

# EMC-scanner

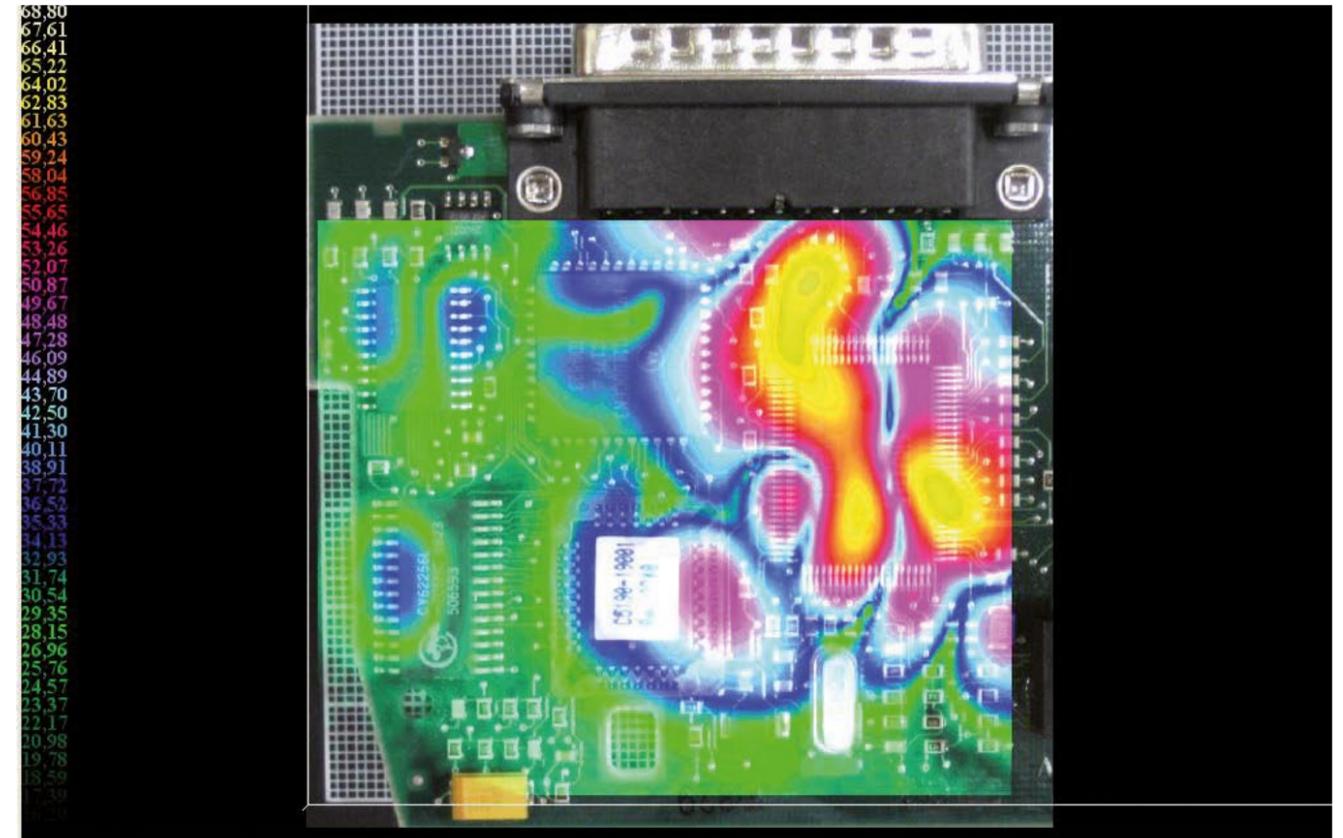
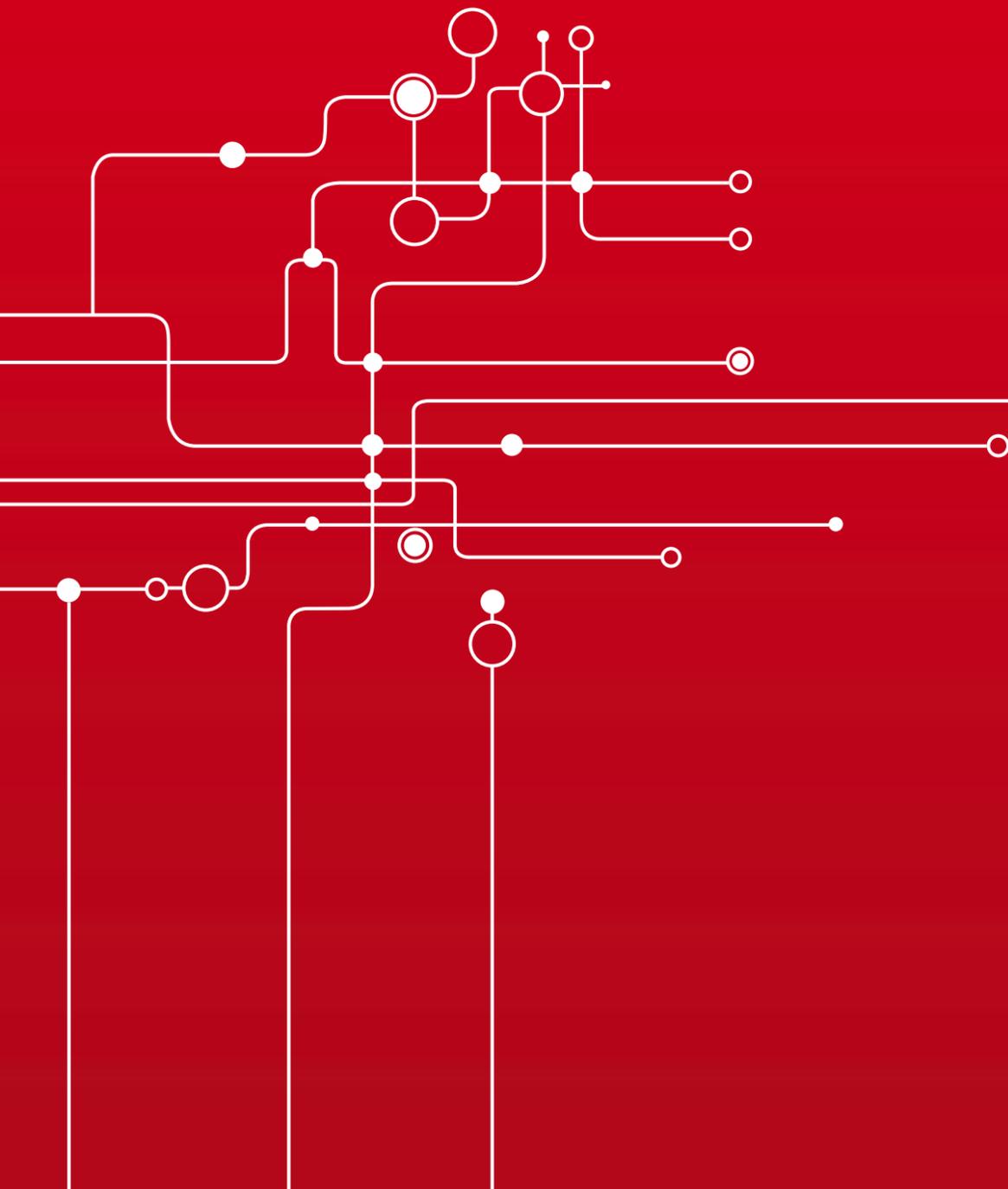
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## HRE-series



