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**."

EMF & RF sensor inputs
High-grade, gold-plated construction with over-torque protection

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

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

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

Power input
For external power supply and charging the Aaronia battery pack

Audio output

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

Data logger function
For long-term measurements

Integrated battery charger

High-grade keyboard
Laser-labelled, with SOLID keycaps and clear layout

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!

WINNER
Passive Components

WINNER
Test & Measurement

HF-4040 Rev3

CE

USB 2.0 ready

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

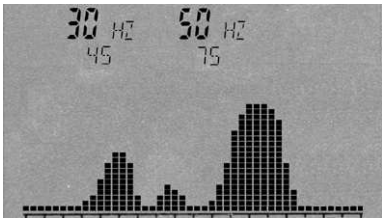
CONFORMING TO STANDARDS and EXACT

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 bakkground, 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 ?

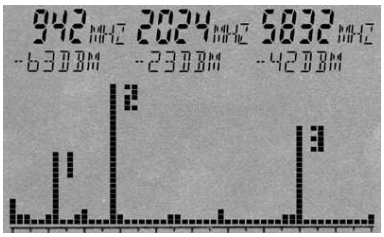
Spectrum ANALYSIS

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 individuals signals and their respective strengths are being broken down, for example into a "bargraph" 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.



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

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=5832MHz (802.11a WLan) at -42dBm

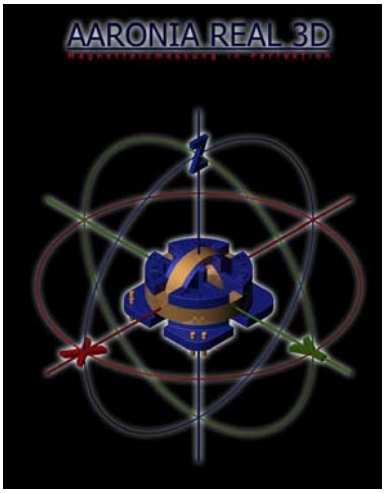


RF spectrum display and automatic triple multi-marker display on the digital screen of a HF-SPECTRAN® (Screenshot)

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

The new standard: 3D MEASUREMENT

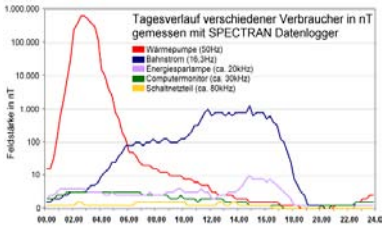
3D magnetic field measurement:
Mismeasurement caused by wrongly adjusting the measurement device in space or troublesome and complex 3D calculations with a calculator are a problem of the past from now on, thanks to SPECTRAN® EMF (LF) measurement devices. All SPECTRAN® EMF (LF) measurement devices can 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 independant 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

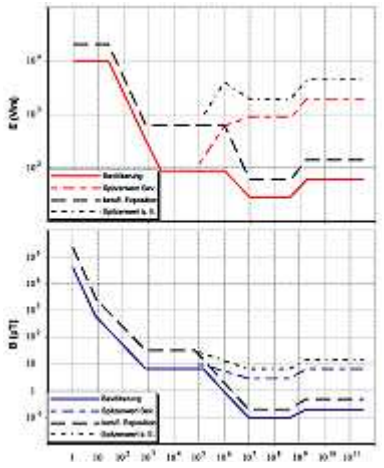
Daily variation of this RF transmitter discloses EXTREME variation in time

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 indispensible, 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-60100 V4 or NF-5030 you can even cover the total ICNIRP-banwidth (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

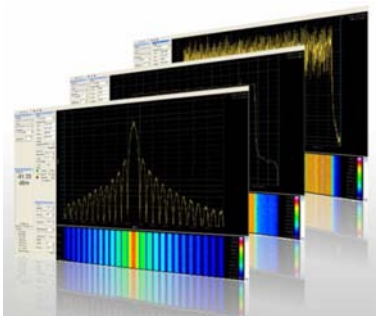
SPECTRAN® displays exposure limits both as percentage as well as a bargraph display. Our example shows approximation to the ICNIRP exposure limits by 0,06%. (Screenshot)

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-resoution 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 rechargable Aaronia NiMH battery

Superlong operating time:
Starting with the SPECTRAN® NF-1010E or SPECTRAN® HF-2025E, respectively, the rechargable 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® model NF-1010 can also subsequently be extended with an Aaronia battery (STRONGLY recommended!).

The Aaronia POWER-battery

SPECTRAN® EMF Spectrum Analyzer

APPLICATION EXAMPLES: Measurement of traction power, high-voltage lines, power cables, lamps, power supplies, transformer stations, various appliances in home and office

SPECIFICATIONS base unit*	NOVICE		INTERMEDIATE		PROFESSIONAL		Outdoor
	NF-1010*	NF-1010E*	NF-3010*	NF-3020*	NF-5010*	NF-5030*	NF-XFR
Frequency range Min	10Hz	10Hz	10Hz	10Hz	**1Hz**	**1Hz**	**1Hz**
Frequency range Max	2kHz	10kHz	100kHz	400kHz	**1MHz**	**30MHz****	**20MHz**
Range electrical field **[V/m]** (typical) Min (1D)	1V/m	1V/m	0,1V/m	0,1V/m	0,1V/m	0,1V/m	-
Range electrical field **[V/m]** (typical) Max (1D)	2.000V/m	2.000V/m	5.000V/m	5.000V/m	5.000V/m	**20kV/m**	-
Range magnetic field **[Tesla]** (typical) Min (3D!)	10nT	10nT	1nT	1nT	1nT	**1pT****	-
Range magnetic field **[Tesla]** (typical) Max (3D!)	100µT	100µT	100µT	100µT	100µT	**2mT**	-
Range magnetic field **[Gauss]** (typical) Min (3D!)	100µG	100µG	10µG	10µG	10µG	**10nG****	-
Range magnetic field **[Gauss]** (typical) Max (3D!)	1G	1G	1G	1G	1G	**20G**	-
Range Analog input (typical) Min	-	-	-	2µV	2µV	**200nV**	**200nV**
Range Analog input (typical) Max	-	-	-	200mV	200mV	200mV	200mV
Filter bandwidth Min	5Hz	5Hz	1Hz	1Hz	1Hz	1Hz	1Hz
Filter bandwidth Max	10kHz	100kHz	300kHz	300kHz	**1MHz**	**1MHz**	**1MHz**
Accuracy Base unit (typical)	5%	5%	5%	5%	3%	3%	3%
FFT (Resolution in points)	64	64	64	64	1024	1024	1024
Vector power measurement (I/Q) and **True RMS**	-	-	✓	✓	✓	✓	✓
FEATURES							
Standards conformant exp. limits (ICNIRP, BGV B11, BImSchV etc.)	-	✓	✓	✓	✓	✓	-
Extended full **ICNIRP range**	-	-	-	-	-	✓	-
Isotropic (3D) AC magnetic field measurement	✓	✓	✓	✓	✓	✓	-
Supports custom P-Code software	-	-	✓	✓	✓	✓	✓
ADVANCED HOLD mode (HOLD function)	-	✓	✓	✓	✓	✓	✓
INTERNAL data logger (long-term measurements)	-	-	✓	✓	✓	✓	64GB
FLASH memory including firmware update (over the Internet)	-	16k	64k	64k	64k	64k	✓
“Clear text” signal identification with direct frequency display		✓	✓	✓	✓	✓	✓
Integrated battery charging circuitry	-	✓	✓	✓	✓	✓	✓
Internal speaker	Piezo	Piezo	✓	✓	✓	✓	✓
Audio demodulation	AM	AM	AM	AM	AM&FM	AM&FM	-
DISPLAY							
Fast FFT or DFT spectrum analysis	-	✓	✓	✓	✓	✓	✓
Limit calculation with simultaneous percentage display	✓	✓	✓	✓	✓	✓	-
X, Y, Z Axis display or Vectorproduct (only M.-Field)	-	✓	✓	✓	✓	✓	-
Main display in V/m, Tesla, Gauss or A/m (switchable)	-	✓	✓	✓	✓	✓	V / dBµV
High-resolution 50 segment bargraph (trend display)	✓	✓	✓	✓	✓	✓	14” Display
3fold marker display (ex. 3x field strength & frequency at once)	-	✓	✓	✓	✓	✓	10fold
INTERFACES / CONNECTORS							
Fast USB 2.0 interface (computer connection)	-	✓	✓	✓	✓	✓	2x
Audio output	✓	✓	✓	✓	✓	✓	-
DC input (max. 15V) for external power supply	✓	✓	✓	✓	✓	✓	✓
External ultra sensitive signal input (SMA input) with max. 0,2V	-	-	-	✓	✓	✓	✓
Jog Dial (Multi-functional dial) for "one-hand operation"	-	-	✓	✓	✓	✓	Key & Touchpad
OPTIONS (extra charge)							
Option 001 (1MB memory expansion)	-	-	-	-	✓	✓	**harddisk**
Option 005 (12Bit DDC / offers ultra high sensitivity up to 1pT)	-	-	-	-	-	✓	**inclusive**
Option 006 (Measure 3D static magnetic fields)*	-	-	-	-	-	✓	-
Option 009 (Ultra high 24Bit resolution on static magnetic fields)	-	-	-	-	-	✓	-
Option 010 (Expanded frequency range up to 30MHz e.g. RFID)	-	-	-	-	-	✓	**20MHz incl.**
INCLUDED ACCESSORIES in addition to the base unit							
Aaronia 7,2V high-performance battery (1300mAh) + charger	-	✓	✓	✓	✓	✓	6 cell battery
Aluminum design transport case incl. padding inlays	-	✓	✓	✓	✓	✓	-
PROFESSIONAL PC analysis software (Windows, downloadable)	-	✓	✓	✓	✓	✓	**installed**

*Preliminary specifications as of 03.04.2009. NF and XFR series are available with latest BETA-Firmware. ALL options are available for the NF series. The BETA firmware is in continuous development. Some functionality may still be limited and not fully to specifications (BETA status). By regularly checking our homepage for updates, you can always keep your measurement device up-to-date. As soon as version 1.0 of the firmware is released, all functionality and features will be fully available.
Range and accuracy can change depending on frequency, sensor and used parameters. Precision values are based on Aaronia calibration-reference and only valid under specific test conditions. Unless otherwise stated, these specifications apply for the reference condition: ambient temperature 22±3°C, relative air humidity 40% to 60%, continuous wave signal (CW), RMS detection
Option 006 offers a range of 100µG-6G (10nT-600µT). You can "zero" the static field sensor (Option 006) by using our "Zero Gauss" chamber.
**Standard: 1MHz. Only with option 010 up to 30MHz. / Standard: 1nT. Only with option 005 up to 1pT.

SPECTRAN® HF Spectrum Analyser

APPLICATION EXAMPLES: Measurement of (active) radar, mobile communications, mobile phones, UMTS, DECT phones, transmission towers, WLan, Wifi, Bluetooth, microwave ovens, TETRA, etc.

SPECIFICATIONS base unit*	NOVICE	INTERMEDIATE		PROFESSIONAL			OUTDOOR
	HF-2025E	HF-4040	HF-4060	HF-6060V4	HF-6080V4	HF-60100V4	HF-XFR
Frequency range Min	700MHz	100MHz	100MHz	10MHz	10MHz	**1MHz**	**1MHz**
Frequency range Max	2,5GHz	4GHz	6GHz	6GHz	8GHz	**9,4GHz**	**9,4GHz**
Optional PEAK Power-Detector (Maximum usable frequency)***	2,5GHz	4GHz	6GHz	6GHz	8GHz	10GHz	-
AVG Noise Level (1Hz)	-80dBm	-90dBm	-90dBm	-135dBm	-145dBm	-155dBm	-
AVG Noise Level (1Hz) with PreAmp	-	-	-	-150dBm	-160dBm	**-170dBm**	**-170dBm**
Maximum Level	0dBm	0dBm	0dBm	+10dBm	+10dBm	**+40dBm****	**+40dBm****
Filter bandwith (RBW) Min	1MHz	100kHz	100kHz	10kHz	3kHz	**200Hz**	**200Hz**
Filter bandwith (RBW) Max	50MHz	50MHz	50MHz	50MHz	50MHz	50MHz	50MHz
EMC-Filter (RBW) 9kHz, 120kHz, 5MHz; 20MHz; 40MHz	-	-	-	✓	✓	✓	✓
Accuracy Base unit (typical)	+/-4dB	+/-3dB	+/-3dB	+/-2dB	+/-2dB	+/-1dB	+/-1dB
Vector power measurement (I/Q) and True RMS	-	✓	✓	✓	✓	✓	✓
Lowest possible SampleTime	100mS	100mS	100mS	1mS	1mS	1mS	**1mS**
FEATURES							
14Bit Dual-ADC & DDC-Hardware-Filter	-	-	-	✓	✓	✓	✓
Standards-conformant exposure limits (ICNIRP, BGV B11, BImSchV etc.)	✓	✓	✓	✓	✓	✓	✓
Extended full **ICNIRP range**	-	-	-	-	-	✓	✓
Fast ZERO-SPAN sweep	-	✓	✓	✓	✓	✓	✓
PULS mode	✓	✓	✓	✓	✓	✓	✓
ADVANCED HOLD mode (HOLD function)	-	✓	✓	✓	✓	✓	✓
INTERNAL Data Logger (long-term measurements)	-	✓	✓	✓	✓	✓	64GB
TIME-SLOT-ANALYZER	✓	✓	✓	✓	✓	✓	✓
Internal speaker	Piezo	✓	✓	✓	✓	✓	✓
Configurable antenna and cable calibration data	-	✓	✓	✓	✓	✓	✓
Audio demodulation	AM	AM&**FM**	AM&**FM**	AM&**FM**	AM&**FM**	AM&**FM**	-
DISPLAY							
DIRECT RF spectrum display	✓	✓	✓	✓	✓	✓	✓
Exposure limits display with simultaneous percentage display	✓	✓	✓	✓	✓	✓	✓
Main display in dBm, V/m, A/m or dBµV (switchable)	✓	✓	✓	✓	✓	✓	simultaneous
ADDITIONAL display in W/m² with AUTORANGE (pW, µW etc.)	✓	✓	✓	✓	✓	✓	simultaneous
Hochauflösender 50-Segment Bargraph (Trendanzeige)	✓	✓	✓	✓	✓	✓	14” Display
3fach Markeranzeige (z.B. 3xLeistung & Frequenz gleichzeitig)	✓	✓	✓	✓	✓	✓	10fold
INTERFACES / CONNECTORS							
Fast USB 2.0 Interface (PC connection)	✓	✓	✓	✓	✓	✓	2x
Audio output (2,5mm MONO)	✓	✓	✓	✓	✓	✓	-
DC input (max. 15V) for external power supply	✓	✓	✓	✓	✓	✓	✓
50 Ohm SMA RF input (F)	✓	✓	✓	✓	✓	✓	✓
Jog Dial (multi-function dial) for “one-hand operation”	✓	✓	✓	✓	✓	✓	key & touchpad
OPTIONS (extra charge)							
Option 001 (1MB memory expansion)	-	-	✓	✓	✓	✓	harddisk
Option 002 (high sensitive 0,5ppm TCXO timebase)	-	-	-	-	-	✓	**inclusive**
Option 020 (internal, switchable 15dB PreAmplifier)	-	-	-	✓	✓	✓	**inclusive**
Option 20x (REALTIME broad band Power-Meter)	2,5GHz	4GHz	6GHz	6GHz	8GHz	10GHz	-
INCLUDED ACCESSORIES in addition to the base unit							
Miniature SMA rod antenna	✓	✓	✓	-	-	-	Omnilog 90200
HyperLOG EMC directional LogPer antenna (model)	**7025**	**7040**	**7060**	**7060**	**6080**	**60100**	**60100 (black)**
Aaronia 7,2V high-performance battery (1300mAh) + charger	✓	✓	✓	✓	✓	✓	6 cell battery
Aluminum design transport case	✓	✓	✓	✓	✓	✓	-
PC analysis software (Windows, downloadable)	✓	✓	✓	✓	✓	✓	**installed**

*Further REALTIME spectrum analysers up to 18GHz are already in development. Please contact us for further details!
Preliminary specifications as of 05.03.2009. The V4 and XFR series are available with latest Beta-Firmware. All options are available for the V4 series too. The Beta-Firmware is in continuous development. Some functionality may still be limited and not fully to specifications (Beta-Status). By regularly checking our homepage for updates, you can always keep your measurement device up-to-date. As soon as V1.0 of the firmware is released, all functionality and features will be fully available. Range, sensitivity and accuracy can change depending on frequency, antenna and used parameters. Precision values are based on Aaronia calibration-reference under specific test conditions. Unless otherwise stated, these specifications apply for the reference condition: ambient temperature 22±3°C, relative air humidity 40% to 60%, continuous wave signal (CW), RMS detection. V4 and XFR Noise Level @5,555GHz. Maximum sensitivity of Rev.3 units: -90dBm @2,2GHz.
** Internal: +20dBm. External (with optional 20dB precision attenuator): +40dBm
*** Depending on frequency the optional PEAK power meter offers sensetivity up to -50dBm and max. +10dBm input power with an extremely fast response time.

© **Aaronia AG**, Gewerbegebiet Aaronia AG, DE-54597 Euscheid, Germany, Phone ++49(0)6556-93033, Fax ++49(0)6556-93034, mail@aaronia.de, URL:www.spectran.com

Options for Spectran Spectrum Analyzers

OPTIONS HF / RF SPECTRUM ANALYZER

Option 001: 1MB memory expansion *Order/Art.-No.: 180*

This memory expansion is a MUST-HAVE particularly when using the data logger, as the standard capacity can quickly become exhausted in this mode. The memory expansion provides space for more than 10,000 logs, while the standard memory will only accomodate approximately 100 of them.
Standard memory size is 64K.

Option 020: 15dB low-noise preamplifier *Order/Art.-No.: 177*

This option provides an internal, super low-noise 15dB preamplifier, enabling maximum performance particularly when measuring extremely weak signals. It is switched via a TRUE RF switch. There really is no excuse for not ordering this one, considering its very attractive price!

Option 002: 0.5ppm TCXO timebase *Order/Art.-No.: 181*

This highly precise TCXO timebase, which has been especially developed for the SPECTRAN, offers significantly reduced phase noise (jitter). This will allow the use of far narrower filters (in development), which will in turn vastly enhance sensitivity. To fully exploit the maximum sensitivity of the HF-60100 V4, this option is indispensable! Furthermore, the TXCO timebase allows far more accurate frequency measurement and display and is therefore a MUST-HAVE for future applications like time-domain measurements or code-selective measurement of UMTS, all already in development.
The standard accuracy WITHOUT option 002 is 50ppm.

Option 20x 2,5GHz / 4GHz / 6GHz / 8GHz / 10GHz Peak Power-Meter *Order/Art.-No.: 182-x*

A 2.5 to 10GHz peak power meter (5 versions depending on the SPECTRAN model, see price list below). This option augments your SPECTRAN® with a power meter with up to 10GHz of bandwidth. Furthermore, it allows exact measurement of signal peaks with high crest factor like those occuring in WLAN technology, or extremely short signals, like RADAR bursts. What's more, measurement is performed in REAL TIME and BROADBAND, while at the same time being temperature-compensated. It is also an ideal solution for measurement of cable attenuation or receiver output. Depending on the actual frequency, the power meter provides a sensitivity of up to approx. -50dBm, while the maximum permissible level is +10dBm. By adding our 20dB attenuator (see price list), the maximum measurable signal level can be enhanced to +30dBm or +50dBm!

Option 022: 40dB low-noise preamplifier DC-1GHz *Order/Art.-No.: 177-2*

This option provides an external, super low-noise 40dB preamplifier, enabling maximum performance particularly when measuring extremely weak signals at a EN55011, EN55022 or EN50371 EMC-test. If you use our BicoLOG antenna or our PBS1 Probeset and EMC-Sniffer this amplifier is a MUST HAVE to get the best performance!

OPTIONS EMF / NF SPECTRUM ANALYZER

Option 001: 1MB memory expansion *Order/Art.-No.: 180*

Available for: NF-5010, NF-5030.
This memory expansion is a MUST-HAVE particularly when using the data logger, as the standard capacity can quickly become exhausted in this mode. The memory expansion provides space for more than 10,000 logs, while the standard memory will only accomodate approximately 100 of them.
Standard memory size is 64K.

Option 005: 12Bit Dual DDC frequency filter *Order/Art.-No.: 186*

Available for: NF-5030 (integrated in the NF-XFR).
This cutting edge 12Bit DDC frequency filter allows extremely fast, crisp and accurate frequency filtering, while at the same time drastically enhancing the sensitivity. As an example, magnetic fields can (depending on their frequency) still be measured down to 1pT (0.001nT), compared to 0.1nT without the option. Option 005 is therefore a MUST-HAVE for professional measurement, especially considering its attractive price.

Option 006: 3D sensor for static magnetic fields *Order/Art.-No.: 188*

Available for: NF-5030.
This top-grade geomagnetic field sensor provides the ability to conduct geophysical assessments and measurement of geomagnetic field anomalies. However, it can also be used to turn the instrument into a Gaussmeter, measuring the difference between field strengths (static fields) of permanent magnets. Thanks to its ISOTROPIC (3D) construction, measurements can be performed in all three spacial dimensions AT ONCE (or seperately).
Sensitivity is about 10nT-600µT.

Option 009: 24Bit resolution for 3D static magnetic field sensor *Order/Art.-No.: 178*

Available for: NF-5030.
Option 009 provides a significantly higher resolution for the optional 3D magnetic field sensor for measurement of static magnetic fields (option 006); it is ABSOLUTELY mandatory for geomagnetic surveys. The standard resolution of the NF-5030 WITHOUT option 009 is 14Bit.

Option 010: 30MHz frequency extension *Order/Art.-No.: 179-1*

Available for: NF-5030.
Our 30MHz frequency extension extends the frequency range of the NF-5030 to the absolute maximum. The new frequency range is 1kHz - 30MHz. Amongst others, it even allows measurement of VDSL2. The higher clock frequency of the DDC provided by this option is a MUST HAVE for technicians and authorities needing ACCURATE assessment of signal sources of up to 30MHz.
The maximum frequency of the NF-5030 WITHOUT option 010 is 1MHz.

Recommended accessories for Aaronia Spectrum Analyzer

Heavy Plastic Carrycase PRO

Shock resistant, heavy version with padding. Offers spaces for 2 SPECTRAN units with all accessories and a HyperLOG 70xx or 60xx antenna. A MUST for the professional user or outdoor usage!

Order/Art.-No.: 243

Pistol grip / miniature tripod

Detachable handle with super-practical miniature tripod mode: this handle is attachable to the backside of the unit and allows optimal handling (esp. for directional measurement) and even fixed installation of the unit. STRONGLY recommended for PC use!

Order/Art.-No.: 280

Aluminum tripod

Height adjustable, high stability. STRONGLY recommended for PC use! Max. height: 105cm.

Order/Art.-No.: 281

Calibration Certificate

Available for all SPECTRAN® units. With detailed calibration sheet.

Order/Art.-No.: 784

USB Cable (Special Version)

To connect your Spectran to the PC. Special version with high performance EMC-ferrite. STRONGLY recommended for PC use!

Order/Art.-No.: 774

1m / 5m / 10m SMA-Cable

High quality special SMA cable for connecting any HyperLOG®-Antenna or BicoLOG®-Antenna with our RF Spectrum-Analyzer. Available as 1m, 5m and 10m Cable. All versions: SMA plug (male) / SMA plug (male).

2200mAh battery

Offers a MUCH higher runtime of your SPECTRAN (up to 50%). Strongly recommended for autonomic measurement! The 1300mAh standard-battery will be replaced.

Order/Art.-No.: 253

Car power adapter for mobile use

With power-LED. For charging batteries or operating our units in your car, including special plug.

Order/Art.-No.: 260

Protection rubber

Protect and personalize your SPECTRAN with a sturdy rubber case and keep it scratch-n-dent free. Allows full access to all functions.

Order/Art.-No.: 290

DC-Blocker (SMA)

It prevents the RF-input of the SPECTRAN to be destroyed by the DC-voltages of f.e. DSL/ISDN lines.

Order/Art.-No.: 778

Calibration Resistor (DC-18GHz)

This calibration resistor is necessary for the best possible calibration of the noise-floor of each Spectran V4-Analyzer.

Order/Art.-No.: 779

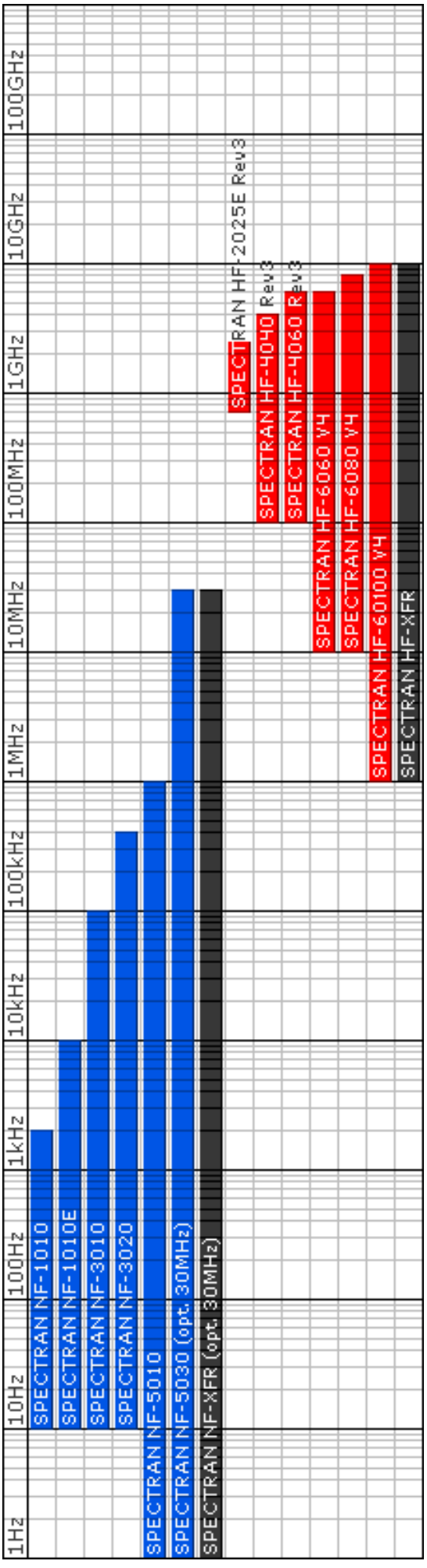
20dB SMA high-end Attenuator

Expands the measurement range to +40dBm. (ONLY SPECTRAN HF-60100 V4 and HF-XFR).

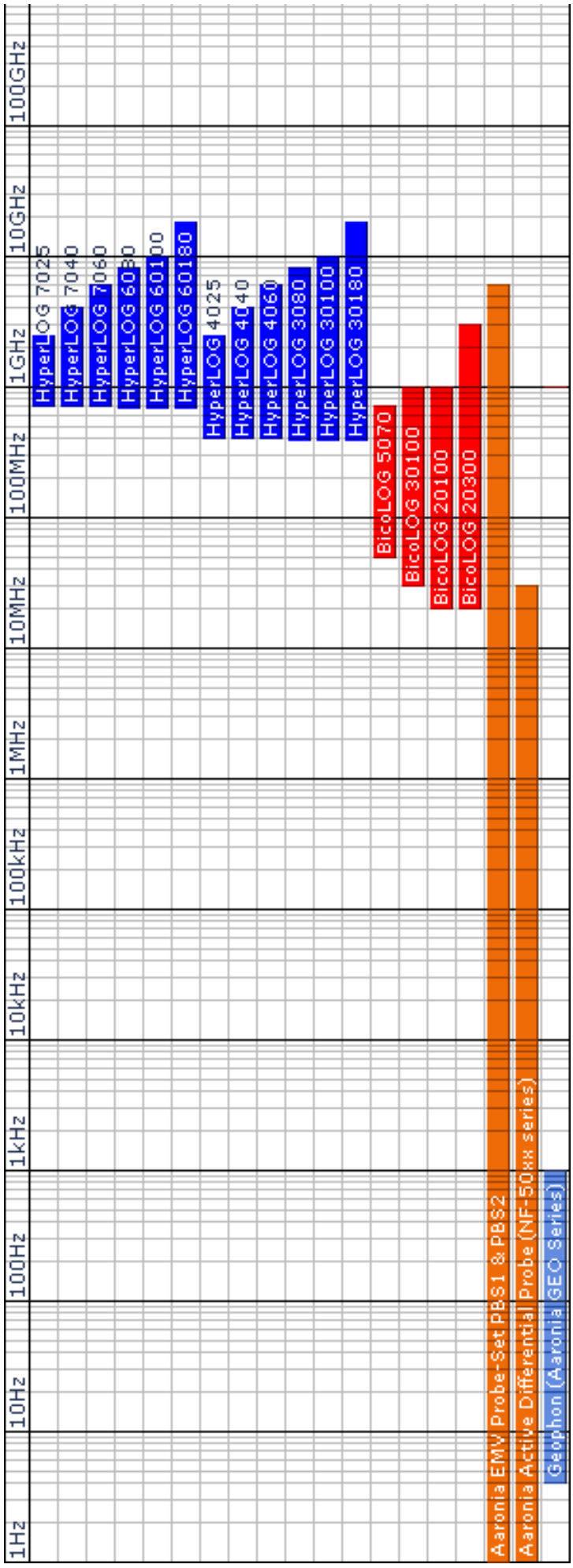
Order/Art.-No.: 775

Frequency overview Analyzer & Antennas

Frequency Overview SIECTRAN Spectrum Analyzer



Frequency Overview HyperLOG and BicoLOG Antennas and Probes



References

User of Aaronia Antennas and Spectrum Analyzers (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

EMV 2011 Stuttgart
Internationale Messe mit Workshops für Elektromagnetische Verträglichkeit
15.-17. März 2011 Messe Stuttgart

Hall C2
Booth 404

SENSOR+TEST 2011
DIE MESSTECHNIK-MESSE
The Measurement Fair
Nürnberg, Germany
7. – 9.6.2011

Hall 11
Booth 101 & 106

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.spectran.com

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

SPECTRAN® NF (EMF) Spectrum Analyser

AARONIA AG

APPLICATION EXAMPLES: Traction power, power lines and cables incl. harmonics, transformer, switching power supplies, RFID, TFTs, DSL etc. Various appliances in home and office.

	Entrance		Intermediate		Professional		Outdoor
Specifications base unit[1]	NF-1010	NF-1010E	NF-3010	NF-3020	NF-5010	NF-5030	NF-XFR
Frequency Range (min)	10Hz	10Hz	10Hz	10Hz	1Hz	1Hz	1Hz
Frequency Rance (max)	2kHz	10kHz	100kHz	400kHz	1MHz	30MHz[2]	30MHz[2]
Electric field [V/m] (min) (typical)	1V/m	1V/m	1V/m	1V/m	1V/m	0,1V/m[2]	see opt. PBS2
Electric field [V/m] (max) (typical)	2.000V/m	2.000V/m	5.000V/m	5.000V/m	5.000V/m	20kV/m	see opt. PBS2
Magnetic field [Tesla] (min (typical)	10nT	10nT	1nT	1nT	1nT	1pT[2]	see opt. PBS2
Magnetic field [Tesla] (max) typical	100µT	100µT	100µT	100µT	100µT	2mT[2]	see opt. PBS2
Magnetic field [Gauss] (min (typical)	100µG	100µG	10µG	10µG	10µG	10nG[2]	see opt. PBS2
Magnetic field [Gauss] (max) typical	1G	1G	1G	1G	1G	20G[2]	see opt. PBS2
Analog input [V] (min) typical	-	-	-	2µV	2µV	200nV[2]	200nV[2]
Analog input [V] (max) typical	-	-	-	200mV	200mV	2V[2]	2V[2]
RBW (resolution bandwidth) (min)	1Hz	1Hz	1Hz	1Hz	1Hz	0,3Hz	0,3Hz
RBW (resolution bandwidth) (max)	1kHz	3kHz	30kHz	100kHz	300kHz	1MHz	1MHz
Demodulator	-	-	AM	AM	AM/FM	AM/FM	AM/FM
Units (additional units via PC software)	V/m, T, G	V/m, T, G	V/m, T, G	V, V/m, T, G	V, V/m, T, G, A/m	V, V/m, T, G, A/m	V, dBV
Detector	RMS	RMS	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax
Internal Datalogger (size). Expandable to 1MB (option 001)	-	-	64K	64K	64K	64K	harddisk
FFT resolution (points)	64	64	64	64	1024	1024	1024
Lowest Sample Time	50mS	50mS	50mS	50mS	10mS	10mS	10mS
Accuracy (typical)	5%	5%	5%	5%	3%	3%	3%
Highlights							
Real-time remote control via USB	-	✓	✓	✓	✓	✓	internal
Integrated electric (E) & isotropic magnetic (H) sensor/antenna	✓	✓	✓	✓	✓	✓	-
3D, 2D or 1D mode switchable (only magnetic field sensor)	-	✓	✓	✓	✓	✓	✓
Calibration setup (selected antenna)	✓	✓	✓	✓	✓	✓	✓
Exposure limit calculation according to ICNIRP, BGV B11, BImSchV etc.	-	✓	✓	✓	✓	✓	✓
Extended full ICNIRP range	-	-	-	-	-	✓	✓
Suitable for Pre-Compliance test	-	-	-	-	-	✓	✓
Real-time limit calculation with simultaneous percentage display	-	✓	✓	✓	✓	✓	Analyzer sw
Vector power measurement (I/Q) and True RMS	-	-	✓	✓	✓	✓	✓
Enhanced DFT spectrum analysis	-	✓	✓	✓	✓	✓	✓
Simultaneously displays frequency and signal strength	-	-	✓	✓	✓	✓	Analyzer sw
Up to 3 marker (showing both frequency and field strength)	-	✓	✓	✓	✓	✓	unlimited
Jog Dial controlled manual marker readout	-	-	✓	✓	✓	✓	key & touchpad
Linear or logarithmic spectrum display (log10, log100, log1000)	-	✓	✓	✓	✓	✓	unlimited
Automatic reference level adjustment (switchable)	-	✓	✓	✓	✓	✓	✓
Hold function	-	✓	✓	✓	✓	✓	unlimited
Free of charge firmware update (via Intenet)	-	✓	✓	✓	✓	✓	✓
Supports programming of custom P-Code & C++ based custom software	-	-	✓	✓	✓	✓	✓
High performance DSP (Digital Signal Processor)	✓	✓	✓	✓	✓	✓	✓
Large, high resolution multifunctional LCD (95mm)	✓	✓	✓	✓	✓	✓	14” TFT
Spectrum display (51x25 pixel)	✓	✓	✓	✓	✓	✓	Analyzer sw
High resolution 50 segment bargraph (trend display)	✓	✓	✓	✓	✓	✓	Analyzer sw
Enhanced, much sharper Aaronia LCD display (3d generation)	-	-	-	-	-	✓	14” TFT
Integrated battery charger (supports our optional LiPo battery)	✓	✓	✓	✓	✓	✓	XFR charger
Internal speaker	Piezo	Piezo	✓	✓	✓	✓	✓

Please continue on next page


NF-1010


NF-1010E


NF-3010


NF-3020


NF-5010


NF-5030


NF-XFR

SPECTRAN® NF (EMF) Spectrum Analyser

APPLICATION EXAMPLES: Traction power, power lines and cables incl. harmonics, transformer, switching power supplies, RFID, TFTs, DSL etc. Various appliances in home and office.

	Entrance		Intermediate		Professional		Outdoor
Connectors / Interface	**NF-1010**	**NF-1010E**	**NF-3010**	**NF-3020**	**NF-5010**	**NF-5030**	**NF-XFR**
SMA input (f) with high impedance	-	-	-	✓	✓	✓	✓
USB 1.1/2.0	-	✓	✓	✓	✓	✓	2x
Audio output (2,5mm jack)	✓	✓	✓	✓	✓	✓	3,5mm jack
Charger plug (max. 15V)	✓	✓	✓	✓	✓	✓	✓
Jog Dial (easy usage of menu, marker and volume control)	-	-	✓	✓	✓	✓	key & touchpad
1/4" tripod connector	✓	✓	✓	✓	✓	✓	in-Vehicle docking
Included In Delivery							
Integrated electric (E) & isotropic magnetic (H) sensor/antenna	✓	✓	✓	✓	✓	✓	-
SPECTRAN 1300mAh rechargable battery (integrated)	✓	✓	✓	✓	✓	✓	6 cell battery
Battery charger and power supply incl. international adapter set	✓	✓	✓	✓	✓	✓	no adapter set
Aluminum carrying case with foam protection	✓	✓	✓	✓	✓	✓	-
Detailed English manual (on CD)	✓	✓	✓	✓	✓	✓	installed
Analyzer Software for MAC-OS, Linux and Windows (on CD)	-	✓	✓	✓	✓	✓	installed
SMA tool	-	-	-	-	-	✓	✓
Available Options (extra charge)							
Option 001 (1MB memory expansion)	-	-	-	-	✓	✓	harddisk
Option 005 (12Bit DDC for ultra high sensitivity)	-	-	-	-	-	✓	installed
Option 006 (Isotropic static magnetic field sensor)[1]	-	-	-	-	-	✓	-
Option 008 (20MHz expansion. New range: 1Hz-20MHz)	-	-	-	-	-	✓	installed
Option 009 (24Bit resolution for Option 006)	-	-	-	-	-	✓	-
Option 010 (30MHz expansion. New range: 1KHz-30MHz)	-	-	-	-	-	✓	✓
Option UBBV2 (40dB external preamplifier DC-8GHz)	-	-	-	-	-	✓	✓
Optional Accessories							
USB Cable (Special Version)	-	✓	✓	✓	✓	✓	installed
3000mAh Lithium Polymer (LiPo) Power-Battery	✓	✓	✓	✓	✓	✓	-
Car Power Adapter (operate or charge via cigarette lighter)	✓	✓	✓	✓	✓	✓	-
Outdoor Rubber Protection (perfect for outdoor usage)	✓	✓	✓	✓	✓	✓	-
Pistol Grip / Miniature Tripod	✓	✓	✓	✓	✓	✓	-
Aluminum Tripod (big version)	✓	✓	✓	✓	✓	✓	-
DC-Blocker (protects the input against DC voltage)	-	-	-	-	-	✓	✓
20dB Attenuator (offers a higher maximum voltage up to 2V)	-	-	-	-	-	✓	✓
PBS1 Near Field Probe Set (passive)	-	-	-	-	-	✓	✓
PBS2 Near Field Probe Set (active, incl. UBBV2 preamplifier)	-	-	-	-	-	✓	✓
ADP1 Active Differential Probe (conductive measurement)	-	-	-	-	-	✓	✓
GEO10 Vibrationsensor (4Hz-1kHz)	-	-	-	-	-	✓	✓
GEO14 Vibrationsensor (10Hz-1kHz)	-	-	-	-	-	✓	✓
Calibration Certificate	✓	✓	✓	✓	✓	✓	✓
Heavy Plastic Carrying Case	✓	✓	✓	✓	✓	✓	-

[1] Preliminary specifications dated 01.02.2011. The NF and XFR series are available with latest Beta firmware. The Beta firmware is constantly in development. Some functionality may still be limited and not fully to specifications (Beta status). By regularly checking our homepage for updates, you can always keep your measurement device up-to-date. As soon as V1.0 of the firmware is released, all functionality and features will be fully available. Range, sensitivity and accuracy can change depending on frequency, setup, antenna and used parameters. Precision datas are based on Aaronias calibration-reference under specific test conditions. Unless otherwise stated, these specifications are according to the following reference conditions: Ambient temperature 22±3°C, relative air humidity 40% to 60%, continuous wave signal (CW), RMS detection.
Option 006 offers a range of 100µG-6G (10nT-600µT). You can "zero" the static field sensor (Option 006) by using our "Zero Gauss" chamber.

[2] NF standard: 1MHz. Only with option 010 up to 30MHz. NF standard: 1nT. Only with option 005 down to 1pT. NF standard 2µV. Only with option 005 down to 200nV. NF standard: 200mV. Only with optional 20dB Attenuator up to 2V.


NF-1010


NF-1010E


NF-3010


NF-3020


NF-5010


NF-5030


NF-XFR

SPECTRAN® HF (RF) Spectrum Analyser

APPLICATION EXAMPLES: Measurement of (active) radar, mobile communications, mobile phones, UMTS, DECT phones, transmission towers, WLan, Wifi, Bluetooth, microwaves etc.

	Entrance	Intermediate		Professional			Outdoor
Specifications base unit[1]	HF-2025E	HF-4040	HF-4060	HF-6060V4	HF-6080V4	HF-60100V4	HF-XFR
Frequency Range (min)	700MHz	100MHz	100MHz	10MHz	10MHz	1MHz	1MHz
Frequency Rance (max)	2,5GHz	4GHz	6GHz	6GHz	8GHz	9,4GHz	9,4GHz
Optional PEAK Power-Detector (Maximum usable frequency)[3]	2,5GHz	4GHz	6GHz	6GHz	8GHz	10GHz	10GHz
DANL (Displayed Average Noise Level)[2]	-80dBm	-90dBm	-90dBm	-135dBm(1Hz)	-145dBm(1Hz)	-155dBm(1Hz)	-155dBm(1Hz)
DANL (Displayed Average Noise Level) with Preamp (Option 020)[2]	-	-	-	-150dBm(1Hz)	-160dBm(1Hz)	-170dBm(1Hz)	-170dBm(1Hz)
Max Power at RF input	0dBm	0dBm	0dBm	+10dBm	+10dBm	+40dBm[2]	+40dBm[2]
RBW (resolution bandwidth) (min)	1MHz	100kHz	100kHz	10kHz	3kHz	200Hz[2]	200Hz[2]
RBW (resolution bandwidth) (max)	50MHz	50MHz	50MHz	50MHz	50MHz	50MHz	50MHz
EMC-Filter 200Hz, 9kHz, 120kHz, 200kHz, 1,5MHz, 5MHz	-	-	-	-	-	✓	✓
Demodulator	AM	AM/FM	AM/FM	AM/FM	AM/FM/PM	AM/FM/FM/GSM	AM/FM/FM/GSM
Detector	RMS	RMS	RMS	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax
Units dBm, dBµV, V/m, A/m, W/m² (dBµV/m etc. via PC software)	✓	✓	✓	✓	✓	✓	✓
Internal Datalogger (size). Expandable to 1MB (option 001)	-	64K	64K	64K	64K	64K	harddisk
Lowest SampleTime	100mS	100mS	100mS	10mS	10mS	5mS	5mS
Accuracy (typical)	+/-4dB	+/-3dB	+/-3dB	+/-2dB	+/-2dB	+/-1dB	+/-1dB
Highlights							
Real-time remote control via USB	✓	✓	✓	✓	✓	✓	internal
Calibration setup (antenna, cable, attenuator etc.)	✓	✓	✓	✓	✓	✓	✓
Exposure limit calculation according to ICNIRP, EN55011, EN55022 etc.	ICNIRP only	ICNIRP only	ICNIRP only	ICNIRP only	ICNIRP only	✓	✓
Extended full ICNIRP range	-	-	-	-	-	✓	✓
Suitable for pre-compliance test	-	-	-	-	-	✓	✓
Realtime limit calculation with simultaneous percentage display	-	✓	✓	✓	✓	✓	Analyzer sw
Time-Domain and fast Zero-Span sweep	-	-	-	✓	✓	✓	✓
Vector power measurement (I/Q) and True RMS	-	✓	✓	✓	✓	✓	✓
Simultaneously displays frequency and signal strength	✓	✓	✓	✓	✓	✓	Analyzer sw
Up to 3 marker (showing both frequency and field strength)	-	✓	✓	✓	✓	✓	unlimited
Jog Dial controlled manual marker readout	-	✓	✓	✓	✓	✓	key & touchpad
Write, AVG and Hold function	no AVG	no AVG	no AVG	✓	✓	✓	& Min, Max
DECT and TimeSlot Analyzer	✓	✓	✓	✓	✓	✓	✓
Audio Level Indicator (changes audio frequency vs power level)	-	-	-	✓	✓	✓	-
Free of charge firmware update (via Intenet)	✓	✓	✓	✓	✓	✓	✓
Supports programming of custom P-Code & C++ based custom software	-	✓	✓	✓	✓	✓	✓
14Bit Dual-ADC & DDC Hardware-Filter	-	-	-	✓	✓	✓	✓
150MIPS high performance DSP (Digital Signal Processor)	-	-	-	✓	✓	✓	✓
Large high resolution multifunctional LCD (95mm)	✓	✓	✓	✓	✓	✓	14” TFT
Spectrum display (51x25 pixel)	✓	✓	✓	✓	✓	✓	Analyzer sw
High resolution 50 segment bargraph (trend display)	✓	✓	✓	✓	✓	✓	Analyzer sw
Enhanced, much sharper Aaronia LCD display (3d generation)	-	-	-	✓	✓	✓	14” TFT
Integrated battery charger (supports our optional LiPo battery)	✓	✓	✓	✓	✓	✓	XFR charger
Internal speaker	Piezo	✓	✓	✓	✓	✓	✓

Please continue on next page


HF-2025E


HF-4040


HF-4060


HF-6060 V4


HF-6080 V4


HF-60100 V4


HF-XFR

SPECTRAN® HF (RF) Spectrum Analyser

APPLICATION EXAMPLES: Measurement of (active) radar, mobile communications, mobile phones, UMTS, DECT phones, transmission towers, WLan, Wifi, Bluetooth, microwaves etc.

	Entrance	Intermediate		Professional			Outdoor
Connectors / Interface	HF-2025E	HF-4040	HF-4060	HF-6060V4	HF-6080V4	HF-60100V4	HF-XFR
USB 1.1/2.0	✓	✓	✓	✓	✓	✓	2x
Audio output (2,5mm jack)	✓	✓	✓	✓	✓	✓	3,5mm jack
Charger plug (max. 12V)	✓	✓	✓	✓	✓	✓	✓
50Ohm SMA input (f)	✓	✓	✓	✓	✓	✓	✓
Jog Dial (easy usage of menu operation and volume control)	-	✓	✓	✓	✓	✓	key & touchpad
1/4" tripod connector	✓	✓	✓	✓	✓	✓	in-Vehicle docking
Included In Delivery							
Miniature SMA rod sniffer antenna	✓	✓	✓	-	-	-	OmniLOG 90200
HyperLOG EMC directional LogPer antenna (model)	7025	7040	7060	7060	6080	60100	60100 (black)
SPECTRAN 1300mAh rechargable battery (integrated)	✓	✓	✓	✓	✓	✓	6 cell battery
Battery charger and power supply incl. international adapter sit	✓	✓	✓	✓	✓	✓	no adapter set
Aluminum carrying case with foam protection	✓	✓	✓	✓	✓	✓	-
Detailed English manual (on CD)	✓	✓	✓	✓	✓	✓	installed
Analyzer Software for MAC-OS, Linux and Windows (on CD)	✓	✓	✓	✓	✓	✓	installed
SMA tool	✓	✓	✓	✓	✓	✓	✓
SMA adapter	✓	✓	✓	✓	✓	✓	-
Available Options (extra charge)							
Option 001 (1MB memory expansion)	-	✓	✓	✓	✓	✓	harddisk
Option 002 (high accurate 0,5ppm TCXO timebase)	-	-	-	-	-	✓	installed
Option 020 (15dB internal low noise preamplifier, switchable)	-	-	-	✓	✓	✓	installed
Option 20x (Real-time Broadband Peak Power Meter)	✓	✓	✓	✓	✓	✓	✓
Option UBBV1 (40dB external preamplifier 1MHz-1GHz)	-	-	-	✓	✓	✓	✓
Option UBBV2 (40dB external preamplifier DC-8GHz)	-	-	-	✓	✓	✓	✓
Optional Accessories							
USB Cable (special EMC screened version)	✓	✓	✓	✓	✓	✓	installed
3000mAh Lithium Polymer (LiPo) Power-Battery	✓	✓	✓	✓	✓	✓	-
Car Power Adapter (operate or charge via cigarette lighter)	✓	✓	✓	✓	✓	✓	-
Outdoor Rubber Protection (perfect for outdoor usage)	✓	✓	✓	✓	✓	✓	-
Pistol Grip / Miniature Tripod	✓	✓	✓	✓	✓	✓	-
Heavy Multifunctional Pistol Grip	✓	✓	✓	✓	✓	✓	-
Aluminum Tripod (big version)	✓	✓	✓	✓	✓	✓	-
DC-Blocker (protects the input against DC voltage)	✓	✓	✓	✓	✓	✓	✓
20dB Attenuator (expands the measurement range by 20dB)	✓	✓	✓	✓	✓	✓	✓
PBS1 Near Field Probe Set (passive)	-	-	-	-	-	✓	✓
PBS2 Near Field Probe Set (active, incl. UBBV2 preamplifier)	-	-	-	-	-	✓	✓
ADP1 Active Differential Probe (conductive measurement)	-	-	-	-	-	✓	✓
5m or 10m low loss SMA Cable	✓	✓	✓	✓	✓	✓	✓
Calibration Resistor (needed for noise floor calibration, SMA)	-	-	-	✓	✓	✓	✓
Calibration Certificate	✓	✓	✓	✓	✓	✓	✓
Heavy Plastic Carrying Case	✓	✓	✓	✓	✓	✓	-

(1) The new V5 real-time spectrum analyser generation up to 80GHz is already in development. Please contact us for further details!
Preliminary specifications dated 01.02.2011. The V4 and XFR series are available with latest Beta firmware. The Beta firmware is constantly in development. Some functionality may still be limited and not fully to specifications (Beta status). By regularly checking our homepage for updates, you can always keep your measurement device up-to-date. As soon as V1.0 of the firmware is released, all functionality and features will be fully available. Range, sensitivity and accuracy can change depending on frequency, setup, antenna and used parameters. Precision datas are based on Aaronias calibration-reference under specific test conditions. Unless otherwise stated, these specifications are according to the following reference conditions: Ambient temperature 22±3°C, relative air humidity 40% to 60%, continuous wave signal (CW), RMS detection.
V4 and XFR DANL @5,555GHz. Maximum sensitivity of Rev.3 units: -90dBm @2,2GHz.
(2) Standard: +20dBm. Only with optional 20dB attenuator +40dBm. Standard: 1kHz. Only with option 002 down to 200Hz.
(3) Depending on frequency the option 20x offers a sensetivity down to -50dBm and max. +10dBm, with optional 20dB attenuator +30dBm.


HF-2025E


HF-4040


HF-4060


HF-6060 V4


HF-6080 V4


HF-60100 V4


HF-XFR

SPECTRAN® USB Spectrum Analyser

APPLICATION EXAMPLES: Pre-Compliance test, conductive EMC/EMI test, exposure limit measurement etc.

	Professional				Outdoor	
Specifications basic unit[1]	NF-5030 X	HF-6060V4 X	HF-6080V4 X	HF-60100V4 X	NF-XFR	HF-XFR
Frequency Range (min)	1Hz	10MHz	10MHz	1MHz	1Hz	1MHz
Frequency Range (max)	30MHz	6GHz	8GHz	9,4GHz	30MHz[2]	9,4GHz
Optional PEAK Power-Detector (Maximum usable frequency)[3]	-	6GHz	8GHz	10GHz	-	10GHz
DANL (Displayed Average Noise Level)[2]	200nV	-135dBm(1Hz)	-145dBm(1Hz)	-155dBm(1Hz)	200nV	-155dBm(1Hz)
DANL (Displayed Average Noise Level) with Preamp (Option 020)[2]	-	-150dBm(1Hz)	-160dBm(1Hz)	-170dBm(1Hz)	-	-170dBm(1Hz)
Max. Power at RF input	2V[2]	+10dBm	+10dBm	+40dBm[2]	2V[2]	+40dBm[2]
RBW (Resolution bandwidth) (min)	0,3Hz	10kHz	3kHz	200Hz[2]	0,3Hz	200Hz
RBW (Resolution bandwidth) (max)	1MHz	50MHz	50MHz	50MHz	1MHz	50MHz
EMC Filter 200Hz, 9kHz, 120kHz, 200kHz, 1,5MHz, 5MHz	-	-	-	✓	-	✓
Demodulator	AM/FM	AM/FM	AM/FM/PM	AM/FM/PM/GSM	AM/FM	AM/FM/PM/GSM
Detector	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax
Units dBm, dBµV, V/m, A/m, W/m² (dBµV/m, W/cm² etc. via PC software)	V, dBV	✓	✓	✓	V, dBV	✓
Lowest Sample Time	10mS	10mS	10mS	5mS	10mS	5mS
Accuracy (typical)	+/-3%	+/-2dB	+/-2dB	+/-1dB	+/-3%	+/-1dB
Highlights						
Real-time remote control via USB	✓	✓	✓	✓	internal	internal
Calibration setup (antenna, cable, attenuator etc.)	✓	✓	✓	✓	✓	✓
Exposure limit calculation according to ICNIRP, EN55011, EN55022 etc.	✓	ICNIRP only	ICNIRP only	✓	✓	✓
Extended full ICNIRP range	-	-	-	✓	-	✓
Suitable for Pre-Compliance test	✓	-	-	✓	✓	✓
Suitable for conductive EMC/EMI test	✓	-	-	✓	✓	✓
Real-time limit calculation, limit line display and limit percentage bar display	✓	✓	✓	✓	✓	✓
Time Domain and fast Zero Span sweep incl. DECT and Time Slot Analyzer	-	✓	✓	✓	-	✓
Unlimited longtime recording and playback feature	✓	✓	✓	✓	✓	✓
Simultaneously displays frequency and signal strength	✓	✓	✓	✓	✓	✓
Multiple unit handling and unlimited multiple window handling	✓	✓	✓	✓	✓	✓
Number of marker (showing frequency and field strength simultaneously)	unlimited	unlimited	unlimited	unlimited	unlimited	unlimited
Spectrum, waterfall, persistance and level vs time display	✓	✓	✓	✓	✓	✓
Sweep, AVG, Max, Min and Hold function	✓	✓	✓	✓	✓	✓
Unlimited number of sweep points, resolution and display size	✓	✓	✓	✓	14” TFT	14” TFT
Supports programming of custom P-Code, C++ based custom software support	✓	✓	✓	✓	✓	✓
Free of charge firmware update (via Intenet)	✓	✓	✓	✓	✓	✓
14Bit Dual-ADC & DDC hardware filter	-	✓	✓	✓	-	✓
150MIPS high performance DSP (Digital Signal Processor)	-	✓	✓	✓	-	✓
Vector power measurement (I/Q) and True RMS	✓	✓	✓	✓	✓	✓
Solid 3mm aluminum housing with excellent shielding performance	✓	✓	✓	✓	-	-
Integrated rechargable battery	-	-	-	-	✓	✓
Internal speaker	✓	✓	✓	✓	✓	✓

Please continue on next page

NF-5030 X

HF-6060 X

HF-6080 X

HF-60100 X

NF-XFR

HF-XFR

SPECTRAN® USB Spectrum Analyser

APPLICATION EXAMPLES: Pre-Compliance test, conductive EMC/EMI test, exposure limit measurement etc.

