



Rev 1.7  
02.08.2011

## Gauss Meter & EMC spectrum analyzer Series SPECTRAN® 50xx

Spectrum Analyzer at multi-meter price!

### References / examples of proof:

- ◆ BOEING, USA
- ◆ NATO, Belgium
- ◆ Rohde & Schwarz, Belgium
- ◆ Shell Oil Company, USA
- ◆ ATI, USA
- ◆ Australian Government Department of Defence, Edingburgh, Australia
- ◆ Daimler Chrysler AG, Bremen, Germany
- ◆ BMW, München, Germany
- ◆ Eurocontrol (Flugüberwachung), Belgium
- ◆ DLR (Deutsches Zentrum für Luft- und Raumfahrt), Köln, Germany
- ◆ ThyssenKrupp, Stuttgart, Germany
- ◆ Siemens AG, Konstanz & Erlangen, Germany
- ◆ PHILIPS, Netherlands



### Product of the year 2009

Our 3D magnetic-field measurement coil with homogeneous centre won the **first price** of Europe's biggest electronic newspaper "Elektronik" at the category passive components. **This coil is installed in each NF-Spectran unit.**

# Specifications

## SPECTRAN® NF-5010 (1Hz to 1MHz)

- ◆ 1024 points BFT (FFT)
- ◆ Frequency range: 1Hz to **1MHz**
- ◆ Typ. level range E-Field: 1V/m to 5kV/m
- ◆ Typ. level range H-Field: 1nT to **100μT**
- ◆ Typ. precision: 3%
- ◆ Superfast FFT spectrum analysis
- ◆ High-performance DSP (Digital Signal Processor)
- ◆ 3D magnetic field measurement
- ◆ Frequency and signal strength display
- ◆ High-resolution multi-function display
- ◆ DIN/VDE 0848 Exposure limit calculation
- ◆ Simultaneous M-Display X, Y, Z axes
- ◆ True RMS signal strength measurement
- ◆ Average (AVG) measurement
- ◆ Internal data logger
- ◆ Internet Flash Software-Updates
- ◆ USB 2.0 Interface
- ◆ Dimensions (L/W/D): (260x86x23) mm
- ◆ Weight: 420gr
- ◆ **Warranty: 10 years**

## SPECTRAN® NF-5030 (1Hz to 1MHz / 20MHz / 30MHz)

- ◆ Vastly expanded range
- ◆ Measurement range up to **DIN/VDE 0848**
- ◆ **65 MSPS** (Option 005)
- ◆ Lots of options
- ◆ NEW: 30MHz Option
- ◆ Frequency range: 1Hz to 1MHz (**30MHz**)
- ◆ Typ. level range E-Field: 0,1V/m to **20kV/m**
- ◆ Typ. level range H-Field: 0,1nT to 2mT
- ◆ Typ. level range DDC H-Field: **1pT** to 2mT
- ◆ Typ. level range DDC Analog in: **200nV** to 200mV / -150dBm (Hz)
- ◆ Typ. accuracy: 3%
- ◆ Superfast FFT spectrum analysis
- ◆ High-performance DSP (Digital Signal Processor)
- ◆ 3D magnetic field measurement
- ◆ Frequency and signal strength display
- ◆ High-resolution multi-function display
- ◆ DIN/VDE 0848 Exposure limit calculation
- ◆ Simultaneous M-Display X, Y, Z axes
- ◆ True RMS signal strength measurement
- ◆ Average (AVG) measurement
- ◆ Internal data logger
- ◆ Internet Flash Software-Updates
- ◆ USB 2.0 Interface
- ◆ Dimensions (L/W/D): (260x86x23) mm
- ◆ Weight: 420gr
- ◆ **Warranty: 10 years**

## Application Examples Spectran NF-50xx Spectrum Analyzer

### Analysis and measurement of:

- ◆ traction power
- ◆ power lines
- ◆ power cables
- ◆ lamps
- ◆ power supplies
- ◆ transformer
- ◆ DSL
- ◆ ADSL
- ◆ VDSL
- ◆ various home appliances, industry and office up to 30MHz



# Description



## CONFORMING TO STANDARDS

### Real ANALYSIS:

Measurement of electric and magnetic fields in this price range has never been this PROFESSIONAL.

