



# SPECTRAN V6

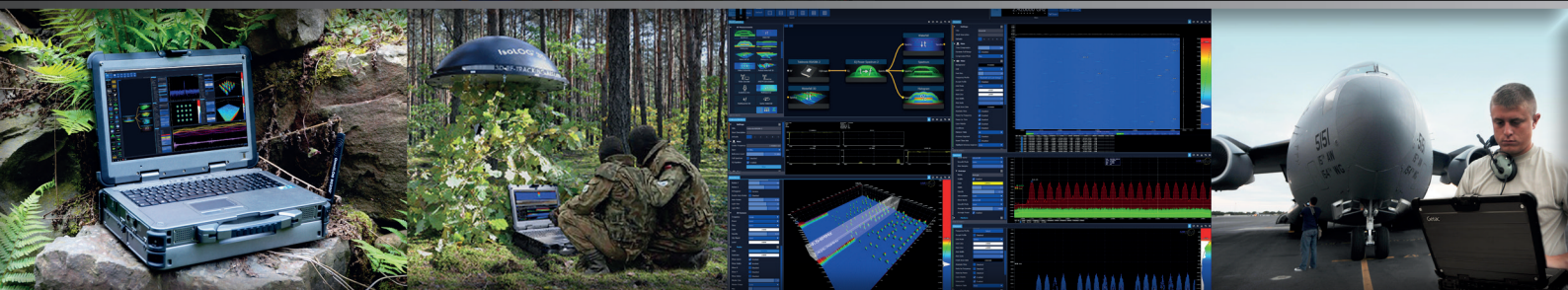
— BEYOND REALTIME —

Rugged Real-Time Spectrum Analyzer/Signal Generator | 245 MHz RTBW

**XFR PRO**



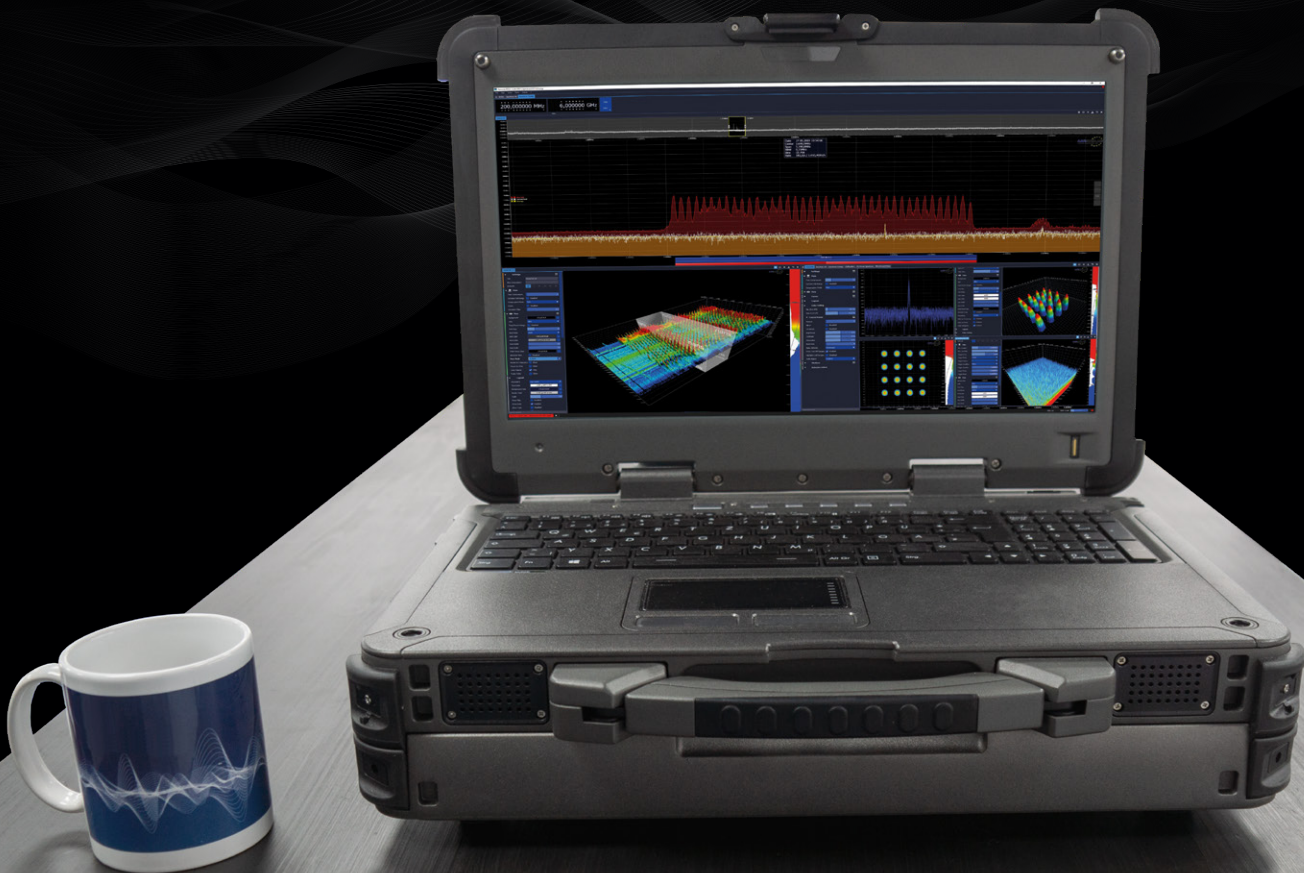
The world's fastest technical outdoor receiver  
for surveillance countermeasures



