

DECODIO Localizer

HIGH-LIGHTS

- ➔ Multichannel hybrid TDoA/AoA localization capability
- ➔ Centralized control of multiple direction finders
- ➔ Compatibility with large number of receivers and direction finders
- ➔ Live map display and interactive operation
- ➔ User-friendly logging and visualization
- ➔ Seamless integration into Decodio's Spectrum Monitoring System

Decodio Localizer is an emitter localization solution and is part of Decodio's Spectrum Monitoring System. It uses signals from distributed, time-synchronized acquisition stations to determine the location of an emitter based on the time difference of arrival technique (TDoA), while at the same combining results from multiple direction finders for increased accuracy.

Multiple Decodio RED instances are used for signal acquisition in the Decodio Localizer system. They acquire a wideband RF signal and extract the narrowband signal of interest, which is then streamed over a TCP/IP connection to Decodio Localizer where the TDoA calculations take place. Remote control of the geographically distributed instances as well as data collection are performed entirely within the Decodio Localizer graphical interface.

Decodio RED natively supports direction finders from various manufacturers and offers an intuitive and easy-to-use interface to control them.

Thanks to the combined use of direction finders and TDoA, Decodio Localizer makes fast and precise emitter localization just a mouse-click away.

The simultaneous use of AoA-based direction finders and TDoA acquisition stations in Decodio Localizer combines the advantages of both techniques.

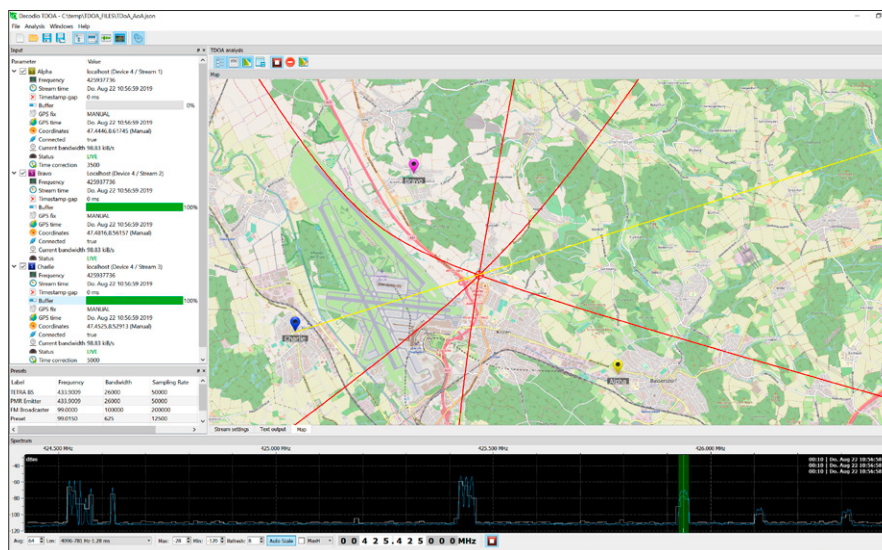
In this hybrid approach, one or more direction finders can be combined with one or more TDoA acquisition stations to form an advanced emitter localization system.

TDoA-based localization

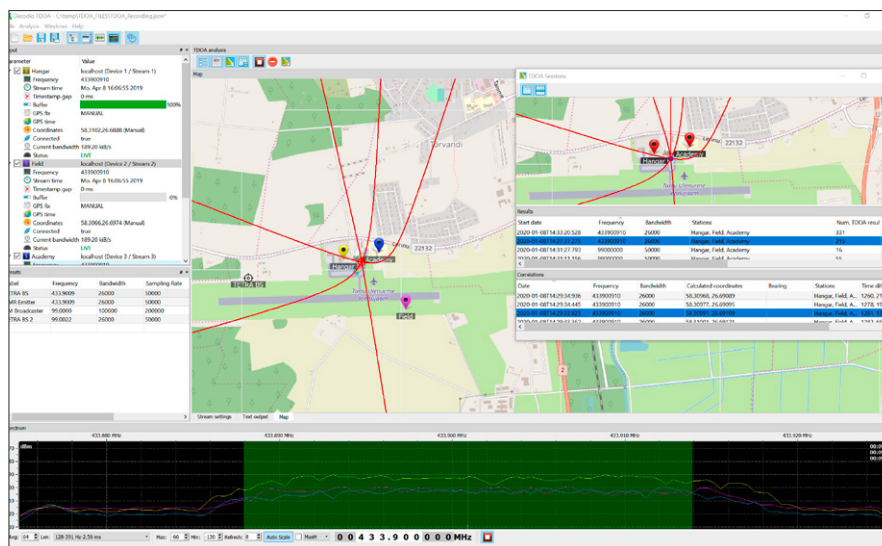
Decodio Localizer is used to control the remote acquisition stations running Decodio RED. It displays all the stations on a map, where they can be selectively enabled or disabled.

The data streams retrieved from the stations are time-aligned and correlated (based on signal level and burst detection) and the origin of the emission is estimated.

After a few measurements, a heat map is displayed on the map. All correlation results are stored in session files along with their corresponding hyperbolas and can be displayed on the map again.



Decodio Localizer with TDoA hyperbolas and AoA bearing



Live emitter localization with heat map and session-list

AoA-based localization

Supported direction finders are seamlessly integrated into Decodio RED and parameters such as center frequency, bandwidth, squelch, etc. can be easily changed in the graphical interface.

