

## RFeye StormCase

Mobile spectrum surveillance,  
interference hunting and RF monitoring  
in a rugged man-portable system





# RFeye StormCase



## AUTONOMOUS

Fully autonomous operation in headless mode. Silently, relentlessly running expert defined in-field missions.



## SACRIFICIAL HARDWARE

All user accessible connectors are designed to be replaced without interfering with the core system.



## LOW SWAP

Weighs just 14kg, and low power use ensuring minimal need for cooling.



## RF PERFORMANCE

High performance RF receiver delivers 9kHz to 18GHz low noise capture with IBW up to 100MHz.



## SOLID STATE STORAGE

High-speed, enterprise-class SSDs deliver multi-hour data capacity for automated or managed missions.



## LOW FATIGUE

A carefully balanced and weight managed interior assures even distribution reducing carrier fatigue.



## STANDARD MIL POWER

Standard military Li-ion battery packs can be easily configured for extended use and to allow continuous external hot swapping.



## MIL SPEC I/O

Built to withstand rugged missions, internal and external i/o is lab grade rugged and/or mil spec.



## COOLING & FILTRATION

Dust-proof duct with high efficiency thermostat controlled IP68 fan units. Fully field serviceable.





# Configure . Deploy . Capture . Retrieve

The RFeye® Stormcase is a man-portable ruggedized integrated system designed for easy mobile RF spectrum monitoring, signal collection and interference hunting. Built into a tough stormcase, the system incorporates an RFeye Node 100-8 or 100-18, internal and external antenna ports, high performance standard military rechargeable battery and integrated SSD memory for high volume data collection during mobile field operations.

Key to the RFeye Stormcase is its ability to run in a 'headless' mode. This 'headless' operation allows signal experts to configure missions in advance either directly connected to the unit or remotely. Deployment operatives simply switch the unit to ENABLE to set the mission running. For security, this switch features a trigger guard to prevent accidental operation or cancellation

The RFeye Stormcase continuously monitors, captures and records mission parameters out in the field ready for the unit's retrieval and subsequent data analysis, making it ideal for non-expert deployment.

## Applications

The RFeye Stormcase is suitable for a wide range of field deployable applications, where rugged form factor, portability and high signal fidelity are essential.

### RF baseline for TacOps

RF spectrum usage may vary significantly from place to place, hour to hour, and even day to day. Therefore it is impossible to establish a realistic signal baseline without long-duration spectrum monitoring. The RFeye Stormcase makes this simple, combining portability with hours or days of measurement capability across a wide bandwidth. This allows signals intelligence (SIGINT) analysts to obtain a reliable estimation of spectrum usage prior to commencing tactical operations (TacOps). It is also ideal for rapid site surveying and collection, even in populated areas.

### Tactical signals collection

Where fixed monitoring is hard to achieve due to terrain, usage or transient threat, the next best option is drop and go. A single RFeye Stormcase positioned along a border will deliver continuous monitoring and triggered capture of signals in use. When three or more are deployed, you get the added benefit of geolocation to monitor transmitter movement and source.

### Vehicle-based SIGINT

Thanks to its compact size and low power requirements, RFeye Stormcase can be deployed in vehicle for SIGINT collection and live analysis. RFeye Stormcase will capture at full rate from 9kHz up to 8GHz/18GHz. Because it can be pre-configured, or remotely operated, signals experts do not need to accompany the vehicle to complete their mission. Furthermore, a single signals expert can operate and interact with multiple units in multiple locations, all in real-time.

### Temporary facility security

From defense applications through to major sporting events, RFeye Stormcases deployed around a site's perimeter will allow you to see what's inside and outside of your area of interest. This could be for security reasons, or to protect other equipment being used inside a facility boundary.

### Interference hunting Strategy

Identifying transient signals which cause interference is a difficult task. The ability to deploy RFeye Stormcase for temporary continuous monitoring means the next time the interference occurs, you can identify the source instantly and prosecute as required. No manned direction finding required. The same system can then be re-deployed to a new site for a new mission.

### Field engineering & testing

The real-world environment can be full of surprises and unusual signals. Understanding what's around you and what signals you produce is an essential part of testing a product capability. From automotive through to radar and satellite communications, live RF monitoring is a critical consideration in the development cycle. The rugged RFeye Stormcase is the ideal system for such field testing.

