RF Command Center (1Hz to 20GHz)

Most Powerful Version of the SPECTRAN V5, Triple Full-HD-Screen, Up to 40TB SSD

The ultimate RF Battlestation

Real-time bandwidth up to 350MHz

Up to 2x internal Receivers

AARONIA AG
WWW.AARONIA.DE

Highlights

✓ Scans 20GHz in less than 20mS (1000GHz / sec.)
✓ Fully customizable, cascadable system (up to 2 independent Analyzers)
✓ Real-time capture bandwidth up to 350MHz
✓ POI below 1µS
✓ Unlimited recording time
✓ Wide measuring range to 20GHz
✓ Sample rate / second: > 5 million
✓ 500 MSPS (14 Bit Dual 256MSPS I/Q)
✓ Up to 40TB ultra-fast SSD recording storage
✓ Optional I/Q Generator (6GHz) and Power Meter (40GHz)
✓ 3x Widescreen Displays (Full HD), creates a resolution of 5760 x 1080
✓ Intel i7 with 16GB RAM, nVidia Power (gapless streaming and playback)
✓ Made in Germany

Introduction

Pure RF Performance

The SPECTRAN V5 RF Command Center is the culmination of Aaronia's efforts in building it´s Spectrum Analyzer Battleship: It scans 20GHz in less than 20 milliseconds, which is an astonishing speed of 1000GHz per second.

This high-end spectrum analyzer offers the RF performance you need with all measurement details available at the same time.
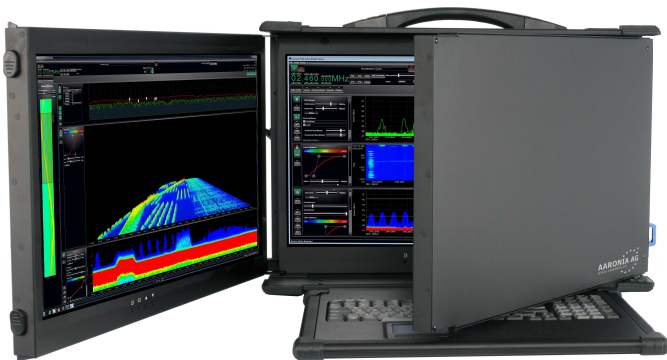
The setup is completely customizable and thanks to it's cascadable system docks up to 2 independent analyzers.

The three large full HD widescreen monitors display and capture the bandwith of up to 175MHz in real time (or 350MHz with two internal analyzers), with an POI below 1uS! And with up to 40TB ultra-fast SSD drives, you basically have an „unlimited" recording time, as only 1GB is needed per minute.

The command center has a wide measuring range of up to 20GHz, with over five million samples per second. A 14 bit dual 256 MSPS I/Q generates 500 MSPS, and an optional I/Q generator enlarges the range to 6GHz. The optional power meter will help you to reach 40GHz.

The hardware side of the computer also features the best available setup, as the SPECTRAN V5 RF Command Center runs on an Intel i7 with 16 Gigabyte RAM and an nVidia GeForce GTX graphic card, which enables gapless streaming and playback.

Made in Germany

And last but not least, the Command Center is made in Germany, ensuring quality on the highest level.

Hardware

Ultra wide measurement ◆
range from 9kHz (1Hz)
to 20GHz

Sunlight readable Display ◆

Expandable hard disk ◆
(up to 40TB)

