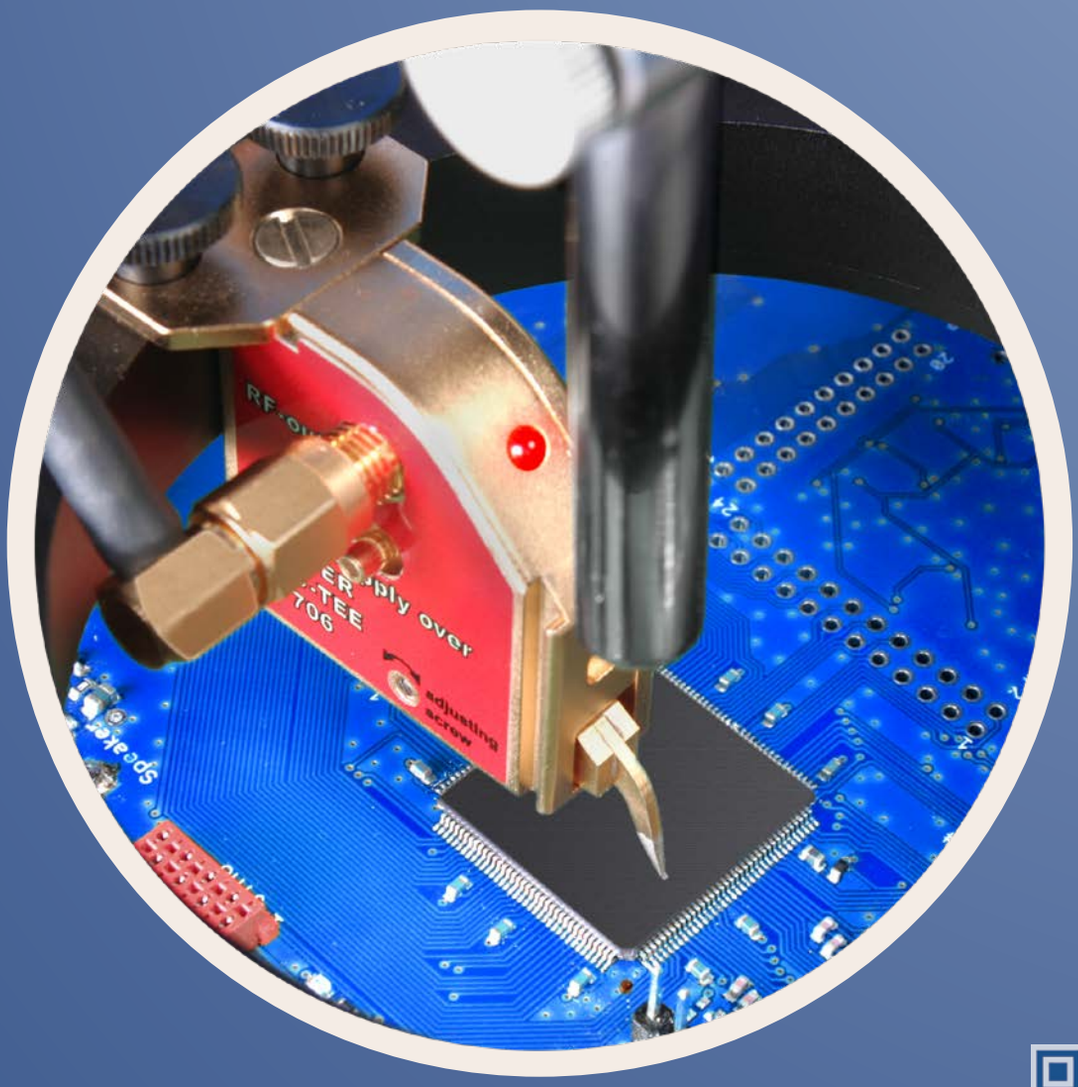
LANGER
EMV-Technik

IC Security Equipment



Company Profile:

Langer EMV-Technik GmbH stands for high-quality products and reliable support in the development of electronic products – with a clear focus on design-stage EMC optimization.
Our goal is to enable customers to create interference-free, efficient, and market-ready products. This is built on three pillars:

- EMC measurement and test equipment for PCB, IC-EMC, and IC Security
- EMC experimental seminars – knowledge transfer through hands-on training
- EMC consulting – practical, solution-oriented, tailored

Early EMC evaluation and targeted optimization make development projects more efficient and cost-effective. In this way, we create measurable added value – from the idea to the finished product.