	Professional				Outdoor	
Connectors / Interface	**NF-5030 X**	**HF-6060V4 X**	**HF-6080V4 X**	**HF-60100V4 X**	**NF-XFR**	**HF-XFR**
50Ohm SMA input (f)	high impedance	✓	✓	✓	high impedance	✓
USB 1.1/2.0	✓	✓	✓	✓	2x	2x
Audio output (2,5mm jack)	✓	✓	✓	✓	3,5mm jack	3,5mm jack
Charger plug (max. 12V)	✓	✓	✓	✓	✓	✓
Included In Delivery						
HyperLOG EMC directional LogPer antenna (model)	-	-	-	-	-	60100 (black)
OmniLOG 90200 radial isotropic antenna	-	✓	✓	✓	-	✓
Rechargable Battery	-	-	-	-	✓	✓
Battery charger and/or power supply incl. international adapter set	✓	✓	✓	✓	no adapter set	no adapter set
Aluminum carrying case with foam protection	✓	✓	✓	✓	-	-
Detailed English manual (on CD)	✓	✓	✓	✓	installed	installed
Analyzer Software for MAC-OS, Linux and Windows (on CD)	✓	✓	✓	✓	installed	installed
1m SMA Cable	-	-	-	-	-	✓
SMA Tool	✓	✓	✓	✓	✓	✓
USB Cable (special EMC screened version)	✓	✓	✓	✓	installed	installed
Available Options (extra charge)						
Option 002 (high accurate 0,5ppm TCXO timebase)	-	-	-	✓	-	installed
Option 005 (12Bit DDC for ultra high sensitivity)	✓	-	-	-	installed	-
Option 008 (20MHz frequency expansion. New range: 1Hz-20MHz)	✓	-	-	-	installed	-
Option 010 (30MHz frequency expansion. New range: 1kHz-30MHz)	✓	-	-	-	✓	-
Option 020 (15dB internal low noise preamplifier, switchable)	-	✓	✓	✓	-	installed
Option 20x (Real-time Broadband Peak Power Meter)	-	✓	✓	✓	-	✓
Option UBBV1 (40dB external preamplifier 1MHz-1GHz)	-	✓	✓	✓	-	✓
Option UBBV2 (40dB external preamplifier DC-8GHz)	✓	✓	✓	✓	✓	✓
Optional Accessories						
DC-Blocker (protects the input against DC voltage)	✓	✓	✓	✓	✓	✓
20dB Attenuator (expands the measurement range by 20dB)	✓	✓	✓	✓	✓	✓
PBS1 Near Field Probe Set (passive)	-	-	-	✓	-	✓
PBS2 Near Field Probe Set (active, incl. UBBV2 preamplifier)	✓	-	-	✓	✓	✓
ADP1 Active Differential Probe (conductive measurement)	✓	-	-	✓	✓	✓
GEO10 Vibrationsensor (4Hz-1kHz)	✓	-	-	-	✓	-
GEO14 Vibrationsensor (10Hz-1kHz)	✓	-	-	-	✓	-
5m or 10m low loss SMA cable	-	✓	✓	✓	-	✓
Calibration Resistor (for noise floor calibration, SMA)	-	✓	✓	✓	-	✓
Calibration Certificate	✓	✓	✓	✓	✓	✓

[1] The new V5 real-time spectrum analyser generation up to 80GHz is already in development. Please contact us for further details!
Preliminary specifications dated 01.02.2011. The NF, V4 and XFR series are available with latest Beta firmware. The Beta firmware is constantly in development. Some functionality may still be limited and not fully to specifications (Beta status). By regularly checking our homepage for updates, you can always keep your measurement device up-to-date. As soon as V1.0 of the firmware is released, all functionality and features will be fully available. Range, sensitivity and accuracy can change depending on frequency, setup, antenna and used parameters. Precision datas are based on Aaronias calibration-reference under specific test conditions. Unless otherwise stated, these specifications are according to the following reference conditions: Ambient temperature 22±3°C, relative air humidity 40% to 60%, continuous wave signal (CW), RMS detection.

[2] V4 DANL @5,555GHz. V4 internal: +20dBm. V4 external (with optional 20dB attenuator): +40dBm. V4 standard: 1kHz. Only with option 002 down to 200Hz.
NF standard: 1MHz. Only with option 010 up to 30MHz. NF standard: 200mV. Only with optional 20dB Attenuator up to 2V.

[3] Depending on frequency the option 20x offers a sensetivity down to -50dBm and max. +10dBm, with optional 20dB attenuator +30dBm.

NF-5030 X

HF-6060 X

HF-6080 X

HF-60100 X

NF-XFR

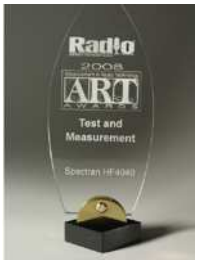
HF-XFR

Data sheet

Rev 1.7
02.08.2011

Low cost handheld RF spectrum analyzer SPECTRAN® HF-2025E measures up to 2,5GHz

RF measurement device for the novice at an unbeatable price



HF-4040 Rev.3

HF-4040 Rev.3

"Unbeatable price.."
"Particularly Aaronia's very powerful (especially considering their price) SPECTRAN handheld spectrum analysers caused much excitement."
(Markt&Technik 20/2005)

References / examples of proof:

- West Virginia University, USA
- University Strasbourg, France
- Athen University, Greece
- Universität München, Germany
- Wilkinson Sword, Solingen, Germany
- WDR, Köln, Germany

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Specifications

SPECTRAN® HF-2025E Rev.3

- Frequency range: 700MHz to 2,5GHz*
- Typ. level range: -80dBm to 0dBm*
- Lowest possible SampleTime: 100mS
- Typ. accuracy: +/- 4dB*
- Filter bandwith (RBW) Min: 1MHz
- Filter bandwith (RBW) Max: 50MHz
- High performance DSP (Digital Signal Processor)
- USB 2.0 interface
- 50 Ohm SMA RF input (F)
- Direct RF spectrum display
- Frequency and signal strength display
- High resolution multifunction display
- Exposure limit calculation according to DIN/VDE 0848
- AM demodulation
- DECT & TimeSlot Analyser
- REALTIME PEAK power detector (option)
- Advanced HOLD function
- Switchable PULS mode
- Main display in dBm, V/m, A/m or dBìV (switchable)
- ADDITIONAL display in W/m² with AUTORANGE (pW, µW etc.)
- Incl. battery pack and charger
- Incl. HyperLOG 7025 EMC antenna
- Incl. elegant aluminum carrycase
- Dimensions (L/W/D): (260x86x23) mm
- Weight: 420gr
- **Warranty: 10 years**

CE

USB 2.0 ready

10 Years Warranty

Designed and Conforms to 92/31/EWG 98/336/EWG EN50082-1 EN55011

Made in Germany

Application examples Spectran® HF-2025E Spectrum Analyzer

Analysis and measurement of:

- GSM900
- DECT
- GSM1800
- UMTS
- WLAN
- Microwave oven
- WiFi

Description

Conforming to standards and exact

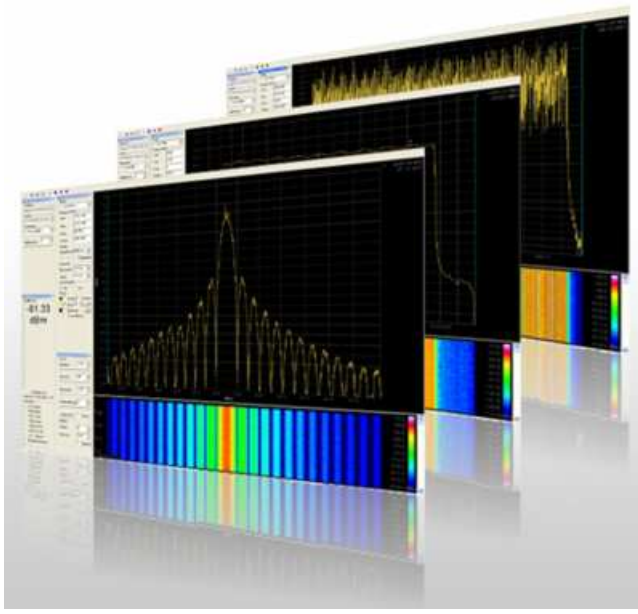
RF Measurement in this price range has never been this professional.
Find radiation sources in your surroundings. Find their respective frequencies and signal strengths, including **direct display of exposure limits**. This used to be impossible in this price category, professional units often costing 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.

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

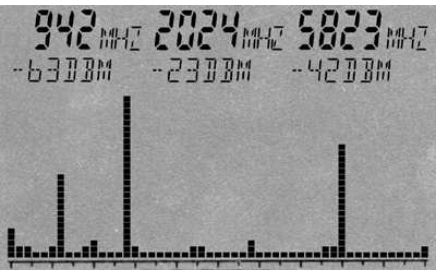
Professional PC analysis software (free download)

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:

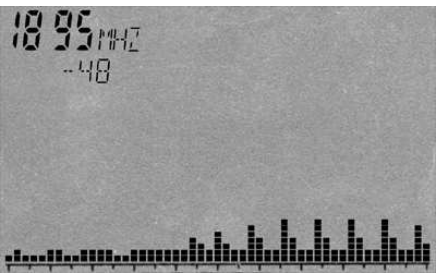
- **MULTI-device capability**! Remote control of several SPECTRAN units. These can be controlled and their data displayed at once on a single PC.
- **HIGH-RESOLUTION**!, freely scalable, coloured spectrum display with falloff function..
- **Display of channel identifiers**! for EXACT identification of 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-clikking!
- **High-resoution 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!



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



Well visible: "Frequency hopping" of a DECT portable phone between 1890 and 1900 MHz (Screenshot)

Spectrum ANALYSIS

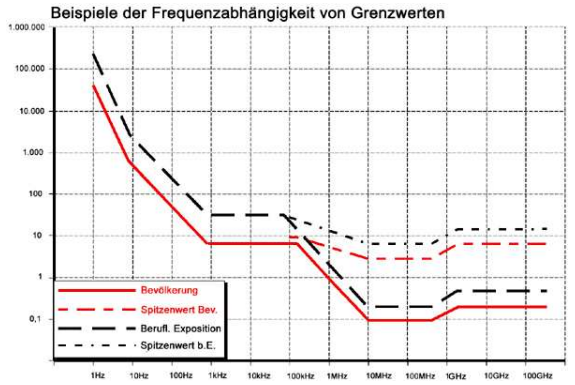
The perfect analysis:
Professional RF measurement devices use a **frequency dependant measurement approach**, the so-called **spectrum analysis**. In a certain frequency range, the individuals signals and their respective strengths are being broken down, for example into a "bargraph" display (see SPECTRAN® screenshots on the left). 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 RF spectrum shown, a frequency range of approx. 100MHz to 7GHz from left to right is being analysed (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=5832MHz (802.11a WLan) at -42dBm

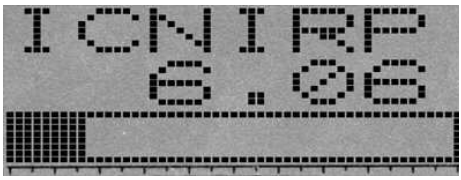
Thanks to its DIRECT frequency display of the individual signal sources, a doubtless mapping of measurement results to the corresponding radiation sources is possible.

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 indispensible, 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-banwidth (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.

The included Transportcase

INCLUDED WITH DELIVERY

- RF spectrum analyzer SPECTRAN HF-2025E
- HyperLOG 7025 EMC/directional antenna
- 1300mAh power battery with charger
- Pistol grip with miniature tripod mode
- SMA toolset
- SMA adapter
- 1m SMA cable
- Sturdy aluminum-design carrycase (with custom padding!)
- Exhaustive manual with lots of basic information, hints and exposure limit tables

SPECTRAN® HF (RF) Spectrum Analyser

APPLICATION EXAMPLES: Measurement of (active) radar, mobile communications, mobile phones, UMTS, DECT phones, transmission towers, WLan, Wifi, Bluetooth, microwaves etc.

	Entrance	Intermediate		Professional			Outdoor
Specifications base unit[1]	HF-2025E	HF-4040	HF-4060	HF-6060V4	HF-6080V4	HF-60100V4	HF-XFR
Frequency Range (min)	700MHz	100MHz	100MHz	10MHz	10MHz	1MHz	1MHz
Frequency Rance (max)	2,5GHz	4GHz	6GHz	6GHz	8GHz	9,4GHz	9,4GHz
Optional PEAK Power-Detector (Maximum usable frequency)[3]	2,5GHz	4GHz	6GHz	6GHz	8GHz	10GHz	10GHz
DANL (Displayed Average Noise Level)[2]	-80dBm	-90dBm	-90dBm	-135dBm(1Hz)	-145dBm(1Hz)	-155dBm(1Hz)	-155dBm(1Hz)
DANL (Displayed Average Noise Level) with Preamp (Option 020)[2]	-	-	-	-150dBm(1Hz)	-160dBm(1Hz)	-170dBm(1Hz)	-170dBm(1Hz)
Max Power at RF input	0dBm	0dBm	0dBm	+10dBm	+10dBm	+40dBm[2]	+40dBm[2]
RBW (resolution bandwidth) (min)	1MHz	100kHz	100kHz	10kHz	3kHz	200Hz[2]	200Hz[2]
RBW (resolution bandwidth) (max)	50MHz	50MHz	50MHz	50MHz	50MHz	50MHz	50MHz
EMC-Filter 200Hz, 9kHz, 120kHz, 200kHz, 1,5MHz, 5MHz	-	-	-	-	-	✓	✓
Demodulator	AM	AM/FM	AM/FM	AM/FM	AM/FM/PM	AM/FM/FM/GSM	AM/FM/FM/GSM
Detector	RMS	RMS	RMS	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax
Units dBm, dBµV, V/m, A/m, W/m² (dBµV/m etc. via PC software)	✓	✓	✓	✓	✓	✓	✓
Internal Datalogger (size). Expandable to 1MB (option 001)	-	64K	64K	64K	64K	64K	harddisk
Lowest SampleTime	100mS	100mS	100mS	10mS	10mS	5mS	5mS
Accuracy (typical)	+/-4dB	+/-3dB	+/-3dB	+/-2dB	+/-2dB	+/-1dB	+/-1dB
Highlights							
Real-time remote control via USB	✓	✓	✓	✓	✓	✓	internal
Calibration setup (antenna, cable, attenuator etc.)	✓	✓	✓	✓	✓	✓	✓
Exposure limit calculation according to ICNIRP, EN55011, EN55022 etc.	ICNIRP only	ICNIRP only	ICNIRP only	ICNIRP only	ICNIRP only	✓	✓
Extended full ICNIRP range	-	-	-	-	-	✓	✓
Suitable for pre-compliance test	-	-	-	-	-	✓	✓
Realtime limit calculation with simultaneous percentage display	-	✓	✓	✓	✓	✓	Analyzer sw
Time-Domain and fast Zero-Span sweep	-	-	-	✓	✓	✓	✓
Vector power measurement (I/Q) and True RMS	-	✓	✓	✓	✓	✓	✓
Simultaneously displays frequency and signal strength	✓	✓	✓	✓	✓	✓	Analyzer sw
Up to 3 marker (showing both frequency and field strength)	-	✓	✓	✓	✓	✓	unlimited
Jog Dial controlled manual marker readout	-	✓	✓	✓	✓	✓	key & touchpad
Write, AVG and Hold function	no AVG	no AVG	no AVG	✓	✓	✓	& Min, Max
DECT and TimeSlot Analyzer	✓	✓	✓	✓	✓	✓	✓
Audio Level Indicator (changes audio frequency vs power level)	-	-	-	✓	✓	✓	-
Free of charge firmware update (via Intenet)	✓	✓	✓	✓	✓	✓	✓
Supports programming of custom P-Code & C++ based custom software	-	✓	✓	✓	✓	✓	✓
14Bit Dual-ADC & DDC Hardware-Filter	-	-	-	✓	✓	✓	✓
150MIPS high performance DSP (Digital Signal Processor)	-	-	-	✓	✓	✓	✓
Large high resolution multifunctional LCD (95mm)	✓	✓	✓	✓	✓	✓	14” TFT
Spectrum display (51x25 pixel)	✓	✓	✓	✓	✓	✓	Analyzer sw
High resolution 50 segment bargraph (trend display)	✓	✓	✓	✓	✓	✓	Analyzer sw
Enhanced, much sharper Aaronia LCD display (3d generation)	-	-	-	✓	✓	✓	14” TFT
Integrated battery charger (supports our optional LiPo battery)	✓	✓	✓	✓	✓	✓	XFR charger
Internal speaker	Piezo	✓	✓	✓	✓	✓	✓

Please continue on next page


HF-2025E


HF-4040


HF-4060


HF-6060 V4


HF-6080 V4


HF-60100 V4


HF-XFR

SPECTRAN® HF (RF) Spectrum Analyser

AARONIA AG WWW.AARONIA.DE

APPLICATION EXAMPLES: Measurement of (active) radar, mobile communications, mobile phones, UMTS, DECT phones, transmission towers, WLan, Wifi, Bluetooth, microwaves etc.

	Entrance	Intermediate		Professional			Outdoor
Connectors / Interface	HF-2025E	HF-4040	HF-4060	HF-6060V4	HF-6080V4	HF-60100V4	HF-XFR
USB 1.1/2.0	✓	✓	✓	✓	✓	✓	2x
Audio output (2,5mm jack)	✓	✓	✓	✓	✓	✓	3,5mm jack
Charger plug (max. 12V)	✓	✓	✓	✓	✓	✓	✓
50Ohm SMA input (f)	✓	✓	✓	✓	✓	✓	✓
Jog Dial (easy usage of menu operation and volume control)	-	✓	✓	✓	✓	✓	key & touchpad
1/4" tripod connector	✓	✓	✓	✓	✓	✓	in-Vehicle docking
Included In Delivery							
Miniature SMA rod sniffer antenna	✓	✓	✓	-	-	-	OmniLOG 90200
HyperLOG EMC directional LogPer antenna (model)	7025	7040	7060	7060	6080	60100	60100 (black)
SPECTRAN 1300mAh rechargable battery (integrated)	✓	✓	✓	✓	✓	✓	6 cell battery
Battery charger and power supply incl. international adapter sit	✓	✓	✓	✓	✓	✓	no adapter set
Aluminum carrying case with foam protection	✓	✓	✓	✓	✓	✓	-
Detailed English manual (on CD)	✓	✓	✓	✓	✓	✓	installed
Analyzer Software for MAC-OS, Linux and Windows (on CD)	✓	✓	✓	✓	✓	✓	installed
SMA tool	✓	✓	✓	✓	✓	✓	✓
SMA adapter	✓	✓	✓	✓	✓	✓	-
Available Options (extra charge)							
Option 001 (1MB memory expansion)	-	✓	✓	✓	✓	✓	harddisk
Option 002 (high accurate 0,5ppm TCXO timebase)	-	-	-	-	-	✓	installed
Option 020 (15dB internal low noise preamplifier, switchable)	-	-	-	✓	✓	✓	installed
Option 20x (Real-time Broadband Peak Power Meter)	✓	✓	✓	✓	✓	✓	✓
Option UBBV1 (40dB external preamplifier 1MHz-1GHz)	-	-	-	✓	✓	✓	✓
Option UBBV2 (40dB external preamplifier DC-8GHz)	-	-	-	✓	✓	✓	✓
Optional Accessories							
USB Cable (special EMC screened version)	✓	✓	✓	✓	✓	✓	installed
3000mAh Lithium Polymer (LiPo) Power-Battery	✓	✓	✓	✓	✓	✓	-
Car Power Adapter (operate or charge via cigarette lighter)	✓	✓	✓	✓	✓	✓	-
Outdoor Rubber Protection (perfect for outdoor usage)	✓	✓	✓	✓	✓	✓	-
Pistol Grip / Miniature Tripod	✓	✓	✓	✓	✓	✓	-
Heavy Multifunctional Pistol Grip	✓	✓	✓	✓	✓	✓	-
Aluminum Tripod (big version)	✓	✓	✓	✓	✓	✓	-
DC-Blocker (protects the input against DC voltage)	✓	✓	✓	✓	✓	✓	✓
20dB Attenuator (expands the measurement range by 20dB)	✓	✓	✓	✓	✓	✓	✓
PBS1 Near Field Probe Set (passive)	-	-	-	-	-	✓	✓
PBS2 Near Field Probe Set (active, incl. UBBV2 preamplifier)	-	-	-	-	-	✓	✓
ADP1 Active Differential Probe (conductive measurement)	-	-	-	-	-	✓	✓
5m or 10m low loss SMA Cable	✓	✓	✓	✓	✓	✓	✓
Calibration Resistor (needed for noise floor calibration, SMA)	-	-	-	✓	✓	✓	✓
Calibration Certificate	✓	✓	✓	✓	✓	✓	✓
Heavy Plastic Carrying Case	✓	✓	✓	✓	✓	✓	-

(1) The new V5 real-time spectrum analyser generation up to 80GHz is already in development. Please contact us for further details!
Preliminary specifications dated 01.02.2011. The V4 and XFR series are available with latest Beta firmware. The Beta firmware is constantly in development. Some functionality may still be limited and not fully to specifications (Beta status). By regularly checking our homepage for updates, you can always keep your measurement device up-to-date. As soon as V1.0 of the firmware is released, all functionality and features will be fully available. Range, sensitivity and accuracy can change depending on frequency, setup, antenna and used parameters. Precision datas are based on Aaronias calibration-reference under specific test conditions. Unless otherwise stated, these specifications are according to the following reference conditions: Ambient temperature 22±3°C, relative air humidity 40% to 60%, continuous wave signal (CW), RMS detection.
V4 and XFR DANL @5,555GHz. Maximum sensitivity of Rev.3 units: -90dBm @2,2GHz.
(2) Standard: +20dBm. Only with optional 20dB attenuator +40dBm. Standard: 1kHz. Only with option 002 down to 200Hz.
(3) Depending on frequency the option 20x offers a sensetivity down to -50dBm and max. +10dBm, with optional 20dB attenuator +30dBm.


HF-2025E


HF-4040


HF-4060


HF-6060 V4


HF-6080 V4


HF-60100 V4


HF-XFR

Recommended accessories for Aaronia Spectrum Analyzer

Heavy Plastic Carrycase PRO

Shock resistant, heavy version with padding. Offers spaces for 2 SPECTRAN units with all accessories and a HyperLOG 70xx or 60xx antenna. A MUST for the professional user or outdoor usage!

Order/Art.-No.: 243

Pistol grip / miniature tripod

Detachable handle with super-practical miniature tripod mode: this handle is attachable to the backside of the unit and allows optimal handling (esp. for directional measurement) and even fixed installation of the unit. STRONGLY recommended for PC use!

Order/Art.-No.: 280

Aluminum tripod

Height adjustable, high stability. STRONGLY recommended for PC use! Max. height: 105cm.

Order/Art.-No.: 281

Calibration Certificate

Available for all SPECTRAN® units. With detailed calibration sheet.

Order/Art.-No.: 784

USB Cable (Special Version)

To connect your Spectran to the PC. Special version with high performance EMC-ferrite. STRONGLY recommended for PC use!

Order/Art.-No.: 774

1m / 5m / 10m SMA-Cable

High quality special SMA cable for connecting any HyperLOG®-Antenna or BicoLOG®-Antenna with our RF Spectrum-Analyzer. Available as 1m, 5m and 10m Cable. All versions: SMA plug (male) / SMA plug (male).

3000mAh LiPo Power-Battery

Offers a MUCH higher runtime of your SPECTRAN (up to 400%). Strongly recommended for autonomic measurement! The 1300mAh standard-battery will be replaced.

Order/Art.-No.: 254

Car power adapter for mobile use

With power-LED. For charging batteries or operating our units in your car, including special plug.

Order/Art.-No.: 260

Protection rubber

Protect and personalize your SPECTRAN with a sturdy rubber case and keep it scratch-n-dent free. Allows full access to all functions.

Order/Art.-No.: 290

DC-Blocker (SMA)

It prevents the RF-input of the SPECTRAN to be destroyed by the DC-voltages of f.e. DSL/ISDN lines.

Order/Art.-No.: 778

Calibration Resistor (DC-18GHz)

This calibration resistor is necessary for the best possible calibration of the noise-floor of each Spectran V4-Analyzer.

Order/Art.-No.: 779

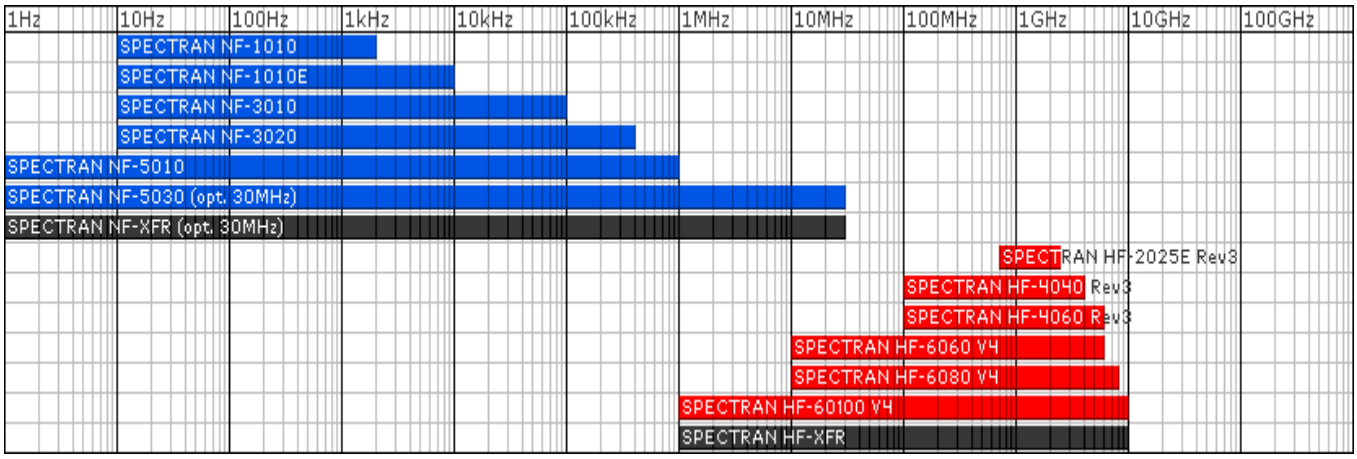
20dB SMA high-end Attenuator

Expands the measurement range to +40dBm. (ONLY SPECTRAN HF-60100 V4 and HF-XFR).

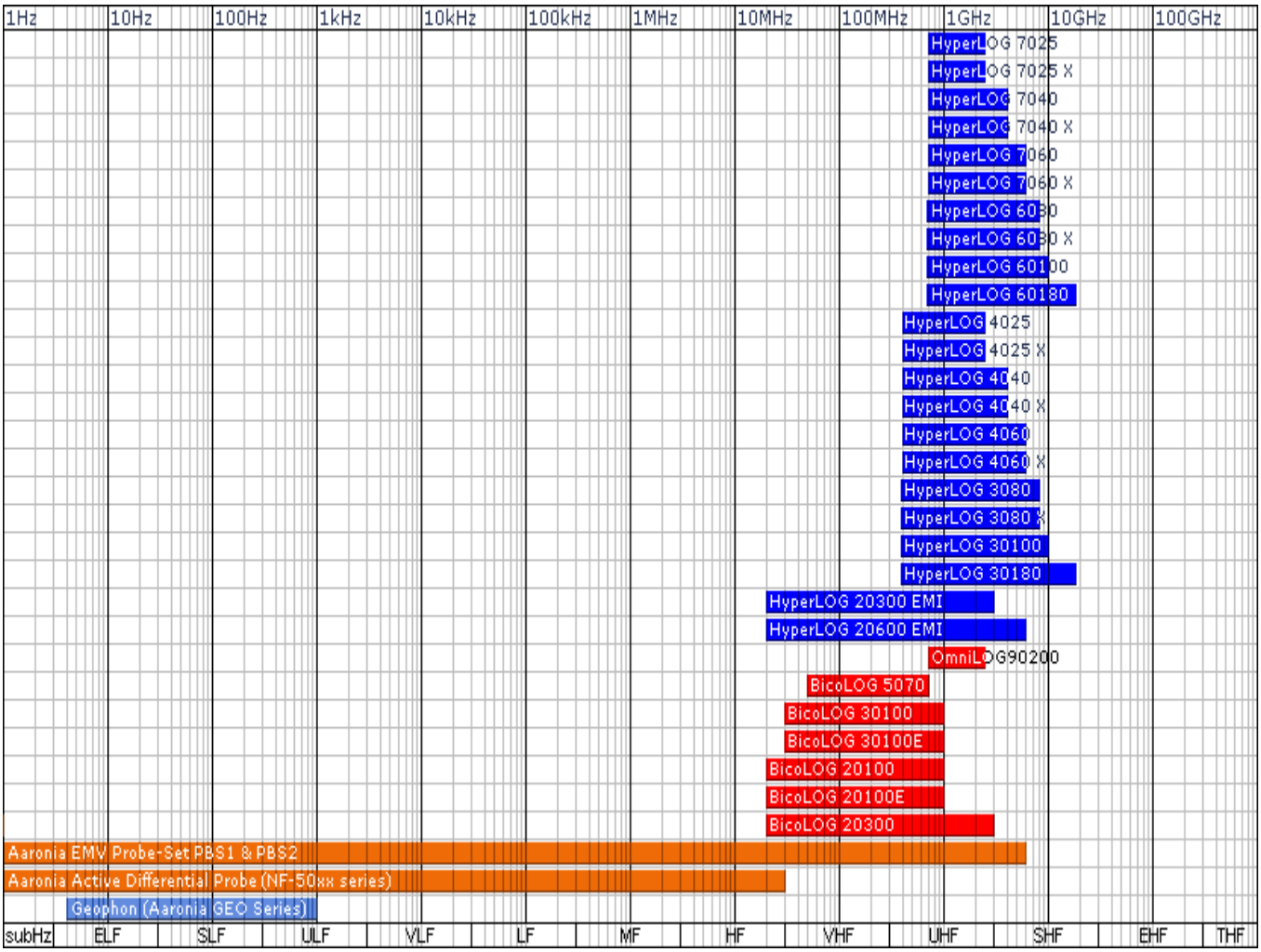
Order/Art.-No.: 775

Frequency overview Analyzer & Antennas

Frequency Overview SPECTRAN Spectrum Analyzer



Frequency Overview HyperLOG and BicoLOG Antennas and Probes



References

User of Aaronia Antennas and Spectrum Analyzers (Examples)

Government, Military, Aeronautic, Astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

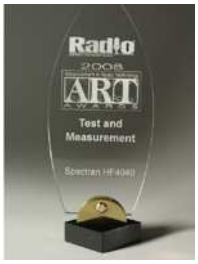
Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet

Rev 1.7
02.08.2011

Handheld RF Spectrum Analyzer series SPECTRAN® 40xx incl. EMC test antenna

VECTOR Spectrum Analyzer for the semi professional



HF-4040 Rev.3

HF-4040 Rev.3

"Unbeatable price.."
"Particularly Aaronia's very powerful (especially considering their price) SPECTRAN handheld spectrum analysers caused much excitement."
(Markt&Technik 20/2005)

References / examples of proof:

- BMW, München
- BASF, Schwarzheide
- Siemens AG, Nürnberg
- Vattenfall, Berlin
- Fedex, USA
- EnBW, Stuttgart

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Specifications

SPECTRAN® HF-4040 Rev.3

- Frequency range: 100MHz to 4GHz*
- Typ. level range: -90dBm to 0dBm*
- Lowest possible SampleTime: 100mS
- Typ. accuracy: +/- 3dB*
- Filter bandwith (RBW) Min: 100kHz
- Filter bandwith (RBW) Max: 50MHz
- Vector (I/Q) / True RMS level measurement
- High performance DSP (Digital Signal Processor)
- USB 2.0 interface
- Direct RF spectrum display
- Frequency and signal strength display
- Enhanced triple multi-function display
- Advanced HOLD function
- Switchable PULS mode
- Exposure limit calculation according to DIN/VDE 0848
- AM / FM Demodulation
- DECT & TimeSlot Analyser
- Realtime PEAK power detector (option)
- Internal datalogger (64K)
- Internet software updates
- Incl. battery pack and charger
- Incl. HyperLOG 7040 EMC antenna
- Incl. aluminum carrycase
- Dimensions (L/W/D): (260x86x23) mm
- Weight: 420gr
- **Warranty: 10 years**

SPECTRAN® HF-4060 Rev.3

- Frequency range: 100MHz to **6GHz***
- Typ. level range: -90dBm to 0dBm*
- Lowest possible SampleTime: 100mS
- Typ. accuracy: +/- 3dB*
- Filter bandwith (RBW) Min: 100kHz
- Filter bandwith (RBW) Max: 50MHz
- Vector (I/Q) / True RMS level measurement
- High performance DSP (Digital Signal Processor)
- USB 2.0 interface
- Direct RF spectrum display
- Frequency and signal strength display
- Enhanced triple multi-function display
- Advanced HOLD function
- Switchable PULS mode
- Exposure limit calculation according to DIN/VDE 0848
- AM / FM Demodulation
- DECT & TimeSlot Analyser
- Realtime PEAK power detector (option)
- **1MB memory expansion (option)**
- Internal datalogger (64K)
- Internet software updates
- Incl. battery pack and charger
- Incl. HyperLOG **7060** EMC antenna
- Incl. aluminum carrycase
- Dimensions (L/W/D): (260x86x23) mm
- Weight: 420gr
- **Warranty: 10 years**

Application examples Spectran® HF-40xx Spectrum Analyzer

Analysis and measurement of:

- WLan
- UMTS
- WiFi
- active Radar
- GSM900
- GMS1800
- Bluetooth
- microwave ovens
- DECT-phones
- TETRA
- 70cm ham radio
- UWB (FB1-FB4)

CE

USB 2.0 ready

10 Years Warranty

Designed and Conforms to 92/31/EWG 98/336/EWG EN50082-1 EN55011

Made in Germany

Description

Conforming to standards and exact

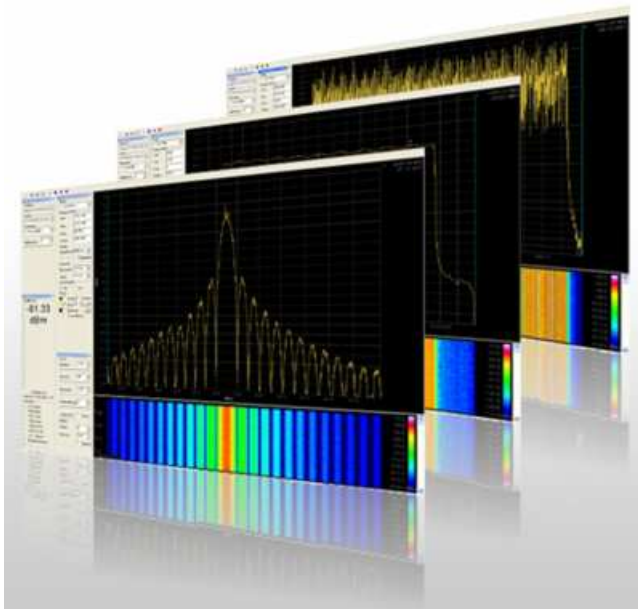
RF Measurement in this price range has never been this professional.
Find radiation sources in your surroundings. Find their respective frequencies and signal strengths, including **direct display of exposure limits**. This used to be impossible in this price category, professional units often costing 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.

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

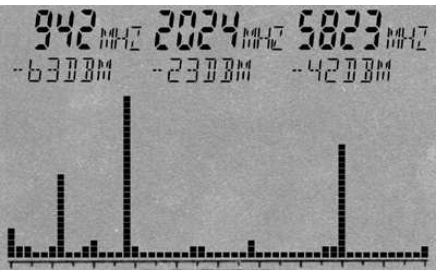
Professional PC analysis software (free download)

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:

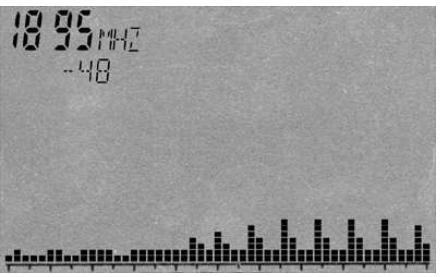
- **MULTI-device capability**! Remote control of several SPECTRAN units. These can be controlled and their data displayed at once on a single PC.
- **HIGH-RESOLUTION**!, freely scalable, coloured spectrum display with falloff function..
- **Display of channel identifiers**! for EXACT identification of 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-clikking!
- **High-resoution 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!



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



Well visible: "Frequency hopping" of a DECT portable phone between 1890 and 1900 MHz (Screenshot)

Spectrum ANALYSIS

The perfect analysis:
Professional RF 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® screenshots on the left). 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 RF spectrum shown, a frequency range of approx. 100MHz to 7GHz from left to right is being analysed (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=5832MHz (802.11a WLan) at -42dBm

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

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 seriuos 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 graphics on the right). 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. Even though SPECTRAN® units "only" last 2 to 3 (depending on model) hours with one battery charge, the intelligent "Powerdown mode" enables much longer data logging and measurement timespans. Finally, if this is not enough, the external power supply can be used to extend the recording timespan infinitely.

Daily variation of this RF transmitter discloses EXTREME variation in time

The included Transportcase

INCLUDED WITH DELIVERY

- RF spectrum analyzer SPECTRAN HF-40xx
- HyperLOG 70xx EMC/directional antenna
- 1300mAh power battery with charger
- Pistol grip with miniature tripod mode
- SMA toolset
- SMA adapter
- 1m SMA cable
- Sturdy aluminum-design carrycase (with custom padding!)
- Exhaustive manual with lots of basic information, hints and exposure limit tables

SPECTRAN® HF (RF) Spectrum Analyser

APPLICATION EXAMPLES: Measurement of (active) radar, mobile communications, mobile phones, UMTS, DECT phones, transmission towers, WLan, Wifi, Bluetooth, microwaves etc.

	Entrance	Intermediate		Professional			Outdoor
Specifications base unit[1]	HF-2025E	HF-4040	HF-4060	HF-6060V4	HF-6080V4	HF-60100V4	HF-XFR
Frequency Range (min)	700MHz	100MHz	100MHz	10MHz	10MHz	1MHz	1MHz
Frequency Rance (max)	2,5GHz	4GHz	6GHz	6GHz	8GHz	9,4GHz	9,4GHz
Optional PEAK Power-Detector (Maximum usable frequency)[3]	2,5GHz	4GHz	6GHz	6GHz	8GHz	10GHz	10GHz
DANL (Displayed Average Noise Level)[2]	-80dBm	-90dBm	-90dBm	-135dBm(1Hz)	-145dBm(1Hz)	-155dBm(1Hz)	-155dBm(1Hz)
DANL (Displayed Average Noise Level) with Preamp (Option 020)[2]	-	-	-	-150dBm(1Hz)	-160dBm(1Hz)	-170dBm(1Hz)	-170dBm(1Hz)
Max Power at RF input	0dBm	0dBm	0dBm	+10dBm	+10dBm	+40dBm[2]	+40dBm[2]
RBW (resolution bandwidth) (min)	1MHz	100kHz	100kHz	10kHz	3kHz	200Hz[2]	200Hz[2]
RBW (resolution bandwidth) (max)	50MHz	50MHz	50MHz	50MHz	50MHz	50MHz	50MHz
EMC-Filter 200Hz, 9kHz, 120kHz, 200kHz, 1,5MHz, 5MHz	-	-	-	-	-	✓	✓
Demodulator	AM	AM/FM	AM/FM	AM/FM	AM/FM/PM	AM/FM/FM/GSM	AM/FM/FM/GSM
Detector	RMS	RMS	RMS	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax
Units dBm, dBµV, V/m, A/m, W/m² (dBµV/m etc. via PC software)	✓	✓	✓	✓	✓	✓	✓
Internal Datalogger (size). Expandable to 1MB (option 001)	-	64K	64K	64K	64K	64K	harddisk
Lowest SampleTime	100mS	100mS	100mS	10mS	10mS	5mS	5mS
Accuracy (typical)	+/-4dB	+/-3dB	+/-3dB	+/-2dB	+/-2dB	+/-1dB	+/-1dB
Highlights							
Real-time remote control via USB	✓	✓	✓	✓	✓	✓	internal
Calibration setup (antenna, cable, attenuator etc.)	✓	✓	✓	✓	✓	✓	✓
Exposure limit calculation according to ICNIRP, EN55011, EN55022 etc.	ICNIRP only	ICNIRP only	ICNIRP only	ICNIRP only	ICNIRP only	✓	✓
Extended full ICNIRP range	-	-	-	-	-	✓	✓
Suitable for pre-compliance test	-	-	-	-	-	✓	✓
Realtime limit calculation with simultaneous percentage display	-	✓	✓	✓	✓	✓	Analyzer sw
Time-Domain and fast Zero-Span sweep	-	-	-	✓	✓	✓	✓
Vector power measurement (I/Q) and True RMS	-	✓	✓	✓	✓	✓	✓
Simultaneously displays frequency and signal strength	✓	✓	✓	✓	✓	✓	Analyzer sw
Up to 3 marker (showing both frequency and field strength)	-	✓	✓	✓	✓	✓	unlimited
Jog Dial controlled manual marker readout	-	✓	✓	✓	✓	✓	key & touchpad
Write, AVG and Hold function	no AVG	no AVG	no AVG	✓	✓	✓	& Min, Max
DECT and TimeSlot Analyzer	✓	✓	✓	✓	✓	✓	✓
Audio Level Indicator (changes audio frequency vs power level)	-	-	-	✓	✓	✓	-
Free of charge firmware update (via Intenet)	✓	✓	✓	✓	✓	✓	✓
Supports programming of custom P-Code & C++ based custom software	-	✓	✓	✓	✓	✓	✓
14Bit Dual-ADC & DDC Hardware-Filter	-	-	-	✓	✓	✓	✓
150MIPS high performance DSP (Digital Signal Processor)	-	-	-	✓	✓	✓	✓
Large high resolution multifunctional LCD (95mm)	✓	✓	✓	✓	✓	✓	14” TFT
Spectrum display (51x25 pixel)	✓	✓	✓	✓	✓	✓	Analyzer sw
High resolution 50 segment bargraph (trend display)	✓	✓	✓	✓	✓	✓	Analyzer sw
Enhanced, much sharper Aaronia LCD display (3d generation)	-	-	-	✓	✓	✓	14” TFT
Integrated battery charger (supports our optional LiPo battery)	✓	✓	✓	✓	✓	✓	XFR charger
Internal speaker	Piezo	✓	✓	✓	✓	✓	✓

Please continue on next page


HF-2025E


HF-4040


HF-4060


HF-6060 V4


HF-6080 V4


HF-60100 V4


HF-XFR

SPECTRAN® HF (RF) Spectrum Analyser

AARONIA AG WWW.AARONIA.DE

APPLICATION EXAMPLES: Measurement of (active) radar, mobile communications, mobile phones, UMTS, DECT phones, transmission towers, WLan, Wifi, Bluetooth, microwaves etc.

	Entrance	Intermediate		Professional			Outdoor
Connectors / Interface	HF-2025E	HF-4040	HF-4060	HF-6060V4	HF-6080V4	HF-60100V4	HF-XFR
USB 1.1/2.0	✓	✓	✓	✓	✓	✓	2x
Audio output (2,5mm jack)	✓	✓	✓	✓	✓	✓	3,5mm jack
Charger plug (max. 12V)	✓	✓	✓	✓	✓	✓	✓
50Ohm SMA input (f)	✓	✓	✓	✓	✓	✓	✓
Jog Dial (easy usage of menu operation and volume control)	-	✓	✓	✓	✓	✓	key & touchpad
1/4” tripod connector	✓	✓	✓	✓	✓	✓	in-Vehicle docking
Included In Delivery							
Miniature SMA rod sniffer antenna	✓	✓	✓	-	-	-	OmniLOG 90200
HyperLOG EMC directional LogPer antenna (model)	7025	7040	7060	7060	6080	60100	60100 (black)
SPECTRAN 1300mAh rechargable battery (integrated)	✓	✓	✓	✓	✓	✓	6 cell battery
Battery charger and power supply incl. international adapter sit	✓	✓	✓	✓	✓	✓	no adapter set
Aluminum carrying case with foam protection	✓	✓	✓	✓	✓	✓	-
Detailed English manual (on CD)	✓	✓	✓	✓	✓	✓	installed
Analyzer Software for MAC-OS, Linux and Windows (on CD)	✓	✓	✓	✓	✓	✓	installed
SMA tool	✓	✓	✓	✓	✓	✓	✓
SMA adapter	✓	✓	✓	✓	✓	✓	-
Available Options (extra charge)							
Option 001 (1MB memory expansion)	-	✓	✓	✓	✓	✓	harddisk
Option 002 (high accurate 0,5ppm TCXO timebase)	-	-	-	-	-	✓	installed
Option 020 (15dB internal low noise preamplifier, switchable)	-	-	-	✓	✓	✓	installed
Option 20x (Real-time Broadband Peak Power Meter)	✓	✓	✓	✓	✓	✓	✓
Option UBBV1 (40dB external preamplifier 1MHz-1GHz)	-	-	-	✓	✓	✓	✓
Option UBBV2 (40dB external preamplifier DC-8GHz)	-	-	-	✓	✓	✓	✓
Optional Accessories							
USB Cable (special EMC screened version)	✓	✓	✓	✓	✓	✓	installed
3000mAh Lithium Polymer (LiPo) Power-Battery	✓	✓	✓	✓	✓	✓	-
Car Power Adapter (operate or charge via cigarette lighter)	✓	✓	✓	✓	✓	✓	-
Outdoor Rubber Protection (perfect for outdoor usage)	✓	✓	✓	✓	✓	✓	-
Pistol Grip / Miniature Tripod	✓	✓	✓	✓	✓	✓	-
Heavy Multifunctional Pistol Grip	✓	✓	✓	✓	✓	✓	-
Aluminum Tripod (big version)	✓	✓	✓	✓	✓	✓	-
DC-Blocker (protects the input against DC voltage)	✓	✓	✓	✓	✓	✓	✓
20dB Attenuator (expands the measurement range by 20dB)	✓	✓	✓	✓	✓	✓	✓
PBS1 Near Field Probe Set (passive)	-	-	-	-	-	✓	✓
PBS2 Near Field Probe Set (active, incl. UBBV2 preamplifier)	-	-	-	-	-	✓	✓
ADP1 Active Differential Probe (conductive measurement)	-	-	-	-	-	✓	✓
5m or 10m low loss SMA Cable	✓	✓	✓	✓	✓	✓	✓
Calibration Resistor (needed for noise floor calibration, SMA)	-	-	-	✓	✓	✓	✓
Calibration Certificate	✓	✓	✓	✓	✓	✓	✓
Heavy Plastic Carrying Case	✓	✓	✓	✓	✓	✓	-

(1) The new V5 real-time spectrum analyser generation up to 80GHz is already in development. Please contact us for further details!
Preliminary specifications dated 01.07.2011. The V4 and XFR series are available with latest Beta firmware. The Beta firmware is constantly in development. Some functionality may still be limited and not fully to specifications (Beta status). By regularly checking our homepage for updates, you can always keep your measurement device up-to-date. As soon as V1.0 of the firmware is released, all functionality and features will be fully available. Range, sensitivity and accuracy can change depending on frequency, setup, antenna and used parameters. Precision datas are based on Aaronias calibration-reference under specific test conditions. Unless otherwise stated, these specifications are according to the following reference conditions: Ambient temperature 22±3°C, relative air humidity 40% to 60%, continuous wave signal (CW), RMS detection.
V4 and XFR DANL @5,555GHz. Maximum sensitivity of Rev.3 units: -90dBm @2,2GHz.
(2) Standard: +20dBm. Only with optional 20dB attenuator +40dBm. Standard: 1kHz. Only with option 002 down to 200Hz.
(3) Depending on frequency the option 20x offers a sensetivity down to -50dBm and max. +10dBm, with optional 20dB attenuator +30dBm.


HF-2025E


HF-4040


HF-4060


HF-6060 V4


HF-6080 V4


HF-60100 V4


HF-XFR

Recommended accessories for Aaronia Spectrum Analyzer

Heavy Plastic Carrycase PRO

Shock resistant, heavy version with padding. Offers spaces for 2 SPECTRAN units with all accessories and a HyperLOG 70xx or 60xx antenna. A MUST for the professional user or outdoor usage!

Order/Art.-No.: 243

Pistol grip / miniature tripod

Detachable handle with super-practical miniature tripod mode: this handle is attachable to the backside of the unit and allows optimal handling (esp. for directional measurement) and even fixed installation of the unit. STRONGLY recommended for PC use!

Order/Art.-No.: 280

Aluminum tripod

Height adjustable, high stability. STRONGLY recommended for PC use! Max. height: 105cm.

Order/Art.-No.: 281

Calibration Certificate

Available for all SPECTRAN® units. With detailed calibration sheet.

Order/Art.-No.: 784

USB Cable (Special Version)

To connect your Spectran to the PC. Special version with high performance EMC-ferrite. STRONGLY recommended for PC use!

Order/Art.-No.: 774

1m / 5m / 10m SMA-Cable

High quality special SMA cable for connecting any HyperLOG®-Antenna or BicoLOG®-Antenna with our RF Spectrum-Analyzer. Available as 1m, 5m and 10m Cable. All versions: SMA plug (male) / SMA plug (male).

3000mAh LiPo Power-Battery

Offers a MUCH higher runtime of your SPECTRAN (up to 400%). Strongly recommended for autonomic measurement! The 1300mAh standard-battery will be replaced.

Order/Art.-No.: 254

Car power adapter for mobile use

With power-LED. For charging batteries or operating our units in your car, including special plug.

Order/Art.-No.: 260

Protection rubber

Protect and personalize your SPECTRAN with a sturdy rubber case and keep it scratch-n-dent free. Allows full access to all functions.

Order/Art.-No.: 290

DC-Blocker (SMA)

It prevents the RF-input of the SPECTRAN to be destroyed by the DC-voltages of f.e. DSL/ISDN lines.

Order/Art.-No.: 778

Calibration Resistor (DC-18GHz)

This calibration resistor is necessary for the best possible calibration of the noise-floor of each Spectran V4-Analyzer.

Order/Art.-No.: 779

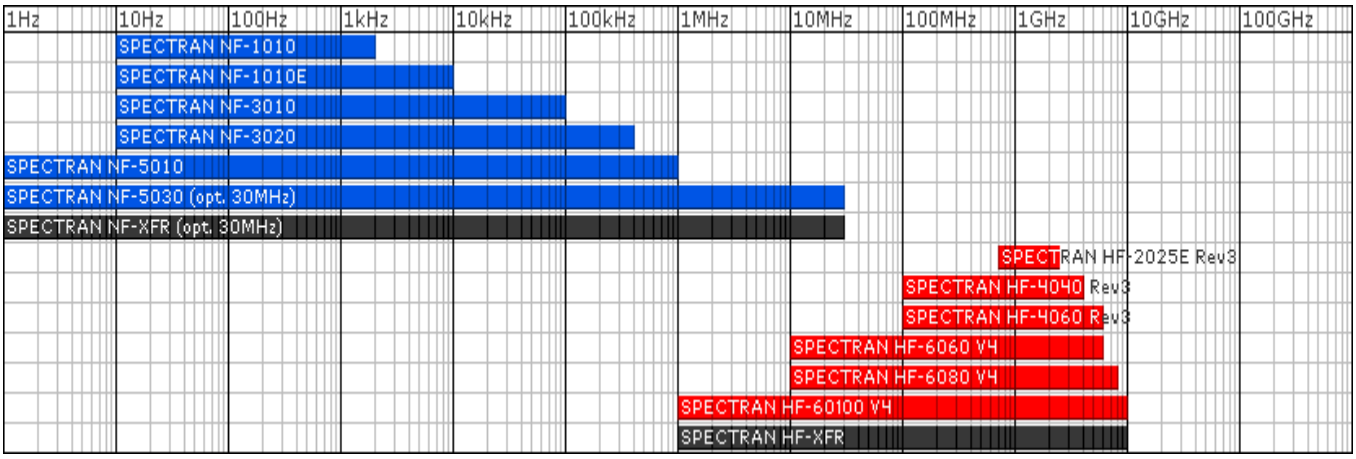
20dB SMA high-end Attenuator

Expands the measurement range to +40dBm. (ONLY SPECTRAN HF-60100 V4 and HF-XFR).

