

24.2 A shark in camouflage

Stop imagining things, please. Defense is serious business.

Can the SignalShark be useful to our armed forces? You might immediately think of the Navy when sharks are mentioned (although sharks and sailors don't mix).

Actually, the **SignalShark** is capable of doing its thing in all branches of the military.

In other words, it's a fish for all seasons. Read all about it in **Military Technology** magazine.



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The SignalShark detects, analyzes, classifies and identifies RF signals between 8 MHz-8 GHz. Image: Narda Safety Test Solutions GmbH



Holger Schwarz and Thomas Grottel

Electronic Intelligence: The Power of Spectrum Analysis

Electronic warfare (EW) battalions support friendly forces by providing information about the opposing side. These highly specialized army teams are also tasked with disrupting enemy strategic communications, while protecting their own. New information technologies, and increasing digitalization, have resulted in a constant increase in the demands placed on EW units. In this context, the use of modern, powerful spectrum analyzers can provide decisive advantages.

Networked Operational Command
One of the principal aims in EW is intelligence superiority. Military action today is generally characterized by complex missions, planned over long distances, within a multinational environment. Success or failure depends to a large extent on the ability to exchange information quickly and securely, and to transmit signals unaltered between entities, including intelligence, command and active systems. To increase military impact, radio channels must be secured to prevent enemy EW units from capturing and jamming signals. One protective measure is to determine how exposed field command posts or radio transmitters are, by ascertaining their electromagnetic fields (EMF). Armed with this knowledge, measures can be taken to minimize field emissions, to make them as invisible as possible to the enemy.

Spectrum Analyzer and Receiver
The SignalShark family of instruments from German RF test and measurement specialist Narda Safety Test Solutions, amply demonstrates the potential for modern spectrum analyzers in military applications. All instruments in the range have identical measuring engines and are equipped with an onboard computer. Developed according with size, weight and power – cost (SWaP-C) criteria in mind, the differences lie only in the principal areas of application. They detect and analyze, classify and localize

Special Feature

RF signals in the 8kHz-8GHz frequency range (see Table 1). These three commercial-off-the-shelf (COTS) components offer optimum performance in terms of speed, real-time bandwidth, dynamic range, and sensitivity. The range includes a compact, real-time bandwidth Spectrum Analyzer and Receiver, suitable for both stationary and mobile use. This is accompanied by the Remote Unit, a remote-control version for centrally-controlled monitoring of systems spread over a large area or separated by long distances. The new Outdoor Unit can be mast-mounted and used for unattended 24/7 autonomous monitoring in the open, with power supplied from a solar panel. This unit is anything but a passive receiver: it can evaluate data, using the built-in intelligence common to the entire family. This has the advantage that the Outdoor Unit does not lose a continuous monitoring operation with data, as it only transmits captured data that has been previously defined as relevant – transmitting it to the command centre automatically.

Onboard Computer and Open Platform
These RF measuring instruments feature an integrated computer running Windows 10, with all the flexibility that this operating system offers. This means that operators can analyze, record, visualize and export measurement results immediately, while still in the field. Everything needed for the mission exists in the robust Handheld Unit, with integrated antenna – no separate PC is required.

The SignalShark is designed as an open platform, meaning it only uses standard protocols, such as SCPI (for remote control), VITA49 and PYTHON. Narda offers open interfaces, and cooperates with practically all the large systems manufacturers. For individual services or special functions, it is possible to load customer-defined, manufacturer-independent software packages onto the spectrum analyzer in order to, for example, decode or save data on enemy communications. Also, operators can connect additional sensors, test modules, or modems to the USB 3.0 host, depending on task requirements. Since the operating system is Windows, the necessary drivers will usually be present.

Intercepting Enemy Communications
The SignalShark's open platform – together with appropriate software such as Decodio or Prolicec – allows direct signal analysis of enemy digital communications, from classification through decoding. This means that captured information can be used and evaluated right there and then, also using the onboard computer. Data does not need to be transmitted from the receiver back to a command centre for evaluation. Since the enemy can gain information about the operator's position as soon as a message is transmitted, this offers real tactical advantage.

High Dynamic Range
A high dynamic range takes on special meaning when it comes to localizing interference signals, because the actual interference is often only weakly received. The enemy will often choose a location surrounded by



The ADPA 2 uses complexive dual arrays, rack with nine antenna elements, and a central omnidirectional reference antenna.

If you find reading rather dry and you would prefer to immerse yourself in the experience of testing the **Narda SignalShark** for yourself, get in touch with your **Narda sales partner**. Prepare to be impressed!

Software updates + data sheet:

An new update for the Area Monitor [AMB-8059](#) software is available [here](#) on the Narda website.

The data sheets for the [AMB-8059](#) and the [AMB-8059 CMK](#) have also been updated and are available for download from our website.

There is also a new software update for the selective Area Monitor [AMS-8061](#), which you can find [here](#).

A new data sheet with all the important information about the compact Field Measuring Sensor [EHP-200](#) is now available [here](#).

Note: You must register on the website in order to download software.

Instrument demonstration:

If you would like a demonstration of these or other Narda products, contact your local [Narda sales partner](#) and ask for the opportunity.

Seminars:

The [seminar "Exposure measurements on wireless transmitters with the SRM-3006"](#) is aimed at beginners, more experienced, and professional users in the field of selective measurement. Register for this seminar now [here](#). You can also ask our [sales partners](#) about individual seminar dates. The next date is April 19 – 21, 2021.

Want to keep up with the latest news? Check regularly for further updates at Narda [here](#).

