



Real-time Spectrum Analyzer Aaronia SPECTRAN V5

μ S ultra fast DDS sweep – real-time data streaming - colour TFT – tracking generator - GPS

- ◆ First real-time spectrum analyzer with up to 200MHz real-time bandwidth
- ◆ Real-time streaming
- ◆ Real-time remote control (GSM, WLAN, USB)
- ◆ Smallest and best-priced real-time spectrum analyzer worldwide
- ◆ Patented polyphase filter technology
- ◆ Patented spectrum analysis without upper lying LO (modulated LO)
- ◆ Extremely low noise (-170dBm/Hz) to analyse even weakest signals
- ◆ Modular construction for fast extension and customization of the front end
- ◆ First analyzer with ultra fast LO sweeps (μ S DDS sweep)
- ◆ High resolution TFT display with 800x480 pixel resolution and touch screen
- ◆ Integrated 3D motion sensor (gyro sensor) and 3D magnetic field sensor (compass and position control)
- ◆ High speed USB 2.0 (480K/s)
- ◆ USB Slave interface (to connect diverse devices like GSM, WLAN, printer, memory etc.)
- ◆ MicroSD Slot (supports Aaronia microSDHC cards with more than 10MB/s)
- ◆ Integrated lithium polymer battery (LiPo) with 8000mAh (or 16000mAh) for up to 3(6) hours runtime
- ◆ Included in delivery: directional tracking and EMC antenna, aluminium carrying case, battery charger and power supply including international adapter set, analyser software for MAC OS, Linux and Windows
- ◆ Available options: tracking generator, GPS



Made in Germany

Prices & technical specifications

SPECTRAN® HF-8025 V5 (10MHz - 2,5GHz)

- ◆ **64MB** SDRAM
- ◆ **200MHz** SingleCore Blackfin DSP
- ◆ **100MSPS** 14Bit Dual (I/Q) ADC
- ◆ **400MSPS** 16Bit DAC
- ◆ **38K** ECP3 FPGA
- ◆ **16MByte** video RAM
- ◆ **10MHz** real-time bandwidth
- ◆ **2,5GHz** power meter
- ◆ HyperLOG **7025EX** directional tracking EMC antenna

SPECTRAN® HF-8060 V5 (1Hz*/1MHz-6GHz)

- ◆ **128MB** SDRAM
- ◆ **400MHz** DualCore Blackfin DSP
- ◆ **150MSPS** 14Bit Dual (I/Q) ADC
- ◆ **600MSPS** 16Bit DAC
- ◆ **72K** ECP3 FPGA
- ◆ **32MByte** video RAM
- ◆ **40MHz** real-time bandwidth
- ◆ **6GHz** power meter
- ◆ HyperLOG **7060EX** directional tracking EMC antenna

SPECTRAN® HF-80100 V5 (1Hz*/1MHz-9,4GHz)

- ◆ **256MB** SDRAM
- ◆ **600MHz** DualCore Blackfin DSP
- ◆ **250MSPS** 14Bit Dual (I/Q) ADC
- ◆ **800MSPS** 16Bit DAC
- ◆ **240K** ECP3 FPGA
- ◆ **64MByte** video RAM
- ◆ **120MHz** real-time bandwidth (optional **200MHz**)
- ◆ **10GHz** power meter
- ◆ HyperLOG **60100EX** directional tracking EMC antenna

Hardware Options

- ◆ 15dB internal low noise **preamplifier**
- ◆ **GPS**
- ◆ *Frequency extension **1Hz-40MHz** (16Bit 105MSPS ADC)
- ◆ **Tracking-Generator**

Highlights

The Aaronia SPECTRAN V5 impresses with the combination of real-time spectrum analysis by means of a shifted poly-phase-filter used together with a patented measurement process with modulated local oscillator.

Benefits include:

- 1) Small and compact design and construction (significantly fewer and much smaller components are required)
- 2) Implementation of cost-effective hardware for a reasonable price (only "standardized" RF-components are needed)
- 3) Extremely low noise signal processing - now up to 170dBm/Hz (achieved by eliminating many noisy components in the RF path)
- 4) Analysis of even highest frequencies up to 90GHz (achieved by the elimination of upper lying LO)

μ S ultra fast DDS sweep

The SPECTRAN V5 also offers a "classical" spectrum analyser mode by means of μ S ultra fast DDS sweep:

In addition to LO-modulation the V5 has a DDS-synthesizer available with up to 800 MSPS I/Q for extremely fast frequency hops of the local oscillator. This technology allows sophisticated measuring programmes over the full frequency range (currently up to 9,4GHz).

The SPECTRAN V5 with its accelerated sweep rate is worlds better than currently available other sweep spectrum analysers.

Expandable frequency range down to 1Hz

The SPECTRAN V5 can optional be fitted with a frequency extension down to 1Hz (only HF-8060 V5 and HF-80100 V5). The input signal is internally diverted to a second RF- path, which is optimised for low frequency processing. The low frequency path offers a frequency range from 1Hz up to 40MHz. In the path is a high-performance 16Bit AD converter with 105MSPS is used. The resolution enhancement from 14Bit to 16Bit improves the dynamic range from 80dB (14Bit) to 100dB (16Bit), which leaves nothing to be desired. This path is a fully capable real-time function controllable by μ S DDS sweep. The low frequency path (1Hz-40MHz/16Bit) and the radio frequency path (1MHz-9,4GHz/14Bit) are seamless to the User, except for the particularly noteworthy improvement in the dynamic range.

Real-time spectrum analysis by using polyphase filter technology

With the SPECTRAN V5 you can find for the first time in hardware the received radio spectrum as an adjusted version. Likewise, parallel filtering is done by hardware-support.

