



# SPECTRAN<sup>®</sup> V6

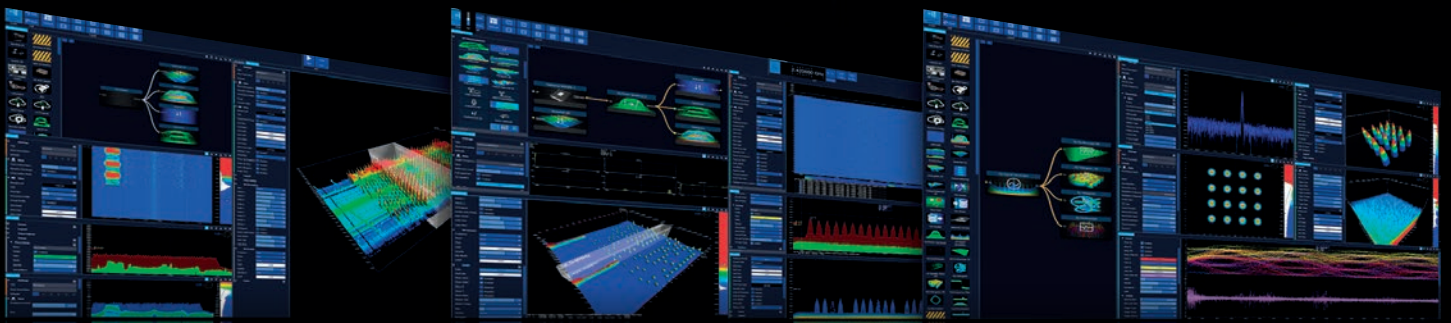
— BEYOND REALTIME —

REALTIME SPECTRUM ANALYZER

ECO



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

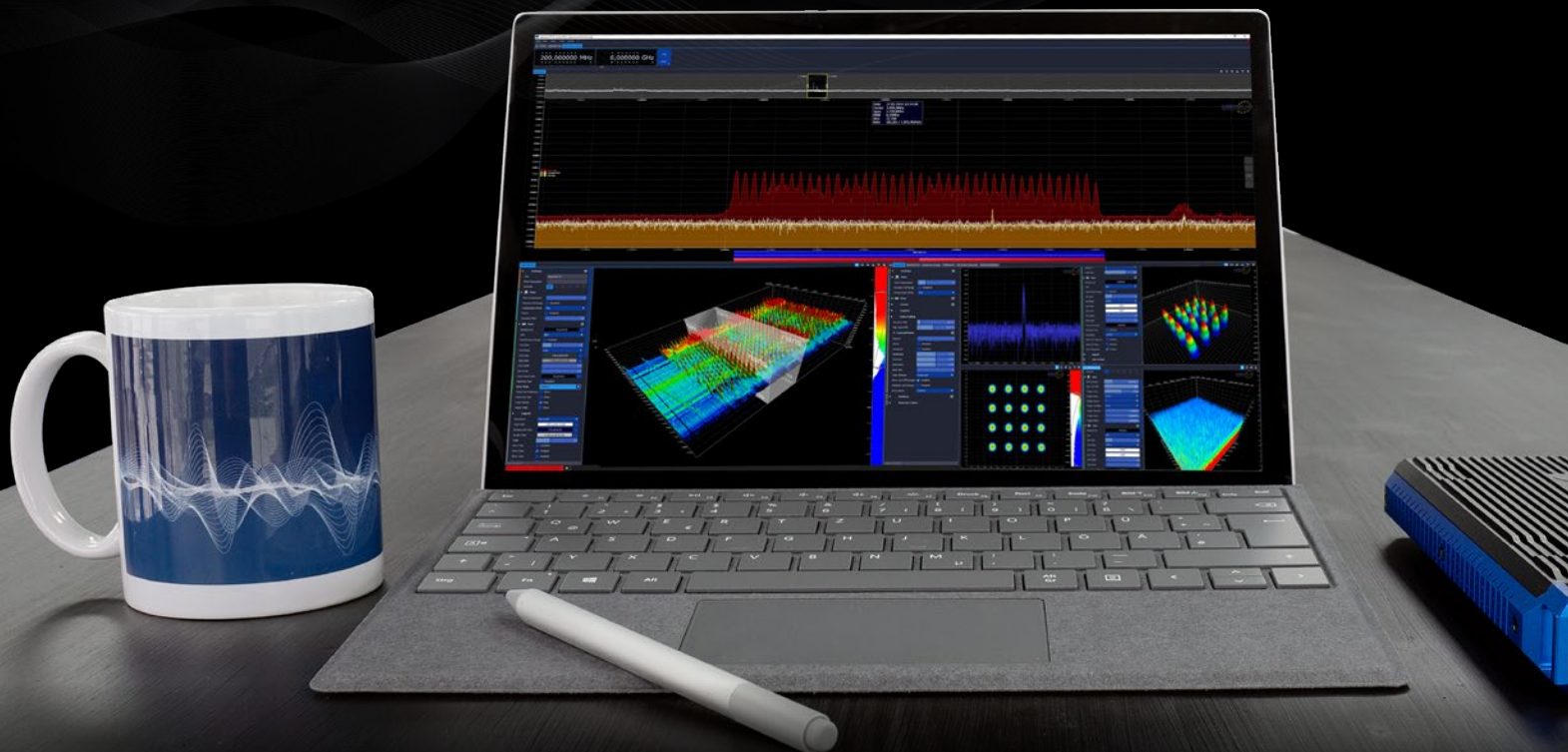


- ✓ Frequency range: 9 kHz to 6 | 8 GHz
- ✓ 3 Versions\*: 1 Rx | 2 Rx | 1 Rx & 1 Tx
- ✓ Bandwidth Rx: 44 MHz or 2x44 MHz (dual LO)
- ✓ Bandwidth Tx: 44 MHz (via USB3 stream)
- ✓ SweepSpeed: 500 GHz/s | 3 THz/s
- ✓ ADC Resolution: 16-Bit
- ✓ DAC Resolution: 14-Bit
- ✓ Noise Figure: -170dBm/Hz (4dB NF)



# Highlights

- ✓ Frequency range: 9kHz to 6|8GHz
- ✓ Power: Via USB (10W)
- ✓ Scans 6GHz in less than 2ms (3THz/s option)
- ✓ Dual Receiver Technology (2x44MHz RTBW)
- ✓ Unlimited, continuous, true 24/7 I/Q Streaming
- ✓ I/Q vector signal generator (44 MHz)
- ✓ Extraordinary dynamic range with a 16-Bit ADC at 2GSPS
- ✓ Sample rate of 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)
- ✓ Stackable accessories
- ✓ Compact and lightweight
- Included software:
  - ✓ “RTSA-Suite PRO” spectrum analysis software with regular updates
  - ✓ Fully remote controllable via platform independent HTTP based API
  - ✓ Native C++ SDK for Windows and Linux
  - ✓ Community plugins for GNU Radio, SDRAngel, SDR++ and many more
  - ✓ Made in Germany



# Introduction

Fast, compact and powerful

Aaronia presents the SPECTRAN® V6 ECO, a real-time, high-performance, spectrum analyzer and monitoring receiver designed to capture even the shortest signal transmissions. Its scanning speed and recording time are unrivaled. The analyzer scans 6GHz in 2ms (3THz/s), making it the world's fastest USB spectrum analyzer.

