



# SPECTRAN<sup>®</sup>V6

BEYOND REALTIME

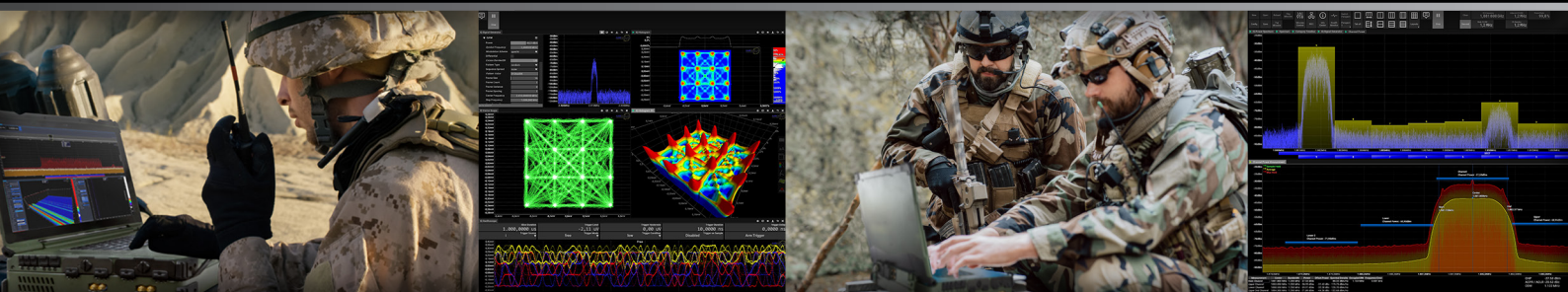
Rugged Realtime Spectrum Analyzer / Signal Generator | 245 MHz RTBW



MIL



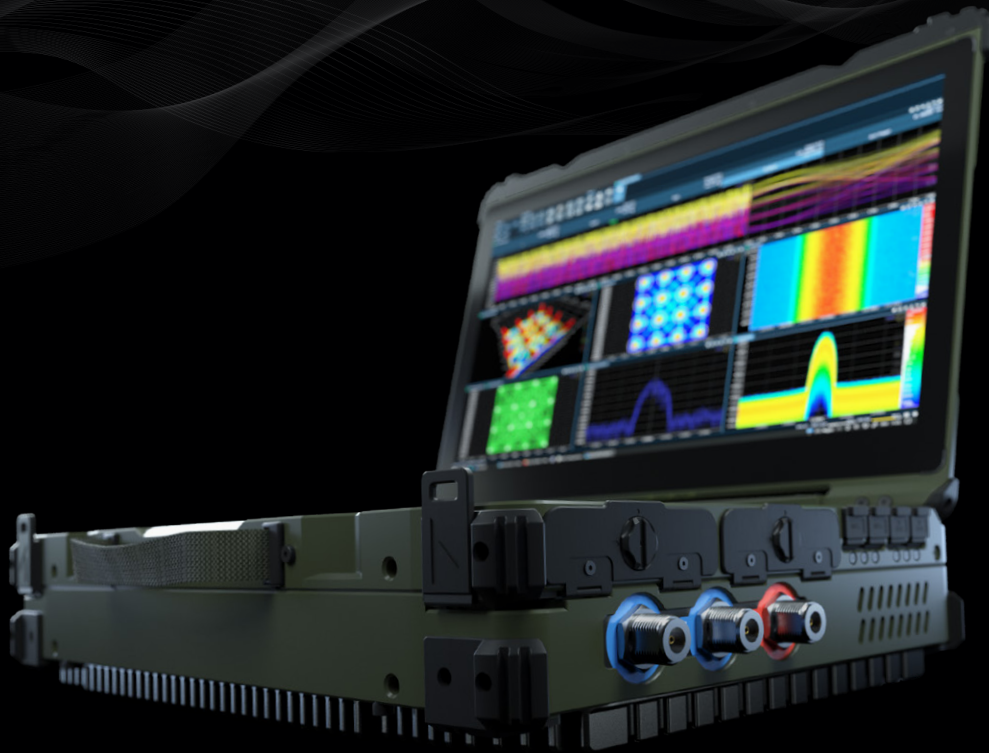
Powerful military outdoor real-time spectrum analyzer developed for I/Q based measurement



