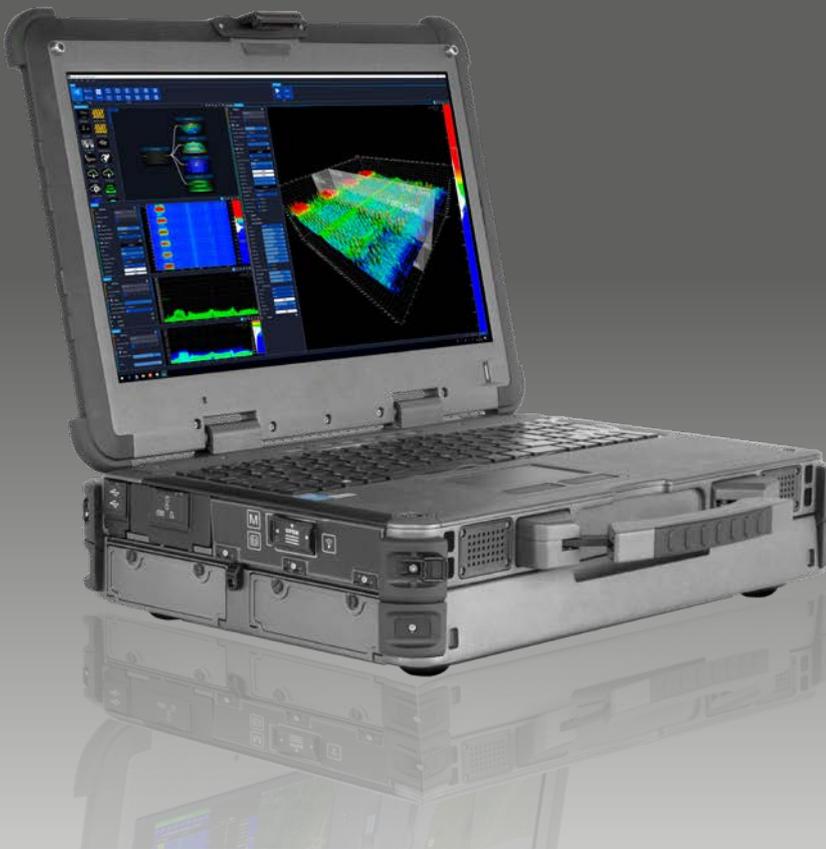# AARONIA

SPECTRAN V5 XFR PRO

9 KHz TO 20 GHz

The world's fastest technical receiver for surveillance countermeasures

Highlights:

- Rugged outdoor spectrum analyzer
- Real-time bandwidth of up to 175 MHz
- Certified per MIL-STD-810G and IP65
- Radio monitoring and enforcement

AARONIA AG
WWW.AARONIA.DE

MADE IN GERMANY

Highlights

✔ Scans a wide measuring range of up to 20 GHz in less than 20 ms (equals 1000 GHz / second)

✔ Ultra-sturdy outdoor spectrum analyzer (IP65-certified, works within range of - 20°C to + 60°C)

✔ > 100.000 data points for 20 GHz sweep, even in lowest resolution mode

✔ Real-time capture bandwidth of up to 175 MHz

✔ POI below 1 µs

✔ Virtually unlimited recording time (needs 1 GB / min at maximum data rate)

✔ Up to 4 TB of ultra-fast SSD recording storage

✔ Sample rate: > 50 million / second

✔ 500 MSPS (14-bit dual 256 MSPS IQ)

✔ Extremely bright, sunlight readable 15,6" widescreen display (Full HD resolution, 1920 x 1080)

✔ Intel® i7 with 8 GB RAM and Nvidia GeForce graphics

✔ Integrated GPS

✔ Includes spectrum analysis software RTSA Suite Pro

✔ Made in Germany

Applications

✔ Technical surveillance countermeasures (TSCM)

✔ Security surveys for detecting and preventing eavesdropping

✔ Interference hunting

✔ Radio monitoring and enforcement

✔ Maintenance, installation and repair both in the factory and in the field

✔ VIP monitoring

✔ Conference monitoring

✔ EMC / EMI testing

✔ Detection of weak signals masked by stronger ones

✔ Detection of rare, short-duration events

✔ Capturing spread-spectrum and frequency-hopping signals

✔ Investigating abuse of crowded RF spectrums

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Introduction

Built to detect

The SPECTRAN XFR V5 PRO is a portable real-time spectrum analyzer, designed to capture even shortest signal transmissions. Both its scanning speed and recording time are unrivaled: The analyzer scans 20 GHz in less than 20 ms, making it the world's fastest counter-surveillance receiver.

