

SPECTRAN[®]

World's first LowCost Handheld Spectrum Analyser!

"These novel spectrum analysers from Aaronia AG finally fulfill the long-standing dream of **electronics engineers** and **environmental measurement technicians** of a **full-featured spectrum analyser** which is affordable for everyone and easy to use even for the novice. This has always been deemed **totally impossible** by experts as such devices always used to **cost a fortune**."



Sensor mount

For sturdy connection of HyperLOG EMC antennas or Aaronia TCO and 3D sensors

EMF & RF sensor inputs

High-grade, gold-plated construction with over-torque protection

Patented signal analysis

Patented, innovative RF vector frequency scanning and processing technology

Huge LC display

High-resolution digital display with 80x60mm! in FSTN quality with various numeric indicators, high-resolution pixel display, large bargraph and text display for **SIMULTANEOUS** display of several measurement results and physical units

Signal processor

Integrated signal processor (DSP) for ultra-fast calculation and display of measurements

Power input

For external power supply and charging the Aaronia battery pack

USB 2.0 Connector

Super-fast USB 2.0 connector for your PC or laptop. Also allows software updates (over the Internet) to the internal FLASH program memory

Audio output

Data logger function

For long-term measurements

Multi-functional dial

For professional "single-hand use" and practical navigation of menus

High-grade keyboard

Laser-labelled, with SOLID keycaps and clear layout

Integrated battery charger

Internal speaker

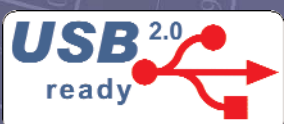
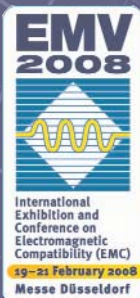
For reproducing AM and FM demodulation.

Professional tripod socket

Solid 5/8" socket for mounting the Aaronia bearing handle or a regular tripod on the back of the unit

Aaronia battery pack

For extremely long battery life. Available with **4** and **7** hours of continuous operation!



The above functionality is different depending on the particular model, see inside for details



SPECTRAN[®] - Our affordable EMC / environmental measurement devices

CONFORMING TO STANDARDS and EXACT

Measurement of EMC 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 REAL-TIME display in all EMF (LF) versions of the SPECTRAN® series (could you ask for more?). Simply amazing.

Handy, cost-effective and beautiful exterior - what more could you ask ?

Spectrum ANALYSIS

Real ANALYSIS:

Professional RF and EMF measurement devices use a **frequency dependant measurement approach**, the so-called **spectrum analysis**. In a certain frequency range, the individual signals and their respective strengths are being broken down, for example into a "bar-graph" display (see SPECTRAN® screenshots on the right). The height of the individual bars represents the corresponding signal strength. For the 3 strongest signal sources, SPECTRAN® automatically displays the exact 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.

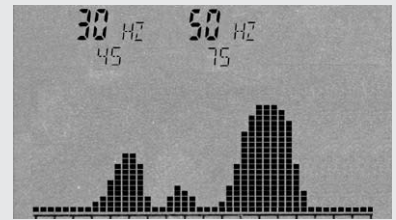
In the shown spectrum of the SPECTRAN® RF measurement device, a frequency range of approx. 100MHz-7GHz is being analysed from left to right (full sweep). During analysis, the Auto Marker feature has determined - fully automatic - three main signal sources:

Signal#1=942MHz (GSM communications) at -63dBm

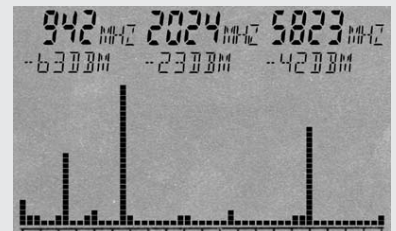
Signal#2=2024MHz (UMTS) at -23dBm

Signal#3=5823MHz (802.11a WLAN) at -42dBm

Thanks to its DIRECT frequency display of the individual signal sources, a mapping of measurement results to the corresponding radiation sources is possible.



