

Rev 1.2  
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# Military Outdoor Spectrum Analyzer SPECTRAN® NF-XFR

Worldwide first "military-standard" Spectrum Analyzer!

## Highlights

- ◆ Highest performing fully rugged laptop and world's most sensitive Handheld Analyzer in one device
- ◆ Ready to go, LCS-Analyzer-Software already installed
- ◆ Ballistic Armor™ Protection System to meet or exceed real world and military standards (MIL-STD-810F)
- ◆ Built tough for tough environments



Made in Germany



# Technical details

## Notebook (based on Dell Latitude E6400XFR)

- ◆ Processor: Intel Core 2 Duo P9600(2,66GHz,1.066MHz,6MB)  
nVidia Quadro NVS 160M, 256MB with express-card and Fingerprint Reader
- ◆ 14.1" WXGA (1280 x 800) wide-aspect transmissive display with DirectVue™ technology for outdoor readability
- ◆ Memory: 4096MB (2x2048) 800MHz DDR2 Dual Channel
- ◆ Primary Storage: 64GB Solid State Drive
- ◆ Battery: 6-cell primary battery
- ◆ Wireless: Intel WiFi Link 5100 (802.11 a/b/g/n 1X2) 1/2 MiniCard with Centrino label
- ◆ 10/100/1000 Gigabit Ethernet-network card
- ◆ Keypad: Internal English Qwertz with background light
- ◆ Operating System: Windows XP Pro SP3 with Windows Vista Business SP1 Medias
- ◆ Ports: IEEE - 1394, docking connector, USB 2.0 (x4), VGA, Display Port, RJ-11 (optional), RJ-45, eSATA, USB PowerShare, headphone/speaker out, mic (all protected behind sealed doors)
- ◆ Multi Media: 2 speakers
- ◆ Independently Tested to MIL-STD-810F for:  
4ft Transit Drop, Aggravated Rain, Blowing Dust, Vibration, Functional Shock, Humidity, Salt Fog, Altitude, Explosive Atmosphere, Temperature Shock, and Temperature Extremes (Operating: -20°F to 145°F (-29°C to 63°C); Non-Operating: -58°F to 160°F (-50°C to 71°C))
- ◆ IP-65 Certified Protection – Dust-Tight and Protected against Pressurized Water Ingress
- ◆ UL1604 Certified for Hazardous Locations (Class 1, Division 2, Zones A, B, C, D)
- ◆ Weight: 8.5 lbs/3.9 kg
- ◆ Width: 13.9"/353.06 mm
- ◆ Depth: 10.1-11.5"/257.6-293.1 mm
- ◆ Height: 2.2"/55.88 mm

## Spectrum Analyzer (based on Spectran NF-5030)

- ◆ Frequency range: 1Hz -20MHz\*
- ◆ Typ. accuracy: 3%\*\*
- ◆ **65 MSPS** (Option 005)
- ◆ Lots of options
- ◆ NEW: 30MHz Option
- ◆ Typ. level range DDC Analog in: **200nV** to 200mV / -150dBm (Hz)
- ◆ Superfast FFT spectrum analysis
- ◆ High-performance DSP (Digital Signal Processor)
- ◆ Frequency and signal strength display!
- ◆ High-resolution multi-function display
- ◆ True RMS signal strength measurement
- ◆ Average (AVG) measurement
- ◆ Internal data logger
- ◆ Internet Flash Software-Updates

## Application examples SPECTRAN® NF-XFR Spectrum Analyzer

### Analysis and measurement of:

- ◆ traction power
- ◆ power lines
- ◆ power cables
- ◆ lamps
- ◆ power supplies
- ◆ transformer
- ◆ DSL
- ◆ ADSL
- ◆ VDSL
- ◆ various home appliances, industry and office up to 30MHz

# Description



## Real World Rugged

Built for tough environments, the SPECTRAN NF-XFR rises to the challenges you face every workday. The NF-XFR is built to be ready out of the box to withstand pounding rain, blowing dust and dirt, extreme temperatures, accidental drops and more.