Full featured PC and ◆
Spectrum Analyzer
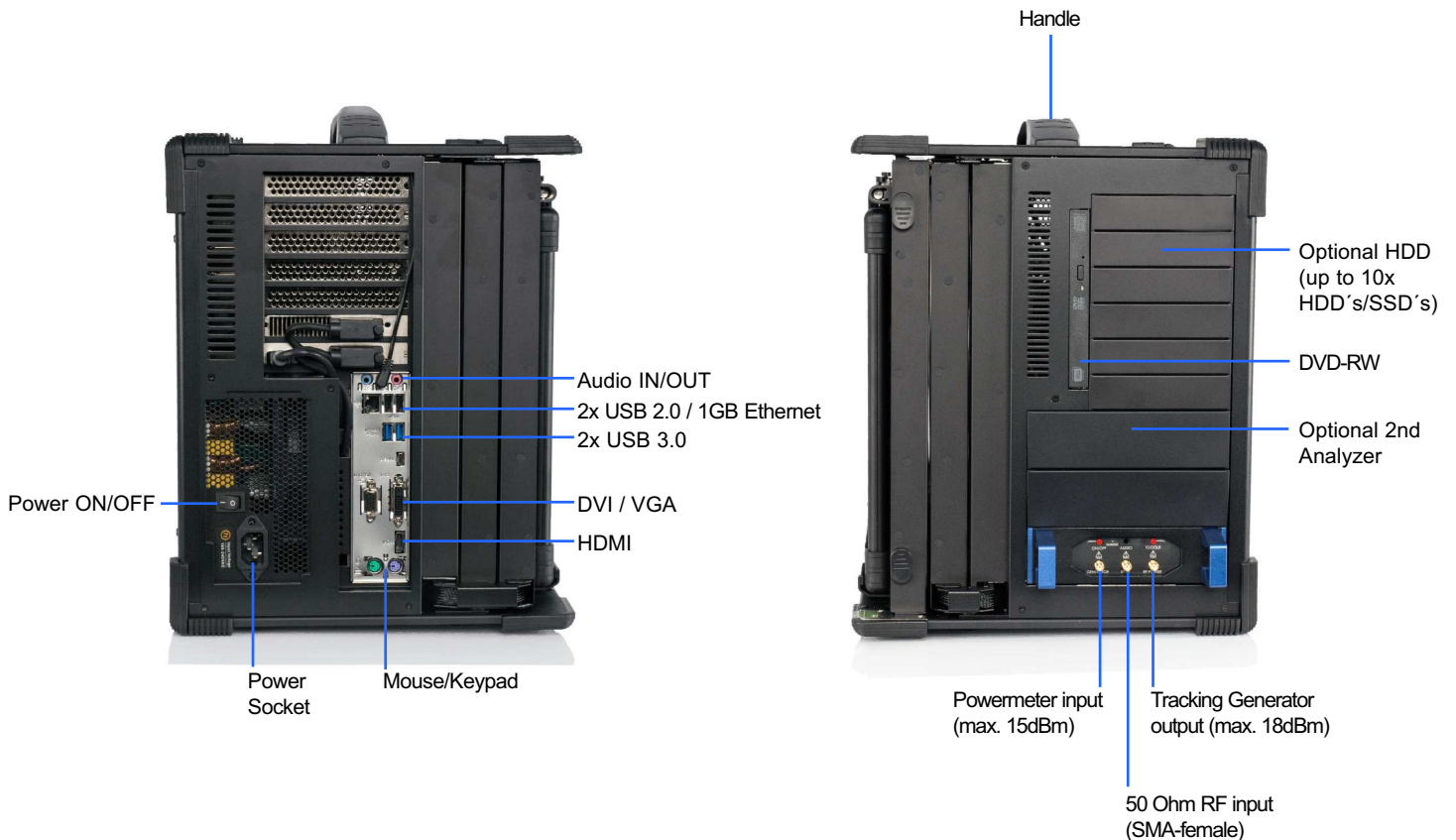at once

Intel i7 Processor with ◆
16GB RAM and 2TB
HDD

◆ Incl. rollcase

◆ 21,5" Widescreen
Full HD Displays

◆ 20/40GHz Power
Meter (optional)

◆ 50 Ohm RF input

◆ 6GHz I/Q Generator
(optional)

Handle

Audio IN/OUT
2x USB 2.0 / 1GB Ethernet
2x USB 3.0

Power ON/OFF

DVI / VGA

HDMI

Power
Socket

Mouse/Keypad

Optional HDD
(up to 10x
HDD´s/SSD´s)