EMF spectrum display and automatic triple multi-marker display on the digital screen of a NF-SPECTRAN® (Screenshot)

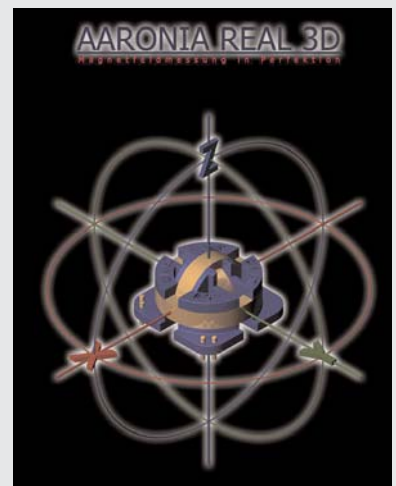


RF spectrum display and automatic triple multi-marker display on the digital screen of a HF-SPECTRAN® (Screenshot)

The new standard: 3D MEASUREMENT

3D magnetic field 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 (LF) measurement devices can measure magnetic fields directly in 3D! 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 perfect 3D measurement results which can otherwise only be achieved by using highly professional equipment.



Aaronia REAL-3D magnetic field sensor

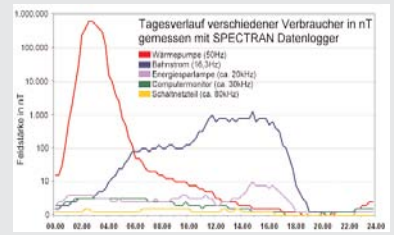
LONG-TERM MEASUREMENT (Data logging feature)

For SERIOUS measurements:

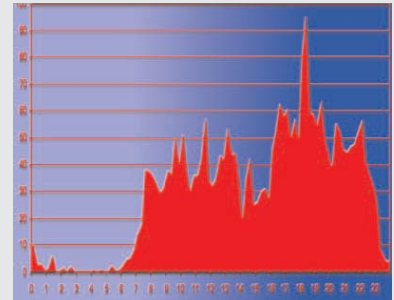
SPECTRAN® measurement devices with data logger allow **long-term recordings of measurement results over a freely adjustable period of time**. This is particularly indispensable for SERIOUS evaluation of exposure by appliances and machinery which have a changing power consumption or radiation strength 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.

The SPECTRAN® units "only" last 4 or 7 (depending on model) hours with one battery charge. If this is not enough, the external power supply can be used to extend the recording timespan infinitely.



Daily variation of various radiation sources discloses **MASSIVE** variation in exposure



Daily variation of this RF transmitter discloses **EXTREME** variation in time

EXPOSURE LIMITS Display

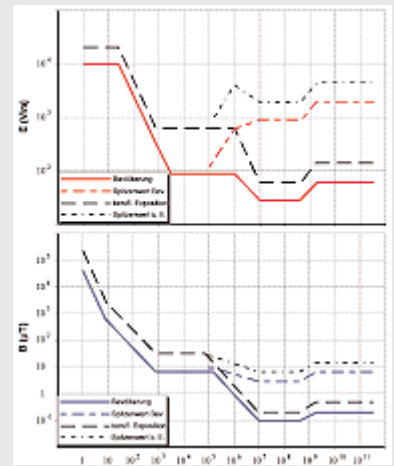
At the push of a button:

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.

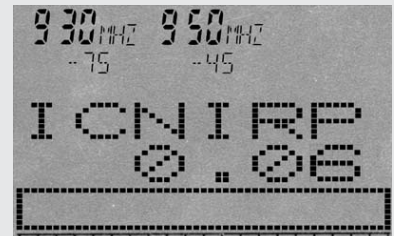
The indispensable, highly complex calculation of frequency-dependant exposure limits can be performed **CONFORMING TO STANDARDS** (e.g. ICNIRP) by a spectrum analyser with high-performance software. Not a problem for SPECTRAN® units: They can calculate even several authoritative exposure limits, precautionary limits and recommendations (simply selectable via a button) and display them 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 0,06%. If you use a HF-6080 or NF-5020 you can even cover the total ICNIRP-bandwidth (depending on frequency).

Hence, even the novice can perform exposure limit calculations **ACCORDING TO STANDARDS** (like ICNIRP) without having to use complex tables and calculators. It really can't get any simpler.