See it before you **CE** it!

  
**Detectus**



Print Screen image of a scan measurement.

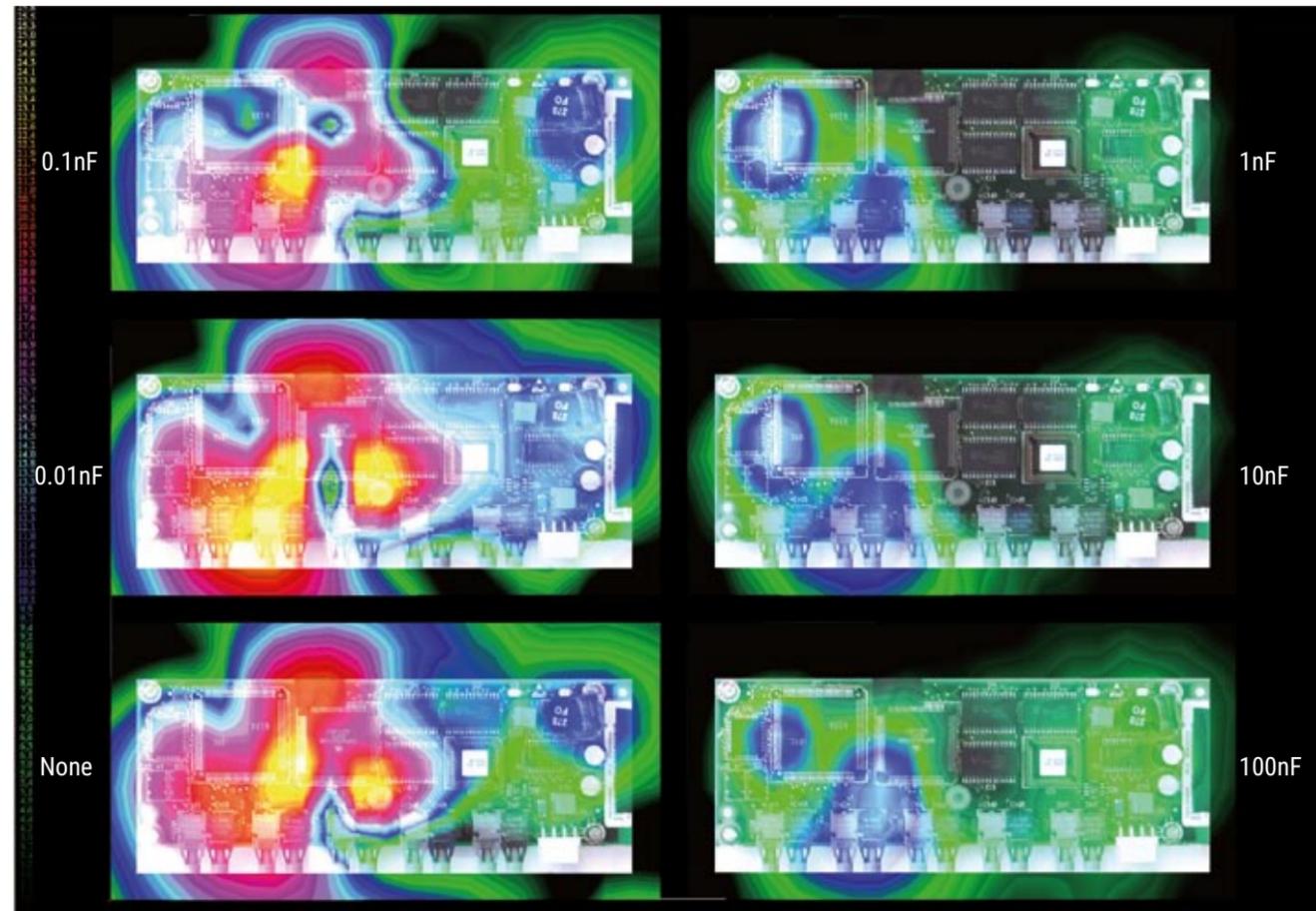
## Seeing high frequencies!