### Search & Rescue

In emergency scenarios, the ability to deliver intelligence quickly and flexibly can mean the difference between life and death. Hunting for energy in desolate environments, post-avalanche or earthquake can help you find signs of life quickly and accurately over large areas.

### Networked Solutions

RFeye Stormcases can also be deployed as rugged and portable networked nodes as part of RFeye solutions for counter UAV (RFeye DroneDefense), passive aircraft tracking (RFeye AirDefense) and Technical Surveillance Counter Measures (RFeye Guard) deployments.





# Connectivity

## Networking options

The RFeye Stormcase can be networked along with other nodes and managed remotely allowing for remote operation by an expert and to provide real time data from any part of an operational area. The backhaul can be wired or delivered via a wireless network. Battery systems can be provided that are hot swappable. The unit can also be controlled directly through a laptop to respond quickly to any changes in monitoring plans.

## Data rate

When you need live intelligence, it's often only possible via temporary/pop-up networks, so keeping network requirements to a minimum becomes critical. Data throughput from RFeye stormcase to remote operators is extremely light weight as the heavy analysis happens in real-time on the unit. Typically, data throughput even with live spectrum graphs will be between 400Kb/s and 1Mb/s depending upon the task at hand.

## Antenna options

RFeye Stormcase provides 3 antenna ports for use across wide frequency ranges. Presented via IP67 weatherproof connections, each antenna may be specific to your particular application. Dust caps make sure your ports stay clean and dry while fixed chains prevent accidental loss.

## Power

RFeye Stormcase comes with internal standard military Li-ion, hot-swappable batteries. External mains supply, battery or wind/solar all supported via weather-proof locking connector.

## GPS

Internal or external GPS antennas are supported, as standard. A GPS antenna is built in. Standard RFeye Stormcase also supports GPS holdover allowing it to operate in GPS denied environments.

