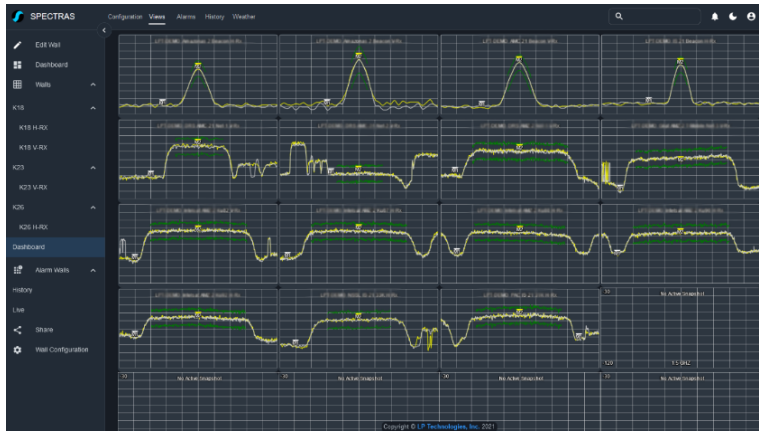


SPECTRAS

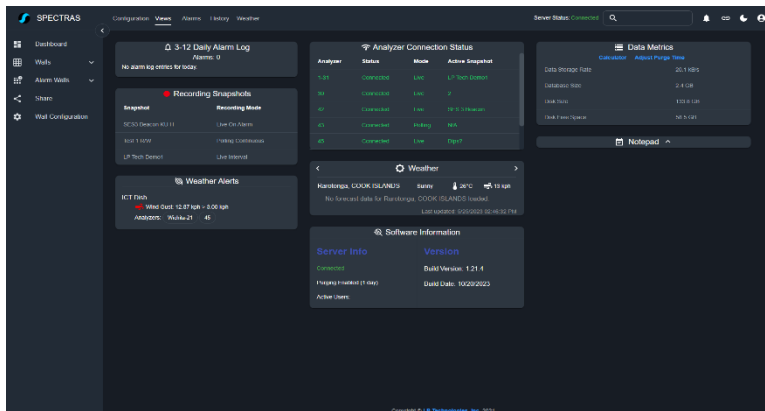
Elevating Spectrum Monitoring to New Heights

Spectras stands as an innovative and advanced spectrum monitoring solution crafted to transform the management and optimization of satellite communication and other RF environments across diverse industries. Featuring a dynamic platform that fosters collaborative spectrum analysis, Spectras empowers teams to collectively interpret and promptly address potential challenges. Its intuitive interface ensures rapid issue identification and resolution, enhanced by a 24/7 monitoring capability that ensures continuous surveillance of the Radio Frequency spectrum.



APPLICATIONS ACROSS INDUSTRIES:

- ✓ Aviation
- ✓ Broadcasting
- ✓ Education
- ✓ Energy and Utilities
- ✓ Manufacturing
- ✓ Maritime Communication
- ✓ Military and Defense
- ✓ Oil and Gas
- ✓ Public Safety
- ✓ Regulatory Agencies
- ✓ Research and Development
- ✓ Satellite Communications
- ✓ Smart Cities
- ✓ Telecommunications



Key Features and Functionality:

- **24/7 Monitoring Capability:** Ensures continuous surveillance of the wireless spectrum for a proactive approach to managing communication environments.
- **Centralized User Management:** Simplifies user management with Active Directory and LDAP compatibility.

- **Collaborative Spectrum Analysis:** Dynamic platform for teams to collectively examine and interpret spectrum data.
- **Consistent User Experience:** Facilitates a consistent and user-friendly experience for operators.
- **Customized User Roles:** Assign roles like Super Admin, Admin, Operator, and Viewer for tailored access to tools and information.
- **Enhanced Decision-Making:** Provides valuable insights for informed decision-making processes.
- **Enhanced Security:** Supports compartmentalization, ensuring a secure and controlled environment for spectrum monitoring.
- **Quick Issue Identification and Resolution:** Intuitive interface empowering operators to address potential challenges promptly.
- **Reduced Administrative Overhead:** Streamlines operations, contributing to more informed decision-making processes.
- **Role-Based Access Control:** Tailor access control based on user roles, enhancing security measures.
- **Scalability:** Highly adaptable to evolving industry needs, ensuring seamless integration into diverse applications.