Operation and Software

Our user-friendly software detects unknown or illegal transmissions across a wide frequency range. Providing virtually unlimited recording time (needs approximately 1 GB hard disk space/minute), the XFR V5 PRO can store several hours of real-time footage. Once recorded, the entire measurement data can be converted into the software.

Perfect for Signal Analysis

Helpful features, such as a 3D spectrogram view displaying the signal in a unique manner, allow for a deep-dive analysis of the real-time measurement or recorded data.

Military Grade

Our spectrum analyzer enables you to master any challenge in any conditions. It provides a powerful, extremely impact-resistant outdoor notebook as well as a high-end spectrum analyzer – all packed into one compact device. The V5 XFR Pro has been independently tested in accordance with MIL-STD-810G, MIL-STD-461F, and IP65 certification standards. Rain, snow, ice or sand? Not a problem for the V5 XFR Pro.

Ultra-wide measurement range from 9 kHz to 20 GHz

Sunlight readable display (800 cd/m^2)

Sealed connectors and caps

All-in-one solution: Fully featured laptop and spectrum analyzer

Internal GPS

Intel® i7 processor with 8 GB RAM and 500 GB HDD (8 TB SSD optional)

Hot-swap battery

15,6" widescreen display (Full HD resolution, 1920 x 1080) with multi-touch

Shell made from high-quality magnesium alloy

50 Ohm RF input

Features and Hardware

The V5 XFR Pro offers an array of helpful functions for spectrum analysis

Peak Performance Measuring

- Various trigger functions and unlimited number of markers

- Different views: Spectrum / persistence Spectrum, Spectrogram / Waterfall, 3D Waterfall, Histogram

- Multi-window feature supports several simultaneous views, e.g. Spectrum & Waterfall & Histogram

- Virtually unlimited storage of measuring data (HDD can be expanded to up to 8 TB for gapless recording max. 100 hours)

- Comfortable reference level and color settings

- Reporting and recording functions

- Storage of personal sessions

and much more ...

Unrivaled Performance

Our powerful and ultra-sturdy spectrum analyzer is the first outdoor analyzer with an Intel® i7 processor and 8 GB RAM, Full HD multi-touchscreen, integrated GPS, and an ultra-low-noise level of up to -170 dBm (Hz) DANL (with pre-amps). Therefore, the XFR V5 PRO is not only rugged, but powerful at the same time.

- The **thermal management system** is compliant with military standards for extreme temperatures. Simultaneously, the XFR V5 PRO offers industry-leading performance, thanks to the very latest generation of Intel® i7 processors

- The **Turbo Boost feature** dynamically increases the processor frequency rate of the active cores to a maximum of 3.33 GHz

- With two USB 3.0 super-speed ports, two USB 2.0 ports, a USB 2.0 / eSATA combi connector, two serial ports, two Ethernet ports and a VGA port (among other connectors), the XFR V5 offers a variety of interfaces to connect with the desired peripherals

Customization

The SPECTRAN V5 XFR Center comes with an extensive scope of options from which to choose. Catering to individual user needs, the delivery can be extended to include various additional products.

