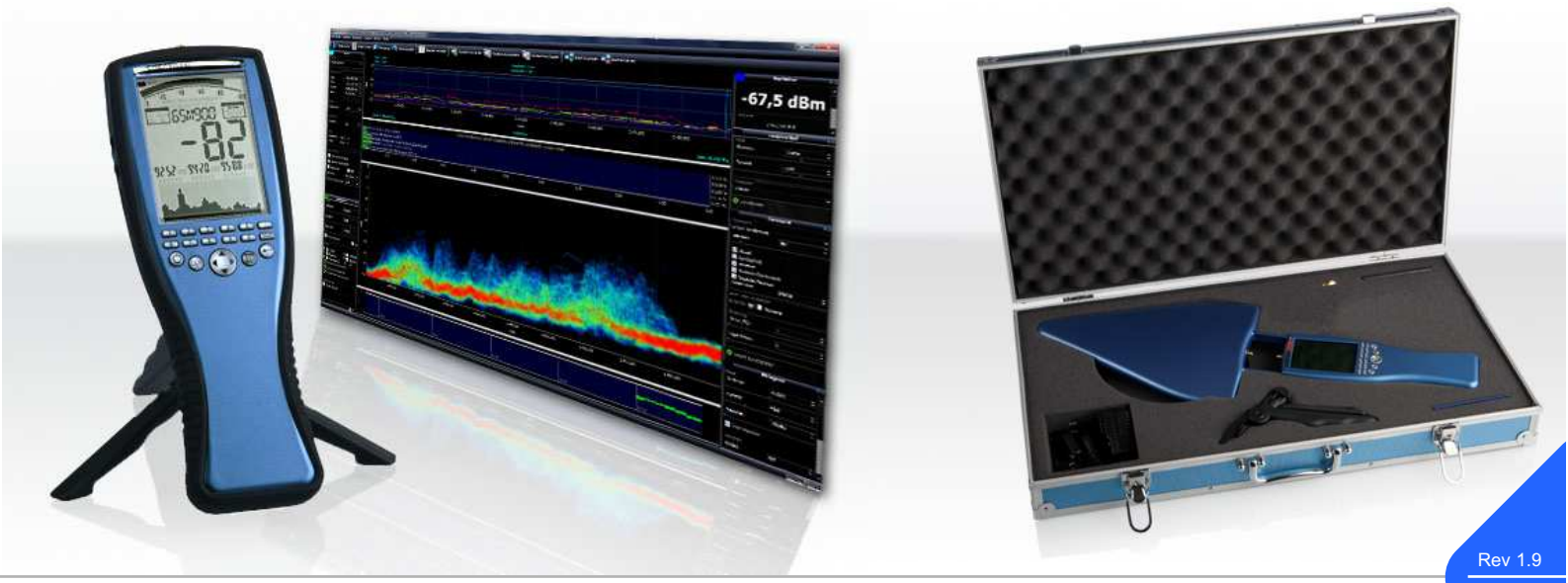
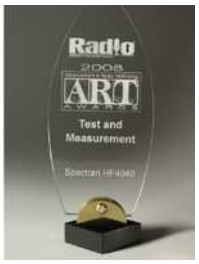


Rev 1.9
26.04.2012

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

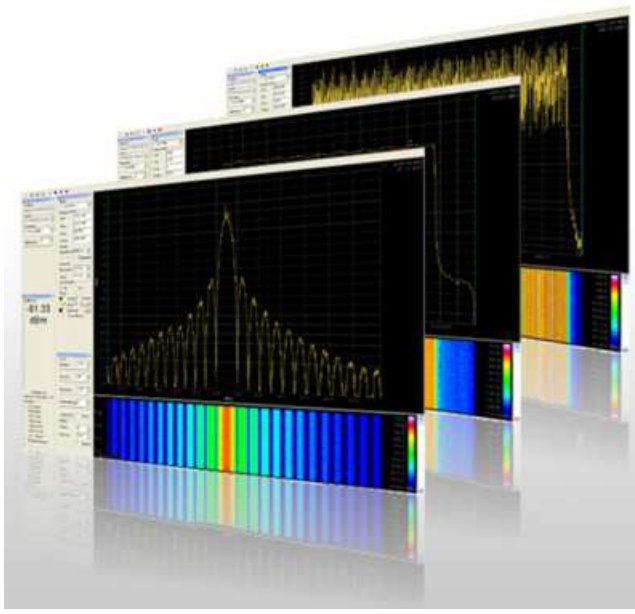
RF Measurement in this price range has never been this professional.
Find radiation sources in your surroundings. Find their respective frequencies and signal strengths, including **direct display of exposure limits**. This used to be impossible in this price category, professional units often costing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