SCA

Side Channel Analysis

on pages 4 to 5

EMFI

EM Fault Injection

on pages 6 to 7

ICR Probe series

Near-Field Microprobes for Radiated Emission Surface Scan and Side-Channel Analysis

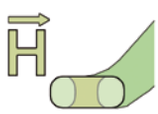
- Spatial resolution down to 60 µm
- 200 kHz - 6 GHz frequency range
- Vertically and horizontally aligned tips
- Integrated preamplifier

With an ICR microprobe, high-frequency magnetic or electric fields in the range between 200 kHz and 6 GHz can be measured above an integrated circuit or a small module with a very high spatial measuring resolution - down to 60 µm. Mounted onto an IC scanner the near-field microprobes can be moved along all three axes over the chip surface and also rotated around the z-axis.

Near-Field Microprobe types

ICR E
horizontal
7 MHz - 3 GHz

ICR HH
horizontal
200 kHz - 6 GHz



ICR HV
vertical
200 kHz - 6 GHz

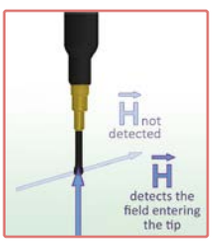
ICS 105
4-Axis Positioning System

Near Field Probes

Near-Field Probes for Radiated Emission Surface Scan and Side-Channel Analysis

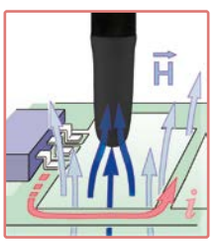
- Spatial resolution down to 1 mm
- 100 kHz - 40 GHz frequency range
- Wide variety of probe types available
- Optional external preamplifier available