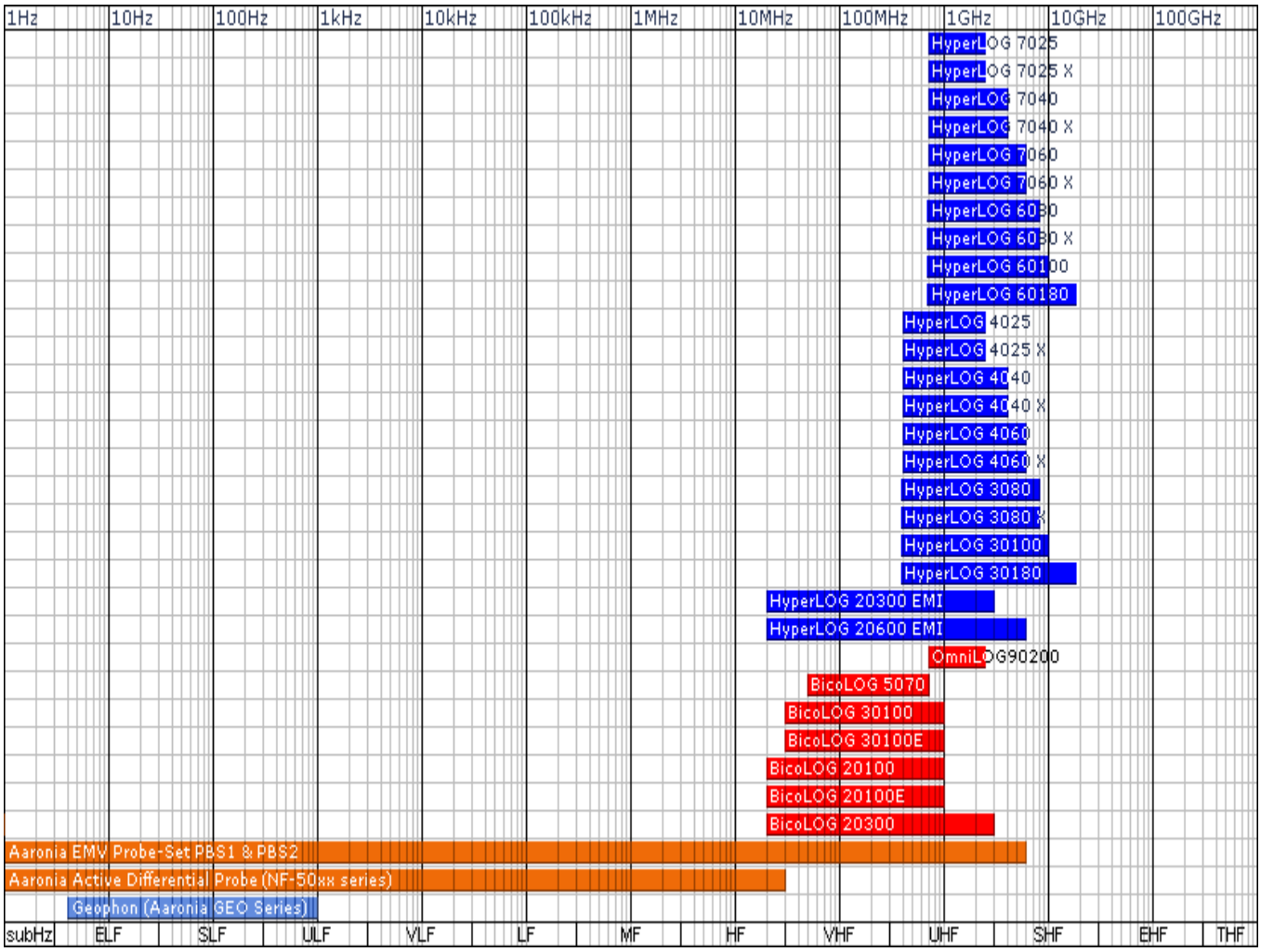
Order/Art.-No.: 775

Frequency overview Analyzer & Antennas

Frequency Overview SPECTRAN Spectrum Analyzer



Frequency Overview HyperLOG and BicoLOG Antennas and Probes



References

User of Aaronia Antennas and Spectrum Analyzers (Examples)

Government, Military, Aeronautic, Astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

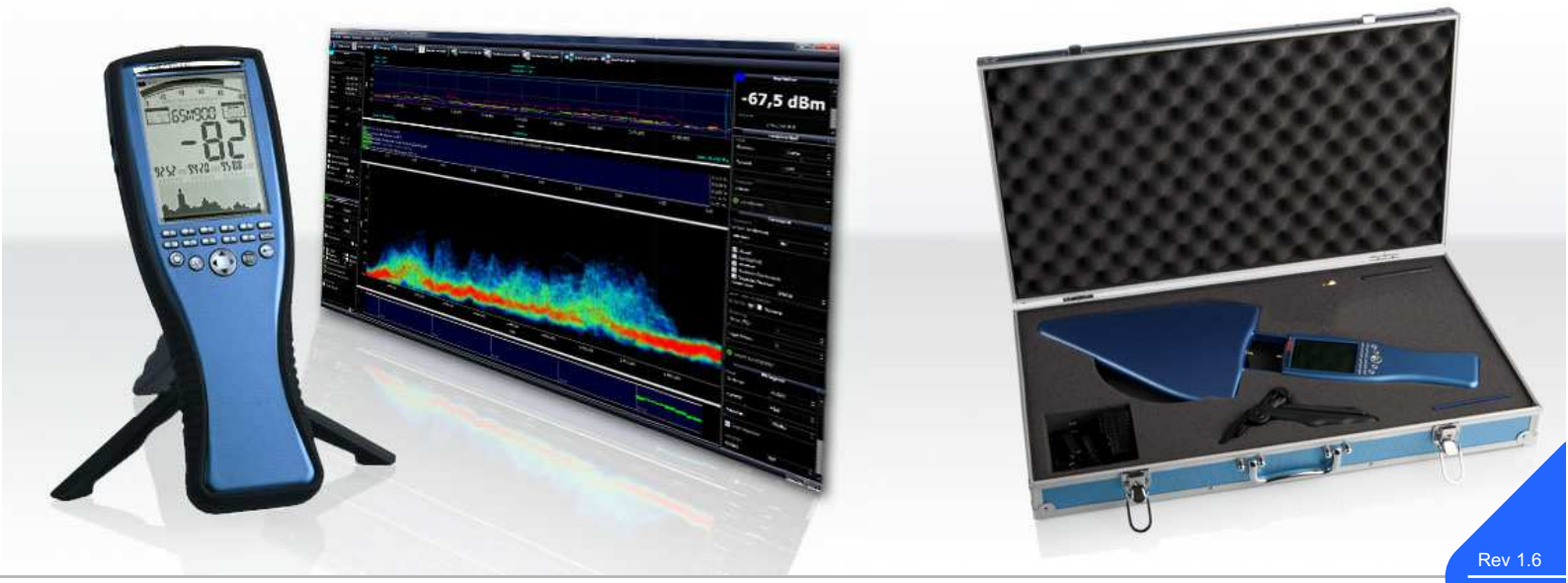
Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

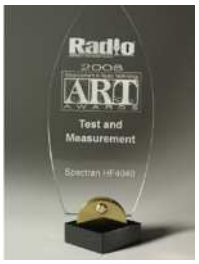
Data sheet



Rev 1.6
12.04.2011

Handheld spectrum analyzer series SPECTRAN® HF-6060 V4, HF-6080 V4, HF-60100 V4

Portable Spectrum Analyser with world record in sensitivity (DANL)



HF-4040 Rev.3

HF-4040 Rev.3

"Unbeatable price.."
"Particularly Aaronia's very powerful (especially considering their price) SPECTRAN handheld spectrum analysers caused much excitement."
(Markt&Technik 20/2005)

References / examples of proof:

- EADS, Munich, Germany
- Mercedes Benz, Austria
- Deutsche Bahn, Berlin, Germany
- EnBW Kernkraft GmbH, Germany
- RTL Television, Cologne, Germany
- NDR, Hamburg, Germany

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Specifications

SPECTRAN® HF-6060 V4:

- Up to **100x faster SampleTime** as Rev.3
- Up to **60dB higher sensitivity** as Rev.3
- 14Bit Dual-ADC
- DDC Hardware-Filter
- 150 MIPS DSP (CPU)
- Frequency range: 10MHz to **6GHz**
- Max measurement range: -135dBm (1Hz)
- Max measurement range PreAmp: **-150dBm** (1Hz)
- AbsMax Level: +10dBm
- Lowest possible SampleTime: **1mS**
- Typ. accuracy: +/- 2dB**
- Dimensions (L/W/D): (260x86x23) mm
- Weight: 420gr
- **Warranty: 10 years**

SPECTRAN® HF-6080 V4:

- Up to **100x faster SampleTime** as Rev.3
- Up to **70dB higher sensitivity** as Rev.3
- 14Bit Dual-ADC
- DDC Hardware-Filter
- 150 MIPS DSP (CPU)
- Frequency range: 10MHz to **8GHz**
- Max measurement range: -145dBm (1Hz)
- Max measurement range PreAmp: **-160dBm** (1Hz)
- AbsMax Level: +10dBm
- Lowest possible SampleTime: **1mS**
- Typ. accuracy: +/- 2dB**
- Dimensions (L/W/D): (260x86x23) mm
- Weight: 420gr
- **Warranty: 10 years**

SPECTRAN® HF-60100 V4 (with Worldrecord in sensitivity!):

- Up to **100x faster SampleTime** as Rev.3
- Up to **80dB higher sensitivity** as Rev.3
- 14Bit Dual-ADC
- DDC Hardware-Filter
- 150 MIPS DSP (CPU)
- Frequency range: 1MHz to **9,4GHz**
- Max measurement range: -155dBm (1Hz)
- Max measurement range PreAmp: **-170dBm** (1Hz)
- AbsMax Level: +20dBm
- AbsMax Level: **+40dBm** (Option)³
- Lowest possible SampleTime: **1mS**
- Typ. accuracy: +/- 1dB**
- Dimensions (L/W/D): (260x86x23) mm
- Weight: 420gr
- **Warranty: 10 years**

CE

USB 2.0 ready

10 Years Warranty

Designed and Conforms to 92/31/EWG 98/336/EWG EN50082-1 EN55011

Made in Germany

Application examples Spectran HF-60xxx Spectrum Analyzer

Analysis and measurement of:

- WLan
- UMTS
- WiFi
- active Radar
- GSM
- Mobile phones
- Bluetooth
- Microwave ovens
- DECT phones
- TETRA
- radio stations
- TV stations

Description

Conforming to standards and exact

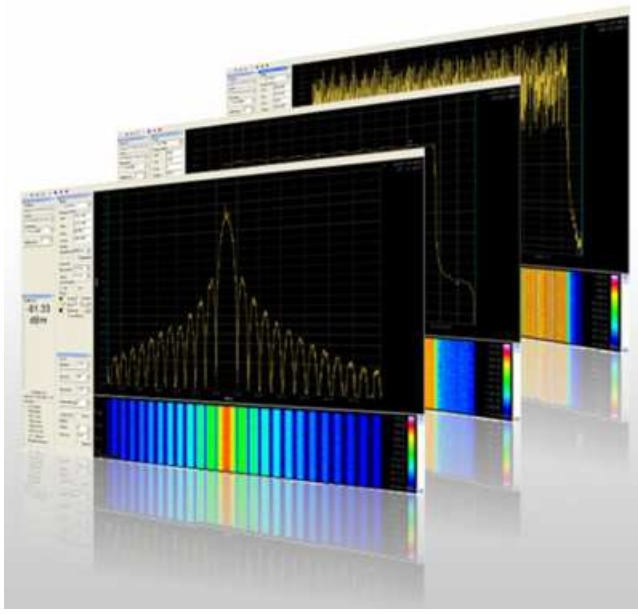
RF Measurement in this price range has never been this professional.
Find radiation sources in your surroundings. Find their respective frequencies and signal strengths, including **direct display of exposure limits**. This used to be impossible in this price category, professional units often costing 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.

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

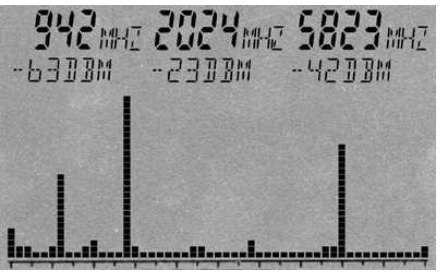
Professional PC analysis software (free download)

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:

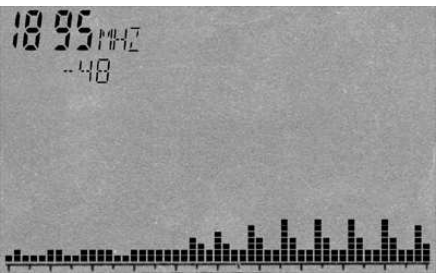
- **MULTI-device capability**! Remote control of several SPECTRAN units. These can be controlled and their data displayed at once on a single PC.
- **HIGH-RESOLUTION**!, freely scalable, coloured spectrum display with falloff function..
- **Display of channel identifiers**! for EXACT identification of 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-clikking!
- **High-resoution 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!



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



Well visible: "Frequency hopping" of a DECT portable phone between 1890 and 1900 MHz (Screenshot)

Spectrum ANALYSIS

The perfect analysis:
Professional RF 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® screenshots on the left). 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 RF spectrum shown, a frequency range of approx. 100MHz to 7GHz from left to right is being analysed (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=5832MHz (802.11a WLan) at -42dBm

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

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 seriuos 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 graphics on the right). 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. Even though SPECTRAN® units "only" last 2 to 3 (depending on model) hours with one battery charge, the intelligent "Powerdown mode" enables much longer data logging and measurement timespans. Finally, if this is not enough, the external power supply can be used to extend the recording timespan infinitely.

Daily variation of this RF transmitter discloses EXTREME variation in time

Included in delivery of Spectran HF-60xx Spectrum Analyzer

INCLUDED WITH DELIVERY

- RF spectrum analyzer SPECTRAN HF-6060 V4, HF-6080 V4 or HF-60100 V4
- HyperLOG 7060, 6080 or 60100 EMC/directional antenna
- 1300mAh power battery with charger
- Pistol grip with miniature tripod mode
- SMA toolset
- SMA adapter
- 1m SMA cable
- Sturdy aluminum-design carrycase (with custom padding!)
- Exhaustive manual with lots of basic information, hints and exposure limit tables

SPECTRAN® HF (RF) Spectrum Analyser

APPLICATION EXAMPLES: Measurement of (active) radar, mobile communications, mobile phones, UMTS, DECT phones, transmission towers, WLan, Wifi, Bluetooth, microwaves etc.

	Entrance	Intermediate		Professional			Outdoor
Specifications base unit[1]	HF-2025E	HF-4040	HF-4060	HF-6060V4	HF-6080V4	HF-60100V4	HF-XFR
Frequency Range (min)	700MHz	100MHz	100MHz	10MHz	10MHz	1MHz	1MHz
Frequency Rance (max)	2,5GHz	4GHz	6GHz	6GHz	8GHz	9,4GHz	9,4GHz
Optional PEAK Power-Detector (Maximum usable frequency)[3]	2,5GHz	4GHz	6GHz	6GHz	8GHz	10GHz	10GHz
DANL (Displayed Average Noise Level)[2]	-80dBm	-90dBm	-90dBm	-135dBm(1Hz)	-145dBm(1Hz)	-155dBm(1Hz)	-155dBm(1Hz)
DANL (Displayed Average Noise Level) with Preamp (Option 020)[2]	-	-	-	-150dBm(1Hz)	-160dBm(1Hz)	-170dBm(1Hz)	-170dBm(1Hz)
Max Power at RF input	0dBm	0dBm	0dBm	+10dBm	+10dBm	+40dBm[2]	+40dBm[2]
RBW (resolution bandwidth) (min)	1MHz	100kHz	100kHz	10kHz	3kHz	200Hz[2]	200Hz[2]
RBW (resolution bandwidth) (max)	50MHz	50MHz	50MHz	50MHz	50MHz	50MHz	50MHz
EMC-Filter 200Hz, 9kHz, 120kHz, 200kHz, 1,5MHz, 5MHz	-	-	-	-	-	✓	✓
Demodulator	AM	AM/FM	AM/FM	AM/FM	AM/FM/PM	AM/FM/FM/GSM	AM/FM/FM/GSM
Detector	RMS	RMS	RMS	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax
Units dBm, dBµV, V/m, A/m, W/m² (dBµV/m etc. via PC software)	✓	✓	✓	✓	✓	✓	✓
Internal Datalogger (size). Expandable to 1MB (option 001)	-	64K	64K	64K	64K	64K	harddisk
Lowest SampleTime	100mS	100mS	100mS	10mS	10mS	5mS	5mS
Accuracy (typical)	+/-4dB	+/-3dB	+/-3dB	+/-2dB	+/-2dB	+/-1dB	+/-1dB
Highlights							
Real-time remote control via USB	✓	✓	✓	✓	✓	✓	internal
Calibration setup (antenna, cable, attenuator etc.)	✓	✓	✓	✓	✓	✓	✓
Exposure limit calculation according to ICNIRP, EN55011, EN55022 etc.	ICNIRP only	ICNIRP only	ICNIRP only	ICNIRP only	ICNIRP only	✓	✓
Extended full ICNIRP range	-	-	-	-	-	✓	✓
Suitable for pre-compliance test	-	-	-	-	-	✓	✓
Realtime limit calculation with simultaneous percentage display	-	✓	✓	✓	✓	✓	Analyzer sw
Time-Domain and fast Zero-Span sweep	-	-	-	✓	✓	✓	✓
Vector power measurement (I/Q) and True RMS	-	✓	✓	✓	✓	✓	✓
Simultaneously displays frequency and signal strength	✓	✓	✓	✓	✓	✓	Analyzer sw
Up to 3 marker (showing both frequency and field strength)	-	✓	✓	✓	✓	✓	unlimited
Jog Dial controlled manual marker readout	-	✓	✓	✓	✓	✓	key & touchpad
Write, AVG and Hold function	no AVG	no AVG	no AVG	✓	✓	✓	& Min, Max
DECT and TimeSlot Analyzer	✓	✓	✓	✓	✓	✓	✓
Audio Level Indicator (changes audio frequency vs power level)	-	-	-	✓	✓	✓	-
Free of charge firmware update (via Intenet)	✓	✓	✓	✓	✓	✓	✓
Supports programming of custom P-Code & C++ based custom software	-	✓	✓	✓	✓	✓	✓
14Bit Dual-ADC & DDC Hardware-Filter	-	-	-	✓	✓	✓	✓
150MIPS high performance DSP (Digital Signal Processor)	-	-	-	✓	✓	✓	✓
Large high resolution multifunctional LCD (95mm)	✓	✓	✓	✓	✓	✓	14” TFT
Spectrum display (51x25 pixel)	✓	✓	✓	✓	✓	✓	Analyzer sw
High resolution 50 segment bargraph (trend display)	✓	✓	✓	✓	✓	✓	Analyzer sw
Enhanced, much sharper Aaronia LCD display (3d generation)	-	-	-	✓	✓	✓	14” TFT
Integrated battery charger (supports our optional LiPo battery)	✓	✓	✓	✓	✓	✓	XFR charger
Internal speaker	Piezo	✓	✓	✓	✓	✓	✓

Please continue on next page


HF-2025E


HF-4040


HF-4060


HF-6060 V4


HF-6080 V4


HF-60100 V4


HF-XFR

SPECTRAN® HF (RF) Spectrum Analyser

AARONIA AG WWW.AARONIA.DE

APPLICATION EXAMPLES: Measurement of (active) radar, mobile communications, mobile phones, UMTS, DECT phones, transmission towers, WLan, Wifi, Bluetooth, microwaves etc.

	Entrance	Intermediate		Professional			Outdoor
Connectors / Interface	HF-2025E	HF-4040	HF-4060	HF-6060V4	HF-6080V4	HF-60100V4	HF-XFR
USB 1.1/2.0	✓	✓	✓	✓	✓	✓	2x
Audio output (2,5mm jack)	✓	✓	✓	✓	✓	✓	3,5mm jack
Charger plug (max. 12V)	✓	✓	✓	✓	✓	✓	✓
50Ohm SMA input (f)	✓	✓	✓	✓	✓	✓	✓
Jog Dial (easy usage of menu operation and volume control)	-	✓	✓	✓	✓	✓	key & touchpad
1/4" tripod connector	✓	✓	✓	✓	✓	✓	in-Vehicle docking
Included In Delivery							
Miniature SMA rod sniffer antenna	✓	✓	✓	-	-	-	OmniLOG 90200
HyperLOG EMC directional LogPer antenna (model)	7025	7040	7060	7060	6080	60100	60100 (black)
SPECTRAN 1300mAh rechargable battery (integrated)	✓	✓	✓	✓	✓	✓	6 cell battery
Battery charger and power supply incl. international adapter sit	✓	✓	✓	✓	✓	✓	no adapter set
Aluminum carrying case with foam protection	✓	✓	✓	✓	✓	✓	-
Detailed English manual (on CD)	✓	✓	✓	✓	✓	✓	installed
Analyzer Software for MAC-OS, Linux and Windows (on CD)	✓	✓	✓	✓	✓	✓	installed
SMA tool	✓	✓	✓	✓	✓	✓	✓
SMA adapter	✓	✓	✓	✓	✓	✓	-
Available Options (extra charge)							
Option 001 (1MB memory expansion)	-	✓	✓	✓	✓	✓	harddisk
Option 002 (high accurate 0,5ppm TCXO timebase)	-	-	-	-	-	✓	installed
Option 020 (15dB internal low noise preamplifier, switchable)	-	-	-	✓	✓	✓	installed
Option 20x (Real-time Broadband Peak Power Meter)	✓	✓	✓	✓	✓	✓	✓
Option UBBV1 (40dB external preamplifier 1MHz-1GHz)	-	-	-	✓	✓	✓	✓
Option UBBV2 (40dB external preamplifier DC-8GHz)	-	-	-	✓	✓	✓	✓
Optional Accessories							
USB Cable (special EMC screened version)	✓	✓	✓	✓	✓	✓	installed
3000mAh Lithium Polymer (LiPo) Power-Battery	✓	✓	✓	✓	✓	✓	-
Car Power Adapter (operate or charge via cigarette lighter)	✓	✓	✓	✓	✓	✓	-
Outdoor Rubber Protection (perfect for outdoor usage)	✓	✓	✓	✓	✓	✓	-
Pistol Grip / Miniature Tripod	✓	✓	✓	✓	✓	✓	-
Heavy Multifunctional Pistol Grip	✓	✓	✓	✓	✓	✓	-
Aluminum Tripod (big version)	✓	✓	✓	✓	✓	✓	-
DC-Blocker (protects the input against DC voltage)	✓	✓	✓	✓	✓	✓	✓
20dB Attenuator (expands the measurement range by 20dB)	✓	✓	✓	✓	✓	✓	✓
PBS1 Near Field Probe Set (passive)	-	-	-	-	-	✓	✓
PBS2 Near Field Probe Set (active, incl. UBBV2 preamplifier)	-	-	-	-	-	✓	✓
ADP1 Active Differential Probe (conductive measurement)	-	-	-	-	-	✓	✓
5m or 10m low loss SMA Cable	✓	✓	✓	✓	✓	✓	✓
Calibration Resistor (needed for noise floor calibration, SMA)	-	-	-	✓	✓	✓	✓
Calibration Certificate	✓	✓	✓	✓	✓	✓	✓
Heavy Plastic Carrying Case	✓	✓	✓	✓	✓	✓	-

(1) The new V5 real-time spectrum analyser generation up to 80GHz is already in development. Please contact us for further details!
Preliminary specifications dated 01.02.2011. The V4 and XFR series are available with latest Beta firmware. The Beta firmware is constantly in development. Some functionality may still be limited and not fully to specifications (Beta status). By regularly checking our homepage for updates, you can always keep your measurement device up-to-date. As soon as V1.0 of the firmware is released, all functionality and features will be fully available. Range, sensitivity and accuracy can change depending on frequency, setup, antenna and used parameters. Precision datas are based on Aaronias calibration-reference under specific test conditions. Unless otherwise stated, these specifications are according to the following reference conditions: Ambient temperature 22±3°C, relative air humidity 40% to 60%, continuous wave signal (CW), RMS detection.
V4 and XFR DANL @5,555GHz. Maximum sensitivity of Rev.3 units: -90dBm @2,2GHz.

(2) Standard: +20dBm. Only with optional 20dB attenuator +40dBm. Standard: 1kHz. Only with option 002 down to 200Hz.

(3) Depending on frequency the option 20x offers a sensetivity down to -50dBm and max. +10dBm, with optional 20dB attenuator +30dBm.


HF-2025E


HF-4040


HF-4060


HF-6060 V4


HF-6080 V4


HF-60100 V4


HF-XFR

OPTIONS RF / HF Spectrum Analyzer 60xxx series

Option 001: 1MB memory expansion

This internal memory expansion is a MUST-HAVE particularly when using the data logger, as the standard capacity can quickly become exhausted in this mode. The memory expansion provides space for more than 10,000 logs, while the standard memory will only accomodate approximately 100 of them.
Standard memory size is 64K.

Order/Art.-No.: 180

Option 020: Internal 15dB low-noise preamplifier

This option provides an internal, super low-noise 15dB preamplifier, enabling maximum performance particularly when measuring extremely weak signals. It is switched via a TRUE RF switch. There really is no excuse for not ordering this one, considering its very attractive price!
The maximum sensitivity of the V4 series without option 020 is lower by 15dB.

Order/Art.-No.: 177

Option 002: 0.5PPM TCXO timebase

(Only available for Spectran® HF-60100 V4).
This highly precise TCXO timebase, which has been especially developed for the SPECTRAN®, offers significantly reduced phase noise (jitter). This will allow the use of far narrower filters (in development), which will in turn vastly enhance sensitivity. To fully exploit the maximum sensitivity of the HF-60100 V4, this option is indispensable! Furthermore, the TCXO timebase allows far more accurate frequency measurement and display and is therefore a MUST-HAVE for future applications like time-domain measurements or code-selective measurement of UMTS, all already in development.
The standard accuracy without option 002 is 50ppm.

Order/Art.-No.: 181

Option 20x: 6GHz / 8GHz / 10GHz peak power meter

A 6 to 10GHz peak power meter (3 versions depending on the SPECTRAN® model, see our price list). This option augments your SPECTRAN® with a power meter with up to 10GHz of bandwidth. Furthermore, it allows exact measurement of signal peaks with high crest factor like those occuring in WLAN technology, or extremely short signals, like RADAR bursts. What's more, measurement is performed in REAL TIME and BROADBAND, while at the same time being temperature-compensated. It is also an ideal solution for measurement of cable attenuation or receiver output. Depending on the actual frequency, the power meter provides a sensitivity of up to approx. -50dBm, while the maximum permissible level is +10dBm. By adding our 20dB attenuator (see price list), the maximum measurable signal level can be enhanced to +30dBm or +50dBm!

Order/Art.-No.: 182-x

Option 022: 40dB low-noise preamplifier DC-1GHz

(Only available for Spectran® HF-60100 V4).
This option provides an external, super low-noise 40dB preamplifier, enabling maximum performance particularly when measuring extremely weak signals at a EN55011, EN55022 or EN50371 EMC-test. If you use our BicoLOG antenna or our PBS1 Probeset and EMC-Sniffer this amplifier is a MUST HAVE to get the best performance!
The 40dB preamplifier is already included in the EMC-Bundle1.

Order/Art.-No.: 177-2

Recommended accessories for Aaronia Spectrum Analyzer

Heavy Plastic Carrycase PRO

Shock resistant, heavy version with padding. Offers spaces for 2 SPECTRAN units with all accessories and a HyperLOG 70xx or 60xx antenna. A MUST for the professional user or outdoor usage!

Order/Art.-No.: 243

Pistol grip / miniature tripod

Detachable handle with super-practical miniature tripod mode: this handle is attachable to the backside of the unit and allows optimal handling (esp. for directional measurement) and even fixed installation of the unit. STRONGLY recommended for PC use!

Order/Art.-No.: 280

Aluminum tripod

Height adjustable, high stability. STRONGLY recommended for PC use! Max. height: 105cm.

Order/Art.-No.: 281

Calibration Certificate

Available for all SPECTRAN® units. With detailed calibration sheet.

Order/Art.-No.: 784

USB Cable (Special Version)

To connect your Spectran to the PC. Special version with high performance EMC-ferrite. STRONGLY recommended for PC use!

Order/Art.-No.: 774

1m / 5m / 10m SMA-Cable

High quality special SMA cable for connecting any HyperLOG®-Antenna or BicoLOG®-Antenna with our RF Spectrum-Analyzer. Available as 1m, 5m and 10m Cable. All versions: SMA plug (male) / SMA plug (male).

3000mAh LiPo Power-Battery

Offers a MUCH higher runtime of your SPECTRAN (up to 400%). Strongly recommended for autonomic measurement! The 1300mAh standard-battery will be replaced.

Order/Art.-No.: 254

Car power adapter for mobile use

With power-LED. For charging batteries or operating our units in your car, including special plug.

Order/Art.-No.: 260

Protection rubber

Protect and personalize your SPECTRAN with a sturdy rubber case and keep it scratch-n-dent free. Allows full access to all functions.

Order/Art.-No.: 290

DC-Blocker (SMA)

It prevents the RF-input of the SPECTRAN to be destroyed by the DC-voltages of f.e. DSL/ISDN lines.

Order/Art.-No.: 778

Calibration Resistor (DC-18GHz)

This calibration resistor is necessary for the best possible calibration of the noise-floor of each Spectran V4-Analyzer.

Order/Art.-No.: 779

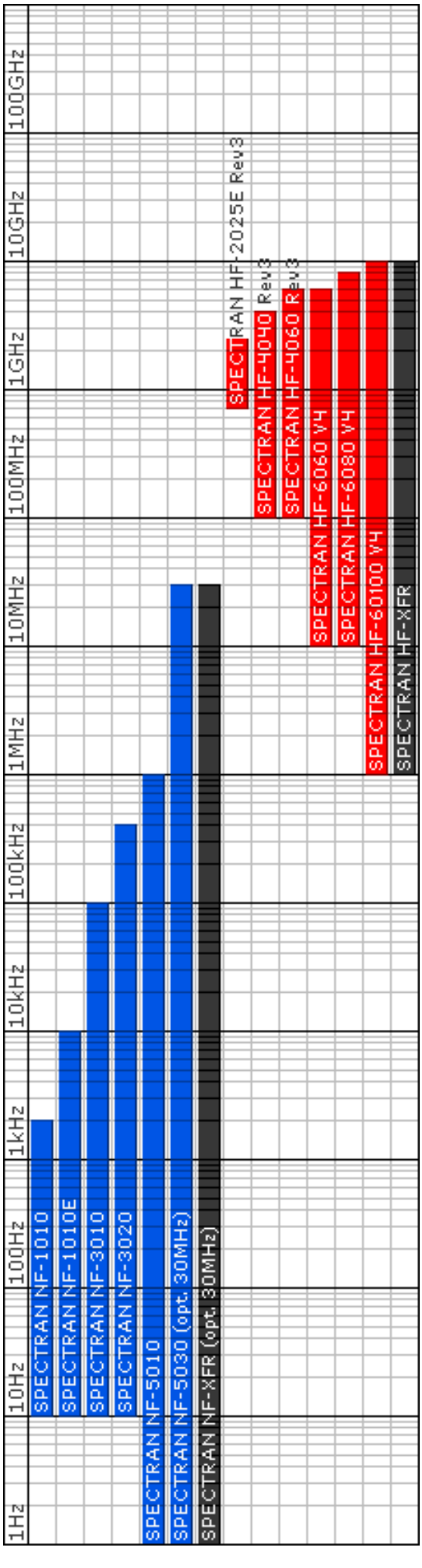
20dB SMA high-end Attenuator

Expands the measurement range to +40dBm. (ONLY SPECTRAN HF-60100 V4 and HF-XFR).

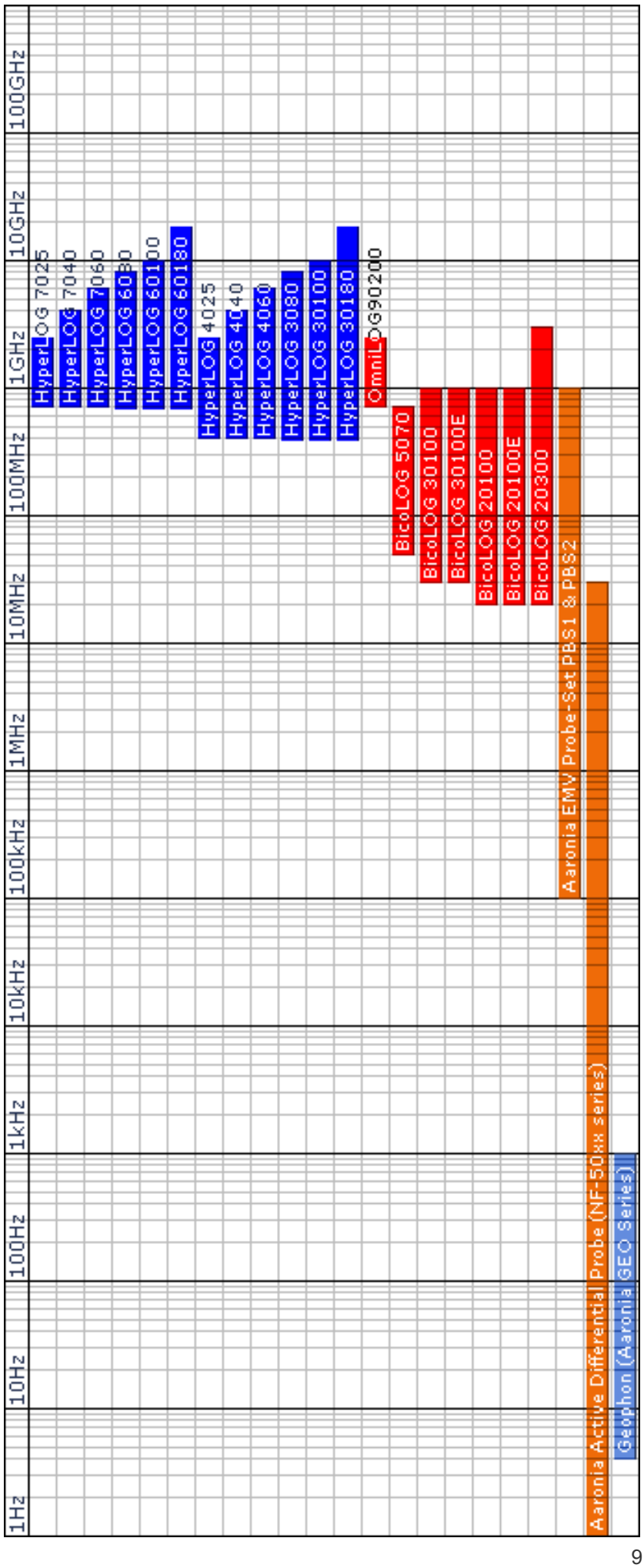
Order/Art.-No.: 775

Frequency overview Analyzer & Antennas

Frequency Overview SIECTRAN Spectrum Analyzer



Frequency Overview HyperLOG and BicoLOG Antennas and Probes



References

User of Aaronia Antennas and Spectrum Analyzers (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

SENSOR+TEST 2011
DIE MESSTECHNIK-MESSE
The Measurement Fair
Nürnberg, Germany
7. – 9.6.2011

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

data sheet

Rev 1.4
12.04.2011

HighEnd Outdoor Spectrum Analyzer SPECTRAN® HF-XFR

Worldwide first "military-standard" Spectrum Analyzer!

Highlights

- Highest performing fully rugged laptop and world´s most sensitive Handheld Analyzer in one device
- Ready to go, LCS-Analyzer-Software already installed
- Ballistic Armor™ Protection System to meet or exceed real world and military standards (MIL-STD-810F)
- Built tough for tough environments

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Technical details

Notebook (based on Dell Latitude E6400XFR)

- Processor: Intel Core 2 Duo P9600(2,66GHz,1.066MHz,6MB) nVidia Quadro NVS 160M, 256MB with express-card and Fingerprint Reader
- 14.1" WXGA (1280 x 800) wide-aspect transmissive display with DirectVue™ technology for outdoor readability
- Memory: 4096MB (2x2048) 800MHz DDR2 Dual Channel
- Primary Storage: 64GB Solid State Drive
- Battery: 6-cell primary battery
- Wireless: Intel WiFi Link 5100 (802.11 a/b/g/n 1X2) 1/2 MiniCard with Centrino label
- 10/100/1000 Gigabit Ethernet-network card
- Keypad: Internal English Qwertz with background light
- Operating System: Windows XP Pro SP3 with Windows Vista Business SP1 Medias
- Ports: IEEE - 1394, docking connector, USB 2.0 (x4), VGA, Display Port, RJ-11 (optional), RJ-45, eSATA, USB PowerShare, headphone/speaker out, mic (all protected behind sealed doors)
- Multi Media: 2 speakers
- Independently Tested to MIL-STD-810F for: 4ft Transit Drop, Aggravated Rain, Blowing Dust, Vibration, Functional Shock, Humidity, Salt Fog, Altitude, Explosive Atmosphere,Temperature Shock, and Temperature Extremes (Operating: -20ºF to 145ºF (-29ºC to 63ºC); Non-Operating: -58ºF to 160ºF (-50ºC to 71ºC))
- IP-65 Certified Protection – Dust-Tight and Protected against Pressurized Water Ingress
- UL1604 Certified for Hazardous Locations (Class 1, Division 2, Zones A, B, C, D)
- Weight: 8.5 lbs/3.9 kg
- Width: 13.9"/353.06 mm
- Depth: 10.1-11.5"/257.6-293.1 mm
- Height: 2.2"/55.88 mm

Spectrum Analyzer (based on Spectran HF-60100 V4)

- Frequency range: 1MHz - 9,4GHz*
- 14Bit Dual-ADC
- DDC Hardware-Filter
- 150 MIPS DSP (CPU)
- AVG Noise Level (DANL): -170dBm(1Hz)*
- AbsMax Level: +20dBm
- AbsMax Level: +40dBm (Option)
- Filter bandwith (RBW) Min: 200Hz
- Filter bandwith (RBW) Max: 50MHz
- EMC-Filter (RBW): 9kHz, 120kHz, 5MHz; 20MHz; 40MHz
- Lowest possible SampleTime : 1mS
- Accuracy (typical) : +/- 1dB
- Vector power measurement (I/Q) and True RMS
- AM/FM/PM Demodulation
- Extended full ICNIRP range
- Standards-conformant exposure limits (ICNIRP, BGV B11, BImSchV etc.)
- Fast ZERO-SPAN sweep
- HOLD Mode
- Time-Slot-Analyzer

Application examples SPECTRAN® HF-XFR Spectrum Analyzer

Analysis and measurement of:

- GSM900
- DECT
- GSM1800
- UMTS
- WLAN
- Microwave ovens
- WiFi
- WiMax
- Radar
- 5GHz WLan
- PAR-Radar
- UWB (FB1-FB12)

Description

Real World Rugged

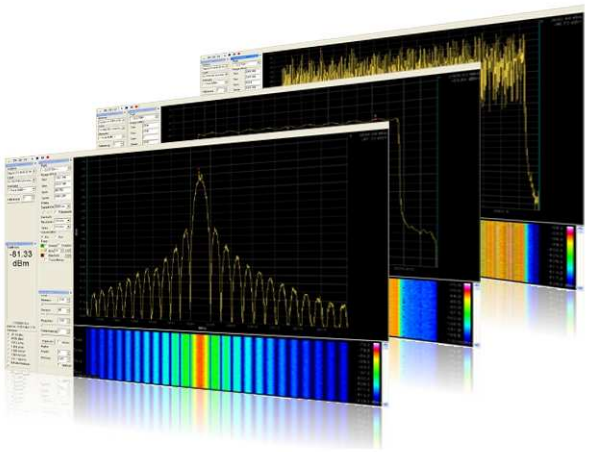
Built for tough environments, the SPECTRAN HF-XFR rises to the challenges you face every workday. The HF-XFR is built to be ready out of the box to withstand pounding rain, blowing dust and dirt, extreme temperatures, accidental drops and more.
Key rugged features include:

- The exclusive Ballistic Armor Protection System featuring PR481™ chassis material provides twice the impact strength versus traditional magnesium alloy.
- The SPECTRAN HF-XFR with Ballistic Armor Protection enables excellent protection and is the first in its class to meet a 4ft drop specification.
- With PrimoSeal™ technology we provide the highest combined Ingress protection rating (IP65), for enhanced protection against blowing dust and liquid.

Integrated Spectrum Analyzer (based on the Spectran HF-60100 V4)

The PROFESSIONAL PC analysis software demonstrates SPECTRAN's vast capabilities.

- 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.
- 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 firmwares.
- etc. etc. etc.



Screenshots from the SPECTRAN HF-XFR

Inspired Design

SPECTRAN HF-XFR features securely sealed port covers and a wide range of key peripherals to work wherever you need it to.

- Work in direct sunlight with the large 14.1" wide-aspect LCD featuring DirectVue™ Technology LCD.
- Vehicle docking allows flexibility for police and field technicians to mount systems directly in their vehicles where they work.
- Secure, simple, locking doors with PrimoSeal™ for exceptional protection while working in wet or dusty conditions.

Uncompromising Performance

The high performing, fully rugged laptop is the first in its class to ship with both Intel® Core™2 Duo Processor with vPro™ technology.
The SPECTRAN HF-XFR has brains as well as brawn.

- QuadCool™ Thermal Management System enables the XFR to meet the MIL-STD for temperature extremes and supports world-class performance, while running the latest Intel® Core™2 Duo Processors.
- Extended field use batteries equipped with ExpressCharge enables primary battery re-charge times up to 2 times faster than Panasonic CF-30.

Included in delivery

- SPECTRAN HF-XFR Outdoor Spectrum Analyzer
- HyperLOG 60100 EMC LogPer Antenna (black) with Pistolgrip
- OmniLOG 90200 miniature Broadbandantenna
- 1m SMA-cable
- SMA-Tool
- Battery
- Battery charger
- Detailed english manual

The SPECTRAN HF-XFR was built for tough environments

SPECTRAN® USB Spectrum Analyser

APPLICATION EXAMPLES: Pre-Compliance test, conductive EMC/EMI test, exposure limit measurement etc.

	Professional				Outdoor	
Specifications basic unit[1]	NF-5030 X	HF-6060V4 X	HF-6080V4 X	HF-60100V4 X	NF-XFR	HF-XFR
Frequency Range (min)	1Hz	10MHz	10MHz	1MHz	1Hz	1MHz
Frequency Range (max)	30MHz	6GHz	8GHz	9,4GHz	30MHz[2]	9,4GHz
Optional PEAK Power-Detector (Maximum usable frequency)[3]	-	6GHz	8GHz	10GHz	-	10GHz
DANL (Displayed Average Noise Level)[2]	200nV	-135dBm(1Hz)	-145dBm(1Hz)	-155dBm(1Hz)	200nV	-155dBm(1Hz)
DANL (Displayed Average Noise Level) with Preamp (Option 020)[2]	-	-150dBm(1Hz)	-160dBm(1Hz)	-170dBm(1Hz)	-	-170dBm(1Hz)
Max. Power at RF input	2V[2]	+10dBm	+10dBm	+40dBm[2]	2V[2]	+40dBm[2]
RBW (Resolution bandwidth) (min)	0,3Hz	10kHz	3kHz	200Hz[2]	0,3Hz	200Hz
RBW (Resolution bandwidth) (max)	1MHz	50MHz	50MHz	50MHz	1MHz	50MHz
EMC Filter 200Hz, 9kHz, 120kHz, 200kHz, 1,5MHz, 5MHz	-	-	-	✓	-	✓
Demodulator	AM/FM	AM/FM	AM/FM/PM	AM/FM/PM/GSM	AM/FM	AM/FM/PM/GSM
Detector	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax
Units dBm, dBµV, V/m, A/m, W/m² (dBµV/m, W/cm² etc. via PC software)	V, dBV	✓	✓	✓	V, dBV	✓
Lowest Sample Time	10mS	10mS	10mS	5mS	10mS	5mS
Accuracy (typical)	+/-3%	+/-2dB	+/-2dB	+/-1dB	+/-3%	+/-1dB
Highlights						
Real-time remote control via USB	✓	✓	✓	✓	internal	internal
Calibration setup (antenna, cable, attenuator etc.)	✓	✓	✓	✓	✓	✓
Exposure limit calculation according to ICNIRP, EN55011, EN55022 etc.	✓	ICNIRP only	ICNIRP only	✓	✓	✓
Extended full ICNIRP range	-	-	-	✓	-	✓
Suitable for Pre-Compliance test	✓	-	-	✓	✓	✓
Suitable for conductive EMC/EMI test	✓	-	-	✓	✓	✓
Real-time limit calculation, limit line display and limit percentage bar display	✓	✓	✓	✓	✓	✓
Time Domain and fast Zero Span sweep incl. DECT and Time Slot Analyzer	-	✓	✓	✓	-	✓
Unlimited longtime recording and playback feature	✓	✓	✓	✓	✓	✓
Simultaneously displays frequency and signal strength	✓	✓	✓	✓	✓	✓
Multiple unit handling and unlimited multiple window handling	✓	✓	✓	✓	✓	✓
Number of marker (showing frequency and field strength simultaneously)	unlimited	unlimited	unlimited	unlimited	unlimited	unlimited
Spectrum, waterfall, persistance and level vs time display	✓	✓	✓	✓	✓	✓
Sweep, AVG, Max, Min and Hold function	✓	✓	✓	✓	✓	✓
Unlimited number of sweep points, resolution and display size	✓	✓	✓	✓	14” TFT	14” TFT
Supports programming of custom P-Code, C++ based custom software support	✓	✓	✓	✓	✓	✓
Free of charge firmware update (via Intenet)	✓	✓	✓	✓	✓	✓
14Bit Dual-ADC & DDC hardware filter	-	✓	✓	✓	-	✓
150MIPS high performance DSP (Digital Signal Processor)	-	✓	✓	✓	-	✓
Vector power measurement (I/Q) and True RMS	✓	✓	✓	✓	✓	✓
Solid 3mm aluminum housing with excellent shielding performance	✓	✓	✓	✓	-	-
Integrated rechargable battery	-	-	-	-	✓	✓
Internal speaker	✓	✓	✓	✓	✓	✓

Please continue on next page

NF-5030 X

HF-6060 X

HF-6080 X

HF-60100 X

NF-XFR

HF-XFR

SPECTRAN® USB Spectrum Analyser

APPLICATION EXAMPLES: Pre-Compliance test, conductive EMC/EMI test, exposure limit measurement etc.

	Professional				Outdoor	
Connectors / Interface	NF-5030 X	HF-6060V4 X	HF-6080V4 X	HF-60100V4 X	NF-XFR	HF-XFR
50Ohm SMA input (f)	high impedance	✓	✓	✓	high impedance	✓
USB 1.1/2.0	✓	✓	✓	✓	2x	2x
Audio output (2,5mm jack)	✓	✓	✓	✓	3,5mm jack	3,5mm jack
Charger plug (max. 12V)	✓	✓	✓	✓	✓	✓
Included In Delivery						
HyperLOG EMC directional LogPer antenna (model)	-	-	-	-	-	60100 (black)
OmniLOG 90200 radial isotropic antenna	-	✓	✓	✓	-	✓
Rechargable Battery	-	-	-	-	✓	✓
Battery charger and/or power supply incl. international adapter set	✓	✓	✓	✓	no adapter set	no adapter set
Aluminum carrying case with foam protection	✓	✓	✓	✓	-	-
Detailed English manual (on CD)	✓	✓	✓	✓	installed	installed
Analyzer Software for MAC-OS, Linux and Windows (on CD)	✓	✓	✓	✓	installed	installed
1m SMA Cable	-	-	-	-	-	✓
SMA Tool	✓	✓	✓	✓	✓	✓
USB Cable (special EMC screened version)	✓	✓	✓	✓	installed	installed
Available Options (extra charge)						
Option 002 (high accurate 0,5ppm TCXO timebase)	-	-	-	✓	-	installed
Option 005 (12Bit DDC for ultra high sensitivity)	✓	-	-	-	installed	-
Option 008 (20MHz frequency expansion. New range: 1Hz-20MHz)	✓	-	-	-	installed	-
Option 010 (30MHz frequency expansion. New range: 1kHz-30MHz)	✓	-	-	-	✓	-
Option 020 (15dB internal low noise preamplifier, switchable)	-	✓	✓	✓	-	installed
Option 20x (Real-time Broadband Peak Power Meter)	-	✓	✓	✓	-	✓
Option UBBV1 (40dB external preamplifier 1MHz-1GHz)	-	✓	✓	✓	-	✓
Option UBBV2 (40dB external preamplifier DC-8GHz)	✓	✓	✓	✓	✓	✓
Optional Accessories						
DC-Blocker (protects the input against DC voltage)	✓	✓	✓	✓	✓	✓
20dB Attenuator (expands the measurement range by 20dB)	✓	✓	✓	✓	✓	✓
PBS1 Near Field Probe Set (passive)	-	-	-	✓	-	✓
PBS2 Near Field Probe Set (active, incl. UBBV2 preamplifier)	✓	-	-	✓	✓	✓
ADP1 Active Differential Probe (conductive measurement)	✓	-	-	✓	✓	✓
GEO10 Vibrationsensor (4Hz-1kHz)	✓	-	-	-	✓	-
GEO14 Vibrationsensor (10Hz-1kHz)	✓	-	-	-	✓	-
5m or 10m low loss SMA cable	-	✓	✓	✓	-	✓
Calibration Resistor (for noise floor calibration, SMA)	-	✓	✓	✓	-	✓
Calibration Certificate	✓	✓	✓	✓	✓	✓

[1] The new V5 real-time spectrum analyser generation up to 80GHz is already in development. Please contact us for further details!
Preliminary specifications dated 01.02.2011. The NF, V4 and XFR series are available with latest Beta firmware. The Beta firmware is constantly in development. Some functionality may still be limited and not fully to specifications (Beta status). By regularly checking our homepage for updates, you can always keep your measurement device up-to-date. As soon as V1.0 of the firmware is released, all functionality and features will be fully available. Range, sensitivity and accuracy can change depending on frequency, setup, antenna and used parameters. Precision datas are based on Aaronias calibration-reference under specific test conditions. Unless otherwise stated, these specifications are according to the following reference conditions: Ambient temperature 22±3°C, relative air humidity 40% to 60%, continuous wave signal (CW), RMS detection.

[2] V4 DANL @5,555GHz. V4 internal: +20dBm. V4 external (with optional 20dB attenuator): +40dBm. V4 standard: 1kHz. Only with option 002 down to 200Hz.
NF standard: 1MHz. Only with option 010 up to 30MHz. NF standard: 200mV. Only with optional 20dB Attenuator up to 2V.

[3] Depending on frequency the option 20x offers a sensetivity down to -50dBm and max. +10dBm, with optional 20dB attenuator +30dBm.

NF-5030 X

HF-6060 X

HF-6080 X

HF-60100 X

NF-XFR

HF-XFR

Options Spectrumanalyzer SPECTRAN HF-XFR

Included in delivery:

Option 020: Internal 15dB low-noise preamplifier

This option provides an internal, super low-noise 15dB preamplifier, enabling maximum performance particularly when measuring extremely weak signals. It is switched via a TRUE RF switch. There really is no excuse for not ordering this one, considering its very attractive price!
The maximum sensitivity of the V4 series without option 020 is lower by 15dB.

Order/Art.-No.: 177

Option 002: 0,5PPM TCXO timebase

This highly precise TCXO timebase, which has been especially developed for the SPECTRAN®, offers significantly reduced phase noise (jitter). This will allow the use of far narrower filters (in development), which will in turn vastly enhance sensitivity. To fully exploit the maximum sensitivity of the HF-60100 V4, this option is indispensable! Furthermore, the TCXO timebase allows far more accurate frequency measurement and display and is therefore a MUST-HAVE for future applications like time-domain measurements or code-selective measurement of UMTS, all already in development.
The standard accuracy without option 002 is 50ppm.

Order/Art.-No.: 181

OmniLOG 90200 broadband antenna

The OmniLOG® 90200 Antenna is specially developed for a quasi isotropic (radial isotropic) measurement in the GSM (GSM900, GSM1800, GSM1900), UMTS and 2,4GHz WLAN frequency ranges. It fits perfectly in addition to our SPECTRAN measurement devices.
Compared to our HyperLOG-Antennas, the OmniLOG antenna offers the possibility for a direct, radial measurement of field strength without the need to move the antenna to the source. This offers the possibility to get a direct field strength reading without any hassle.

Order/Art.-No.: 177-2

Available options (extra charge):

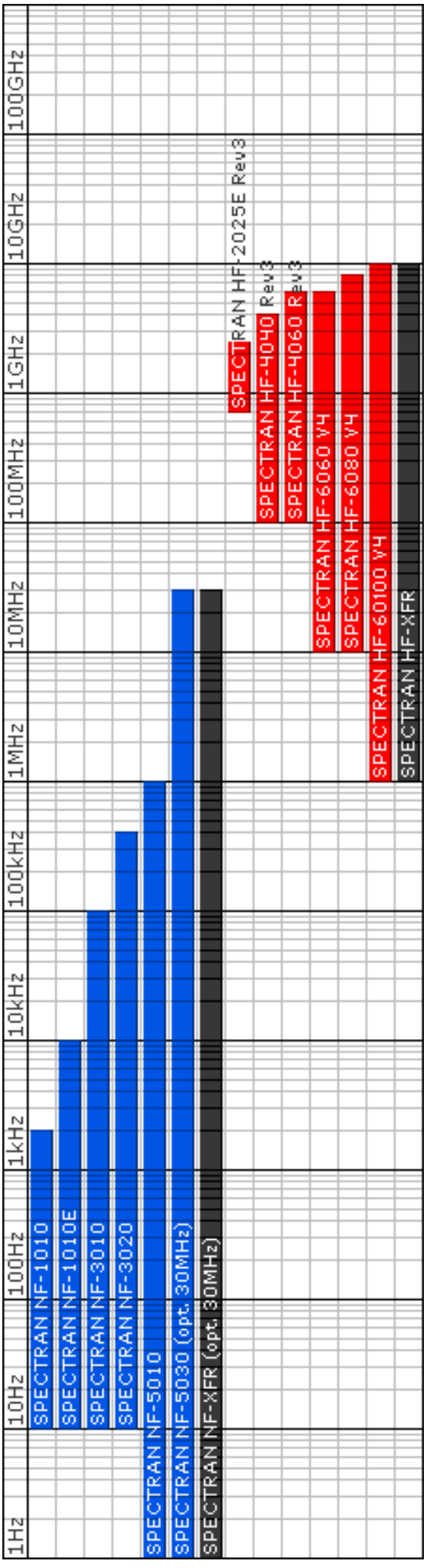
Option 022: 40dB low-noise preamplifier DC-8GHz

This option provides an external, super low-noise 40dB preamplifier, enabling maximum performance particularly when measuring extremely weak signals at a EN55011, EN55022 or EN50371 EMC-test. If you use our BicoLOG antenna or our PBS1 Probeset and EMC-Sniffer this amplifier is a MUST HAVE to get the best performance!
The 40dB preamplifier is already included in the EMC-Bundle1.

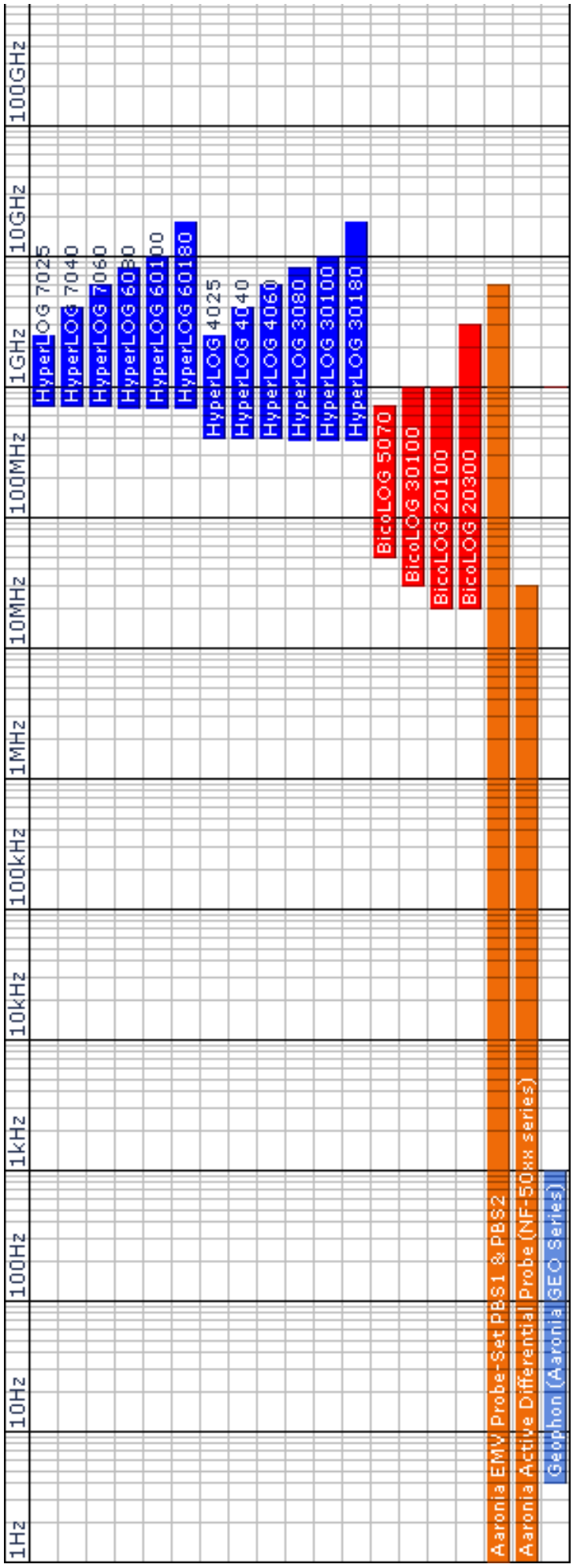
Order/Art.-No.: 177-2

Frequency overview Analyzer & Antennas

Frequency Overview SPECTRAN Spectrum Analyzer



Frequency Overview HyperLOG and BicoLOG Antennas and Probes



References

User of Aaronia Antennas and Spectrum Analyzers (Examples)

Government, Military, Aeronautic, Astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

SENSOR+TEST 2011
DIE MESSTECHNIK-MESSE
The Measurement Fair
Nürnberg, Germany
7. – 9.6.2011

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet

Rev 1.7
02.08.2011

Low cost EMF Spectrum Analyzer Series SPECTRAN® 10xx

Cost-effective, easy-to-use LF measurement unit for the novice

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.

