



Rev 1.5  
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# Real-Time Remote Spectrum Analyzer - V5 RSA Series

Real-time RF/EMF Data-Logger with integrated PC, 1Hz to 20GHz

## Highlights:

- ◆ Continuously streaming and storing from any spectrum of interest
- ◆ Allows the monitoring of multiple sites from one centralized location
- ◆ Eliminates trips to difficult locations
- ◆ Data transfer via TCP / IP
- ◆ Up to 24TB data storage inside the remote unit
- ◆ Optional I/Q GENERATOR up to 6GHz
- ◆ Samplerate/second: > 5 million
- ◆ Polyphase Filter Technology
- ◆ Up to 175MHz Real-Time bandwidth
- ◆ POI below 1µS
- ◆ Real-time Remote Software with unlimited resolution incl. views (working at the same time): "3D Waterfall", "Waterfall", "Histogram", "Spectrogram"
- ◆ 19" standard module with one height unit only (1U)
- ◆ Extremely low noise (up to max. -170dBm/Hz DANL with amplifier)
- ◆ Wide frequency range starting from 1Hz up to 20GHz
- ◆ Customizable Alarm-, Trigger- and Limits-Function



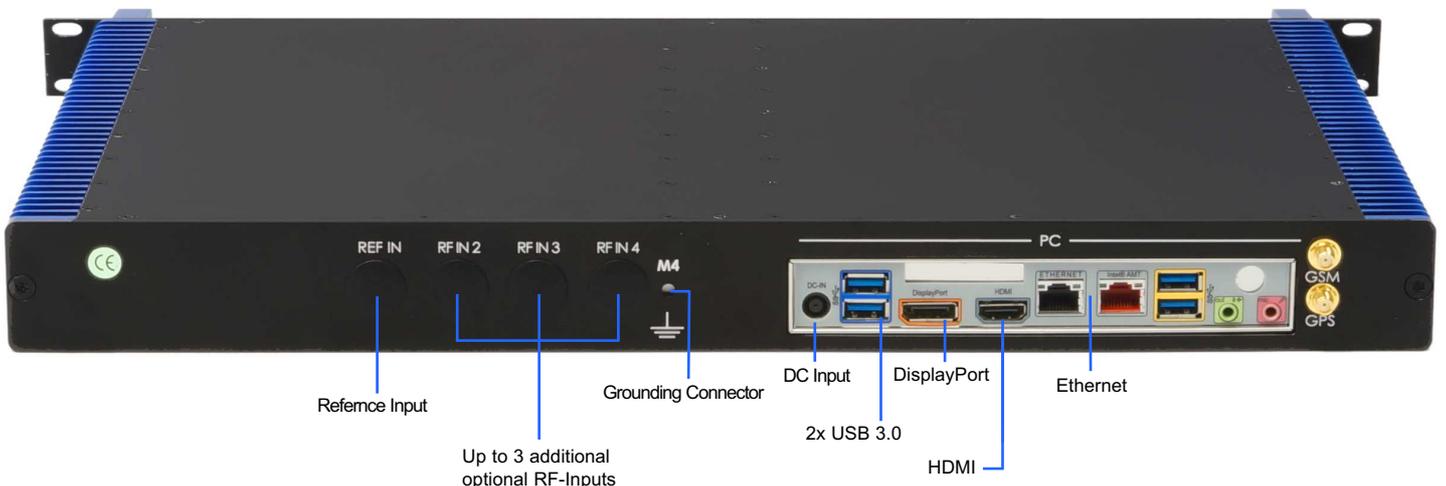
Made in Germany

# Remote controlled, fast and interconnected

Aaronia presents the SPECTRAN V5 RSA, a remote-controlled Real-Time Spectrum Analyzer designed to capture even shortest signal transmissions. It's scanning speed and recording time is without competition, the Analyzer scans 20GHz in less than 20mS making it World's fastest remote controllable Spectrum Analyzer.

With this Spectrum Analyzer you can master all the challenges. Whether it is for spectrum monitoring, RF and microwave measurements, Interference hunting, EMC testing or Wi-Fi and wireless network measurements, the SPECTRAN V5 RSA is the ideal Spectrum Analyzer for making reliable and fast measurements.