## Perfect for any RF problem

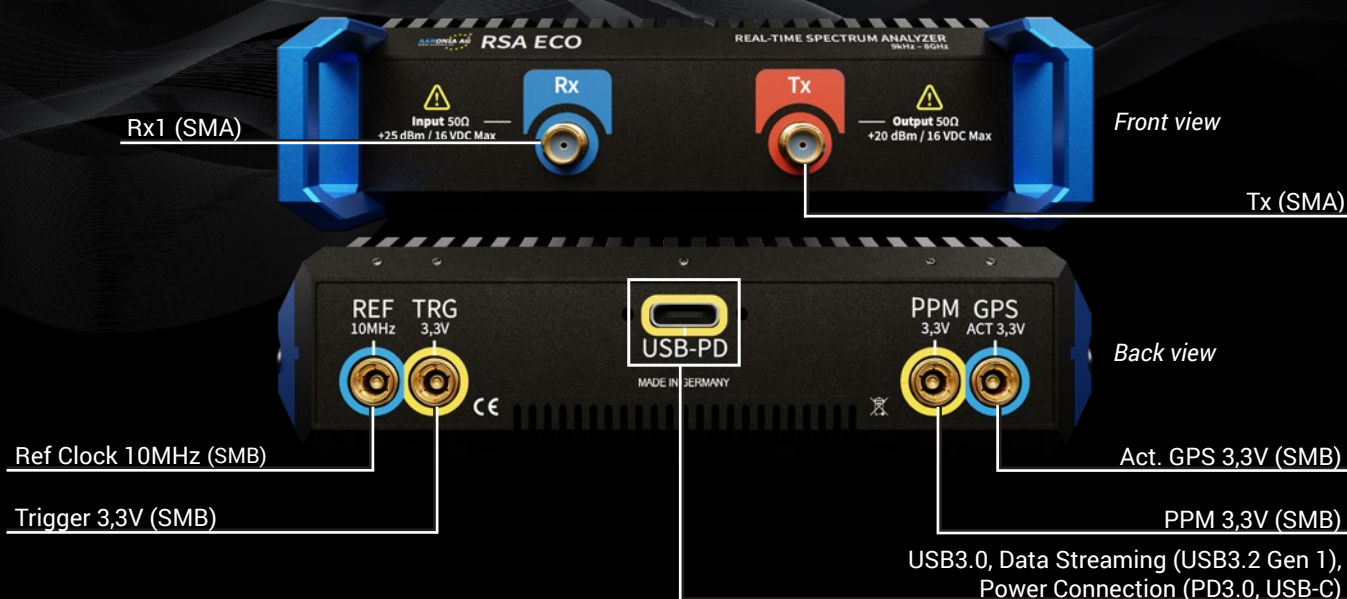
This spectrum analyzer enables you to conquer almost any challenge. Whether it's spectrum monitoring, RF and microwave measurements, Interference hunting, EMC testing or Wi-Fi and wireless network measurements, the SPECTRAN® V6 ECO is the ideal spectrum analyzer for making reliable and fast measurements.

## Compact and lightweight

The V6 ECO is ideal for measurements in both the field and in the lab. The included analysis software, RTSA-Suite PRO, transforms the V6 ECO into a fully-featured benchtop spectrum analyzer. The V6 ECO offers a solution for almost every application.

## Made in Germany

The SPECTRAN® V6 ECO spectrum analyzer and vector signal generator is designed and assembled in Germany, guaranteeing the highest quality standards.