The Aaronia SPECTRAN V5 is setting new standards in filtering process technology. Where typical real-time analysers are based on Fourier analysis, the V5 uses a patented receiving method with two staggered combs which are produced by a polyphase filter. In contrast to the ordinary Fourier analysis, the polyphase filter covers more than one interval of sampling points, based on the number of frequency points. Thereby any filter curve (e.g. real Gauss-filter) can be realised without limitation of the slope due to the predetermined interval. To avoid gaps in the frequency-time-diagram, two spatially and temporary staggered filter combs are used for analysis. This SPECTRAN V5 break-through technology will not miss even the smallest signal detail in the investigated frequency band.

Real-time streaming

The real-time streaming function is another special feature of the SPECTRAN V5. Contrary to existing real-time spectrum analysers, which do not allow uninterrupted data logging, the V5 can stream data continuously and save them gap-free on PC e.g. via high-speed USB-interface. The real-time streaming offers a variety of new applications that were previously inconceivable, like recording and repeated playing of any signal or a subsequent, complete decoding of complete recorded digital signals like GSM, TETRA, etc.

Interchangeable RF front end

The complete front end of SPECTRAN V5 is interchangeable and can be replaced at any time with Aaronia's latest technology.

A 9,4GHz module is available very soon. An 18GHz module can be ordered by approx. end of 2013. Further versions up to 90 GHz are already being planned and scheduled for 2014.

The "open source" interface to the front end is made available by Aaronia and allows the user to customize self development applications of their own front ends. This open source availability opens endless new markets for the Aaronia SPECTRAN V5.

Technology

The signal processing is realised by FPGA, which also includes a vector processor for statistic analysis and demodulation. Together with the powerful Dual Core Blackfin DSP-CPU and the 800x480 pixel high-resolution colour display and touch screen, the possibilities for analysing even the most complex signals are limitless.

Within the analogue process, the signal is sampled by a real 14Bit A/D converter with up to 500MSPS (250 MSPS I/Q) data rate. This process always ensures a big dynamic range of 80dB and a high quality of analysis. An optional 16Bit A/D converter with 100dB dynamic range (1Hz-40MHz) can be added.

The SPECTRAN V5 can be controlled either by the unit's touch screen, by a multifunctional jog-dial, by motion control, via custom-hotkeys or real-time remote control (GSM, WLAN or USB). An optional tracking generator allows amongst others network-, cable- and antenna measurements.

The high-sensitivity integrated gyro sensor with compass function can register the position and alignment of the unit at any time. Optionally available is a GPS-receiver, which stores the exact location of the measurement and allows complex measurement runs as well.

Both sensors, together with the integrated data logger, enable a complete gap-free recording of field measurements including an automatic heatmap-generation (e.g. on Google-Maps). Thus, the user's documentation of EMC measurements or the visualisation of network coverage of GSM, WLAN etc. will be remarkably easy to generate.

The SPECTRAN V5 has an integrated 8,000mAh lithium polymer battery (LiPo) for 2-3 hours of runtime, plus there is a 16,000mAh battery upgrade available to provide 4-6 hours of runtime.

A variety of more advanced software-evaluation and analysis-options are currently under development and these will be available for retrofit when requested (e.g. GSM decoder).

Interfaces

- 50/75Ohm RF input
- Tracking generator output
- Sync In/Output
- USB Slave
- USB Master
- Micro SD
- Power

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)1782 645 190, Fax ++44(0)870-8700001
Email: sales@aaronia.co.uk
URL: www.aaronia.co.uk



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



Aaronia North China, Beijing Mesh Communication
Tech Co. Ltd., No. 2 Huayuan Road, Building 2,
Haidian District, 100191 Beijing, China
Phone ++86 10 822 37 606, Fax ++86 10 822 37 609
Email: sales@bjmesh.com
URL: www.bjmesh.com.cn



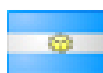
Aaronia South China, Shenzhen TORI Wisdom
Technology Co., Ltd, 3BRM, RD FL Luhua Technology
Bldg, Guangxia Road 7, Futian, 518049 Shenzhen, China
Phone ++86 755 888 580 86, Fax ++86 755 830 73 418
Email: mail@aaronia-china.com
URL: www.aaronia-china.com



EgeRate Elektronik Muh. ve Tic. Ltd. Sti.,
Perpa Ticaret Merkezi, A Blok Kat: 5 No: 141,
Sisli / Istanbul, Turkey
Phone ++90 212 220 3483, Fax ++90 212 220 7635
Email: info@egerate.com
URL: www.egerate-store.com



NDN, Janowskiego 15
02-784 Warszawa, Poland
Phone ++48 22 641 1547, Fax ++48 22 641 1547
Email: ndn@ndn.com.pl
URL: www.ndn.com.pl



EKKON SA, Paraná 350, Capital Federal,
1017 Buenos Aires, Argentina
Phone ++ 54 114 123 009 1, Fax ++54 114 372 324 4
Email: info@aaronia-argentina.com.ar
URL: www.aaronia-argentina.com.ar



Mono Tech Ltd, 2 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



Tagor Electronic doo
Tihomira Brankovica 21
18000 Nis, Serbia
Phone ++381 18 575 545, Fax ++381 18 217 125
Email: miodrag.stojilkovic@tagor.rs
URL: www.tagor-instrumenti.rs



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



VECTOR Technologies Ltd, 40 Diogenous str., 15234
Halandri, Greece
Phone ++30 210 685 8008, Fax ++30 210 6858 8118
Email: info@vectortechnologies.gr
URL: www.vectortechnologies.gr



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

Spectran® **HyperLOG®** **BicoLOG®** **OmniLOG®** **Aaronia-Shield®** **Aaronia X-Dream®** **MagnoShield®** **IsoLOG®**

are registered trademarks of Aaronia AG