# RFeye Stormcase 100-18 Specifications

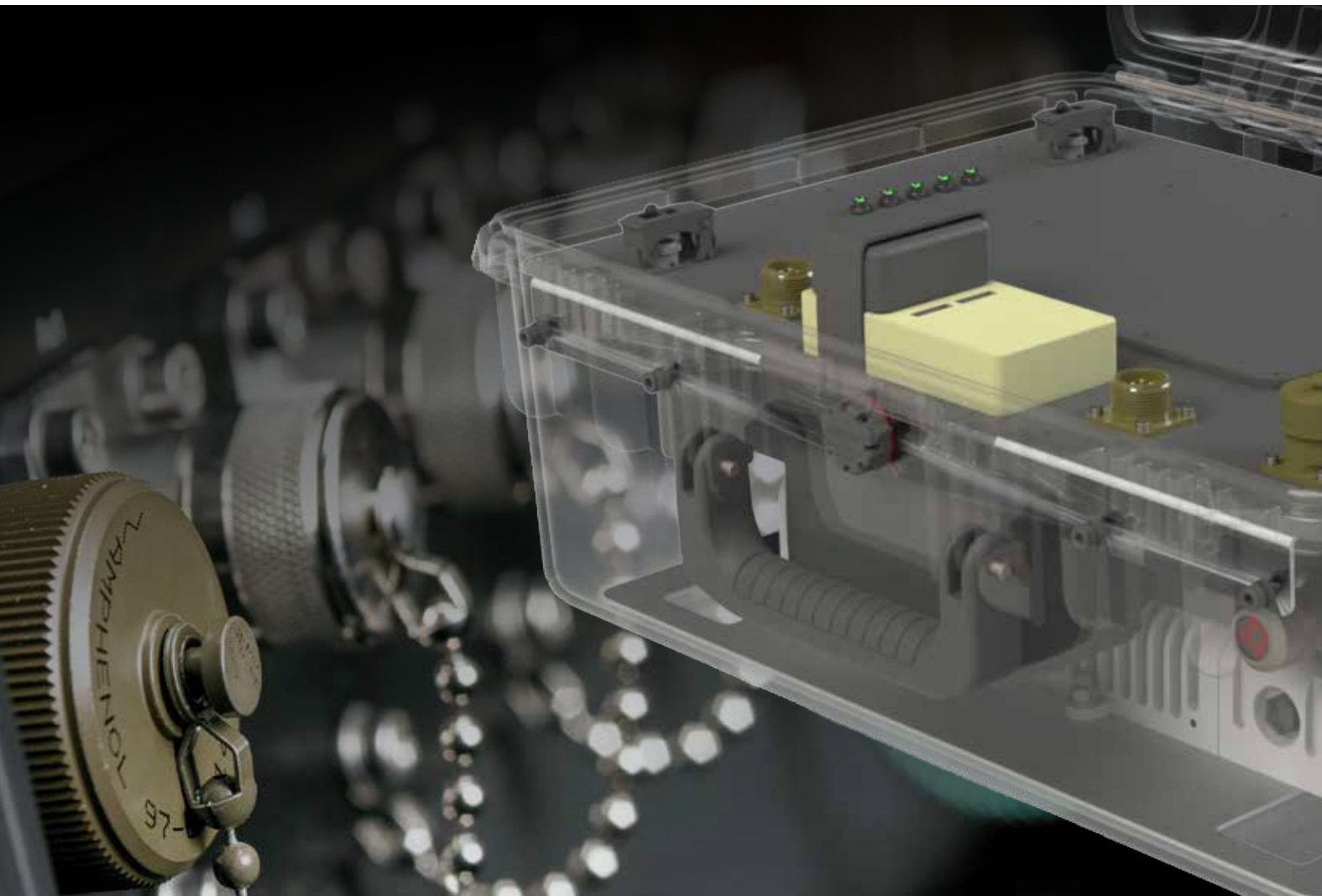


RFeye Stormcase is available with a choice of RF receiver capabilities as per RFeye Node 100-8 and RFeye Node 100-18. Further options include SSD capacity from 256GB (standard) to 1TB. Case color options include Black, Tan, Green, Orange.



<b>Receiver</b>	
Integrated receiver	1 x Node 100-18
<b>Frequency</b>	
Range	9 kHz to 18 GHz
<b>Noise figures at maximum sensitivity</b>	
9 kHz to 0.12 GHz	12 dB typical
0.12 GHz to 6 GHz	8.5 dB typical
6 GHz to 10 GHz	10.5 dB typical
10 GHz to 18 GHz	13 dB typical
<b>Phase noise</b>	
Receiver input at $\leq 0.5$ GHz	$\leq -125$ dBc/Hz at 20 kHz offset
Receiver input at $> 1$ GHz	$\leq -115$ dBc/Hz at 20 kHz offset
<b>Signal analysis</b>	
Instantaneous bandwidth	100 MHz
Tuning resolution	1 Hz
<b>Internal frequency reference</b>	
Initial accuracy @ 25°C	$\pm 0.1$ ppm typical
Stability over temperature	$\pm 0.3$ ppm typical
Ageing	$\pm 0.04$ ppm per day
<b>Programmable sweep modes</b>	
Sweep speed at 2 MHz RBW	390 GHz/s typical
Sweep speed at 61 kHz RBW	320 GHz/s typical
User programmable modes	Continuous, single timed, user trigger and adaptive
Trigger-on-event modes	User defined masks, actions and alarms
<b>Sampling</b>	
Resolution	16bits per channel (I&Q)
Rate	125 MS/s I&Q
<b>Third order intercept points with AGC</b>	
$\leq 1$ GHz	+ 20 dBm typical
$> 1$ GHz to $\leq 6$ GHz	+ 15 dBm typical
$> 6$ GHz to $\leq 18$ GHz	+ 20 dBm typical
<b>Local oscillator</b>	
Re-radiation	$\leq -90$ dBm typical
<b>Frequency references</b>	
Selectable	GPS Internal or external
Optional:	GPS Holdover Reference
Internal input	10 MHz $\pm 10$ ppm