- ✓ Rugged outdoor spectrum analyzer
- ✓ Certified per MIL-STD-810G and IP65
- ✓ Radio monitoring and enforcement
- ✓ Frequency range of 10 MHz up to 8 GHz
- ✓ Dual instantaneous receiver bandwidth
- ✓ Simult. measurement of multiple bands

# Highlights

- ✓ Ultra-stable outdoor spectrum analyzer (IP65, operates in the range of - 20°C to + 60°C)
- ✓ Sweep speed up to 1 THz/s (scans 6 GHz in less than 5 ms)
- ✓ Dual instantaneous receiver bandwidth
- ✓ Realtime capture bandwidth of up to 245 MHz
- ✓ 120 MHz (opt. 245 MHz) vector signal generator (depends on V6 MIL version)
- ✓ 1TB SSD system hard disk
- ✓ Up to 16 TB HighSpeed 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
- ✓ Very bright, sunlight-readable and glare-free 15.6" widescreen display (Full HD: 1920 x 1080) with LED backlighting
- ✓ Intel® Xeon® processor E-2176 (up to 4.4 GHz) with 64 GB RAM and dedicated NVIDIA GTX 1050 graphics card with 4GB
- ✓ Pre-installed and pre-configured RTSA Suite PRO software
- ✓ Made in Germany



# Introduction

Built to find and solve RF problems on site!

The SPECTRAN® V6 MIL is a military-grade, portable real-time spectrum analyzer capable of capturing even the shortest signal transmissions. Both its scanning speed and recording time are unmatched: The analyzer scans 6 GHz in less than 5 ms (ENTERPRISE version), making it one of the world's fastest monitoring receivers. At the same time an unlimited recording is reached by clever file writing options such as fifo, as well as several possible storage capacity extensions.

## Operation and software

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

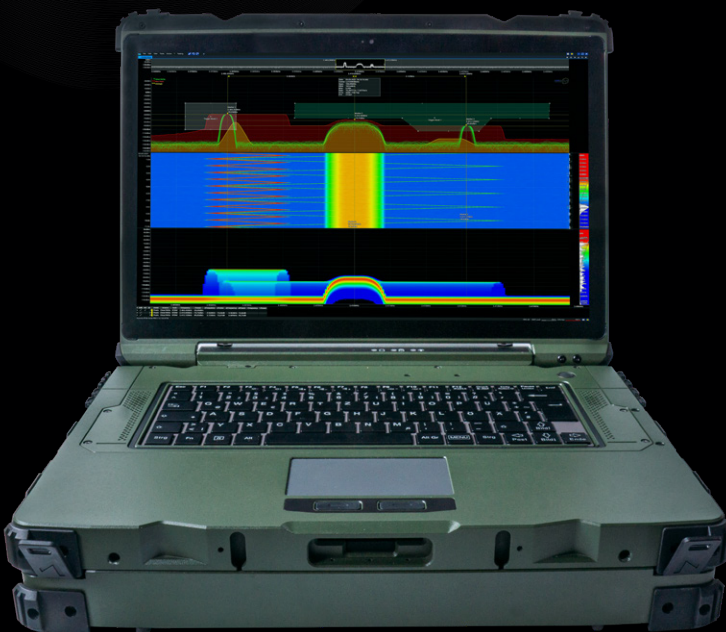
Our user-friendly software detects unknown or illegal transmissions across a wide frequency range. The SPECTRAN® V6 MIL can store several hours of real-time recordings and also offers an auto-rotate function for virtually unlimited recording time. Once recorded, the entire measurement data can be converted 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 MIL 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 MIL.



- ✓ All-in-one solution: Fully featured outdoor laptop and spectrum analyzer
- ✓ Frequency range from 10 MHz to 6 GHz (opt. 8 GHz)
- ✓ Intel® Xeon® processor with 64 GB RAM and 1 TB SSD system hard disk and 1 to 8 TB recording storage, expandable (depends on version)
- ✓ 15,6" widescreen display (Full HD resolution, 1920 x 1080), sunreadable, anti-glare
- ✓ Dedicated nVidia GTX 1050 graphic card with 4 GB
- ✓ 2x Rx input, 1x Tx output (depend on MIL version)
- ✓ 2 Hot-swap batteries
- ✓ Sealed connectors and caps

# Hardware and Versions

The V6 MIL is offered in 3 versions depending on requirements

## Unrivalled performance

Our powerful and ultra-rugged military-grade outdoor spectrum analyzer boasts unprecedented performance from an Intel® Xeon® processor and 64 GB RAM, fast SSD hard drive, and an ultra-low-noise level of up to -170 dBm (Hz) DANL (preamplifier on). This makes the SPECTRAN® V6 MIL not only robust, but also extremely powerful at the same time.

