipment is also used to evaluate safety-relevant components.

With this holistic approach and a focus on quality and customer satisfaction, Langer EMV-Technik GmbH has established itself as a trustworthy partner in the industry.

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Langer EMV-Technik GmbH cordially invites you to two important industry events in March 2025: Embedded World 2025 in Nuremberg and EMV 2025 in Stuttgart.

Embedded World 2025

At **Embedded World 2025** (event from 11 - 13 March 2025 in Nuremberg) you will find us at **booth 4-637**, where we will be presenting our EMC services and products. This event is a great opportunity for you to meet our expert staff and learn how our solutions can improve your projects. Please also visit our **presentation in the exhibition forum**: Wednesday, 12 March 2025 at 11am in the Forum of Exhibition Hall 5!

EMV 2025 in Stuttgart at booth C2-402

We will also be exhibiting at **EMV 2025 in Stuttgart at stand C2-402.** This exhibition is almost exclusively dedicated to EMC, and we look forward to presenting our product range in the fields of board EMC emission and immunity and explaining how our products can help you to improve the EMC quality of your applications. We will also introduce our products to the audience in a **presentation at the forum.**

Please visit us on **Wednesday, 26 March 2025 from 15:40-16:00,** in the forum: location Hall C2 Stand 120 (in the exhibition hall). We would also like to invite you to the **Workshop: Practical Troubleshooting of ESD Problems in an Electronic** by our speaker. Please reserve your place here in good time, as the Langer EMV-Technik GmbH workshop is always very well attended.

Workshop 34, Thursday, 27 March 2025 from 12:45 to 16:00, Room C5.1 (registration exclusively via Mesago)

We cordially invite all customers, distributors and media representatives to visit our exhibition stand at both events. Have insightful conversations with our team and discover how Langer EMV-Technik GmbH can support your technical and business goals.

We look forward to seeing you and making stronger connections within the industry.

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