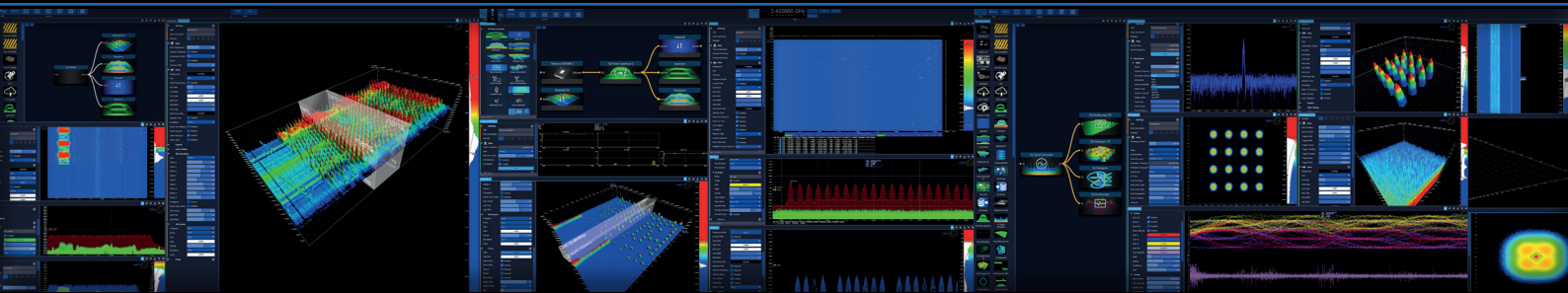


# SPECTRAN V6<sup>®</sup>

— BEYOND REALTIME —



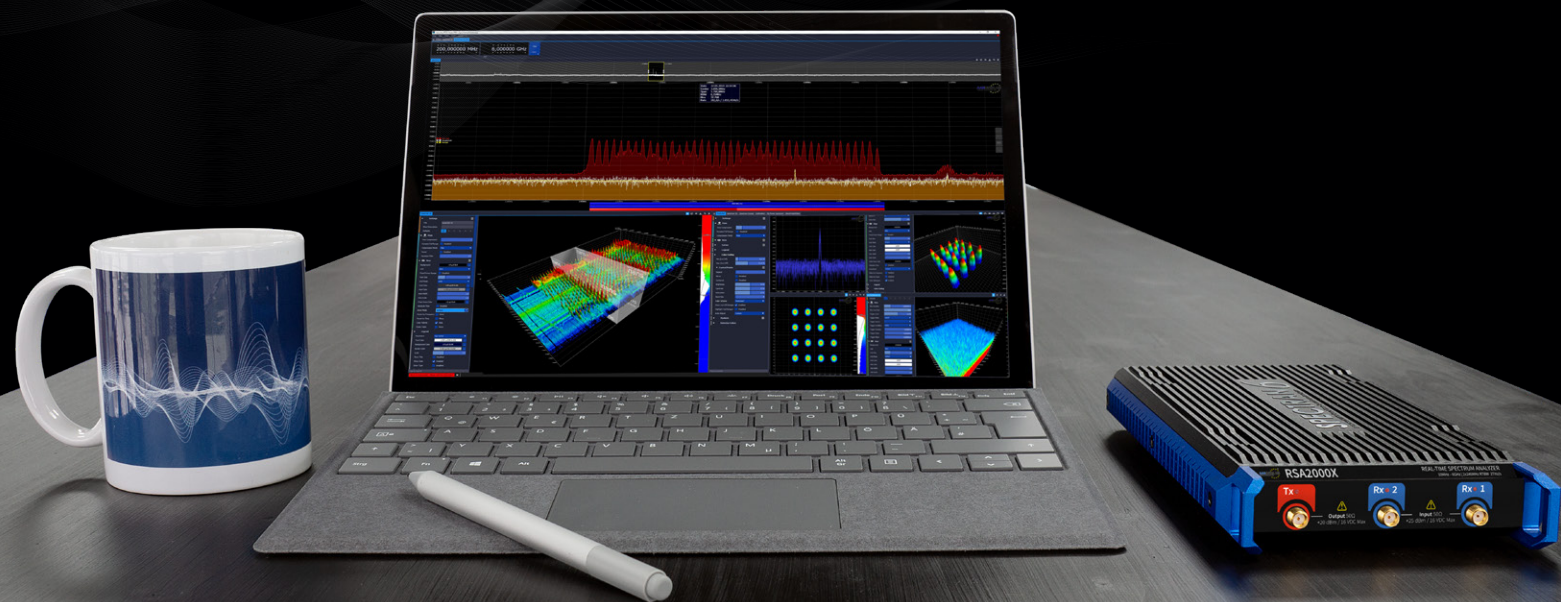
## 6 GHz USB Real-Time Spectrum Analyzer & Vector Signal Generator



