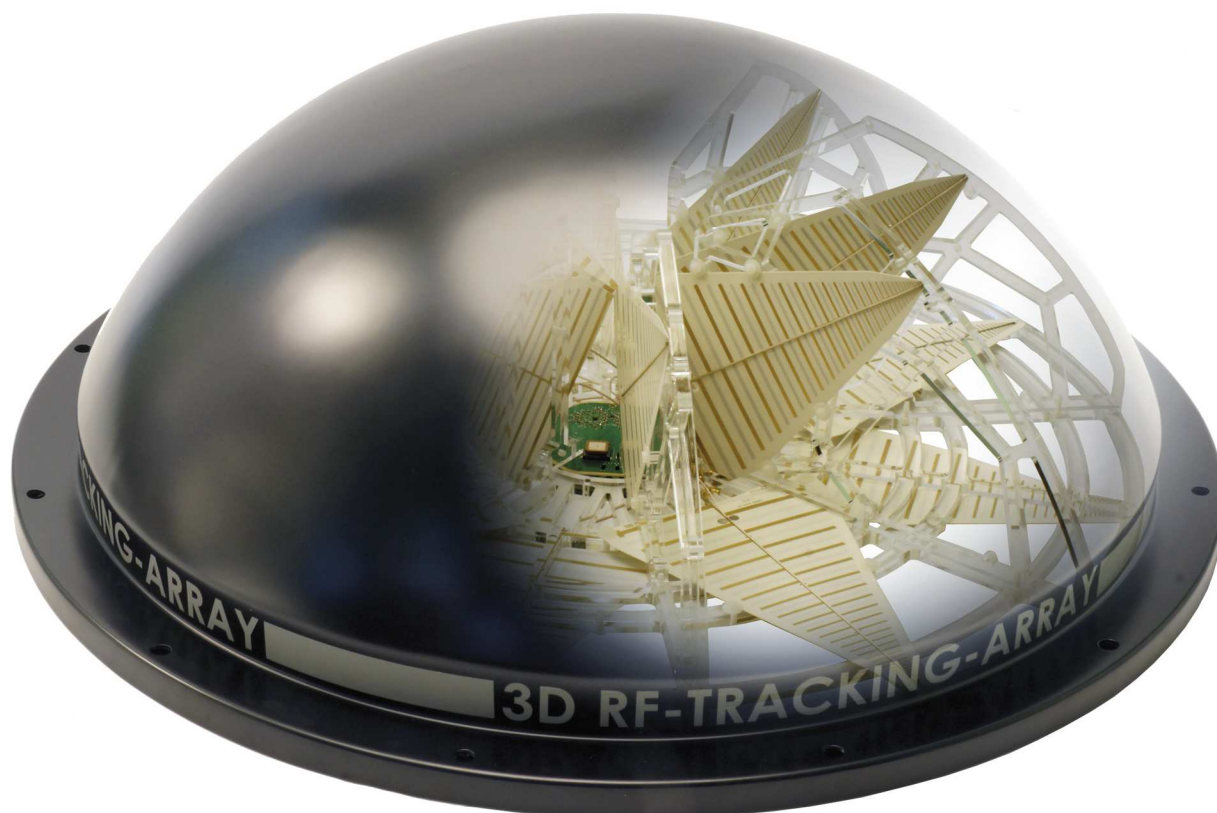


## 3D 360° Panorama Tracking Antenna

# IsoLOG 3D (9kHz - 40GHz)

Ultra Wideband, Real-Time Spectrum Monitoring and Direction Finding