<b>Processor sub-system</b>	
CPU	Intel E3845 quad core
<b>System software</b>	
Boot firmware	BIOS
Operating system	Linux, kernel v2.6
<b>Data storage</b>	
Removable SSD	512 GB (1 TB option)
<b>I/O Ports</b>	
RF input (External)	3 x N-type, 9 kHz - 18 GHz
GPS (External)	N-type (by-passable with internal antenna via Int/Ext patch)
DC Power (External Input)	1 x 4-pin Amphenol MS 3102 series
Network (External)	1 x 1 GigE
Universal Serial Bus (Internal)	1 x USB 2.0
Data Logger	Internal control switch and status LEDs
<b>Power</b>	
Power Adapter 65 W (External)	90-264 VAC input, 24 VDC 2.7 A output
Battery Charger (External)	Universal, 100-240VAC
Battery (Internal)	9.9Ah Lithium-ion, rechargeable 5 hrs nominal operation.
Optional: High Capacity Battery Pack	$> 10$ hrs operation with ext Hot-swappable batteries
<b>Power consumption</b>	
Nominal @ 20°C	50 W
Maximum	65 W
<b>Environmental</b>	
Operating temperature	-30 to +50°C (-22 to 122°F)
Storage temperature	-40 to +71°C (-40 to 160°F)
Ingress protection	IP55 minimum
<b>Mechanical</b>	
Dimensions	490 x 390 x 230 mm (19.3 x 15.4 x 9.1 inches)
Weight (case only - no battery)	14 kg (31 lbs)
Weight (single 9.9 Ah battery)	1.5 kg (3.3 lbs)





# The CRFS difference

CRFS is at the forefront of new technology for distributed monitoring and geolocation, featuring wideband receivers with lightning-fast sweep speeds and best-in-class noise figures and phase noise. These high-sensitivity receivers are known as RFeye Nodes.

For our military customers, fast sweep speeds and instantaneous bandwidth mean higher probability of intercept (POI). This translates to confidence that potential threats can be detected for real-time tracking, recording and further analysis.

Low noise means that operators can detect and locate lower-power, more distant signals that might otherwise have been missed entirely, providing earlier threat warning indicators (TWIs) and better situational awareness of an area of operations (AO).

RFeye's high-performance hardware and state-of-the-art software enable extremely fast processing to give much faster geolocation updates than other systems. Our TDOA geolocation algorithms typically update 10 times per second compared to similar systems that may only update once every 30 seconds. Fast geolocation updates are crucial in situations where hostile targets may be moving at speeds of over 1,000 mph.

## How we work with military customers

CRFS is recognized as a best-in-class COTS supplier by defense forces and system integrators, and our systems have been widely deployed with outstanding results over many years.

CRFS is known not just for the hardware and software we provide, but also for our support. We have long-term partnerships with many of our military customers, working closely with them not just to ensure the successful deployment of equipment, but also to develop new features to meet their specific mission requirements.

## Military & government contract vehicles

Many of our Mil/Gov customers prefer to purchase CRFS products using an existing approved contract vehicle. Our products are available through a range of different contract vehicles, and the list is always growing. If you have a specific request, please do not hesitate to get in contact with us directly via [enquiries@crfs.com](mailto:enquiries@crfs.com).