DVD-RW

Optional 2nd
Analyzer

Powermeter input
(max. 15dBm)

Tracking Generator
output (max. 18dBm)

50 Ohm RF input
(SMA-female)

RF measurement at the highest level

The RF Command Center offers a huge variety of helpful functions for spectrum analysis

- Various trigger functions and unlimited number of markers
- Different views: Spectrum / persistence Spectrum, Spectrogram / Waterfall, 3D Waterfall, Histogram
- Multi Window feature supports several views at the same time, e.g. Spectrum & Waterfall & Histogram
- Unlimited storage of measurements, HDD can be expanded up to 60TB for gapless recording of up to 750 hours
- Comfortable reference level and color settings
- Reporting and recording function
- Storage of personal sessions

  and much more ...

Applications

- Technical surveillance countermeasures (TSCM)
- Security surveys for eavesdropping detection
- Interference hunting
- Spectrum monitoring and enforcement
- Maintenance, installation and repair in the factory / field
- VIP monitoring
- Conference monitoring
- EMC/EMI testing
- Seeing weak signals masked by stronger ones
- Discovery of rare, short duration events
- Capturing spread-spectrum and frequency-hopping signals
- Investigating misuse of the crowded RF spectrum

Scope of delivery

The RF Command Center comes with an extensive scope of delivery, depending on the special needs of users, the delivery can be extended to various additional products (see "Accessories" on Page 9).

- RF Command Center incl. Option 020 (internal 20dB preamp)
- Padded Carrying case with wheels to manage RF Command Center with ease
- OmniLOG 70600 omnidirectional antenna (700MHz to 6GHz)
- Pre-installed Spectrum Analysis Software RTSA Suite
- Power supply

# RTSA Suite
## World´s fastest Real-Time Analyzer Software included

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, shortkeys etc.
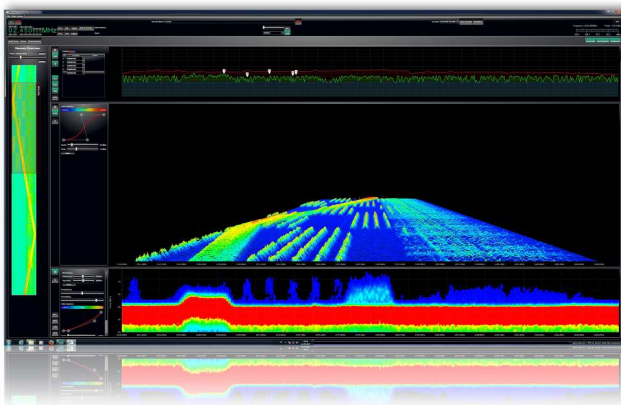
- ◆ The RF Command Center displays several views at once (Spectrum, 3D Waterfall, Histogram, etc.)
- ◆ The window size can be adjusted freely, therefore a full utilization of each FULL HD display is possible
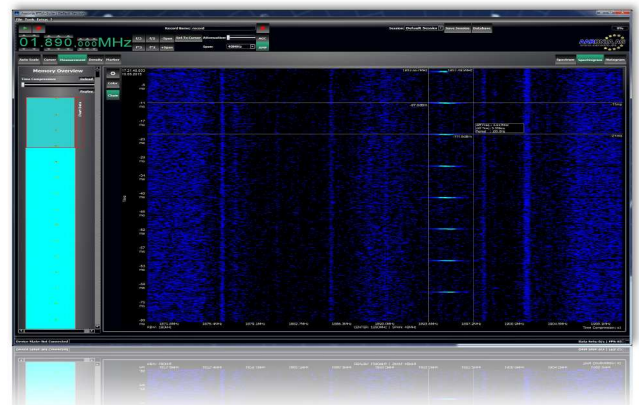
- ◆ Spectrogram / Waterfall View for the identification of frequency hops, measurements of pulse rate, analysis of time variant spectra and the tuning of a VCO

Specification (RF / Performance)