Now you can SEE high frequency electromagnetic fields.

### The background

There are high demands for electromagnetic compatibility (EMC) of electronic products. The demands are stated in different set of rules, for example: VCCI, ANSI, CISPR, FCC and VDE. These demands are specified for products or systems and not for components or elements. The fact that there is no easy way to find the exact location of a radiating source is a problem for designers today.

Detectus AB has developed several measuring systems with which designers can measure the intensity and the location of a radiation source at a component level. The results of such a measurement can be shown as two or three dimensional coloured maps. The measurements can easily be repeated creating objective, comparative measurement results.



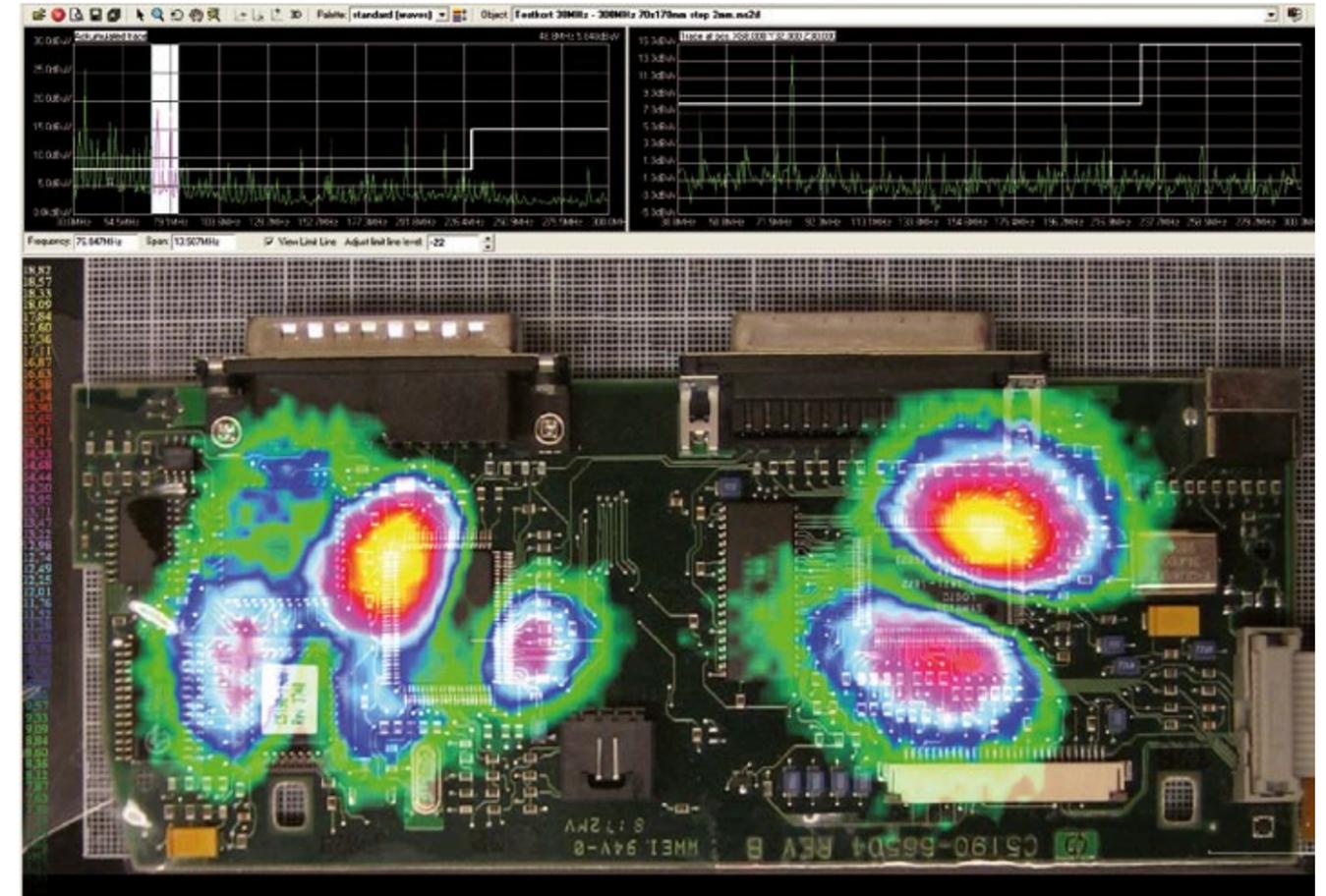
Six Scan measurements with different de-coupling

### Visual noise detection

The patented EMC-Scanner measures the emission from components, cables, PCB's and products. The system consists of an X-Y-Z robot, a spectrum analyzer with near field probe and a standard PC with custom software and a GPIB card or similar for communicating with the spectrum analyzer. During measurement the near field probe is moved by the robot to predetermined measuring points above the test object.

