



**Spectrum Defender®**

## CUSTOMER APPLICATIONS

# From Concept to Capability in 18 Days

**ONE OF THE U.S. Navy's most advanced research labs explores the intersection of cryogenics, quantum mechanics, and RF signals.**

This expert team of scientists is tasked with identifying and exploring novel phenomena in device physics, playing a crucial role in maintaining the U.S. Navy's strategic edge over our adversaries.

This team identified a need for a turnkey RF recorder that was capable of the highest fidelity and the best RF sensitivity. There was only one problem: only

four weeks remained until the end of the fiscal year when the funding earmarked for this equipment would expire.

## Problem Background

As their tight deadline quickly approached, the team had concerns that the other RF recorders they were evaluating had functionality that was too rigid and fixed, and it would not be possible to modify the instruments' behavior in the future as research led to new areas of exploration.

Traditional vendors offered box instrument solutions with a very specific list of measurements. But as a niche R&D lab with ever-evolving requirements, they valued adaptability, expandability, and scalability, but also needed a solution that would just start testing.



## Key Engineering Requirements

- 1 – Adaptable turnkey solution.
- 2 – Best-in-class RF sensitivity.
- 3 – Tuning range from DC to microwave.
- 4 – Scalable to additional channels and storage.

## Discovering the Solution

The Navy approached Spectra Lab and gave four weeks to deliver a single-channel RF recorder. Spectra Lab and the Navy jointly identified the RF instrument that best matched the project goals, recording conditions, and anticipated RF challenges that the Navy was likely to encounter. In Spectrum Defender®, they discovered instrumentation that retained the flexibility of the National Instruments (NI) hardware while offering the out-of-the-box, turnkey solution they needed.

In order to meet this deadline, Spectra Lab leveraged its long-standing relationship with NI to ensure the supply chain was primed to expedite the delivery of hardware. Working with a niche business within the defense marketplace facilitated a faster process than conventional project bidding allows. Not only was the required turnaround time met, Spectra Lab was able to exceed it by five days.

## Ready to Just Start Testing

In just 18 days, Spectra Lab designed and delivered Spectrum Defender Model 3823. The 3823 used NI's flagship VSA and NI's brand new solid state disk array PXIe-8267. The instrument was ready to use out of the box—without the need for extensive factory training.

The Navy acquired the most capable test instrument available in the marketplace within an incredibly small time frame. Upon delivery, the R&D team found the user interface intuitive and quickly became comfortable with the instrument operation. With this short learning curve, the team immediately began

collecting recordings in the real-world environments, analyzing the data, and presenting their findings to their colleagues in the research community.

## Find Your Turnkey RF Solution


With over 20 years of RF recording experience, Spectra Lab designs instruments with multi-channel RF signal acquisition and reproduction functionality. Our typical customer has a specialized test need which cannot be met by conventional RF instruments.

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Spectrum Defender belongs to a new class of instrumentation compared to legacy RF spectrum analyzers. We have an existing platform, an existing code base, that's uniquely designed for simple adaptations and modifications. Without the risks associated with a full-custom design, we deliver an exact fit for your application.

Contact our experienced engineering team at **703-634-5290** to tell us what measurements you'd like to perform immediately, without any programming. **We're here to help design the time-saving solution you need to just start testing.** 



MODEL SD-3823



## Spectrum Defender®

Spectra Lab, LLC  
17873 Main Street, Suite C  
Dumfries, VA 22026 USA

**P** 703-634-5290 | **E** [info@spectralab.com](mailto:info@spectralab.com)  
[spectrumdefender.com](http://spectrumdefender.com)

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