Rev 1.1  
08.03.2016



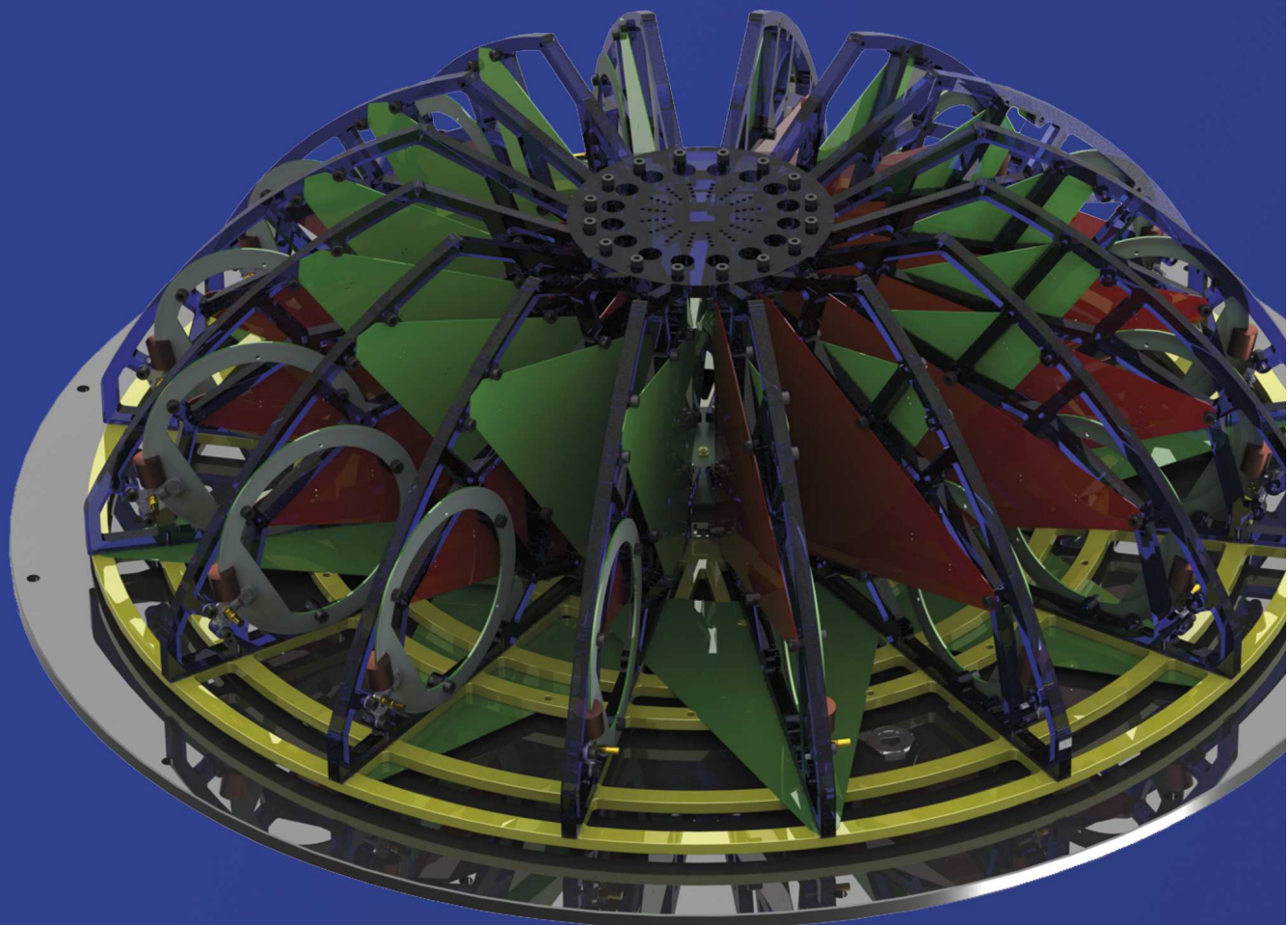
High tracking accuracy

Extremely fast tracking -speed (up to 1 $\mu$ s)