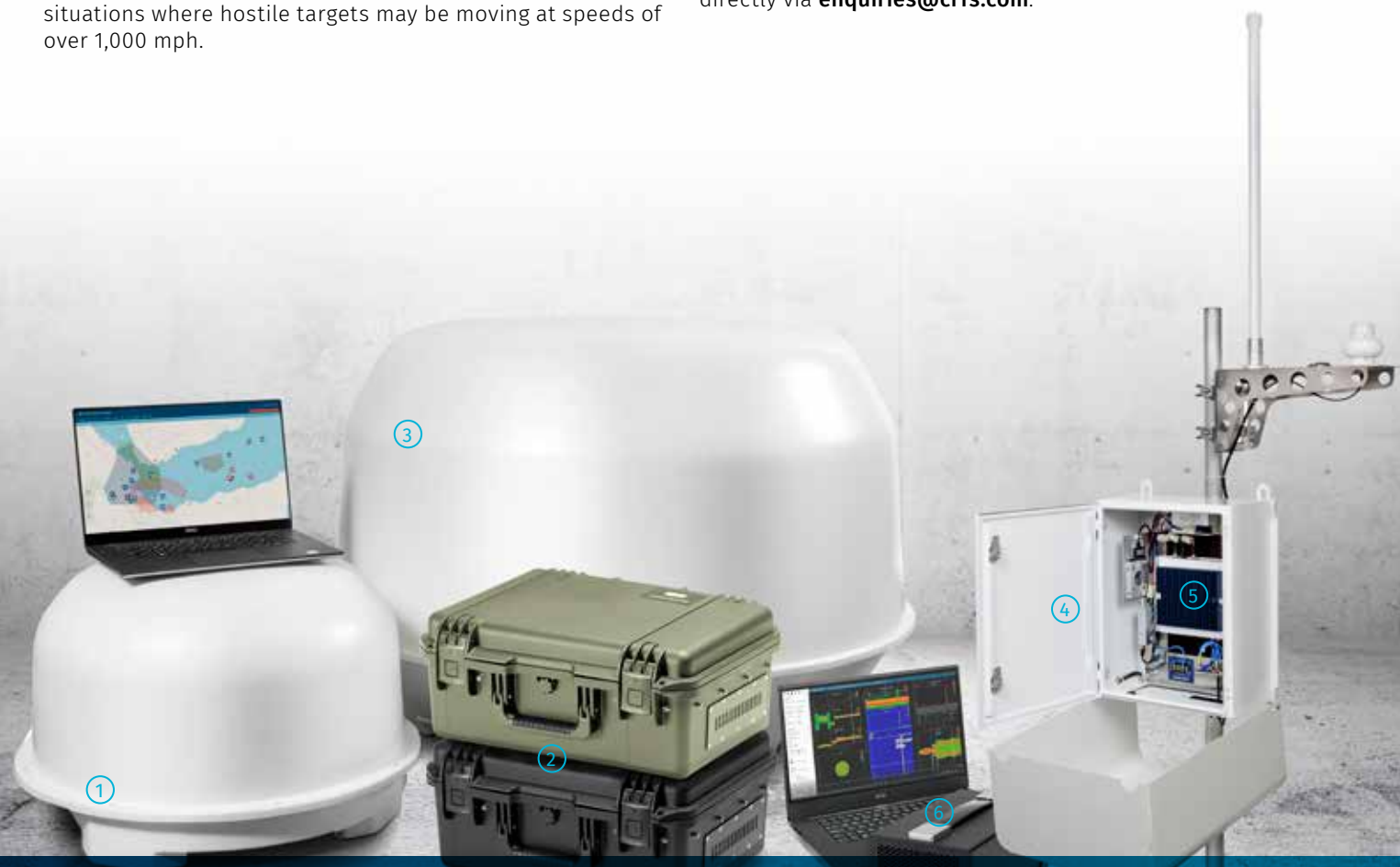
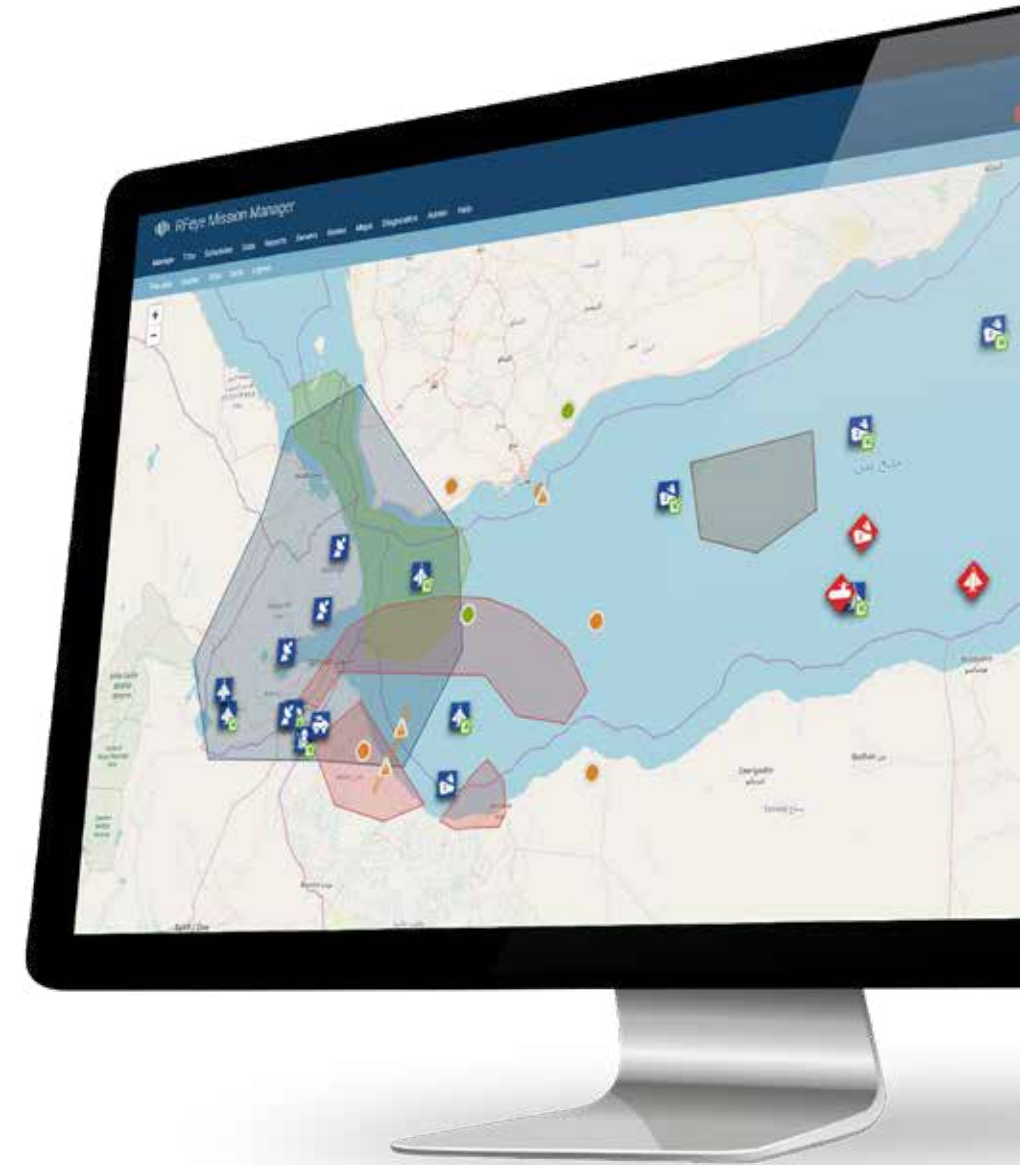
## RFeye Mission