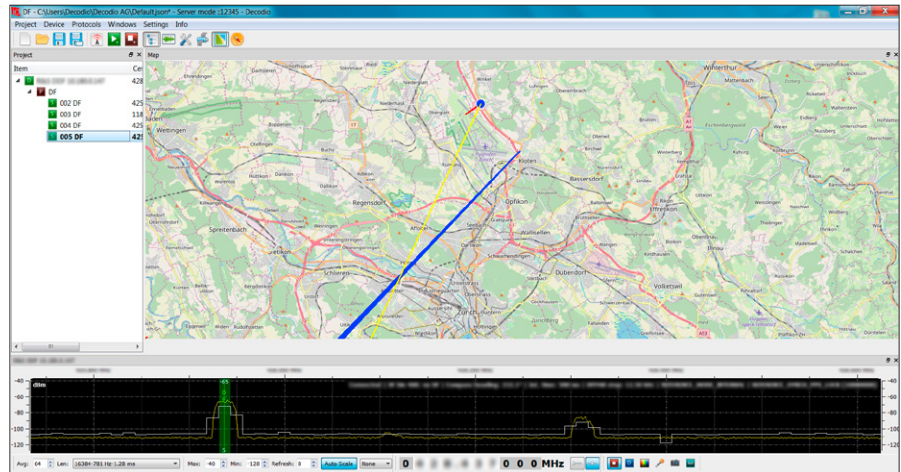
Where supported by the direction finder it is possible to use a combined IQ and direction finding mode to perform signal localization and decoding/analysis in parallel.

The bearing to the emitter as well as the antenna orientation and coordinates are retrieved from the direction finder and displayed on a map which can be customized by the user.

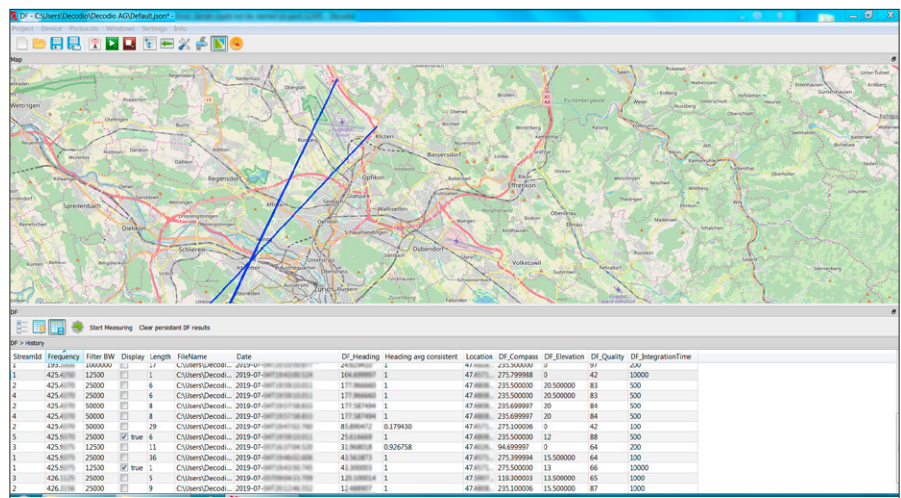
Decodio RED keeps all direction finding results in memory and can generate reports containing the full dataset.

By moving the direction finder and displaying both live and past results, the operator can easily pinpoint the origin of an emission at the intersection of the lines on the map.

If supported by the direction finder, multiple frequencies can be monitored, localized and displayed in parallel.



Live direction finder control in Decodio RED

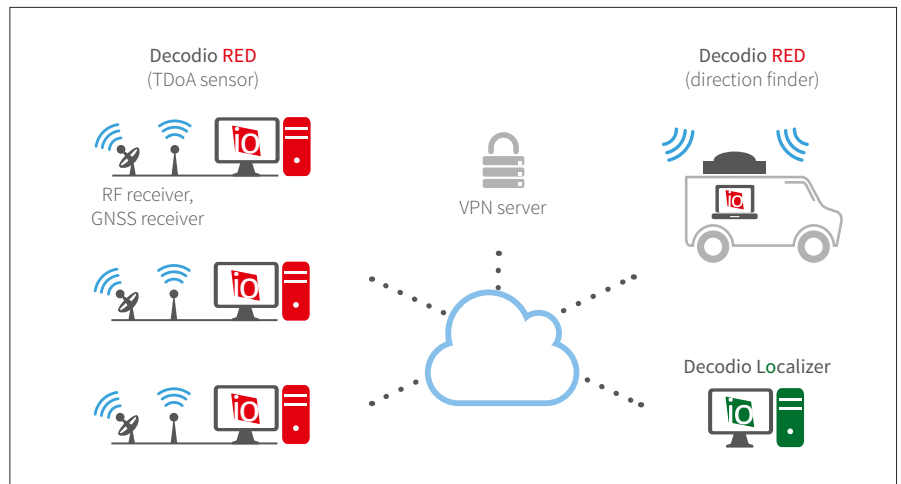


Display of past direction finding sessions to pinpoint the origin of an emission

Scalable localization network

Using Decodio Localizer, emitter localization systems of different sizes and with different capabilities can be deployed, ranging from a system of three acquisition sites monitoring a single narrowband channel, to large multi-site systems with many stations, several narrowband channels and additionally decoding, signal analysis and remote control capabilities.

In addition to the already supported direction finders, Decodio is able to integrate additional systems based on customer-provided interface specifications.



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