Selection of Near-Field Probes



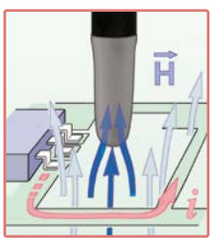
RF-B 0.3-3

- 30 MHz - 3 GHz
- headsize Ø ≈ 2 mm
- horizontal



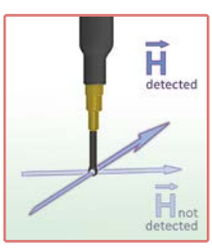
RF-B 3-2

- 30 MHz - 3 GHz
- headsize Ø ≈ 4 mm
- horizontal



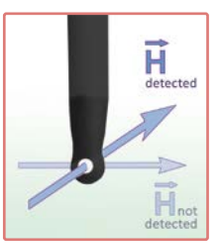
XF-B 3-1

- 30 MHz - 6 GHz
- headsize Ø ≈ 4 mm
- horizontal



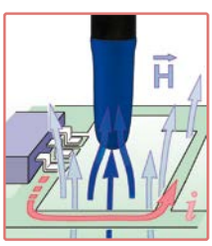
RF-R 0.3-3

- 30 MHz - 3 GHz
- headsize Ø ≈ 2 mm
- vertical



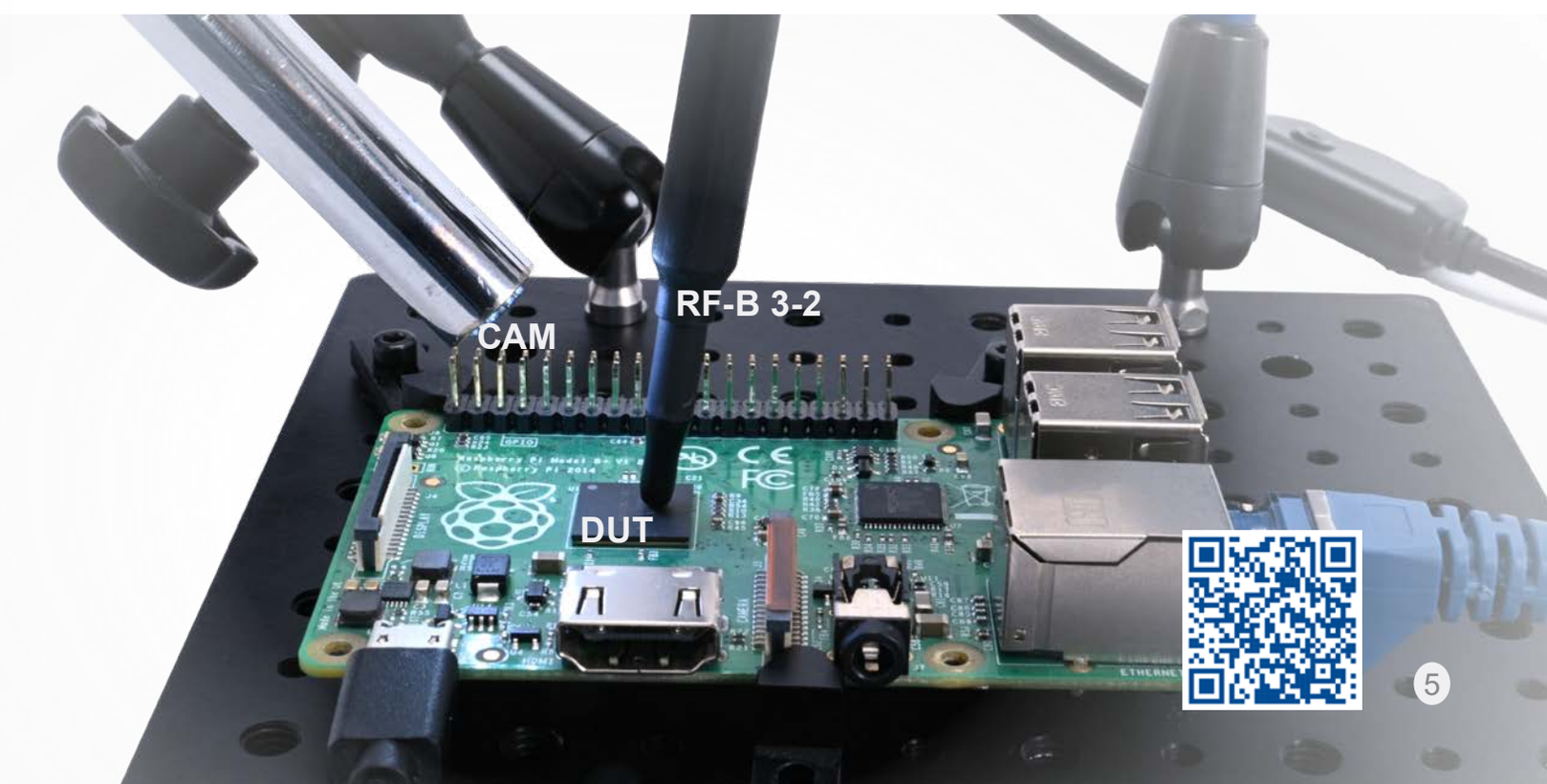
RF-R 3-2

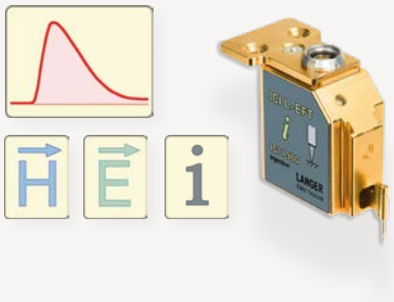
- 30 MHz - 3 GHz
- headsize Ø ≈ 3 mm
- vertical



LF-B 3

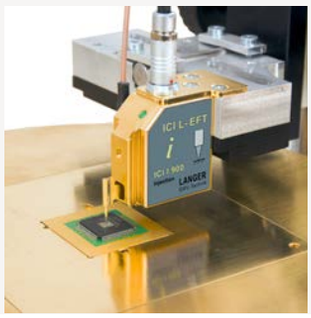
- 100 kHz - 50 MHz
- headsize Ø ≈ 4 mm
- horizontal