Incl. Control Software

# Highlights

- ✓ Worlds first 9kHz to 40GHz 3D Tracking-Antenna
- ✓ High Tracking-Accuracy (up to 22,5 Degree with 4x16 Sectors)
- ✓ Provide 360° coverage without mechanical rotation
- ✓ Super fast Tracking-Speed (up to 1μS)
- ✓ Very high IP3 of 40dBm (versions without pre-amp)
- ✓ Glitch free high-end digital RF-Switches (no mechanical parts)
- ✓ Suitable for Ultra-Wide-Band, Real-Time Spectrum-Monitoring
- ✓ Can be used as stand-alone or Multi-Device/Grid system
- ✓ Realtime Clock and opt. GPS
- ✓ Fully customizable, cascable system (16 to 64 independent antennas)
- ✓ Suitable for harsh environments (-40 to 60 Degree Celsius)
- ✓ Perfect for vehicle mounting (only 8-10 kg system weight)
- ✓ Easy to use PC Control-Software (via Ethernet) included
- ✓ PoE (Power over Ethernet) power feed (no extra power supply needed)
- ✓ Plug and Play: All parts incl. Cable, PoE and Software included
- ✓ 10 years warranty
- ✓ Made in Germany

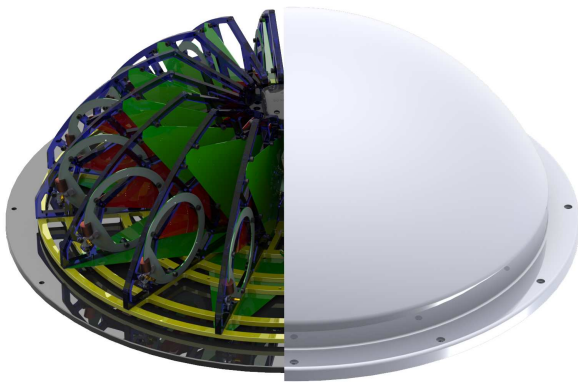


# Introduction

## Wide area Multi-Direction finding and RF Tracking-Antenna

Aaronia's IsoLOG 3D provides cost-effective high performance real-time signals monitoring, direction finding and geolocation for spectrum-critical areas.

The 3D RF Tracking Antenna includes a high density, customizable antenna array. A total of at least 16 and up to 48 tracking-antennas, for horizontal and for vertical polarization, can be integrated. Additionally 8 or 16 specialized low frequency antennas can be added to extend the frequency range down to 9kHz. In total up to 64 independent antennas can be equipped.



The antenna only needs a Power-over-Ethernet (PoE) connection for easy integration and control over any existing Ethernet-network. A powerful control software is included for free, for operation on Windows systems. The control software allows various tracking and selection setups, e.g. sweep all antennas horizontal or/and vertical, switch all in one sector and a powerful high speed „chopper mode“. This makes it the right tool to track signals in no time.

### Modular and flexible deployments

Each IsoLOG 3D is fully self-contained within a robust radome designed for hostile conditions. Close coupling of the IsoLOG and antenna modules reduces cable runs and cable losses and significantly improves performance at higher frequencies. Various directional antenna options are available from 9kHz to 40GHz.

Arrays can be networked over large distances as part of a wider monitoring network with other IsoLOG antennas.

### Class-leading accuracy and speed

The antennas and the electronic is protected by a included radom which can be ordered in any color and optional prints (standard color is black). The radom is watertight, shock- and heat-proofed to withstand even hardest conditions.

The perfect solution for counter-surveillance measurements or drone-detection-systems (unmanned air vehicle). The wide frequency range eliminates the need of various antenna setups to save space and system cost. This makes it usable for mounting on vehicles (e.g. drive test cars etc.) and for hidden operations. Looking like a satellite dish for camping vans the antenna is not recognized as a tracking antenna.

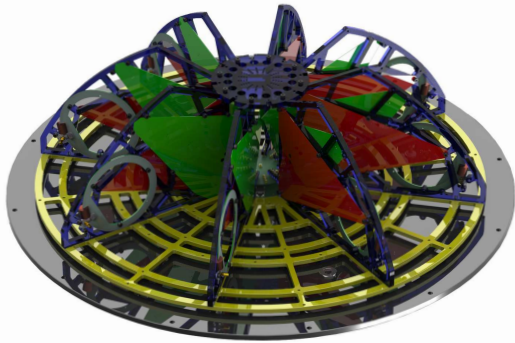
The IsoLOG 3D is sensitive to the majority of incoming signal polarizations including all linear polarizations, allowing reliable detection of signals including those invisible to most DF systems that use only vertically polarized antennas.