### Objective comparative measurements

One of the most useful features of the EMC-Scanner system is that it enables you to make truly objective comparative measurements. Above, you can see an example of comparative measurements. The six measurements show the same test object and the same frequency. The difference is the value of the de-coupling capacitor of one IC.



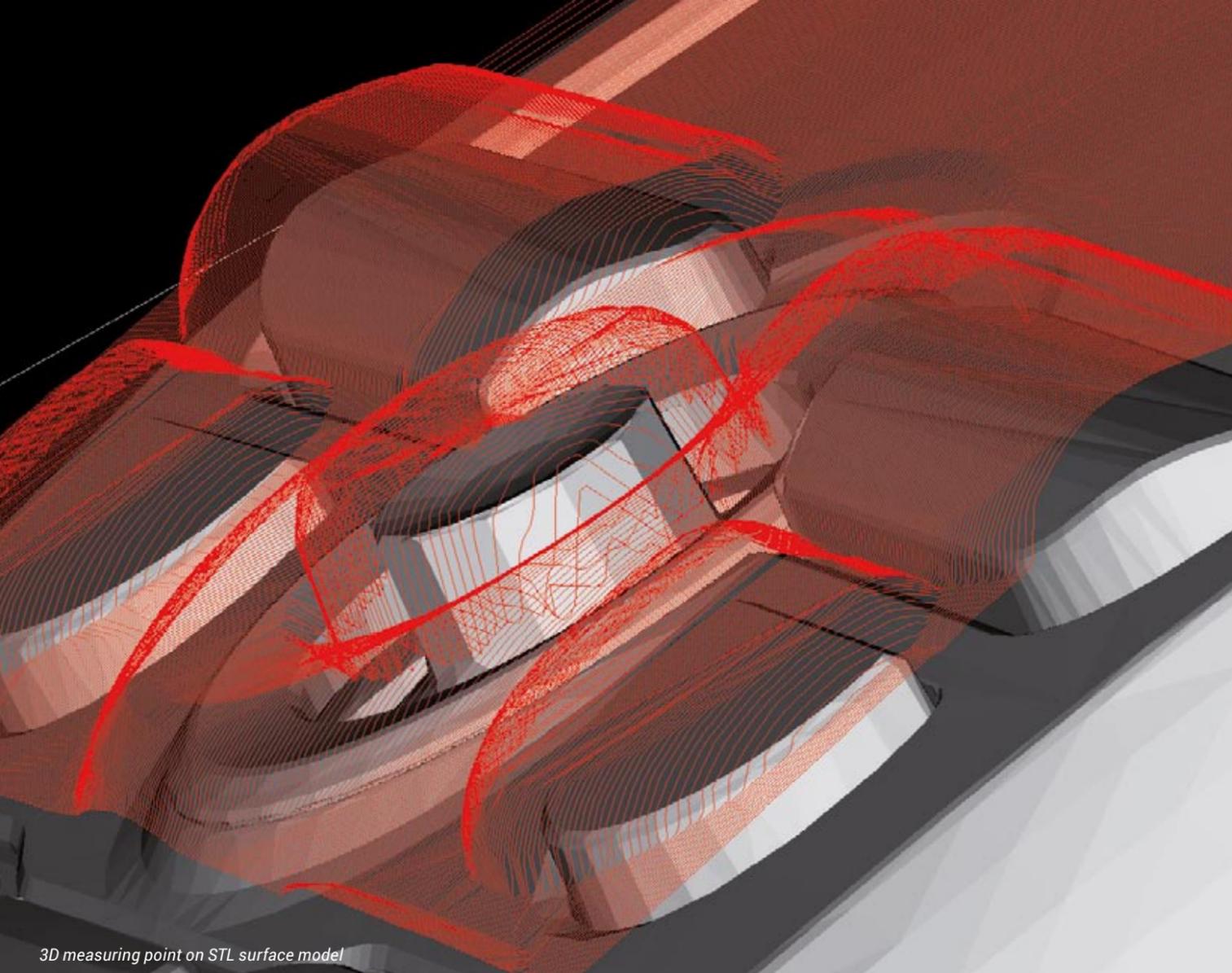
MultiScan measurement. The top left graph shows the accumulated trace (a max hold spectra of all measuring points). The top right graph shows the wide band spectra from a user selectable spot on the field plot.

### Ease of use

Earlier emission measurements had to be made by specialists. With the EMC-Scanner anyone can make a measurement and draw conclusions from the informative and easily interpreted reports. You do not even need to have access to a screened room to make the measurements. The software runs in Windows on a standard PC and is intuitive and user-friendly. Since the system is configurable for most modern spectrum analyzers, you can use your own and do not have to purchase a new one.

### MultiScan

The MultiScan measurement enables you to generate field plots from any frequency within the measured wide band span. This powerful feature is a major improvement and it gives an enormous amount of information. Looking at the screen shot above, the main part of the screen shows the field plot of the frequency selected in the top left graph. The upper right graph shows the spectra from a user selectable position.