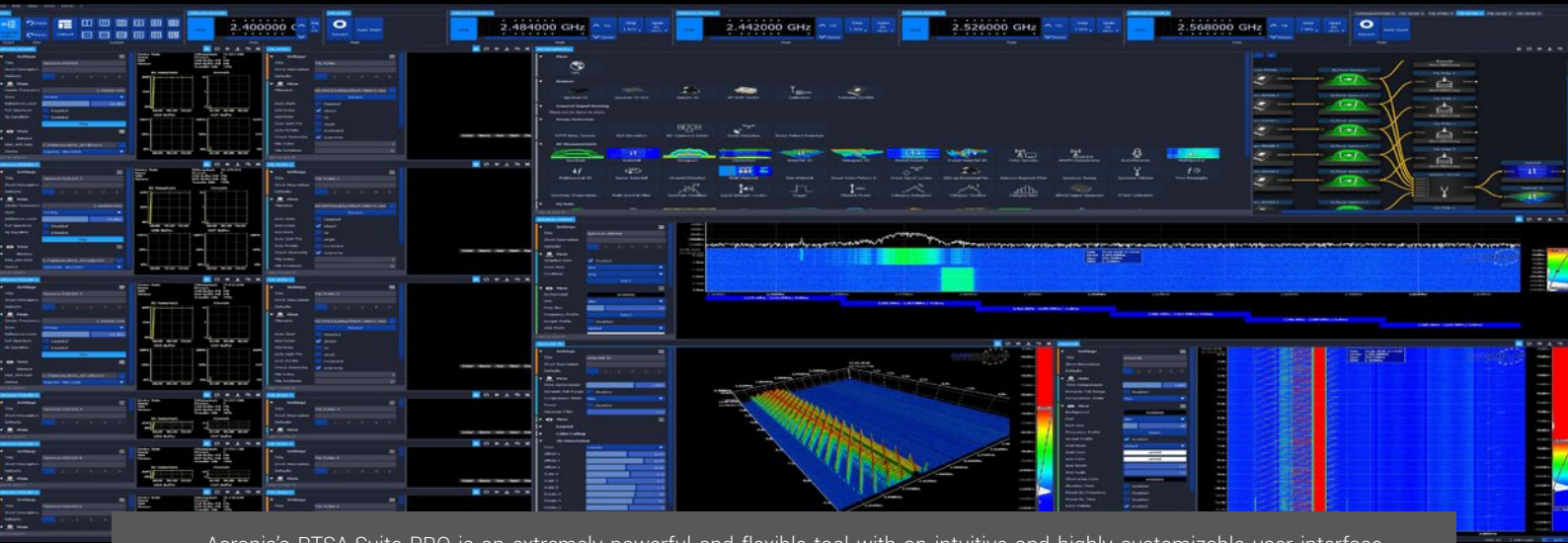


- ✓ Real-Time USB IQ-streaming
- ✓ Ultrawide frequency range from 9 kHz - 8 GHz
- ✓ Compact size: 210 x 115 x 30 mm
- ✓ Stackable
- ✓ Included PC software
- ✓ Tough, high quality aluminum case
- ✓ 50 Ohm RF connector(s) (SMA)