The included PC analysis software RTSA Suite transforms the RSA into a fully-featured Benchtop Spectrum Analyzer (see page 6). Available in 4 different versions (see page 7) the RSA offers a solution for almost every application.

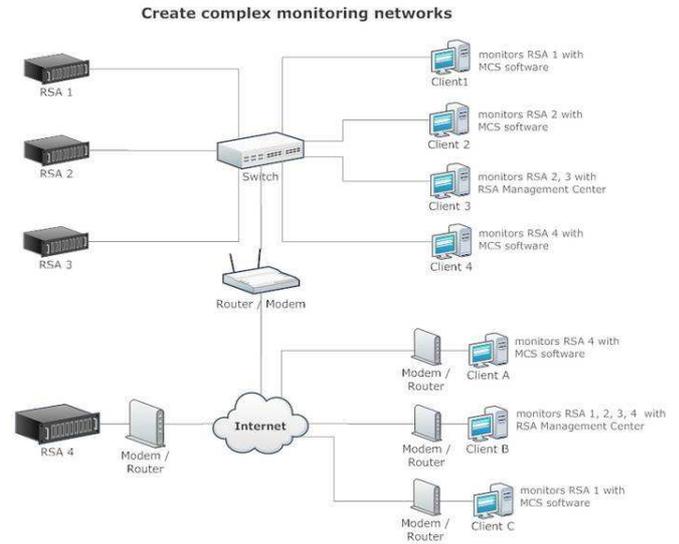


## Remote controllable Spectrum Analysis

The SPECTRAN RSA Spectrum Analyzer Series offers an incredible performance at an unbeatable price-performance ratio in a noble 19inch rack-housing.

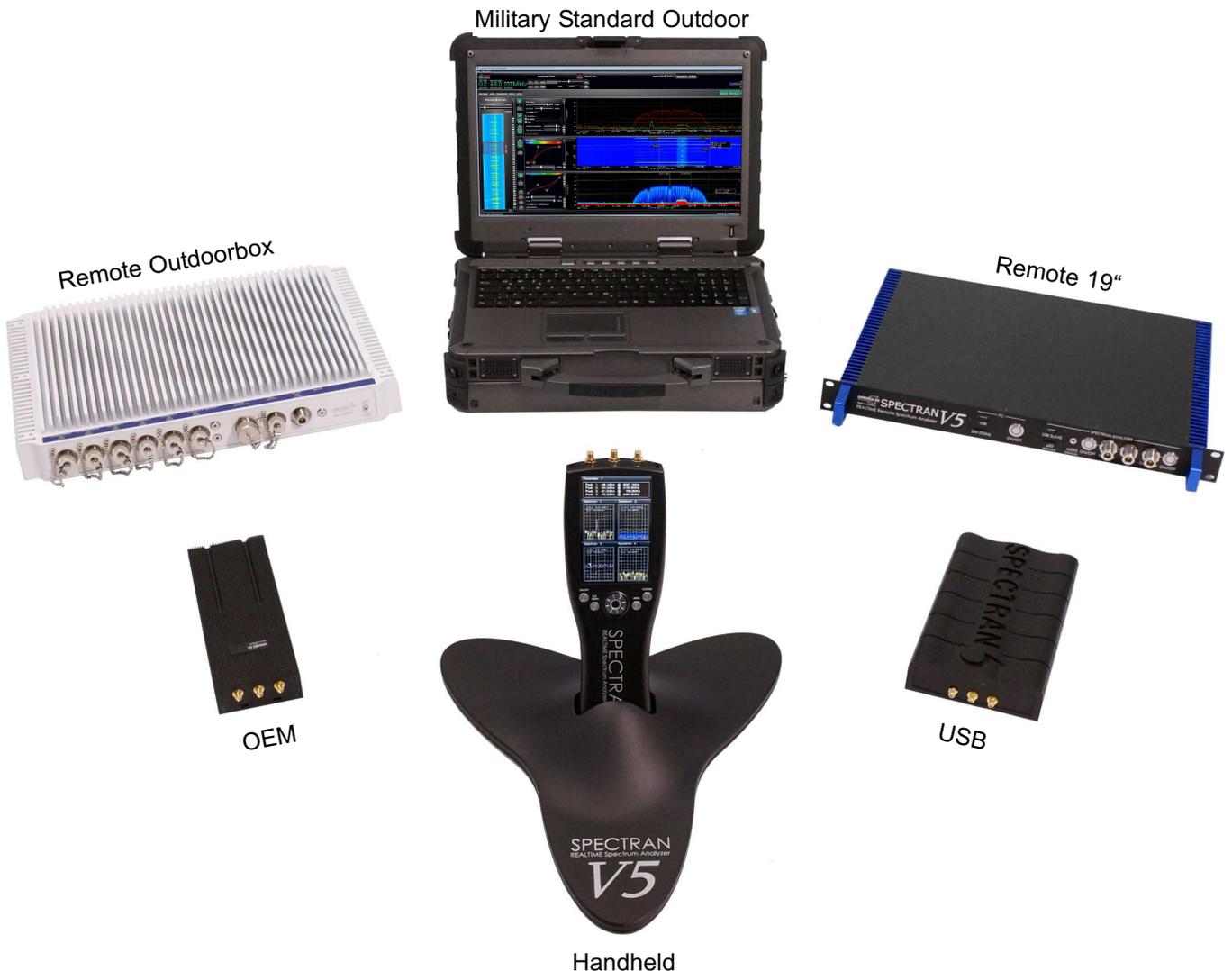
Each RSA unit can be mounted into a common 19" instrument rack and requires one height unit (1U) only. Thus the RSA is perfectly suitable for stationary use in laboratories as well as, thanks to the low power consumption, for mobile use in measuring vehicles or satellite broadcasting vans.