- ✓ RF Frequency range of 10 MHz up to 8 GHz
- ✓ Continuous 245 MHz true I/Q streaming
- ✓ Simultaneous measurement of multiple bands
- ✓ Dual USB 3.0 streaming
- ✓ RTSA-Suite PRO software
- ✓ 120 MHz Vector Signal Generator

# Highlights

- ✓ World's first dual USB true I/Q streaming – up to **784 MBytes/s**
- ✓ Scans 6 GHz in less than 5 ms (1 THz/s)
- ✓ Unlimited continuous true I/Q streaming over up to 2 x USB 3.0
- ✓ Instantaneous bandwidth (complex I/Q) of up to 245MHz
- ✓ I/Q vector signal generator bandwidth of up to 245 MHz
- ✓ FFT-based POI up to 97 ns
- ✓ I/Q-based POI up to 10 ns
- ✓ Extraordinary dynamic range from a 16-bit ADC at 2GSPS
- ✓ Radio Frequency range of 10 MHz to 8 GHz
- ✓ Sample rate: 500 MSPS (16 Bit Dual 256 MSPS I/Q-Data)
- ✓ FPGA: 930 GMAC/s
- ✓ FFT rate: 960 Million FFT-points/s (120 Million FFTs/s)
- ✓ Full MATLAB support
- ✓ Fully automatic pulse classification (decodes Wifi, BT, GSM, DECT, QPSK, QAM etc.)
- ✓ Stackable accessories
- ✓ Extremely compact and lightweight
- ✓ Including “RTSA-Suite PRO” spectrum analysis software with regular updates
- ✓ Made in Germany



# Introduction

Fast, compact and powerful

Aaronia presents the SPECTRAN® V6 X, a real-time high-performance spectrum analyzer and monitoring receiver designed to capture even shortest signal transmissions. Its scanning speed and recording time are unrivalled. The analyzer scans 6 GHz in less than 5 ms, making it world's fastest USB spectrum analyzer.

## Perfect for any RF problem

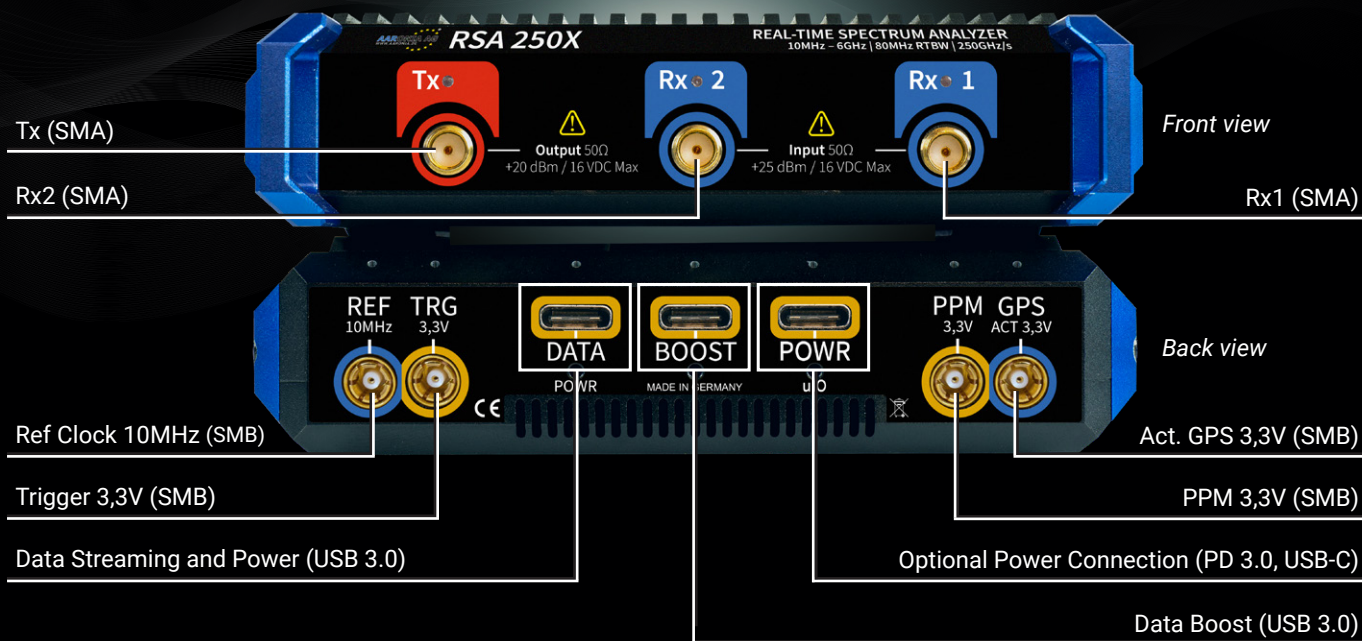
This spectrum analyzer enables you to master any challenge. Whether it is for spectrum monitoring, RF and microwave measurements, Interference hunting, EMC testing or Wi-Fi and wireless network measurements, the SPECTRAN® V6 X is the ideal spectrum analyzer for making reliable and fast measurements.