- SPECTRAN XFR V5 PRO including Option 020 (internal 20 dB preamp)

- OmniLOG 70600 antenna (700 MHz to 6 GHz)

- Pre-installed RTSA Suite Pro software

- Rechargeable 8700 mAh battery (pre-installed, a second hot-swap battery available as an option)

- Battery charger / power supply (optional in-car charger available)

- English manual (on CD)

Options

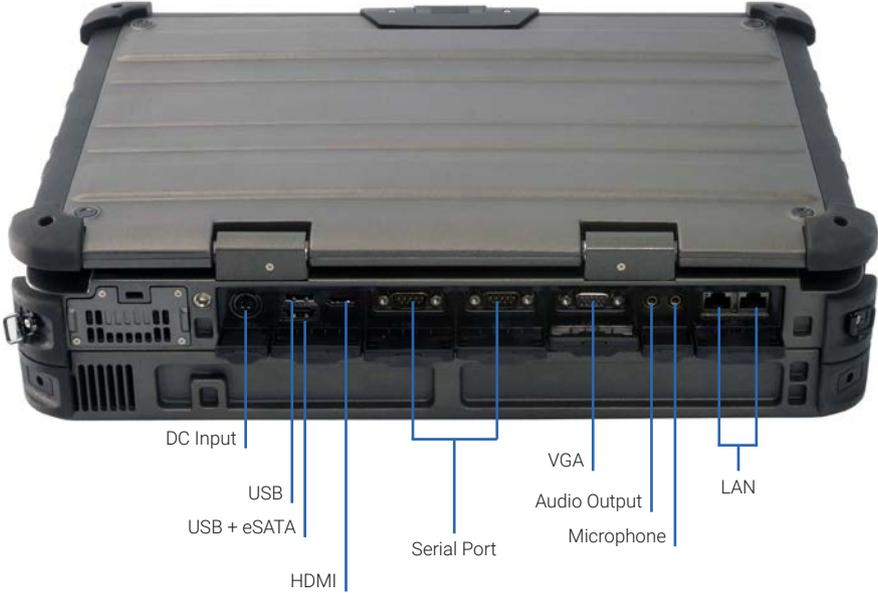Optional modifications to the V5 XFR Pro include:

Option 002: 5 ppb (0,005 ppm) OCXO Time Base

Our highly precise OCXO time base, especially developed for and adjusted to the SPECTRAN® series, offers significantly reduced phase noise (jitter). This allows for the use of far narrower filters, which in turn vastly enhances sensitivity. In order to use maximum sensitivity, then, this is an indispensable option. Furthermore, the OCXO time base allows far more accurate frequency measurements and displays.

Option 160: 160 MHz Real-Time Bandwidth (175 MHz available for EU countries)

This additional feature expands the real-time bandwidth from 88 MHz to 160 MHz (or 175 MHz in EU countries).

Hardware

DC Input

USB

USB + eSATA

HDMI

Serial Port

VGA

Audio Output

Microphone

LAN

8700 mAh Battery

50 Ohm RF Input
(N female, max. 20 dbm)

HDD

Power

USB Slave

2x USB 3.0

PCMCIA Slots

Smart Card
Reader

ExpressCard

Slot for second hot-swap
battery or DVD Multi Drive
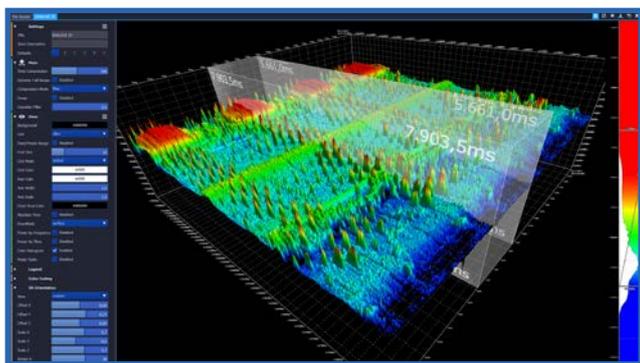(both optional)