- ✓ Rugged outdoor spectrum analyzer
- ✓ Certified per MIL-STD-810G and IP65
- ✓ Radio monitoring and enforcement
- ✓ RF Frequency range of 10 MHz to 6 GHz
- ✓ Dual instantaneous receiver bandwidth
- ✓ Simult. measurement of multiple bands

# Highlights

- ✓ Ultra-sturdy outdoor spectrum analyzer (IP65, works within range of - 20°C to + 60°C)
- ✓ Scans 6 GHz in less than 5 ms (1 THz/s)
- ✓ Dual instantaneous receiver bandwidth
- ✓ Real-time capture bandwidth of up to 245 MHz
- ✓ 120 MHz vector signal generator onboard (opt. 245 MHz)
- ✓ Up to 8 TB of ultra-fast SSD recording storage
- ✓ Virtually unlimited recording time (with auto-rotate function)
- ✓ Sample rate: 500 MSPS (16 Bit Dual 256 MSPS I/Q-Data)
- ✓ FFT rate: 960 Million FFT-points/s (120 Million FFTs/s)
- ✓ FFT-based POI as short as 97ns
- ✓ I/Q-based POI as short as 10ns
- ✓ Extremely bright, sunlight readable 15,6" widescreen display (Full HD: 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





# Introduction

## Built to detect

The SPECTRAN® V6 XFR 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 6 GHz in less than 5 ms, making it the world's fastest counter-surveillance receiver.

## Operation and Software

The pre-installed RTSA-Suite PRO software is designed to fully utilize the power of the SPECTRAN® V6 XFR PRO.

Our user-friendly software detects unknown or illegal transmissions across a wide frequency range. The SPECTRAN® V6 XFR PRO can store several hours of real-time recordings and also offers an auto-rotate function for virtually unlimited recording time. 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 V6 XFR PRO has been independently tested in accordance with MIL-STD-810G, MIL-STD-461F, and IP65 certification standards. Rain, snow, ice or sand? No problem for the Spectran® V6 XFR PRO.



- ✓ All-in-one solution: Fully featured laptop and spectrum analyzer
- ✓ Frequency range from 10 MHz up to 6 GHz
- ✓ Intel® i7 processor with 8 GB RAM and 500 GB HDD (8 TB SSD optional)
- ✓ 15,6" widescreen display (Full HD resolution, 1920 x 1080) with multi-touch
- ✓ 2x Rx input, 1x Tx output, all 50 ohm
- ✓ Internal GPS
- ✓ Sunlight readable display (800 cd/m2)
- ✓ Hot-swap battery
- ✓ Sealed connectors and caps
- ✓ Shell made from high-quality magnesium alloy

# Features and Hardware

The V6 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, for example Spectrum & Waterfall & Histogram
- Virtually unlimited storage of measuring data (HDD can be expanded to up to 8 TB for gapless recording)
- 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 (pre-amp on). Therefore, the V6 XFR 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 V6 XFR PRO offers industry-leading performance, thanks to the very latest generation of Intel® i7 processor
- 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 V6 XFR PRO offers a variety of interfaces to connect with the desired peripherals.

