



Detect, analyze and localize RF signals

IDA 2

Interference Direction Analyzer

Triple precision: Detect anomalies, analyze signals, localize sources

The risk of RF interference arising from unintentional emissions and interactions has increased markedly due to the rapid growth in the use of wireless technologies. The IDA 2, with its innovative smartDF® technology, is ideal for tracing unintended, illegal or intentional interference as well as potentially dangerous signal sources.



Detecting suspect signals

The first task is to identify from the densely occupied RF spectrum those signals that are emanating from illegal sources or potential interferers. The more accurately these are detected, the less effort is needed for analysis and localization. Spectrum analysis is the basis for this in the IDA 2. This requires characteristics such as a high dynamic range, low noise, high frequency resolution and rapid recording.

Separate legal transmitters from interferers

Once the potentially suspect signals have been detected, they need to be analyzed. Those sources that are illegal or causing interference then have to be targeted and identified. Doing this saves wasting time tracing signals that later turn out to be known.

Quickly find the source

There are many factors that can make automatically determined direction-finding results appear both physically and statistically questionable. For example, other transmitters may often occupy the channel under investigation or the frequency being monitored. Reflections can also falsify the bearing result. The signal level of the source being traced will also vary depending on the measurement location. For this

reason, the IDA 2 does not simply display the pure bearing results. Rather, the results are evaluated intelligently and made available with all the measurement data, so that experienced users can avoid false bearings and improve the bearing results. This speeds up the final step of clearly establishing the location of the source(s) being looked for.

IDA2: Trace interference confidently with smartDF®

The Interference Direction Analyzer IDA2 has been specially developed to identify and localize interference, spurious signals, and unknown sources. True receiver qualities coupled with direct on site signal analysis make this groundbreaking handheld persistence monitor a universal instrument for reliable signal detection, analysis, characterization, and localization.

Efficient: I/Q analyzer with large bandwidth

Evaluating the recorded I/Q data offers possibilities that conventional spectrum analyzers cannot achieve. While still on site, the IDA2 can display different views of the measured signal, and can be switched between the time and frequency domains as needed. Even sporadic interference can be detected and analyzed reliably using the trigger functions and the digital persistence display.

Portable: Precision at its most compact

IDA2 brings new lightness to interference analysis: Tipping the scales at less than three kilograms, its safe, intuitive operation and compact, robust design incorporates technical features of the highest order. These include an extremely fast sweep rate of 12 GHz/s, high-resolution spectrogram with almost real-time resolution of 1 μ s, and a powerful persistence display.



The major IDA 2 advantages:

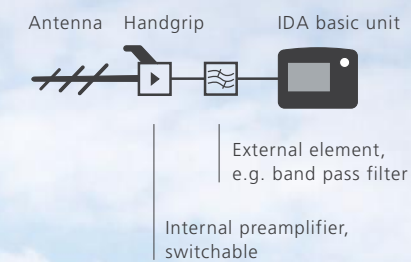
- ▶ Extremely fast measurement with a sweep rate of up to 12 GHz/s, so even very wide ranges can be monitored.
- ▶ Time resolution 32 ns, recording time up to 24 h. This ensures that even sporadic interference will be detected.
- ▶ Impressive measurement sensitivity with a noise figure of 7 dB. This increases the possible bearing radius to cover an area much greater than before.
- ▶ Reliable detection even of swamped interference and frequency hopping signals
- ▶ I/Q analyzer with real time trigger, spectrograms with time resolution as fine as 1 μ s. This ensures that even unusual signals can be detected and classified.
- ▶ Persistence display with digital persistence effect
- ▶ Built in GPS receiver and electronic compass
- ▶ Automatic localization by bearing triangulation with results displayed on a map
- ▶ Handy and light, weighs less than 3 kg

Many powerful transmitters – no problem for IDA2 with external filter

The Interference Direction Analyzer IDA2 is much more than just a normal handheld direction finder. It includes features that are otherwise only found in much larger systems. It is the device that gets straight to the source of the problem. It is specially designed to make invisible signals easy to see, not least by means of intelligent direction finding using smartDF®.

Intelligent direction finding with smartDF®

Narda has developed smartDF®, a special process that systematically localizes suspect signals, interferers, and RF leaks. The triangulation procedure simultaneously measures the angle and level and hence the distance from the interference source. This is a combination of AoA (Angle of Arrival) and PoA (Power of Arrival) algorithms. GPS and an active directional antenna with built in electronic compass all combine to enable rapid and effective source discovery and location display on a map. This is possible even under difficult conditions and for complex signal shapes, such as from broadband communications or pulsed or sporadic signals.



The overmodulation resistance of the preamplifier means that it is possible to insert a filter between it and the basic unit. The IDA2 can store all the relevant transfer factors in the signal chain, from the antenna conversion factor to the preamplifier, filter, external attenuators and RF cable, and takes them into account together with the transfer function of its input stage when displaying the results.



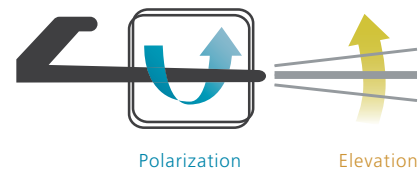
Exemplary: Interference analysis at major events

Trying to find the source of interference is like looking for a needle in a haystack, and can take a very long time – particularly if the equipment used isn't up to the job technically. Time is usually in short supply. Is the signal from an illegal transmitter, or from one that is just out of spec? Is it an industrial controller breaking through into an adjacent band? Or, just a poor contact somewhere in the wiring? Localizing interference and spurious signals in the RF region gets more and more complex as mobile communications become more widespread and ever more sophisticated forms of modulation are used.