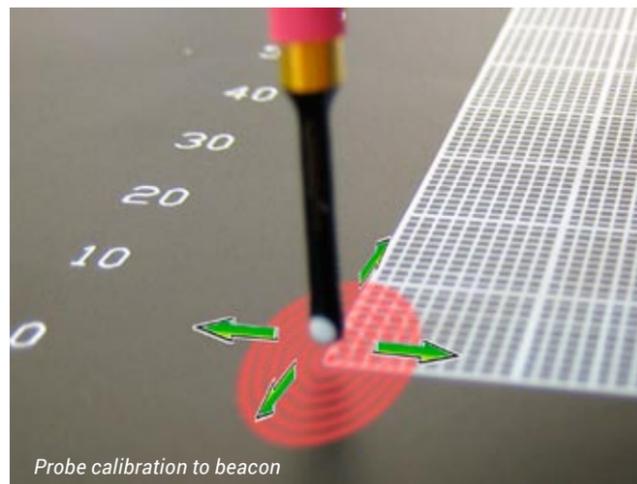
3D measuring point on STL surface model

### Import 3D surface models

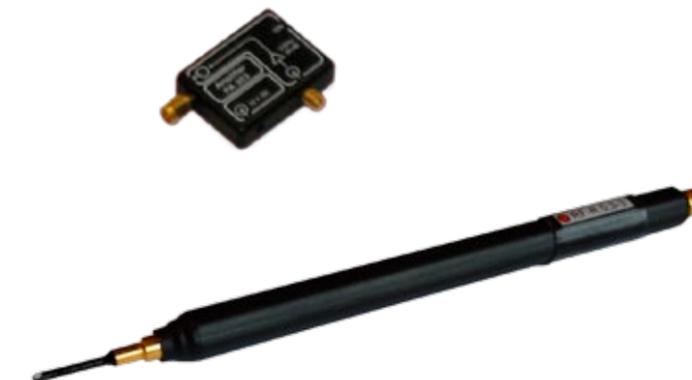
Now you can import 3D surface models in STL file format and create measuring points that follow the surface at a fixed distance. 3D surface models can easily be aligned to the measurement using the 3-point alignment feature.

### Calibrate to beacon

The Scanner tables of the HRE-series scanners are equipped with beacons for automatic and accurate probe calibration. Calibrating the probe using the electric center point gives a higher accuracy than calibrating using the mechanical center point.



Probe calibration to beacon



## What do I get...

The HRE-Scanner comes with a set of four specially selected near field probes, a 30 dB pre-amplifier and RF cables.

### Technical data

Accuracy:	+/- 0.02 mm	
Min step size:	0,025 mm	
Line voltage:	115 or 230V, 50 or 60 Hz	
Power consumption:	1150 W	
Control:	Ethernet, RS-232 or USB to RS-232 adapter	
Software:	Runs on Windows XP or later. (32- and 64-bit) Also runs on Mac using BootCamp	

Modell:	HRE-1	HRE-3
Measurable volume (mm):	190x140x80	390x290x130
Size (w/h/d in mm):	535x690x600	780x850x810
Weight:	95 kg	125 kg

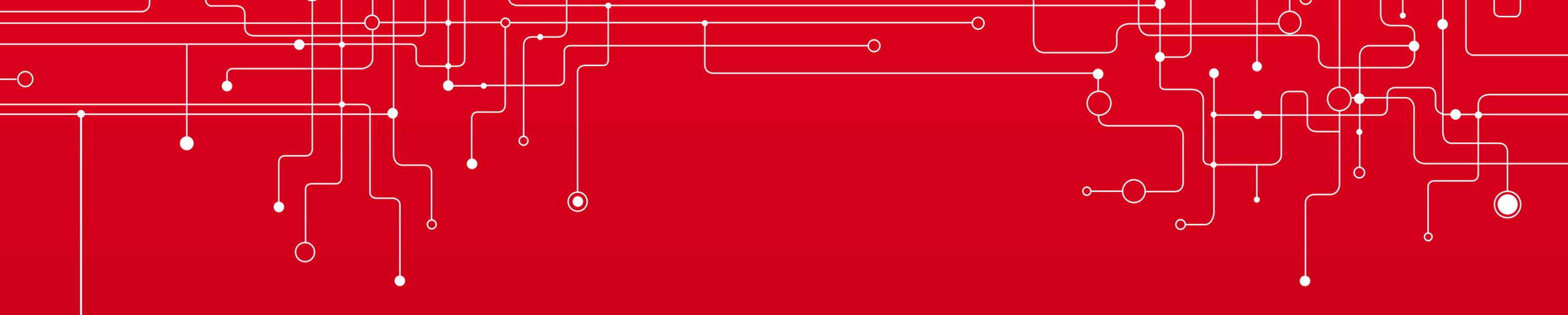
### A complete system

To complete the Scanner system you would need a PC and a spectrum analyzer. Depending on your choice of spectrum analyzer you may also need an National Instruments GPIB adapter.

### The probe set contains:

RF-E 03	E-field 30MHz-3GHz
RF-B 0,3-3	Vert. H-field, 30MHz-3GHz
RF-R 0,3-3	Horiz. H-field, 30MHz-3GHz
LF-B 3	Vert. H-field, 9kHz-50MHz

6GHz versions of the RF-probes are also available.