## Scope of delivery

- SPECTRAN® V6 XFR PRO
- 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 USB)

The SPECTRAN® V6 XFR PRO 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.

## Options

Optional modifications to the V6 XFR PRO include:

### Option 0002: 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 0020: Ultra Low Noise Pre-Amp

*Additional 20 dB of gain.*

### Option 0245: 245 MHz Real-Time Bandwidth\*

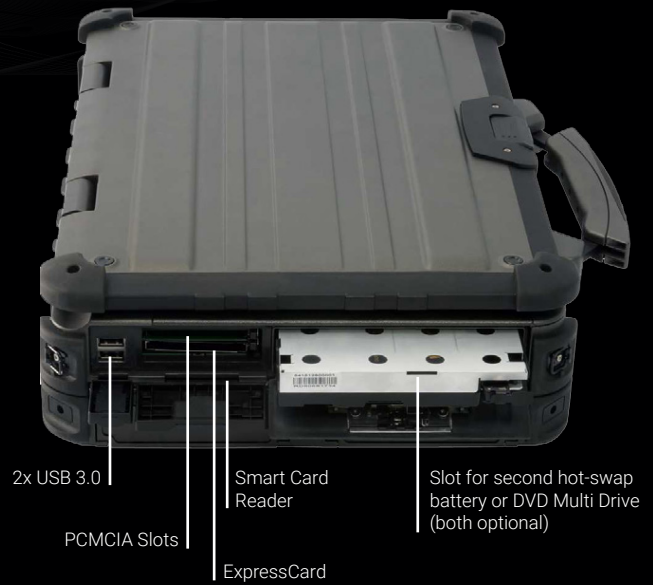
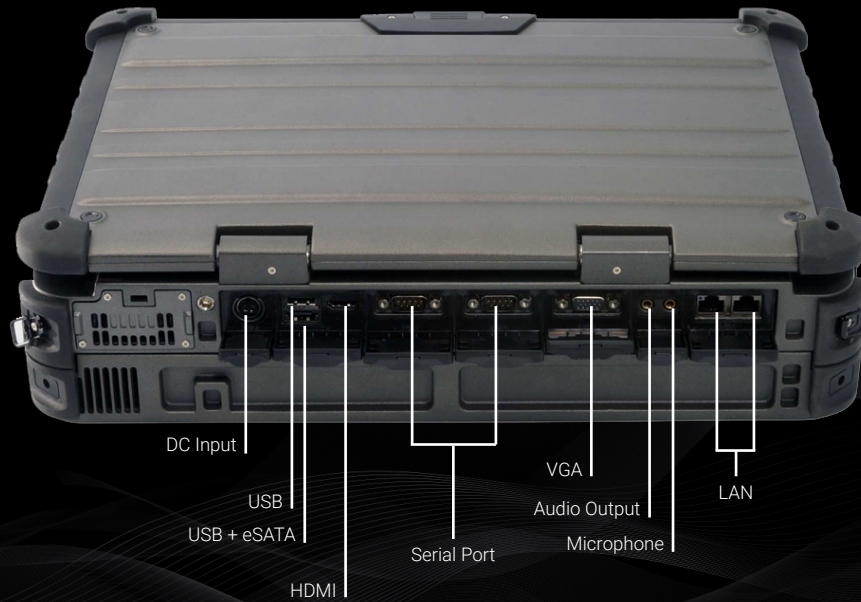
*This additional feature expands the real-time bandwidth from 160 MHz to 245 MHz.\**

\* There are export restrictions for spectrum analyzers from 160MHz real-time bandwidth.