## Fields of application:

- Technical Surveillance Countermeasures (TSCM)
- Security surveys to detect and prevent eavesdropping attacks
- Interference detection
- Radio monitoring and enforcement
- Maintenance, installation and repair both in the factory and on site
- VIP monitoring
- Conference monitoring
- EMC / EMI testing
- Detection of weak signals masked by stronger signals
- Detection of rare, short-lived events
- and much more...

## Scope of delivery

- SPECTRAN® V6 MIL incl. case
- Pre-installed RTSA-Suite PRO software
- OmniLOG® 70600 antenna
- N(m) / SMA(f) adapter
- 2 x Li-ion Polymer 10.8V/6900 mAh Akkus
- Battery charger / power supply

## Options

Some options for upgrading the SPECTRAN® V6 MIL:

**Option 0002:** 5 ppb (0,005 ppm) OCXO Time Base

**Option 0020:** Ultra low noise pre-amp

*Additional 20 dB of gain.*

**Option 0245:** 245 MHz realtime bandwidth\*

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

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

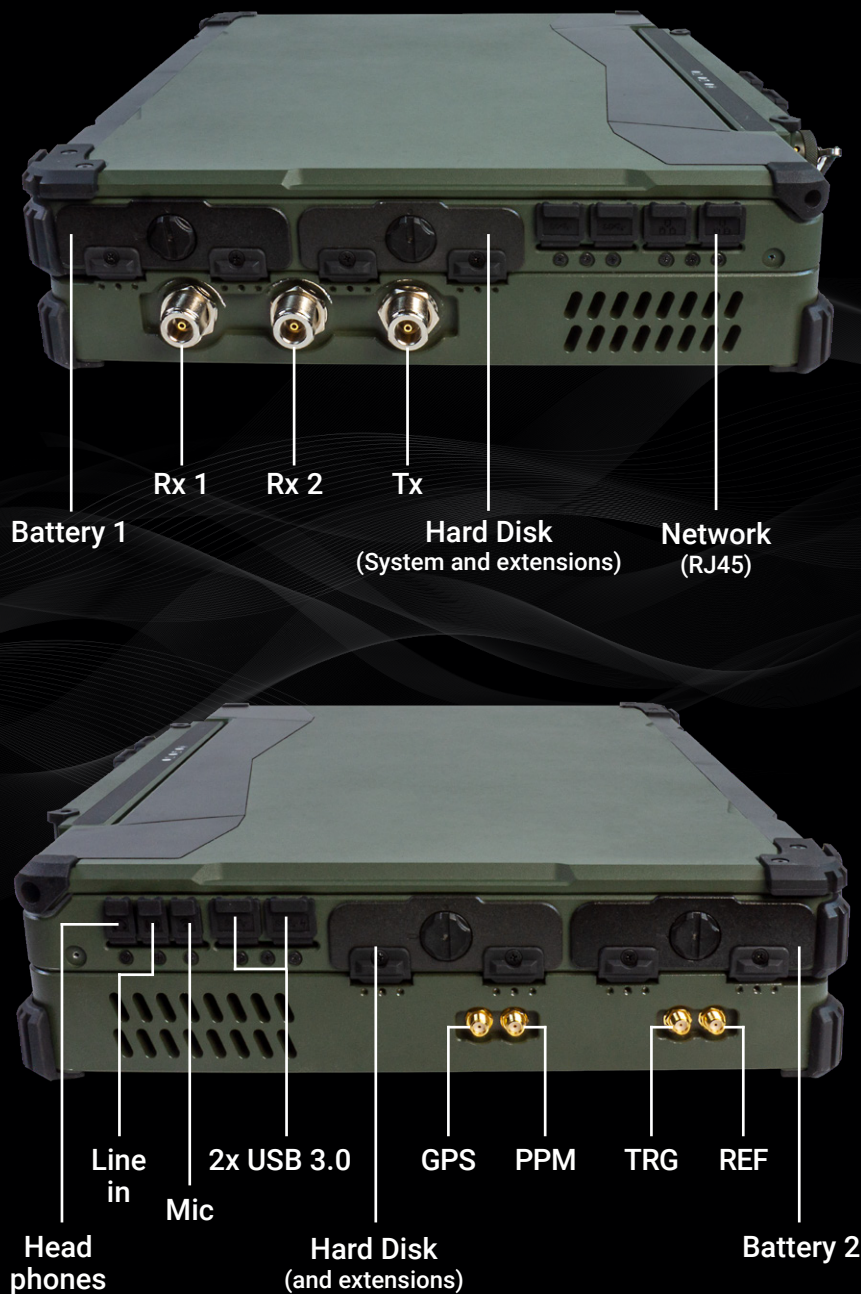
Further options and related products can be found in our online store: [www.aaronia-shop.com](http://www.aaronia-shop.com)