# IsoLOG 3D types & configurations

## IsoLOG 3D 80



**8 sectors with 16 antennas**

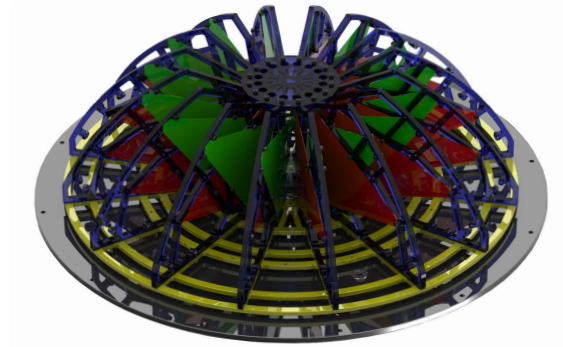
Frequency range: **680MHz** to **6 / 20 / 40GHz**

Frequency range	
Standard	680MHz to 6GHz
VLF Extender to 9kHz (option)	Yes
SHF Extender to 20GHz (option)	Yes
EHF Extender to 40GHz (option)	Yes

Additional Options	
Internal GPS receiver	Yes
Internal low noise pre-amplifier	Yes (included)
Customized color (RAL table)	Yes
4/8x horizontal LPDA's in addition	Yes

Mechanical & environmental	
Power	via included PoE adapter
Operating temperature	-30 to +60°C (-22 to 140°F)
Storage temperature	-40 to +70°C (-40 to 158°F)
Dimensions	950 x 950 x 300mm
Weight	4kg (8kg with mounting plate)
RF Output	N, SMA or SMP (50Ohm)
Warranty	10 years

## IsoLOG 3D 160



**16 sectors with 32 antennas**

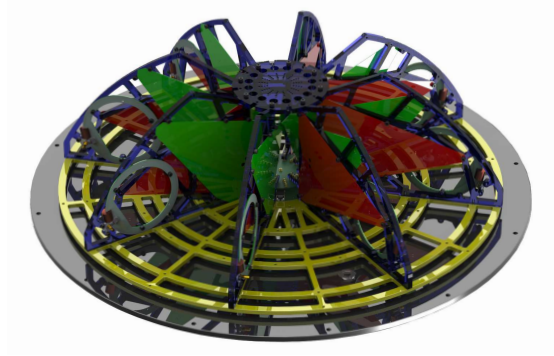
Frequency range: **680MHz** to **6 / 20 / 40GHz**

Frequency range	
Standard	680MHz to 6GHz
VLF Extender to 9kHz (option)	Yes
SHF Extender to 20GHz (option)	Yes
EHF Extender to 40GHz (option)	Yes

Additional Options	
Internal GPS receiver	Yes
Internal low noise pre-amplifier	Yes (included)
Customized color (RAL table)	Yes
4/8x horizontal LPDA's in addition	Yes

Mechanical & environmental	
Power	via included PoE adapter
Operating temperature	-30 to +60°C (-22 to 140°F)
Storage temperature	-40 to +70°C (-40 to 158°F)
Dimensions	950 x 950 x 300mm
Weight	6kg (10kg with mounting plate)
RF Output	N, SMA or SMP (50Ohm)
Warranty	10 years

## IsoLOG 3D 80-UWB



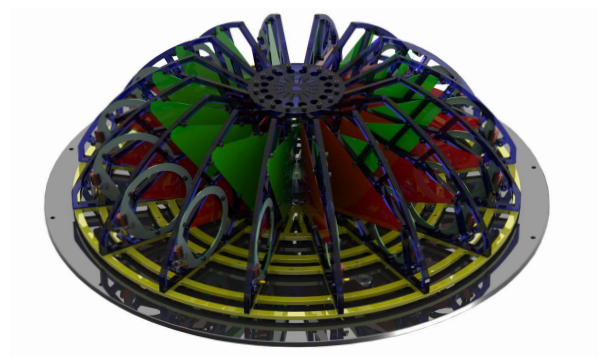
**8 sectors with 24 antennas**  
Frequency range: **9kHz to 6 / 20 / 40GHz**