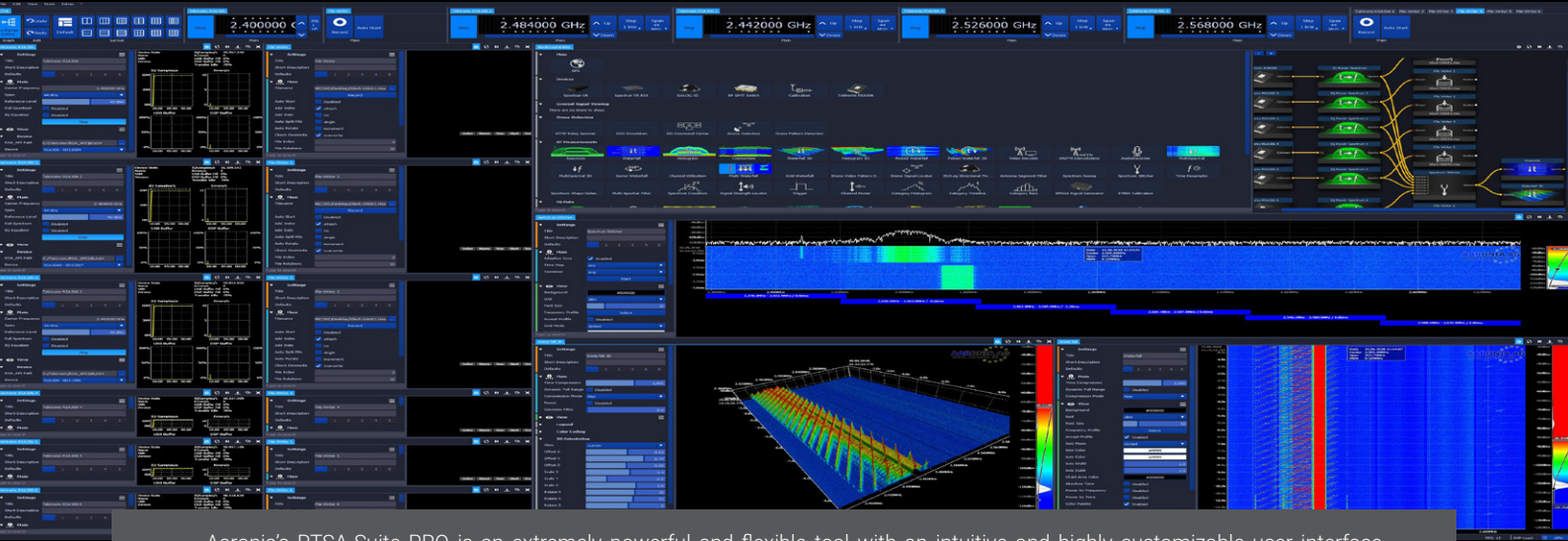
# Hardware

## Slots and connectors overview



# RTSA-Suite PRO Software

World's most powerful RTSA software with endless possibilities!



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

## RTSA-Suite PRO – Layout

An amazing block solution offers a convenient configuration to match any requirement!