Find radiation sources in your surroundings. Find their respective frequencies and signal strengths, including direct display of exposure limits. This used to be impossible in this price category, professional units often costing several thousand euros and being excessively complicated in handling.

The highly complex calculations in spectrum analysis incl. exposure limit calculation is being performed, unnoticed in the background, by a high-performance DSP (digital signal processor). This ultra-fast processor even allows, depending on the settings, REAL-TIME display with a NF-5030 (could you ask for more?). Simply amazing!

**Fast, handy, cost-effective, beautiful exterior and PRECISION - what more could you ask ?**

## Spectrum ANALYSIS

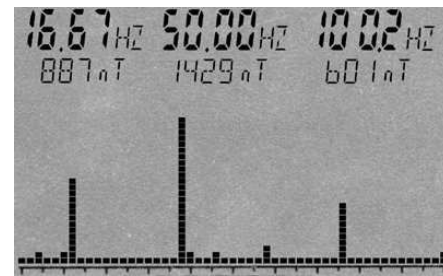
### Real ANALYSIS:

Professional EMF measurement devices use a frequency dependant measurement approach, the so-called spectrum analysis. In a certain frequency range, the individuals signals and their respective strengths are being broken down, for example into a "bargraph" display (see SPECTRAN® screenshot on the right). The height of the individual bars represents the corresponding signal strength. For the 3 strongest signal sources, SPECTRAN® can automatically displays the frequency and signal level, thanks to its "Auto Marker" feature. Of course, you can also setup the filter width and the frequency range to be analysed as you like.

In the EMF (LF) spectrum shown here, a frequency range of approx. 20Hz to 60Hz from left to right is being analysed. During analysis, the Auto Marker feature has determined - fully automatic - two main signal sources:

**Signal#1=30Hz at 45µT**

**Signal#2=50 (mains power) at 75µT**

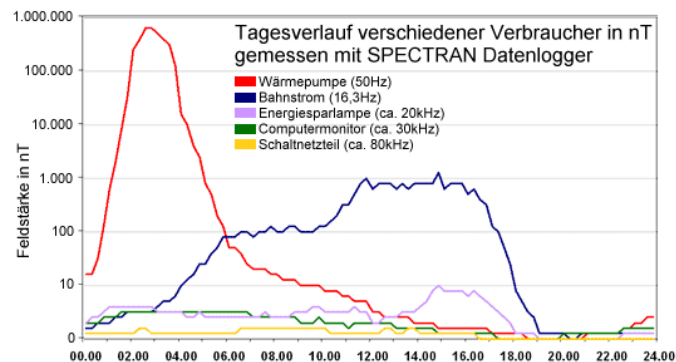


LF spectrum display and automatic multi-marker display on the digital screen of SPECTRAN® (Screenshot)

## LONG-TERM MEASUREMENT (Data logging feature)

SPECTRAN® measurement devices with data logger allow long-term recordings of measurement results over a freely adjustable period of time. This is particularly indispensable for serious evaluation of exposure by appliances and machinery which have a changing power consumption or radiation strength over time. Examples for these include railroads, power lines and plants, but also home appliances and their respective power cables, and various high-frequency transmission facilities like mobile phone transmission towers, mobile phones, radar etc. Depending on the time of day, considerable variation of exposure can occur (see attached graphics). Without long-term recordings, MASSIVE misinterpretation of total exposure can occur. With long-term data logging using SPECTRAN®, the daily variation of exposure can be recorded and analysed. Thus, the actual total exposure can be evaluated precisely.

With this functionality, you can even discover sporadic EMC problems which would otherwise be very hard to detect.