10 Years Warranty

Designed and Conforms to 92/31/EWG 98/336/EWG EN50082-1 EN55011

Made in Germany

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Specifications

SPECTRAN® NF-1010 (10Hz to 2kHz)

- Frequency range: 10Hz to 2kHz*
- Typ. level range E-Field: 1V/m to 2.000 V/m*
- Typ. level range H-Field: 10nT to 100.000nT*
- Typ. precision: 5% *
- Easy to use
- Superfast FFT spectrum analysis
- High-performance DSP (Digital Signal Processor)
- 3D magnetic field measurement
- Frequency and signal strength display!
- High-resolution multi-function display
- Incl. battery, charger & aluminum transportcase
- Dimensions (L/W/D): (260x86x23) mm
- Weight: 420gr
- **Warranty: 10 years**

SPECTRAN® NF-1010E (10Hz to 10kHz)

- Frequency range: 10Hz to **10kHz***
- Typ. level range E-Field: 1V/m to 2.000 V/m*
- Typ. level range H-Field: 10nT to 100.000nT*
- Typ. precision: 5% *
- REALTIME FFT spectrum display
- 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!
- Internet Flash Software-Updates
- **USB 2.0 Interface**
- Simultaneous M-Display X, Y, Z axes
- Average (AVG) measurement
- PEAK Hold
- Incl. battery, charger & aluminum transportcase
- Dimensions (L/W/D): (260x86x23) mm
- Weight: 420gr
- **Warranty: 10 years**

Application Examples Spectran NF-10xx Spectrum Analyzer

Analysis and measurement of:

- traction power
- power lines
- power cables
- harmonics

CE

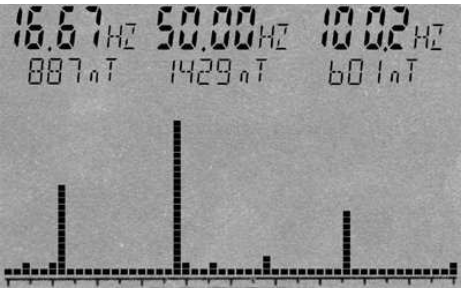
USB 2.0 ready

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).

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



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

Spectrum ANALYSIS

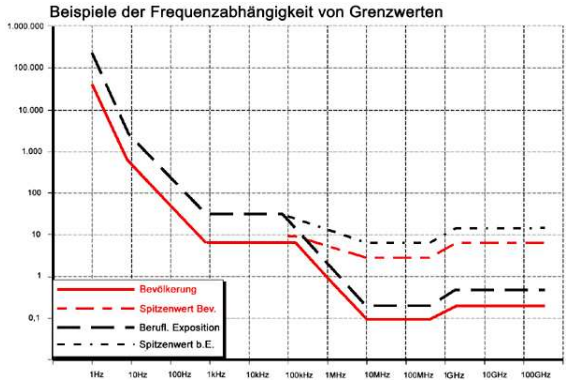
Real ANALYSIS:
Professional EMF measurement devices use a frequency dependant measurement approach, the so-called spectrum analysis. In a certain frequency range, the individuals signals and their respective strengths are being broken down, for example into a "bargraph" display (see SPECTRAN® screenshot 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:

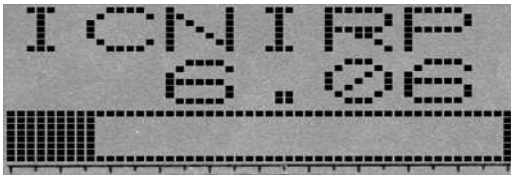
Signal#1=30Hz at 45µT
Signal#2=50 (mains power) at 75µT

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 indispensible, 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-banwidth (depending on frequency). Hence, even the novice can perform exposure limit calculations ACCORDING TO STANDARDS without having to use complex tables and calculators.



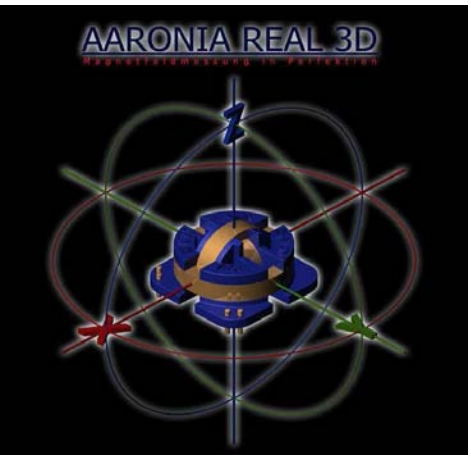
Graphic display of frequency-dependant exposure limits.



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

Lots of power: The rechargeable Aaronia NiMH battery

Superlong operating time:
The Aaronia NiMH high-performance battery 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.



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 seperately. 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 independant 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-10xx
- 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 (PDF-document)


Package contents SPECTRAN 10xx devices

SPECTRAN® NF (EMF) Spectrum Analyser

AARONIA AG WWW.AARONIA.DE

APPLICATION EXAMPLES: Traction power, power lines and cables incl. harmonics, transformer, switching power supplies, RFID, TFTs, DSL etc. Various appliances in home and office.

	Entrance		Intermediate		Professional		Outdoor
Specifications base unit[1]	NF-1010	NF-1010E	NF-3010	NF-3020	NF-5010	NF-5030	NF-XFR
Frequency Range (min)	10Hz	10Hz	10Hz	10Hz	1Hz	1Hz	1Hz
Frequency Rance (max)	2kHz	10kHz	100kHz	400kHz	1MHz	30MHz[2]	30MHz[2]
Electric field [V/m] (min) (typical)	1V/m	1V/m	1V/m	1V/m	1V/m	0,1V/m[2]	see opt. PBS2
Electric field [V/m] (max) (typical)	2.000V/m	2.000V/m	5.000V/m	5.000V/m	5.000V/m	20kV/m	see opt. PBS2
Magnetic field [Tesla] (min (typical)	10nT	10nT	1nT	1nT	1nT	1pT[2]	see opt. PBS2
Magnetic field [Tesla] (max) typical	100µT	100µT	100µT	100µT	100µT	2mT[2]	see opt. PBS2
Magnetic field [Gauss] (min (typical)	100µG	100µG	10µG	10µG	10µG	10nG[2]	see opt. PBS2
Magnetic field [Gauss] (max) typical	1G	1G	1G	1G	1G	20G[2]	see opt. PBS2
Analog input [V] (min) typical	-	-	-	2µV	2µV	200nV[2]	200nV[2]
Analog input [V] (max) typical	-	-	-	200mV	200mV	2V[2]	2V[2]
RBW (resolution bandwidth) (min)	1Hz	1Hz	1Hz	1Hz	1Hz	0,3Hz	0,3Hz
RBW (resolution bandwidth) (max)	1kHz	3kHz	30kHz	100kHz	300kHz	1MHz	1MHz
Demodulator	-	-	AM	AM	AM/FM	AM/FM	AM/FM
Units (additional units via PC software)	V/m, T, G	V/m, T, G	V/m, T, G	V, V/m, T, G	V, V/m, T, G, A/m	V, V/m, T, G, A/m	V, dBV
Detector	RMS	RMS	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax
Internal Datalogger (size). Expandable to 1MB (option 001)	-	-	64K	64K	64K	64K	harddisk
FFT resolution (points)	64	64	64	64	1024	1024	1024
Lowest Sample Time	50mS	50mS	50mS	50mS	10mS	10mS	10mS
Accuracy (typical)	5%	5%	5%	5%	3%	3%	3%
Highlights							
Real-time remote control via USB	-	✓	✓	✓	✓	✓	internal
Integrated electric (E) & isotropic magnetic (H) sensor/antenna	✓	✓	✓	✓	✓	✓	-
3D, 2D or 1D mode switchable (only magnetic field sensor)	-	✓	✓	✓	✓	✓	✓
Calibration setup (selected antenna)	✓	✓	✓	✓	✓	✓	✓
Exposure limit calculation according to ICNIRP, BGV B11, BImSchV etc.	-	✓	✓	✓	✓	✓	✓
Extended full ICNIRP range	-	-	-	-	-	✓	✓
Suitable for Pre-Compliance test	-	-	-	-	-	✓	✓
Real-time limit calculation with simultaneous percentage display	-	✓	✓	✓	✓	✓	Analyzer sw
Vector power measurement (I/Q) and True RMS	-	-	✓	✓	✓	✓	✓
Enhanced DFT spectrum analysis	-	✓	✓	✓	✓	✓	✓
Simultaneously displays frequency and signal strength	-	-	✓	✓	✓	✓	Analyzer sw
Up to 3 marker (showing both frequency and field strength)	-	✓	✓	✓	✓	✓	unlimited
Jog Dial controlled manual marker readout	-	-	✓	✓	✓	✓	key & touchpad
Linear or logarithmic spectrum display (log10, log100, log1000)	-	✓	✓	✓	✓	✓	unlimited
Automatic reference level adjustment (switchable)	-	✓	✓	✓	✓	✓	✓
Hold function	-	✓	✓	✓	✓	✓	unlimited
Free of charge firmware update (via Intenet)	-	✓	✓	✓	✓	✓	✓
Supports programming of custom P-Code & C++ based custom software	-	-	✓	✓	✓	✓	✓
High performance DSP (Digital Signal Processor)	✓	✓	✓	✓	✓	✓	✓
Large, high resolution multifunctional LCD (95mm)	✓	✓	✓	✓	✓	✓	14” TFT
Spectrum display (51x25 pixel)	✓	✓	✓	✓	✓	✓	Analyzer sw
High resolution 50 segment bargraph (trend display)	✓	✓	✓	✓	✓	✓	Analyzer sw
Enhanced, much sharper Aaronia LCD display (3d generation)	-	-	-	-	-	✓	14” TFT
Integrated battery charger (supports our optional LiPo battery)	✓	✓	✓	✓	✓	✓	XFR charger
Internal speaker	Piezo	Piezo	✓	✓	✓	✓	✓

Please continue on next page

NF-1010

NF-1010E

NF-3010

NF-3020

NF-5010

NF-5030

NF-XFR

SPECTRAN® NF (EMF) Spectrum Analyser

AARONIA AG WWW.AARONIA.DE

APPLICATION EXAMPLES: Traction power, power lines and cables incl. harmonics, transformer, switching power supplies, RFID, TFTs, DSL etc. Various appliances in home and office.

	Entrance		Intermediate		Professional		Outdoor
Connectors / Interface	**NF-1010**	**NF-1010E**	**NF-3010**	**NF-3020**	**NF-5010**	**NF-5030**	**NF-XFR**
SMA input (f) with high impedance	-	-	-	✓	✓	✓	✓
USB 1.1/2.0	-	✓	✓	✓	✓	✓	2x
Audio output (2,5mm jack)	✓	✓	✓	✓	✓	✓	3,5mm jack
Charger plug (max. 15V)	✓	✓	✓	✓	✓	✓	✓
Jog Dial (easy usage of menu, marker and volume control)	-	-	✓	✓	✓	✓	key & touchpad
1/4” tripod connector	✓	✓	✓	✓	✓	✓	in-Vehicle docking
Included In Delivery							
Integrated electric (E) & isotropic magnetic (H) sensor/antenna	✓	✓	✓	✓	✓	✓	-
SPECTRAN 1300mAh rechargable battery (integrated)	✓	✓	✓	✓	✓	✓	6 cell battery
Battery charger and power supply incl. international adapter set	✓	✓	✓	✓	✓	✓	no adapter set
Aluminum carrying case with foam protection	✓	✓	✓	✓	✓	✓	-
Detailed English manual (on CD)	✓	✓	✓	✓	✓	✓	installed
Analyzer Software for MAC-OS, Linux and Windows (on CD)	-	✓	✓	✓	✓	✓	installed
SMA tool	-	-	-	-	-	✓	✓
Available Options (extra charge)							
Option 001 (1MB memory expansion)	-	-	-	-	✓	✓	harddisk
Option 005 (12Bit DDC for ultra high sensitivity)	-	-	-	-	-	✓	installed
Option 006 (Isotropic static magnetic field sensor)[1]	-	-	-	-	-	✓	-
Option 008 (20MHz expansion. New range: 1Hz-20MHz)	-	-	-	-	-	✓	installed
Option 009 (24Bit resolution for Option 006)	-	-	-	-	-	✓	-
Option 010 (30MHz expansion. New range: 1KHz-30MHz)	-	-	-	-	-	✓	✓
Option UBBV2 (40dB external preamplifier DC-8GHz)	-	-	-	-	-	✓	✓
Optional Accessories							
USB Cable (Special Version)	-	✓	✓	✓	✓	✓	installed
3000mAh Lithium Polymer (LiPo) Power-Battery	✓	✓	✓	✓	✓	✓	-
Car Power Adapter (operate or charge via cigarette lighter)	✓	✓	✓	✓	✓	✓	-
Outdoor Rubber Protection (perfect for outdoor usage)	✓	✓	✓	✓	✓	✓	-
Pistol Grip / Miniature Tripod	✓	✓	✓	✓	✓	✓	-
Aluminum Tripod (big version)	✓	✓	✓	✓	✓	✓	-
DC-Blocker (protects the input against DC voltage)	-	-	-	-	-	✓	✓
20dB Attenuator (offers a higher maximum voltage up to 2V)	-	-	-	-	-	✓	✓
PBS1 Near Field Probe Set (passive)	-	-	-	-	-	✓	✓
PBS2 Near Field Probe Set (active, incl. UBBV2 preamplifier)	-	-	-	-	-	✓	✓
ADP1 Active Differential Probe (conductive measurement)	-	-	-	-	-	✓	✓
GEO10 Vibrationsensor (4Hz-1kHz)	-	-	-	-	-	✓	✓
GEO14 Vibrationsensor (10Hz-1kHz)	-	-	-	-	-	✓	✓
Calibration Certificate	✓	✓	✓	✓	✓	✓	✓
Heavy Plastic Carrying Case	✓	✓	✓	✓	✓	✓	-

[1] Preliminary specifications dated 01.07.2011. Range, sensitivity and accuracy can change depending on frequency, setup, antenna and used parameters. Precision datas are based on Aaronias calibration-reference under specific test conditions. Unless otherwise stated, these specifications are according to the following reference conditions: Ambient temperature 22±3°C, relative air humidity 40% to 60%, continuous wave signal (CW), RMS detection.
Option 006 offers a range of 100µG-6G (10nT-600µT). You can "zero" the static field sensor (Option 006) by using our "Zero Gauss" chamber.
NF standard: 1MHz. Only with option 010 up to 30MHz. NF standard: 1nT. Only with option 005 down to 1pT. NF standard 2µV. Only with option 005 down to 200nV. NF standard: 200mV. Only with optional 20dB
[2] Attenuator up to 2V.


NF-1010


NF-1010E


NF-3010


NF-3020


NF-5010


NF-5030


NF-XFR

Recommended accessories for Aaronia Spectrum Analyzer

Heavy Plastic Carrycase PRO

Shock resistant, heavy version with padding. Offers spaces for 2 SPECTRAN units with all accessories and a HyperLOG 70xx or 60xx antenna. A MUST for the professional user or outdoor usage!

Order/Art.-No.: 243

Pistol grip / miniature tripod

Detachable handle with super-practical miniature tripod mode: this handle is attachable to the backside of the unit and allows optimal handling (esp. for directional measurement) and even fixed installation of the unit. STRONGLY recommended for PC use!

Order/Art.-No.: 280

Aluminum tripod

Height adjustable, high stability. STRONGLY recommended for PC use! Max. height: 105cm.

Order/Art.-No.: 281

Calibration Certificate

Available for all SPECTRAN® units. With detailed calibration sheet.

Order/Art.-No.: 784

USB Cable (Special Version)

To connect your Spectran to the PC. Special version with high performance EMC-ferrite. STRONGLY recommended for PC use!

Order/Art.-No.: 774

Protection rubber

Protect and personalize your SPECTRAN with a sturdy rubber case and keep it scratch-n-dent free. Allows full access to all functions.

Order/Art.-No.: 290

3000mAh LiPo Power-Battery

Offers a MUCH higher runtime of your SPECTRAN (up to 400%). Strongly recommended for autonomic measurement! The 1300mAh standard-battery will be replaced.

Order/Art.-No.: 254

Car power adapter for mobile use

With power-LED. For charging batteries or operating our units in your car, including special plug.

Order/Art.-No.: 260

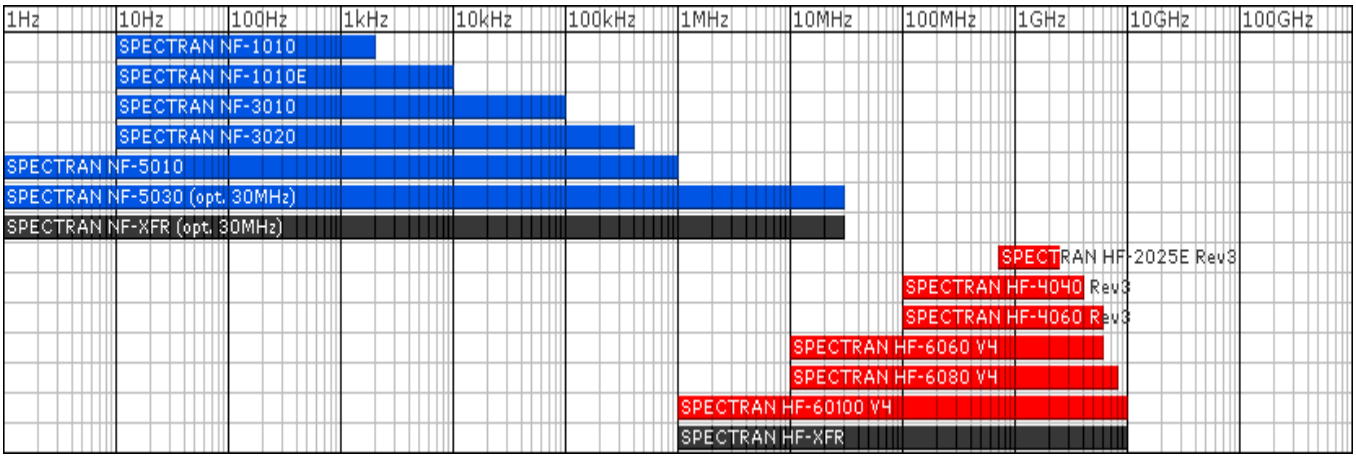
DC-Blocker (SMA)

It prevents the RF-input of the SPECTRAN to be destroyed by the DC-voltages of f.e. DSL/ISDN lines.

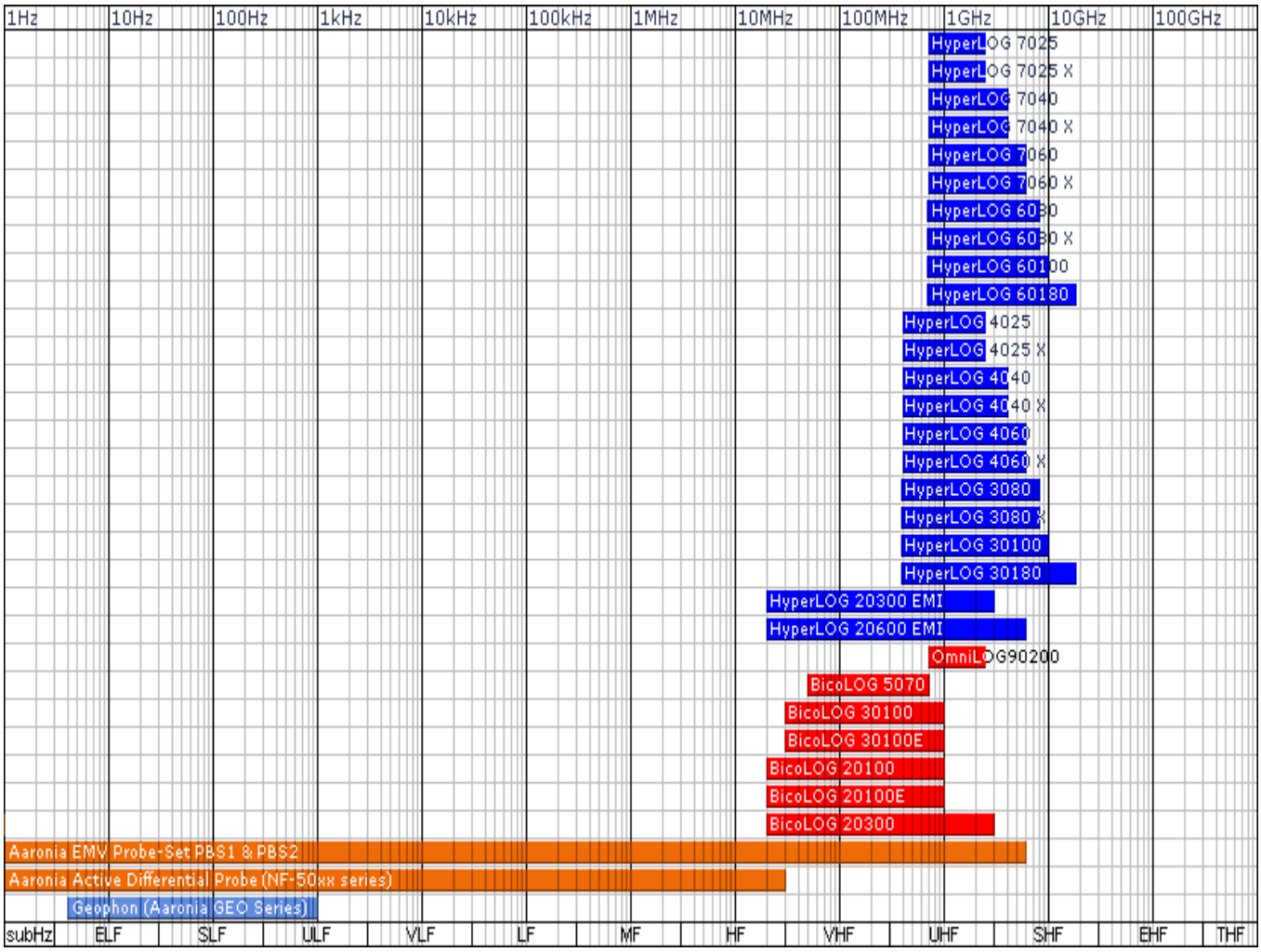
Order/Art.-No.: 778

Frequency overview Analyzer & Antennas

Frequency Overview SPECTRAN Spectrum Analyzer



Frequency Overview HyperLOG and BicoLOG Antennas and Probes



References

User of Aaronia Antennas and Spectrum Analyzers (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet

Rev 1.7
02.08.2011

EMF Spectrum Analyzer SPECTRAN® 30xx series

Measure electric and magnetic fields

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.

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Specifications

SPECTRAN® NF-3010 (10Hz to 100kHz)

- Frequency range: 10Hz to 100kHz
- Typ. level range E-Field: 1V/m to 5.000 V/m
- Typ. level range H-Field: 1nT to 100.000nT
- Typ. precision: 5%
- Superfast FFT spectrum analysis
- High-performance DSP (Digital Signal Processor)
- 3D magnetic field measurement
- Simultaneous M-Display X, Y, Z axes
- True RMS signal strength measurement
- Average (AVG) measurement
- PEAK Hold
- Frequency and signal strength display
- High-resolution multi-function display
- "Clear text" signal identification
- DIN/VDE 0848 Exposure limit calculation
- Internal data logger
- Multi-function controls (single hand usage)
- USB 2.0 Interface
- Internet Flash Software-Updates
- Incl.battery, charger & aluminum transportcase
- Dimensions (L/W/D): (260x86x23) mm
- Weight: 420gr
- **Warranty: 10 years**

SPECTRAN® NF-3020 (10Hz to 400kHz)

- Frequency range: 10Hz to **400kHz**
- Typ. level range E-Field: 1V/m to 5.000 V/m
- Typ. level range H-Field: 1nT to 100.000nT
- Typ. precision: 5%
- Superfast FFT spectrum analysis
- High-performance DSP (Digital Signal Processor)
- 3D magnetic field measurement
- Simultaneous M-Display X, Y, Z axes
- True RMS signal strength measurement
- Average (AVG) measurement
- PEAK Hold
- Frequency and signal strength display
- High-resolution multi-function display
- "Clear text" signal identification
- DIN/VDE 0848 Exposure limit calculation
- Internal data logger
- Multi-function controls (single hand usage)
- USB 2.0 Interface
- Internet Flash Software-Updates
- Incl.battery, charger & aluminum transportcase
- **External SMA signal input**
- Dimensions (L/W/D): (260x86x23) mm
- Weight: 420gr
- **Warranty: 10 years**

Application Examples Spectran NF-30xx Spectrum Analyzer

Analysis and measurement of:

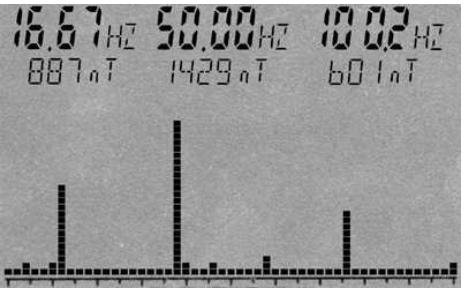
- traction power
- power lines
- power cables
- lamps
- power supplies
- transformer
- monitors

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).

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



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

Spectrum ANALYSIS

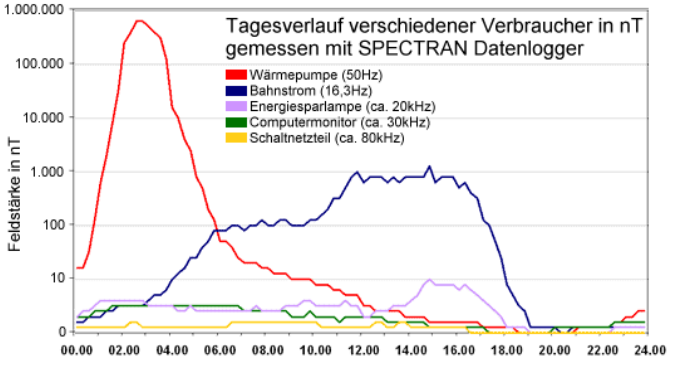
Real ANALYSIS:
Professional EMF measurement devices use a frequency dependant measurement approach, the so-called spectrum analysis. In a certain frequency range, the individuals signals and their respective strengths are being broken down, for example into a "bargraph" display (see SPECTRAN® screenshot 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

LONG-TERM MEASUREMENT (Data logging feature)

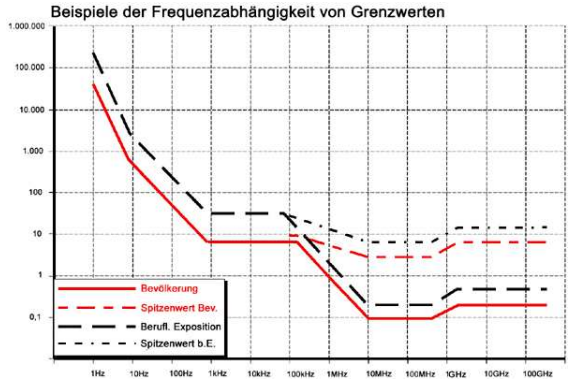
SPECTRAN® measurement devices with data logger allow long-term recordings of measurement results over a freely adjustable period of time. This is particularly indispensable for serious evaluation of exposure by appliances and machinery which have a changing power consumption or radiation strength over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



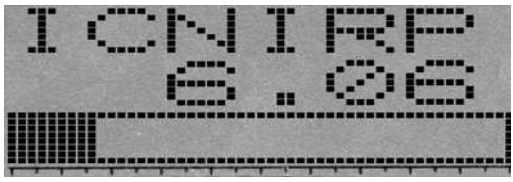
Daily variation of various radiation sources discloses MASSIVE variation in exposure

EXPOSURE LIMITS

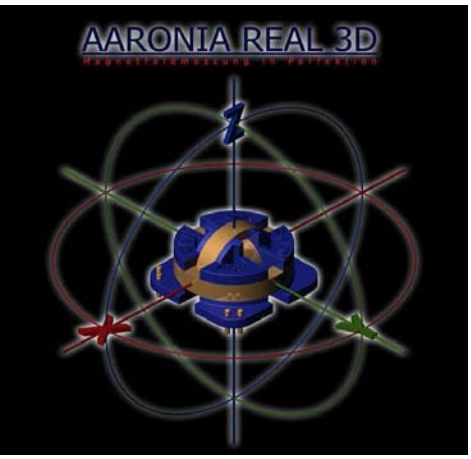
At the push of a button:
Exposure limit calculation used to be a complex and awkward procedure even for the professional, as most of the time, a chaotic mixture of an abundance of different frequencies, modulations and signal strengths is present.
The indispensible, highly complex calculation of frequency-dependant 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-banwidth (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 seperately. 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 independant 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-30xx
- 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 (PDF-document)

Package contents SPECTRAN 30xx devices

SPECTRAN® NF (EMF) Spectrum Analyser

AARONIA AG WWW.AARONIA.DE

APPLICATION EXAMPLES: Traction power, power lines and cables incl. harmonics, transformer, switching power supplies, RFID, TFTs, DSL etc. Various appliances in home and office.

	Entrance		Intermediate		Professional		Outdoor
Specifications base unit[1]	NF-1010	NF-1010E	NF-3010	NF-3020	NF-5010	NF-5030	NF-XFR
Frequency Range (min)	10Hz	10Hz	10Hz	10Hz	1Hz	1Hz	1Hz
Frequency Rance (max)	2kHz	10kHz	100kHz	400kHz	1MHz	30MHz[2]	30MHz[2]
Electric field [V/m] (min) (typical)	1V/m	1V/m	1V/m	1V/m	1V/m	0,1V/m[2]	see opt. PBS2
Electric field [V/m] (max) (typical)	2.000V/m	2.000V/m	5.000V/m	5.000V/m	5.000V/m	20kV/m	see opt. PBS2
Magnetic field [Tesla] (min (typical)	10nT	10nT	1nT	1nT	1nT	1pT[2]	see opt. PBS2
Magnetic field [Tesla] (max) typical	100µT	100µT	100µT	100µT	100µT	2mT[2]	see opt. PBS2
Magnetic field [Gauss] (min (typical)	100µG	100µG	10µG	10µG	10µG	10nG[2]	see opt. PBS2
Magnetic field [Gauss] (max) typical	1G	1G	1G	1G	1G	20G[2]	see opt. PBS2
Analog input [V] (min) typical	-	-	-	2µV	2µV	200nV[2]	200nV[2]
Analog input [V] (max) typical	-	-	-	200mV	200mV	2V[2]	2V[2]
RBW (resolution bandwidth) (min)	1Hz	1Hz	1Hz	1Hz	1Hz	0,3Hz	0,3Hz
RBW (resolution bandwidth) (max)	1kHz	3kHz	30kHz	100kHz	300kHz	1MHz	1MHz
Demodulator	-	-	AM	AM	AM/FM	AM/FM	AM/FM
Units (additional units via PC software)	V/m, T, G	V/m, T, G	V/m, T, G	V, V/m, T, G	V, V/m, T, G, A/m	V, V/m, T, G, A/m	V, dBV
Detector	RMS	RMS	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax
Internal Datalogger (size). Expandable to 1MB (option 001)	-	-	64K	64K	64K	64K	harddisk
FFT resolution (points)	64	64	64	64	1024	1024	1024
Lowest Sample Time	50mS	50mS	50mS	50mS	10mS	10mS	10mS
Accuracy (typical)	5%	5%	5%	5%	3%	3%	3%
Highlights							
Real-time remote control via USB	-	✓	✓	✓	✓	✓	internal
Integrated electric (E) & isotropic magnetic (H) sensor/antenna	✓	✓	✓	✓	✓	✓	-
3D, 2D or 1D mode switchable (only magnetic field sensor)	-	✓	✓	✓	✓	✓	✓
Calibration setup (selected antenna)	✓	✓	✓	✓	✓	✓	✓
Exposure limit calculation according to ICNIRP, BGV B11, BImSchV etc.	-	✓	✓	✓	✓	✓	✓
Extended full ICNIRP range	-	-	-	-	-	✓	✓
Suitable for Pre-Compliance test	-	-	-	-	-	✓	✓
Real-time limit calculation with simultaneous percentage display	-	✓	✓	✓	✓	✓	Analyzer sw
Vector power measurement (I/Q) and True RMS	-	-	✓	✓	✓	✓	✓
Enhanced DFT spectrum analysis	-	✓	✓	✓	✓	✓	✓
Simultaneously displays frequency and signal strength	-	-	✓	✓	✓	✓	Analyzer sw
Up to 3 marker (showing both frequency and field strength)	-	✓	✓	✓	✓	✓	unlimited
Jog Dial controlled manual marker readout	-	-	✓	✓	✓	✓	key & touchpad
Linear or logarithmic spectrum display (log10, log100, log1000)	-	✓	✓	✓	✓	✓	unlimited
Automatic reference level adjustment (switchable)	-	✓	✓	✓	✓	✓	✓
Hold function	-	✓	✓	✓	✓	✓	unlimited
Free of charge firmware update (via Intenet)	-	✓	✓	✓	✓	✓	✓
Supports programming of custom P-Code & C++ based custom software	-	-	✓	✓	✓	✓	✓
High performance DSP (Digital Signal Processor)	✓	✓	✓	✓	✓	✓	✓
Large, high resolution multifunctional LCD (95mm)	✓	✓	✓	✓	✓	✓	14” TFT
Spectrum display (51x25 pixel)	✓	✓	✓	✓	✓	✓	Analyzer sw
High resolution 50 segment bargraph (trend display)	✓	✓	✓	✓	✓	✓	Analyzer sw
Enhanced, much sharper Aaronia LCD display (3d generation)	-	-	-	-	-	✓	14” TFT
Integrated battery charger (supports our optional LiPo battery)	✓	✓	✓	✓	✓	✓	XFR charger
Internal speaker	Piezo	Piezo	✓	✓	✓	✓	✓

Please continue on next page

NF-1010

NF-1010E

NF-3010

NF-3020

NF-5010

NF-5030

NF-XFR

SPECTRAN® NF (EMF) Spectrum Analyser

AARONIA AG WWW.AARONIA.DE

APPLICATION EXAMPLES: Traction power, power lines and cables incl. harmonics, transformer, switching power supplies, RFID, TFTs, DSL etc. Various appliances in home and office.

	Entrance		Intermediate		Professional		Outdoor
Connectors / Interface	**NF-1010**	**NF-1010E**	**NF-3010**	**NF-3020**	**NF-5010**	**NF-5030**	**NF-XFR**
SMA input (f) with high impedance	-	-	-	✓	✓	✓	✓
USB 1.1/2.0	-	✓	✓	✓	✓	✓	2x
Audio output (2,5mm jack)	✓	✓	✓	✓	✓	✓	3,5mm jack
Charger plug (max. 15V)	✓	✓	✓	✓	✓	✓	✓
Jog Dial (easy usage of menu, marker and volume control)	-	-	✓	✓	✓	✓	key & touchpad
1/4” tripod connector	✓	✓	✓	✓	✓	✓	in-Vehicle docking
Included In Delivery							
Integrated electric (E) & isotropic magnetic (H) sensor/antenna	✓	✓	✓	✓	✓	✓	-
SPECTRAN 1300mAh rechargable battery (integrated)	✓	✓	✓	✓	✓	✓	6 cell battery
Battery charger and power supply incl. international adapter set	✓	✓	✓	✓	✓	✓	no adapter set
Aluminum carrying case with foam protection	✓	✓	✓	✓	✓	✓	-
Detailed English manual (on CD)	✓	✓	✓	✓	✓	✓	installed
Analyzer Software for MAC-OS, Linux and Windows (on CD)	-	✓	✓	✓	✓	✓	installed
SMA tool	-	-	-	-	-	✓	✓
Available Options (extra charge)							
Option 001 (1MB memory expansion)	-	-	-	-	✓	✓	harddisk
Option 005 (12Bit DDC for ultra high sensitivity)	-	-	-	-	-	✓	installed
Option 006 (Isotropic static magnetic field sensor)[1]	-	-	-	-	-	✓	-
Option 008 (20MHz expansion. New range: 1Hz-20MHz)	-	-	-	-	-	✓	installed
Option 009 (24Bit resolution for Option 006)	-	-	-	-	-	✓	-
Option 010 (30MHz expansion. New range: 1KHz-30MHz)	-	-	-	-	-	✓	✓
Option UBBV2 (40dB external preamplifier DC-8GHz)	-	-	-	-	-	✓	✓
Optional Accessories							
USB Cable (Special Version)	-	✓	✓	✓	✓	✓	installed
3000mAh Lithium Polymer (LiPo) Power-Battery	✓	✓	✓	✓	✓	✓	-
Car Power Adapter (operate or charge via cigarette lighter)	✓	✓	✓	✓	✓	✓	-
Outdoor Rubber Protection (perfect for outdoor usage)	✓	✓	✓	✓	✓	✓	-
Pistol Grip / Miniature Tripod	✓	✓	✓	✓	✓	✓	-
Aluminum Tripod (big version)	✓	✓	✓	✓	✓	✓	-
DC-Blocker (protects the input against DC voltage)	-	-	-	-	-	✓	✓
20dB Attenuator (offers a higher maximum voltage up to 2V)	-	-	-	-	-	✓	✓
PBS1 Near Field Probe Set (passive)	-	-	-	-	-	✓	✓
PBS2 Near Field Probe Set (active, incl. UBBV2 preamplifier)	-	-	-	-	-	✓	✓
ADP1 Active Differential Probe (conductive measurement)	-	-	-	-	-	✓	✓
GEO10 Vibrationsensor (4Hz-1kHz)	-	-	-	-	-	✓	✓
GEO14 Vibrationsensor (10Hz-1kHz)	-	-	-	-	-	✓	✓
Calibration Certificate	✓	✓	✓	✓	✓	✓	✓
Heavy Plastic Carrying Case	✓	✓	✓	✓	✓	✓	-

[1] Preliminary specifications dated 01.07.2011. Range, sensitivity and accuracy can change depending on frequency, setup, antenna and used parameters. Precision datas are based on Aaronias calibration-reference under specific test conditions. Unless otherwise stated, these specifications are according to the following reference conditions: Ambient temperature 22±3°C, relative air humidity 40% to 60%, continuous wave signal (CW), RMS detection.
Option 006 offers a range of 100µG-6G (10nT-600µT). You can "zero" the static field sensor (Option 006) by using our "Zero Gauss" chamber.
NF standard: 1MHz. Only with option 010 up to 30MHz. NF standard: 1nT. Only with option 005 down to 1pT. NF standard 2µV. Only with option 005 down to 200nV. NF standard: 200mV. Only with optional 20dB
[2] Attenuator up to 2V.


NF-1010


NF-1010E


NF-3010


NF-3020


NF-5010


NF-5030


NF-XFR

Recommended accessories for Aaronia Spectrum Analyzer

Heavy Plastic Carrycase PRO

Shock resistant, heavy version with padding. Offers spaces for 2 SPECTRAN units with all accessories and a HyperLOG 70xx or 60xx antenna. A MUST for the professional user or outdoor usage!

Order/Art.-No.: 243

Pistol grip / miniature tripod

Detachable handle with super-practical miniature tripod mode: this handle is attachable to the backside of the unit and allows optimal handling (esp. for directional measurement) and even fixed installation of the unit. STRONGLY recommended for PC use!

Order/Art.-No.: 280

Aluminum tripod

Height adjustable, high stability. STRONGLY recommended for PC use! Max. height: 105cm.

Order/Art.-No.: 281

Calibration Certificate

Available for all SPECTRAN® units. With detailed calibration sheet.

Order/Art.-No.: 784

USB Cable (Special Version)

To connect your Spectran to the PC. Special version with high performance EMC-ferrite. STRONGLY recommended for PC use!

Order/Art.-No.: 774

Protection rubber

Protect and personalize your SPECTRAN with a sturdy rubber case and keep it scratch-n-dent free. Allows full access to all functions.

Order/Art.-No.: 290

3000mAh LiPo Power-Battery

Offers a MUCH higher runtime of your SPECTRAN (up to 400%). Strongly recommended for autonomic measurement! The 1300mAh standard-battery will be replaced.

Order/Art.-No.: 254

Car power adapter for mobile use

With power-LED. For charging batteries or operating our units in your car, including special plug.

Order/Art.-No.: 260

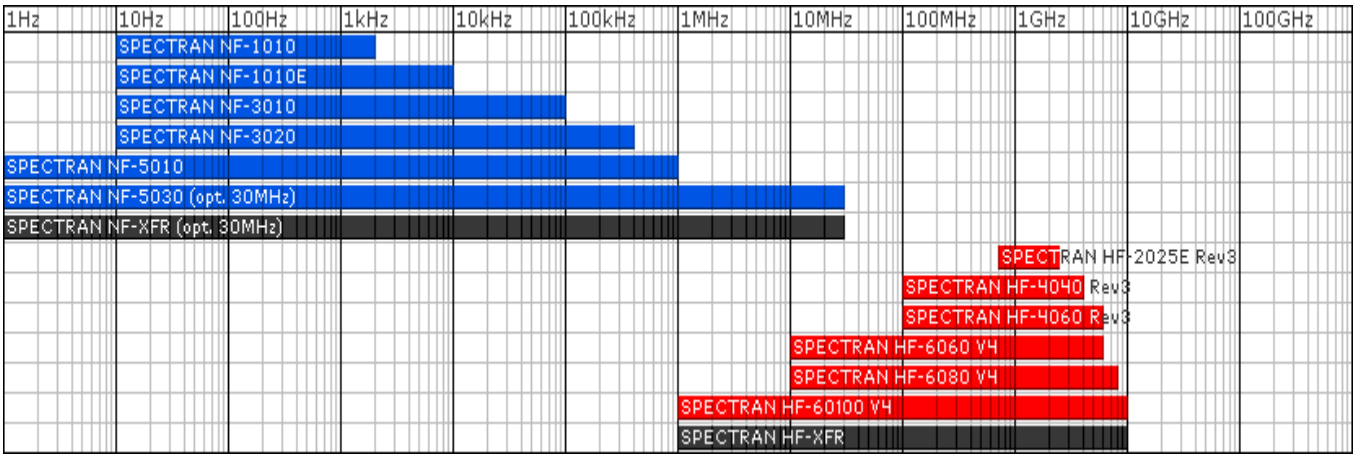
DC-Blocker (SMA)

It prevents the RF-input of the SPECTRAN to be destroyed by the DC-voltages of f.e. DSL/ISDN lines.

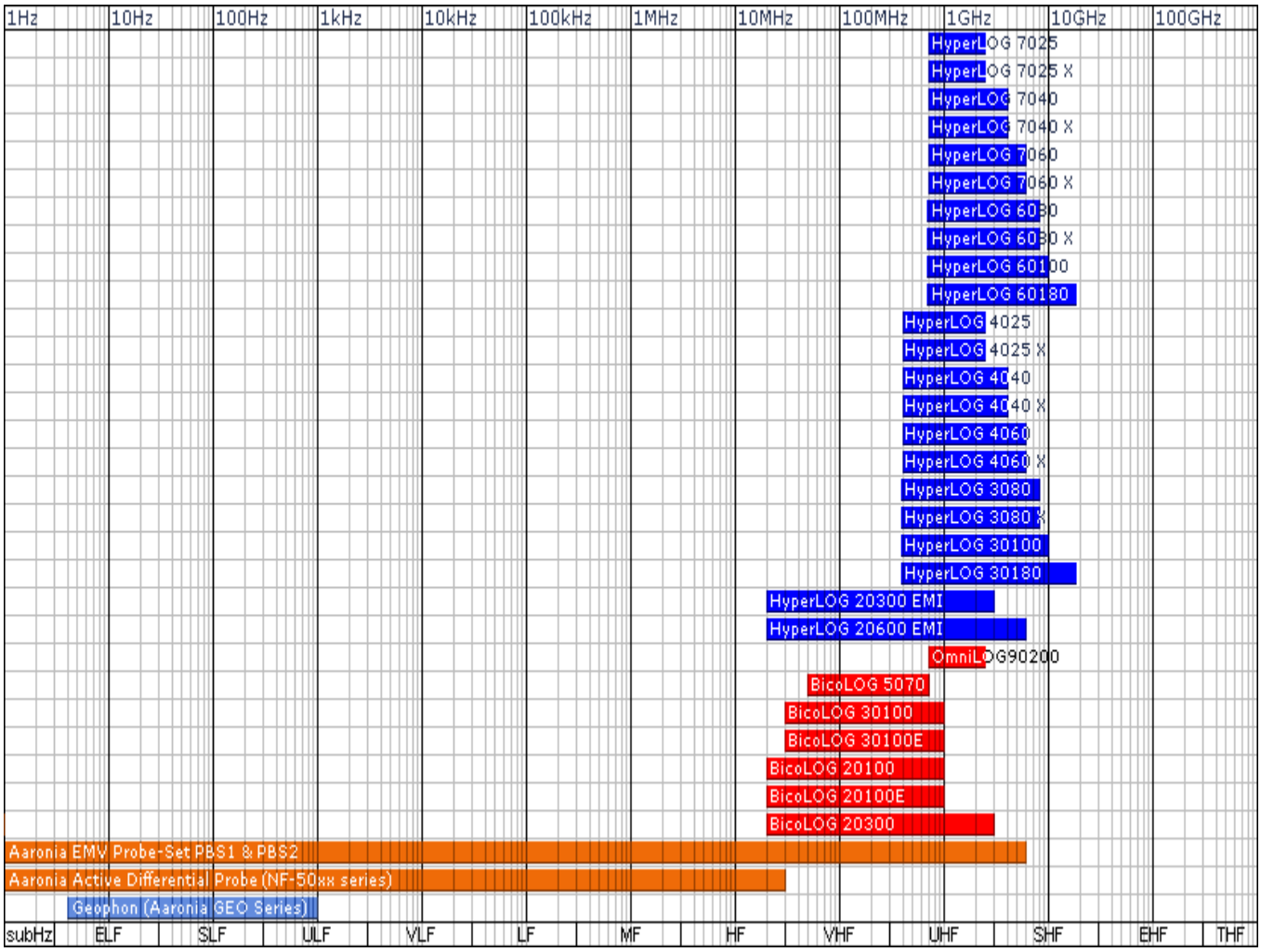
Order/Art.-No.: 778

Frequency overview Analyzer & Antennas

Frequency Overview SPECTRAN Spectrum Analyzer



Frequency Overview HyperLOG and BicoLOG Antennas and Probes



References

User of Aaronia Antennas and Spectrum Analyzers (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet

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.**

AARONIA AG
WWW.AARONIA.DE

Made in Germany

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!

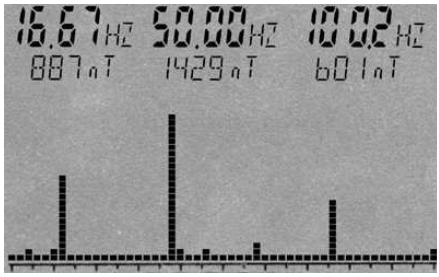
Fast, handy, cost-effective, beautiful exterior and PRECISION - what more could you ask ?

Spectrum ANALYSIS

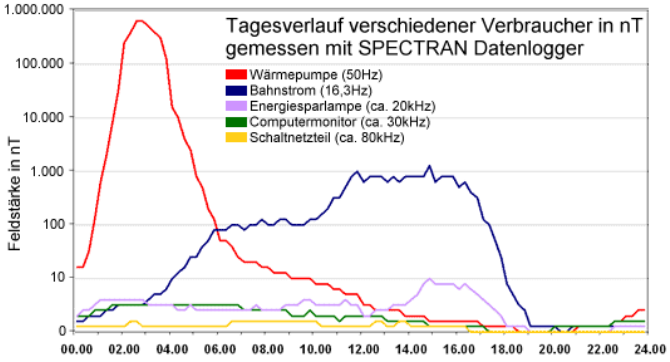
Real ANALYSIS:
Professional EMF measurement devices use a frequency dependant measurement approach, the so-called spectrum analysis. In a certain frequency range, the individuals signals and their respective strengths are being broken down, for example into a "bargraph" display (see SPECTRAN® screenshot 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)



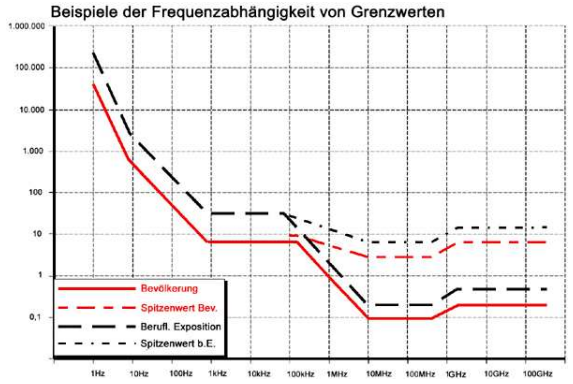
Daily variation of various radiation sources discloses MASSIVE variation in exposure

LONG-TERM MEASUREMENT (Data logging feature)

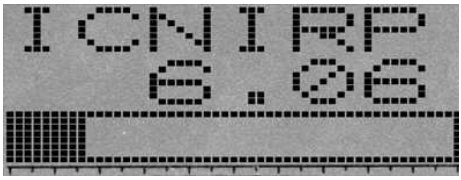
SPECTRAN® measurement devices with data logger allow long-term recordings of measurement results over a freely adjustable period of time. This is particularly indispensable for serious evaluation of exposure by appliances and machinery which have a changing power consumption or radiation strength over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

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 indispensible, 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-banwidth (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 seperately. 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 independant 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

SPECTRAN® NF (EMF) Spectrum Analyser

AARONIA AG WWW.AARONIA.DE

APPLICATION EXAMPLES: Traction power, power lines and cables incl. harmonics, transformer, switching power supplies, RFID, TFTs, DSL etc. Various appliances in home and office.

	Entrance		Intermediate		Professional		Outdoor
Specifications base unit[1]	NF-1010	NF-1010E	NF-3010	NF-3020	NF-5010	NF-5030	NF-XFR
Frequency Range (min)	10Hz	10Hz	10Hz	10Hz	1Hz	1Hz	1Hz
Frequency Rance (max)	2kHz	10kHz	100kHz	400kHz	1MHz	30MHz[2]	30MHz[2]
Electric field [V/m] (min) (typical)	1V/m	1V/m	1V/m	1V/m	1V/m	0,1V/m[2]	see opt. PBS2
Electric field [V/m] (max) (typical)	2.000V/m	2.000V/m	5.000V/m	5.000V/m	5.000V/m	20kV/m	see opt. PBS2
Magnetic field [Tesla] (min (typical)	10nT	10nT	1nT	1nT	1nT	1pT[2]	see opt. PBS2
Magnetic field [Tesla] (max) typical	100µT	100µT	100µT	100µT	100µT	2mT[2]	see opt. PBS2
Magnetic field [Gauss] (min (typical)	100µG	100µG	10µG	10µG	10µG	10nG[2]	see opt. PBS2
Magnetic field [Gauss] (max) typical	1G	1G	1G	1G	1G	20G[2]	see opt. PBS2
Analog input [V] (min) typical	-	-	-	2µV	2µV	200nV[2]	200nV[2]
Analog input [V] (max) typical	-	-	-	200mV	200mV	2V[2]	2V[2]
RBW (resolution bandwidth) (min)	1Hz	1Hz	1Hz	1Hz	1Hz	0,3Hz	0,3Hz
RBW (resolution bandwidth) (max)	1kHz	3kHz	30kHz	100kHz	300kHz	1MHz	1MHz
Demodulator	-	-	AM	AM	AM/FM	AM/FM	AM/FM
Units (additional units via PC software)	V/m, T, G	V/m, T, G	V/m, T, G	V, V/m, T, G	V, V/m, T, G, A/m	V, V/m, T, G, A/m	V, dBV
Detector	RMS	RMS	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax
Internal Datalogger (size). Expandable to 1MB (option 001)	-	-	64K	64K	64K	64K	harddisk
FFT resolution (points)	64	64	64	64	1024	1024	1024
Lowest Sample Time	50mS	50mS	50mS	50mS	10mS	10mS	10mS
Accuracy (typical)	5%	5%	5%	5%	3%	3%	3%
Highlights							
Real-time remote control via USB	-	✓	✓	✓	✓	✓	internal
Integrated electric (E) & isotropic magnetic (H) sensor/antenna	✓	✓	✓	✓	✓	✓	-
3D, 2D or 1D mode switchable (only magnetic field sensor)	-	✓	✓	✓	✓	✓	✓
Calibration setup (selected antenna)	✓	✓	✓	✓	✓	✓	✓
Exposure limit calculation according to ICNIRP, BGV B11, BImSchV etc.	-	✓	✓	✓	✓	✓	✓
Extended full ICNIRP range	-	-	-	-	-	✓	✓
Suitable for Pre-Compliance test	-	-	-	-	-	✓	✓
Real-time limit calculation with simultaneous percentage display	-	✓	✓	✓	✓	✓	Analyzer sw
Vector power measurement (I/Q) and True RMS	-	-	✓	✓	✓	✓	✓
Enhanced DFT spectrum analysis	-	✓	✓	✓	✓	✓	✓
Simultaneously displays frequency and signal strength	-	-	✓	✓	✓	✓	Analyzer sw
Up to 3 marker (showing both frequency and field strength)	-	✓	✓	✓	✓	✓	unlimited
Jog Dial controlled manual marker readout	-	-	✓	✓	✓	✓	key & touchpad
Linear or logarithmic spectrum display (log10, log100, log1000)	-	✓	✓	✓	✓	✓	unlimited
Automatic reference level adjustment (switchable)	-	✓	✓	✓	✓	✓	✓
Hold function	-	✓	✓	✓	✓	✓	unlimited
Free of charge firmware update (via Intenet)	-	✓	✓	✓	✓	✓	✓
Supports programming of custom P-Code & C++ based custom software	-	-	✓	✓	✓	✓	✓
High performance DSP (Digital Signal Processor)	✓	✓	✓	✓	✓	✓	✓
Large, high resolution multifunctional LCD (95mm)	✓	✓	✓	✓	✓	✓	14” TFT
Spectrum display (51x25 pixel)	✓	✓	✓	✓	✓	✓	Analyzer sw
High resolution 50 segment bargraph (trend display)	✓	✓	✓	✓	✓	✓	Analyzer sw
Enhanced, much sharper Aaronia LCD display (3d generation)	-	-	-	-	-	✓	14” TFT
Integrated battery charger (supports our optional LiPo battery)	✓	✓	✓	✓	✓	✓	XFR charger
Internal speaker	Piezo	Piezo	✓	✓	✓	✓	✓

Please continue on next page

NF-1010

NF-1010E

NF-3010

NF-3020

NF-5010

NF-5030

NF-XFR

SPECTRAN® NF (EMF) Spectrum Analyser

AARONIA AG WWW.AARONIA.DE

APPLICATION EXAMPLES: Traction power, power lines and cables incl. harmonics, transformer, switching power supplies, RFID, TFTs, DSL etc. Various appliances in home and office.