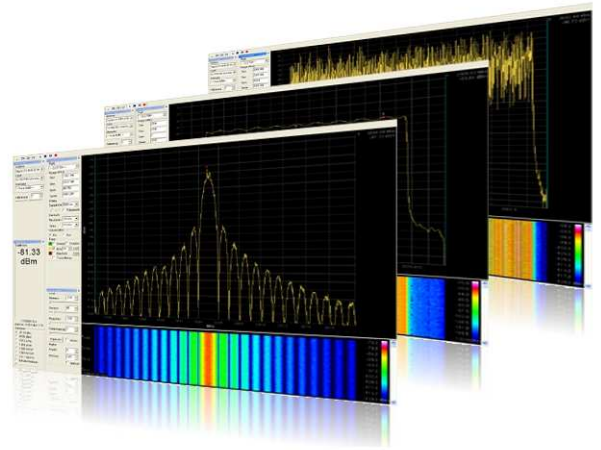
Key rugged features include:

- ◆ The exclusive Ballistic Armor Protection System featuring PR481™ chassis material provides twice the impact strength versus traditional magnesium alloy.
- ◆ The SPECTRAN NF-XFR with Ballistic Armor Protection enables excellent protection and is the first in its class to meet a 4ft drop specification.
- ◆ With PrimoSeal™ technology we provide the highest combined Ingress protection rating (IP65), for enhanced protection against blowing dust and liquid.

## Integrated Spectrum Analyzer (based on the Spectran NF-5030)

The PROFESSIONAL PC analysis software demonstrates SPECTRAN's vast capabilities.

- ◆ HIGH-RESOLUTION!, freely scalable, coloured spectrum display with falloff function.
- ◆ Freely positionable windows for comfortable entry of frequency, RBW, sweep time etc. etc.
- ◆ Up to 10 markers with frequency and level display.
- ◆ Intuitive zoom control with very comfortable frequency adjustment.
- ◆ High quality "waterfall"-display with timecode. Colour scale freely configurable. Size freely scalable. Optional display of data directly on top of the graph by pointing with your mouse and CTRL-clicking!
- ◆ High-resolution Slot Analyser with 3D display!
- ◆ SUPER-LOGGER: all data can be written to disk continuously. File format is readable by spreadsheet applications, for creating custom reports, etc.
- ◆ Various pre-defined profiles for RFID, power, TV, TFT's, ADSL etc. etc. for instant recall. Incl. optimal parameters and extensive channel information! Freely programmable and extensible!
- ◆ Independant main display with SIMULTANEOUS display of dBm, dBμV, V/m, W/m<sup>2</sup> and A/m, each with AUTORANGE. Freely transposable and scalable.
- ◆ Exposure limit display with various profiles (ICNIRP, Salzburg precautionary values, ECOLOG, etc. etc.). Freely programmable with a virtually infinite amount of display options.
- ◆ Functionality to update firmwares.
- ◆ etc. etc. etc.



Screenshots from the SPECTRAN NF-XFR

## Inspired Design

SPECTRAN NF-XFR features securely sealed port covers and a wide range of key peripherals to work wherever you need it to.

- ◆ Work in direct sunlight with the large 14.1" wide-aspect LCD featuring DirectVue™ Technology LCD.
- ◆ Vehicle docking allows flexibility for police and field technicians to mount systems directly in their vehicles where they work.
- ◆ Secure, simple, locking doors with PrimoSeal™ for exceptional protection while working in wet or dusty conditions.



## Uncompromising Performance

The high performing, fully rugged laptop is the first in its class to ship with both Intel® Core™2 Duo Processor with vPro™ technology. The SPECTRAN NF-XFR has brains as well as brawn.

- ◆ QuadCool™ Thermal Management System enables the XFR to meet the MIL-STD for temperature extremes and supports world-class performance, while running the latest Intel® Core™2 Duo Processors.
- ◆ Extended field use batteries equipped with ExpressCharge enables primary battery re-charge times up to 2 times faster than Panasonic CF-30.

