

SIGNAL:IQ

Advanced signal monitoring solutions for today's complex satellite environments

OVERVIEW

Tracking satellites, monitoring signals, and analyzing and alarming signal data are vital tenets of space domain awareness and RF situational awareness in an increasingly congested and contested satellite ecosystem. ARKA has developed a signal monitoring solution called signal:IQ, an open-architecture sensor framework that employs advanced monitoring processes to enhance system control and data processing. Built on our flexible SOFTLINK® architecture, signal:IQ is a versatile satellite signal analysis tool with a wide range of applications and deployment options. Our solution integrates seamlessly with ARKA's suite of digitizers and third-party systems, enabling comprehensive signal identification, addressing signal anomalies and enhancing electronic RF surveillance.

MARKET SEGMENTS

We support signal monitoring for a variety of market segments—Government Satellite Communications (SATCOM), Commercial SATCOM, Product Augmentation, Teleport Augmentation, and more—and we have a variety of capabilities that we are always looking to grow. Contact our team to speak with an expert on how we can help support and assist you in meeting your signal monitoring needs.



DATA CAPTURE

Multiple data source options provide flexibility to build the perfect solution for your needs.



INTEGRATION & INTEROPERABILITY

Open APIs provide seamless integration with your systems. Automate solutions for maximum data throughput.



SIGNAL SEARCH

Perform signal search of 500 MHz in less than 1/2 second. Examine data faster and find more anomalies.



DATA STORAGE & VIEWING

Leverage tools for precise reporting and flexible data visualization. Quickly spot trend changes and issues.



SIGNAL ANALYSIS

Unique algorithms enable faster analysis and improve accuracy. Solve problems and restore spectrum more quickly.



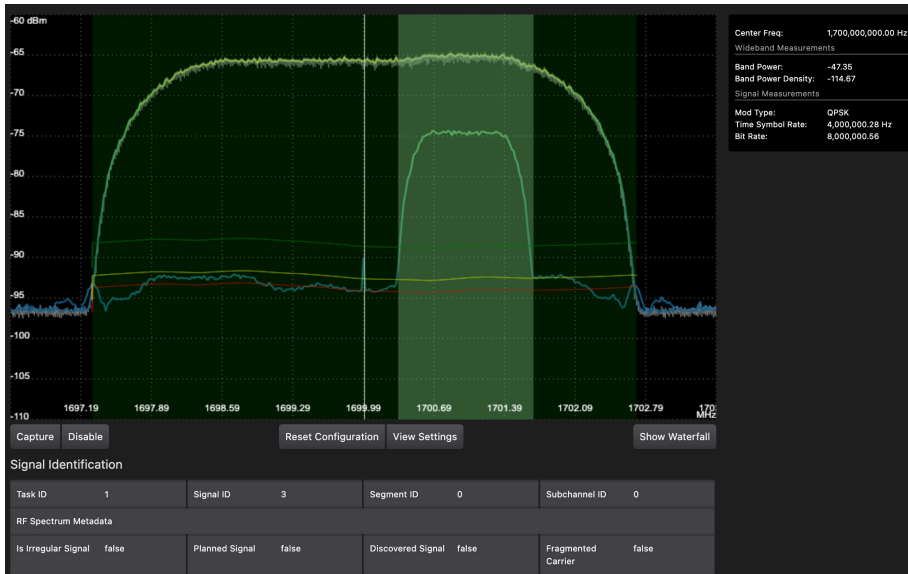
PLANNING & ALARMING

Optionally build plans for plan-based monitoring, and select from multiple alarm methods. Choose your desired planning and alarming method.

THESE CAPABILITIES ARE BUILT INTO OUR SIGNAL:IQ—A COMPLETE SIGNAL MONITORING SOLUTION.

TROUBLESHOOT SIGNAL ANOMALIES

signal:IQ maximizes resources and tracks Service Level Agreements (SLAs) effectively. Our pure general purpose compute software solution enables full automation and orchestration of your data tasks. Troubleshoot issues with our alarming capability and leverage our extensive API to write your solution, ultimately decreasing the use of satellite power and extending satellite life. View an in-depth, comprehensive spectrum analyzer using our intuitive GUI. By using the spectrum's capabilities to its full extent, you can identify signal anomalies and transmission configuration issues, pointing issues, frequency overuse, or other unintentional and intentional interference therefore producing additional revenue.



DEPLOYMENT

To allow for high channel density to enable faster signal monitoring systems, we designed a component-driven digitizer system: a custom RF front end for filtering and gain control that is paired with a Xilinx-based RF SoC front end card and integrated into a server. All system input is routed through our custom I/O connection panel that is specifically designed for signal and timing reference signal routing to a flexible array of digitizers.

The modularity of our sensor software achieves efficient and economic scalability and on-demand orchestration that is amplified when the software is deployed in a modern, containerized system for rapid access to data and real-time processing capabilities. By leveraging the scalability and on-demand orchestration, along with our flexible SOFTLINK architecture and sensor software modularity, we can provide a full, end-to-end solution or deploy components separately.

THE COMPONENTS

SENSOR API

Supply an entry point for received signals from a variety of source locations with the capability to manually manage the sensor with the provided User Interface (GUI).

DATA CAPTURE

Capture data, in real time, on up to 8 channels for an extensive reach of signal monitoring.

WIDEBAND CHARACTERIZATION

Perform analysis over a wideband spectrum, and find signals using Blind Signal Search (BSS) for reliable accuracy, in-depth and usable visualizations, and a variety of deployment options.

SIGNAL CHARACTERIZATION

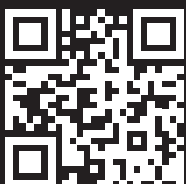
Conduct analysis / characterization of a desired signal with advanced functionality of control and operating parameters for high-performing and usable visual results as well as a scalable number of measurement instances.

MEASUREMENT DATABASE

Store a collection of analysis / characterization results with Influx Database to provide measurements in a range of formats (Kafka, XML, JSON).

PLANNING AND ALARMING

Build custom monitoring plans to establish an alarming technique that reports deviations or changes.



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