## SPECTRAN V6 MIL Versions

V6 MIL versions	V6 MIL	V6 MIL PRO	V6 MIL ENTERPRISE
Connectors	1 x Rx	1 x Rx 1 x Tx	2 x Rx 1x Tx
Realtime bandwidth	80 MHz Rx	120 MHz Rx 120 MHz Tx (opt. 245 MHz)	160 MHz Rx (opt. 245 MHz) 120 MHz Tx (opt. 245 MHz)
Sweep speed	300/440 GHz/s	300/440 GHz/s	730/1100 GHz/s
DANL	-165 dBm/Hz	-168 dBm/Hz	-170 dBm/Hz
SSD recording storage	1 TB (expandable)	4 TB (expandable)	8 TB (expandable)

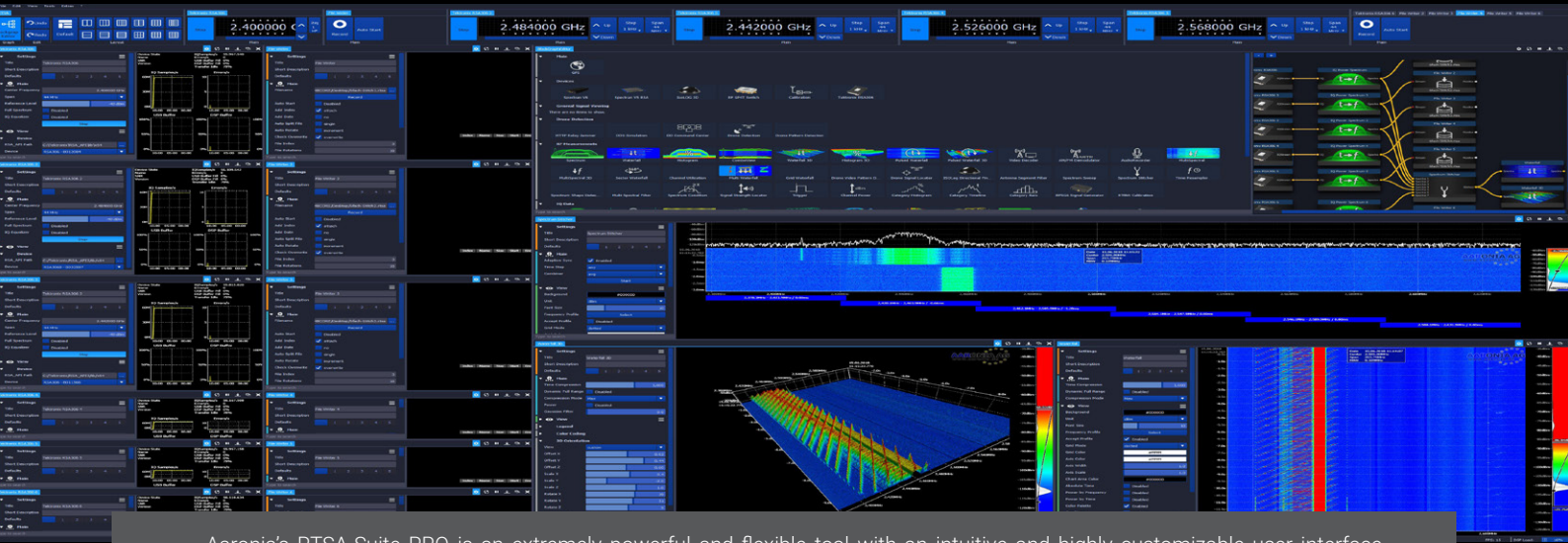
# Hardware

## 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!



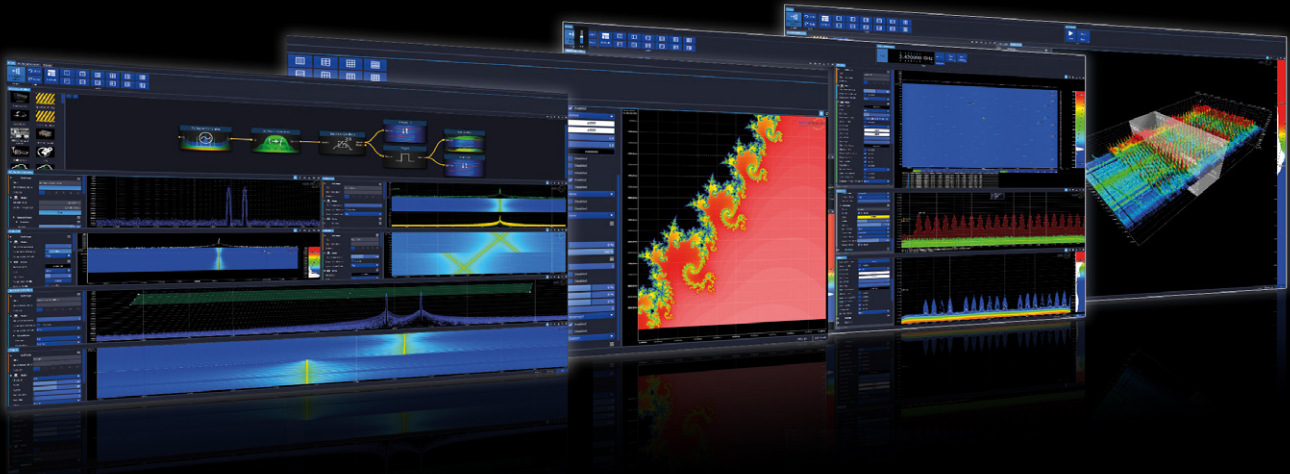
# Multiple 2D/3D Spectrum Analysis

Trigger Block

Powerful Script Block

Various Demodulations

3D/4D Waterfall



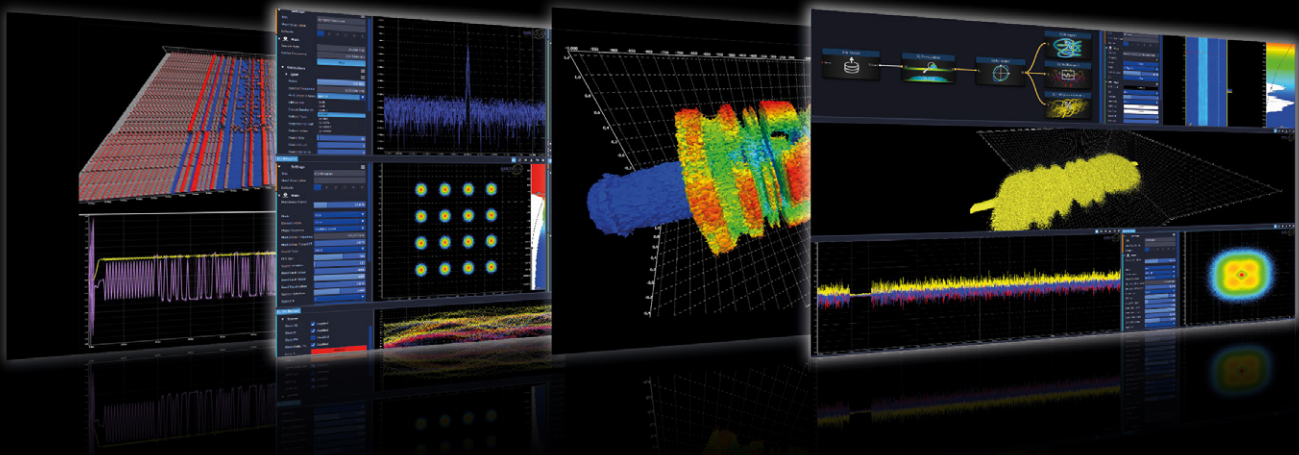
## 2D/3D IQ Streaming & Decoding

DECT Decoding

Software IQ Generator

3D IQ Display

DAB IQ Demodulation



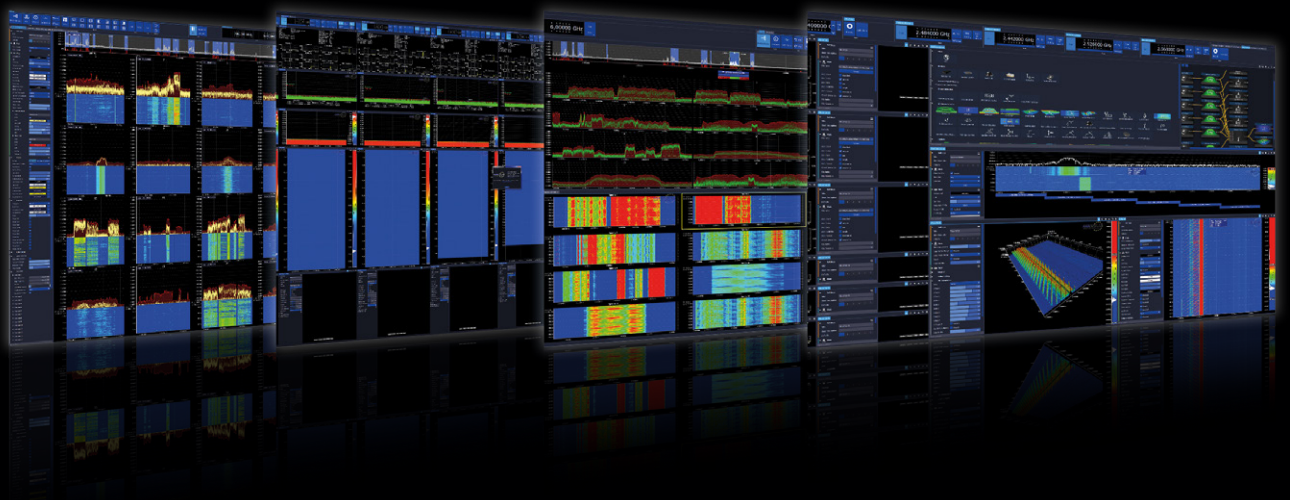
## Multi Frequency Band Monitoring

Multi Frequency Monitoring

Multi Waterfall

V6 full Frequency Monitoring

Multi-Unit Stitching



# Specifications (Analyzer)

Specifications	