SYSTEM SPECIFICATIONS:

- **Operating Systems:** Supports Windows (Server 2012R2 and above, Desktop 10 and above) and Linux (RedHat Version 8, Ubuntu - No version requirements).
- **Memory and Storage:** Server (8GB), Client (4GB), Storage (Minimum: 10GB, Recommended: 100GB).
- **Minimum Hardware:** Dedicated PC, Physical Server, Virtual Machine (VM).
- **Architecture:** Consists of Server, Database, API, and Client processes.
- **Modules:** BASE, GEO, Advanced History, Weather.
- **Scalability:** Supports an unlimited number of instrument connections, monitored signals, remote sites, simultaneous users, and trace storage (subject to hardware limitations).

AVAILABLE MODULES FOR ENHANCED SPECTRUM MANAGEMENT:

1. **BASE:** Harness advanced spectrum analysis capabilities for comprehensive monitoring and troubleshooting in diverse RF environments.
2. **GEO:**
3. **Advanced History:** Dive into the historical data to better understand spectrum trends.
4. **NIMBUS (Weather):** Integrate weather data for a holistic view of environmental factors impacting spectrum performance.
5. **LIVE Walls:** Collaborate effectively with real-time display walls for dynamic spectrum analysis.
6. **Time-share (TS):** Optimize spectrum utilization with time-sharing capabilities for increased efficiency.

SPECTRAS-BASE:

Empowering Real-Time Spectrum Management



Advanced Ad-hoc Spectrum Analyzing and Troubleshooting Platform

Spectras-Base is an all-encompassing module crafted for cutting-edge ad-hoc spectrum analysis and troubleshooting. It is a sophisticated tool that guarantees optimal management of your RF in a wide range of signal-monitoring applications. It empowers users with real-time insights into the spectrum, allowing quick identification and resolution of potential issues.



ADVANTAGES OF REAL-TIME SPECTRUM MONITORING:



- ✓ Immediate Issue Identification
- ✓ Enhanced Network Performance
- ✓ Faster Troubleshooting
- ✓ Proactive Interference Management
- ✓ Dynamic Frequency Allocation
- ✓ Improved Security
- ✓ Optimized Spectrum Sharing
- ✓ Efficient Spectrum Planning
- ✓ Timely Response to Environmental Changes
- ✓ Compliance with Regulations
- ✓ Improved Quality of Service (QoS)

Taking Control with SPECTRAS-BASE

Spectras-Base transcends being just software; it's your dedicated partner in achieving excellence in real-time satellite spectrum management. With its unparalleled features and capabilities, Spectras-Base empowers you to detect and resolve issues swiftly, ensuring a seamless and optimized satellite monitoring experience. Choose Spectras-Base for a more innovative, efficient approach to satellite spectrum monitoring and troubleshooting in the satellite industry.

KEY BENEFITS:

1. **Real-Time Monitoring Excellence:** Spectras-Base is your go-to solution for real-time spectrum monitoring, ensuring immediate awareness of the wireless spectrum landscape.
2. **Comprehensive Spectrum Analysis:** Designed for advanced ad-hoc spectrum analysis, Spectras-Base offers a sophisticated toolkit to troubleshoot and manage your signals.

3. **Unlimited Connectivity:** Connect unlimited spectrum analyzers and external switch instruments, providing unparalleled flexibility in managing your spectrum infrastructure.
4. **Seamless Collaboration:** Display Walls are unlimited, supporting various trace display modes such as Spectrum, Spectrogram, and Trendline Trace modes. Import, export, and share functionalities enable seamless collaboration among users.
5. **Intelligent Dashboard:** The comprehensive dashboard keeps you in control, allowing you to monitor crucial aspects such as alarm status, recording status, instrument connection status, data metrics, and software information.
6. **User Management Perfection:** Spectras-Base ensures optimal user management with unlimited users, compartmentalization, and user-level-based permissions. Compatibility with Active Directory and LDAP streamlines user access.
7. **Instrument Prowess:** Connect and pair instruments based on your needs, with a system overview display providing a holistic view of your spectrum infrastructure.
8. **Advanced Toolset:** Utilize powerful tools like Min, Max, and Baseline, along with features such as monitors, thresholds, spectral mask alarms, cross-pol, trace history, marker history, and trend history for in-depth spectrum analysis.