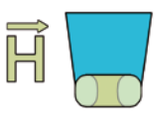
ICI Probe series
IC EM Pulse Injection
Langer Pulse

- Pulse injection into IC
  → for EMFI & pulse immunity analysis
- Pulse rise time: 2 ns
- Spatial resolution: 500 µm
- voltage up to 500 V

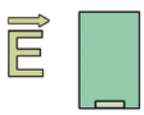


ICI Probe types

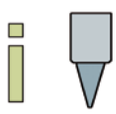
ICI HH500-15
Pulse Magnetic
Field Source



ICI E450
Pulse Electric
Field Source

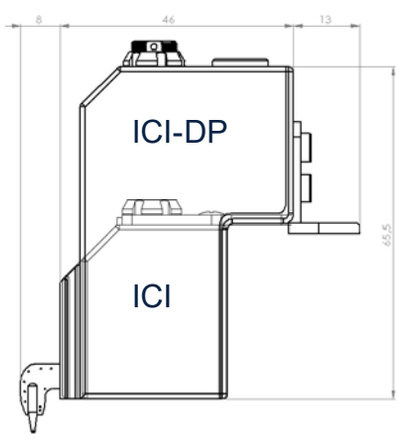


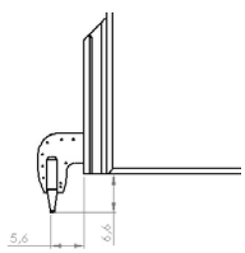
ICI I900
Pulse Current
Source (FBBI)



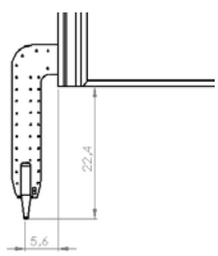
The ICI and ICI-DP probes enable the injection of fast transient magnetic or electric fields as well as current pulses into integrated circuits. They are intended to use for high-precision and high-resolution electromagnetic fault injection (EMFI) or body biasing injection (BBI). With the ICI-DP probes, single disturbance pulses as well as a double pulse sequence with a pulse following time down to 25 ns can be injected into ICs with precise timing and location.

Tip Types

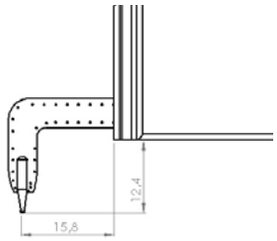




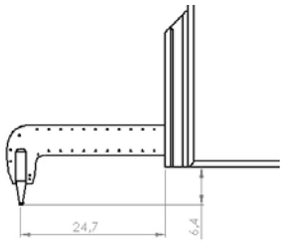
Tip Type 01



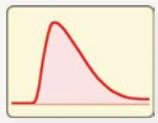
Tip Type 03



Tip Type 02



Tip Type 04



ICI-DP Probe series
IC EM Douple Pulse Injection
Langer Pulse

- Double pulse injection into IC
- Pulse rise time: 2 ns
- Spatial resolution: 150 - 1000 µm due to different probe tips
- voltage up to 1000 V

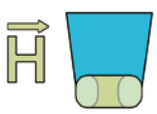
ICI-DP Probe types

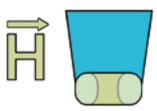
ICI-DP HH150-15
Double Pulse Magnetic Field Source

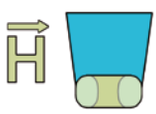
ICI-DP HH250-15
Double Pulse Magnetic Field Source

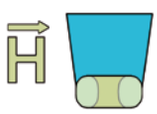
ICI-DP HH500-15
Double Pulse Magnetic Field Source