RTSA Suite Pro

The world's fastest real-time analyzer software

Aaronia's RTSA Suite Pro is an extremely powerful and flexible software with an intuitive and highly customizable user interface. Our node-based software enables the user to identify, capture, demodulate and track any signal, and offers a multitude of ways to graphically display the signal detection.
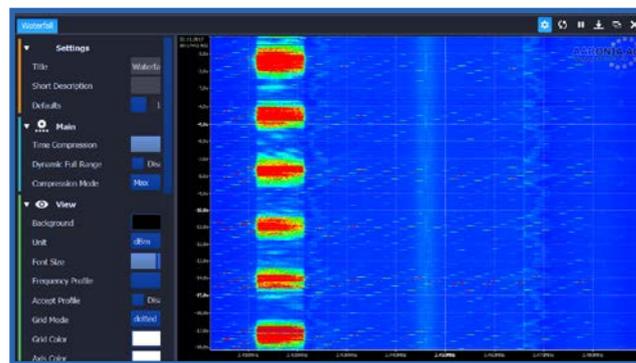

- ◆ High-resolution persistence spectrum display of the current sweep, average, min / max, peak, RMS etc.
- ◆ Marker function with unlimited number of different markers (min, max, delta, AVG, OBW.)
- ◆ Intuitive drag and drop zoom, shortkeys etc.

3D View and Histogram View

- ◆ The RF Command Center is able to display several views at once (Spectrum, 3D Waterfall, Histogram etc.)
- ◆ The window size can be adjusted freely, therefore tapping the potential of each full HD display
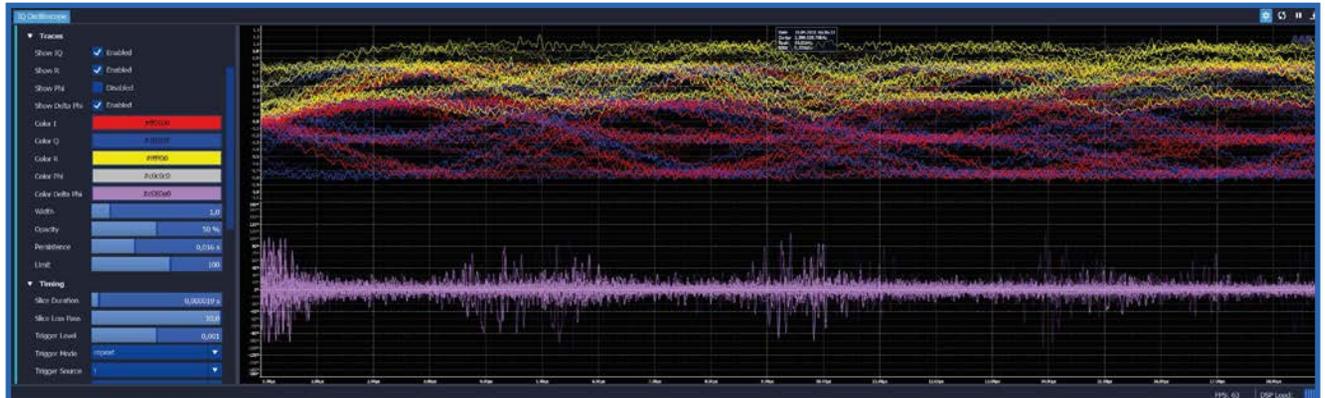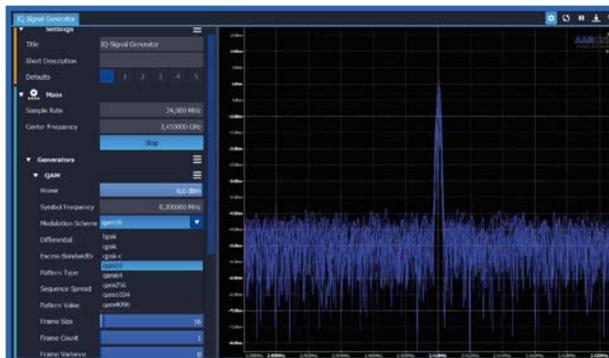
Waterfall View