Frequency range	
Standard	9kHz to 6GHz
VLF Extender to 9kHz (option)	Included
SHF Extender to 20GHz (option)	Yes
EHF Extender to 40GHz (option)	Yes

Additional Options	
Internal GPS receiver	Yes
Internal low noise pre-amplifier	Yes
Customized color (RAL table)	Yes
4/8x horizontal LPDA's in addition	Yes

Mechanical & environmental	
Power	via included PoE adapter
Operating temperature	-30 to +60°C (-22 to 140°F)
Storage temperature	-40 to +70°C (-40 to 158°F)
Dimensions	950 x 950 x 300mm
Weight	4kg (8kg with mounting plate)
RF Output	N, SMA or SMP (50Ohm)
Warranty	10 years

## IsoLOG 3D 160-UWB



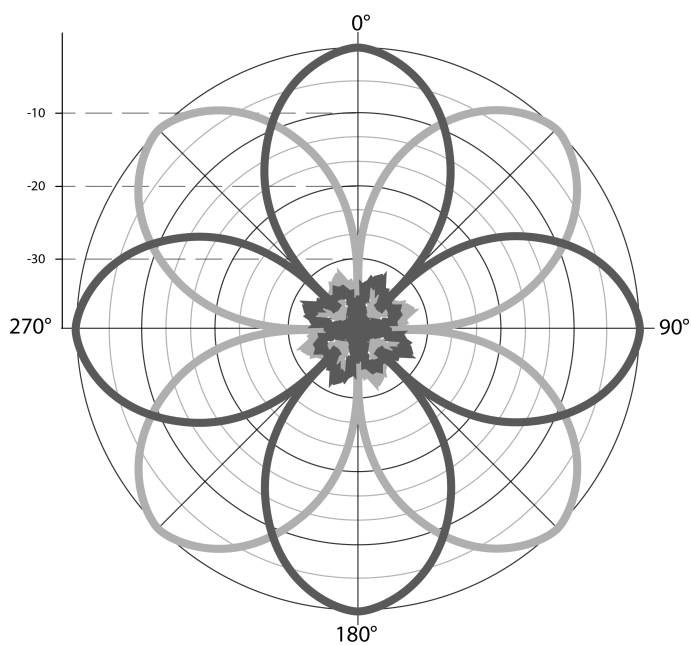
**16 sectors with 48 antennas**  
Frequency range: **9kHz to 6 / 20 / 40GHz**

Frequency range	
Standard	9kHz to 6GHz
VLF Extender to 9kHz (option)	Included
SHF Extender to 20GHz (option)	Yes
EHF Extender to 40GHz (option)	Yes

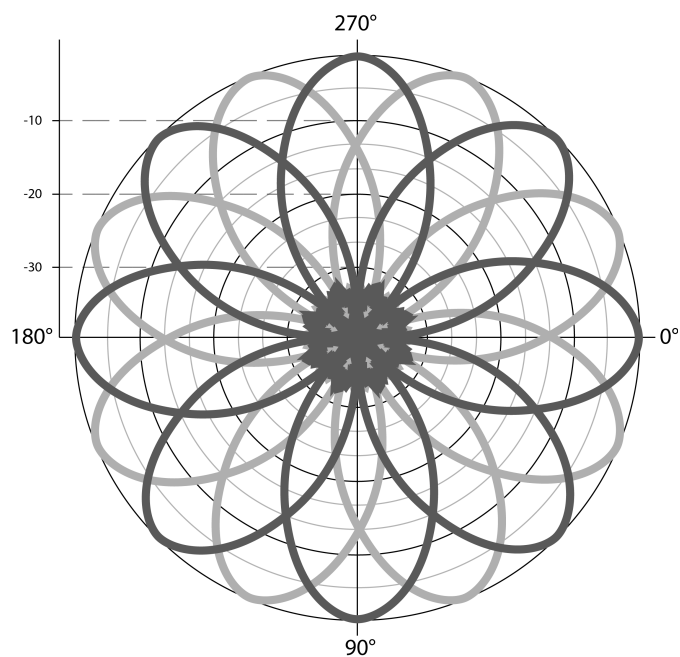
Additional Options	
Internal GPS receiver	Yes
Internal low noise pre-amplifier	Yes
Customized color (RAL table)	Yes
4/8x horizontal LPDA's in addition	Yes

