RF Command Center  (9kHz to 20GHz)

The most powerful SPECTRAN V5 version, three FullHD screens, up to 40 TB SSD

The ultimate RF-Battlestation

Real-time bandwidth of up to 350MHz

Up to 2x internal V5 receivers
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 1QS
✔ 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
✔ 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 its 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.

Perfect for any RF-Problem

The setup is completely customizable and thanks to its cascadable system docks up to 2 independent analyzers.

The three large full HD widescreen monitors display and capture the bandwidth 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 unlimited recording time, as only 1GB is needed per minute.

Hardware

The command center has a wide measuring range of up to 20GHz, with over five million samples per second. The 14 bit dual 256 MSPS I/Q generates 500 MSPS.

The hardware side of the computer also features the best available setup, as the SPECTRAN V5 RF Command Center runs on the newest generation Intel i7 with 16 gigabyte DDR4 RAM and an nVidia GeForce GTX graphics 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.

The Command Center in action.
Hardware

- Ultra wide measurement range from 9kHz to 20GHz
- Sunlight readable displays
- Expandable hard disk (up to 40TB)
- Fully featured PC and Spectrum Analyzer in one
- Intel i7 processor, 16GB RAM and 2TB SSD

- Incl. rollcase
- 21.5” Widescreen FullHD screens
- 50 Ohm RF input
- Fully featured PC and Spectrum Analyzer in one
- Intel i7 processor, 16GB RAM and 2TB SSD
RF-Measurements

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

**Measurement at the highest level**

- 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

**Options**

Optional modifications to the RF Command Center:

**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.

**Option 160**: Expands the real-time Bandwidth from 88MHz to 160 or 175MHz.
RTSA Suite Pro
The world’s fastest real-time analyzer software.

Aaronia’s “RTSA Suite Pro” is an extremely powerful and flexible software, with an intuitive and highly customizable user interface. The node-based software allows the user to identify, capture, demodulate and track any signal, and offers a multitude of ways to graphically display the signal detection.

- 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.

3D View and Histogramm View

- 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

Waterfall View

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

IQ Oscilloscope

IQ Signal Generator

IQ Histogram 3D

IQ Histogram

IQ Oscilloscope 3D
## Specifications (Analyzer)

<table>
<thead>
<tr>
<th>Main Specifications</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>9kHz to 20GHz</td>
</tr>
<tr>
<td>Real-Time Bandwidth</td>
<td>88MHz (Optional: 160/175MHz)</td>
</tr>
<tr>
<td>Min. Event Duration</td>
<td>&lt;1µS</td>
</tr>
<tr>
<td>Max. Power at RF input</td>
<td>+20dBm (+33dBm*)</td>
</tr>
<tr>
<td>Displayed Average Noise Level</td>
<td>typ. -150dBm/Hz</td>
</tr>
<tr>
<td>(internal pre-amp on)</td>
<td></td>
</tr>
<tr>
<td>Displayed Average Noise Level</td>
<td>max. -170dBm/Hz</td>
</tr>
<tr>
<td>(with external pre-amp)</td>
<td></td>
</tr>
<tr>
<td>Amplitude accuracy (typ.)</td>
<td>typ. +/-1.5dB</td>
</tr>
<tr>
<td>RF Input</td>
<td>50 Ohm (SMA-connector)</td>
</tr>
<tr>
<td>Frequency reference accuracy</td>
<td>0.5ppm (optional 5ppb with Option 002)</td>
</tr>
<tr>
<td>RBW (resolution bandwidth)</td>
<td>1Hz to 3MHz</td>
</tr>
<tr>
<td>VBW (video bandwidth)</td>
<td>1Hz to 3MHz</td>
</tr>
<tr>
<td>Demodulator</td>
<td>AM, FM</td>
</tr>
<tr>
<td>Measurement Units</td>
<td>dBm, dBµV, V/m, A/m, W/m², dBµV/m, W/cm²</td>
</tr>
<tr>
<td>Detector</td>
<td>45dB (0.5dB steps)</td>
</tr>
<tr>
<td>Traces</td>
<td>ACT, AVG, MAX, MIN</td>
</tr>
<tr>
<td>Reference range</td>
<td>-2000dBm to 1000dBm</td>
</tr>
<tr>
<td>Measurement modes</td>
<td>I/Q, Power/Frequency Data</td>
</tr>
<tr>
<td>ADC</td>
<td>500MSPS 14Bit</td>
</tr>
<tr>
<td>GPS</td>
<td>Inbuilt GPS</td>
</tr>
<tr>
<td>FPGA</td>
<td>240K ECP3</td>
</tr>
<tr>
<td>DSP</td>
<td>600MHz</td>
</tr>
</tbody>
</table>
# Specifications (PC)