## Automated RF situational awareness

RFeye Mission is CRFS's flagship solution for automated spectrum operations. It enables spectrum stakeholders to derive useful and actionable intelligence from their deployed RFeye receivers without the need for teams of RF experts. It has been designed for use with RFeye assets deployed over wide areas such as ranges, test sites, borders and cities, as well as small networks such as indoor technical surveillance countermeasures (TSCM).

RFeye Mission is controlled via a web browser interface. It allows even novice operators to automate spectrum monitoring task schedules without junior analysts having to view a "wall of spectrum data." Sweeps, scans and surveys can be set up quickly, and operating zones, geolocations and authorized transmitters are clearly displayed alongside immediate alarms as incident logs as violations happen.



1: RFeye Array 100/150  
2: RFeye Stormcase  
3: RFeye Array 300  
4: RFeye Node + ODK  
5: RFeye Node 100-18  
6: RFeye SenS Portable Recorder

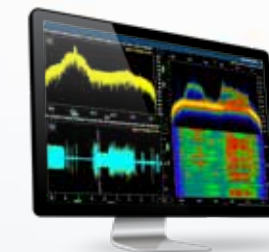
## Software Solutions



### Site

RFeye Site is our state-of-the-art desktop application for real-time monitoring and geolocation requirements.

Monitoring, Geolocation, Indoor Geolocation, 3DTDOA MLAT, Signal Classification, Propagation, Map, Signal Verification



### DeepView

RFeye DeepView software is the ultimate forensic tool for searching through multi-terabyte datasets for signals of interest.

Big data view: time/spectrogram & heatmap, Live mode: Real-time Spectrum Analyzer, Fast zoom/scroll through IQ data, Select export: filtered IQ data, Full dataset or selection playback, Marker: Delta function with live recording, Unlimited file duration, Screens: Dataset, Analysis region overview, Analysis region Spectrum, Time cursor Spectrum, Power/Time



### 3D TDOA

3D TDOA (or MLAT) is a recent advance in our geolocation software enabling passive tracking of targets in three dimensions even with a ground-based network of Nodes.

This is used to track objects such as military/civilian aircraft, commercial drones and more advanced military UAVs. As the method is entirely passive it allows targets to be tracked without any emissions which may alert those targets.

## About CRFS

CRFS provides best-in-class solutions for radio spectrum monitoring, management and geolocation.

CRFS offers a new generation of technology for the detection, identification and geolocation of signals in complex RF environments.

CRFS is recognized as delivering truly “best in class” technology—our RFeye systems are deployed worldwide by regulatory, military, law enforcement and intelligence agencies.



RFeyeSystem

For further information or to schedule a demonstration visit:

[crfs.com](http://crfs.com)



See through the noise

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