# Why the EMC-scanner

1

You can **save time and money** by reducing your need for expensive and time consuming full scale measurements

2

You can make **comparative measurements** to document the effect of a change in design.

3

You can maintain a **high quality** in the production line by measuring samples and comparing them to a reference.

4

You can subtract one measurement from another to remove ambient noise or to be able to see the difference between two products more clearly.

5

You can use your own instruments.

6

You can **see the emission** at components level.

7

Early in the design phase you can **detect potential emission problems**.

8

You do not have to know what frequencies you are looking for thanks to the Pre-Scan and MultiScan functions.

9

You can **easily document** (ISO 900x) the emission spectra of your products in both design and production phase.

## Design

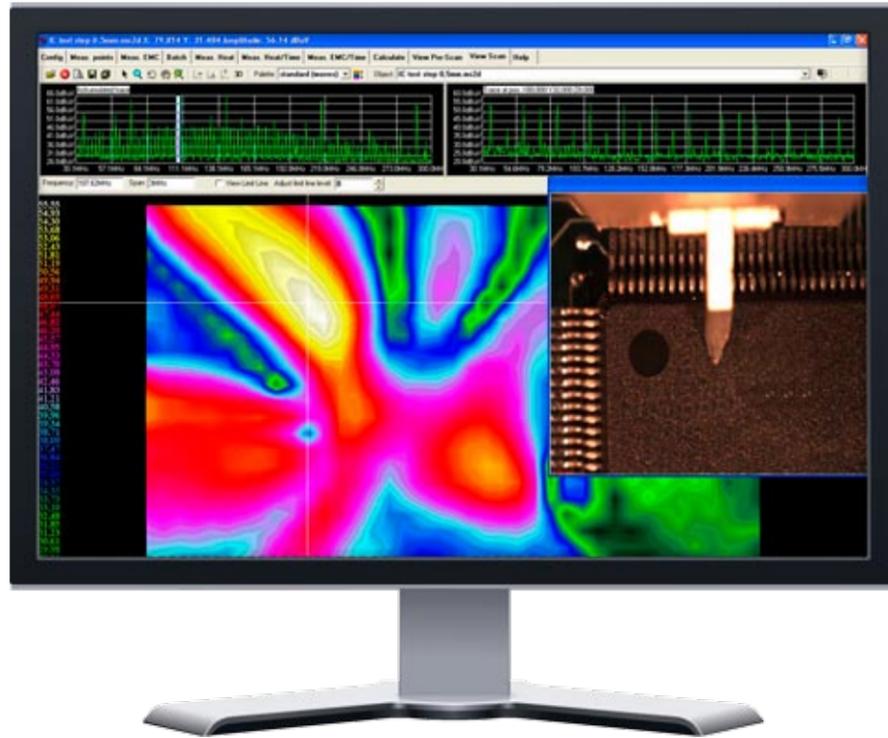
Using the EMC-Scanner during the early stages of design enables you to detect potential emission problems before they become integrated into the product and expensive to correct.

If a product has failed a test at a test house, normally you only know which frequency failed. You don't get to know the location of the source.

The EMC-Scanner can help you find the source and repeated measurements while redesigning your product helps you lower the emission levels.

## Q&A tool

The EMC-Scanner can help you maintain a high quality in the production line. You can make measurements on samples from the production line and easily compare them with a reference. That way you can make sure that, for example, a change of supplier of a component doesn't affect the emission spectra in a negative way.



Screen shot of IC-option software.

## IC measurement option

The high resolution real time inspection camera shows a microscopic view of the probe tip and the test object. The resolution of the image is better than 10µm/pixel.

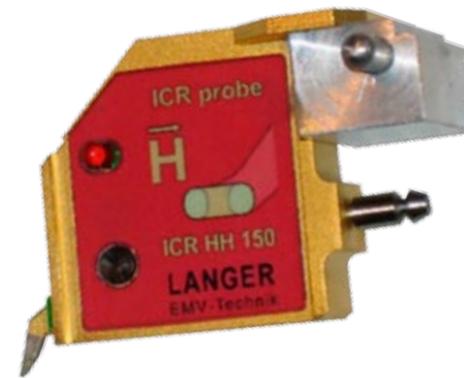
### The IC-option allows you to:

- Define your measuring path very accurately.
- Examine measurement result with accuracy and confidence
- Use the special high resolution near field probes to take full advantage of the HRE-Scanners 25µm resolution.
- Zoom in and see details beyond the capability of the naked eye.

### The IC-option includes:

- A real time inspection camera with 10 µm resolution and digital zoom.
- Mounting for high resolution near field probes.
- LED lighting.
- Software features for zoom, pan and screen shot.

Please note. Probes are sold separately.



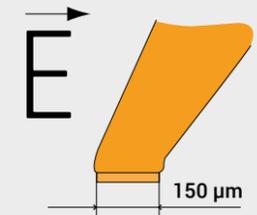
## Probe options

To complete the IC-option there are three high resolution probes to choose from: electric, magnetic with horizontal loop and magnetic with vertical loop. The probes has a built in preamplifier and are equipped with special mounting details to fit the IC-option.