- ◆ Spectrogram / Waterfall view for the identification of frequency hops, measuring of pulse rate, analysis of time-variant spectra and the tuning of a VCO
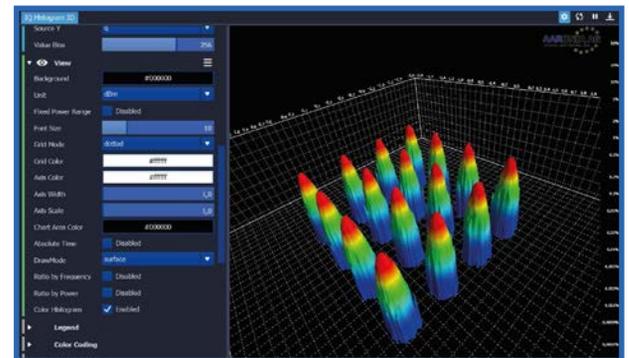
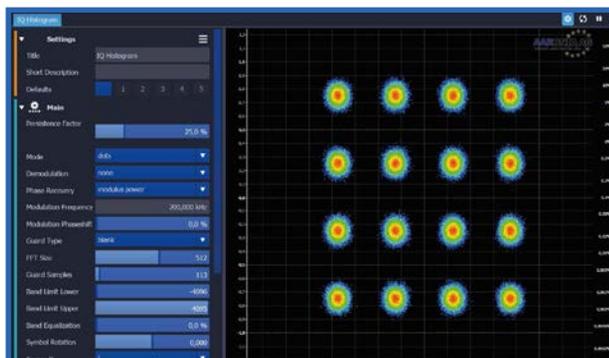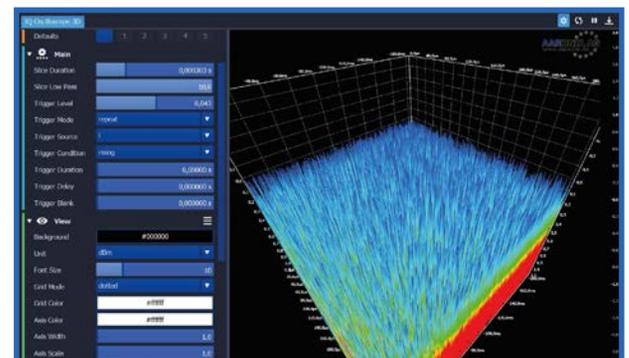# RTSA Suite Pro

IQ Oscilloscope

IQ Signal Generator

IQ Histogram 3D

IQ Histogram

IQ Oscilloscope 3D

Specifications (Analyzer)

Main Specifications	
Frequency Range	9 kHz to 20 GHz
Real-time Bandwidth	88 MHz (optional: 160 / 175 MHz)
Min. Event Duration	<1 µs
Max. Power at RF Input	+20 dBm (+33 dBm)
Displayed Average Noise Level (Internal Pre-Amp On)	typ. -150 dBm / Hz
Displayed Average Noise Level (With External Pre-Amp)	max. -170 dBm / Hz
Amplitude Accuracy	typ. +/- 1,5 dB
RF Input	50 Ohm (SMA Connector)
Frequency Reference Accuracy	50 Ohm (SMA Connector)
RBW (Resolution Bandwidth)	1 Hz to 3 MHz
VBW (Video Bandwidth)	1 Hz to 3 MHz
Demodulator	AM, FM, PM, IQ
Measurement Units	dBm, dBµV, V/m, A/m, W/m², dBµV/m, W/cm²
Detector	45 dB (0,5 dB steps)
Traces	ACT, AVG, MAX, MIN
Reference Range	-200 dBm to 100 dBm
Measurement Modes	IQ, Power / Frequency Data
ADC	500 MSPS 14-bit
GPS	Built-In GPS
FPGA	240 K ECP3
DSP	600 MHz

Specifications (V5 XFR Pro)

