AARONIA **AG** ®

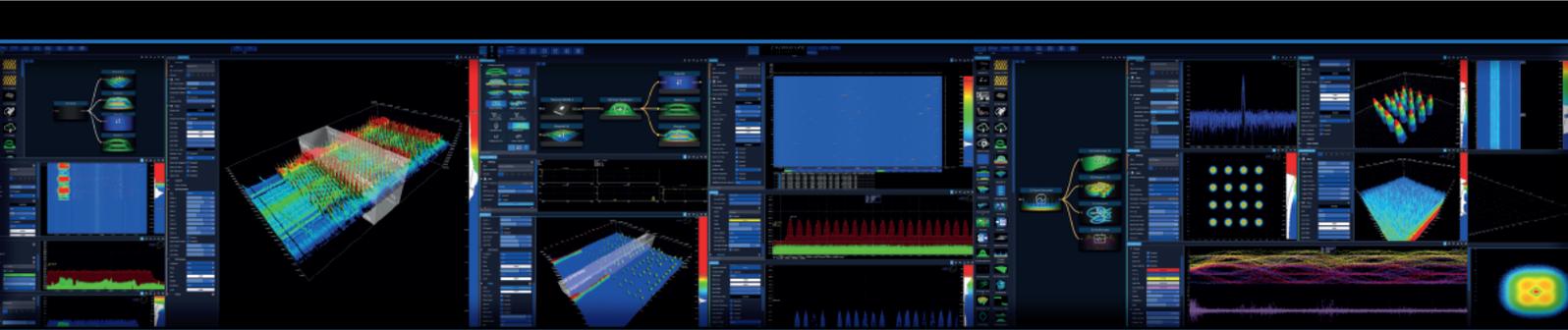# GHz USB Real-Time Spectrum Analyzer

✔ 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.
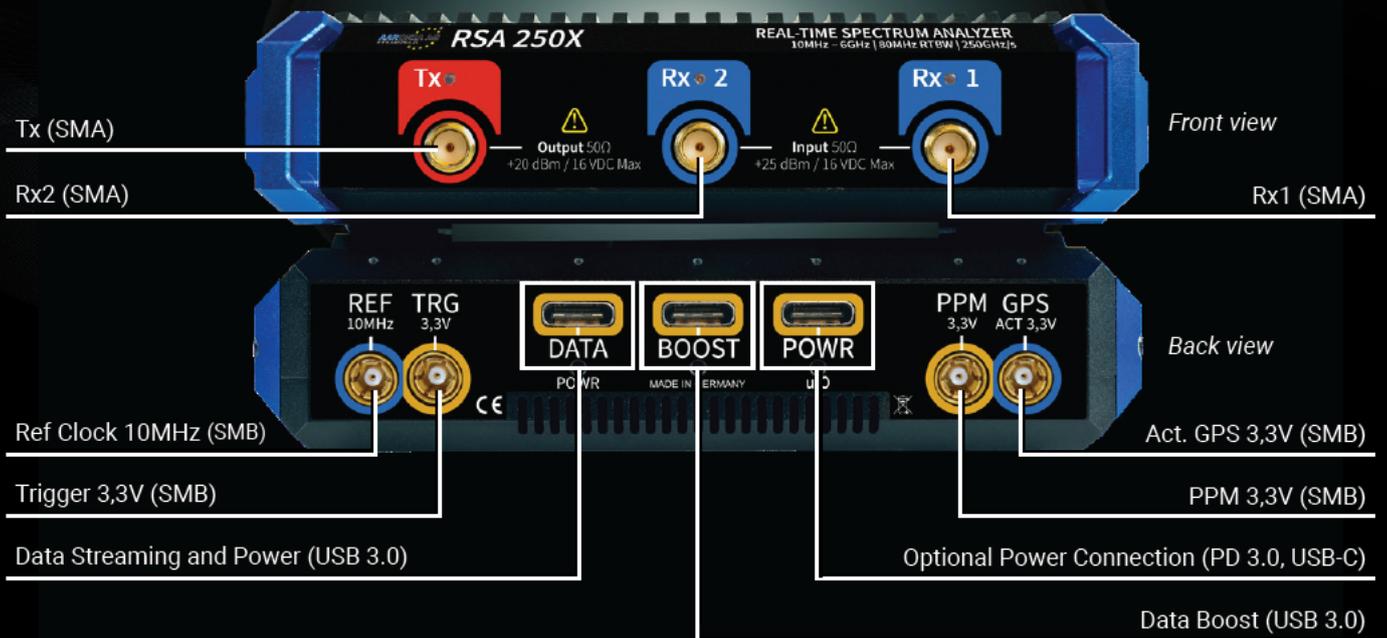
Perfect for any RF problem