## Compact and lightweight

A weight of just 850 g makes the V6 X ideal for measurements in the field, yet it can also be used in the lab. The included PC analysis software RTSA-Suite PRO transforms the V6 X into a fully-featured benchtop spectrum analyzer. The V6 X offers a solution for almost every application.

## Made in Germany

The SPECTRAN® V6 X spectrum analyzer and vector signal generator is developed and assembled in Germany, guaranteeing the highest quality standard.

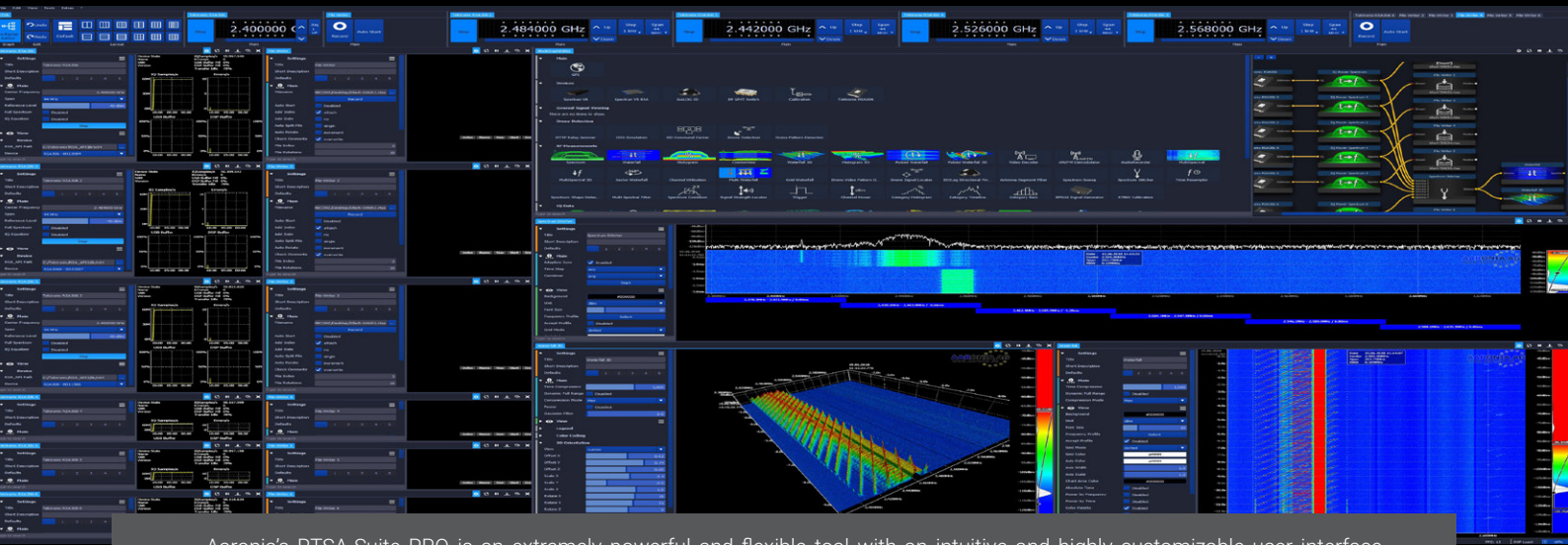


- ✓ Real-Time USB IQ-streaming
- ✓ Ultrawide frequency range from 10 MHz up to 6 GHz
- ✓ Compact size: 210 x 115 x 30 mm
- ✓ Weighs only 850 g
- ✓ Included PC software
- ✓ Tough, high quality aluminum case
- ✓ 50 Ohm RF input and output (SMA)
- ✓ Stackable



# RTSA-Suite PRO

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!