The Analyzer is remote controllable through the USB interface or Lan/Ethernet, allowing a continuous logging and streaming of any frequency range and direct access to the Analyzer through each PC connected to the Internet.



# SPECTRAN V5 - Solutions for every application

The SPECTRAN V5 series is available in different versions, each specially equipped for its specific application. Besides the Handheld version Aaronia offers the USB (X & OEM) series, remote-control Analyzers (19" RSA and outdoor box) and military grade Countersurveillance Receivers (XFR V5 PRO).



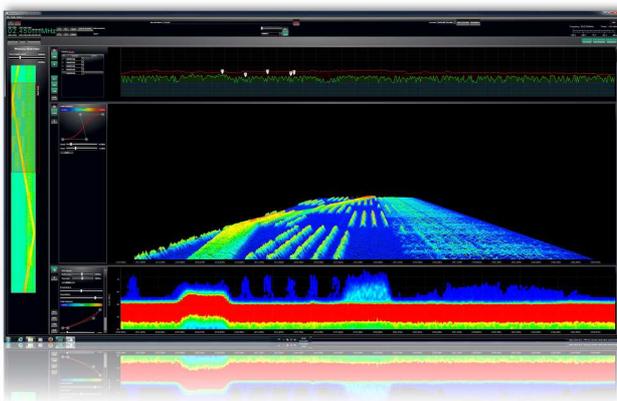
# RTSA Suite

## World's fastest Real-Time Analyzer Software included for remote control

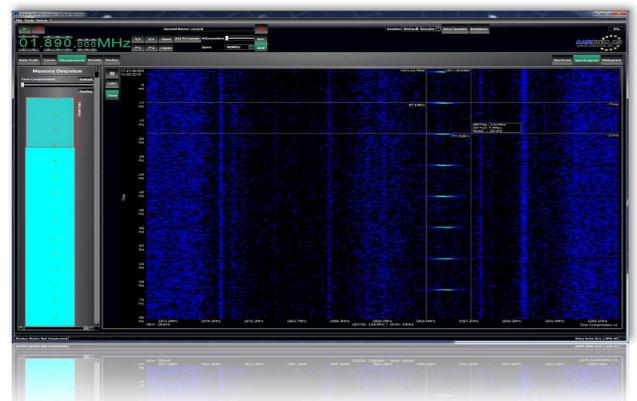
Aaronia's real-time Software „RTSA Suite“ offers powerful analysis features. An intuitive layout combined with useful display options helps to identify, capture, demodulate and track signals up to 20GHz.



- ◆ 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, shortcuts etc.