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.
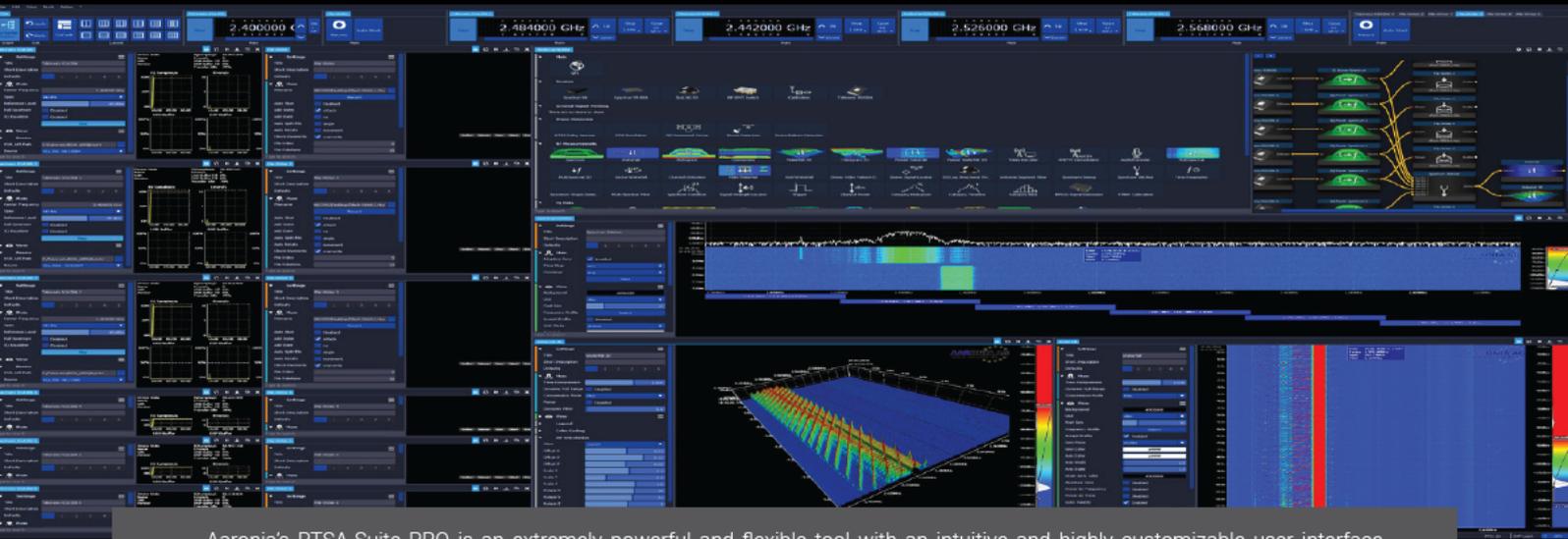

Tx (SMA)

Rx2 (SMA)

Rx1 (SMA)

Front view

Ref Clock 10MHz (SMB)

Trigger 3,3V (SMB)

Data Streaming and Power (USB 3.0)

Act. GPS 3,3V (SMB)

PPM 3,3V (SMB)

Optional Power Connection (PD 3.0, USB-C)

Data Boost (USB 3.0)

Back view

Weighs only 850 g

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

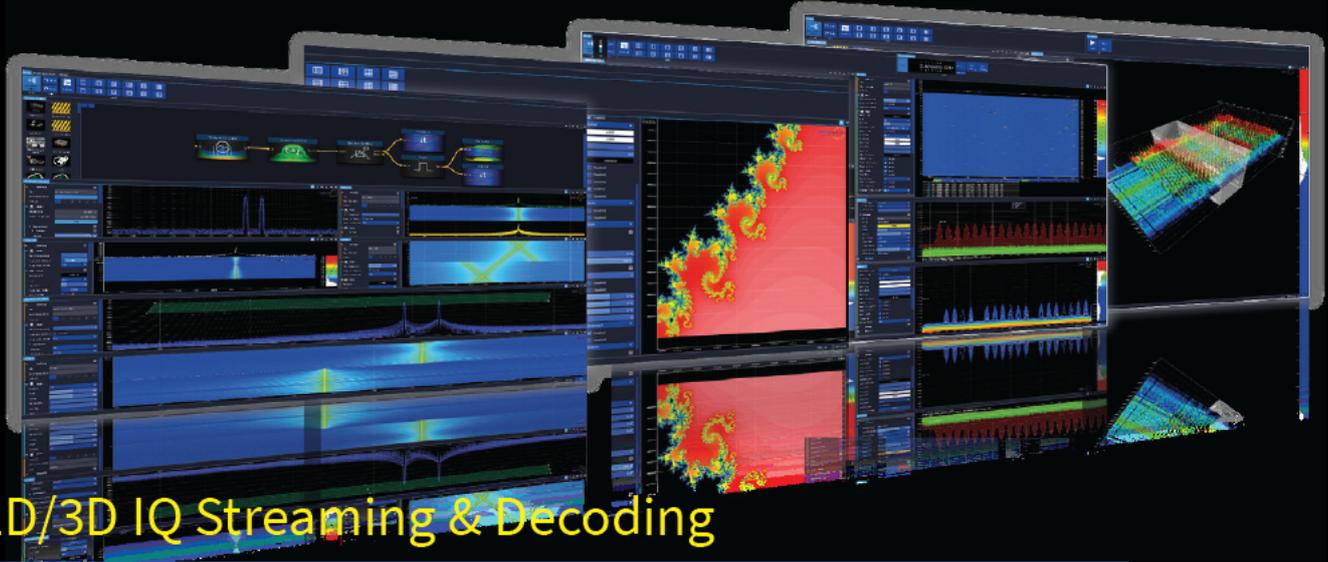## An amazing block solution offers a convenient configuration to match any requirement!