Graphic display of frequency-dependant exposure limits. They disclose the **INDISPENSIBLE** consideration of signal frequency



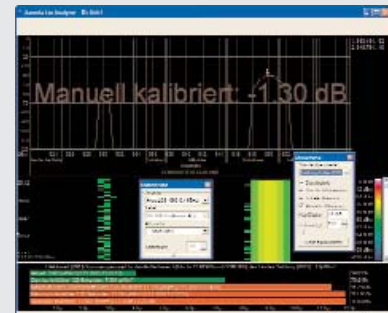
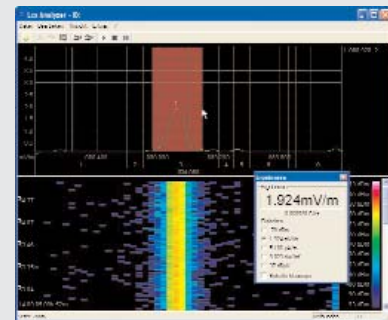
SPECTRAN® displays exposure limits both as percentage as well as a bargraph display. Our example shows approximation to the ICNIRP exposure limits by 0,06%. (Screenshot)

PROFESSIONAL PC analysis software included for free

Simply AMAZING:

The PROFESSIONAL PC analysis software demonstrates SPECTRAN®'s vast capabilities. This software can be used IN ADDITION to SPECTRAN® and offers an incredible amount of features. All this for FREE. Just download it from our homepage, and your PC turns into a real spectrum analyser with a huge display:

- MULTI-device capability!!! Remote control of SEVERAL SPECTRAN® units. These can be controlled and their data displayed AT ONCE on a single PC.
- HIGH-RESOLUTION!, freely scalable, coloured spectrum display with falloff function..
- Display of CHANNEL IDENTIFIERS!!! for EXACT identification of providers. Channel numbers etc. freely programmable and extensible!
- Up to 10! markers with frequency and level display.
- Intuitive zoom control with very comfortable frequency adjustment.
- High quality "waterfall"-display with TIMECODE. Colour scale freely configurable. Size freely scalable. Optional display of data DIRECTLY ON TOP OF THE GRAPH by pointing with your mouse and CTRL-clicking!
- High-resolution SLOT ANALYSER with 3D display!!
- SUPER-LOGGER: ALL data can be written to disk continuously. File format is readable by spreadsheet applications, for creating custom reports, etc.
- Freely positionable windows for comfortable entry of frequency, RBW, sweeptime etc. etc.
- Various pre-defined profiles for DECT, UMTS, GSM, Wlan etc. etc. for instant recall. Incl. optimal parameters and extensive channel information! Freely programmable and extensible!
- Independant main display with SIMULTANEOUS display of dBm, dBµV, V/m, W/m2 and A/m, each with AUTORANGE. Freely transposable and scalable.
- SUPERB exposure limit display with various profiles (ICNIRP, Salzburg precautionary values, ECOLOG, etc. etc.). Freely programmable with a virtually infinite amount of display options.
- Functionality to update SPECTRAN® measurement device firmwares.
- Freely programmable key assignments and labels for SPECTRAN® measurement devices.
- Filemanager and COMPILER for creation and management of YOUR OWN PROGRAMS for SPECTRAN® measurement devices.
- "Rename" option for renaming any of your SPECTRAN® units (for example, including location) for better identification
- etc. etc. etc.



AMAZING: The PROFESSIONAL PC software for SPECTRAN®. Get to know SPECTRAN®'s real capabilities!

Lots of power: The rechargeable Aaronia NiMH battery

Superlong operating time:

Starting with the SPECTRAN® NF-1010E or SPECTRAN® HF-2025E, respectively, the rechargeable Aaronia NiMH high-performance battery is supplied as standard. It has been developed specifically for the SPECTRAN® devices and is optimally suited for their requirements. Thanks to NiMH technology, the dreaded "Memory effect" is now a thing of the past, as with this power battery, maximum quality and long life have been our primary goals. Another reason why such a battery technology is necessary is the high power demand of the high-performance DSP used in all SPECTRAN® units, especially in the RF versions, which furthermore include very demanding RF receiving circuitry. Still, it is astounding that even when using the standard version of the Aaronia battery (1300mAh), continuous operation of the SPECTRAN® for approx. 4 hours is possible. The special version with 2200mAh (available at an extra charge) bumps this up to a stunning 7 hours! This is certainly a new all-time record for portable, battery-supplied spectrum analysers, or do you know a portable spectrum analyser which even remotely provides 7 hours of continuous operation with a single battery charge ?

