Detectus AB

EMC-Scanner
HR-series
Seeing high frequencies!
Now you can SEE high frequency electromagnetic fields.

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, a GPIB card for communicating with the spectrum analyzer and a standard PC with custom software. During measurement the near field probe is moved by the robot to predetermined measuring points above the test object.

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.

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.
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. To the right, 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

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 dump below, the main part of the screen shows the field plot of the frequency selected in the top left graph.

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 HR-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.

**Useful for ...**

- **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 for a component doesn’t affect the emission spectra in a negative way.

**Why the EMC-Scanner**

- You can **save time and money** by reducing your need for expensive and time consuming full scale measurements.
- You can **see the emission** at components level.
- You can make **comparative measurements** to document the effect of a change in design.
- Early in the design phase you can **detect potential emission problems**.
- You can maintain a **high quality** in the production line by measuring samples and comparing them to a reference.
- You do not have to know what frequencies you are looking for thanks to the Pre-Scan and MultiScan functions.
- You can use your own instruments.
- You can **easily document** (ISO 900x) the emission spectra of your products in both design and production phase.
- You can subtract one measurement from another to remove ambient noise or to be able to see the difference between two products more clearly.
What do I get...

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

Technical data

<table>
<thead>
<tr>
<th></th>
<th>HR-1</th>
<th>HR-3</th>
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<tbody>
<tr>
<td>Accuracy</td>
<td>+/- 0.02 mm</td>
<td></td>
</tr>
<tr>
<td>Min step size</td>
<td>0.025 mm</td>
<td></td>
</tr>
<tr>
<td>Line voltage</td>
<td>115 or 230V, 50 or 60 Hz</td>
<td></td>
</tr>
<tr>
<td>Power consumption</td>
<td>1150 W</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>RS-232 or USB to RS232 adapter</td>
<td></td>
</tr>
<tr>
<td>Software</td>
<td>Requires Win XP or later</td>
<td></td>
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<tr>
<td>Modell</td>
<td>HR-1</td>
<td>HR-3</td>
</tr>
<tr>
<td>Measurable volume (mm)</td>
<td>190x140x80</td>
<td>390x290x130</td>
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<tr>
<td>Size (w/h/d in mm)</td>
<td>535x690x600</td>
<td>780x850x810</td>
</tr>
<tr>
<td>Weight</td>
<td>95 kg</td>
<td>125 kg</td>
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IC-option

The IC-option improves the accuracy of your HR-Scanner.

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 HR-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 10μm 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.

Electric field probe - ICR E 150

Resolution: 65 μm
Horizontal electrode of 150 μm x 35 μm.

H-field probe - ICR HH 150

Resolution: 80 μm
Horizontal measuring coil with Inside diameter of 150μm.

H-field probe - ICR HV 150

Resolution: 100 μm
Vertikal measuring coil with Inside diameter of 150μm.

Preamplifier built into ICR-probes

Gain: 30 dB
Frequency range: 16 kHz – 3 GHz
Noise factor: 4.5 dB
Company Profile

Detectus AB is a Swedish company that develops, manufactures and sells EMC test systems directly and through distributors worldwide. Detectus AB was founded in 1994 and has since then been dedicated to providing market leading EMC scanning technology to the electronics industry in general and the cell phone industry in particular.

The main products of Detectus are the patented EMC-Scanners which are developed and manufactured in the factory in Malung, Sweden. Development is done in close contact with our customers which allows for flexible and easy-to-use products.

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