



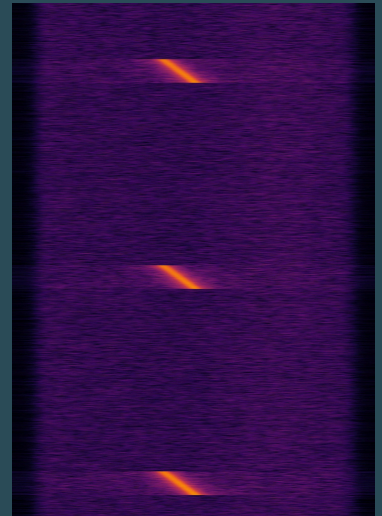
Real-Time SAR Satellite Activity Detection

The proliferation of SAR (Synthetic Aperture Radar) satellites has fundamentally changed the surveillance landscape. With a growing number of commercial and military SAR constellations in orbit, sensitive sites, military installations, and critical infrastructures are now subject to persistent overhead observation, often without the knowledge of those being monitored. The ability to detect and anticipate SAR imaging activity has become a strategic necessity for defense and security stakeholders.

What is SARShield

SARShield is a compact, automated RF spectrum monitoring system designed to detect and characterize SAR satellite imaging activity in C and X bands. Built on a robust architecture combining a wideband spiral antenna, an RF digitizer, and a software-defined radio processing chain, it enables continuous radar spectrum monitoring to identify emissions characteristic of synthetic aperture radar imaging systems.

By correlating signal characteristics with space object databases, SARShield delivers timely and actionable RF Space Situational Awareness, supporting authorities and security stakeholders in assessing surveillance exposure, protecting sensitive sites, and maintaining operational discretion.



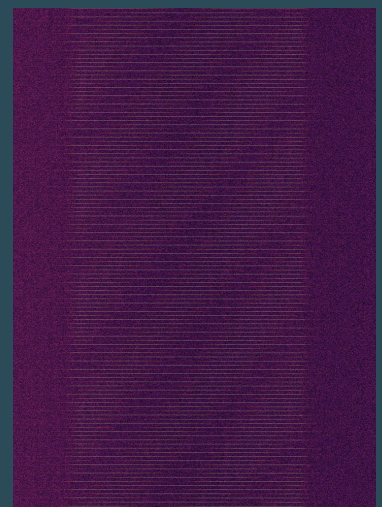
Objectives

- Detects and characterizes SAR imaging attempts over sensitive sites
- Provides dedicated RF SSA capabilities focused on radar satellites
- Enables early warning of both known and unknown SAR platforms
- Improves protection and monitoring of critical infrastructures

Targets

SARShield is designed for organizations requiring reliable and sovereign RF surveillance capabilities:

- Government agencies & regulatory authorities
- Operators of sensitive sites & critical infrastructures
- Armed forces



Technical Architecture

- Wideband spiral antenna (L, S, C and X band coverage)
- Dedicated RF digitizer Modular software-defined radio
- processing chain Proprietary detection & classification algorithms

Thanks to the use of COTS components and a modular software processing chain, SARShield can be rapidly deployed and adapted to specific operational requirements.



How It Works

When a signal is detected, SARShield correlates the observation with space objects visible at the time of detection to identify the most probable satellite, relying on both orbital geometry and chirp signal analysis.

The system automatically classifies chirp signals to provide information on the SAR satellite's operational mode and the resolution of the acquired image. Emissions that do not match any known satellite are categorized as unknown objects, enabling the detection of new platforms or unusual activity. Classification techniques leverage proprietary algorithms initially developed for RF interference detection and classification in telecommunication constellations.