## Included in delivery

- ◆ SPECTRAN NF-XFR Outdoor Spectrum Analyzer
- ◆ SMA-Tool
- ◆ Battery
- ◆ Battery charger
- ◆ Detailed english manual



The SPECTRAN NF-XFR was built for tough environments

# Overview of features SPECTRAN® NF Spectrum Analyzer

SPECIFICATIONS base unit*	NOVICE		INTERMEDIATE		PROFESSIONAL		OUTDOOR
	NF-1010*	NF-1010E*	NF-3010*	NF-3020*	NF-5010*	NF-5030*	NF-XFR*
Frequency range Min	10Hz	10Hz	10Hz	10Hz	1Hz	1Hz	1Hz
Frequency range Max	2kHz	10kHz	100kHz	400kHz	1MHz	30MHz**	20MHz
Range electrical field [V/m] (typical) Min (1D)	1V/m	1V/m	0,1V/m	0,1V/m	0,1V/m	0,1V/m	-
Range electrical field [V/m] (typical) Max (1D)	2.000V/m	2.000V/m	5.000V/m	5.000V/m	5.000V/m	20kV/m	-
Range magnetic field [Tesla] (typical) Min (3D!)	10nT	10nT	1nT	1nT	1nT	1pT**	-
Range magnetic field [Tesla] (typical) Max (3D!)	100µT	100µT	100µT	100µT	100µT	2mT	-
Range magnetic field [Gauss] (typical) Min (3D!)	100µG	100µG	10µG	10µG	10µG	10nG**	-
Range Analog input (typical) Min	-	-	-	2µV	2µV	200nV	200nV
Range Analog input (typical) Max	-	-	-	200mV	200mV	200mV	200mV
Range magnetic field [Gauss] (typical) Max (3D!)	1G	1G	1G	1G	1G	20G	-
Filter bandwidth Min	5Hz	5Hz	1Hz	1Hz	1Hz	1Hz	1Hz
Filter bandwidth Max	10kHz	100kHz	300kHz	300kHz	1MHz	1MHz	1MHz
Accuracy base unit (typical)	5%	5%	5%	5%	3%	3%	3%
FFT (Resolution in points)	64	64	64	64	1024	1024	1024
Vector power measurement (I/Q) and True RMS	-	-	✓	✓	✓	✓	✓
<b>FEATURES</b>							
Standards conformant exp. limits (ICNIRP, BGV B11, BImSchV etc.)	-	✓	✓	✓	✓	✓	-
Extended full ICNIRP range	-	-	-	-	-	✓	-
Isotropic (3D) AC magnetic field measurement	✓	✓	✓	✓	✓	✓	-
Supports custom P-Code software	-	-	✓	✓	✓	✓	✓
ADVANCED HOLD mode (HOLD function)	-	✓	✓	✓	✓	✓	✓
INTERNAL data logger (long-term measurements)	-	-	✓	✓	✓	✓	64GB
FLASH memory including firmware update (over the Internet)	-	16k	64k	64k	64k	64k	✓
"Clear text" signal identification with direct frequency display	-	✓	✓	✓	✓	✓	✓
Integrated battery charging circuitry	-	✓	✓	✓	✓	✓	✓
Internal speaker	Piezo	Piezo	✓	✓	✓	✓	✓
Audio demodulation	AM	AM	AM	AM	AM&FM	AM&FM	-
<b>DISPLAY</b>							
Fast FFT or DFT spectrum analyses	-	✓	✓	✓	✓	✓	✓
Limit calculation with simultaneous percentage display	✓	✓	✓	✓	✓	✓	-
X, Y, Z Axis display or Vectorproduct (only M.-Field)	-	✓	✓	✓	✓	✓	-
Main display in V/m, Tesla, Gauss or A/m (switchable)	-	✓	✓	✓	✓	✓	V / dBµV
High-resolution 50 segment bargraph (trend display)	✓	✓	✓	✓	✓	✓	14" Display
3fold marker display (ex. 3x field strength & frequency at once)	-	✓	✓	✓	✓	✓	10fold
<b>INTERFACES / CONNECTORS</b>							
Fast USB 2.0 interface (computer connection)	-	✓	✓	✓	✓	✓	2x
Audio output	✓	✓	✓	✓	✓	✓	-
DC input (max. 15V) for external power supply	✓	✓	✓	✓	✓	✓	✓
External ultra sensitive signal input (SMA input) with max. 0,2V	-	-	-	✓	✓	✓	✓
Jog Dial (Multi-functional dial) for "one-hand operation"	-	-	✓	✓	✓	✓	Key&Touchpad
<b>OPTIONS (extra charge)</b>							
Option 001 (1MB memory expansion)	-	-	-	-	✓	✓	harddisk
Option 005 (12Bit DDC / offers ultra high sensitivity up to 1pT)	-	-	-	-	-	✓	inclusive
Option 006 (Measure 3D static magnetic fields)*	-	-	-	-	-	✓	-
Option 009 (Ultra high 24Bit resolution on static magnetic fields)	-	-	-	-	-	✓	-
Option 010 (Expanded frequency range up to 30MHz e.g. RFID)	-	-	-	-	-	✓	20MHz incl.
<b>INCLUDED ACCESSORIES (in addition to the base unit)</b>							
Aaronia 7,2V high-performance battery (1300mAh) + charger	-	✓	✓	✓	✓	✓	6 cell battery
Aluminum design transport case incl. padding inlays	-	✓	✓	✓	✓	✓	-
PROFESSIONAL PC analysis software (Windows, downloadable)	-	✓	✓	✓	✓	✓	installed