Technical Data	RF Command Center
Frequency Range (min)	9kHz (optional 1Hz)
Frequency Range (max)	20GHz
Real-Time Bandwidth	88MHz (optional 160/175MHz)
Minimum Event Duration for 100% POI	<1µS
Max. Power at RF input (50 Ohm)	+20dBm (+33dBm*)
Displayed Average Noise Level (internal pre-amp on)	typ. -150dBm/Hz
Displayed Average Noise Level (with external pre-amp)	max. -170dBm/Hz
Amplitude accuracy (typ.)	typ. +/- 1,5dB
RF input	50 Ohm (SMA-connector)
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, dBµV, V/m, A/m, W/m², dBµV/m, W/cm²
Detector	Min, Max, AVG, Peak
Attenuator range	45dB (0,5dB steps, incl. pre-amp)
Traces	ACT, AVG, MAX, MIN
Reference range	-200dBm to 100dBm
Measurement modes	I/Q (in preparation), Power/Frequency Data
Views	Spectrum, Persistence Spectrum, Spectrogram / Waterfall, Histogram
Trigger	Cursor, Measurement, Density
Video RAM	64MB
SDRAM	256MB
ADC	500MSPS 14Bit
GPS	Inbuilt GPS
FPGA	240K ECP3
DSP	600MHz

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

Specification (Hardware)

Technical Data	SPECTRAN XFR V5 PRO
CPU	Intel i7 3,4GHz, 8MB Cache
RAM	16 GB
HDD	120GB SSD (operation system), 2TB HDD (storage), optional expandable
Operation System	Windows 7
Display	3x 21,5" Full-HD 1080p, sunlight readable, anti reflection tempered strengthen glass
Graphic Card	GeForce GTX, latest generation
Speaker	Built-in amplified 2x 3W speakers
Keypad	104-key industrial keyboard with integrated numeric keypad and touchpad
Connectors	2x USB 3.0, 2x USB 2.0, Mouse, Keypad, DVI, VGA, HDMI, Power socket
Mainboard	Gigabyte B150M-D3H
Case	Padded Carrying case with wheels
Weight Case	7kg
Temperature Range (Operation)	0 °C to 50 °C
Temperature Range (Storage)	-20 °C to +60 °C
Dimensions	536 x 394 x 300mm (monitors closed)
Weight	30 kg
Relative Humidity	10% - 90%
Power Supply	Silent 580W, 100-240V, 50-60Hz
Power Consumption	typ. < 90W
Country of Origin	Germany
Recommended Calibration Interval	2 years

Options

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 003: Low Frequency Extension (starting at 1Hz) (in preparation, not activated yet)

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 µS 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 001: Memory Expansion

Extension of the hard disk space from 2TB (standard) up to 20TB (or more) with superfast, shock resistant SSD technology.

Order/Art.-No.: 129

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 004: Ultra Low Phase Noise

Order/Art.-No.: 123

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

Order/Art.-No.: 125

Option 160: 160MHz / 175MHz Real-Time bandwidth

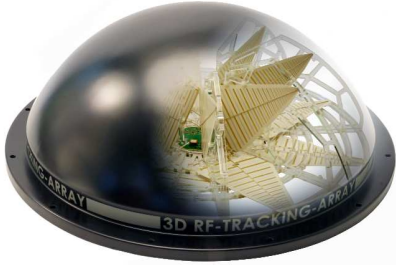Expands the real-time Bandwidth from 88MHz to 160 or 175MHz.

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 with specified control software for RF Command Center.

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 Preamplifier 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 Preamplifier (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 from being destroyed by the DC-voltages, e.g. while doing conducted emission testing.
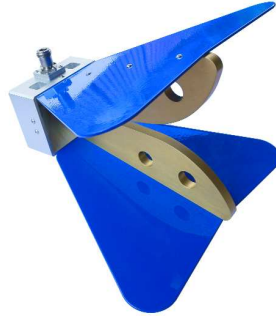
Order/Art.-No.: 778

20dB Attenuator (DC -18GHz)

Expands the measurement range to +33dBm.

Order/Art.-No.: 775