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RFeye SenS

Wideband RF spectrum streaming, recording and analysis



Ultra-low noise, high probability of intercept, record, analyze and playback

100MHz -**1GHZ** Instantaneous Bandwidth

RFeye SenS

High fidelity recording and playback of wideband RF signals

The SenS range of spectrum recorders are designed for the operator who needs to capture and analyze signals in high fidelity across a wide frequency range. Signals can be captured that are intermittent, of low power, occur outside of working hours, hide next to other transmission sources or have a short pulse duration. SenS captures the spectrum in extremely high resolution and can continuously stream full rate I/Q over the selected bandwidth to storage media, meaning you never miss a signal.

Each SenS receiver provides a frequency range of up to

8GHz or 18 GHz and a 100MHz IBW. Multiple receivers can be seamlessly combined to provide an IBW up to 1GHz, without the loss of Spurious Free Dynamic Range (SFDR) that usually affects very wideband receivers. This means SenS captures and records data with a much higher level of fidelity than can be achieved by other systems.

The analysis of the data can be performed in situ or remotely using the DeepView software. DeepView is designed for rapid search through multi-terabyte I/Q datasets for signals of interest, enabling very large datasets to be analyzed in minutes.

Use cases



EW/radar testing and analysis

Many radar systems try to disguise their signals by randomizing and spreading the pulses over a wide bandwidth. By using RFeye SenS to capture the full I/Q over a wide bandwidth it becomes possible to discriminate an individual radar pulse from the background noise. In the design and test of radar systems, this capability is also extremely useful to help ensure the system is performing to specification.

Post-event analysis and testing

After a test has been completed, you may need to question what exactly happened in the spectrum over that period. Did anything occur that caused interference to your systems? Were there any unexpected signals or anomalies? By recording the full I/Q you can reconstruct what happened and when. This data can then be used to verify the root cause or create repeatable environments for further tests, saving you time and money.

Interference hunting

When radar or other transmissions cause accidental interference to communications equipment, spectrum managers and enforcement teams need to be able to identify the source quickly and with certainty. However, this can be difficult when the signal is sporadic or transient. By capturing the full I/Q you can quickly find trends and patterns in the data over time, which will help identify the signal source.

Signals intelligence

Military and security services are interested in a range of signal types generated by hostile actors. By recording and analyzing the spectrum over time, it is possible to determine what signals were generated and where they came from. Further decoding and classification work can then be performed to extract evidential intelligence from the captured signals.

RFeye SenS range

CRFS provides different SenS solutions for a wide variety of missions and requirements: SenS Portable, SenS Remote and SenS G-Rack. All SenS systems utilize the same highly sensitive wideband superheterodyne receiver technology to provide full 16bit sample resolution and ultra-low noise.

SenS Portable

Lightweight system

The SenS Portable allows you to capture high fidelity I/Q data directly from your desktop or in the field. With a frequency range of 9kHz to 18GHz, and an IBW of 100MHz to 200MHz, it is ideal for lab test environments or manned field trials. The highly sensitive receiver module can connect to multiple SSD storage modules for longer recording missions. Everything is managed via a PC connection, which can also be used to examine the data with the DeepView forensic analysis software.



SenS Remote

Rugged deployable system

SenS Remote enables recording to take place in fixed unmanned locations such as on a mast or tower. Weatherproof remote receiver heads are located as close to the antenna as possible to minimize cable losses. Data from the receivers is streamed via fiber-optic cables to COTS rack-mounted processors and storage media (SAN, NAS or RAID, for example) housed in a building or environmental enclosure.

SenS Remote has been designed to operate in the harshest of conditions on land and on sea, but still deliver high fidelity, low noise spectrum data.

In-built analysis

The rack mounted controller runs a copy of DeepView forensic analysis software. By remotely connecting to DeepView, using a web browser, anyone in your organization can perform analysis on the data without the need for high speed data connections.

Modular expansion

The modular nature of SenS enables you to increase the IBW from 100MHz up to several hundred MHz with no degradation in SFDR or increase in noise. Multiple receiver heads can be deployed using a single antenna input to provide wider seamless IBWs.



SenS G-Rack

Ultra wideband system

For ultra wideband recording, up to 1GHz IBW, the SenS G-Rack is the answer. Every component, except the antenna, is mounted in a COTS server rack creating a compact system, which can be mounted inside a vehicle or building. The radio receivers are contained within the rack in a shielded case to prevent any interference. The G-Rack makes high fidelity ultra wideband recording, analysis and playback a reality.



Management and analysis can be performed in situ or remotely via networked PC

Playback

An optional external playback module is in development to support the SenS range and will offer playback of up to 100MHz on a fixed IF: this signal can then be fed into a Vector Signal Generator (VSG) for up conversion

to the desired frequency. The playback module offers the capability to replay captured signals for test & measurement of intricate signals.

Specifications

	SenS Portable	SenS Remote	SenS G-Rack
Frequency Range	9kHz to 8/18GHz	9kHz to 18GHz	9kHz to 18GHz
IBW	Up to 200 MHz	100MHz – 500MHz+	200MHz – 1 GHz
Deployment	Portable	Fixed location	Mobile or fixed location

Data storage requirements

	1 Hr	2Hrs	24Hrs
100MHz IBW	2TB	24TB	48TB
200MHz IBW	4TB	48TB	96TB
1 GHz IBW	20TB	240TB	480TB

For further information or to schedule a demonstration, visit:

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See through the noise

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