### Please note.

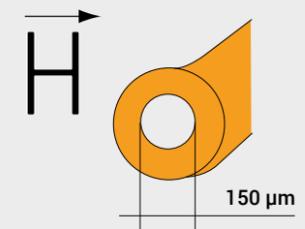
There are several other ICR type probes in different sizes and frequency ranges available. Please ask your local Detectus representative for more information.

Electric field probe - ICR E 150



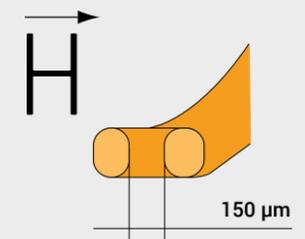
Horizontal electrode of 150 µm x 35 µm.

H-field probe - ICR HV 150 - 27



Vertical measuring coil with Inside diameter of 150µm.

H-field probe - ICR HH 150 - 27



Horizontal measuring coil with Inside diameter of 150µm.

# Immunity option

## Visual Immunity test

The patented Immunity software option allows you to use a Detectus EMC-Scanner system, a signal generator with a small antenna and an Error Detection Device (EDD) to measure the immunity against radiated electro magnetic interference of components, cables, PCB's and products. The measurements are easily interpreted and can be repeated for objective comparison.

## Measurements and reports

From an Immunity Scan measurement the DSS software can produce two or three dimensional colour maps showing sensitive hot spots at any frequency. Also printable reports can be generated. The reports include the colour map, graphs and all the measurement settings.

## The measuring procedure

During measurement the EMC-scanner moves the antenna to predetermined measuring positions above the test object. In each measuring position the signal generator sweeps in frequency and amplitude while the EDD measures for test object failure. If your signal generator allows it, you can also use different modulations such as FM, AM and Pulse

## The measuring procedure

The Error Detection Device can be any type of GPIB or VISA controllable instrument that measures a value from the test object to determine when the test object fails. The EDD can for example be a voltmeter or a protocol tester.

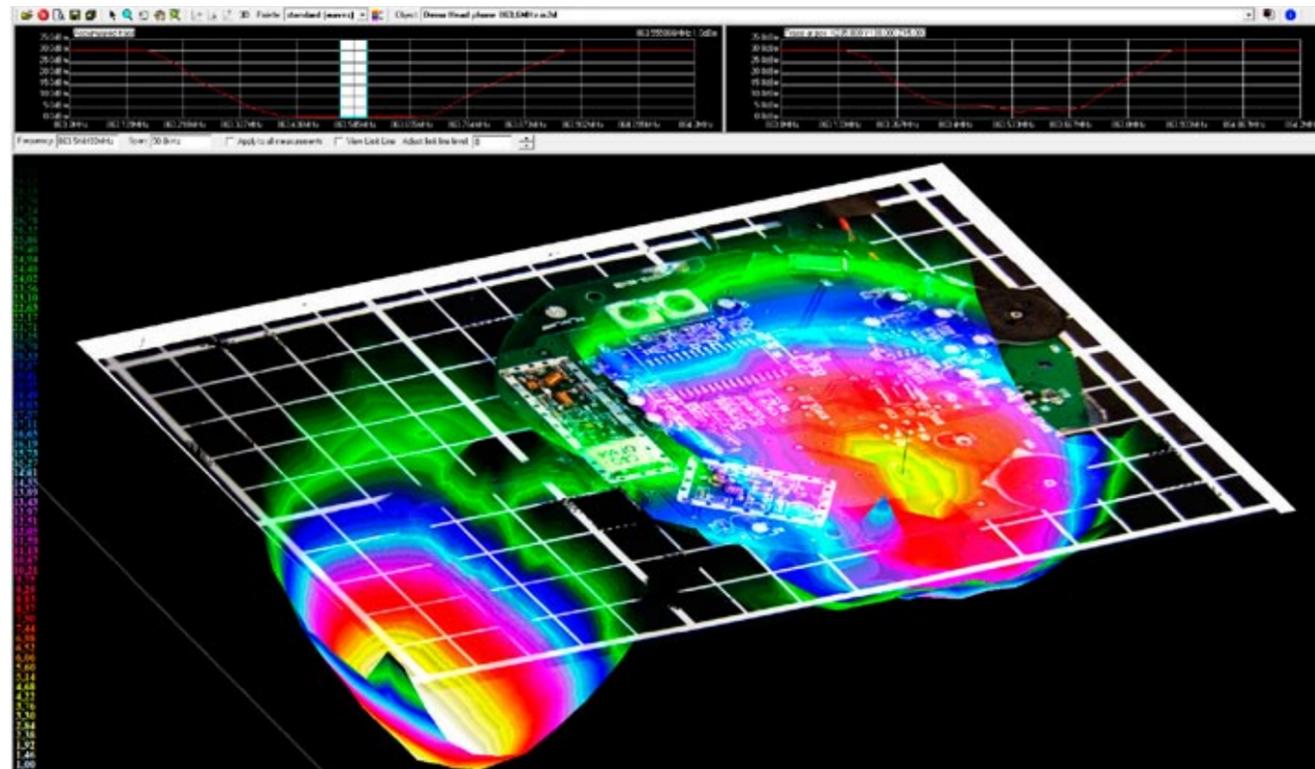


Photo of a HRE 41 with the rotation device.