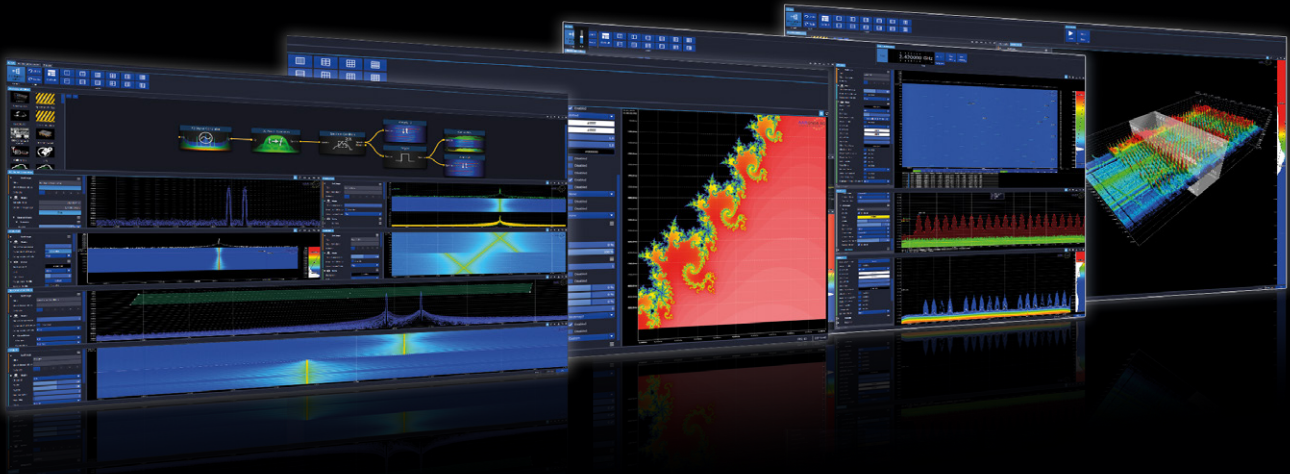
# Multiple 2D/3D Spectrum Analysis

Trigger Block

Powerful Script Block

Various Demodulations

3D/4D Waterfall



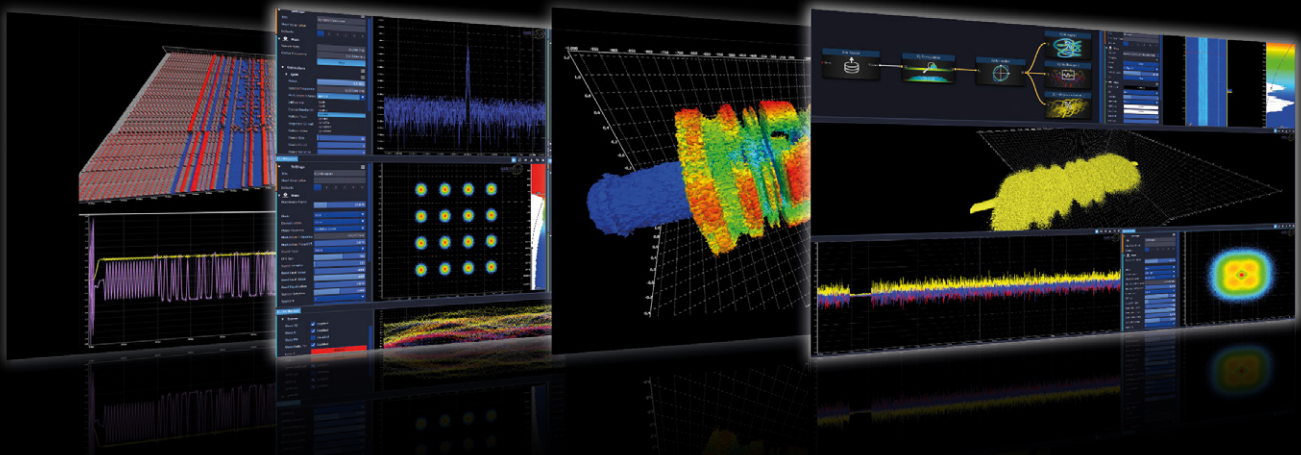
## 2D/3D IQ Streaming & Decoding

DECT Decoding

Software IQ Generator

3D IQ Display

DAB IQ Demodulation



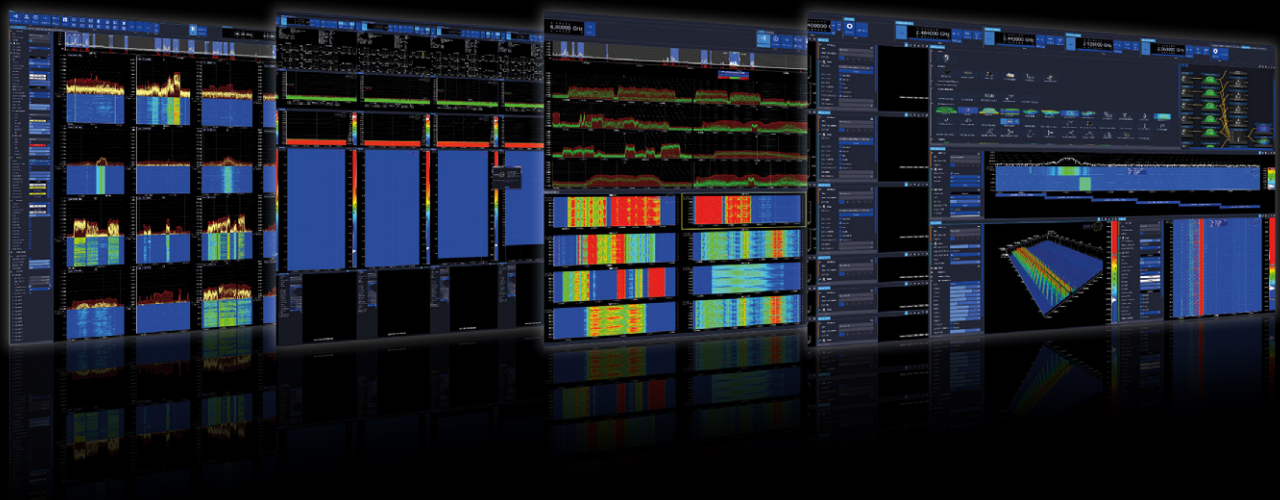
## Multi Unit Stitching / Multi Frequency Monitoring