Mechanical & environmental	
Power	via included PoE adapter
Operating temperature	-30 to +60°C (-22 to 140°F)
Storage temperature	-40 to +70°C (-40 to 158°F)
Dimensions	950 x 950 x 300mm
Weight	6kg (10kg with mounting plate)
RF Output	N, SMA or SMP (50Ohm)
Warranty	10 years

## Typical Antenna Pattern

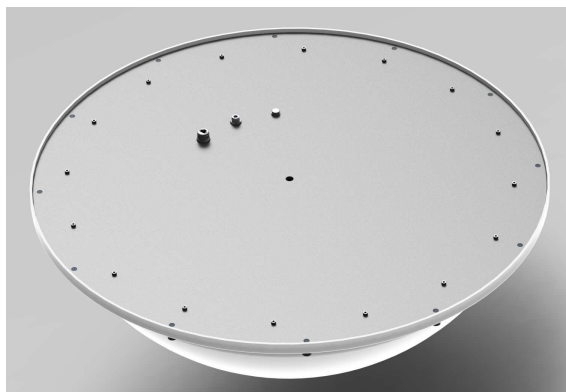


IsoLOG 3D 80 & 80 UWB



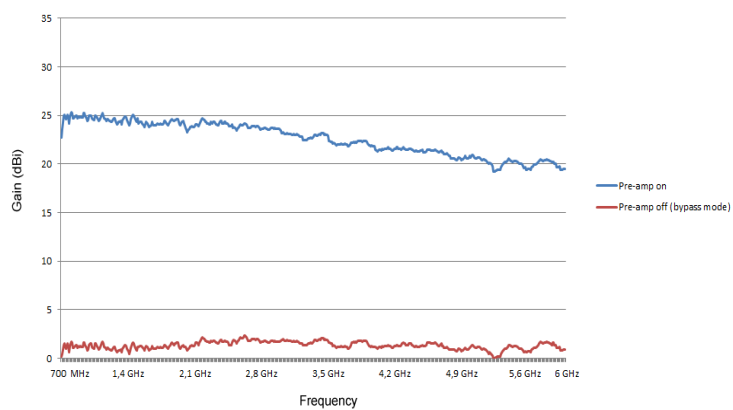
IsoLOG 3D 160 & 160 UWB

## Mounting Plate & Connectors



The picture shows the standard positions of the RF Output, Ethernet connector and mounting holes. The design of the antenna's mounting plate can be changed upon the requirements of the user.