\*Preliminary specifications as of 12.03.2009. NF and XFR series are available with latest BETA-Firmware. ALL options are available for the NF-series. The BETA firmware is in continuous development. Some functionality may still be limited and not fully to specifications (BETA status). By regularly checking our homepage for updates, you can always keep your measurement device up-to-date. As soon as version 1.0 of the firmware is released, all functionality and features will be fully available.

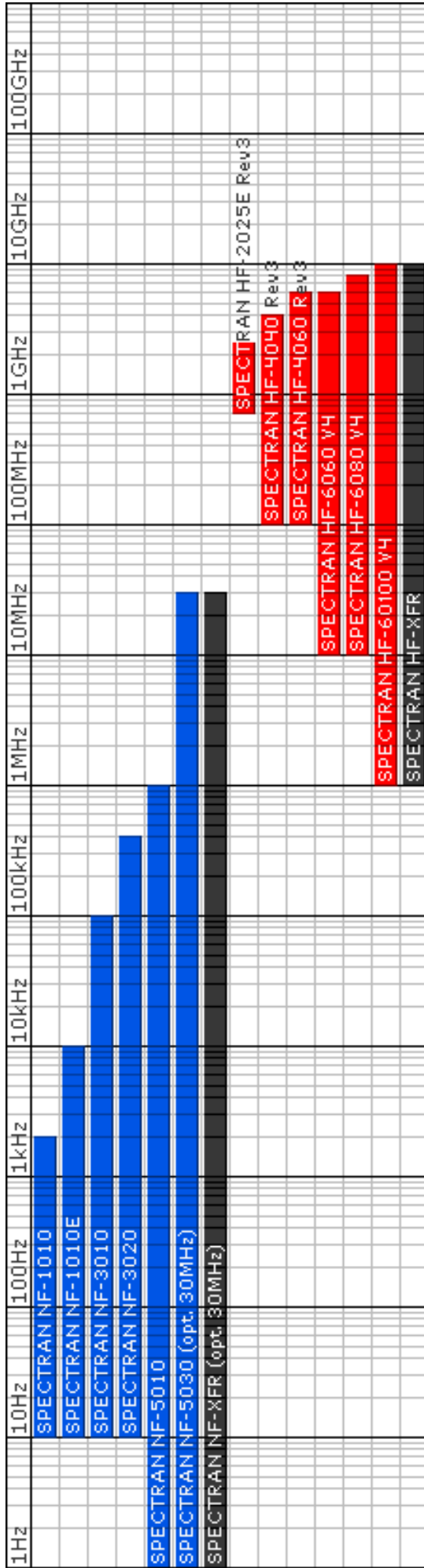
Range and accuracy can change depending on frequency, sensor and used parameters. Precision values are based on Aaronia calibration-reference and only valid under specific test conditions. Unless otherwise stated, these specifications apply for the reference condition: ambient temperature 22±3°C, relative air humidity 40% to 60%, continuous wave signal (CW), RMS detection. NF-5030 noise level at 100kHz and 1kHz RBW. Option 006 offers a range of 100µG-6G (10nT-600µT). You can "zero" the static field sensor (Option 006) by using our "Zero Gauss" chamber.