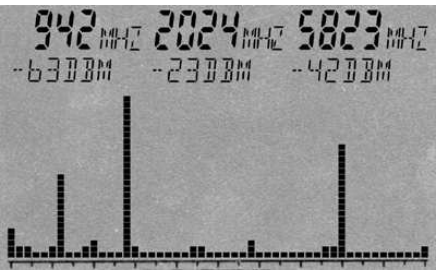
Professional PC analysis software (free download)

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:

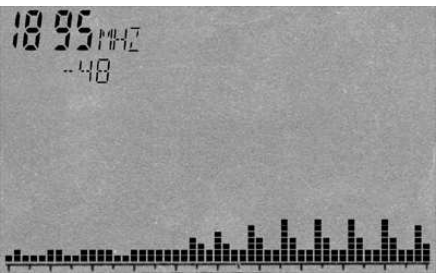
- **MULTI-device capability**! Remote control of several SPECTRAN units. These can be controlled and their data displayed at once on a single PC.
- **HIGH-RESOLUTION**!, freely scalable, coloured spectrum display with falloff function..
- **Display of channel identifiers**! for EXACT identification of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

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	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.

AARONIA AG
WWW.AARONIA.DE

	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 @3,6009GHz. 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

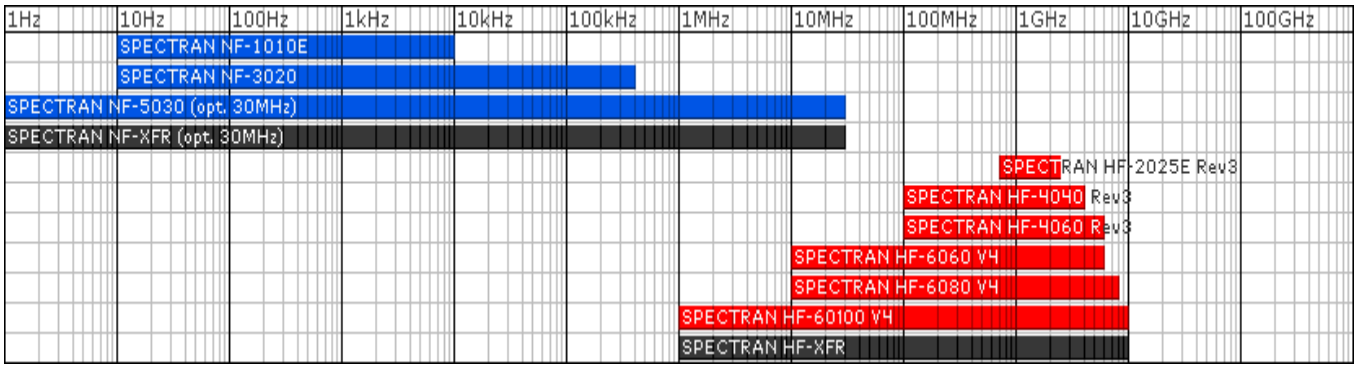
20dB SMA high-end Attenuator

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

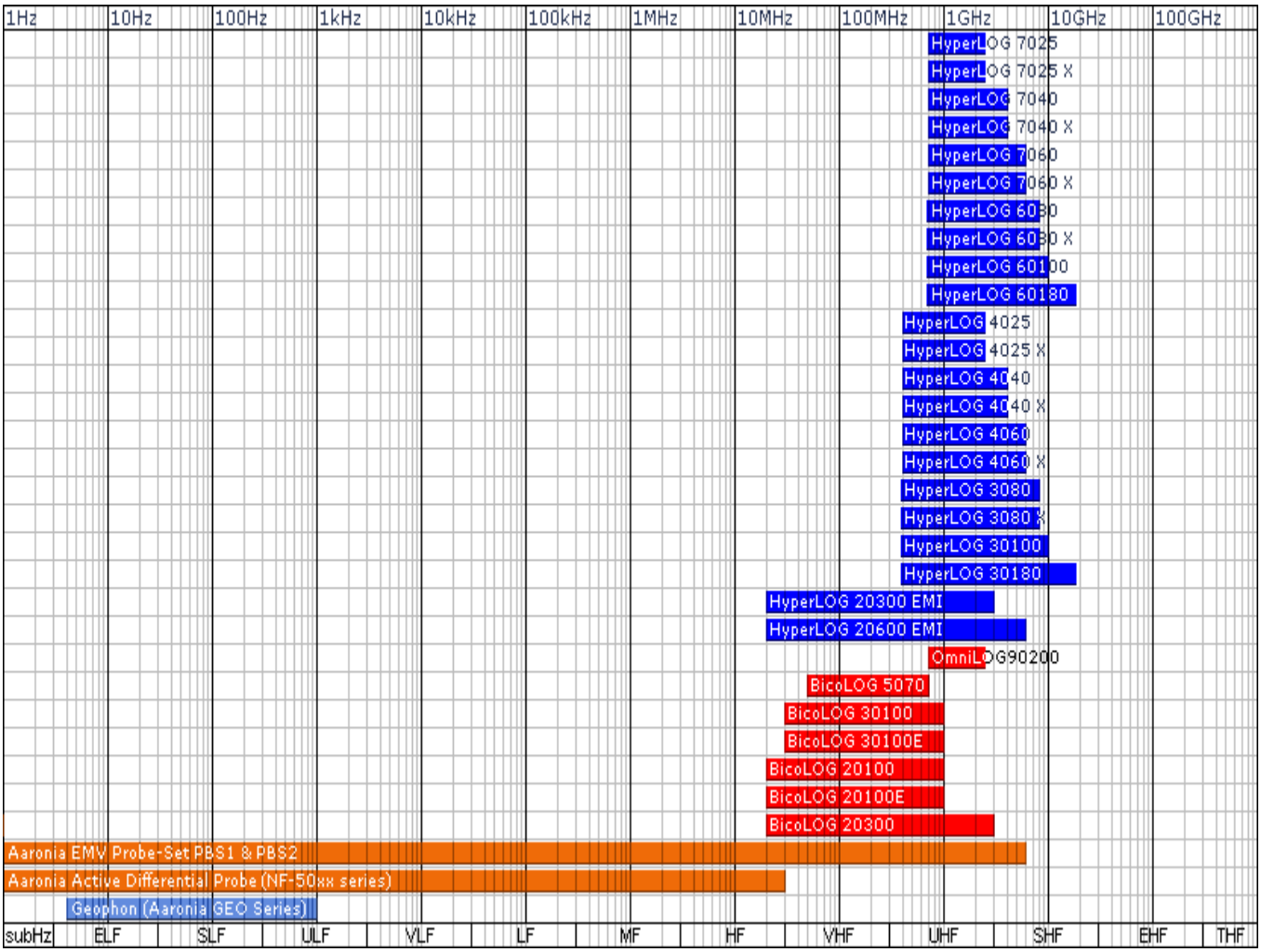
Order/Art.-No.: 775

Frequency overview Analyzer & Antennas

Frequency Overview 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
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- EnBW Kernkraftwerk GmbH, Neckarwestheim
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- Intel GmbH, Feldkirchen
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