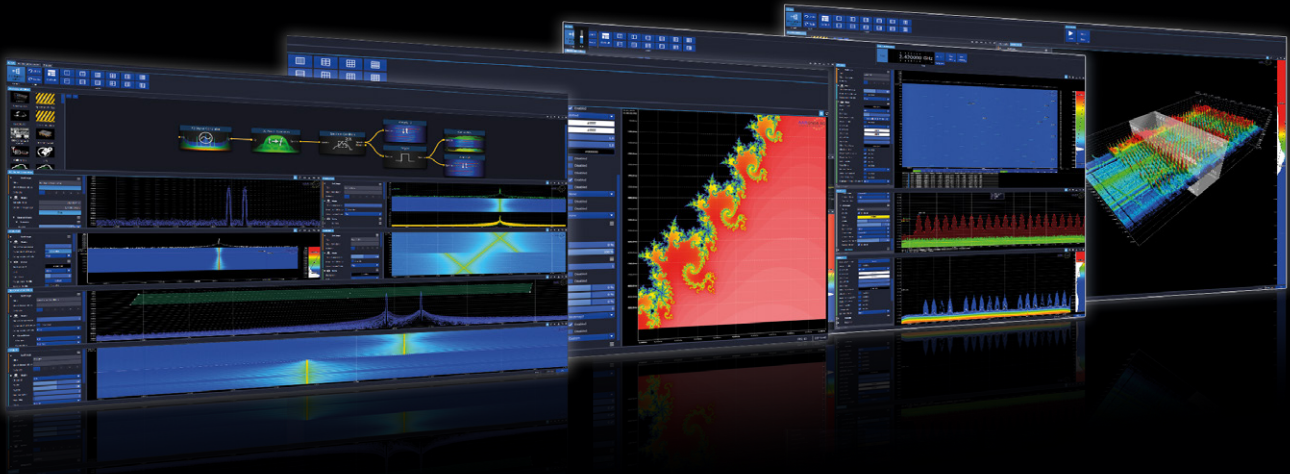
# Multiple 2D/3D Spectrum Analysis

Trigger Block

Powerful Script Block

Various Demodulations

3D/4D Waterfall



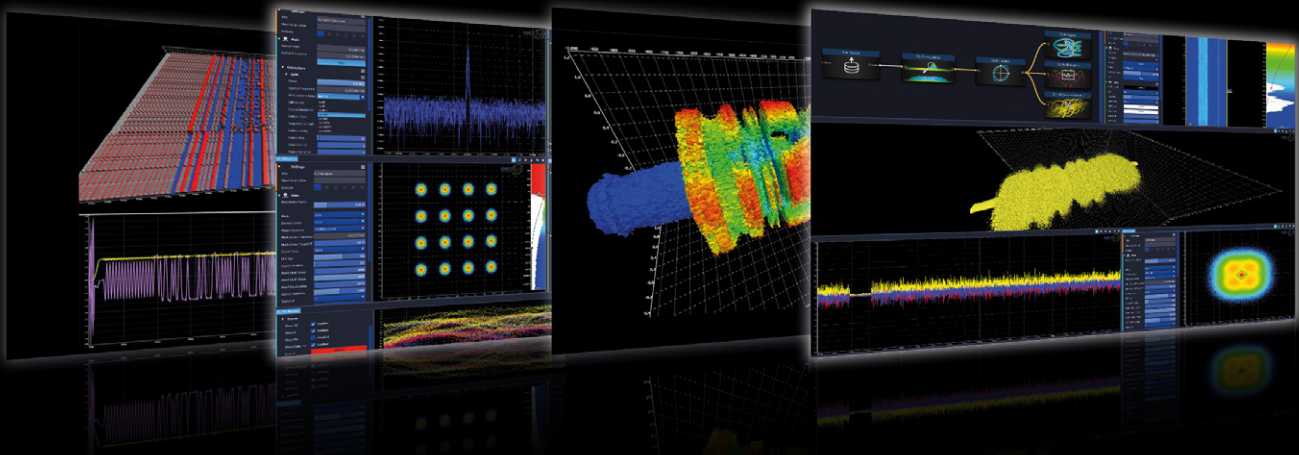
## 2D/3D IQ Streaming & Decoding

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



# WORLD of SPECTRAN® V6 X

Model	RTBW	Speed	I/Os
V6-RSA250X	80 MHz (opt. 120 MHz) I/Q	300/440 GHz/s	1 Rx (opt. 1 Tx)
V6-RSA500X	80 MHz (opt. 120 MHz) I/Q	300/440 GHz/s	1 Rx & 1 Tx
V6-RSA2000X	160 MHz (opt. 245 MHz*) I/Q	730/1100 GHz/s	2 Rx & 1 Tx

All models are available in OEM versions with e.g. reduced size and weight

Options	Comment
120 MHz I/Q RTBW	V6-RSA250X & V6-RSA500X only
245 MHz I/Q RTBW	V6-RSA2000X only
120 MHz Tx	V6-RSA250X only
Ultra Low Noise Preamp	<b>Additional 20 dB of gain</b> (Add 2 for V6-RSA2000X)
OCXO Timebase	<b>5 ppb</b> , ultra high vibration resistance ( $\pm 0.1$ ppb/g)
Internal GPS	Incl. spoofing detection and active GPS antenna with SMB cable

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

## Accessories

### RF over Fiber (Rx/Tx)

Converts an RF signal into a laser signal for lossless streaming of data over long distances through a fiber optic cable.



### HyperLOG Antennas

Directional, ultra broadband LPDA antennas with wide frequency range from 380 MHz to 6 GHz. High and constant gain of typ. 5 dBi (active up to 45 dBi).



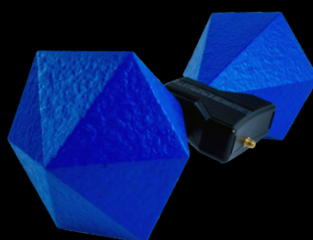
### 4-way Splitter/Combiner

External 4-way low-loss splitter/combiner (e.g. stitch multiple V6 units to expand the real-time bandwidth), stackable.



### BicoLOG Antennas (20MHz – 3GHz)

Broadband Biconical Antennas for EMC Pre-compliance Tests. Perfect for in-house compliance testing of various EMC standards. High bandwidth and gain up to 41dBi (active).