	Entrance		Intermediate		Professional		Outdoor
Connectors / Interface	**NF-1010**	**NF-1010E**	**NF-3010**	**NF-3020**	**NF-5010**	**NF-5030**	**NF-XFR**
SMA input (f) with high impedance	-	-	-	✓	✓	✓	✓
USB 1.1/2.0	-	✓	✓	✓	✓	✓	2x
Audio output (2,5mm jack)	✓	✓	✓	✓	✓	✓	3,5mm jack
Charger plug (max. 15V)	✓	✓	✓	✓	✓	✓	✓
Jog Dial (easy usage of menu, marker and volume control)	-	-	✓	✓	✓	✓	key & touchpad
1/4” tripod connector	✓	✓	✓	✓	✓	✓	in-Vehicle docking
Included In Delivery							
Integrated electric (E) & isotropic magnetic (H) sensor/antenna	✓	✓	✓	✓	✓	✓	-
SPECTRAN 1300mAh rechargable battery (integrated)	✓	✓	✓	✓	✓	✓	6 cell battery
Battery charger and power supply incl. international adapter set	✓	✓	✓	✓	✓	✓	no adapter set
Aluminum carrying case with foam protection	✓	✓	✓	✓	✓	✓	-
Detailed English manual (on CD)	✓	✓	✓	✓	✓	✓	installed
Analyzer Software for MAC-OS, Linux and Windows (on CD)	-	✓	✓	✓	✓	✓	installed
SMA tool	-	-	-	-	-	✓	✓
Available Options (extra charge)							
Option 001 (1MB memory expansion)	-	-	-	-	✓	✓	harddisk
Option 005 (12Bit DDC for ultra high sensitivity)	-	-	-	-	-	✓	installed
Option 006 (Isotropic static magnetic field sensor)[1]	-	-	-	-	-	✓	-
Option 008 (20MHz expansion. New range: 1Hz-20MHz)	-	-	-	-	-	✓	installed
Option 009 (24Bit resolution for Option 006)	-	-	-	-	-	✓	-
Option 010 (30MHz expansion. New range: 1KHz-30MHz)	-	-	-	-	-	✓	✓
Option UBBV2 (40dB external preamplifier DC-8GHz)	-	-	-	-	-	✓	✓
Optional Accessories							
USB Cable (Special Version)	-	✓	✓	✓	✓	✓	installed
3000mAh Lithium Polymer (LiPo) Power-Battery	✓	✓	✓	✓	✓	✓	-
Car Power Adapter (operate or charge via cigarette lighter)	✓	✓	✓	✓	✓	✓	-
Outdoor Rubber Protection (perfect for outdoor usage)	✓	✓	✓	✓	✓	✓	-
Pistol Grip / Miniature Tripod	✓	✓	✓	✓	✓	✓	-
Aluminum Tripod (big version)	✓	✓	✓	✓	✓	✓	-
DC-Blocker (protects the input against DC voltage)	-	-	-	-	-	✓	✓
20dB Attenuator (offers a higher maximum voltage up to 2V)	-	-	-	-	-	✓	✓
PBS1 Near Field Probe Set (passive)	-	-	-	-	-	✓	✓
PBS2 Near Field Probe Set (active, incl. UBBV2 preamplifier)	-	-	-	-	-	✓	✓
ADP1 Active Differential Probe (conductive measurement)	-	-	-	-	-	✓	✓
GEO10 Vibrationsensor (4Hz-1kHz)	-	-	-	-	-	✓	✓
GEO14 Vibrationsensor (10Hz-1kHz)	-	-	-	-	-	✓	✓
Calibration Certificate	✓	✓	✓	✓	✓	✓	✓
Heavy Plastic Carrying Case	✓	✓	✓	✓	✓	✓	-

[1] Preliminary specifications dated 01.07.2011. Range, sensitivity and accuracy can change depending on frequency, setup, antenna and used parameters. Precision datas are based on Aaronias calibration-reference under specific test conditions. Unless otherwise stated, these specifications are according to the following reference conditions: Ambient temperature 22±3°C, relative air humidity 40% to 60%, continuous wave signal (CW), RMS detection.
Option 006 offers a range of 100µG-6G (10nT-600µT). You can "zero" the static field sensor (Option 006) by using our "Zero Gauss" chamber.
NF standard: 1MHz. Only with option 010 up to 30MHz. NF standard: 1nT. Only with option 005 down to 1pT. NF standard 2µV. Only with option 005 down to 200nV. NF standard: 200mV. Only with optional 20dB
[2] Attenuator up to 2V.


NF-1010


NF-1010E


NF-3010


NF-3020


NF-5010


NF-5030


NF-XFR

Available Options for Spectran NF-50xx series

Option 001: 1MB memory expansion

Available for: NF-5010, NF-5030.
This memory expansion is a MUST-HAVE particularly when using the data logger, as the standard capacity can quickly become exhausted in this mode. The memory expansion provides space for more than 10,000 logs, while the standard memory will only accomodate approximately 100 of them.
Standard memory size is 64K.

Order/Art.-No.: 180

Option 005: 12Bit Dual DDC frequency filter

Available for: NF-5030 (inclusive at NF-XFR).
This cutting edge 12Bit DDC frequency filter allows extremely fast, crisp and accurate frequency filtering, while at the same time drastically enhancing the sensitivity. As an example, magnetic fields can (depending on their frequency) still be measured down to 1pT (0.001nT), compared to 0.1nT without the option. Option 005 is therefore a MUST-HAVE for professional measurement, especially considering its attractive price.

Order/Art.-No.: 186

Option 006: 3D sensor for static magnetic fields

Available for: NF-5030.
This top-grade geomagnetic field sensor provides the ability to conduct geophysical assessments and measurement of geomagnetic field anomalies. However, it can also be used to turn the instrument into a Gaussmeter, measuring the difference between field strengths (static fields) of permanent magnets. Thanks to its ISOTROPIC (3D) construction, measurements can be performed in all three spacial dimensions AT ONCE (or seperately). Sensitivity is about 10nT-600µT.

Order/Art.-No.: 188

Option 008: 20MHz frequency extension

Available for: NF-5030 (inclusive at NF-XFR).
This 20MHz frequency extension option vastly enhances the frequency range of the NF-5030. Amongst others, it brings the ADSL and 13.56MHz RFID frequency bands in range. What's more, we are already developing a PC-based analysis software for decoding RFID.
The maximum frequency range of the NF-5030 without option 008 is 1MHz.

Order/Art.-No.: 179

Option 009: 24Bit resolution for 3D static magnetic field sensor

Available for: NF-5030.
Option 006 provides a significantly higher resolution for the optional 3D magnetic field sensor for measurement of static magnetic fields (option 006); it is ABSOLUTELY mandatory for geomagnetic surveys.
The standard resolution of the NF-5030 without option 009 is 14Bit.

Order/Art.-No.: 178

Option 010: 30MHz frequency extension

Available for: NF-5030.
Our 30MHz frequency extension extends the frequency range of the NF-5030 to the absolute maximum. The new frequency range is 1kHz - 30MHz. Amongst others, it even allows measurement of VDSL2. The higher clock frequency of the DDC provided by this option is a MUST HAVE for technicians and authorities needing ACCURATE assessment of signal sources of up to 30MHz. The maximum frequency of the NF-5030 without option 010 is 1MHz.

Order/Art.-No.: 179-1

Recommended accessories for Aaronia Spectrum Analyzer

Heavy Plastic Carrycase PRO

Shock resistant, heavy version with padding. Offers spaces for 2 SPECTRAN units with all accessories and a HyperLOG 70xx or 60xx antenna. A MUST for the professional user or outdoor usage!

Order/Art.-No.: 243

Pistol grip / miniature tripod

Detachable handle with super-practical miniature tripod mode: this handle is attachable to the backside of the unit and allows optimal handling (esp. for directional measurement) and even fixed installation of the unit. STRONGLY recommended for PC use!

Order/Art.-No.: 280

Aluminum tripod

Height adjustable, high stability. STRONGLY recommended for PC use! Max. height: 105cm.

Order/Art.-No.: 281

Calibration Certificate

Available for all SPECTRAN® units. With detailed calibration sheet.

Order/Art.-No.: 786

USB Cable (Special Version)

To connect your Spectran to the PC. Special version with high performance EMC-ferrite. STRONGLY recommended for PC use!

Order/Art.-No.: 774

Protection rubber

Protect and personalize your SPECTRAN with a sturdy rubber case and keep it scratch-n-dent free. Allows full access to all functions.

Order/Art.-No.: 290

3000mAh LiPo Power-Battery

Offers a MUCH higher runtime of your SPECTRAN (up to 400%). Strongly recommended for autonomic measurement! The 1300mAh standard-battery will be replaced.

Order/Art.-No.: 254

Car power adapter for mobile use

With power-LED. For charging batteries or operating our units in your car, including special plug.

Order/Art.-No.: 260

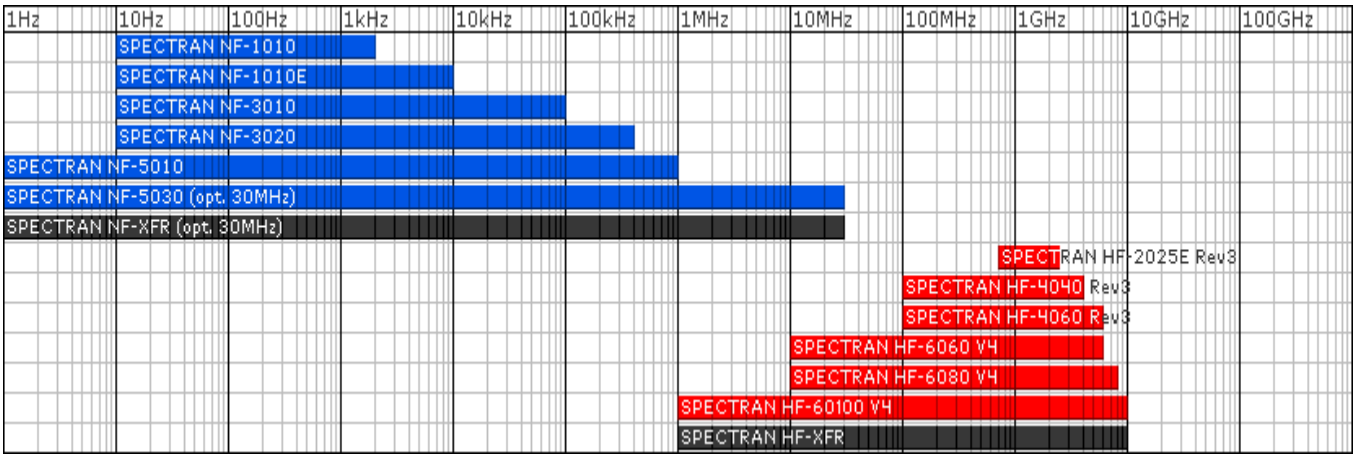
DC-Blocker (SMA)

It prevents the RF-input of the SPECTRAN to be destroyed by the DC-voltages of f.e. DSL/ISDN lines.

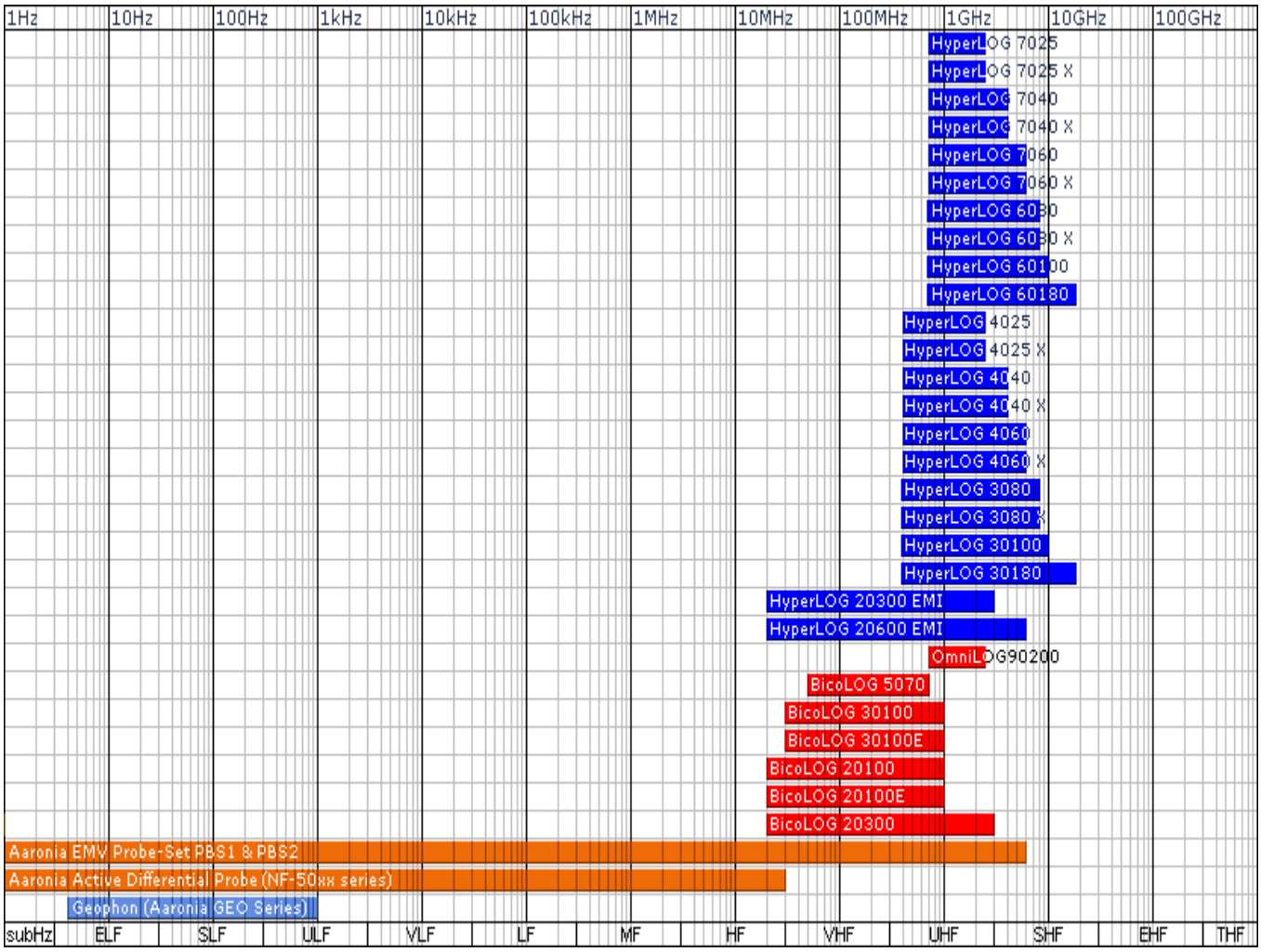
Order/Art.-No.: 778

Frequency overview Analyzer & Antennas

Frequency Overview SPECTRAN Spectrum Analyzer



Frequency Overview HyperLOG and BicoLOG Antennas and Probes



References

User of Aaronia Antennas and Spectrum Analyzers (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

data sheet

Rev 1.7
02.08.2011

Military Outdoor Spectrum Analyzer SPECTRAN® NF-XFR

Worldwide first "military-standard" Spectrum Analyzer!

Highlights

- Highest performing fully rugged laptop and world´s most sensitive Handheld Analyzer in one device
- Ready to go, LCS-Analyzer-Software already installed
- Ballistic Armor™ Protection System to meet or exceed real world and military standards (MIL-STD-810F)
- Built tough for tough environments

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Technical details

Notebook (based on Dell Latitude E6400XFR)

- Processor: Intel Core 2 Duo P9600(2,66GHz,1.066MHz,6MB) nVidia Quadro NVS 160M, 256MB with express-card and Fingerprint Reader
- 14.1" WXGA (1280 x 800) wide-aspect transmissive display with DirectVue™ technology for outdoor readability
- Memory: 4096MB (2x2048) 800MHz DDR2 Dual Channel
- Primary Storage: 64GB Solid State Drive
- Battery: 6-cell primary battery
- Wireless: Intel WiFi Link 5100 (802.11 a/b/g/n 1X2) 1/2 MiniCard with Centrino label
- 10/100/1000 Gigabit Ethernet-network card
- Keypad: Internal English Qwertz with background light
- Operating System: Windows XP Pro SP3 with Windows Vista Business SP1 Medias
- Ports: IEEE - 1394, docking connector, USB 2.0 (x4), VGA, Display Port, RJ-11 (optional), RJ-45, eSATA, USB PowerShare, headphone/speaker out, mic (all protected behind sealed doors)
- Multi Media: 2 speakers
- Independently Tested to MIL-STD-810F for: 4ft Transit Drop, Aggravated Rain, Blowing Dust, Vibration, Functional Shock, Humidity, Salt Fog, Altitude, Explosive Atmosphere,Temperature Shock, and Temperature Extremes (Operating: -20ºF to 145ºF (-29ºC to 63ºC); Non-Operating: -58ºF to 160ºF (-50ºC to 71ºC))
- IP-65 Certified Protection – Dust-Tight and Protected against Pressurized Water Ingress
- UL1604 Certified for Hazardous Locations (Class 1, Division 2, Zones A, B, C, D)
- Weight: 8.5 lbs/3.9 kg
- Width: 13.9"/353.06 mm
- Depth: 10.1-11.5"/257.6-293.1 mm
- Height: 2.2"/55.88 mm

Spectrum Analyzer (based on Spectran NF-5030)

- Frequency range: 1Hz -20MHz*
- Typ. accuracy: 3%**
- **65 MSPS** (Option 005)
- Lots of options
- NEW: 30MHz Option
- Typ. level range DDC Analog in: **200nV** to 200mV / -150dBm (Hz)
- Superfast FFT spectrum analysis
- High-performance DSP (Digital Signal Processor)
- Frequency and signal strength display!
- High-resolution multi-function display
- True RMS signal strength measurement
- Average (AVG) measurement
- Internal data logger
- Internet Flash Software-Updates

Application examples SPECTRAN® NF-XFR 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

Real World Rugged

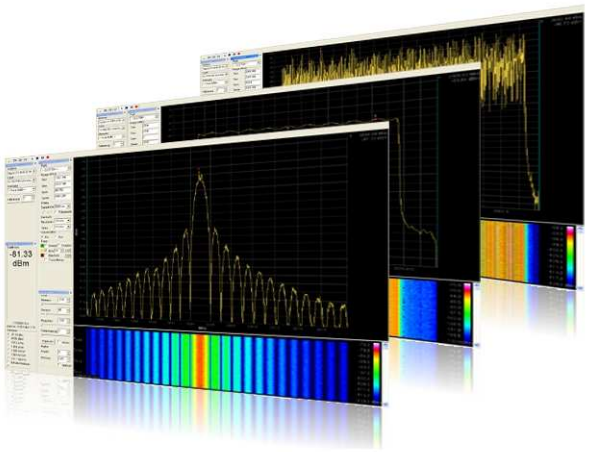
Built for tough environments, the SPECTRAN NF-XFR rises to the challenges you face every workday. The NF-XFR is built to be ready out of the box to withstand pounding rain, blowing dust and dirt, extreme temperatures, accidental drops and more.
Key rugged features include:

- The exclusive Ballistic Armor Protection System featuring PR481™ chassis material provides twice the impact strength versus traditional magnesium alloy.
- The SPECTRAN NF-XFR with Ballistic Armor Protection enables excellent protection and is the first in its class to meet a 4ft drop specification.
- With PrimoSeal™ technology we provide the highest combined Ingress protection rating (IP65), for enhanced protection against blowing dust and liquid.

Integrated Spectrum Analyzer (based on the Spectran NF-5030)

The PROFESSIONAL PC analysis software demonstrates SPECTRAN's vast capabilities.

- HIGH-RESOLUTION!, freely scalable, coloured spectrum display with falloff function.
- Freely positionable windows for comfortable entry of frequency, RBW, sweeptime etc. etc.
- 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.
- Various pre-defined profiles for RFID, power, TV, TFT´s, ADSL 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.
- 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 firmwares.
- etc. etc. etc.



Screenshots from the SPECTRAN NF-XFR

Inspired Design

SPECTRAN NF-XFR features securely sealed port covers and a wide range of key peripherals to work wherever you need it to.

- Work in direct sunlight with the large 14.1" wide-aspect LCD featuring DirectVue™ Technology LCD.
- Vehicle docking allows flexibility for police and field technicians to mount systems directly in their vehicles where they work.
- Secure, simple, locking doors with PrimoSeal™ for exceptional protection while working in wet or dusty conditions.

Uncompromising Performance

The high performing, fully rugged laptop is the first in its class to ship with both Intel® Core™2 Duo Processor with vPro™ technology.
The SPECTRAN NF-XFR has brains as well as brawn.

- QuadCool™ Thermal Management System enables the XFR to meet the MIL-STD for temperature extremes and supports world-class performance, while running the latest Intel® Core™2 Duo Processors.
- Extended field use batteries equipped with ExpressCharge enables primary battery re-charge times up to 2 times faster than Panasonic CF-30.

Included in delivery

- SPECTRAN NF-XFR Outdoor Spectrum Analyzer
- SMA-Tool
- Battery
- Battery charger
- Detailed english manual

The SPECTRAN NF-XFR was built for tough environments

SPECTRAN® USB Spectrum Analyser

APPLICATION EXAMPLES: Pre-Compliance test, conductive EMC/EMI test, exposure limit measurement etc.

	Professional				Outdoor	
Specifications basic unit[1]	NF-5030 X	HF-6060V4 X	HF-6080V4 X	HF-60100V4 X	NF-XFR	HF-XFR
Frequency Range (min)	1Hz	10MHz	10MHz	1MHz	1Hz	1MHz
Frequency Range (max)	30MHz	6GHz	8GHz	9,4GHz	30MHz[2]	9,4GHz
Optional PEAK Power-Detector (Maximum usable frequency)[3]	-	6GHz	8GHz	10GHz	-	10GHz
DANL (Displayed Average Noise Level)[2]	200nV	-135dBm(1Hz)	-145dBm(1Hz)	-155dBm(1Hz)	200nV	-155dBm(1Hz)
DANL (Displayed Average Noise Level) with Preamp (Option 020)[2]	-	-150dBm(1Hz)	-160dBm(1Hz)	-170dBm(1Hz)	-	-170dBm(1Hz)
Max. Power at RF input	2V[2]	+10dBm	+10dBm	+40dBm[2]	2V[2]	+40dBm[2]
RBW (Resolution bandwidth) (min)	0,3Hz	10kHz	3kHz	200Hz[2]	0,3Hz	200Hz
RBW (Resolution bandwidth) (max)	1MHz	50MHz	50MHz	50MHz	1MHz	50MHz
EMC Filter 200Hz, 9kHz, 120kHz, 200kHz, 1,5MHz, 5MHz	-	-	-	✓	-	✓
Demodulator	AM/FM	AM/FM	AM/FM/PM	AM/FM/PM/GSM	AM/FM	AM/FM/PM/GSM
Detector	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax	RMS/MinMax
Units dBm, dBµV, V/m, A/m, W/m² (dBµV/m, W/cm² etc. via PC software)	V, dBV	✓	✓	✓	V, dBV	✓
Lowest Sample Time	10mS	10mS	10mS	5mS	10mS	5mS
Accuracy (typical)	+/-3%	+/-2dB	+/-2dB	+/-1dB	+/-3%	+/-1dB
Highlights						
Real-time remote control via USB	✓	✓	✓	✓	internal	internal
Calibration setup (antenna, cable, attenuator etc.)	✓	✓	✓	✓	✓	✓
Exposure limit calculation according to ICNIRP, EN55011, EN55022 etc.	✓	ICNIRP only	ICNIRP only	✓	✓	✓
Extended full ICNIRP range	-	-	-	✓	-	✓
Suitable for Pre-Compliance test	✓	-	-	✓	✓	✓
Suitable for conductive EMC/EMI test	✓	-	-	✓	✓	✓
Real-time limit calculation, limit line display and limit percentage bar display	✓	✓	✓	✓	✓	✓
Time Domain and fast Zero Span sweep incl. DECT and Time Slot Analyzer	-	✓	✓	✓	-	✓
Unlimited longtime recording and playback feature	✓	✓	✓	✓	✓	✓
Simultaneously displays frequency and signal strength	✓	✓	✓	✓	✓	✓
Multiple unit handling and unlimited multiple window handling	✓	✓	✓	✓	✓	✓
Number of marker (showing frequency and field strength simultaneously)	unlimited	unlimited	unlimited	unlimited	unlimited	unlimited
Spectrum, waterfall, persistance and level vs time display	✓	✓	✓	✓	✓	✓
Sweep, AVG, Max, Min and Hold function	✓	✓	✓	✓	✓	✓
Unlimited number of sweep points, resolution and display size	✓	✓	✓	✓	14” TFT	14” TFT
Supports programming of custom P-Code, C++ based custom software support	✓	✓	✓	✓	✓	✓
Free of charge firmware update (via Intenet)	✓	✓	✓	✓	✓	✓
14Bit Dual-ADC & DDC hardware filter	-	✓	✓	✓	-	✓
150MIPS high performance DSP (Digital Signal Processor)	-	✓	✓	✓	-	✓
Vector power measurement (I/Q) and True RMS	✓	✓	✓	✓	✓	✓
Solid 3mm aluminum housing with excellent shielding performance	✓	✓	✓	✓	-	-
Integrated rechargable battery	-	-	-	-	✓	✓
Internal speaker	✓	✓	✓	✓	✓	✓

Please continue on next page


NF-5030 X


HF-6060 X


HF-6080 X


HF-60100 X



NF-XFR


HF-XFR

SPECTRAN® USB Spectrum Analyser

APPLICATION EXAMPLES: Pre-Compliance test, conductive EMC/EMI test, exposure limit measurement etc.

	Professional				Outdoor	
Connectors / Interface	NF-5030 X	HF-6060V4 X	HF-6080V4 X	HF-60100V4 X	NF-XFR	HF-XFR
50Ohm SMA input (f)	high impedance	✓	✓	✓	high impedance	✓
USB 1.1/2.0	✓	✓	✓	✓	2x	2x
Audio output (2,5mm jack)	✓	✓	✓	✓	3,5mm jack	3,5mm jack
Charger plug (max. 12V)	✓	✓	✓	✓	✓	✓
Included In Delivery						
HyperLOG EMC directional LogPer antenna (model)	-	-	-	-	-	60100 (black)
OmniLOG 90200 radial isotropic antenna	-	✓	✓	✓	-	✓
Rechargable Battery	-	-	-	-	✓	✓
Battery charger and/or power supply incl. international adapter set	✓	✓	✓	✓	no adapter set	no adapter set
Aluminum carrying case with foam protection	✓	✓	✓	✓	-	-
Detailed English manual (on CD)	✓	✓	✓	✓	installed	installed
Analyzer Software for MAC-OS, Linux and Windows (on CD)	✓	✓	✓	✓	installed	installed
1m SMA Cable	-	-	-	-	-	✓
SMA Tool	✓	✓	✓	✓	✓	✓
USB Cable (special EMC screened version)	✓	✓	✓	✓	installed	installed
Available Options (extra charge)						
Option 002 (high accurate 0,5ppm TCXO timebase)	-	-	-	✓	-	installed
Option 005 (12Bit DDC for ultra high sensitivity)	✓	-	-	-	installed	-
Option 008 (20MHz frequency expansion. New range: 1Hz-20MHz)	✓	-	-	-	installed	-
Option 010 (30MHz frequency expansion. New range: 1kHz-30MHz)	✓	-	-	-	✓	-
Option 020 (15dB internal low noise preamplifier, switchable)	-	✓	✓	✓	-	installed
Option 20x (Real-time Broadband Peak Power Meter)	-	✓	✓	✓	-	✓
Option UBBV1 (40dB external preamplifier 1MHz-1GHz)	-	✓	✓	✓	-	✓
Option UBBV2 (40dB external preamplifier DC-8GHz)	✓	✓	✓	✓	✓	✓
Optional Accessories						
DC-Blocker (protects the input against DC voltage)	✓	✓	✓	✓	✓	✓
20dB Attenuator (expands the measurement range by 20dB)	✓	✓	✓	✓	✓	✓
PBS1 Near Field Probe Set (passive)	-	-	-	✓	-	✓
PBS2 Near Field Probe Set (active, incl. UBBV2 preamplifier)	✓	-	-	✓	✓	✓
ADP1 Active Differential Probe (conductive measurement)	✓	-	-	✓	✓	✓
GEO10 Vibrationsensor (4Hz-1kHz)	✓	-	-	-	✓	-
GEO14 Vibrationsensor (10Hz-1kHz)	✓	-	-	-	✓	-
5m or 10m low loss SMA cable	-	✓	✓	✓	-	✓
Calibration Resistor (for noise floor calibration, SMA)	-	✓	✓	✓	-	✓
Calibration Certificate	✓	✓	✓	✓	✓	✓

(1) The new V5 real-time spectrum analyser generation up to 80GHz is already in development. Please contact us for further details!
Preliminary specifications dated 01.07.2011. The V4 and XFR series are available with latest Beta firmware. The Beta firmware is constantly in development. Some functionality may still be limited and not fully to specifications (Beta status). By regularly checking our homepage for updates, you can always keep your measurement device up-to-date. As soon as V1.0 of the firmware is released, all functionality and features will be fully available. Range, sensitivity and accuracy can change depending on frequency, setup, antenna and used parameters. Precision datas are based on Aaronias calibration-reference under specific test conditions. Unless otherwise stated, these specifications are according to the following reference conditions: Ambient temperature 22±3°C, relative air humidity 40% to 60%, continuous wave signal (CW), RMS detection.

(2) V4 DANL @5,555GHz. V4 internal: +20dBm. V4 external (with optional 20dB attenuator): +40dBm. V4 standard: 1kHz. Only with option 002 down to 200Hz.
NF standard: 1MHz. Only with option 010 up to 30MHz. NF standard: 200mV. Only with optional 20dB Attenuator up to 2V.

(3) Depending on frequency the option 20x offers a sensetivity down to -50dBm and max. +10dBm, with optional 20dB attenuator +30dBm.

NF-5030 X

HF-6060 X

HF-6080 X

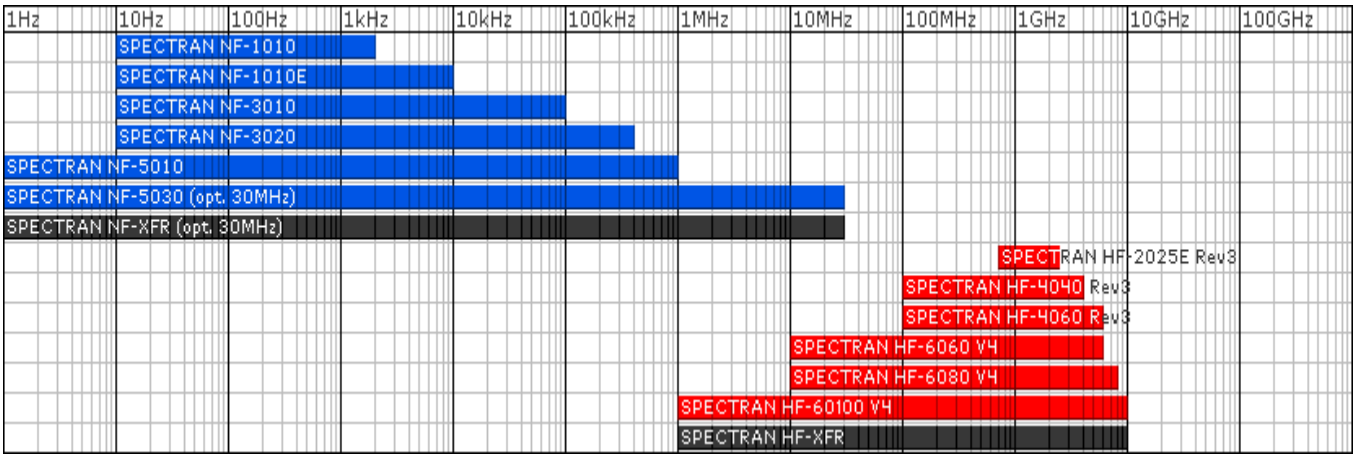
HF-60100 X

NF-XFR

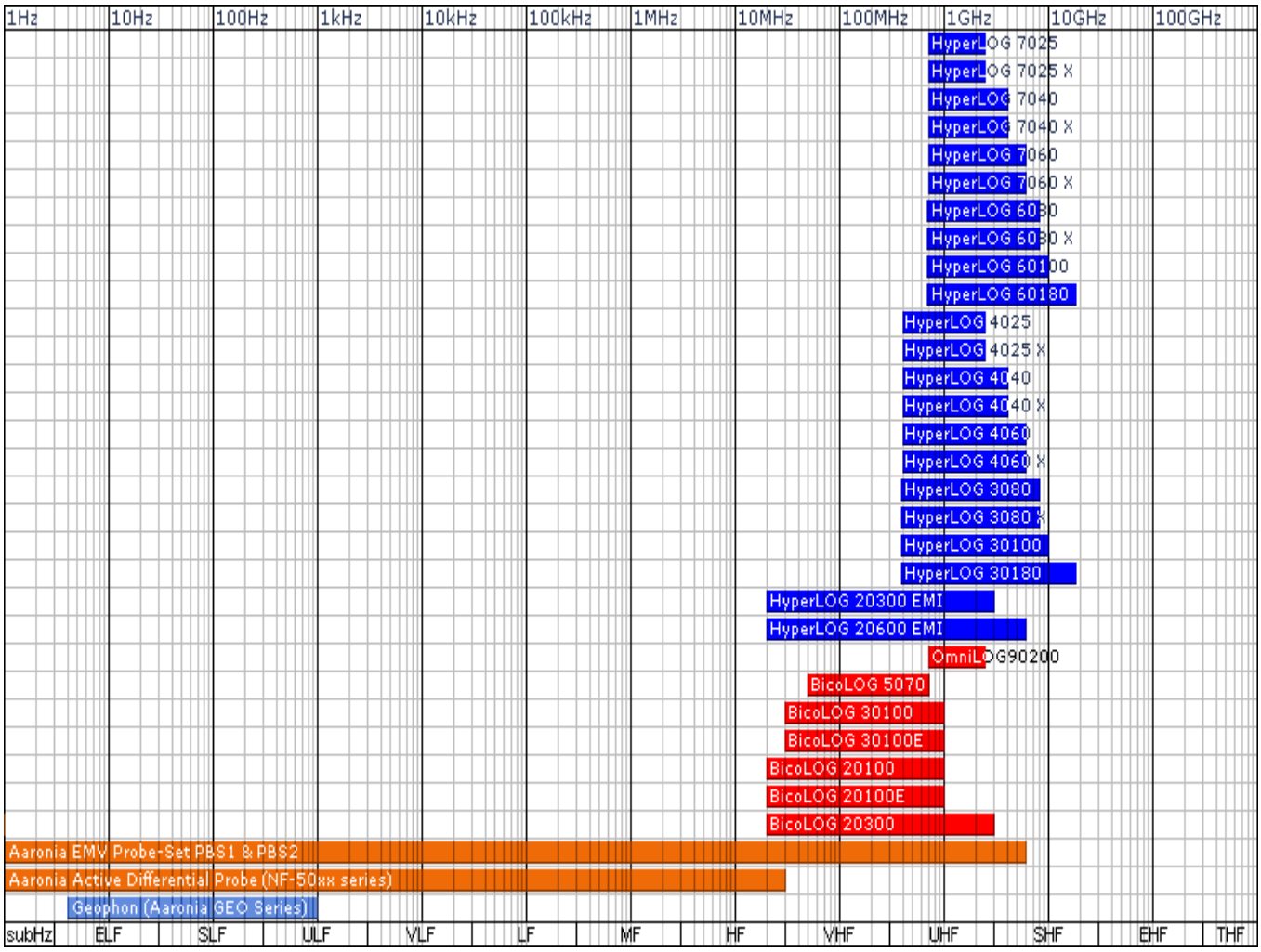
HF-XFR

Frequency overview Analyzer & Antennas

Frequency Overview SPECTRAN Spectrum Analyzer



Frequency Overview HyperLOG and BicoLOG Antennas and Probes



References

User of Aaronia Antennas and Spectrum Analyzers (Examples)

Government, Military, Aeronautic, Astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet

Rev 1.4
12.07.2011

Log periodic broadband yagi antenna Series HyperLOG® 70xx - span 700MHz to 6GHz

Excellent LogPer antennas for mobile measurements and laboratory

Highlights:

- Optimal for usage with spectrum analysers for EMC measurement
- Incl. high-tech radom with modern, appealing design
- Excellent forward/backward ratio
- Freely alignable polarisation
- Excellent symmetry of radiation patterns
- Integrated 1/4" tripod socket
- Suitable for mobile use
- Made in Germany
- **10 years warranty**

Calibration & standards:

- The log-periodic precompliance test antenna of the HyperLOG® 70xx series are suitable for interference field strength measurement. The specialized broadband characteristics allow measurements to be taken in the complete specified frequency range **without switching.**
- **These antennas are suitable for measurement according to the following standards and procedures:**
  CISPR, VDE, MIL, VG, EN 55011, EN 55013, EN 55015, EN 55022, MIL-Std-461.

Included with delivery:

- HyperLOG® 70xx-Antenna
- **Typical calibration data with up to 533 calibration points (10MHz steps)**
- Aluminum design carrycase with custom padding
- Sturdy, detachable pistol grip with "miniature tripod" mode
- Special Aaronia SMA toolset with over-torque protection

References / examples of proof:

- Airbus Deutschland, Germany
- EADS, Germany
- ATI Research, USA
- Motorola, Spain
- University of California, USA
- Los Alamos National Labratory, USA

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Specifications

HyperLOG® 7025:

- Design: Logarithmic-periodic
- Frequency range: **700MHz-2,5GHz**
- Max. transmission power: 100 W CW (400MHz)
- Nominal impedance: 50 Ohm
- VSWR (typ.): <1:2
- Gain (typ.): **4dBi**
- Antenna factor: **23-34dB/m**
- Calibration points: **183** (10MHz steps)
- RF connection: SMA socket (18GHz) or N socket using an adapter
- Dimensions (L/W/D): (340x200x25) mm
- Weight: 270gr
- **Warranty: 10 years**

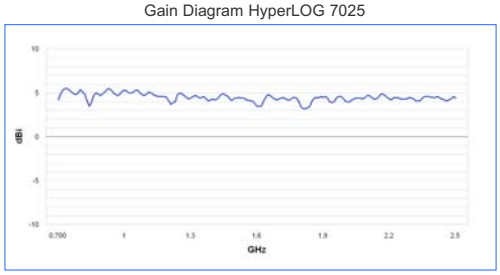
HyperLOG® 7040:

- Design: Logarithmic-periodic
- Frequency range: **700MHz-4GHz**
- Max. transmission power: 100 W CW (400MHz)
- Nominal impedance: 50 Ohm
- VSWR (typ.): <1:2
- Gain (typ.): **4dBi**
- Antenna factor: **23-38dB/m**
- Calibration points: **333** (10MHz steps)
- RF connection: SMA socket (18GHz) or N socket using an adapter
- Dimensions (L/W/D): (340x200x25) mm
- Weight: 270gr
- **Warranty: 10 years**

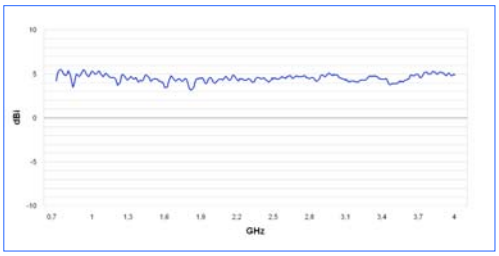
HyperLOG® 7060:

- Design: Logarithmic-periodic
- Frequency range: **700MHz-6GHz**
- Max. transmission power: 100 W CW (400MHz)
- Nominal impedance: 50 Ohm
- VSWR (typ.): <1:2
- Gain (typ.): **5dBi**
- Antenna factor: **26-41dB/m**
- Calibration points: **533** (10MHz steps)
- RF connection: SMA socket (18GHz) or N socket using an adapter
- Dimensions (L/W/D): (340x200x25) mm
- Weight: 250gr
- **Warranty: 10 years**

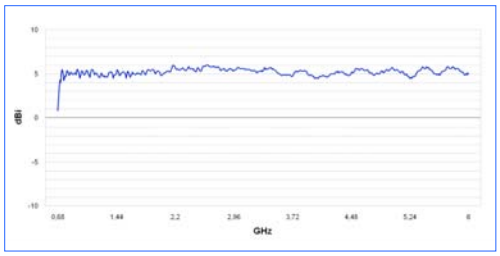
Gain Diagram HyperLOG 7025



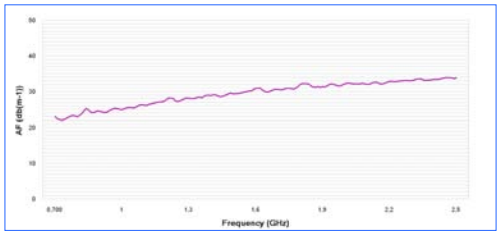
Gain Diagram HyperLOG 7040



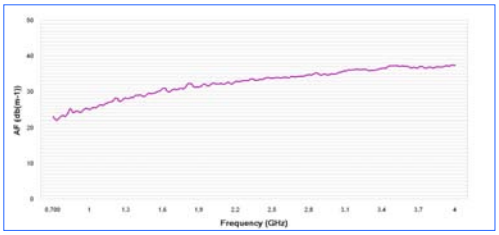
Gain Diagram HyperLOG 7060



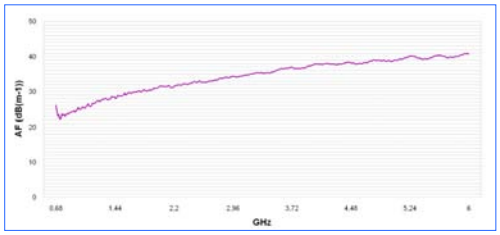
Antenna factor HyperLOG 7025



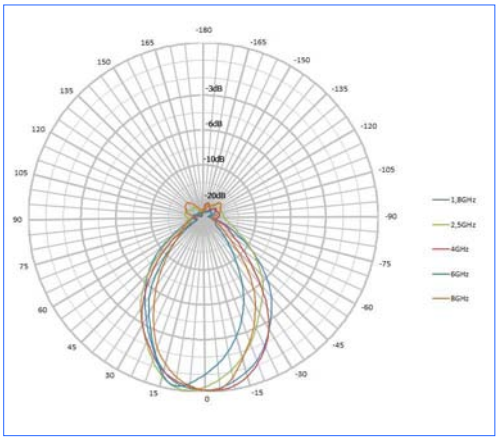
Antenna factor HyperLOG 7040



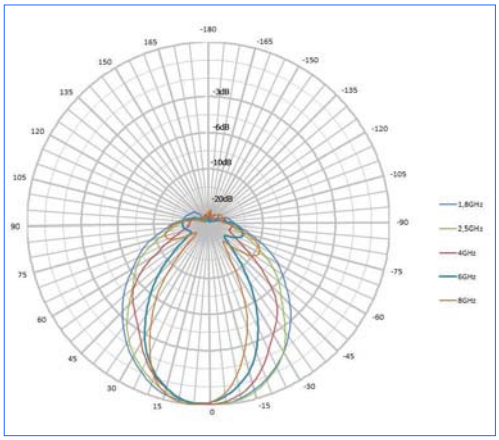
Antenna factor HyperLOG 7060



Horizontal Pattern HyperLOG 70xx Serie



Vertikal Pattern HyperLOG 70xx Serie



Description

HyperLOG 70xx Antenna with pistol grip expanded as a miniature tripod

With their log-periodic measurement antennas from the HyperLOG® 70xx series, Aaronia finally offers a very cost-effective alternative, which at the same time meets the highest expectations. In conjunction with the HyperLOG® antennas, every regular spectrum analyser becomes a fully professional directional RF measurement device within a few moments. Thus, a perfect "dream team" for EMC measurement in the laboratory or for outdoor use is at your disposal.

Due to their flexibility in polarisation, HyperLOG antennas can also be used as handy WLAN or Wifi antennas. Point-to-point WLan links or networks can be constructed easily using the full bandwidth up to 6GHz, achieving high throughput. Optimal for MMDS, ISM, CCTV and data/telephony transmission.

The HyperLOG® 70xx logper antennas come standard with a specially constructed, high tech radom housing. This housing has been constructed after intense research with the most modern computer technology in such a way that its shape, material and special coating have virtually no influence on measurements, not even in case of dew or other kinds of humidity collecting on the surface. Another important factor for Aaronia was the development of a radom with the lowest possible damping factor achievable. This turned out to be quite an adventure for our development team, particularly in the high GHz ranges. Fortunately, this adventure has been mastered resulting in a beautiful, elegant design, to the complete satisfaction of the development team. Our first test measurements even by far surpassed our guidelines!
The resulting antenna had the best possible protection against mechanical stress and environmental influence without sacrificing any of its performance.

Also available in a "transparent" finish at extra charge

Lot of space for optionally accessories:
The HyperLOG® transportcase

Included with delivery: A sturdy aluminum design carrycase with custom padding for the antenna, cables and accessories. Furthermore, every antenna of the HyperLOG® 70xx series includes a detachable multi-functional pistol grip with "miniature-tripod" mode and an appropriate SMA toolset.

Recommended accessories for Aaronia Antennas

Heavy Plastic Carrycase PRO

Schock resistant, heavy version with padding. Offers spaces for a HyperLOG 70xx or 60xxx antenna and 2 SPECTRAN units with all accessories.
A must for the professional user or outdoor usage!

Order/Art.-No.: 243

interior view

exterior view

1m / 5m / 10m SMA-Cable

High quality special SMA cable for connecting any HyperLOG®-Antenna or BicoLOG®-Antenna with various test equipment like our RF Spectrum-Analyzer. You can choose between 3 different cables:

1m standard SMA cable (RG316U)
5m LowLoss SMA cable (especially low damping)
10m LowLoss SMA cable (especially low damping)

All versions: SMA plug (male) / SMA plug (male)

Order/Art.-No.: 771 (1m Cable), 772 (5m Cable), 773 (10m Cable)

SMA Cable (1-10m)

SMA to N Adapter

This special high quality adapter allows operation of all HyperLOG®-Antenna with any standard spectrum-analyzer with N connector. Also this adapter is needed to connect BicoLOG® antennas to a SPECTRAN Spectrum Analyzer.

Especially massive, chrome-plated design. This adapter is usable for very high frequencies up to at least 18GHz. Physical dimensions are just 30x20mm. Nominal impedance 50 Ohms. Layout: SMA socket (female) / N plug (male).

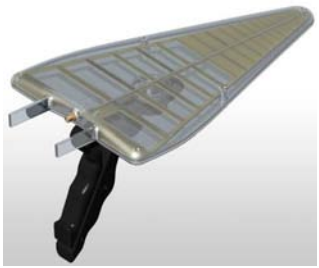
Order/Art.-No.: 770

SMA to N Adapter

Option Transparent

Beautiful, transparent case for HyperLOG® antenna series 30xxx, 40xx, 60xxx and 70xx. Hand-polished.

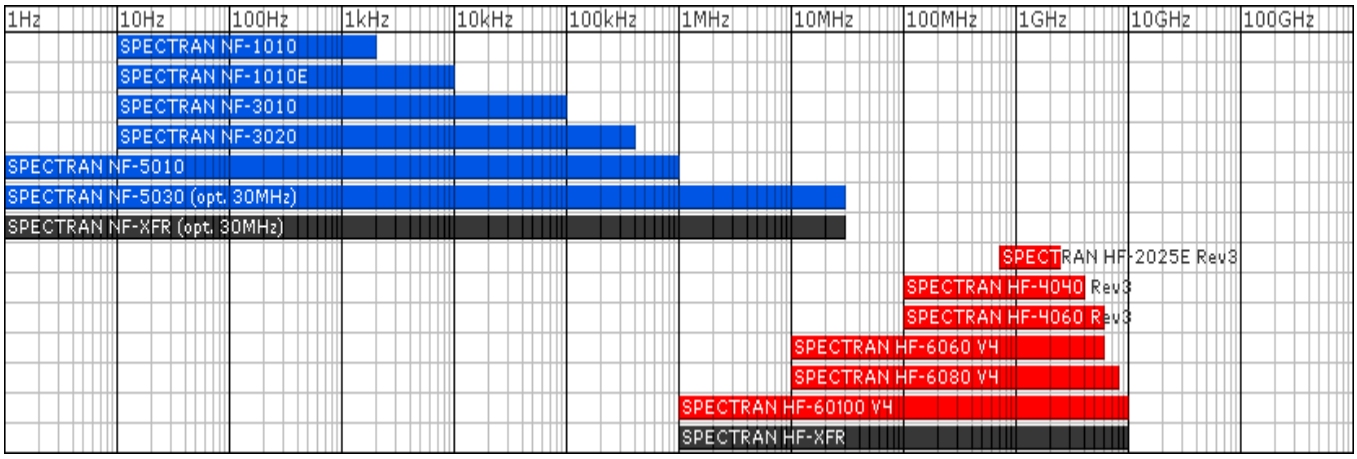
Order/Art.-No.: Antenna Order-No. + T



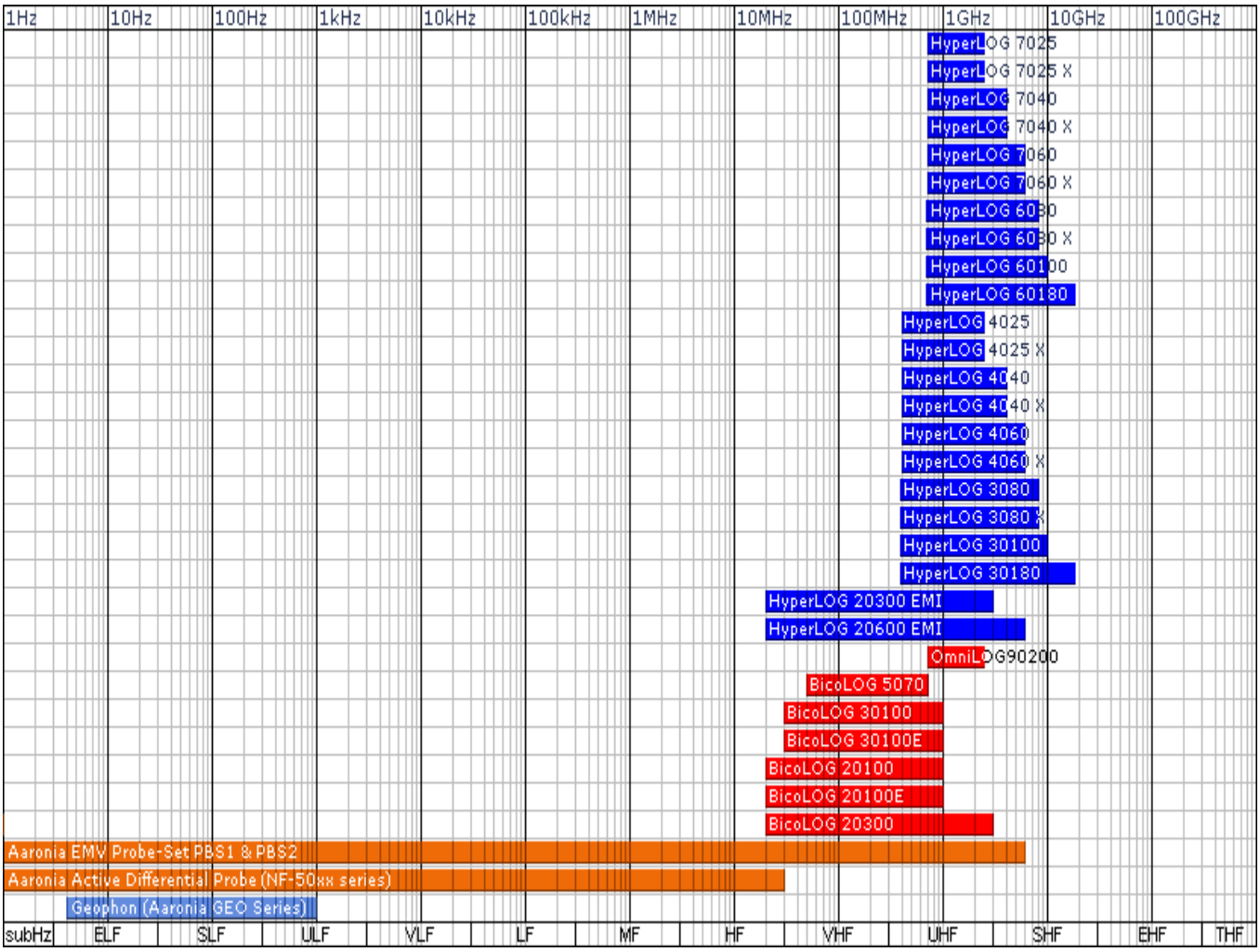
transparent finish

Frequency overview Analyzer & Antennas

Frequency Overview SPECTRAN Spectrum Analyzer



Frequency Overview HyperLOG and BicoLOG Antennas and Probes



References

User of Aaronia Antennas and Spectrum Analyzers (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet

Rev 1.4
12.07.2011

Precompliance test antenna series HyperLOG® 60xxx span 680MHz to 18GHz

A logper antenna for the complete frequency range from 680MHz to 18GHz

Highlights:

- Optimal for usage with spectrum analysers for EMC measurement
- Top-quality high-tech TEFLON antenna support
- Excellent forward/backward ratio
- Freely alignable polarisation
- Excellent symmetry of radiation patterns
- Integrated 1/4" tripod socket
- Suitable for mobile use
- Made in Germany
- **10 years warranty**

Calibration & standards:

- The log-periodic precompliance test antenna of the HyperLOG® 60xxx series are suitable for interference field strength measurement. The specialized broadband characteristics allow measurements to be taken in the complete specified frequency range **without switching.**
- **These antennas are suitable for measurement according to the following standards and procedures:**
  CISPR, VDE, MIL, VG, EN 55011, EN 55013, EN 55015, EN 55022, MIL-Std-461.