\*\*Standard: 1MHz. Only with option 010 up to 30MHz. / Standard: 1nT. Only with option 005 up to 1pT.

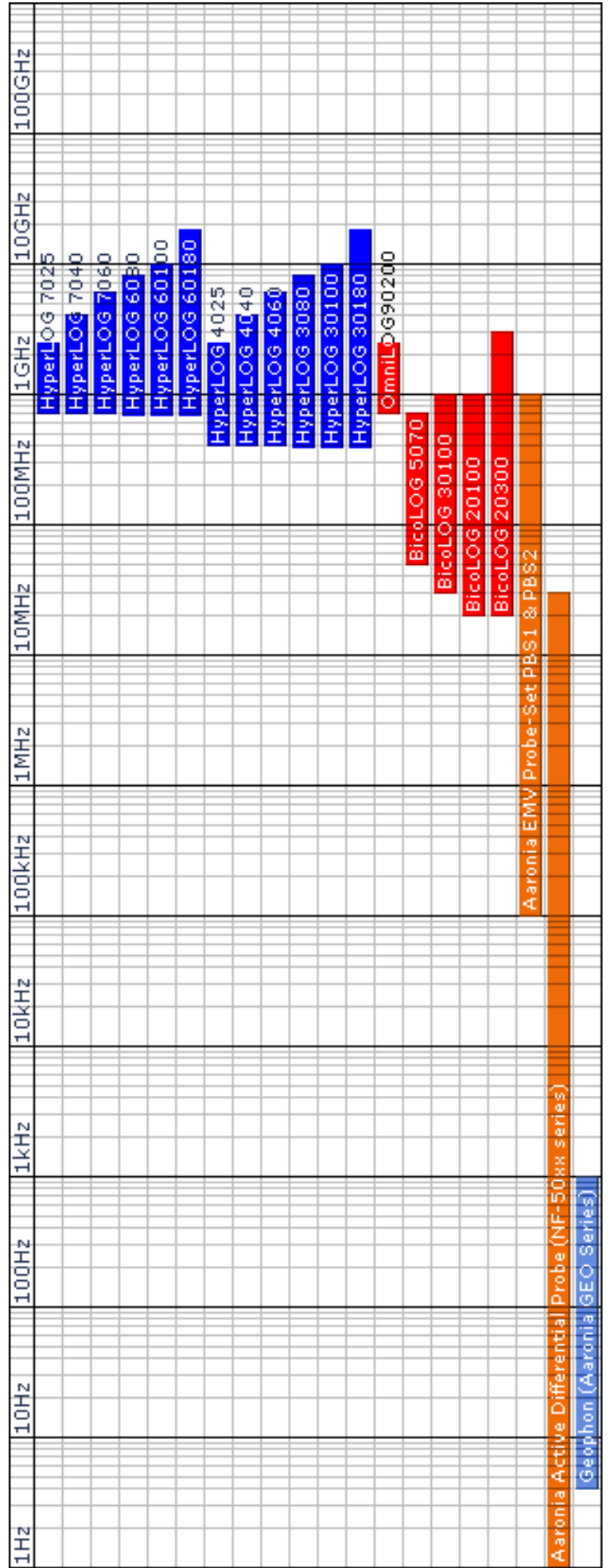
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# Frequency overview Analyzer & Antennas