Naturally, the necessary battery charger is also included. At the same time, it can be used for operating the SPECTRAN® units with mains power. The battery charger is integrated into all SPECTRAN® units, thus SPECTRAN® models NF-1010 and HF-2025 can also subsequently be extended with an Aaronia battery (STRONGLY recommended!).

NiMH RECHARGEABLE CYLINDRICAL BATTERY

SPECIFICATIONS	
Model	MEI5000000
Description	NiMH rechargeable battery, AA size, flat top
Nominal Capacity	1300 mAh at 25°C with 0.1C discharge
Nominal Voltage	1.2 Volt
Cut-off Voltage	0.8 Volt
End of Charge Voltage	1.4 Volt
End of Discharge Voltage	0.8 Volt
Weight	130 grams
Life Cycles	> 1000 cycles (Capacity to IEC 283-1993 4.4.1)
Charge	Trickle - 45 mA, 14 hours
	Standard - 120 mA, 14 hours
Quick - 700 mA, 2.8 hours (with cut-off circuit)	
Temperature Environment	Every 3-6 months recommended
	Standard charge: 0 °C to 45 °C
	Quick charge: 0 °C to 40 °C
	Discharge: -20 °C to 60 °C
	Storage: -20 °C to 40 °C
Trickle Charge	45mA for 28 days, no leakage or explosion
Charge Retention	100% for 28 days storage after standard charge
Leakage	No leakage, no explosion under standard operating condition
Voltage	Battery remains constant after activation at range limits
Price	Price: 1300mAh for 60 pcs.
Stock	Battery remains normal after dropping from 900mm to an 80cm board for 3 hours

Approximate to the following units:

Model: MEI5000000 Address: 62, Lohsestr. 1, Lohsestr. 1
 Version: 1.1 Manufacture: KCEEM-20 Rev. 1.1

Aaronia AG

The Aaronia POWER-battery

HUGE Digital LC display

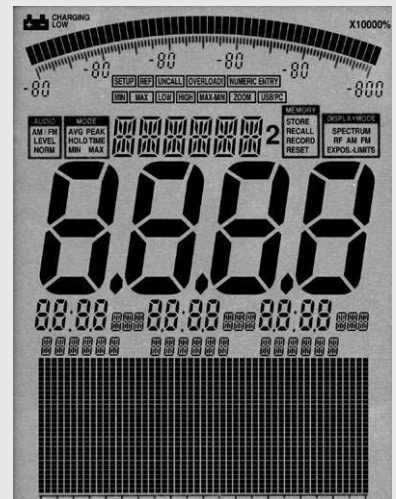
Pure luxury:

The huge, high resolution digital LC display more than 80x60 mm in size! It has been developed especially for SPECTRAN® by Aaronia. Needless to say, it uses FSTN quality for crystal clear display. It covers a vast amount of display capabilities (listed from top to bottom):

- Big graphics display (pixel display) with 51x25 pixels (can be used for complex spectrum and exposure limit display, convenient menu navigation, etc.)
- HUGE numeric display (4 digits, max. 9999)
- Large, high-resolution bargraph (50 segments) for very responsive trend display
- Various function and mode indication display blocks (AUDIO, MODE, MEMORY etc.)
- Large multi-function text display (6 text fields / e.g. for displaying units, service information, etc.)
- Three further big numeric displays (4 digits each, each max. 9999 / e.g. for simultaneous display of MIN, MAX, AVG values, 3 marker values, etc.)
- Triple multi-function text displays (Next to each of the previously described numeric displays / 3x3 text fields each / used e.g. for unit display for markers, etc.)
- Three more multi-function text displays (directly beneath the previously described displays / 3x6 text fields each / e.g. ADDITIONAL values AND unit display for markers, etc.)
- Battery status and charging display (incl. "CHARGING" and "LOW")
- 6 numerical displays for flexible bargraph scaling (incl. multiplication factor and percentage display)

Thanks to the vast amount of flexible display options, this device can display various readings, a bargraph AND a spectral display (starting from NF-1010E resp. HF-2025E) SIMULTANEOUSLY, without bothersome switching back and forth.

Using SPECTRAN®, the user is supplied with virtually ALL information AT ONCE, without the hassle of switching back and forth. Where else can you find such luxury at a similar price ?



The COMPLETE digital multifunction display of SPECTRAN® at a glance

Test Equipment Depot - 800.517.8431 - 99 Washington Street Melrose, MA 02176

FAX 781.665.0780 - TestEquipmentDepot.com