Included with delivery:

- HyperLOG® 60xxx-Antenna
- **Typical calibration data with up to 1734 calibration points (10MHz steps)**
- Aluminum design carrycase with custom padding
- Sturdy, detachable pistol grip with "miniature tripod" mode
- Special Aaronia SMA toolset with over-torque protection

References / examples of proof:

- BMW, München, Germany
- Hewlett Packard, Dornach, Germany
- Audi AG, Ingolstadt, Germany
- DLR, Köln, Germany
- University of Florida, USA
- IBM, Stuttgart, Germany

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Specifications

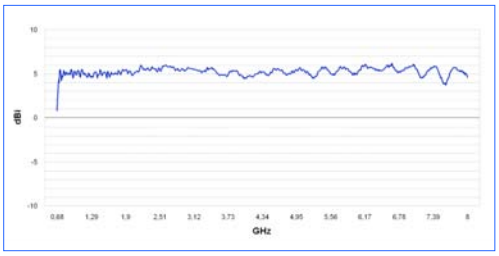
HyperLOG® 6080:

- Design: Logarithmic-periodic
- Frequency range: **680MHz-8GHz**
- Max. transmission power: 100 W CW (400MHz)
- Nominal impedance: 50 Ohms
- VSWR (typ.): <1:2,5
- Gain (typ.): **5dBi**
- Antenna factor: **22-44dB/m**
- Calibration points: **733** (10MHz steps)
- RF connection: SMA socket (18GHz) or N socket using an adapter
- Dimensions (L/W/D): (340x200x25) mm
- Weight: 250gr
- **Warranty: 10 years**

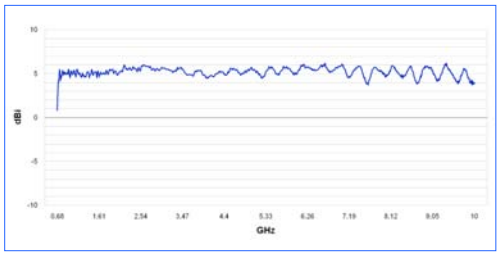
HyperLOG® 60100:

- Design: Logarithmic-periodic
- Frequency range: **680MHz-10GHz**
- Max. transmission power: 100 W CW (400MHz)
- Nominal impedance: 50 Ohms
- VSWR (typ.): <1:2,5
- Gain (typ.): **5dBi**
- Antenna factor: **22-46dB/m**
- Calibration points: **933** (10MHz steps)
- RF connection: SMA socket (18GHz) or N socket using an adapter
- Dimensions (L/W/D): (340x200x25) mm
- Weight: 250gr
- **Warranty: 10 years**

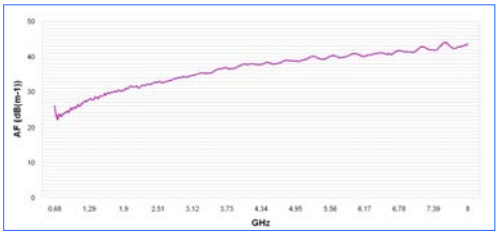
Gain Diagram HyperLOG 6080



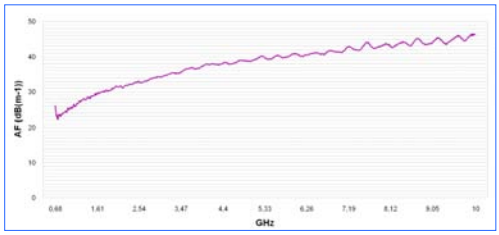
Gain Diagram HyperLOG 60100



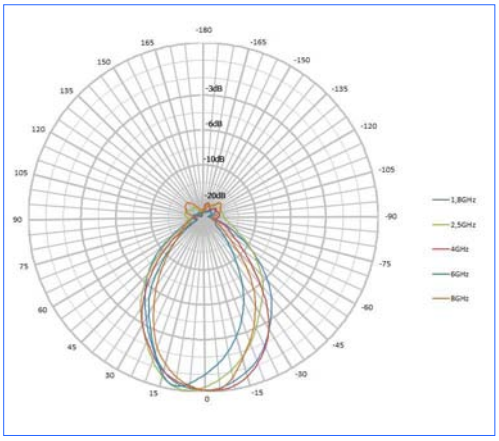
Antenna factor HyperLOG 6080



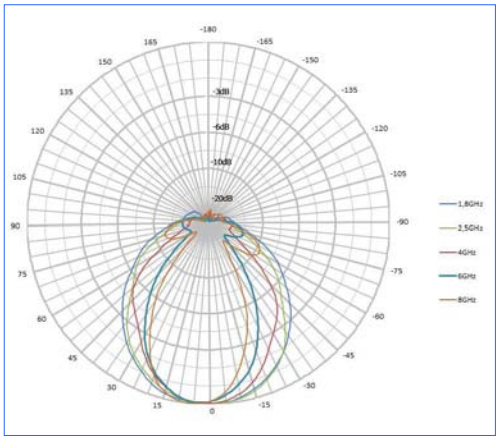
Antenna factor HyperLOG 60100



Horizontal Pattern HyperLOG 60xx Series



Vertikal Pattern HyperLOG 60xx Series



Description

HyperLOG 70xx Antenna with pistol grip expanded as a miniature tripod

With their log-periodic measurement antennas from the HyperLOG® 60xxx series, Aaronia finally offers a very cost-effective alternative, which at the same time meets the highest expectations. In conjunction with the HyperLOG® antennas, every regular spectrum analyser becomes a fully professional directional RF measurement device within a few moments. Thus, a perfect "dream team" for EMC measurement in the laboratory or for outdoor use is at your disposal.

Due to their small weight and the multi-functional handle, these antennas are the optimal supplement for portable EMC measurement devices for locating and evaluating any kind of signal source.

The HyperLOG® 60xxx logper antennas come standard with a specially constructed, high tech radom housing. This housing has been constructed after intense research with the most modern computer technology in such a way that its shape, material and special coating have virtually no influence on measurements, not even in case of dew or other kinds of humidity collecting on the surface. Another important factor for Aaronia was the development of a radom with the lowest possible damping factor achievable. This turned out to be quite an adventure for our development team, particularly in the high GHz ranges. Fortunately, this adventure has been mastered resulting in a beautiful, elegant design, to the complete satisfaction of the development team. Our first test measurements even by far surpassed our guidelines!
The resulting antenna had the best possible protection against mechanical stress and environmental influence without sacrificing any of its performance.

Also available in a "transparent" finish at extra charge

Lot of space for optionally accessories:
The HyperLOG® transportcase

Included with delivery: A sturdy aluminum design carrycase with custom padding for the antenna, cables and accessories. Furthermore, every antenna of the HyperLOG® 60xxx series includes a detachable multi-functional pistol grip with "miniature-tripod" mode and an appropriate SMA toolset.

Recommended accessories for Aaronia Antennas

Heavy Plastic Carrycase PRO

Schock resistant, heavy version with padding. Offers spaces for a HyperLOG 70xx or 60xxx antenna and 2 SPECTRAN units with all accessories.
A must for the professional user or outdoor usage!

Order/Art.-No.: 243

interior view

exterior view

1m / 5m / 10m SMA-Cable

High quality special SMA cable for connecting any HyperLOG®-Antenna or BicoLOG®-Antenna with various test equipment like our RF Spectrum-Analyzer. You can choose between 3 different cables:

1m standard SMA cable (RG316U)
5m LowLoss SMA cable (especially low damping)
10m LowLoss SMA cable (especially low damping)

All versions: SMA plug (male) / SMA plug (male)

Order/Art.-No.: 771 (1m Cable), 772 (5m Cable), 773 (10m Cable)

SMA Cable (1-10m)

SMA to N Adapter

This special high quality adapter allows operation of all HyperLOG®-Antenna with any standard spectrum-analyzer with N connector. Also this adapter is needed to connect BicoLOG® antennas to a SPECTRAN Spectrum Analyzer.

Especially massive, chrome-plated design. This adapter is usable for very high frequencies up to at least 18GHz. Physical dimensions are just 30x20mm. Nominal impedance 50 Ohms. Layout: SMA socket (female) / N plug (male).

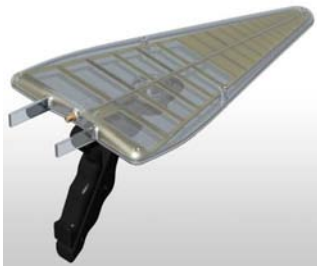
Order/Art.-No.: 770

SMA to N Adapter

Option Transparent

Beautiful, transparent case for HyperLOG® antenna series 30xxx, 40xx, 60xxx and 70xx. Hand-polished.

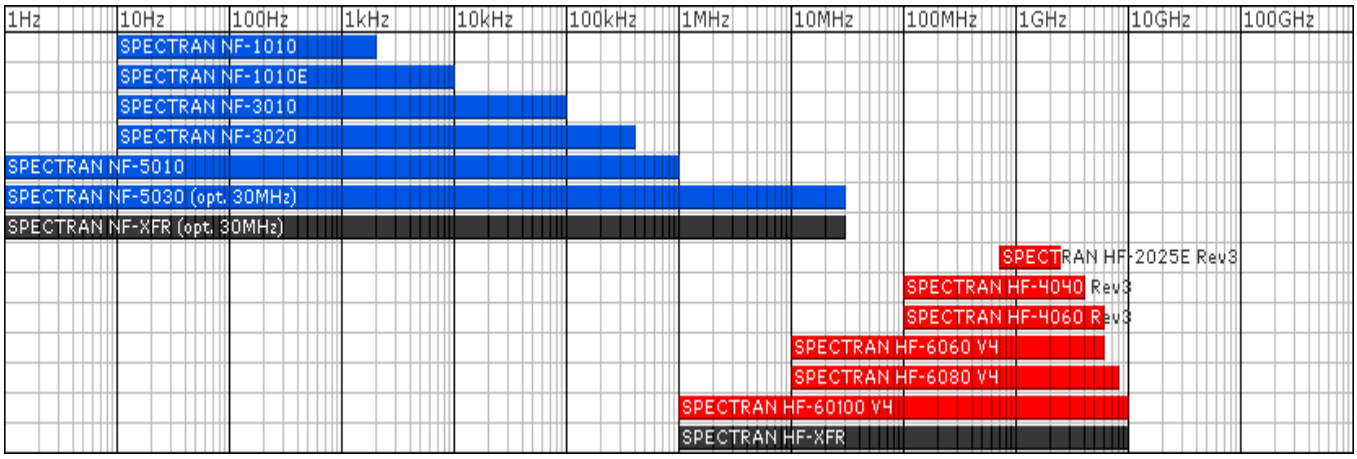
Order/Art.-No.: Antenna Order-No. + T



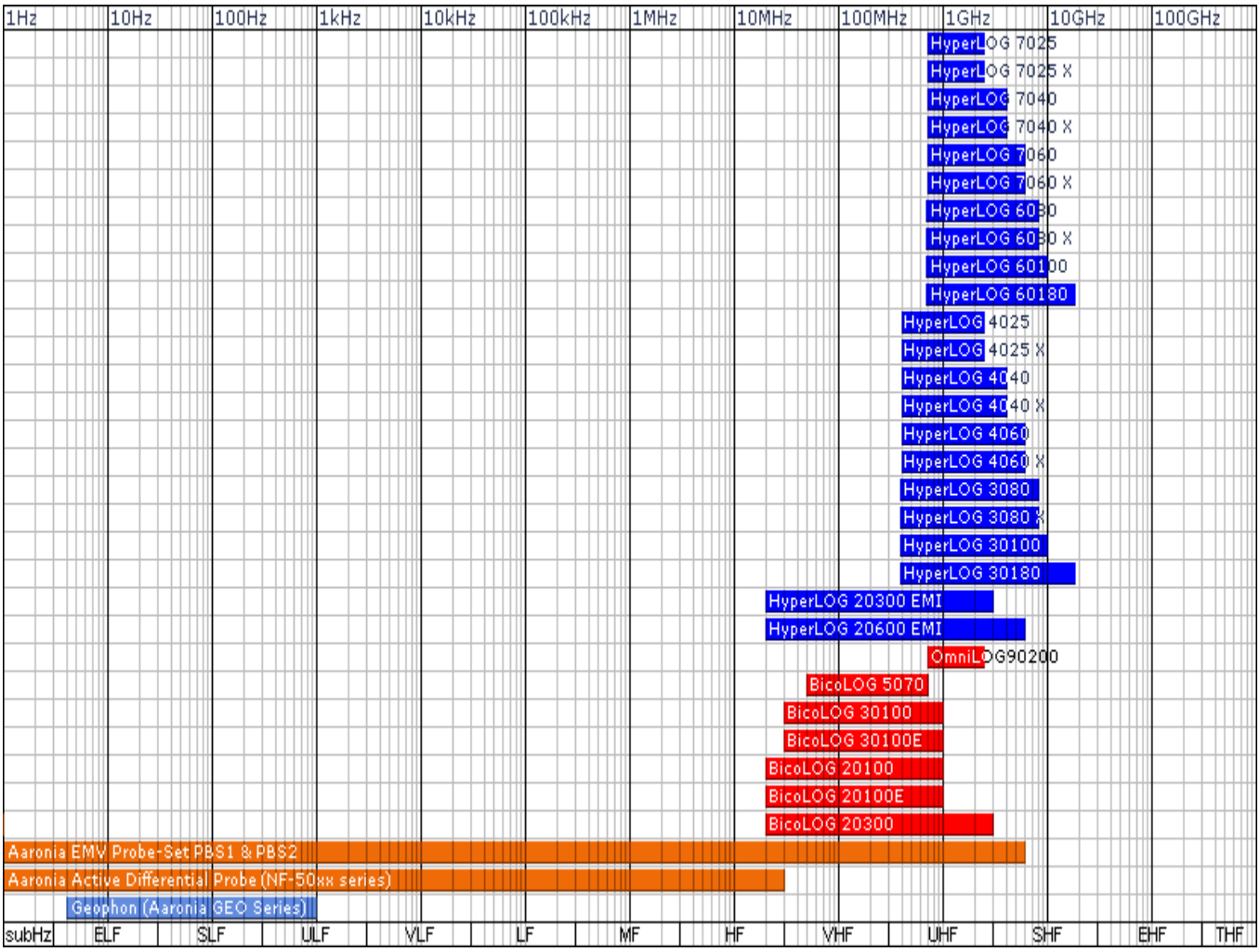
transparent finish

Frequency overview Analyzer & Antennas

Frequency Overview SPECTRAN Spectrum Analyzer



Frequency Overview HyperLOG and BicoLOG Antennas and Probes



References

User of Aaronia Antennas and Spectrum Analyzers (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet

Rev 1.5
12.07.2011

LogPer antenna HyperLOG® 40xx span 400MHz to 6GHz

Broadband antenna for the complete frequency range up to 6GHz

Highlights:

- Optimal for usage with spectrum analysers for EMC measurement
- Incl. high-tech radom with modern, appealing design
- Excellent forward/backward ratio
- Freely alignable polarisation
- Excellent symmetry of radiation patterns
- Integrated 1/4" tripod socket
- Suitable for mobile use
- Made in Germany
- **10 years warranty**

Calibration & standards:

- The log-periodic precompliance test antenna of the HyperLOG® 40xx series are suitable for interference field strength measurement. The specialized broadband characteristics allow measurements to be taken in the complete specified frequency range **without switching.**
- **These antennas are suitable for measurement according to the following standards and procedures:**
  CISPR, VDE, MIL, VG, EN 55011, EN 55013, EN 55015, EN 55022, MIL-Std-461.

Included with delivery:

- HyperLOG® 40xx-Antenna
- **Typical calibration data with up to 561 calibration points (10MHz steps)**
- Aluminum design carrycase with custom padding
- Sturdy, detachable pistol grip with "miniature tripod" mode
- Special Aaronia SMA toolset with over-torque protection

References / examples of proof:

- Boeing, USA
- Rohde & Schwarz, Germany
- DaimlerChrysler AG, Germany
- EADS, Belgium
- Philips Semiconductors, Germany
- Infineon, Austria

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Specifications

HyperLOG® 4025:

- Design: Logarithmic-periodic
- Frequency range: **400MHz-2,5GHz**
- Max. transmission power: 100 W CW (400MHz)
- Nominal impedance: 50 Ohm
- VSWR (typ.): <1:2
- Gain (typ.): **4dBi**
- Antenna factor: **18-34dB/m**
- Calibration points: **211** (10MHz steps)
- RF connection: SMA socket (18GHz) or N socket using an adapter
- Dimensions (L/W/D): (590x360x30) mm
- Weight: 1200gr
- **Warranty: 10 years**

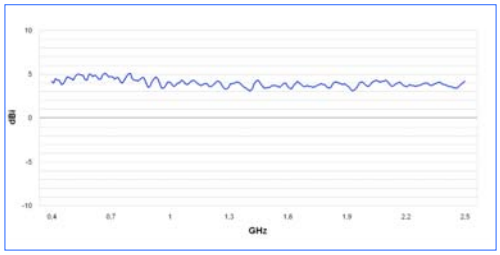
HyperLOG® 4040:

- Design: Logarithmic-periodic
- Frequency range: **400MHz-4GHz**
- Max. transmission power: 100 W CW (400MHz)
- Nominal impedance: 50 Ohm
- VSWR (typ.): <1:2
- Gain (typ.): **4dBi**
- Antenna factor: **18-38dB/m**
- Calibration points: **361** (10MHz steps)
- RF connection: SMA socket (18GHz) or N socket using an adapter
- Dimensions (L/W/D): (590x360x30) mm
- Weight: 1200gr
- **Warranty: 10 years**

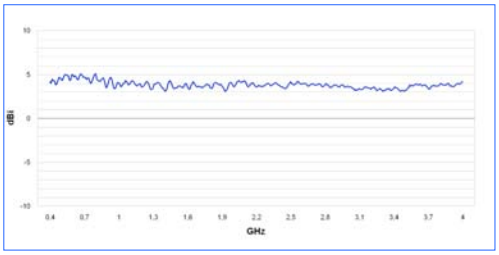
HyperLOG® 4060:

- Design: Logarithmic-periodic
- Frequency range: **400MHz-6GHz**
- Max. transmission power: 100 W CW (400MHz)
- Nominal impedance: 50 Ohm
- VSWR (typ.): <1:2
- Gain (typ.): **5dBi**
- Antenna factor: **20-40dB/m**
- Calibration points: **561** (10MHz steps)
- RF connection: SMA socket (18GHz) or N socket using an adapter
- Dimensions (L/W/D): (590x360x30) mm
- Weight: 1000gr
- **Warranty: 10 years**

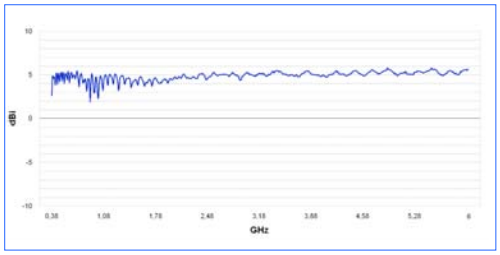
Gain Diagram HyperLOG 4025



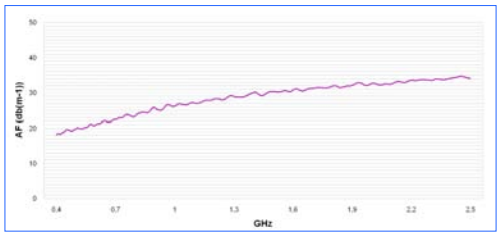
Gain Diagram HyperLOG 4040



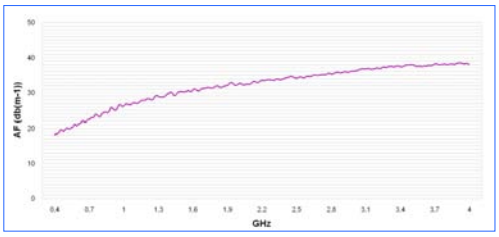
Gain Diagram HyperLOG 4060



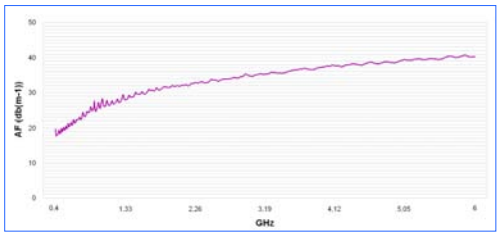
Antenna factor HyperLOG 4025



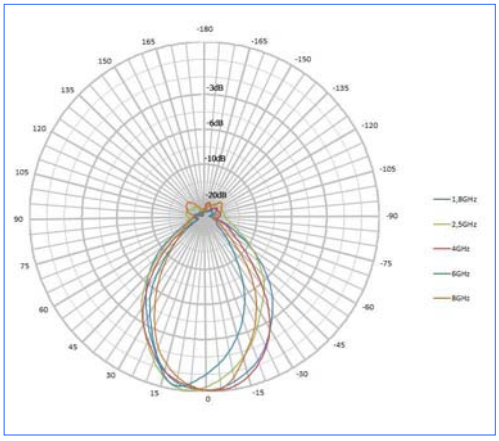
Antenna factor HyperLOG 4040



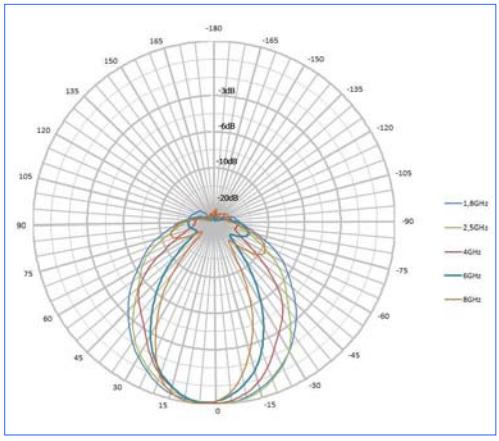
Antenna factor HyperLOG 4060



Horizontal Pattern HyperLOG 40xx Serie



Vertikal Pattern HyperLOG 40xx Serie



Description

HyperLOG 40xx Antenna with optional aluminum tripod

With their log-periodic measurement antennas from the HyperLOG® 40xx series, Aaronia finally offers a very cost-effective alternative, which at the same time meets the highest expectations. In conjunction with the HyperLOG® antennas, every regular spectrum analyser becomes a fully professional directional RF measurement device within a few moments. Thus, a perfect "dream team" for EMC measurement in the laboratory or for outdoor use is at your disposal.

The LogPer antennas of the HyperLOG® 40xx series are identical to those of the 70xx series, but have an enhanced frequency range down to 400MHz, particularly for covering the 70cm amateur radio band (430 MHz and up). Consequently, the dimensions of the antennas had to be increased significantly.

The HyperLOG® antennas come standard with a specially constructed, high tech radom housing. This housing has been constructed after intense research with the most modern computer technology in such a way that its shape, material and special coating have virtually no influence on measurements, not even in case of dew or other kinds of humidity collecting on the surface. Another important factor for Aaronia was the development of a radom with the lowest possible damping factor achievable. This turned out to be quite an adventure for our development team, particularly in the high GHz ranges. Fortunately, this adventure has been mastered resulting in a beautiful, elegant design, to the complete satisfaction of the development team. Our first test measurements even by far surpassed our guidelines!
The resulting antenna had the best possible protection against mechanical stress and environmental influence without sacrificing any of its performance.

Spectrum Analyser and HyperLOG® directional antenna

Lot of space for optionally accessories:
The HyperLOG® transportcase

Included with delivery: A sturdy aluminum design carrycase with custom padding for the antenna, cables and accessories. Furthermore, every antenna of the HyperLOG® 40xx series includes a detachable multi-functional pistol grip with "miniature-tripod" mode and an appropriate SMA toolset.

Recommended accessories for Aaronia Antennas

Aluminum tripod

Height adjustable, high stability. STRONGLY recommended for use with HyperLOG 40xx and 30xxx antennas! Max. height: 105cm.

Order/Art.-No.: 281

Aluminum tripod

1m / 5m / 10m SMA-Cable

High quality special SMA cable for connecting any HyperLOG®-Antenna or BicoLOG®-Antenna with various test equipment like our RF Spectrum-Analyzer. You can choose between 3 different cables:

1m standard SMA cable (RG316U)
5m LowLoss SMA cable (especially low damping)
10m LowLoss SMA cable (especially low damping)

All versions: SMA plug (male) / SMA plug (male)

Order/Art.-No.: 771 (1m Cable), 772 (5m Cable), 773 (10m Cable)

SMA Cable (1-10m)

SMA to N Adapter

This special high quality adapter allows operation of all HyperLOG®-Antenna with any standard spectrum-analyzer with N connector. Also this adapter is needed to connect BicoLOG® antennas to a Spectran Spectrum Analyzer.

Especially massive, chrome-plated design. This adapter is usable for very high frequencies up to at least 18GHz. Physical dimensions are just 30x20mm. Nominal impedance 50 Ohms. Layout: SMA socket (female) / N plug (male).

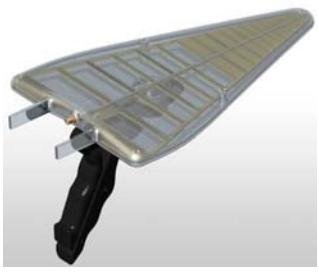
Order/Art.-No.: 770

SMA to N Adapter

Option Transparent

Beautiful, transparent case for HyperLOG® antenna series 30xxx, 40xx, 60xxx and 70xx. Hand-polished.

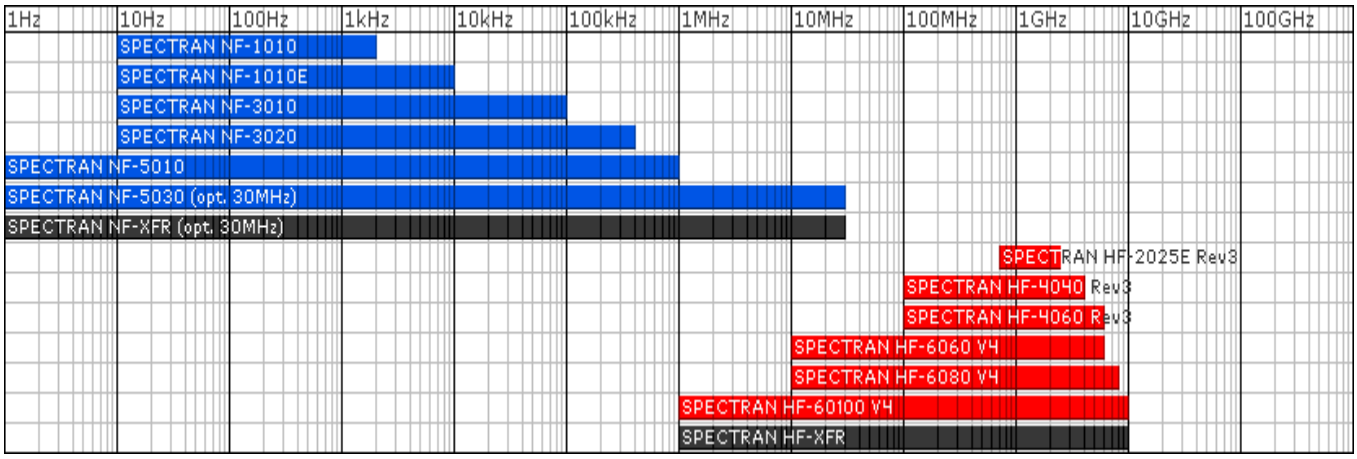
Order/Art.-No.: Antenna Order-No. + T



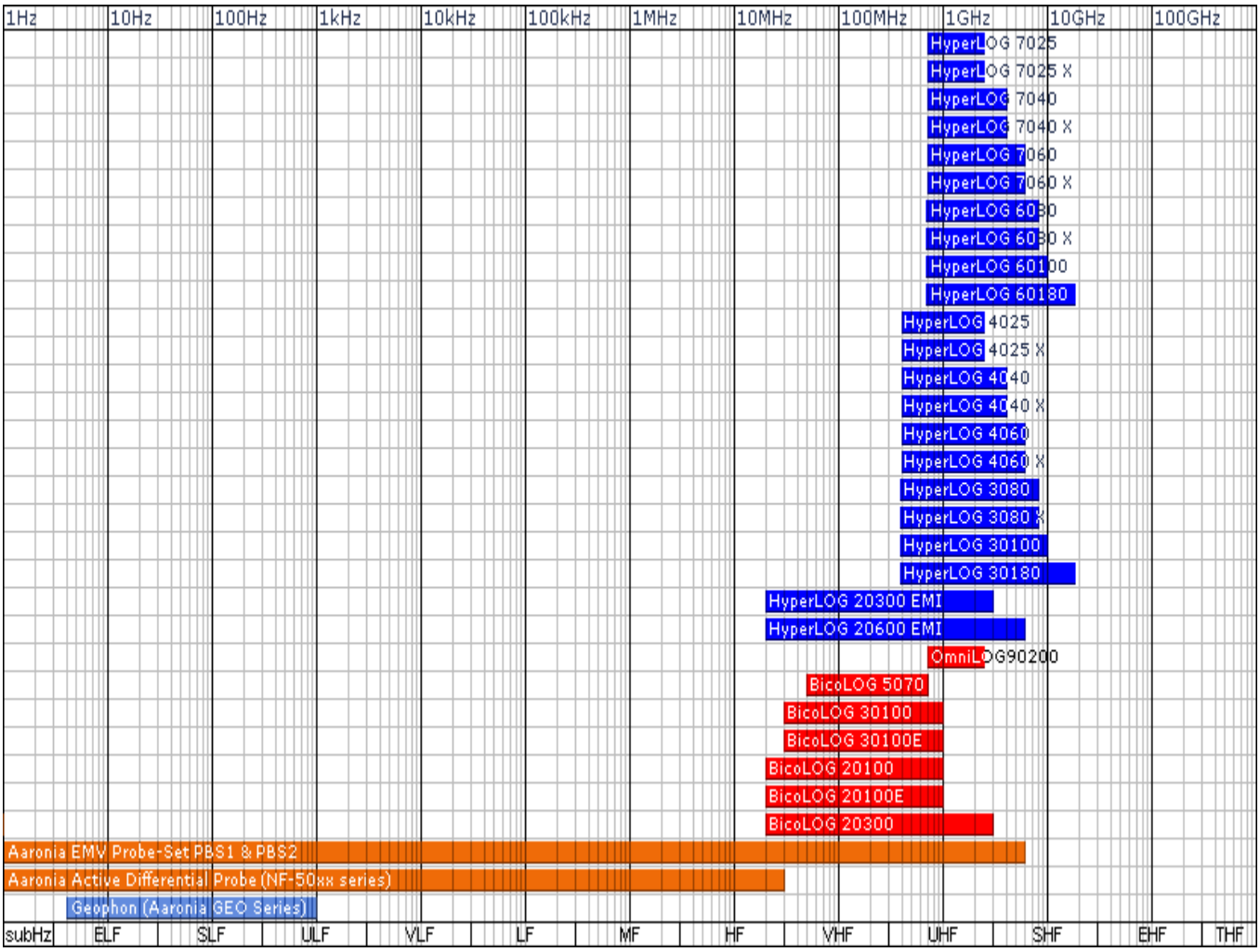
transparent finish

Frequency overview Analyzer & Antennas

Frequency Overview SPECTRAN Spectrum Analyzer



Frequency Overview HyperLOG and BicoLOG Antennas and Probes



References

User of Aaronia Antennas and Spectrum Analyzers (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet

Rev 1.5
12.07.2011

Precompliance EMC Test Antenna HyperLOG® 30xxx series
Logarithmic Periodic Antenna. Spans 380MHz to 18GHz

Ultimate functionality and elegant design at a revolutionary price

Highlights:

- Only a single broadband antenna for the complete frequency range from 380MHz to 18GHz
- Optimal for usage with spectrum analysers for EMC measurement
- Complete ISO calibration certificate (option)
- **Top-quality high-tech TEFLON antenna support**
- Freely alignable polarisation
- Made in Germany
- **10 years warranty**

Calibration & standards:

- The log-periodic precompliance test antenna of the HyperLOG® 30xxx series are suitable for interference field strength measurement. The specialized broadband characteristics allow measurements to be taken in the complete specified frequency range **without switching.**
- **These antennas are suitable for measurement according to the following standards and procedures:**
  CISPR, VDE, MIL, VG, EN 55011, EN 55013, EN 55015, EN 55022, MIL-Std-461.

Included with delivery:

- HyperLOG® 30xxx-Antenna
- **Typical calibration data with up to 1763 calibration points (10MHz steps)**
- Aluminum design carrycase with custom padding
- Sturdy, detachable pistol grip with "miniature tripod" mode
- Special Aaronia SMA toolset with over-torque protection

References / examples of proof:

- Airbus, Hamburg, Germany
- Australian Government Department of Defence, Australia
- Siemens AG, München, Germany
- BMW, München, Germany
- Bundesamt für Sicherheit in der Informationstechnik, Bonn, Germany
- Fraunhofer Institut Integrierte Schaltungen, Erlangen, Germany

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Specifications

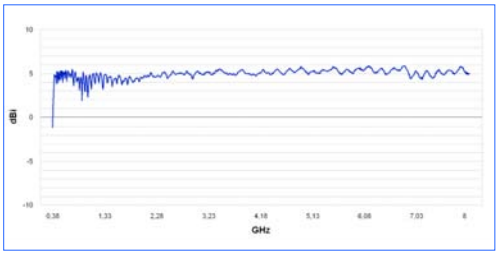
HyperLOG® 3080:

- Design: Logarithmic-periodic
- Frequency range: **380MHz-8GHz**
- Max. transmission power: 100W CW (400 MHz)
- Nominal impedance: 50 Ohms
- VSWR (typ.): <1:2,5
- Gain (typ.): **5dBi**
- Antenna factor: **20-43dB/m**
- Calibration points: **763** (10MHz-steps)
- RF connection: SMA socket (18GHz) or N socket using an adapter
- Dimensions (L/W/D): (590x360x30) mm
- Weight: 1000gr
- **Warranty: 10 years**

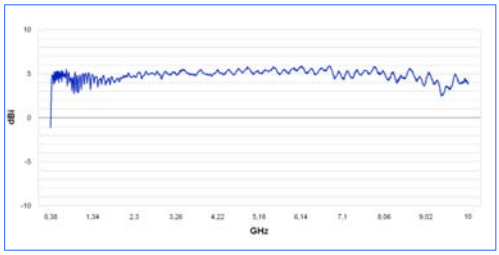
HyperLOG® 30100:

- Design: Logarithmic-periodic
- Frequency range: **380MHz-10GHz**
- Max. transmission power: 100W CW (400 MHz)
- Nominal impedance: 50 Ohms
- VSWR (typ.): <1:2,5
- Gain (typ.): **5dBi**
- Antenna factor: **20-46dB/m**
- Calibration points: **963** (10MHz-steps)
- RF connection: SMA socket (18GHz) or N socket using an adapter
- Dimensions (L/W/D): (590x360x30) mm
- Weight: 1000gr
- **Warranty: 10 years**

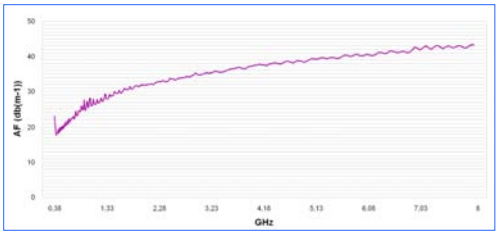
Gain Diagram HyperLOG 3080



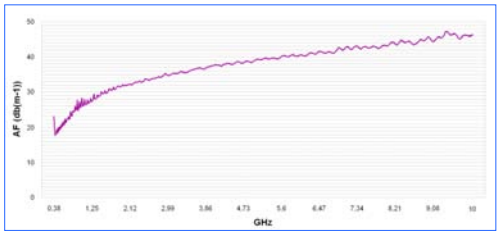
Gain Diagram HyperLOG 30100



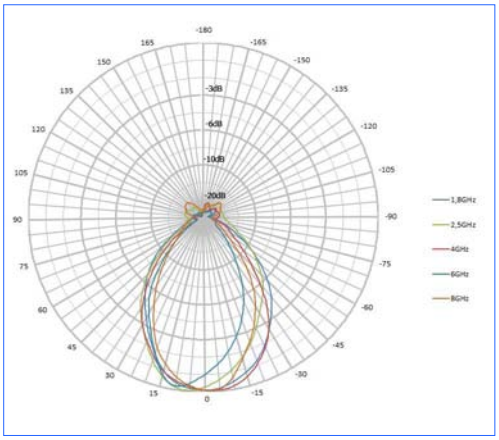
Antenna factor HyperLOG 3080



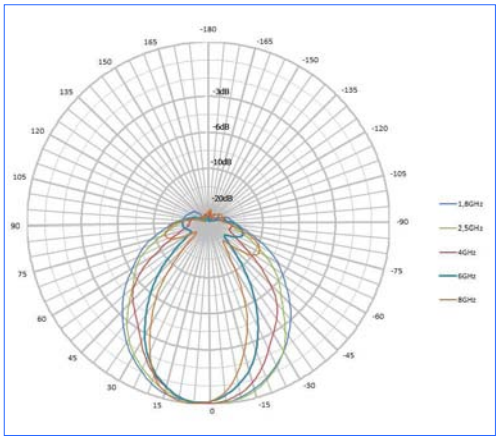
Antenna factor HyperLOG 30100



Horizontal Pattern HyperLOG 30xx Serie



Vertikal Pattern HyperLOG 30xx Serie



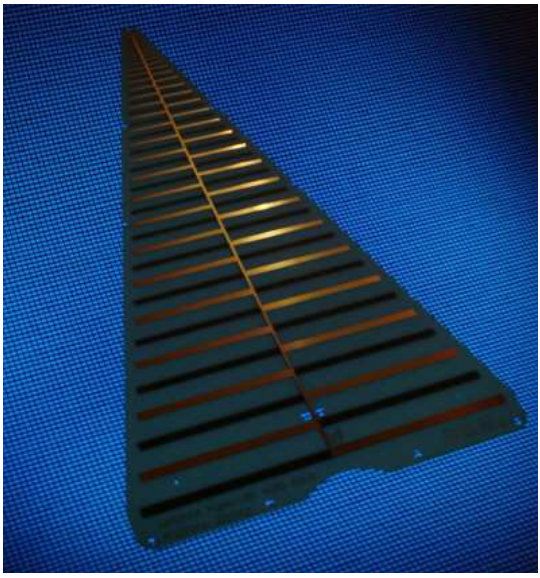
Description

HyperLOG 30xxx antenna with optional aluminum tripod

With their log-periodic measurement antennas from the HyperLOG® 30xxx series, Aaronia finally offers a very cost-effective alternative, which at the same time meets the highest expectations. In conjunction with the HyperLOG® antennas, every regular spectrum analyser becomes a fully professional directional RF measurement device within a few moments. Thus, a perfect "dream team" for EMC measurement in the laboratory or for outdoor use is at your disposal.

The TEFLON LogPer antennas of the HyperLOG® 30xxx series are identical to those of the 60xxx series, but have an enhanced frequency range down to 380MHz, particularly for coverage of the important TETRA band. After a huge amount of complex development, a whole series of truely high-tech antennas has evolved, with an exceptional mix of performance, functionality and design in this price category.

The HyperLOG® antennas come standard with a specially constructed, high tech radom housing. This housing has been constructed after intense research with the most modern computer technology in such a way that its shape, material and special coating have virtually no influence on measurements, not even in case of dew or other kinds of humidity collecting on the surface. Another important factor for Aaronia was the development of a radom with the lowest possible damping factor achievable. This turned out to be quite an adventure for our development team, particularly in the high GHz ranges. Fortunately, this adventure has been mastered resulting in a beautiful, elegant design, to the complete satisfaction of the development team. Our first test measurements even by far surpassed our guidelines!
The resulting antenna had the best possible protection against mechanical stress and environmental influence without sacrificing any of its performance.



Gold-coated, protected TEFLON precision antenna

Lot of space for optionally accessories:
The HyperLOG® transportcase

Included with delivery: A sturdy aluminum design carrycase with custom padding for the antenna, cables and accessories. Furthermore, every antenna of the HyperLOG® 30xxx series includes a detachable multi-functional pistol grip with "miniature-tripod" mode and an appropriate SMA toolset.

Recommended accessories for Aaronia Antennas

Aluminum tripod

Height adjustable, high stability. STRONGLY recommended for use with HyperLOG 40xx and 30xxx antennas! Max. height: 105cm.

Order/Art.-No.: 281

Aluminum tripod

1m / 5m / 10m SMA-Cable

High quality special SMA cable for connecting any HyperLOG®-Antenna or BicoLOG®-Antenna with various test equipment like our RF Spectrum-Analyzer. You can choose between 3 different cables:

1m standard SMA cable (RG316U)
5m LowLoss SMA cable (especially low damping)
10m LowLoss SMA cable (especially low damping)

All versions: SMA plug (male) / SMA plug (male)

Order/Art.-No.: 771 (1m Cable), 772 (5m Cable), 773 (10m Cable)

SMA Cable (1-10m)

SMA to N Adapter

This special high quality adapter allows operation of all HyperLOG®-Antenna with any standard spectrum-analyzer with N connector. Also this adapter is needed to connect BicoLOG® antennas to a Spectran Spectrum Analyzer.

Especially massive, chrome-plated design. This adapter is usable for very high frequencies up to at least 18GHz. Physical dimensions are just 30x20mm. Nominal impedance 50 Ohms. Layout: SMA socket (female) / N plug (male).

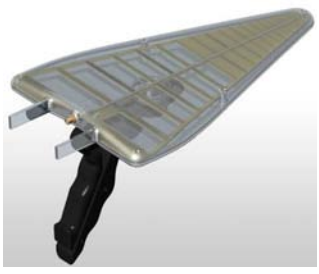
Order/Art.-No.: 770

SMA to N Adapter

Option Transparent

Beautiful, transparent case for HyperLOG® antenna series 30xxx, 40xx, 60xxx and 70xx. Hand-polished.

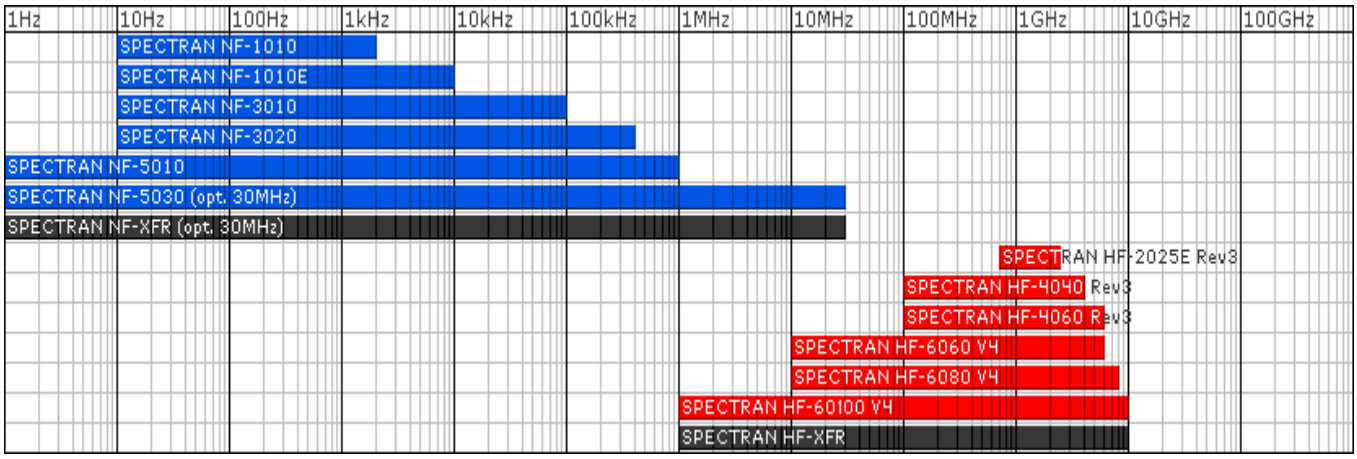
Order/Art.-No.: Antenna Order-No. + T



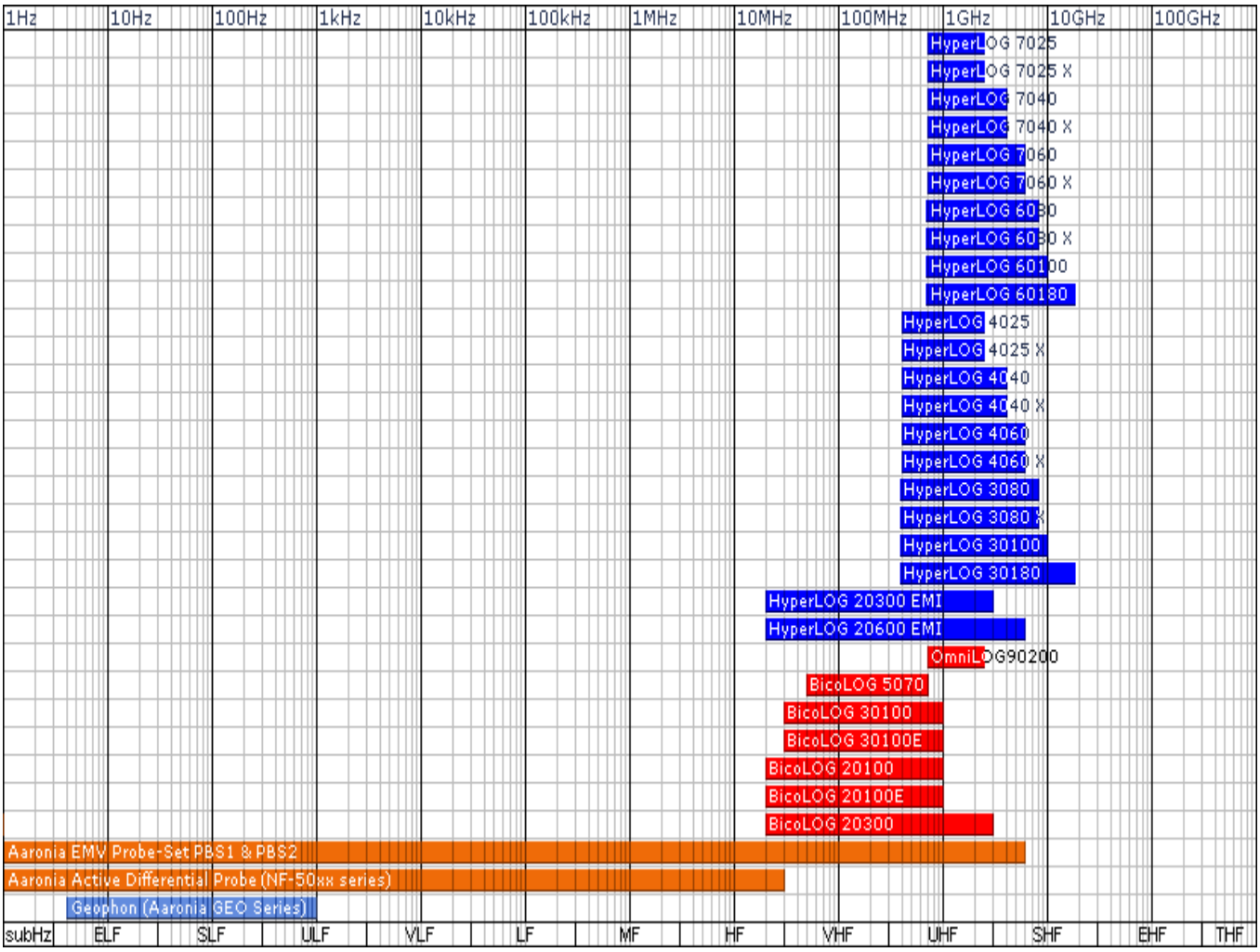
transparent finish

Frequency overview Analyzer & Antennas

Frequency Overview SPECTRAN Spectrum Analyzer



Frequency Overview HyperLOG and BicoLOG Antennas and Probes



References

User of Aaronia Antennas and Spectrum Analyzers (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

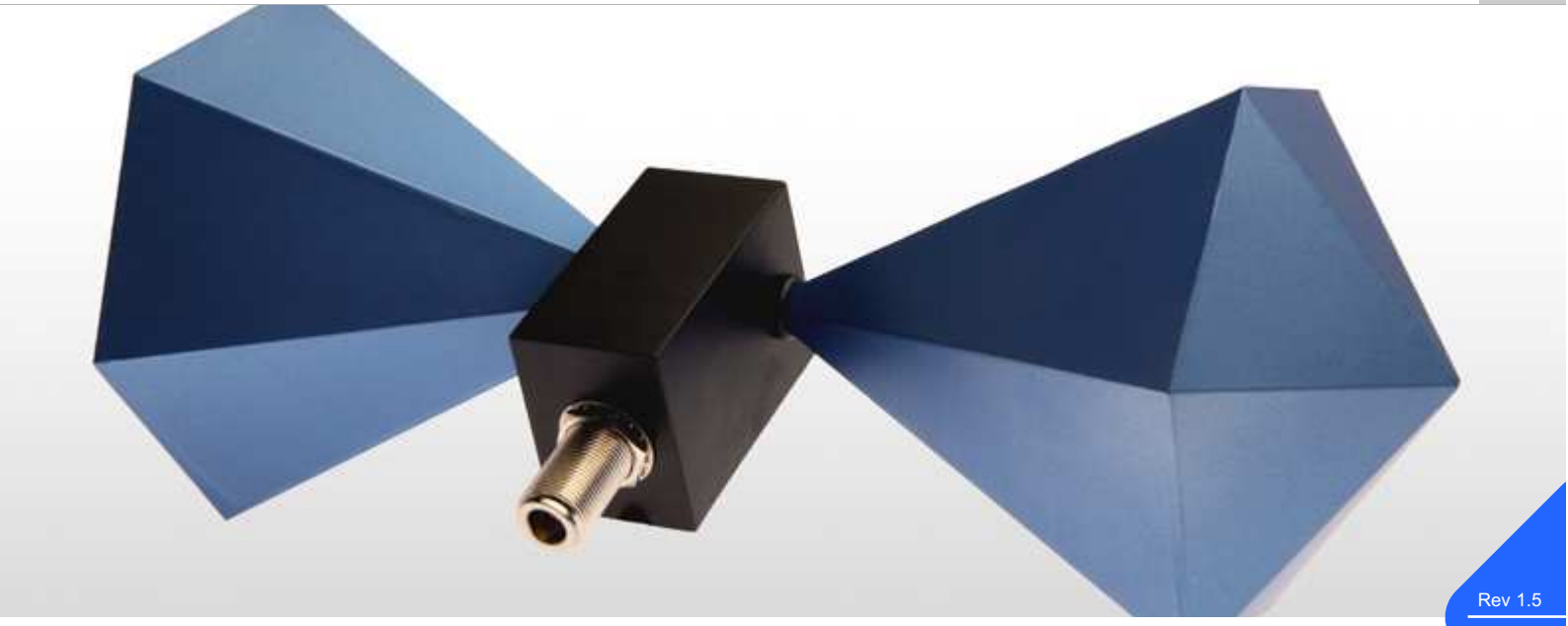
Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet



Rev 1.5
14.07.2011

Biconical EMC broadband antennas - BicoLOG Series

Broadband transmission and reception from 20MHz to 3GHz - mobile and stationary use

Highlights:

- Only a single broadband test antenna for the complete frequency range from 20MHz up to 3GHz
- Optimal for usage with spectrum analysers for EMC measurement
- Suitable for mobile use
- Small weight and dimensions
- Made in Germany
- **10 years warranty**

Calibration & standards:

- The biconical antennas of the BicoLOG®. series are suitable for EMI interference field strength measurement. The specialized broadband characteristics allow measurements to be taken in the complete specified frequency range **without switching.**
- **These antennas are suitable for measurments according to the following standards and procedures:**
  CISPR, VDE, MIL, VG, EN 55011, EN 55013, EN 55015, EN 55022, MIL-Std-461.