Frequency Overview SPECTRAN Spectrum Analyzer



Frequency Overview HyperLOG and BicoLOG Antennas and Probes



# References

## User of Aeronia Antennas and Spectrum Analyzers (Examples)

### Government, Military, Aeronautic, Astronautic

- ◆ NATO, Belgien
- ◆ Boeing, USA
- ◆ Airbus, Hamburg
- ◆ Bund (Bundeswehr), Leer
- ◆ Bundeswehr (Technische Aufklärung), Hof
- ◆ Lufthansa, Hamburg
- ◆ DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart)
- ◆ Eurocontrol (Flugüberwachung), Belgien
- ◆ Australian Government Department of Defence, Australien
- ◆ EADS (European Aeronautic Defence & Space Company) GmbH, Ulm
- ◆ Institut für Luft- und Raumfahrtmedizin, Köln
- ◆ Deutscher Wetterdienst, Tauche
- ◆ Polizeipräsidium, Bonn
- ◆ Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- ◆ Zentrale Polizeitechnische Dienste, NRW
- ◆ Bundesamt für Verfassungsschutz, Köln
- ◆ BEV (Bundesamt für Eich- und Vermessungswesen)

### Research/Development, Science and Universitys

- ◆ Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern
- ◆ Universität Freiburg
- ◆ Indonesien Institute of Sience, Indonesien
- ◆ Max-Planck-Institut für Polymerforschung, Mainz
- ◆ Los Alamos National Labratory, USA
- ◆ University of Bahrain, Bahrain
- ◆ University of Florida, USA
- ◆ Universität Erlangen, Erlangen
- ◆ Universität Hannover, Hannover
- ◆ University of Newcastle, Großbritannien
- ◆ Universität Strasbourg, Frankreich
- ◆ Universität Frankfurt, Frankfurt
- ◆ Uni München – Fakultät für Physik, Garching
- ◆ Technische Universität Hamburg, Hamburg
- ◆ Max-Planck Institut für Radioastronomie, Bad Münstereifel
- ◆ Max-Planck-Institut für Quantenoptik, Garching
- ◆ Max-Planck-Institut für Kernphysik, Heidelberg
- ◆ Max-Planck-Institut für Eisenforschung, Düsseldorf
- ◆ Forschungszentrum Karlsruhe, Karlsruhe

### Industry

- ◆ Shell Oil Company, USA
- ◆ ATI, USA
- ◆ Fedex, USA
- ◆ Walt Disney, Kalifornien, USA
- ◆ Agilent Technologies Co. Ltd., China
- ◆ Motorola, Brasilien
- ◆ IBM, Schweiz
- ◆ Audi AG, Neckarsulm
- ◆ BMW, München
- ◆ Daimler Chrysler AG, Bremen
- ◆ BASF, Ludwigshafen
- ◆ Deutsche Bahn, Berlin
- ◆ Deutsche Telekom, Weiden
- ◆ Siemens AG, Erlangen
- ◆ Rohde & Schwarz, München
- ◆ Infineon, Österreich
- ◆ Philips Technologie GmbH, Aachen
- ◆ ThyssenKrupp, Stuttgart
- ◆ EnBW, Stuttgart
- ◆ RTL Television, Köln
- ◆ Pro Sieben – SAT 1, Unterföhring
- ◆ Channel 6, Großbritannien
- ◆ WDR, Köln
- ◆ NDR, Hamburg
- ◆ SWR, Baden-Baden
- ◆ Bayerischer Rundfunk, München
- ◆ Carl-Zeiss-Jena GmbH, Jena
- ◆ Anritsu GmbH, Düsseldorf
- ◆ Hewlett Packard, Dornach
- ◆ Robert Bosch GmbH, Plochingen
- ◆ Mercedes Benz, Österreich
- ◆ EnBW Kernkraftwerk GmbH, Neckarwestheim
- ◆ AMD, Dresden
- ◆ Infineon Technologies, Regensburg
- ◆ Intel GmbH, Feldkirchen
- ◆ Philips Semiconductors, Nürnberg
- ◆ Hyundai Europe, Rüsselsheim
- ◆ Saarschmiede GmbH, Völklingen
- ◆ Wilkinson Sword, Solingen
- ◆ IBM Deutschland, Stuttgart
- ◆ Vattenfall, Berlin
- ◆ Fraport, Frankfurt

# Visit us at the



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