Frequency range	10 MHz to 6 GHz (opt. 8 GHz)
Realtime bandwidth Rx	80 MHz / 120 MHz / 160 MHz (opt. 245 MHz I/Q rate) (depends on MIL version)
Realtime 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 frequency reference input	typ. 10 MHz, 3,5 VRMS into 50 Ohm (SMB-connector)
FPGA	XC7A200T-2
DSP processing	930 GMACs
SDRAM	2 GB
RF connectors	N (female) 2x Rx, 1x Tx (depending on MIL version)
Recommended calibration interval	2 years



# Specifications (Laptop)

Specifications	
CPU	Intel® Xeon® E-2176M 2,7 GHz, 12 MB Intel® Smart Cache, up to 4,4 GHz
RAM	64 GB RAM
SSD	1 TB NMVe (m.2) system hard disk 1 TB / 4 TB / 8 TB recording storage, expandable (depends on version)
Operation System	Windows 10 Pro
Display	15.6" Full HD 1920 x 1080, sunlight readable (300 cd/m <sup>2</sup> ), anti-glare with LED backlight
Graphics Card	Dedicated nVidia GTX 1050 with 4 GB
Battery	2x Li-ion polymer 10.8V/6900 mAh batteries Standard power supply 230 V, opt. vehicle adapter
Keypad	German or optional US layout
Connectors	2x USB 3.1 Gen.2 (1x 1.5 A fast charge) 1x Microphone 1x Audio output 1x Line-in 1x GLAN RJ45 1x MIL DC-In 1x VGA 1x Displayport 1.2 2x Serielle DB9 (COM 1-2)
Certifications	MIL-STD-810G , MIL-STD-461G, CE, FFC, WEE, Reach, IP65 (with opened I/O ports)
Operating temperature	-20° to +60° C
Storage temperature	-40° to +70° C
Dimensions	392 x 300 x 42.5 mm (with rubber corners)
Housing	milled anti-corrosive aluminum
Colour	military green (NATO olive / RAL6031HR), black
Weight	9,5 kg
Relative humidity	95% relative humidity, non-condensing
Power supply	AC input: 100 - 240 V, 50 - 60 Hz DC output: 19 V, 10,5 A max.
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
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- German Telekom, Germany
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- NBC News, USA
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- Hewlett Packard, Germany
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- Mercedes Benz, Austria
- Osram, Germany
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- AMD, Germany
- Keysight, China
- Infineon Technologies, Germany
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