Included with delivery:

- BicoLOG® EMI testantenna
- **Typical calibration data with up to 106 calibration points (5MHz and 10MHz steps!)**

References / examples of proof:

- NATO, Belgium
- Rohde & Schwarz Rome, Italy
- EADS (European Aeronautic Defence & Space Company), Germany
- Robert Bosch GmbH, Germany
- Australian Government Department of Defence, Australia
- Eurocontrol, Netherlands

AARONIA AG®
WWW.AARONIA.DE

Made in Germany

Specifications

BicoLOG® 5070

- Design: Biconical Antenna
- Frequency range: **50MHz** to **700MHz**
- Max. transmission power: 1W (30dBm or 0dbW)
- Nominal impedance: 50 Ohms
- Gain: **-29dBi** to 1dBi
- Antenna factor: **20-33dB/m**
- Calibration points: **70** (5MHz and 10MHz steps)
- RF connection: N (female) or SMA with adapter
- Tripod socket: 1/4”
- Dimensions (L/W/D) : (350x160x140)mm
- Weight: 350gr
- **Warranty: 10 years**

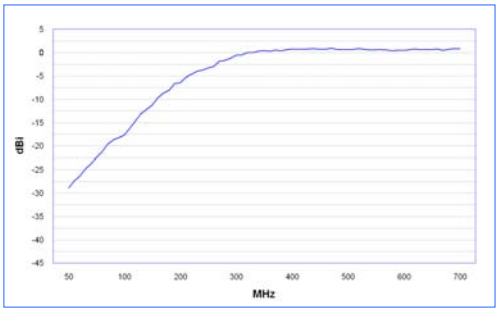
BicoLOG® 30100

- Design: Biconical Antenna
- Frequency range: **30MHz** to **1GHz**
- Max. transmission power: 1W (30dBm or 0dbW)
- Nominal impedance: 50 Ohms
- Gain: **-39dBi** to 1dBi
- Antenna factor: **20-41dB/m**
- Calibration points: **104** (5MHz and 10MHz steps)
- RF connection: N (female) or SMA with adapter
- Tripod socket: 1/4”
- Dimensions (L/W/D) : (350x160x140)mm
- Weight: 350gr
- **Warranty: 10 years**

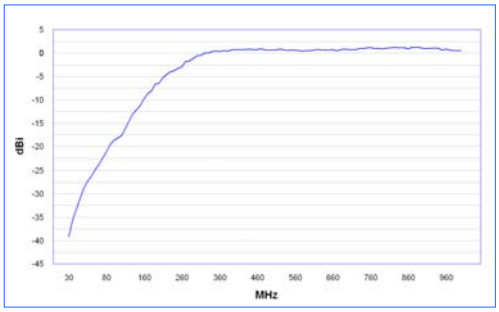
NEW: BicoLOG® 30100E

- Design: Biconical Antenna
- Frequency range: **30MHz** to **1GHz**
- Max. transmission power: 1W (30dBm or 0dbW)
- Nominal impedance: 50 Ohms
- Gain: **-31dBi** to 1dBi
- Antenna factor: **17-31dB/m**
- Calibration points: **194** (**5MHz steps**)
- RF connection: N (female) or SMA with adapter
- Tripod socket: 1/4”
- Dimensions (L/W/D) : (540x225x225)mm
- Weight: 1150gr
- **Warranty: 10 years**
- **Optimized for EMC measurements**

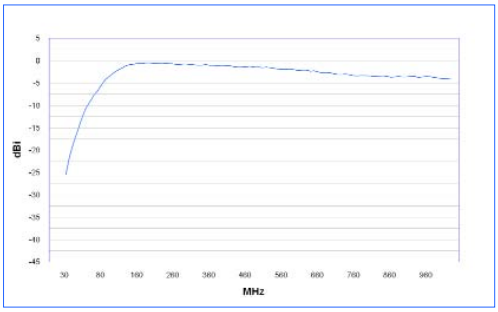
Gain Diagram BicoLOG 5070



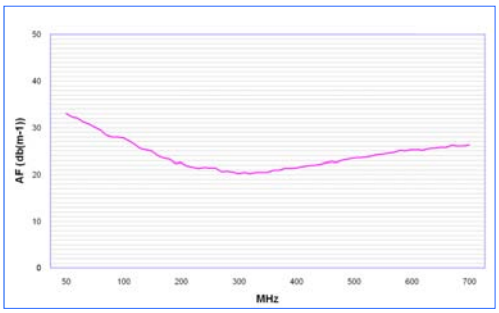
Gain Diagram BicoLOG 30100



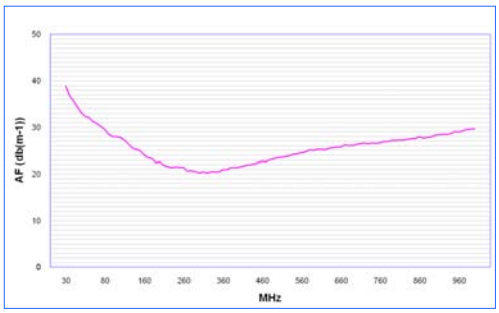
Gain Diagram BicoLOG 30100E



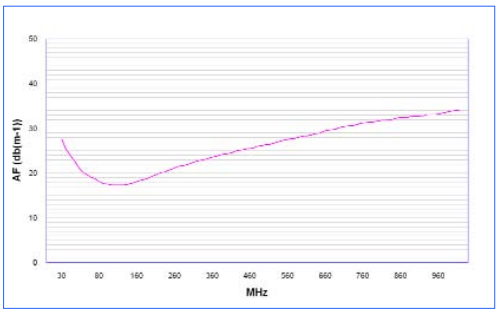
Antenna factor BicoLOG 5070



Antenna factor BicoLOG 30100



Antenna factor BicoLOG 30100E



BicoLOG® 20100

- Design: Biconical Antenna
- Frequency range: **20MHz** to **1GHz**
- Max. transmission power: 1W (30dBm or 0dbW)
- Nominal impedance: 50 Ohms
- Gain: **-45dBi** to 1dBi
- Antenna factor: **20-42dB/m**
- Calibration points: **106** (5MHz and 10MHz steps)
- RF connection: N (female) or SMA with adapter
- Tripod socket: 1/4”
- Dimensions (L/W/D) : (350x160x140)mm
- Weight: 350gr
- **Warranty: 10 years**

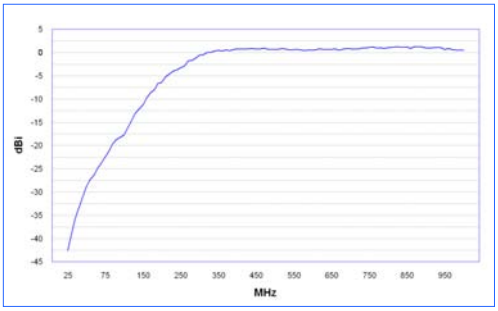
NEW: BicoLOG® 20100E

- Design: Biconical Antenna
- Frequency range: **20MHz** to **1GHz**
- Max. transmission power: 1W (30dBm or 0dbW)
- Nominal impedance: 50 Ohms
- Gain: **-38dBi** to 1dBi
- Antenna factor: **17-34dB/m**
- Calibration points: **196** (**5MHz steps**)
- RF connection: N (female) or SMA with adapter
- Tripod socket: 1/4”
- Dimensions (L/W/D) : (540x225x225)mm
- Weight: 1150gr
- **Warranty: 10 years**
- **Optimized for EMC measurements**

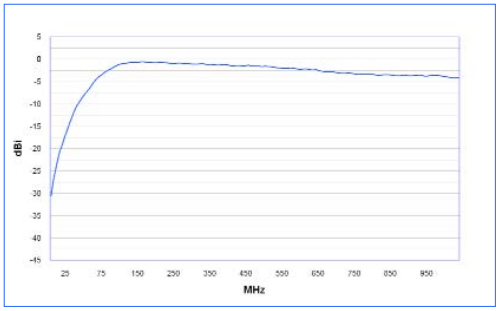
BicoLOG® 20300

- Design: Biconical Antenna
- Frequency range: **20MHz** to **3GHz**
- Max. transmission power: 1W (30dBm or 0dbW)
- Nominal impedance: 50 Ohms
- Gain: **-45dBi** to 1dBi
- Antenna factor: **20-51dB/m**
- Calibration points: **296** (5MHz and 10MHz steps)
- RF connection: N (female) or SMA with adapter
- Tripod socket: 1/4”
- Dimensions (L/W/D) : (350x160x140)mm
- Weight: 350gr
- **Warranty: 10 years**

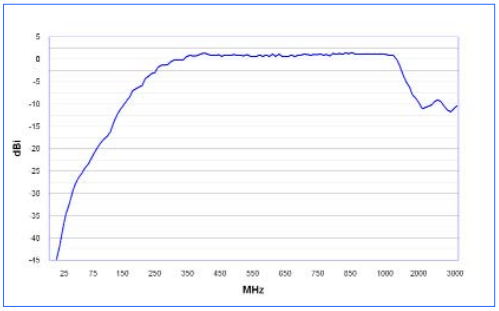
Gain Diagram BicoLOG 20100



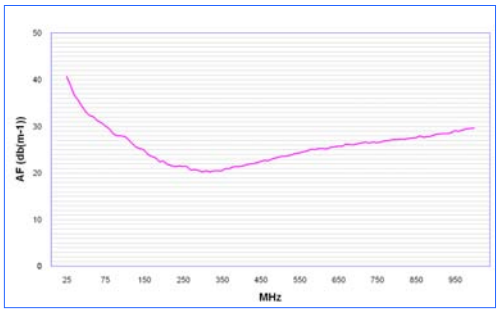
Gain Diagram BicoLOG 20100E



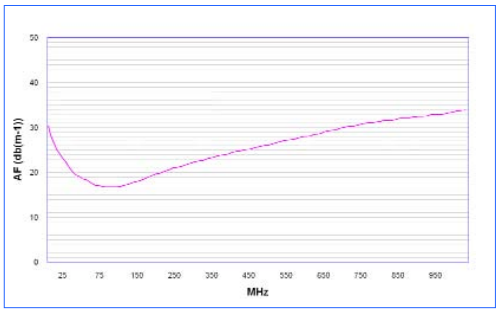
Gain Diagram BicoLOG 20300



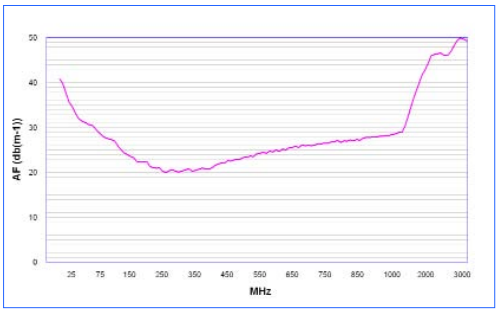
Antenna factor BicoLOG 20100



Antenna factor BicoLOG 20100E



Antenna factor BicoLOG 20300



Recommended accessories for Aaronia Antennas

Heavy Plastic Carrycase PRO

Schock resistant, heavy version with padding. Offers space foam for all BicoLOG® antennas with all accessories. A MUST for the professional user or outdoor usage!

Order/Art.-No.: 244

interior view
(with optional accessories)

exterior view

1m / 5m / 10m SMA-Cable

High quality special SMA cable for connecting any HyperLOG®-Antenna or BicoLOG®-Antenna with various test equipment like our RF Spectrum-Analyzer. You can choose between 3 different cables:

1m standard SMA cable (RG316U)
5m LowLoss SMA cable (especially low damping)
10m LowLoss SMA cable (especially low damping)

All versions: SMA plug (male) / SMA plug (male)

Order/Art.-No.: 771 (1m Cable), 772 (5m Cable), 773 (10m Cable)

SMA to N Adapter

This special high quality adapter allows operation of all HyperLOG®-Antenna with any standard spectrum-analyzer with N connector. Also this adapter is needed to connect BicoLOG® antennas to a Spectran Spectrum Analyzer.

Especially massive, chrome-plated design. This adapter is usable for very high frequencies up to at least 18GHz. Physical dimensions are just 30x20mm. Nominal impedance 50 Ohms. Layout: SMA socket (female) / N plug (male).

Order/Art.-No.: 770

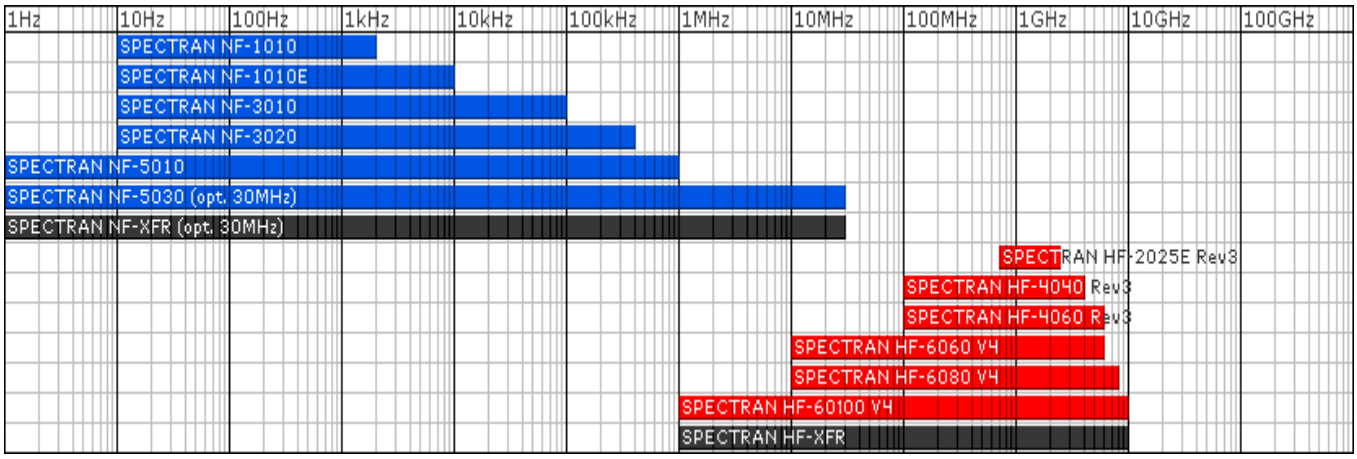
Pistol grip / miniature tripod

Detachable handle with super-practical miniature tripod mode: this handle is attachable to the backside of the unit and allows optimal handling (esp. for directional measurement) and even fixed installation of the unit. STRONGLY recommended for PC use!

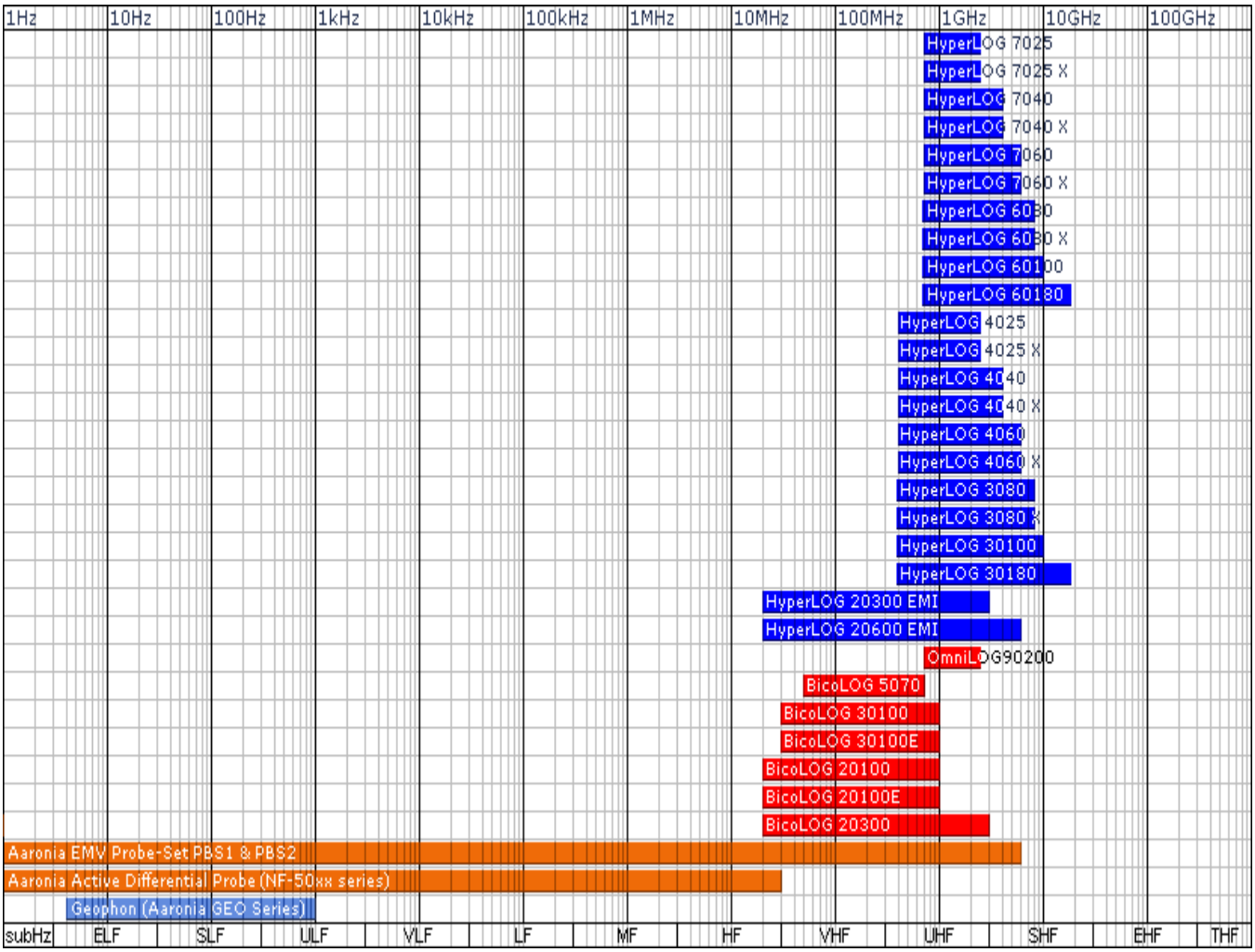
Order/Art.-No.: 280

Frequency overview Analyzer & Antennas

Frequency Overview SPECTRAN Spectrum Analyzer



Frequency Overview HyperLOG and BicoLOG Antennas and Probes



References

User of Aaronia Antennas and Spectrum Analyzers (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet

Rev 1.4
12.04.2011

Radial Isotropic Broadband Antenna OmniLOG® 90200

For measurements in the 700MHz - 2,5GHz frequency range, specially GSM, UMTS and 2,4GHz WLAN

Highlights:

- Highly isotropic from 700MHz to 2,5GHz
- Optimal for usage with spectrum analyzer for radial isotropic measurements
- 90° knuckle base with SMA connector
- Small weight and very small dimensions
- **10 years warranty**

AARONIA AG
WWW.AARONIA.DE

Made in Germany

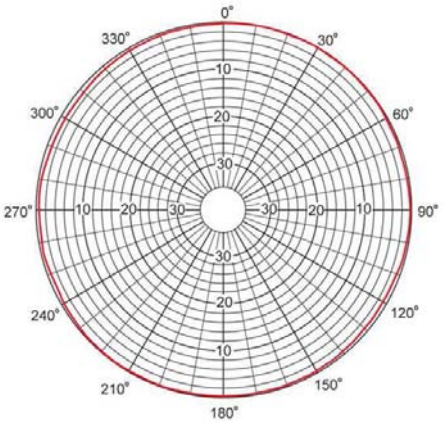
Specifications

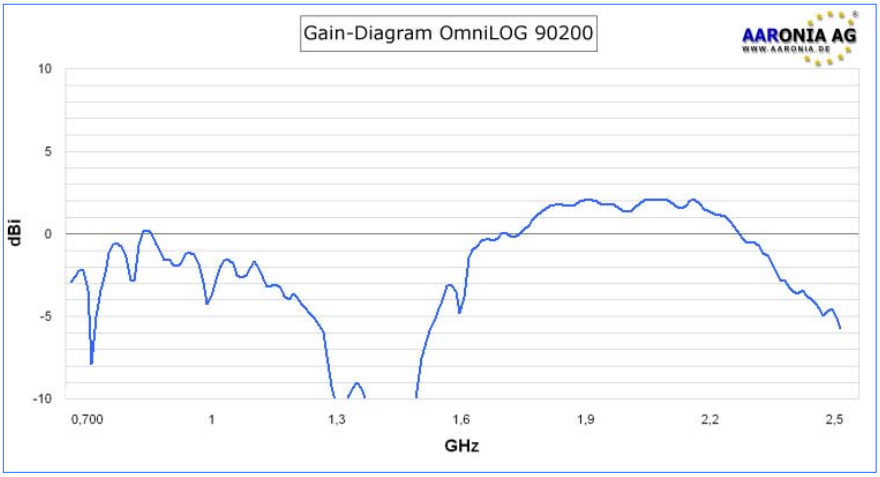
OmniLOG® 90200

- Design: Omni-Directional
- Nominal impedance: 50 Ohms
- Frequency range: 700MHz - 2,5GHz
- VSWR (typ): < 3:1
- RF-connection: SMA (male)
- Temperature range: - 20°C to +70°C Shock: 40G at 10msek
- Thermal Shock: - 20°C to +70°C:10 cycles
- Dimensions (L/W): 210 x 20mm
- Weight: 70gr
- **Warranty: 10 years**

OmniLOG 90200 Antenna with Spectran HF-60100 V4. The antenna is directly supported by the V4 series. It can be used for the GSM and UMTS frequency range with the Rev.3 units too (measurement uncertainty only 2dB).

Horizontal Pattern OmniLOG 90200



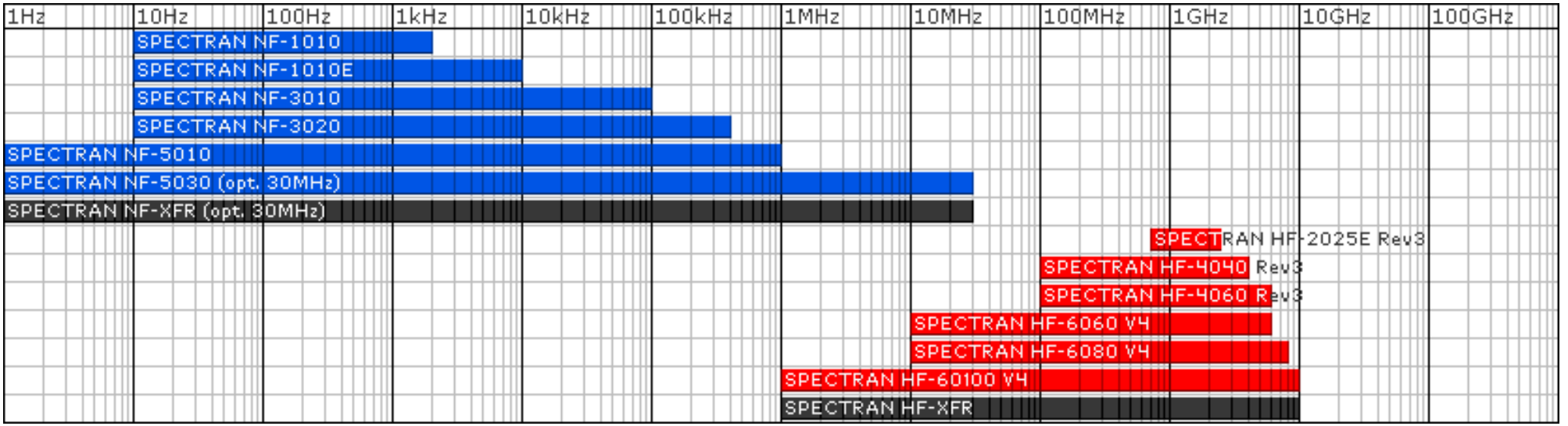


Front view OmniLOG 90200 Broadbandantenna

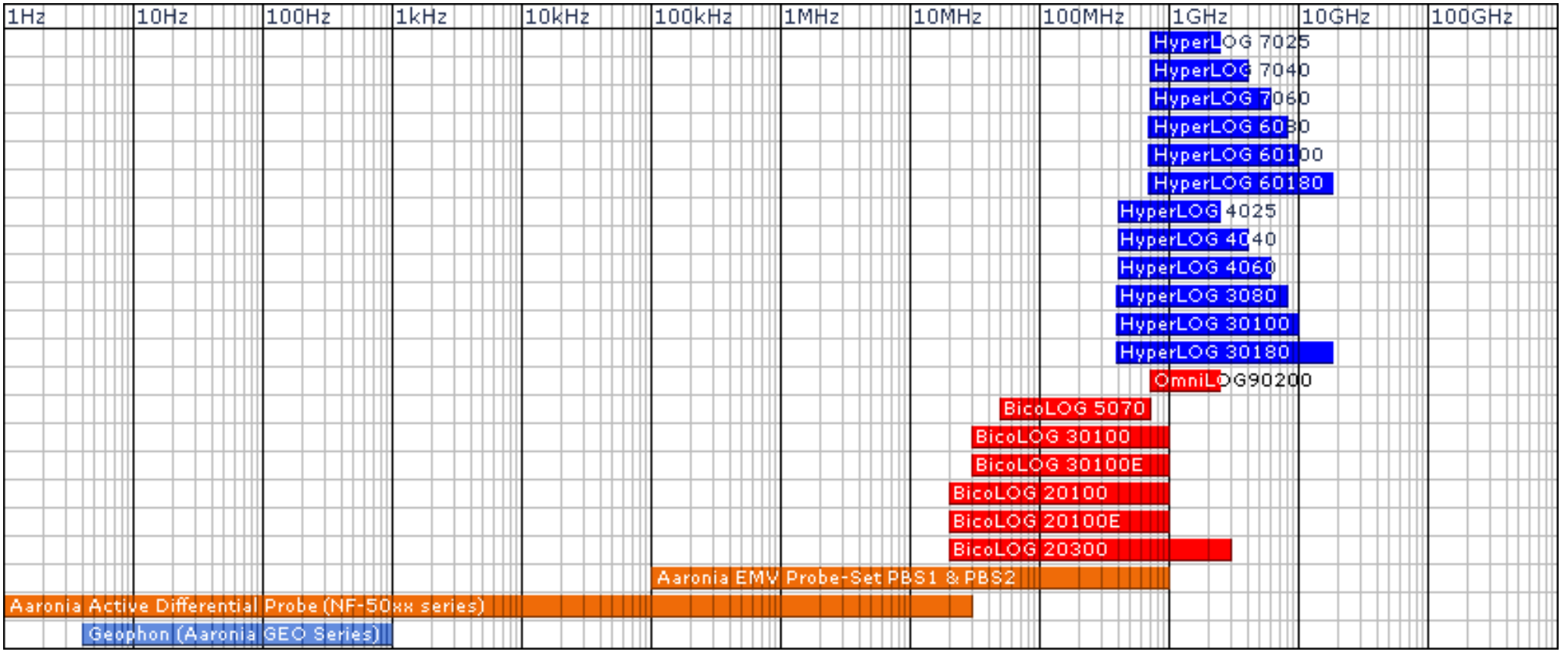
Rear view

OmniLOG with Spectran HF-XFR (OmniLOG 90200 Antenna already included at the Spectran HF-XFR)

Frequency Overview SIECTRAN Spectrum Analyzer



Frequency Overview HyperLOG and BicoLOG Antennas and Probes



References

User of Aaronia Antennas and Spectrum Analyzers (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

SENSOR+TEST 2011
DIE MESSTECHNIK-MESSE
The Measurement Fair
Nürnberg, Germany
7. – 9.6.2011

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet

Rev 1.5
12.04.2011

RF Near Field Probe Set DC to 6GHz

EMF & RF close field sniffer-set for use with any Spectrum Analyzer or Measurement Receiver

Included with delivery:

- 1 x 50mm magnetic field probe
- 1 x 25mm magnetic field probe
- 1 x 12mm magnetic field probe
- 1 x 6mm magnetic field probe
- 1 x directional E-field probe
- **Pre-amplifier with power supply (only PBS2)**
- 1m SMB-to-SMA Cable
- Pistol grip with tripod function
- Transport case with paddings
- Exhaustive manual

AARONIA AG
WWW.AARONIA.DE

Made in Germany

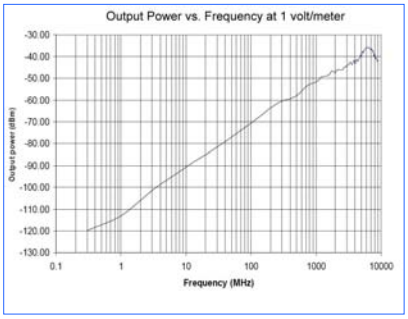
Specifications:

PBS1 & PBS2 Sniffer Set:

- Frequency range: **DC-6GHz**
- Pre-Amplifier noise (PBS2): 3.5dB typical
- PreAmplifier type/gain (PBS2): "linear" falloff. 1MHz: 40dB; 3GHz: 37.5dB; 6GHz: 35dB
- Dimensions of case (L/W/D): (300x190x70) mm
- Weight PBS1 (case incl. probes): 1200gr
- Weight PBS2 (case incl. probes and pre-amplifier): 1500gr
- **Warranty: 10 years**

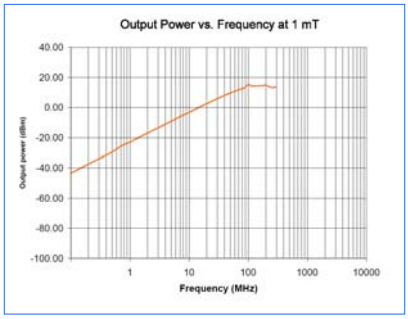
Directional E-field probe:

- Sensor diameter: 3mm
- Maximum resonance frequency: >3GHz
- Connector: 50 Ohms SMB socket (m)
- **Warranty: 10 years**



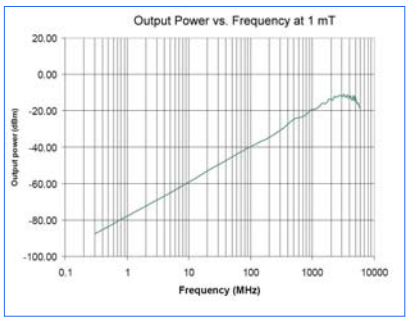
50mm magnetic field probe:

- Sensor diameter: 50mm
- Maximum resonance frequency: 700MHz
- Connector: 50 Ohms SMB socket (m)
- **Warranty: 10 years**



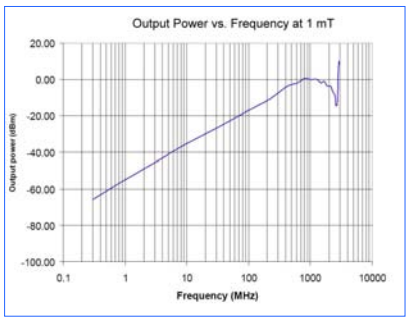
6mm magnetic field probe:

- Sensor diameter: 6mm
- Maximum resonance frequency: >6GHz
- Connector: 50 Ohms SMB socket (m)
- **Warranty: 10 years**



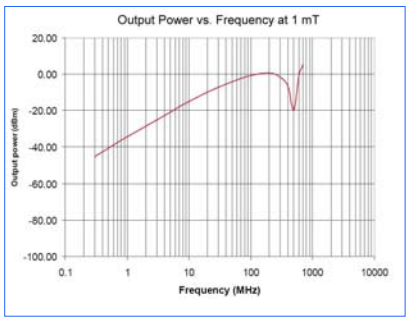
12mm magnetic field sniffer:

- Sensor diameter: 12mm
- Maximum resonance frequency: 2,6GHz
- Connector: 50 Ohms SMB socket (m)
- **Warranty: 10 years**



25mm magnetic field probe:

- Sensor diameter: 25mm
- Maximum resonance frequency: 500MHz
- Connector: 50 Ohms SMB socket (m)
- **Warranty: 10 years**



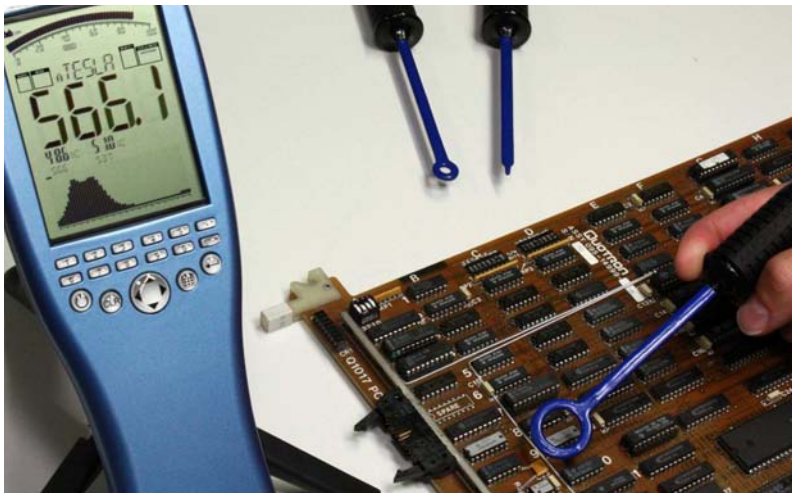
Included in delivery is a transport case with paddings for the 5 probes and for the pre-amplifier with power supply (only included at the PBS2). Each probe-set also contains an exhaustive english manual, a 1m SMB-to-SMA cable and a pistol grip with miniature tripod function.

Details

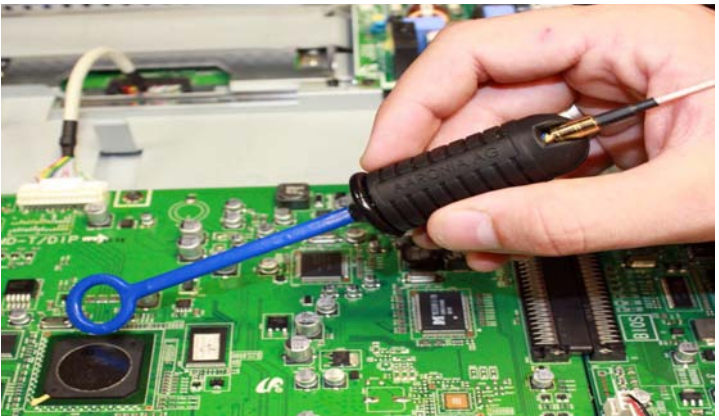
Our EMC Near Field probe set allows for straightforward pinpointing and measurement of interference sources in electronic component groups as well as execution and monitoring of generic EMC measurement. Our RF near field probe set is especially suitable for:

- **Pinpointing interference sources**
- **Estimation of interference field strength**
- **Verification of shielding and filtering measures**
- **Identifying faulty components**
- **Detecting circuitry overly sensitive to interference**

Our set includes a total of 5 probes: 4 probes for magnetic field measurement and one for measurement of electric fields. All probes are covered with an insulating layer, thus allowing safe measurement of oscillators or mains lines.



Magnetic field measurement on a group of components using the H-field probe



Pinpointing interference sources on a circuit board

Use of the included tripod for the fixation of the H-field probe

The PBS2 probe set additionally contains a high-performance pre-amplifier, allowing measurement of significantly weaker interference sources, boosting the sensitivity of our instruments by up to 40dB.
All probes have deliberately been implemented as passive devices to make them usable as transmitting devices as well. Consequently, components and circuits sensitive to interference can easily be pinpointed.

Perfect for locating interference sources which might have been found e.g. in an EN55011, EN55022 or EN50371 (Class A or Class B) survey. After implementing appropriate changes in the circuit, their efficiency can easily and reliably be verified. That way, expensive and time-consuming re-assessments in an EMC laboratory can be skipped.

Verification of official EMC limits: For example, should an interference source exceed an official EMC limit by 10dB, our probe set can easily verify if a certain countermeasure succeeds in making the circuitry conforming again.
This is another situation where the probe sets can eliminate the need for expensive and time-consuming measurements in EMC laboratories.

Very usefull is the integrated (1/4”) tripod connector which allows to mount the probes on each tripod.

Our RF Probe Set can be connected to any Spectrum Analyzer or Oscilloscope. For units with N-connector we offer a SMA-to-N Adapter (optional).

Each Probe offers a SMB-quick-connector...

... which allows a fast connection/change of the included measurement cable.

The tripod connector at the bottomside of each probe allows the comfortable fixation using the included miniature tripod

References

User of Aaronia Antennas, Probe Sets and Spectrum Analyzers (Examples)

Government, Military, aeronautic, astronautic

- Airbus, Hamburg, Germany
- Boeing, USA
- NATO, Belgium
- Bund (Bundeswehr), Leer, Germany
- Bundeswehr (Technische Aufklärung), Hof, Germany
- Lufthansa, Hamburg, Germany
- DLR, Germany
- Eurocontrol (Flugüberwachung), Belgium
- Australian Government Department of Defence, Australia
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm, Germany
- Institut für Luft- und Raumfahrtmedizin, Köln, Germany
- Deutscher Wetterdienst, Tauche, Germany
- Polizeipräsidium, Bonn, Germany
- Landesamt für Umweltschutz Sachsen-Anhalt, Germany
- Zentrale Polizeitechnische Dienste, Germany
- Bundesamt für Verfassungsschutz, Germany
- BEV (Bundesamt für Eich- und Vermessungswesen)
- Europäisches Zentrum für Umweltmedizin, Austria

Industry

- Audi AG, Neckarsulm, Germany
- Rohde & Schwarz, München, Germany
- Shell Oil Company, USA
- Motorola, Brazil
- Anritsu GmbH, Düsseldorf, Germany
- Philips Technologie GmbH, Aachen, Germany
- Siemens AG, Erlangen, Germany
- ThyssenKrupp, Stuttgart, Germany
- Carl-Zeiss-Jena GmbH, Jena, Germany
- BMW, München, Germany
- Daimler Chrysler AG, Bremen, Germany
- ATI, USA
- BASF, Ludwigshafen, Germany
- Hewlett Packard, Dornach, Germany
- Robert Bosch GmbH, Plochingen, Germany
- IBM Deutschland, Stuttgart, Germany
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden, Germany
- Infineon Technologies, Regensburg, Germany

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Germany
- Universität Freiburg, Germany
- Indonesien Institute of Sience, Indonesia
- Max-Planck-Institut für Polymerforschung, Mainz, Germany
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen, Germany
- Universität Hannover, Hannover, Germany
- University of Newcastle, United Kingdom
- Universität Strasbourg, France
- Universität Frankfurt, Frankfurt, Germany
- Uni München – Fakultät für Physik, Garching, Germany
- Technische Universität Hamburg, Hamburg , Germany
- Max-Planck Institut für Radioastronomie, Bad Münstereifel, Germany
- Max-Planck-Institut für Quantenoptik, Garching, Germany
- Max-Planck-Institut für neurologische Forschung, Köln, Germany
- Max-Planck-Institut für Kernphysik, Heidelberg, Germany
- Max-Planck-Institut für Eisenforschung, Düsseldorf, Germany
- Forschungszentrum Karlsruhe, Karlsruhe, Germany
- Forschungszentrum Molekularphysiologie des Gehirns, Germany

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

SENSOR+TEST 2011
DIE MESSTECHNIK-MESSE
The Measurement Fair
Nürnberg, Germany
7. – 9.6.2011

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet

Rev 1.1
04.08.2011

EMC Reference Antennas up to 6GHz
Series HyperLOG® EMI

EMC Broadbandantennas for the complete frequency range from 20MHz to 6GHz

- Reference Antenne with 0,3dB accuracy
- Max. input power: 310W AM
- Compatible with any Spectrum Analyzer brand
- Perfect for EMC/EMI pre-compliance tests and immunity measurements
- Incl. specific calibration details (up to 5970 calibration points)
- Made in Germany

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Technical data

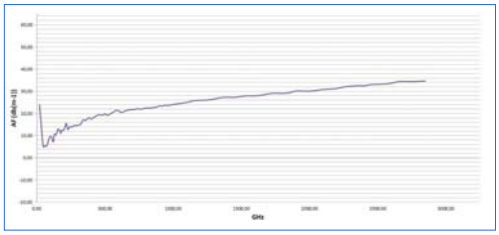
HyperLOG® 20300 EMI

- Design: Biconical & LogPer
- Frequency range: **20MHz-3GHz**
- Max. input power: **310W AM**
- Immunity test field strength: **10V/m**
- Nominal impedance: 50 Ohm
- Genauigkeit: **0,3dB**
- VSWR (typ.): <2:1
- Gain (typ.): **8dBi**
- Calibration points: **2970** (1MHz-steps)
- RF-connection: N female
- Dimensions (L/W/D): (1200x1600x80) mm
- Weight: 6,5kg
- Warranty: 10 years

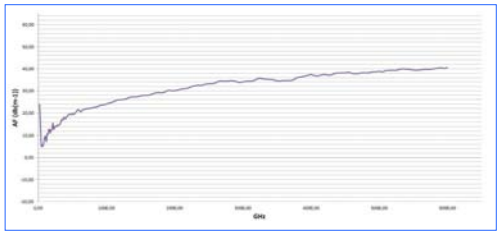
HyperLOG® 20600 EMI

- Design: Biconical & LogPer
- Frequency range: **20MHz-6GHz**
- Max. input power: **310W AM**
- Immunity test field strength: **10V/m**
- Nominal impedance: 50 Ohm
- Genauigkeit: **0,3dB**
- VSWR (typ.): <2:1
- Gain (typ.): **8dBi**
- Calibration points: **5970** (1MHz-steps)
- RF-connection: N female
- Dimensions (L/W/D): (1200x1600x80) mm
- Weight: 6,5kg
- Warranty: 10 years

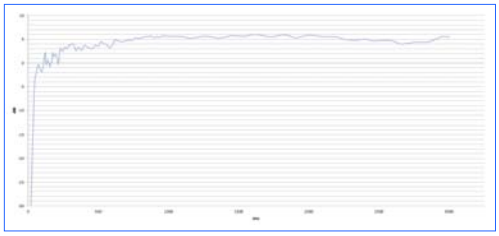
Antenna factor HyperLOG 20300 EMI



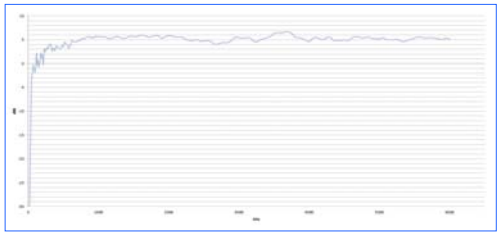
Antenna factor HyperLOG 20600 EMI



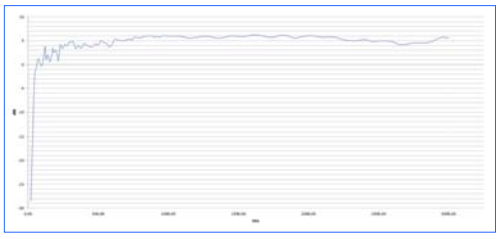
Gain Diagram HyperLOG 20300 EMI (3m)



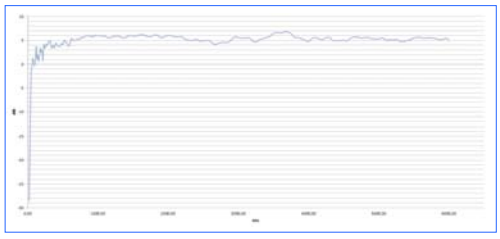
Gain Diagram HyperLOG 20600 EMI (3m)



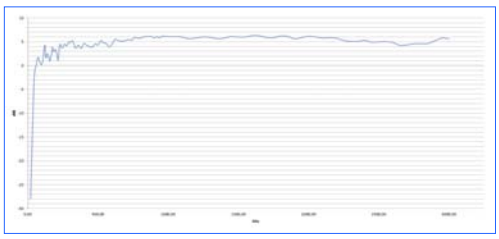
Gain Diagram HyperLOG 20300 EMI (10m)



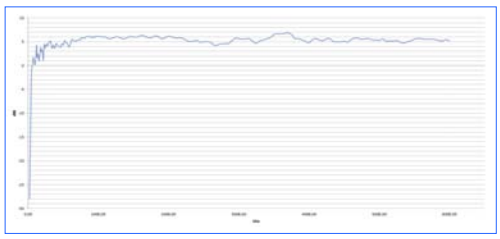
Gain Diagram HyperLOG 20600 EMI (10m)



Gain Diagram HyperLOG 20300 EMI (30m)



Gain Diagram HyperLOG 20600 EMI (30m)



HyperLOG EMI Antenna with optional tripod

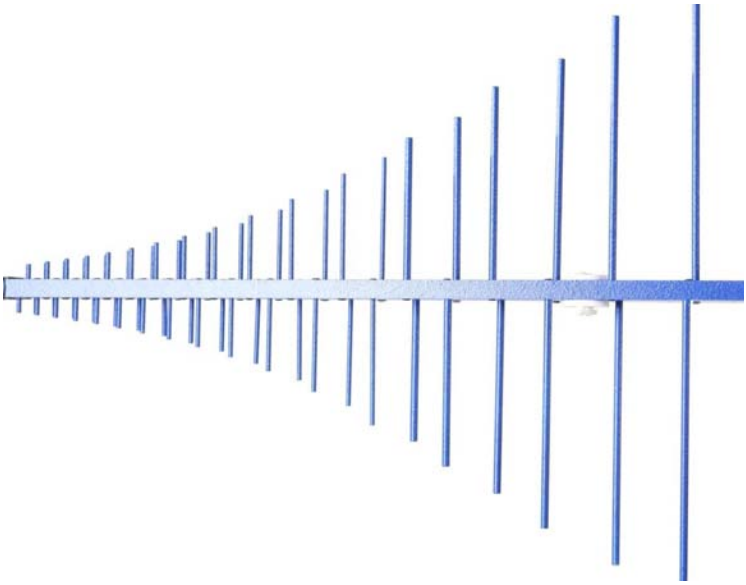
Aaronia´s HyperLOG EMI antennas are the ultimate EMC / EMI pre-compliance test antennas with unmatched high accuracy. These antennas offer a very high gain over the full frequency range.

The HyperLOG EMI is Aaronia´s latest antenna development and combines the advantages of a biconical antenna and those of a log periodic antenna in a single high end EMC/EMI antenna.

Furthermore the HyperLOG EMI series offer an extremely high accuracy of 0.3dB over the full specified frequency range and therefor can even be used as reference antenna.

By using the HyperLOG EMI antennas, the common EMI and EMC measurement error-rates, which show up by switching between different test antennas, are avoided. This is because you have only to use one antenna for the complete frequency range instead of two ore more antennas. This saves significant costs since the measuring time is reduced drastically.

The HyperLOG EMI series can also be used as a powerful broadcasting antenna with up to 310 watts. This antennas are suitable even for immunity measurements, where very high field strengths are needed by more than 10 V/m.



HyperLOG EMI Antenna

Transportcase of the HyperLOG EMI Antenna (included in delivery)

Included in delivery with each HyperLOG EMI antenna is the large transport case with protection foam and the specific calibration details (calibrated by Rohde & Schwarz).

Recommended accessories for HyperLOG EMI antennas

Heavy tripod

Height adjustable, high stability. STRONGLY recommended for use with HyperLOG EMI antennas!

Order/Art-No.: 283

Tripod for HyperLOG EMI

1m / 5m / 10m SMA-Cable

High quality special SMA cable for connecting any HyperLOG EMI Antenna with various test equipment like our RF Spectrum-Analyzer. You can choose between 3 different cables:

1m standard SMA cable (RG316U)
5m LowLoss SMA cable (especially low damping)
10m LowLoss SMA cable (especially low damping)

All versions: SMA plug (male) / SMA plug (male)

Order/Art.-No.: 771 (1m Cable), 772 (5m Cable), 773 (10m Cable)

SMA Cable (1-10m)

SMA to N Adapter

This special adapter allows operation of all HyperLOG EMI Antennas with any spectrum-analyzer with SMA connector (like the Aaronia SPECTRAN series).

Especially massive, chrome-plated design. This adapter is usable for very high frequencies up to at least 18GHz. Physical dimensions are just 30x20mm. Nominal impedance 50 Ohms. Layout: SMA socket (female) / N plug (male).

Order/Art.-No.: 770

SMA to N Adapter

Laser

Perfect for pinpointing any RF source even at bright daylight.
Including connector and all needed screws. Easy to connect on top of any HyperLOG EMI antenna.

Order/Art.-No.: 791 (150mW Laser), 792 (1mW Laser)

150mW Laser

References

User of Aaronia Antennas and Spectrum Analyzers (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

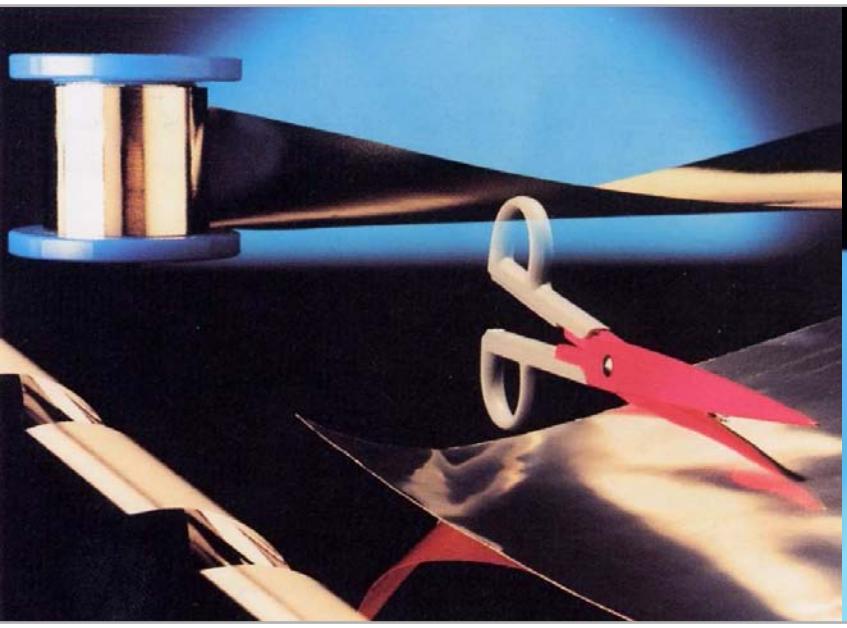
Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet



Rev 1.4
02.08.2011

Magnetic field shielding foil / shielding sheet Aaronia MagnoShield® FLEX

Screening against static and low-frequency magnetic fields and interference of any kind

References / examples of proof:

- German military (technical observation), Hof, Germany
- Philipps GmbH, Munich, Germany
- Panasonic, Bad Homburg, Germany
- Max-Planck Institute for nuclear physics, Heidelberg, Germany
- Robert Bosch GmbH, Magdeburg, Germany
- Technical University Hamburg, Germany
- Siemens AG, Munich, Germany
- University of Newcastle, United Kingdom

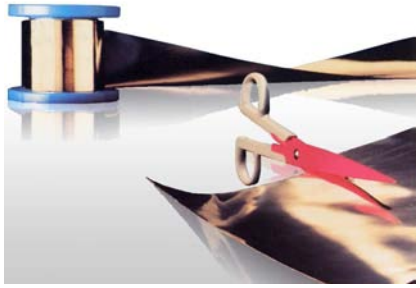
AARONIA AG
WWW.AARONIA.DE

Made in Germany

Specifications

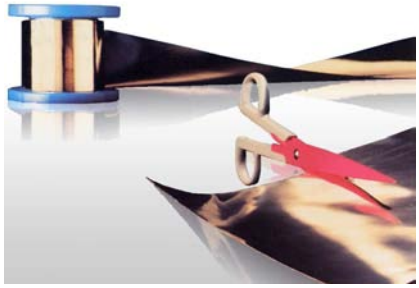
Aaronia MagnoShield® FLEX

- **Nealted** for **maximum** shielding efficiency
- **Shielding factor: 5-7**
- Saturation flux density: approx. 0,8 Tesla
- Length per standard packaging unit: 1m (0,155m²), 10m (1,55m²), also available as cut good
- Lane width: 0,155m (155mm) / Smaller widths on request
- Weight: approx. 1,1kg/m²
- Material thickness: 0,1mm
- Foldable, can be bent and folded without problems
- Very easy handling and cutting using a knife or scissors
- Easy to install due to high flexibility
- Magnetically conductive material: Nickel/iron alloy, so-called Mu metal, isotrope
- Noncorrosive
- Frost proof
- Paintable
- Colour: dark silver
- Also available to your specifications (deep-drawn)
- Also available as self-adhesive version

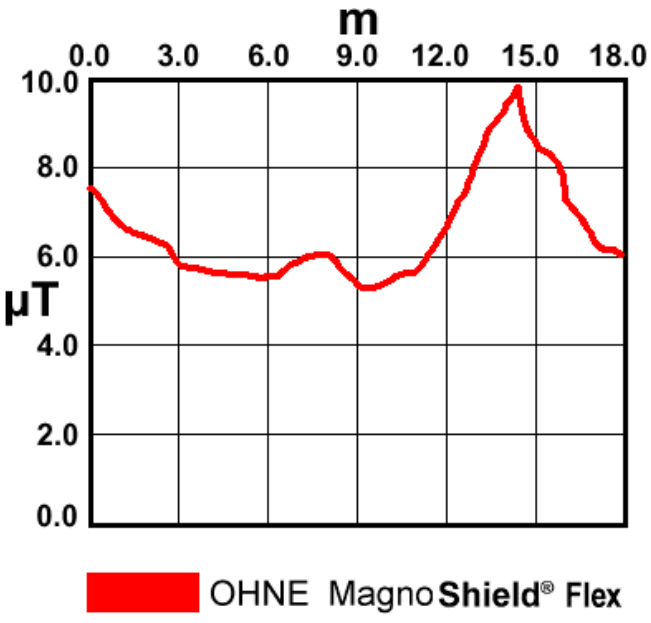


Aaronia MagnoShield® FLEX PLUS

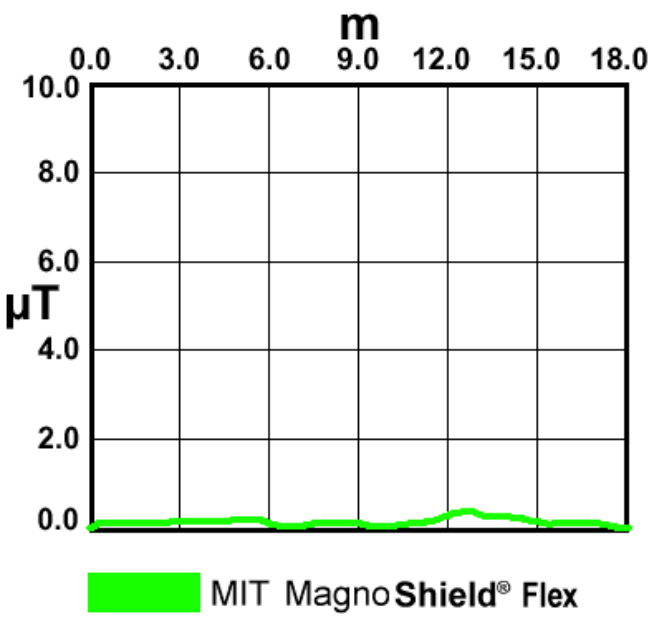
- **Self-adhesive version** with very high adhesive strength
- Glue heat-resistant up to 120 C
- **Nealted** for **maximum** shielding efficiency
- **Shielding factor: 5-7**
- Saturation flux density: approx. 0,8 Tesla
- Length per standard packaging unit: 1m (0,091m²), 10m (0,91m²), 50m (4,55m²). Also available as cut good.
- Lane width: 0,091m (91mm) / Smaller widths on request
- Weight: approx. 1,1kg/m²
- Material thickness: 0,1mm
- Foldable, can be bent and folded without problems
- Very easy handling and cutting using a knife or scissors
- Easy to install due to high flexibility
- Magnetically conductive material: Nickel/iron alloy, so-called Mu metal, isotrope
- Noncorrosive
- Frost proof
- Paintable
- Colour: dark silver



Transmission damping curves:



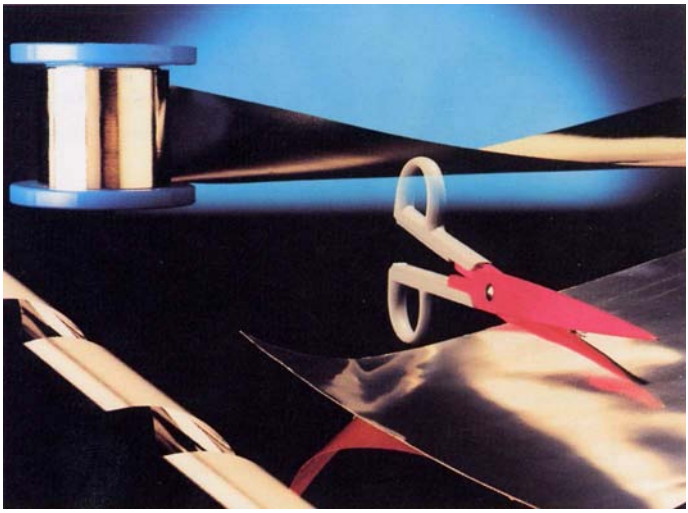
Magnetic field of a transformer before shielding



Magnetic field of a transformer after shielding

Product description

Aaronia offers a magnetic field shielding which is easy to handle even for the novice: Aaronia MagnoShield® FLEX magnetic field shielding foil. Aaronia MagnoShield® FLEX is very easy to handle and to install. It is highly flexible, sturdy, frost proof, rot proof and noncorrosive.
Aaronia MagnoShield® FLEX has been developed especially for also shielding high-frequency magnetic fields caused by local radiation sources such as cables, transformers, generators, traction power, power distribution boxes, high-voltage lines etc. Aaronia MagnoShield® FLEX allows shielding electronic circuitry, appliances and their chassis against magnetic interference even in highly sensible areas such as control centres, etc.
Installation is very easy especially when using Aaronia MagnoShield® FLEX PLUS, even for the novice. The individual lanes need to be installed with an overlap of approx. 5cm to guarantee the best possible shielding efficiency.
Magnetic shielding performance can be adapted optimally to your requirements by applying several layers of the product.



Aaronia MagnoShield® FLEX and Aaronia MagnoShield® FLEX+ are the highly flexible solution for shielding any kind of electronic appliance, circuitry, sensors and chassis against static (for example, magnets) and low-frequency magnetic fields (for example, transformers, cables, traction power)

Deep-drawn, nealed magnetic field shieldings made from Aaronia MagnoShield® FLEX offer maximum shielding against static and low-frequency magnetic fields of any kind

To shield large areas (for example, entire rooms or buildings) against magnetic fields, we recommend our industrial solution consisting of Aaronia MagnoShield® magnetic shielding panels.
Aaronia MagnoShield® FLEX is nealed and thus offers maximum shielding efficiency against magnetic fields compared to regular materials. Still, Aaronia MagnoShield® FLEX can be folded and bent, which is normally not possible with regular materials, as their shielding efficiency would degrade drastically.