Multiple 2D/3D Spectrum Analysis

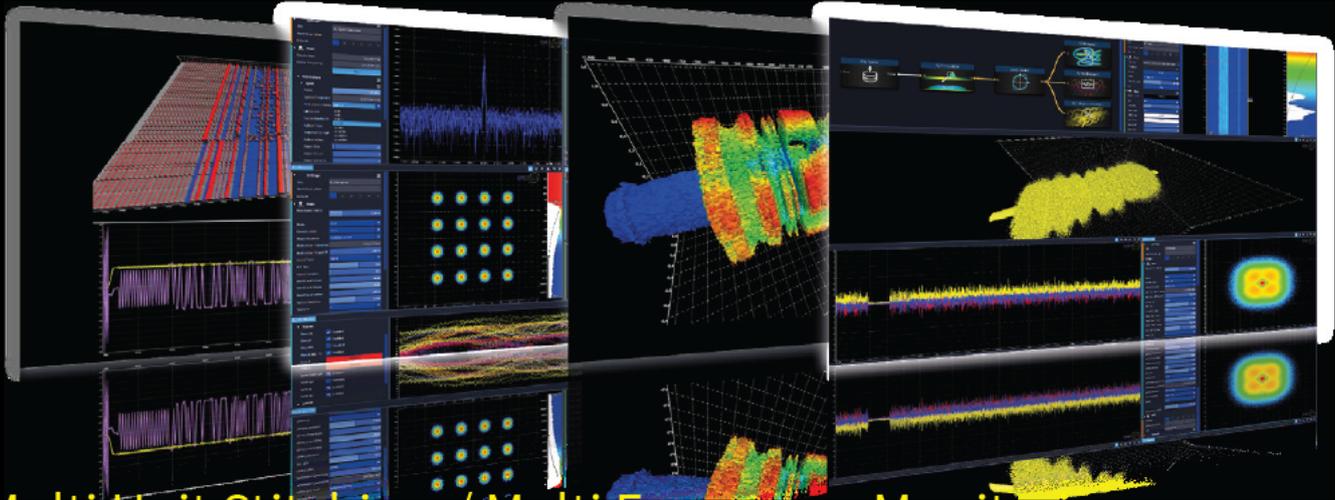Trigger Block   Powerful Script Block   Various Demodulations   3D/4D Waterfall

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-RSA**250X**	80 MHz (opt. 120 MHz) I/Q	300/440 GHz/s	1 Rx (opt. 1 Tx)
V6-RSA**500X**	80 MHz (opt. 120 MHz) I/Q	300/440 GHz/s	1 Rx & 1 Tx
V6-RSA**2000X**	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	**Additional 20 dB of gain** (Add 2 for V6-RSA2000X)
OCXO Timebase	**5 ppb**, ultra high vibration resistance (±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.

4-way Splitter/Combiner

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

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.

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).
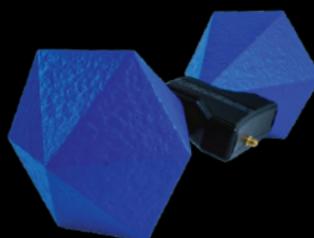

BicoLOG Antennas (20MHz – 3GHz)

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).

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/m², dBµV/m, W/cm²)
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 Frequenc 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
- Duracell, USA
- German Telekom, Germany
- Bank of Canada, Canada
- NBC News, USA
- Sony, Germany
- Anritsu, Germany
- Hewlett Packard, Germany
- Robert 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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