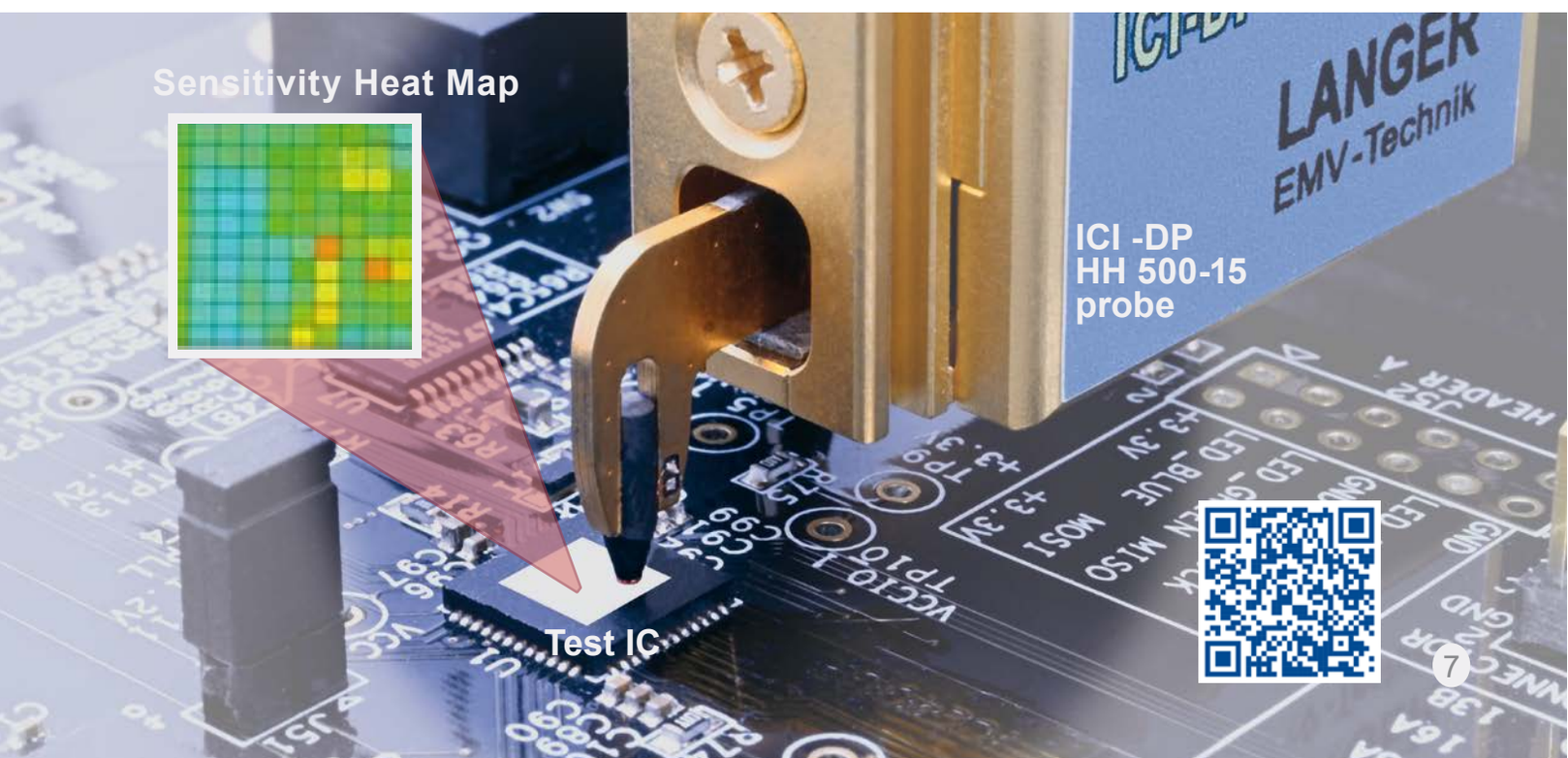
ICI-DP HH1000-15
Double Pulse Magnetic Field Source











Langer EMV-Technik is in the forefront of research, development, and production in the field of EMC. Through EMC experimental seminars and EMC workshops we offer our comprehensive knowledge to our customers.

Our interference emission and interference immunity EMC measurement technology as well as the IC test system are used mainly in the development stage and are in worldwide demand.

Developers and designers gain new perspectives and more efficient working strategies for module- and IC developments with the EMC know how and measurement technology of Langer EMV-Technik GmbH.

The individual pre-compliance consulting services provided by Langer EMV-Technik GmbH help developers and designers quickly find solutions to complex EMC problems in IC, device, and module development.

We make both our comprehensive EMC expertise and research results available to our customers via practical experimental EMC seminars and in-house events.

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