# 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!



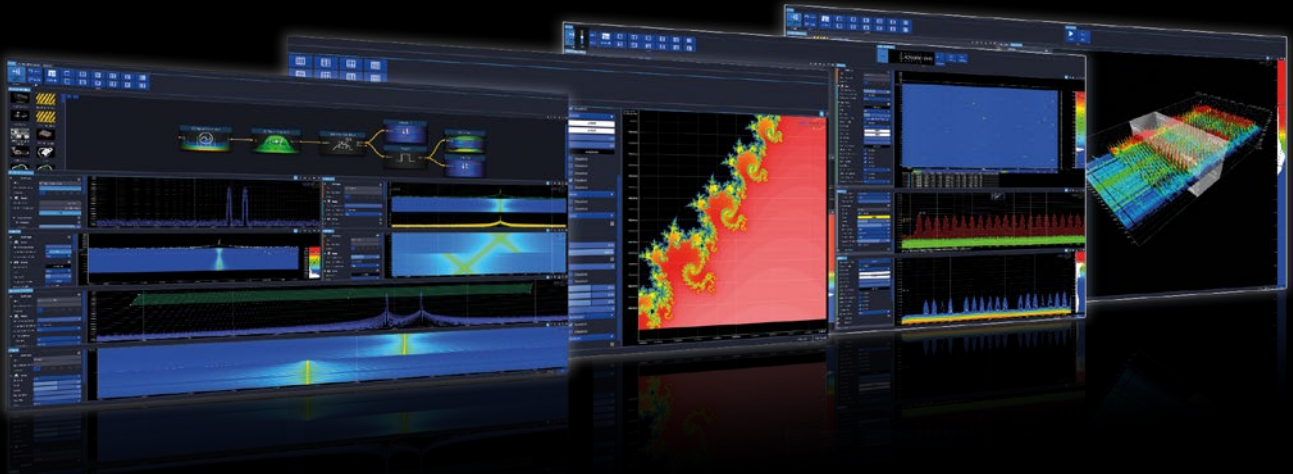
# Multiple 2D/3D Spectrum Analysis

Trigger Block

Powerful Script Block

Various Demodulations

3D/4D Waterfall



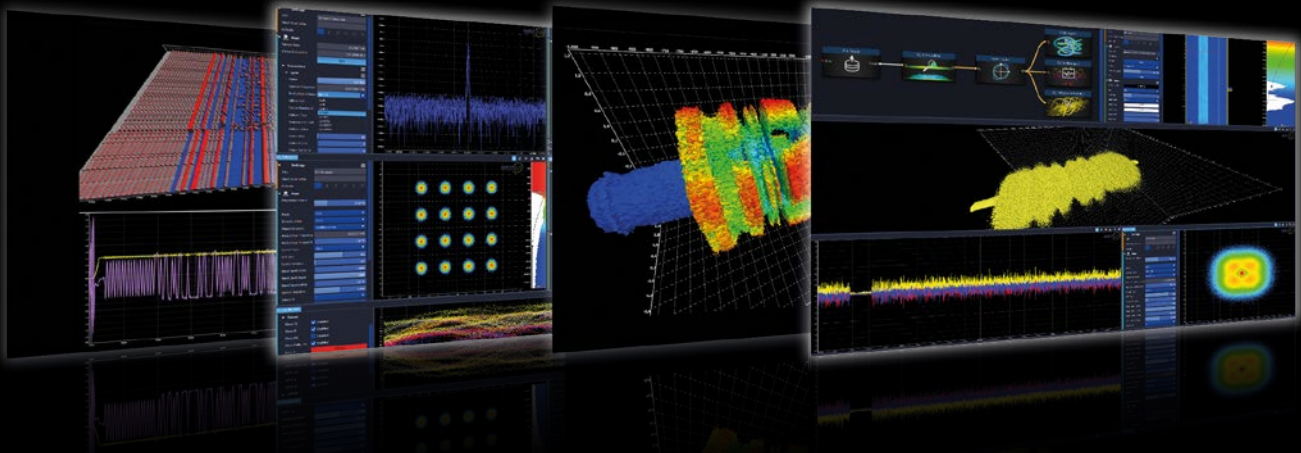
# 2D/3D IQ Streaming and Decoding

DECT Decoding

Software IQ Generator

3D IQ Display

DAB IQ Demodulation



# Multi Unit Stitching and Multi Frequency Monitoring

Multi Frequency Monitoring

Multi Waterfall

V6 full Frequency Monitoring

Multi-Unit Stitching



# WORLD of SPECTRAN® V6 ECO

| Model          | RTBW                | Speed                       | I/Os       |
|----------------|---------------------|-----------------------------|------------|
| V6 ECO 100XA-6 | 44 MHz              | 500 GHz/s                   | 1 Rx       |
| V6 ECO 150XA-6 | 44 MHz each         | 500 GHz/s                   | 1 Rx, 1 Tx |
| V6 ECO 200XA-6 | 2x 44 MHz (dual LO) | 500 GHz/s (optional 3THz/s) | 2 Rx       |

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

| Options                | Comment  |
|------------------------|--|
| Ultra Low Noise Preamp | <b>Additional 20 dB of gain</b> (Add 2 for 2 inputs)   |
| WiFi6E Extention 8 GHz | Extended frequency band including WiFi6E   |
| OCXO Timebase          | 5 ppb, anti shock OCXO (no crystal, vibration resistant)   |
| Internal GPS           | Incl. spoofing detection and active GPS antenna with SMB cable, GPS disciplined Oscillator (200ppt   optional, additional software key required) |

## Accessories

### RF over Fiber (Rx/Tx) Set

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



### HyperLOG PRO Antennas

Directional measuring and direction finding antennas with a wide frequency range of 380 MHz to 40 GHz. Active and passive versions available.



### Splitter/Combiner

External, 4 or 6-way, low-loss, splitter/combiner can stitch multiple V6 units together to expand its real-time bandwidth.



### BicoLOG Antennas (20MHz – 3GHz)

Broadband Biconical Antennas for EMC Pre-compliance Tests. Perfect for in-house compliance testing of various EMC standards. With high bandwidth and a gain of 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)

Compact and lightweight, battery-powered 3 axis antenna with isotropic reception behaviour. Contains loop and dipole antenna elements and multiple amplifier stages.



# Analyzer Specifications

| Specifications                     | SPECTRAN® V6 ECO   |
|------------------------------------|--|
| Frequency range                    | 9kHz to 6 8GHz   |
| Real-time bandwidth Rx             | up to 88 (2 x 44) MHz via 1x USB                             |
| Real-time bandwidth Tx             | 44 MHz (device dependent)                                    |
| 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           | 1x USB 3.1 or 3.2 PD   |
| 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                                | 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)              |
| 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  |
| Power                              | USB 3.2 Gen 1 Type-C PD 3.0                                  |
| Power consumption                  | Typical 10 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