For greater amounts of identically sized units, we recommend custom manufacture to your specifications, giving you a perfect magnetic shielding product. However, please be aware of the one-time, yet considerable tool cost.

For shielding large areas (like rooms and buildings), we recommend our industrial solution consisting of Aaronia MagnoShield® shielding panels.

References

User of Aaronia Antennas, Spectrum Analyzers and screening solutions (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet

Rev 1.4
02.08.2011

EMC & magnetic field screening Aaronia MagnoShield®

High performance industry-grade EMC magnetic panel-shielding

References / examples of proof:

- German military (technical intelligence), Hof, Germany
- Max-Planck Institute for quantum optics, Garching, Germany
- Max-Planck Institute for nuclear physics, Heidelberg, Germany
- Robert Bosch GmbH, Magdeburg, Germany
- Technical University Hamburg, Germany
- Landesbank Berlin, Germany
- AMD, Dresden, Germany
- LBBW Bank, Stuttgart, Germany

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Specifications

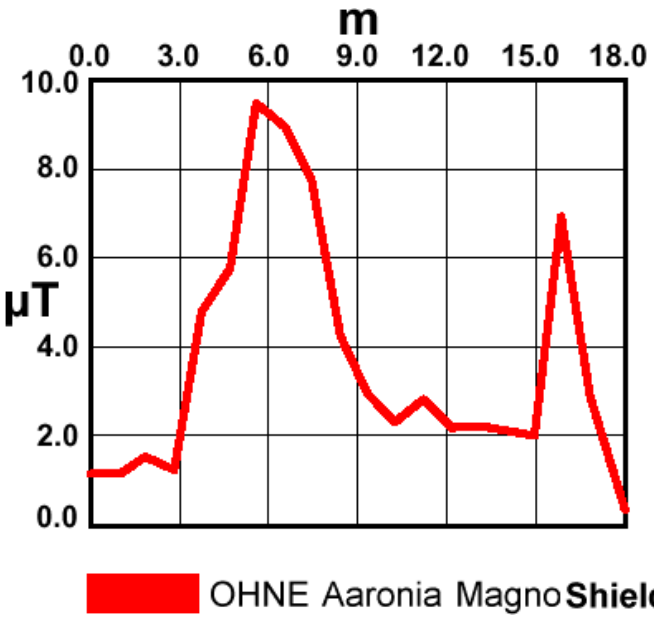
Aaronia MagnoShield® COMPOUND panels

- **Nealed** for **maximum** shielding efficiency
- **Shielding factor: 5-7**
- Saturation flux density: approx. 0,8 Tesla
- Packaging unit: 2m²
- Width: approx. 1000mm (1m)
- Height: approx. 2000mm (2m)
- Thickness: approx. 2mm
- Electrically conductive material: Aluminum
- Magnetically conductive Material: Nickel/iron alloy, so-called. Mu-Metal, isotrope
- Noncorrosive
- Frost proof
- Paintable
- Installable in plaster or concrete
- Very easy handling even for the novice
- Easy handling due to practical packaging unit
- Colour: Silver (Aluminum)
- Weight: approx. 8kg/m²
- Quality assurance standard: ISO 9001
- Material verification certificate: B according to EN 10204

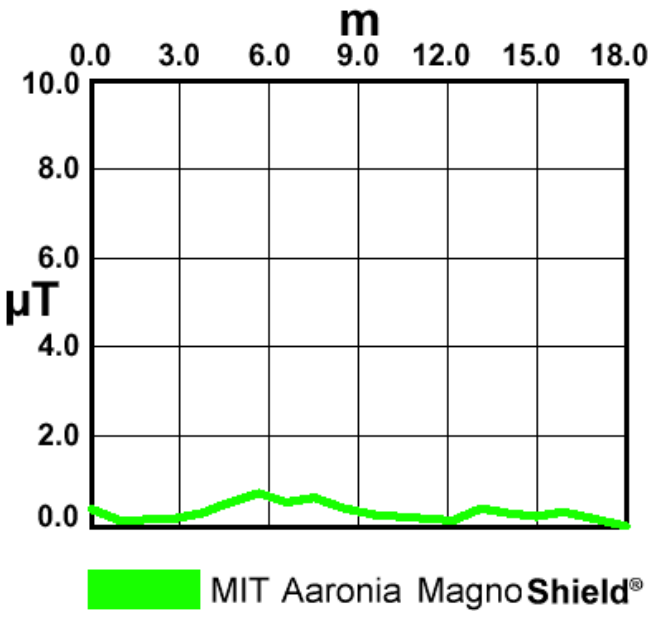
Aaronia MagnoShield® DUR panel

- **Nealed** for **maximum** shielding efficiency
- **Shielding factor: 10-13**
- Saturation flux density: approx. 0,8 Tesla
- Packaging unit: 1,32m²
- Width: approx. 660mm (0,66m)
- Height: approx. 2000mm (2m)
- Thickness: 0,5mm (1mm with screening factor >15 on request)
- Magnetically conductive Material: Nickel/iron alloy, so-called.
- Mu-Metal, isotrope
- Noncorrosive
- Frost proof
- Paintable
- Installable in plaster or concrete
- Very easy handling even for the novice
- Easy handling due to practical packaging unit
- Colour: Dark silver
- Weight: approx. 4kg/m²
- Quality assurance standard: ISO 9001
- Material verification certificate: B according to EN 10204

Transmission damping curves:



Magnetic field above a transformer station without screening



Magnetic field above the transformer station after screening

Product description

Material characteristics

Aaronia offers an extremely efficient, yet very easy to handle solution for screening static and alternating magnetic fields: Aaronia MagnoShield® magnetic field screening panels. Aaronia MagnoShield® magnetic field screening panels offer, thanks to their special Mu-metal / aluminum compound concept, protection against high-frequency (RF) AND low-frequency (LF) radiation and protection against low-frequency magnetic fields.
Aaronia MagnoShield® screening panels are easy to handle and install. They are robust, frost proof, rot proof, noncorrosive and can even be installed in plaster or concrete. Thus, they are also suitable for outdoor application.
Aaronia MagnoShield® screening panels have been especially developed for screening even strong magnetic fields caused by local radiation sources like cables, transformers, generators, traction power, power distribution boxes, high-voltage lines etc. They allow screening of entire rooms, houses and other buildings, but also highly sensitive areas like distributing centres, control centres etc. against interference from magnetic fields.
Installation is performed edge to edge to build a completely closed surface.

Aaronia Magnoshield® made from Mu-metal allows quick and easy large-area magnetic field screenings.

Large-area screening of an office building against a lower level transformer station using Aaronia Magnoshield® screening panels.

Screening a room

To screen a room against a low-frequency magnetic field, such as caused by a transformer station, the surface facing the radiation source needs to be covered completely with Aaronia MagnoShield® screening panels. This is the only way to efficiently block the magnetic field (ATTENTION: If ADDITIONALLY a high-frequency radiation source like mobile communications needs to be screened against, the ENTIRE room must ADDITIONALLY be covered completely with Aaronia X-Dream® screening fleece. Windows need to be covered with the transparent screening fabric Aaronia-Shield®.).
In floor areas, Aaronia MagnoShield® panels can be installed invisibly under the carpet, or in new constructions, inside the floor pavement or concrete. In the case of even, sustainable walls, the panels can be mounted directly to the walls using screws or firing pins. Otherwise, a sustainable support structure needs to be created first. Installation on ceilings is performed in a similar way, though special care needs to be excerzised as these panels are pretty heavy.
Doors should be covered entirely with Aaronia MagnoShield®. With the door closed, a gap-free connection with the rest of the panels in the room needs to be established.
After installation, Aaronia MagnoShield® panels can be painted or covered with plaster. Hence, an invisble installation is not a problem.

References

User of Aaronia Antennas, Spectrum Analyzers and screening solutions (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet

Rev 1.2
12.07.2011

80dB Stainless steel RFI shielding Aaronia X-Steel

Military and industrial screening to meet even highest challenges

Highlights

- Almost impossible to destroy
- Usable up to 600° Celsius
- Very high frequency range
- Permeable to air

AARONIA AG
WWW.AARONIA.DE

Made in Germany

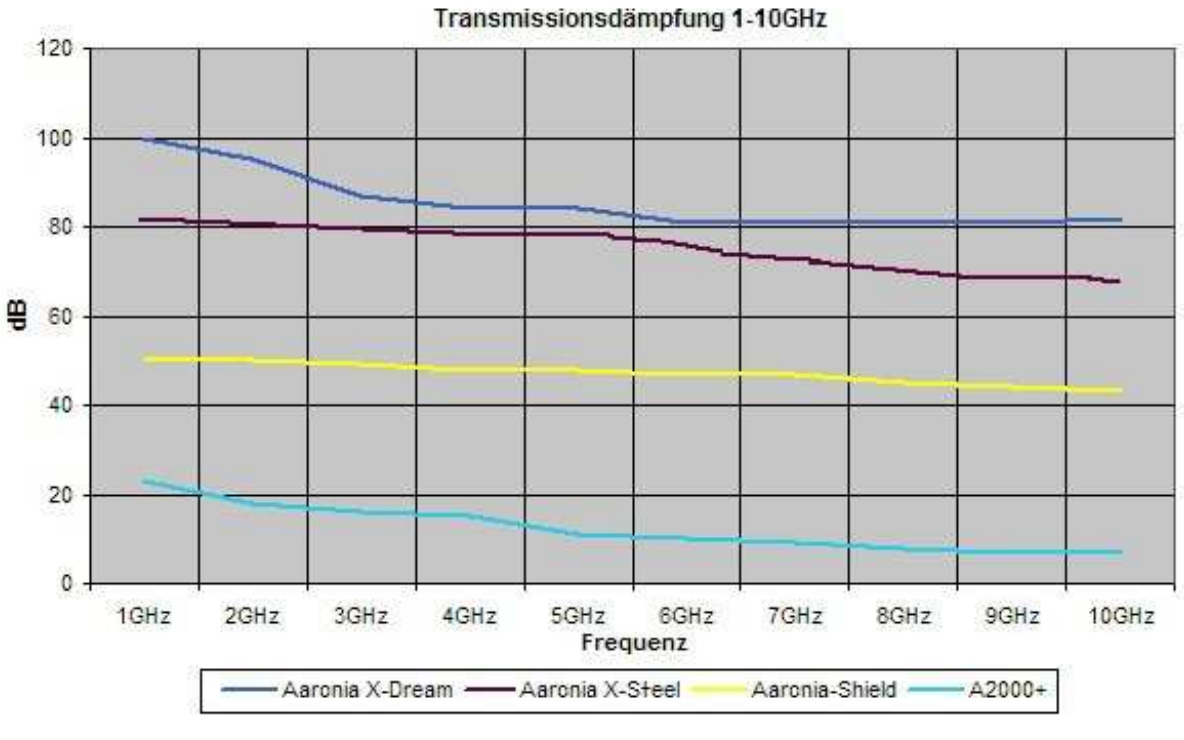
Technical data

Aaronia X-Steel

- Shielding: RF & LF electric fields
- Frequency range: 1MHz to 50GHz
- Damping (dB): 80dB
- Shielding material: Stainless steel
- Carrier material: Stainless steel
- Color: Stainless steel (silver)
- Width: 0,25m or 1m
- Thickness: 1mm
- Available Size: 0,25m² or 1m²
- Mesh size: approx. 0,1mm (multiple layer)
- Weight: approx. 1000g/m²
- Almost impossible to destroy
- Perfectly fits for industrial or military applications
- Temperature range up to 600° Celsius
- Permeable to air
- Very easy handling even for the amateur
- Application examples: Radio & TV, TETRA, ISM434, LTE800, ISM868, GSM900, GSM1800, GSM1900, DECT, UMTS, WLAN....

Aaronias latest high end EMC screening Aaronia X-Steel. Made from 100% stainless steel fibre.
Meets any industrial or military standard. Almost impossible to destroy. Very temperature stable for at least 600 degrees Celsius, does not rot, permeable to air.
Perfectly suitable for EMC screening of air entrances, very high protective EMC clothings etc.
Protects against any kind of RF fields just like Aaronia Shield, but offers a 1000 fold better shielding-performance and protection especially in the very high GHz range. Aaronia X-Steel offers the worlds highest screening within the air permeable EMC screening materials.

Transmission damping chart 1-10GHz



References

User of Aaronia Antennas, Spectrum Analyzers and screening solutions (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet

Rev 1.5
20.07.2011

100dB EMC shielding fleece Aaronia X-Dream®

Optimal for rf Shielding-Application of homes, offices, laboratories and manufacturing

References / examples of proof:

- EADS GmbH, Ulm, Germany
- BMW, Munich, Germany
- Daimler Chrysler AG, Böblingen, Germany
- Fraunhofer Institut für Kurzzeitdynamik, Freiburg, Germany
- EnBW, Karlsruhe, Germany
- BASF, Schwarzheide, Germany
- Volkswagen Motorsport GmbH, Hannover, Germany
- Institut für Luft- und Raumfahrtmedizin, Cologne, Germany

AARONIA AG
WWW.AARONIA.DE

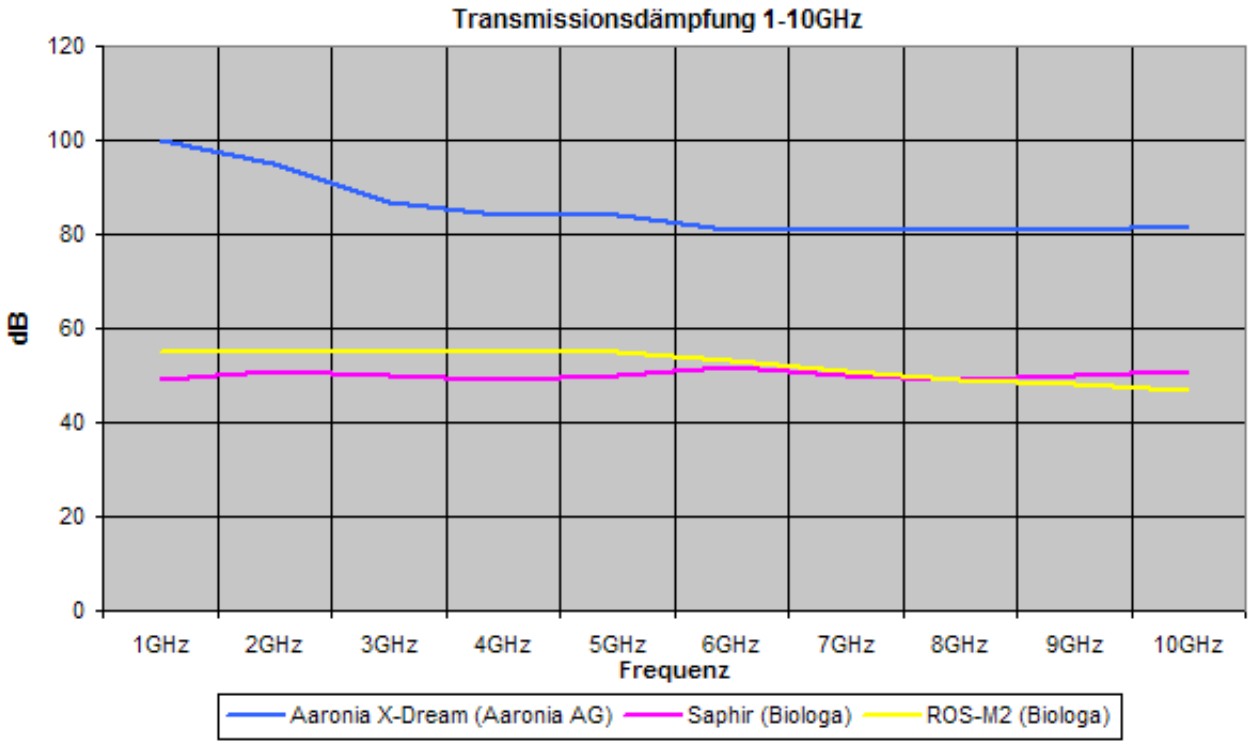
Made in Germany

Specifications

Aaronia X-Dream

- Breathable
- Rot proof
- Frost proof
- Foldable
- Paintable
- Anti-static
- Very lightweight
- Usable inside concrete
- Very easy handling even for the novice
- Length per standard packaging unit: 0,7m, 7m or 36m (1m², 10m², 50m²). Also available as cut good.
- Lane width: 1,4m
- Thickness: 0,5mm
- Colour: Brown/Silver
- Weight: approx. 30g/m2
- Material: High-performance copper/polyester compound
- Screening efficiency **static fields**: 99,999.999% to 99,999.999.99% (only with grounding)
- Screening efficiency **low-frequency, electric fields**: 99,999.999% to 99,999.999.99% (only with grounding)
- Screening efficiency **high-frequency fields**: 70dB (99,999.99%) at 20GHz to over 110dB (99,999.999.999%) at 500MHz (even without grounding)

Damping chart

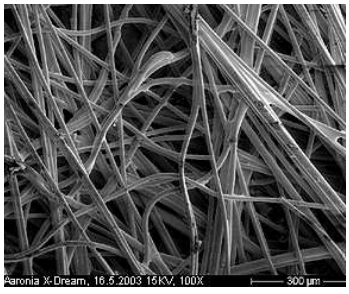


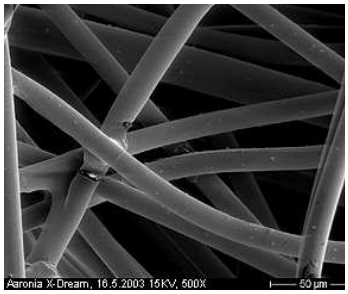
Standard-conformant tests according to MIL-STD-285 approve the extreme screening performance of Aaronia X-Dream®: The damping performance for pulsed high-frequency radiation in the frequency range between 1 and 2GHz, for instance caused by cell towers, is up to 100dB (99,999.999.99%). Compared to the also shown screening fleeces from other manufacturers, Aaronia X-Dream® offers a one hundred times (or more) better screening efficiency in the tested frequency range. Furthermore, allowing grounding, it is equally efficient against static and low-frequency electric fields such as caused by almost any cables running through homes, various home appliances, high-voltage lines, etc.

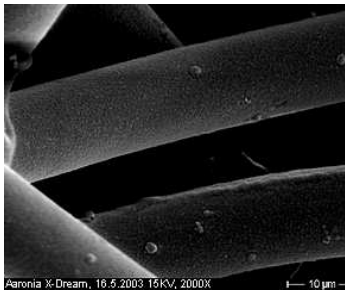
Description

Material characteristics:

The various screening systems available on the market today differ widely in both affordability and protection efficiency. They are often far too difficult to handle, particularly for the novice, but also for professional users. Apart from this, they are mostly far too expensive. Also, customers currently mostly need two seperate screenings simultaneously, as most screenings against RF offer hardly any protection against LF fields, and vice-versa.
With their EMC high-tech fleece Aaronia X-Dream®, Aaronia probably offers the world's most efficient screening performance of over 110dB, unique in this price category and with these material characteristics. Still, Aaronia X-Dream® is easy to handle even for the novice. Aaronia X-Dream® screening fleece offers simultaneous protection against high-frequency (RF) and low-frequency (LF) E-field radiation. The secret behind this extremely good efficiency is a patented tissue based on a compound of copper and polyester. Aaronia X-Dream® is easy to handle and to install. It can be folded without taking damage, is sturdy, frost proof, rot proof, breathable and can even be installed in concrete. As such, it is also applicable for outdoor use and can thus save a lot of cost.
Aaronia X-Dream® can be used both for screening electric fields from local LF radiation sources like cables or distribution boxes, as well as for screening rooms or entire houses or other buildings against RF radiation. Installation is performed by laying the fleece in adjacent lanes which need to overlap approx. 15cm for guaranteeing a closed surface. It is noteworthy that it is not necessary to ground Aaronia X-Dream® for RF screening! Still, we generally recommend grounding using our grounding package, as this will also add protection against low-frequency electric fields from high-voltage lines, power cables etc.



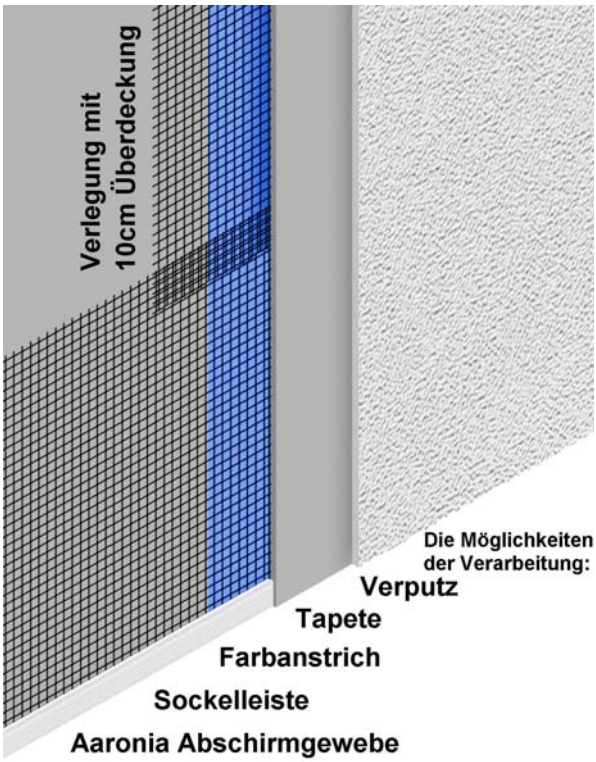




High-resolution imaging shows the chaotic structure of Aaronia X-Dream® fleece, which provides exceptional screening performance. Also it shows the inseperable interconnections between the fibres, thus forming a structure impermeable to RF radiation.

Screening a room:

To protect a room (such as a bedroom) against high frequency radiation, the entire room needs to be covered with Aaronia X-Dream® completely. On the other hand, if shielding against low-frequency electric fields (such as the electrical distribution box or in-wall cables) is desired, only a small area around the radiation source needs to be covered. Attention: For achieving low frequency shielding, the fleece must be grounded! For this, we strongly recommend our Aaronia grounding package. For floors, the fleece can be installed invisibly under the carpet, or, in a new building, in the floor pavement. When attaching to walls, the fleece can be attached like usual wallpapers using a special glue. If walls are made from plasterboard, wood or similar, the fleece can simply be "stapled" to the wall. Though, the easiest alternative is the self-adhesive "PLUS" version of Aaronia X-Dream®. The surface needs to be dust-free, free of grease and dry. Attachment to ceilings can be performed similarly. Doors and their frames should be covered entirely and completely with the fleece, preferably using the self-adhesive Aaronia X-Dream PLUS®, yielding to an almost perfect connectivity between the door's fleece and the fleece used in the rest of the room. For window use, we recommend Aaronia-Shield® which allows elegant installation as an invisible "fly screen". After installation, the EMC fleece can also be painted and covered with wallpaper or plaster. It even offers an attractive surface with the original copper appearance. Our installation manual makes it easy even for the novice to construct a screened room without hassle.



Shielding a house or a building:

Houses and other buildings should be protected with Aaronia X-Dream indoors.This is achieved by glueing or "stapling" the EMC fleece to the walls. In roofs, the fleece should be installed directly beneith the vapor barrier. In floors, the fleece can even be installed in the floor pavement.

Always note that for professional RF screening, a hermetically sealed enclosure, a so-called Faraday cage, must be built. Be careful to always leave a bit of overlap when attaching the fleece to walls, floors and ceilings to be able to later connect the lanes without gaps! Windows need to be screened as well. For this, we recommend our highly-transparent shielding fabric Aaronia-Shield®.

Damping specifications for Aaronia high-performance shielding products

Product	Frequency	Damping in dB:	Damping factor	Damping in %	Application examples:
A 2000+	1GHz 10GHz	20dB 10dB	100 10	99,0% 90%	Indoor and outdoor shielding, low exposure
Aaronia-Shield®	1GHz 10GHz	50dB 45dB	100.000 30.000	99,999% 99,992%	Textile applications (Canopies, clothing, curtains etc.) Low and high exposure
Aaronia X-Dream®	1GHz 10GHz	100dB 80dB	10.000.000.000 100.000.000	99,999.999.99% 99,999.999%	Indoor shielding, measurement chambers High to highest exposure

Notice: when using the dB unit, an increase of 10dB is equivalent to a 10fold increase in strength. For example, 100dB is 10 times as strong as 90dB, or 100 times as strong as 80dB, etc.

References

User of Aaronia Antennas, Spectrum Analyzers and screening solutions (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet

Rev 1.4
12.07.2011

50dB EMC screening fabric Aaronia-Shield®

High performance RF Shielding-Fabric made from a patented high-tech shielding-fibre

"..especially effective against all high-frequency radiation up to far beyond 10GHz"
"..ensures conformance with rigorous architecture-biological exposure limits.."
"..offers a 30 to 1000 fold more efficient screening than similar products on the market"
"..particularly well-suited for people with allergies!"
(KettenwirkPraxis 02/2005)

References / examples of proof:

- EADS GmbH, Ulm, Germany
- Max Planck Institute for Plasma Physics, Greifswald, Germany
- Max Planck Institute for Iron Research, Düsseldorf, Germany
- Technical University Hamburg, Germany
- EnBW, Karlsruhe, Germany
- University Munich, Germany
- Dr. Oetker Nahrungsmittel, Bielefeld, Germany

AARONIA AG
WWW.AARONIA.DE

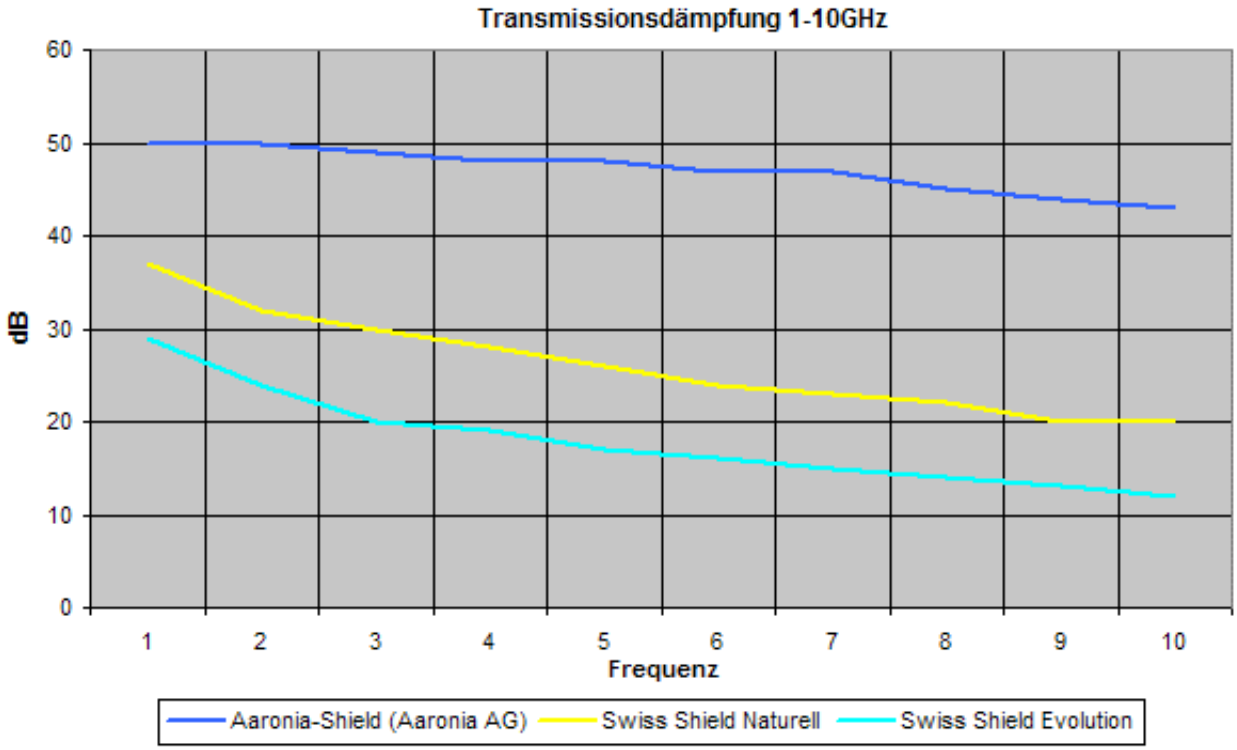
Made in Germany

Specifications

Aaronia Shield®

- Extremely breathable
- Odourless
- Extremely transparent
- Treatable like regular fabric. Ideal for garments, curtains, canopies, protective suits etc.
- Rot proof
- Frost proof
- Anti-septic
- Anti-static
- Washable
- Foldable
- Also usable as a transparent fly screen
- Very easy to handle even for the novice
- Length per standard unit: 0,7m, 7m, (1m², 10m²). Also available as cut good
- Lane width: approx. 1,4m
- Thickness: 0,1mm
- Mesh size: approx. 0,7mm!
- Colour: Silver
- Weight: approx. 15g/m2
- Mesh material: High-performance silver/polyamid compound (20%/80%)
- Screening performance **static fields**: 99,99% to 99,999% (only WITH grounding!)
- Screening performance **low-frequency, electric fields**: 99,99% to 99,999% (only WITH grounding!)
- Screening performance **high-frequency fields**: 43dB (99,992%) at 10GHz and 50dB (99,999%) at 1GHz (even without grounding!)

Transmission damping chart 1-10GHz



Independent tests according to MIL-STD-285 performed by Prof.Dipl.-Ing.P.Pauli approve the superior screening performance of Aaronia-Shield® compared to the other products shown which are typically used for constructing screening canopies or curtains. The RF (high-frequency) radiation damping performance, especially in the frequency range where pulsed signals from cell towers etc. are present, is an exceptional 43dB (99,992%) to 50dB (99,999%). Compared to the other products shown, Aaronia-Shield® offers 30 to 1000 times better protection!
Apart from this, Aaronia-Shield® is the only screening product of these three which can also be grounded and thus even protects against static AND low-frequency EMF, which is generated by virtually all cables running through homes, all home appliances and also high-voltage power lines.

Description

Material characteristics:

The various "transparent" shielding systems currently available on the market are very diverse concerning their protection efficiency and affordability. Most offer hardly any protection at all in the higher GHz ranges. Mostly they are also extremely expensive and do not offer protection against low frequency EMF radiation, either. Also, the customer currently mostly needs TWO seperate shieldings: One against RF and another against LF.

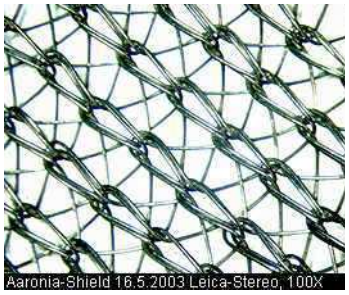
Consequently, Aaronia offers a very affordable alternative whose handling is particularly easy for the novice: The "screening fabric" Aaronia-Shield®. Aaronia-Shield® offers extremely good shielding performance especially in the high GHZ range. Aaronia-Shield® simultaneously protects against both RF AND LF E-field radiation and is still extremely transparent. The reason behind this very good screening efficiency is a complex textile concept based on a special kind of patented silver/polyamid fibre. Aaronia-Shield® can be handled like regular fabric. It can be folded without the risk of taking damage, is anti-septic, frost proof, rot proof and extremely breathable. Aaronia-Shield® is optimally suited for constructing highly efficient screenings in terms of canopies, garments, curtains, fly screens, protective suits or for aerospace use.

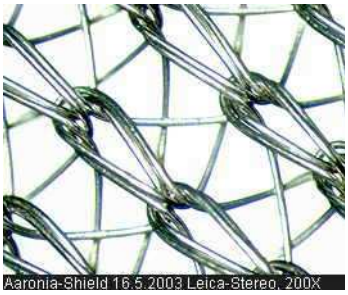
It is noteworthy that Aaronia-Shield® does NOT need to be grounded for high-frequency screening! Though, we generally recommend grounding using our grounding package if stationary use is intended (for example as canopy, curtains, fly screens etc.), as that way, protection against LF electric fields caused by high-voltage lines, power cables, etc. will also be achieved.

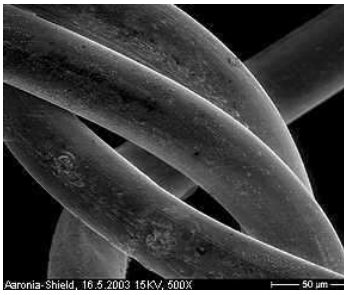
Screening solutions made from Aaronia-Shield®:

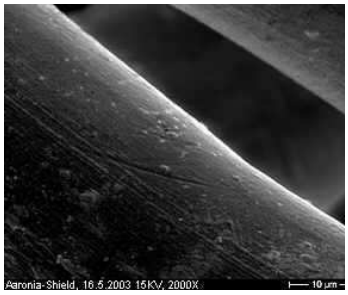
For window use, Aaronia-Shield® lends itself optimally as a transparent shielding and at the same time doubles as a fly screen. Also, application as high-grade shielding curtain is not a problem at all.

Aaronia offers complete, high-grade canopy systems made from Aaronia-Shield® for beds. For also shielding the floor area, matching screening mats made from Aaronia X-Dream® have been developed exactly for this purpose. These mats are also used to ground the canopy systems and thus offer a comprehensive, complete protection. Our canopy systems allow even the novice to construct an optimally screened sleeping place with minimal effort.









The complex weaving technique used in Aaronia-Shield® warrants the best possible screening performance particularly in the higher GHz range.

References

User of Aaronia Antennas, Spectrum Analyzers and screening solutions (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

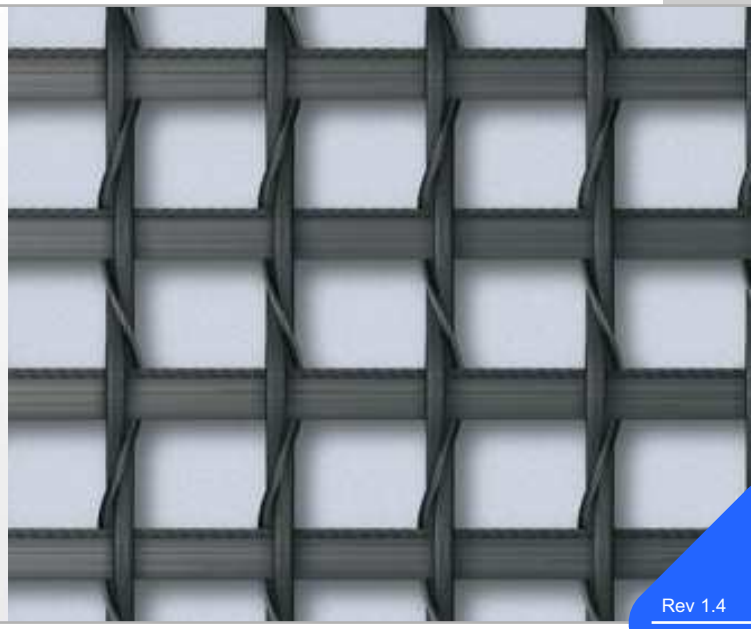
Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet



Rev 1.4
12.07.2011

20dB rf screening tissue A2000+

Reduces rf electrosmog from mobile phones, microwave ovens, transmission towers etc. by approx. 99%

References / examples of proof:

- CERN, Switzerland
- University Munich, Germany
- University Hannover, Germany
- Bayer Industry, Krefeld, Germany
- EnBW, Karlsruhe, Germany

AARONIA AG
WWW.AARONIA.DE

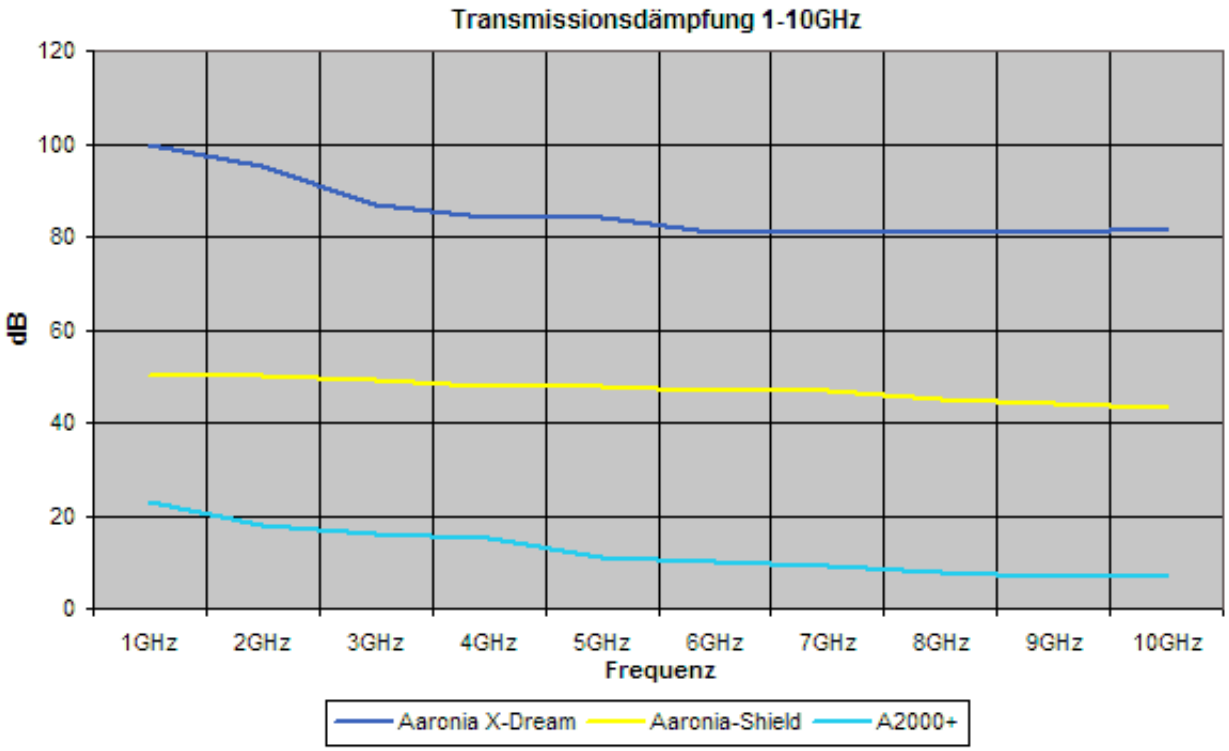
Made in Germany

Specifications

Aaronia A2000+

- Breathable
- Rot resistant
- Frost-proof
- Foldable
- Paintable
- Usable in walls or concrete
- Replaces reinforcement fabric
- Very easy processing even for the novice
- Length per unit: 10m or 50m
- Width: 1m
- Thickness: 0,5mm
- Mesh size: ca. 5mm
- Colour: black
- Weight: approx. 200g/m2
- Mesh material: Stainless steel
- Quality assurance: TÜV CERT according to ISO 9001
- Screening efficiency **static fields**: 99,5% to 99,95% (only with grounding!)
- Screening efficiency **low-frequency, electric fields**: 99,5% to 99,95% (only with grounding!)
- Screening efficiency **radio frequency fields**: 90% to 99% (even without grounding!)

Damping graph

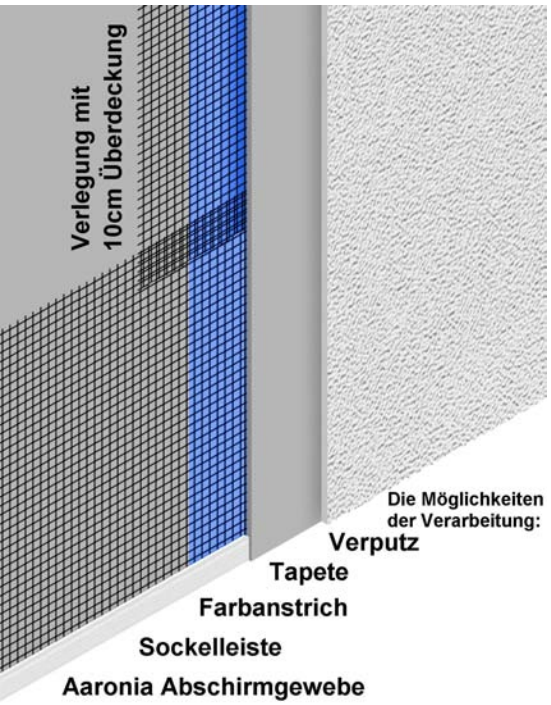


Measurements prove the good screening performance: Damping of high-frequency radiation in the frequency range particularly affected by pulsed signals, for example by cell towers, is 90% to 99%. Also, static and low-frequency electric fields like those generated by any cables or appliances in homes, or high-voltage power lines, are being damped by up to 99,9%.

Description

Application:

The various currently available shielding systems all are vastly different in their shielding- and cost efficiency. Most are far too complicated in handling particularly for the novice, but also for the professional user. Furthermore, they are often also far too expensive. Additionally, mostly TWO seperate screening products are necessary as screenings against RF (high/radio frequency) are often not efficient against EMF and vice-versa.
In turn, Aaronia offers a very cost-effective and easy to use shielding: The Aaronia shielding-tissue A2000+. The Aaronia Shielding-tissue A2000+ offers protection against RF AND EMF E-field radiation at the same time. This exceptional performance is based on a concept using interwoven fibres made of stainless steel, and a special conductive coating. The tissue is easy to handle and to lay. It can be folded without risk of damage, is sturdy, frost proof, rot proof, breathable and can even be used inside walls or concrete. As such it is also suitable for outdoor use and then replaces the normal reinforcement fabric, thus saving a lot of cost.
The Aaronia screening tissue A2000+ can be used to screen local radiation sources like cables or distribution boxes as well as for protecting entire rooms or buildings. Laying is performed in lanes which need to overlap 15cm to form a closed surface. It is noteworthy that this tissue does NOT need to be grounded for achieving RF (high-frequency) protection! Though we generally recommend grounding using our grounding package, as low-frequency E-fields from power cables, high-voltage lines, etc. will also be screened using this method.



Protecting a room:

To protect a room (such as a bedroom) against high frequency (RF) radiation, the complete room needs to be entirely covered with the tissue. In contrast, if a low-frequency E-Field radiation source (such as the power distribution box in your home or in-wall cables) is to be screened, only a small area around the radiation source needs to be covered. Attention: For protection against low frequency EMF, the tissue also needs to be grounded! For this, you should definitely use the Aaronia grounding package. For covering floors, the tissue can be laid invisible under carpets, or in the floor pavement. The tissue can be attached to walls like wallpaper using a special glue. If the walls are made from plasterboard, wood, or similar, the tissue can simply be "stapled" to the wall. Likewise, it can also be attached to ceilings. On the other hand, doors and their frames should be covered using Aaronia X-Dream screening fleece. That way, a nearly perfect connection with the rest of the tissue is formed when the door is closed. For shielding windows, you should use our screening fabric Aaronia-Shield, which can be installed elegantly like an invisible "fly screen". After installation, the tissue can be painted, covered with wallpaper or plaster and thus becomes invisible. Our installation manual even allows the novice to create a screened room without much hassle.

Shielding a house or other building:

Houses and other buildings should always be shielded externally when constructed.
To do this, the tissue can be used as a replacement for the reinforcement fabric.
In roofs, the tissue should be installed directly beneith the vapor barrier.

For floors, the tissue should be installed in the floor pavement.
Always remember that for the best possible RF screening, a completely closed surface needs to be built! So always leave a bit of overlapping tissue when installing in walls, floors and roofs for being able to tightly connect the lanes later!

Damping specifications for Aaronia high-performance shielding products

Product	Frequency	Damping in dB:	Damping factor	Damping in %	Application examples:
A 2000+	1GHz 10GHz	20dB 10dB	100 10	99,0% 90%	Indoor and outdoor shielding, low exposure
Aaronia-Shield®	1GHz 10GHz	50dB 45dB	100.000 30.000	99,999% 99,992%	Textile applications (Canopies, clothing, curtains etc.) Low and high exposure
Aaronia X-Dream®	1GHz 10GHz	100dB 80dB	10.000.000.000 100.000.000	99,999.999.99% 99,999.999%	Indoor shielding, measurement chambers High to highest exposure

Notice: when using the dB unit, an increase of 10dB is equivalent to a 10fold increase in strength. For example, 100dB is 10 times as strong as 90dB, or 100 times as strong as 80dB, etc.

References

User of Aaronia Antennas, Spectrum Analyzers and screening solutions (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com

Data sheet

Rev 1.4
12.07.2011

50dB high-performance screening canopies made from Aaronia-Shield®

High performance RF Shielding-canopies made from a patented high-tech shielding-fibre

"..especially effective against all high-frequency radiation up to far beyond 10GHz"
"..ensures conformance with rigorous architecture-biological exposure limits.."
"..offers a 30 to 1000 fold more efficient screening than similar products on the market"
"..particularly well-suited for people with allergies!"
(KettenwirkPraxis 02/2005)

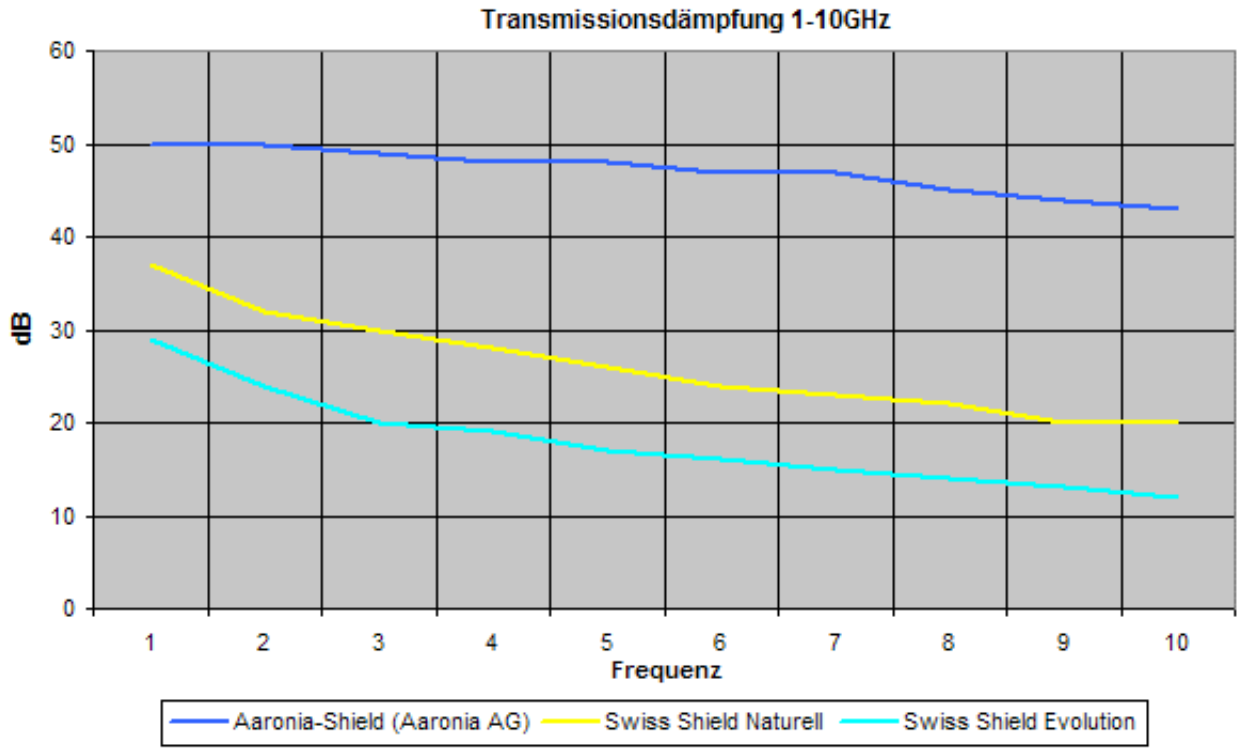
AARONIA AG
WWW.AARONIA.DE

Made in Germany

Specifications

- Extremely breathable
- Odourless
- Extremely transparent
- Anti-septic
- Anti-static
- Washable
- Foldable
- Very easy to handle even for the novice
- Thickness: 0,5mm
- Mesh size: approx. 0,5mm
- Colour: Silver
- Weight: approx. 40g/m2
- Mesh material: silver/polyamid compound
- Screening performance **static fields**: 99,99% to 99,999% (only with grounding)
- Screening performance **low-frequency, electric fields**: 99,99% to 99,999% (only with grounding)
- Screening performance **high-frequency fields**: 43dB (99,992%) at 10GHz and 50dB (99,999%) at 1GHz (even without grounding) See following chart

Transmission damping chart 1-10GHz



Tests according to MIL-STD-285 approve the superior screening performance of our canopies due to the consequent deployment of Aaronia-Shield®. The RF (high-frequency) radiation damping performance, especially in the frequency range where pulsed signals from cell towers etc. are present, is an exceptional 43dB (99,992%) to 50dB (99,999%). Compared to canopies made from the other products shown, canopies made from Aaronia-Shield® offer 30 to 1000 times better protection!
Apart from this, canopies made from Aaronia-Shield® can also be grounded and thus even protect against static and low-frequency EMF, which is generated by virtually all cables running through homes, all home appliances and also high-voltage power lines.

Description

Application / installation:

The various screening canopy systems currently available on the market are very diverse concerning their protection efficiency and affordability. Most offer hardly any protection at all in the higher GHz ranges. Mostly they are also extremely expensive and do not offer protection against low frequency EMF radiation, either. Also, the customer currently mostly needs TWO seperate screenings: One against RF and another against LF.
Consequently, Aaronia offers a very affordable alternative whose handling is particularly easy for the novice: The shielding canopy made from the "screening fabric" Aaronia-Shield®. Aaronia-Shield® offers extremely good screening performance especially in the high GHZ range. Aaronia-Shield® simultaneously protects against both RF and LF E-field radiation and is still extremely transparent. The reason behind this very good shielding efficiency is a complex textile concept based on a special kind of patented silver/polyamid fibre. Canopies made from Aaronia-Shield® can be folded without the risk of taking damage, are anti-septic and extremely breathable.
It is noteworthy that canopies made from Aaronia-Shield® do not need to be grounded for high-frequency screening! Though, we generally recommend grounding using the corresponding grounding mat, as that way, protection against LF electric fields caused by high-voltage lines, power cables, etc. will also be achieved.

Shielding canopy made from Aaronia-Shield:

Aaronia, probably as the first supplier at all, not only offers a highly transparent shielding canopy with 50dB damping, but also a complete, sophisticated shielding system around the canopy:
First, the high-grade canopy made from Aaronia-Shield® is installed. To screen the floor area as well, special screening mats made from Aaronia X-Dream® have been developed. These can simply be put under the bed. That way, a complete, integrated screening system is established, achieving complete shielding even in the floor area. Shielding the floor area is indispensable with nearly all types of floors, as RF radiation can permeate them virtually unaffected. Two seperate grounding cables are included with the screening mat: One for connection to a radiator (heating appliance), and, in case no radiator is installed, a cable for direct connection to the wall socket's integrated grounding. Connection to the grounding mat is very easy by using a so-called "alligator crimp" attached to the grounding cable. That way, you achieve an optimal screening even against LF radiation / EMF.

Shielding canopies made from Aaronia-Shield® still have further advantages:
In contrast to cotton-based canopies, canopies made from Aaronia-Shield create a very open, natural atmosphere. Because of the high proportion of silver in the material, very good heat conductivity is achieved. Thus, the heat generated by the human body can quickly and easily escape and does not accumulate under the canopy, like with other canopy systems. A very fresh and light atmosphere is the result, which you will appreciate especially on hot summer days.

Naturally, our screening canopies also offer regular protection against midges and flies.
Whenever possible, you should use a rectangular canopy if you plan to install it permanently. Even though this version will always be slightly more expensive, it offers the most space and easiest handling in daily use. As such, you can simply "put aside" a rectangular canopy and thus have free access to your bed. "Entry" and "exit" is also very comfortable, and there is no way for pieces of the canopy to get caught up in your bed.
In contrast, a pyramid canopy is particularly easy to set up and tear down, so it is very well suited for (holiday) trips, always offering optimal protection against electrosmog.

References

User of Aaronia Antennas, Spectrum Analyzers and screening solutions (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgien
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer
- Bundeswehr (Technische Aufklärung), Hof
- Lufthansa, Hamburg
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgien
- Australian Government Department of Defence, Australien
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- Institut für Luft- und Raumfahrtmedizin, Köln
- Deutscher Wetterdienst, Tauche
- Polizeipräsidium, Bonn
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, NRW
- Bundesamt für Verfassungsschutz, Köln
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- Universität Freiburg
- Indonesien Institute of Sience, Indonesien
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- Universität Erlangen, Erlangen
- Universität Hannover, Hannover
- University of Newcastle, Großbritannien
- Universität Strasbourg, Frankreich
- Universität Frankfurt, Frankfurt
- Uni München – Fakultät für Physik, Garching
- Technische Universität Hamburg, Hamburg
- Max-Planck Institut für Radioastronomie, Bad Münstereifel
- Max-Planck-Institut für Quantenoptik, Garching
- Max-Planck-Institut für Kernphysik, Heidelberg
- Max-Planck-Institut für Eisenforschung, Düsseldorf
- Forschungszentrum Karlsruhe, Karlsruhe

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, Kalifornien, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brasilien
- IBM, Schweiz
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, Großbritannien
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Österreich
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
- IBM Deutschland, Stuttgart
- Vattenfall, Berlin
- Fraport, Frankfurt

Visit us at Tradeshows/Conferences:

productronica 2011
innovation all along the line

emv
Internationale Fachmesse und Kongress
für Elektromagnetische Verträglichkeit
Düsseldorf, 07.–09.02.2012

electronica 2012

Aaronia Distributors

Aaronia USA, 651 Amberton Crossing
Suwanee, Georgia 30024 USA
Phone ++1 678-714-2000, Fax ++1 678-714-2092
Email:sales@aaroniausa.com
URL:www.aaroniaUSA.com

Aaronia UK, Bellringer Road, Trentham, Lakes South,
Stoke-on-Trent, ST4 8GB Staffordshire, UK
Phone ++44(0)845-4379092, Fax ++44(0)870-8700001
Email:sales@aaronia.co.uk
URL:www.aaronia.co.uk

Aaronia Australia Measurement Innovation Py Ltd
Perth - Western Australia
Phone ++61 (8) 9437 2550, Fax ++61 (8) 9437 2551
Email: info@measurement.net.au
URL: www.measurement.net.au

Testpribor, Fabriciusa St. 30
Moscow 125363 Russia
Phone ++7 495-225-67-37
Email: testpribor@test-expert.ru
URL: www.test-expert.ru

Aimil Ltd, B-906, BSEL Tech Park, Opp. Vashi Rly Stn,
400705 Vashi, Navi Mumbai, India
Phone ++91 22 3918 3554, Fax ++91 22 3918 3562
Email:sanjayagarwal@aimil.com
URL:www.aimil.com

Aaronia Israel, Johanan Hasandlar St.
44641 Kfar-Sava, Israel
Phone ++972 72 2500 290, Fax ++972 9 7654 264
Email: kobi@aaronia.co.il
URL: www.aaronia.co.il

AARONIA AG
WWW.AARONIA.DE

Made in Germany

Aaronia AG, Gewerbegebiet Aaronia AG, DE-54597 Strickscheid, Germany
Phone ++49(0)6556-93033, Fax ++49(0)6556-93034
Email:mail@aaronia.de URL:www.aaronia.com