## Typical Gain

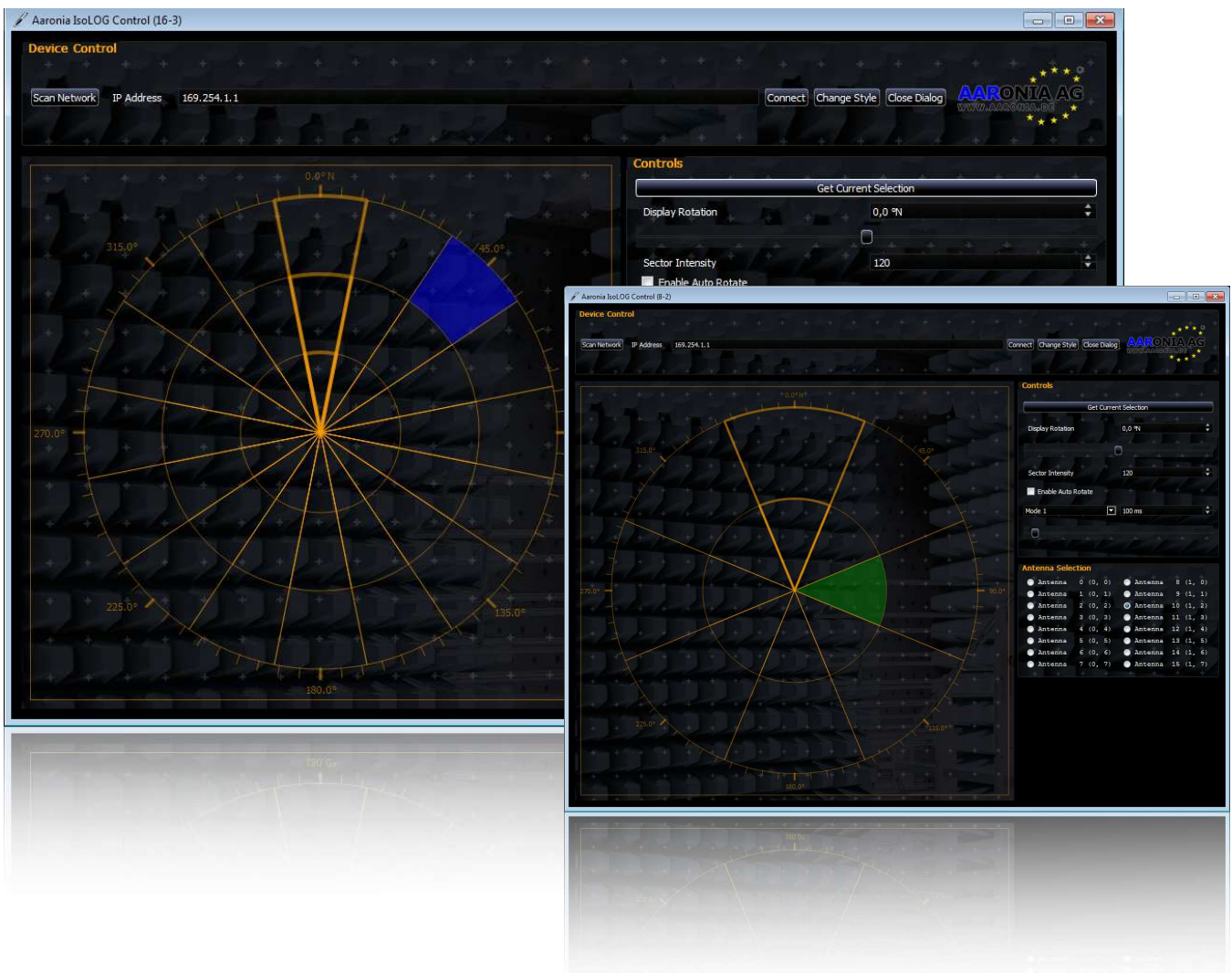


Above picture shows the typical gain of the IsoLOG 3D 80, with and without activated internal pre-amplifier.

# Control Software

## Real-Time Ethernet Switch-Software included

A easy to use Remote-Control-Software is included in the shipment and allows to control the Tracking-Array via any Windows PC with Ethernet-Connector. The powerfull software allows to manually switch between each antenna and/or sector (manually RF tracking). The software also includes a programable sector/antenna auto-rotate and a ultra fast „chopper mode“ for real time isotropic measurements over all antennas/sectors at the same time. The free adjustable switching speed allows even quite slow recievers to be used together with the IsoLOG 3D, but because of the possible high switching speed we recomend the usage of a Real-Time Spectrum Analyzer.



- ◆ Auto rotate with adjustable speed and super fast „chopper mode“ („omni-directional“ measurement)
- ◆ Fast and easy antenna/sector selection for manually RF tracking
- ◆ Switch between all sectors in almost real-time (vertical, horizontal, all)
- ◆ Pre-saved and adjustable profiles for specific measurement modes