Straightforward real time interference search

For example: When visitors are arriving for a major event, maybe when thousands of fans are waiting for the concert of the year, or when everyone is watching for the results of a sporting event, what do you do when interference suddenly occurs?

This is just the situation where the IDA 2 is at its best. Communications between portable terminals, from mobile relief teams or rescue services, or transmissions of result data – in all these areas and more, IDA 2 reliably and quickly finds, analyzes and localizes wireless signals and interference.



Position sensors in the handgrip determine the polarization and the elevation as well as the azimuth of the antenna.



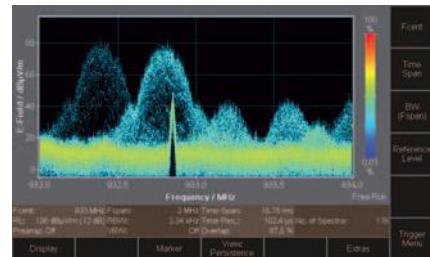
Measurements with the IDA 2 get straight to the point with its practical operating modes:

- ▶ Spectrum
- ▶ Direction Finding
- ▶ I/Q Analyzer (I/Q display, magnitude display, high resolution spectrograms and persistence spectrograms)
- ▶ Level Meter
- ▶ Multi-Channel Power
- ▶ Time Domain (scope, time characteristic)

Flexible: Always just what you need

IDA 2 combines a frequency scanner / receiver, transmitter detector, spectrum analyzer, signal analyzer and triangulation software in a single, portable device. As a result, it can be adapted to ideally meet your requirements, and the device functions can be expanded by means of "Application Packages" and accessories. The wide range of accessories also includes directional antennas with built in switchable preamplifier and electronic compass.

Persistence Spectrum



The **Persistence view** shows the incidence of a particular amplitude value at a given frequency in different colors. This makes it easy to spot sporadic signals. Interference that in other views is swamped by the wanted signal can be easily distinguished because of the color differences.

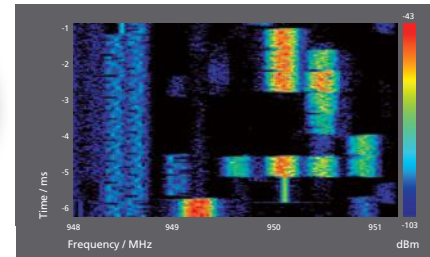
New standards: IDA 2 with Ethernet connection

The I/Q data captured by the IDA 2 provides a depth of analysis that was previously only available from very large laboratory instruments, now possible in a hand held battery-operated device that weighs less than 3 kilograms. The IDA 2 reveals weak or sporadic signals and interference that may be hidden behind stronger signals or variable frequency payload signals, now directly on site.

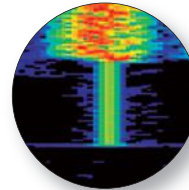


A wide range of external filters is available for situations where the IDA 2, despite its large dynamic range, might be "electronically dazzled" by a very strong emitter. These filters have a compact design and the matching Mounting Kit ensures that portable use of the IDA 2 is fully maintained.

High Resolution Spectrogram Zoom



The **spectrogram** allows an overview of the entire signal sequence that is captured. The color values indicate the signal levels. Up to 8000 spectrums are combined into one view in this way. Even the briefest of impulses in the microsecond range are reliably detected without interruption and displayed, and each individual spectrum can be examined in detail and evaluated using the marker functions.



Interference signal



Active antenna handgrip



Ergonomic: More than just a handle

The extremely light, ergonomically formed handgrip complements the low weight of the IDA 2 perfectly. It includes a switchable preamplifier, electronic compass and position sensors. It also automatically detects the antenna type and the polarization of the antenna that is attached to it. To save weight, the power supply is drawn from the basic unit through the control cable.

Dead accurate: Antennas for every frequency range

IDA 2 covers a wide frequency range. Four interchangeable antennas, each optimized for its particular frequency range in terms of sensitivity and directional characteristic, ensure excellent direction finding accuracy. All Narda antennas are notable for their low weight and robust construction. The universal antenna adapter also allows antennas from other manufacturers to be used.

The Application Packages match the IDA 2 flexibly to your requirements:

- ▶ **Antenna Basic Kit:** Antenna set for the frequency range 400 MHz to 6 GHz (e.g. cell phone signals)
- ▶ **Antenna Extension Kit:** Expands the frequency range to cover 9 kHz to 500 MHz
- ▶ **Off-Site Extension:** Accessory set for outdoor and in-vehicle applications
- ▶ **Receiver:** Expands the IDA 2 with a wide range of receiver functions
- ▶ **I/Q Analyzer:** Expands the IDA 2 with comprehensive signal analysis functions
- ▶ **Direction Finding:** Expands the IDA 2 with intelligent direction finding and localization functions

Our online "Signal Guide" tool gives you an overview of wireless services and the modulation types using typical signal scans recorded with the IDA 2.



signals.narda-sts.com





Leaders in EMF Measurement

Narda, worldwide leaders in measurement technology

Established in the year 2000, Narda Safety Test Solutions GmbH is part of L3 Technologies, New York. We are active in the fields of RF safety, RF measurement and EMC. Narda is among the world's leading suppliers in all of these fields, and only develops solutions that are tailored to our clients' applications. Our worldwide network of sales partners ensures close contact with our customers.

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