Daily variation of various radiation sources discloses MASSIVE variation in exposure

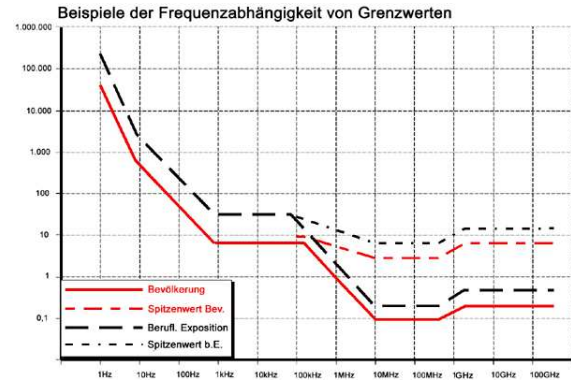
## EXPOSURE LIMITS

### At the push of a button:

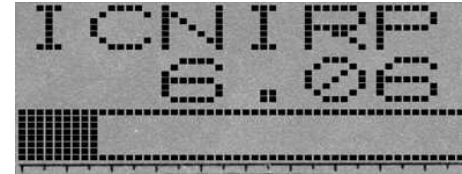
Exposure limit calculation used to be a complex and awkward procedure even for the professional, as most of the time, a chaotic mixture of an abundance of different frequencies, modulations and signal strengths is present.

The indispensable, highly complex calculation of frequency-dependant exposure limits can ONLY be performed CONFORMING TO STANDARDS by a spectrum analyser with high-performance software. Not a problem for SPECTRAN® units: They can calculate even several authoritative exposure limits, precautionary limits and recommendations (simply selectable via a button) and display these as a practical bargraph display (including convergence display in percent!), while the measurement is running.

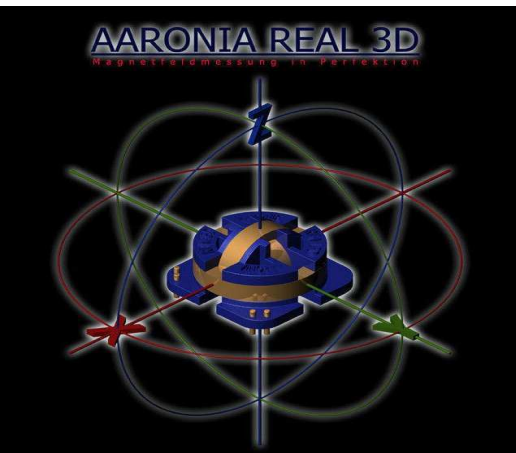
The attached SPECTRAN® screenshot demonstrates how it works: At the push of a button, the ICNIRP exposure limit has been chosen among the various available exposure limits. SPECTRAN® now automatically calculates convergence or excess of this limit. For achieving this, often thousands of complex calculations have to be performed per second, and a steady scan of the entire frequency range needs to be performed. A true nightmare for every processor. In our test case, the graphic display shows an approximation towards the ICNIRP limit by 6,06%. If you use a NF-5030 you can even cover the total ICNIRP-bandwidth (depending on frequency). Hence, even the novice can perform exposure limit calculations ACCORDING TO STANDARDS without having to use complex tables and calculators.



Graphic display of frequency-dependant exposure limits.



SPECTRAN® displays exposure limits both as percentage as well as a bargraph display.



Aaronia REAL-3D magnetic field sensor

## The new standard: 3D MEASUREMENT

Mismeasurement caused by wrongly adjusting the measurement device in space or troublesome and complex 3D calculations with a calculator are a problem of the past from now on, thanks to SPECTRAN® EMF (LF) measurement devices. All SPECTRAN® EMF measurement devices can measure magnetic fields directly in 3D! Starting with the SPECTRAN® NF-1010E, field strengths of the individual X, Y and Z axes can even be shown separately. This has become possible thanks to the newest development from the Aaronia laboratories: Our high-tech REAL 3D miniature sensor coil. Consisting of a specially crafted nylon base with 3 independent windings made of ultra-thin, 0,05 mm! wire, it impresses with its extremely high sensitivity. It allows measurement of magnetic fields in all 3 spacial dimensions. The signal processor (DSP) of the SPECTRAN® performs the resulting highly complex calculations. You receive 3D measurement results which can otherwise only be achieved by using highly professional equipment.

## INCLUDED WITH DELIVERY

- ◆ LF spectrum analyser SPECTRAN NF-50xx
- ◆ Sturdy aluminum-design carrycase (with custom padding!)
- ◆ 1300mAh Aaronia power battery with charger
- ◆ Exhaustive manual with lots of basic information, hints and exposure limit tables



Package contents SPECTRAN 50xx devices