- ◆ The RTSA Software displays several views at once (Spectrum, 3D Waterfall, Histogram, etc.)
- ◆ The window size can be adjusted freely, therefore a full utilization of e.g. FULL HD or 4K displays is possible



- ◆ Spectrogram / Waterfall View for the identification of frequency hops, measurements of pulse rate, analysis of time variant spectra and the tuning of a VCO

# Specifications

	8060 V5 RSA	80120 V5 RSA	80160 V5 RSA	80200 V5 RSA
<b>Comparison Features</b>				
Frequency Range (min)	9kHz (optional 1Hz with Option 003)			
Frequency Range (max)	6GHz	12GHz	16GHz	20GHz
Real-Time Bandwidth	44MHz (opt. 88MHz)	88MHz (opt. 160/175MHz)	88MHz (opt. 160/175MHz)	88MHz (opt. 160/175MHz)
Minimum Event Duration for 100% POI	<1µS			
Max. Power at RF input (50 Ohm)	+20dBm (+30dBm*)			
Displayed Average Noise Level (internal pre-amp on)	-150dBm/Hz typ. (pre-amp activated)			
Display Range	DANL to +20dBm			
Amplitude accuracy (typ.)	typ. +/- 1,5dB			
RF input	50 Ohm (N-connector, female)			
Frequency reference accuracy	0,5ppm (optional 5ppb with Option 002)			
RBW (resolution bandwidth)	1Hz to 3MHz			
VBW (video bandwidth)	1Hz to 3MHz			
Demodulator	AM, FM			
Measurement Units	dBm, dBV, dBmV, dBµV			
Detector	RMS, Min, Max, AVG			
Attenuator range	45dB (0,5dB steps, incl. pre-amp)			
Traces	ACT, AVG, MAX, MIN			
Reference range	-200dBm to 100dBm			
Reference Level	-30dBm to +20dBm (1dB steps)			
Views	Spectrum, Persistence Spectrum, Spectrogram / Waterfall, Histogram			
Trigger	Cursor, Measurement, Density			
Video RAM	32 MB	64 MB	64 MB	64 MB
SDRAM	128 MB	256 MB	256 MB	256 MB
ADC	250MSPS 14Bit	500MSPS 14Bit	500MSPS 14Bit	500MSPS 14Bit
Other connectors	3,5mm Audio output			
FPGA	72K ECP3	240K ECP3	240K ECP3	240K ECP3
DSP (Dual Core Blackfin)	400 MHz	600 MHz	600 MHz	600 MHz
Temperature Range (Operation)	0 °C to +50 °C			
Temperature Range (Storage)	-20 °C to +60 °C			
Dimensions	480 x 370 x 44mm			
Weight	4,8kg			
Power Supply	AC Input: 100-240V, 50-60Hz - DC Output: 19V, 5,25A			
Power Consumption	<60W			
Country of Origin	Germany			
Recommended Calibration Interval	2 years			

\* optionally available +33dBm, decreases sensitivity by 20dB, Article number 775

# Options

## Included in delivery

### Option 020: Internal 20dB Low-Noise Pre-Amplifier

This option provides an internal, super low-noise 20dB Pre-Amplifier, enabling maximum performance particularly when measuring extremely weak signals. It is switched via a true RF switch.

Order/Art.-No.: 120

## Available options (extra charge)

### Option 220 / 240: 20 / 40GHz Power Meter (in preparation)

High accuracy internal Power Meter / Oscilloscop Mode up to 40GHz.

Order/Art.-No.: 127 (20GHz Power Meter) - Order/Art.-No.: 128 (40GHz Power Meter)

### Option 002: 5ppb (0,005ppm) OCXO Timebase

This highly precise OCXO timebase, which has been especially developed for the SPECTRAN®, offers significantly reduced phase noise (jitter). This will allow the use of far narrower filters, which will in turn vastly enhance sensitivity. To fully exploit the maximum sensitivity this option is indispensable! Furthermore, the OCXO timebase allows far more accurate frequency measurement and display.

Order/Art.-No.: 126

### Option 003: Low Frequency Extension (starting at 1Hz, in preparation)

Extension of the low frequency range to 1Hz. The input signal is internally diverted to a second RF- path, which is optimised for low frequency processing. The low frequency path offers a frequency range from 1Hz up to 40MHz. This path uses a high-performance 16Bit AD converter with 105MSPS. This resolution enhancement from 14Bit to 16Bit improves the dynamic range from 80dB (14Bit) to 100dB (16Bit), which leaves nothing to be desired. This path is a fully capable Real-Time function controllable by  $\mu$ S DDS sweep. The low frequency path (1Hz-40MHz/16Bit) and the radio frequency path (9kHz-20GHz/14Bit) are seamless to the User, except for the particularly noteworthy improvement in the dynamic range.