Multi Frequency Monitoring

Multi Waterfall

V6 full Frequency Monitoring

Multi-Unit Stitching



# Specifications (V6 Analyzer)

Specifications	
Frequency range	10 MHz to 6 GHz (1 Hz to 26 GHz in development)
Real-time bandwidth Rx	160 MHz (opt. 245 MHz I/Q rate)
Real-time bandwidth Tx	120 MHz I/Q gapless streaming (opt. 245 MHz)
POI (with 245 MHz option)	97 ns (FFT-based), 10ns (direct I/Q-based)
Max. power Rx	+23 dBm
Max. power Tx	+20 dBm
DANL (internal pre-amp on)	Typ. -170 dBm/Hz
Amplitude accuracy (typ.)	Typ. +/- 0,5 dB (compensated by FIR filter)
Frequency reference accuracy	0,5 ppm (5 ppb via OCXO option)
RBW (resolution bandwidth)	62 mHz to 200 MHz
Measurement units	Over 20 (e.g. dBm, dBμV, V/m, A/m, W/m <sup>2</sup> , dBμV/m, W/cm <sup>2</sup> )
Detector	Min, Max, AVG, Peak, QPeak
Attenuator range	50 dB / 70 dB (0,5 dB steps)
Traces	Over 20 (e.g. ACT, AVG, MAX, MIN, QPEAK)
Measurement modes	True IQ or Power/Frequency data
Trigger	Cursor, Measurement, Density
ADC	Dual 2GSPS 16 Bit
DAC	2GSPS 14-Bit
External Frequenc Reference Input	typ. 10MHz, 3,5VRMS into 50 Ohm (SMB-connector)
FPGA	XC7A200T-2
DSP processing	930 GMACs
SDRAM	2 GB
RF connectors	N (female) 2x Rx, 1x Tx
Recommended calibration interval	2 years



# Specifications (XFR PRO)

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	<ul style="list-style-type: none"> <li>2x PCMCIA Type II</li> <li>1x ExpressCard / 54</li> <li>1 x Smart Card reader I/O interface</li> <li>2x serial port (9-pin, D-Sub)</li> <li>1x external VGA port (15-pin, D-Sub)</li> <li>1x microphone</li> <li>1x audio output (mini-jack)</li> <li>1x DC input</li> <li>2x USB 3.0, 2x USB 2.0</li> <li>1x USB 2.0 / eSATA combo</li> <li>2x LAN (RJ45)</li> <li>1x HDMI</li> <li>1x docking connector (80-pin)</li> </ul>
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	8 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

# REFERENCES



## Selected Aaronia Clients

### Government, Military, Aeronautic, Astronautic

- NATO, Belgium
- Department of Defense, USA
- Department of Defense, Australia
- Airbus, Germany
- Boeing, USA
- Bundeswehr, Germany
- NASA, USA
- Lockheed Martin, USA
- Lufthansa, Germany
- DLR, Germany
- Eurocontrol, Belgium
- EADS, Germany
- DEA, USA
- FBI, USA
- BKA, Germany
- Federal Police, Germany
- Ministry of Defense, Netherlands

### Research/Development, Science and Universities

- MIT – Physics Department, USA
- California State University, USA
- Indonesian Institute of Sciences, Indonesia
- Los Alamos National Laboratory, 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 Athens, 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, Germany
- CNN, USA
- Duracell, USA
- German Telekom, Germany
- Bank of Canada, Canada
- NBC News, USA
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