### 26800 mAh Power Pack

External Power Pack with 26800 mAh capacity. Extends the battery runtime by up to 4-5 hours. Strongly recommended for outdoor operation. Stackable.



### IsoLOG 3D Mobile (9 kHz – 8 GHz)

Very light and small isotropic antenna. Compact form factor. Battery-powered multiple amplifier stages. Remote USB or manual control.



# Analyzer Specifications

Specifications	SPECTRAN® V6 X
Frequency range	10 MHz to 6 GHz (1 Hz to 26 GHz in development)
Real-time bandwidth Rx	Up to 245 MHz I/Q – via 2 x USB
Real-time bandwidth Tx	120 MHz I/Q
POI	Up to 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)
USB streaming connection	One or two USB 3.0 (USB 3.1 Gen1; USB 3.2 Gen1)
USB bandwidth (2 x USB 3.0)	Up to 784 MBytes/s sustained throughput to PC
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
GPS	GPS/QZSS, GLONASS, BeiDou and Galileo (concurrent reception)
GPS synchronisation	+/- 10ns timestamping in each data packet
External Frequency Reference Input	typ. 10MHz, 3,5VRMS into 50 Ohm (SMB-connector)
FPGA	XC7A200T-2
DSP processing	930 GMACs
SDRAM	2 GB
RF connectors	SMA (Rx,Tx), SMB (Trigger, Refclock, GPS, PPM). All 50 Ohms.
Temperature range (operation)	0 °C to +50 °C (extended -40 to +75 °C)
Dimensions	210 x 115 x 30 mm
Weight	850 g
Power	USB 3.2 Gen 1 Type-C PD 3.0
Power consumption	Typical 15 W
Country of origin	Germany
Recommended calibration interval	2 years



# 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
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- German Telekom, Germany
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