Main Specifications	
CPU	Intel® Haswell i7-4600M
RAM	8 GB RAM
HDD	500 GB, 7200 RPM (expandable by option to max. 8 TB SSD)
Operation System	Windows 10 PRO
Display	15,6" Full HD 1920 x 1080 with multi-touchscreen, sunlight readable (800 cd/m2 QuadraClear®)
Graphics Card	nVidia GeForce GT 745M 4 GB DDR3
Battery	Intelligent lithium-ion battery with 8700 mAh (second battery optional, hot-swap system)
Keypad	Membrane keyboard with integrated numeric keypad and LED backlight
Connectors	2x PCMCIA Type II, 1x ExpressCard / 54, 1 x Smart Card reader I/O interface: 2x serial port (9-pin, D-Sub), 1x external VGA port (15-pin, D-Sub), 1x microphone, 1x audio output (mini-jack), 1x DC input, 2x USB 3.0, 2x USB 2.0, 1x USB 2.0 / eSATA combo, 2x LAN (RJ45), 1x HDMI, 1x docking connector (80-pin)
Interfaces	10 / 100 / 1000 BASE-T Ethernet Intel Centrino Advanced-N 6200, 802.11 a / b / g / n, GPS module + Tri-Pass-Through
Safety Features	Fingerprint scanner, Smart Card reader, Kensington Lock
Certification	MIL-STD-810G, IP65, MIL-STD-461F
Operating Temperature	-20° to +60° C
Storage Temperature	-40° to +71° C
Dimensions	410 x 315 x 120 mm
Weight	7,5 kg
Relative Humidity	95% relative humidity, non-condensing
Power Supply	AC input: 100 - 240 V, 50 - 60 Hz DC output: 19 V, 4,74 A max.
Power Consumption	typ. < 90 W
Country of Origin	Germany
Recommended Calibration Interval	2 years

REFERENCES

Selected List of Aaronia Clients

AARONIA AG
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Government, Military, Aero- and Astronautic

- **NATO,** Belgium
- **Department of Defense (DoD),** USA
- **Department of Defence,** Australia
- **Airbus,** Germany
- **Boeing,** USA
- **German Armed Forces,** Germany
- **NASA,** USA
- **Lockheed Martin,** USA
- **Lufthansa,** Germany
- **German Aerospace Center (DLR),** Germany
- **Eurocontrol,** Belgium
- **EADS,** Germany
- **Drug Enforcement Administration (DEA),** USA
- **Federal Bureau of Investigation (FBI),** USA
- **Federal Criminal Police Office (BKA),** Germany
- **Federal Police,** Germany
- **Ministry of Defence,** Netherlands

Research/Development, Science and Universities

- **MIT - Physics Department,** USA
- **California State University,** USA
- **Indonesian Institute of Sience (LIPI),** Indonesia
- **Los Alamos National Laboratory (LANL),** USA
- **University of Bahrain,** Bahrain
- **University of Florida,** USA
- **University of Victoria,** Canada
- **University of Newcastle,** United Kingdom
- **University of Durham,** United Kingdom
- **University Strasbourg,** France
- **University of Sydney,** Australia
- **University of Athen,** Greece
- **University of Munich,** Germany
- **Technical University of Hamburg,** Germany
- **Max-Planck Inst. for Radio Astronomy,** Germany
- **Max-Planck Inst. for Nuclear Physics,** Germany
- **Research Centre Karlsruhe,** Germany

Industry

- **IBM,** Switzerland
- **Intel,** Germany
- **Shell Oil Company,** USA
- **ATI,** USA
- **Microsoft,** USA
- **Motorola,** Brazil
- **Audi,** Germany
- **BMW,** Germany
- **Daimler,** Germany
- **Volkswagen,** Germany
- **BASF,** Germany
- **Siemens AG,** Germany
- **Rohde & Schwarz,** Germany
- **Infineon,** Austria
- **Philips,** Germany
- **ThyssenKrupp,** Germany
- **EnBW (Energie Baden-Württemberg),** Germany
- **CNN,** USA
- **Duracell,** USA
- **German Telekom,** Germany
- **Bank of Canada,** Canada
- **NBC News,** USA
- **Sony,** Germany
- **Anritsu,** Germany
- **Hewlett-Packard,** Germany
- **Bosch,** Germany
- **Mercedes-Benz,** Austria
- **Osram,** Germany
- **DEKRA,** Germany
- **AMD,** Germany
- **Keysight,** China
- **Infineon Technologies,** Germany
- **Philips Semiconductors,** Germany
- **Hyundai Europe,** Germany
- **VIAVI,** Korea
- **Wilkinson Sword,** Germany
- **IBM Deutschland,** Germany
- **Nokia-Siemens Networks,** Germany

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