Order/Art.-No.: 124

### Option 004: Ultra Low Phase Noise

Order/Art.-No.: 123

### Option 007: 6GHz Tracking / IQ DDS Generator (in preparation)

Order/Art.-No.: 125

### Option 160: 160/175MHz Real-Time Bandwidth

Extends the real-time Bandwidth from 88MHz to 160 or 175MHz.

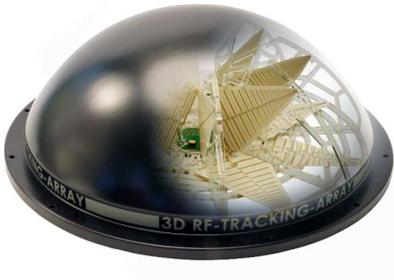
175MHz is subject to export control law and not allowed to be imported in all countries, please contact us for details.

Order/Art.-No.: 119 / 119-2

# Accessories

## IsoLOG 3D (9kHz - 40GHz)

3d Direction Finding Antenna Array. Perfect for Spectrum monitoring and signal tracking. Comes incl. specified control software for SPECTRAN RSA.



## PowerLOG Antennas

Directional, Broadband Horn Antennas with very wide frequency range from 700MHz to 18GHz. Very high gain up to 18dBi.

Order/Art.-No.: 726



## Biconical Antennas (20MHz - 3GHz)

Broadband Biconical Antennas for EMC Pre-compliance Tests. Perfect for in-house compliance testing of various EMC standards up to 3GHz. High bandwidth and gain up to 41dBi (active version).



## HyperLOG Antennas (380MHz - 35GHz)

Directional, Ultra Broadband Antennas with extremely wide frequency range from 380MHz to 35GHz. High and constant gain of typ. 5dBi (active up to 45dBi), with optional Laser, GPS, Compass and Pre-Amplifier.



## External Pre-Amplifier

External Battery-Powered Pre-amplifier with full range of 1Hz to 30GHz & up to 40dB gain. Perfect to reach extremely high sensitivity up to -170dBm/Hz.



## Near field probe set (DC to 9GHz)

Passive or active Near-Field Probeset PBS1 or PBS2. Consisting of 5 Probes (4xH-Field, 1xE-Field), 40dB Pre-amplifier (only PBS2). Perfect for EMC near field tests.

Order/Art.-No.: 720 / 721



## MDF Antennas (9kHz - 400MHz)

Magnetic Tracking Antennas for the low frequency range of the Analyzer. Covers 9kHz to 400MHz. Active and Passive Antennas with high sensitivity.



## OmniLOG 30800 (300MHz - 8GHz)

Omnidirectional Broadband Antenna with extremely wide frequency range from 300MHz to 8GHz. Small and lightweight.

Order/Art.-No.: 734



## 1m / 5m / 10m SMA-Cable

High quality special SMA cable for connecting any HyperLOG or MDFAntenna with the Analyzer. Available as 1m, 5m and 10m Cable. All versions: SMA plug (male) / SMA plug (male).



## DC-Blocker (SMA)

It prevents the RF-input of the SPECTRAN to be destroyed by the DC-voltages, e.g. while doing conducted emission testing.

Order/Art.-No.: 778



## 20dB Attenuator (DC -18GHz)

Expands the measurement range to +33dBm.

Order/Art.-No.: 775



# References

## Cross-Section of 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
- ◆ Indonesien Institute of Science, 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 Athen, Greece
- ◆ University of Munich, Germany
- ◆ Technical University of Hamburg, Germany
- ◆ Max-Planck Institute for Radio Astronomy, Germany
- ◆ Max-Planck-Institute for Nuclear Physics, Germany
- ◆ Research Centre Karlsruhe, Germany

### Industry

- ◆ APPLE, USA
- ◆ 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
- ◆ JDSU, Korea
- ◆ Wilkinson Sword, Germany
- ◆ IBM Deutschland, Germany
- ◆ Nokia-Siemens Networks, Germany



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