<table>
<thead>
<tr>
<th>Main Specifications</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Newest Gen. Intel i7</td>
</tr>
<tr>
<td>RAM</td>
<td>16 GB DDR4</td>
</tr>
<tr>
<td>HDD</td>
<td>120GB SSD (OS), 2TB HDD (storage), optional expandable</td>
</tr>
<tr>
<td>Operation System</td>
<td>Windows 7</td>
</tr>
<tr>
<td>Display</td>
<td>3x 21,5” Full-HD 1080p, sunlight readable, anti reflection tempered strengthen glass</td>
</tr>
<tr>
<td>Graphics Card</td>
<td>GeForce GTX</td>
</tr>
<tr>
<td>Speaker</td>
<td>Built-in, 2x 3W speakers</td>
</tr>
<tr>
<td>Keypad</td>
<td>104-key industrial keyboard with integrated numeric keypad and touchpad</td>
</tr>
<tr>
<td>Connectors</td>
<td>2x USB 3.0, 2x USB 2.0, Mouse, Keypad, DVI, VGA, HDMI, Power socket</td>
</tr>
<tr>
<td>Mainboard</td>
<td>Name-Brand ATX Mainboard</td>
</tr>
<tr>
<td>Case</td>
<td>Padded Carrying case with wheels</td>
</tr>
<tr>
<td>Weight Case</td>
<td>7kg</td>
</tr>
<tr>
<td>Temperature (Operation)</td>
<td>0 °C to 50 °C</td>
</tr>
<tr>
<td>Temperature (Storage)</td>
<td>-20 °C to +60 °C</td>
</tr>
<tr>
<td>Dimensions</td>
<td>536 x 394 x 300mm</td>
</tr>
<tr>
<td>Weight</td>
<td>30 kg</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>10% - 90%</td>
</tr>
<tr>
<td>Power Supply</td>
<td>Silent 580W, 100-240V, 50-60Hz</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>typ. &lt; 90W</td>
</tr>
<tr>
<td>Country of Origin</td>
<td>Germany</td>
</tr>
</tbody>
</table>
Accessories

**IsoLOG 3D (9kHz - 40GHz)**
3D directional 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.

**Biconical 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).

**HyperLOG Antennas**
Directional, Ultra Broadband Antennas with extremely wide frequency range from 380MHz to 35GHz. High and constant gain of typ. 5dBi (active up to 45dBi).

**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.

**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.

**IsoLOG 3D Mobile (9kHz - 6GHz)**
Very light and small isotropic antenna which is compatible to any spectrum analyzer.

**1m / 5m / 10m SMA-Cable**
High quality SMA cable for connecting any HyperLOG or MDF Antenna with the Analyzer. Available as 1m, 5m and 10m Cable. All versions: SMA plug (male) / SMA plug (male).
## Cross-Section of Aaronia Clients

### 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
- VIAVI, Korea
- Wilkinson Sword, Germany
- IBM Deutschland, Germany
- Nokia-Siemens Networks, Germany

### 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 Sience, 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 Inst. for Radio Astronomy, Germany
- Max-Planck-Inst. for Nuclear Physics, Germany
- Research Centre Karlsruhe, Germany