# HRE 4-axis option

The HRE4x-series of Scanners are exactly like the HREx-series with the addition of a device for automatic rotation around the probe axis. During measurement the Scanner will rotate the probe and find the "worst case" angle and then storing the amplitude. This procedure is performed in every measuring position. The probe can be setup to rotate in steps down to one degree. The ability to rotate the probe means that you no longer have to worry about missing sources of radiation due to the fact that your probe has different sensitivity in different angles. It will also enable you to more easily follow cables, traces on PCBs and even bonding wires in a chip.

The calibration option includes:

- The strip line board.
- A 50 ohm termination.
- A software key that enables the calibration wizard



## Strip line calibration

The new strip line calibration feature enables you to accurately measure the field strength of the magnetic near field and to compare measurements made with different probes and setups.

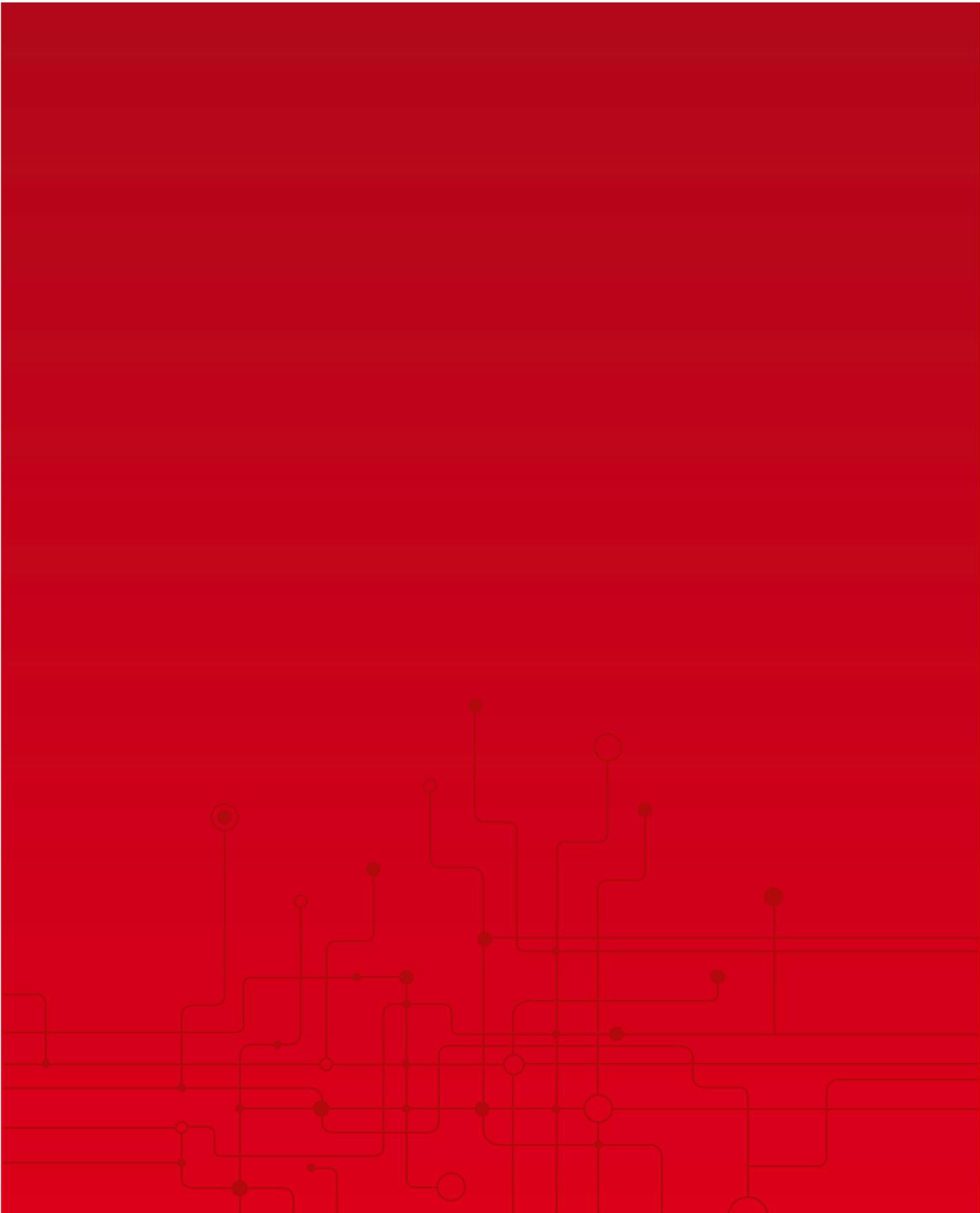
### The Strip line

The strip line calibration feature uses a well defined strip line board and a spectrum analyzer with built in tracking generator to automatically generate a set of probe correction factors in Detectus Scanner Software. The correction factors will compensate for imperfections in the probe, cables, connectors and pre-amp.

### Calibration procedure

The calibration procedure only takes a few minutes and is very easy to perform. Just follow the step-by-step wizard. The wizard includes detailed instructions on how to connect everything and setup the calibration measurement. Calibration can be made on any magnetic near field probe and covers a frequency range from 10 MHz to 6 GHz

See it before you € it!



S. Hantverkargatan 38B / SE-782 34 / Malung  
+46 280 411 22 / [info@detectus.se](mailto:info@detectus.se) / [www.detectus.com](http://www.detectus.com)