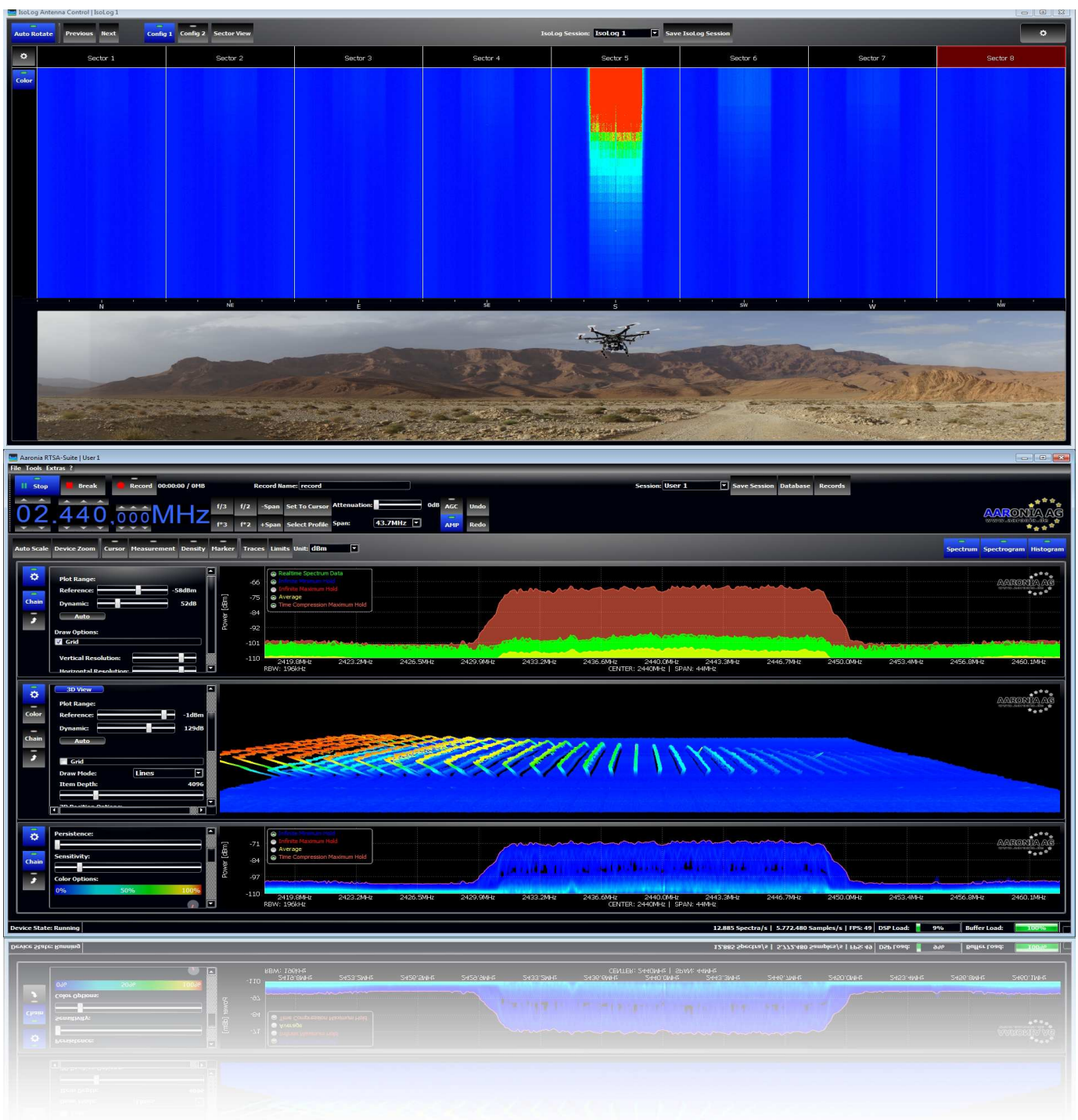


# Drone Detection System needed?

## RF & Drone Detector/Tracker System using the IsoLOG 3D

The IsoLOG 3D is also used as a part of our **Real-Time RF Spectrum-Monitoring-System**, a perfect tool for Drone Detection and Tracking. It includes a complete „ready to go“ package including the IsoLOG 3D antenna, 20GHz real-time analyzer/receiver, powerful outdoor PC or Laptop and a special Counter-Surveillance-Software. The software offers an intuitive layout combined with powerful tracking, trigger and display options helping to identify, capture and track any RF signal up to 20GHz.

Please contact us for further information about this system.





# 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
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- ♦ University of Sydney, Australia
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- ♦ 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

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