LICENSING OPTIONS:

The Spectras-Base license is perpetual, allows for multiple simultaneous users and installations, includes free software updates, is tied to the specific instrument, and is non-transferable.

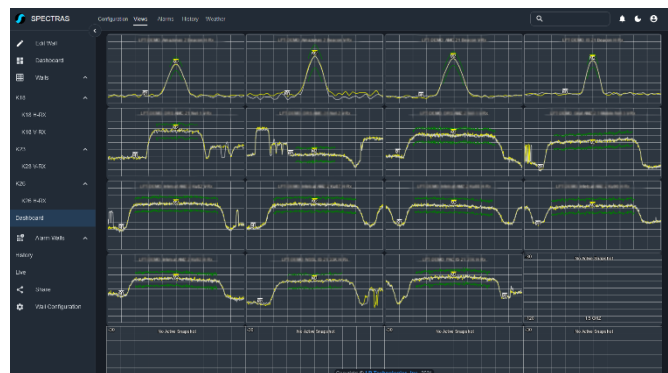
SPECTRAS-GEO:

Revolutionizing Unattended Spectrum Monitoring

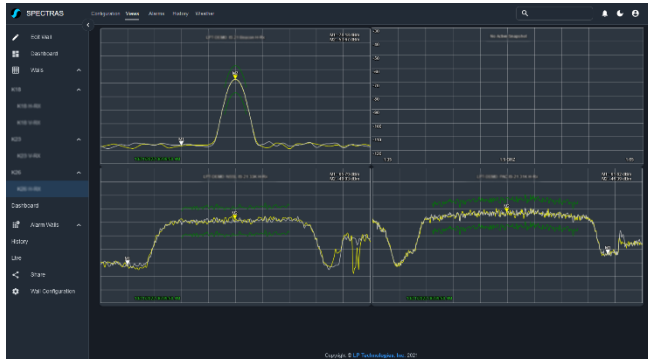


Sophisticated Automated Spectrum Analysis and Troubleshooting Platform

Embark on a new era of automated spectrum monitoring with Spectras-GEO, a state-of-the-art software designed exclusively for automatic (unattended) spectrum monitoring. Specializing in real-time and polling-based monitoring, Spectras-GEO takes a proactive approach to continuously analyze the spectrum environment, ensuring timely identification and resolution of potential issues.



ADVANTAGES OF AUTOMATED SPECTRUM MONITORING:



- ✓ Controlled and Targeted Monitoring
- ✓ Reduced Data Overhead
- ✓ Efficient Resource Utilization
- ✓ Real-time Information Retrieval
- ✓ Adaptability to Dynamic Environments
- ✓ Customized Monitoring Plans
- ✓ Lower Power Consumption
- ✓ Selective Data Collection
- ✓ Scalability
- ✓ Improved Security and Privacy)
- ✓ Cost Savings

Assuming Command with SPECTRAS-GEO

Remain in charge of your spectrum monitoring efforts with Spectras-GEO. This cutting-edge software equips you with the tools to supervise and precisely monitor your spectrum actively. Spectras-GEO offers unparalleled features, allowing you to foresee potential challenges and transform your strategy in automated spectrum monitoring. Leverage the capabilities of Spectras-GEO to navigate the complex landscape of unattended spectrum monitoring, ensuring optimal performance in your RF environment.

KEY BENEFITS:

1. **Automated Spectrum Monitoring Expertise:** Spectras-GEO is your dedicated solution for automatic (unattended) spectrum monitoring, offering continuous and proactive surveillance of the wireless spectrum. Experience a revolutionary approach to spectrum management.
2. **Collaboration-Driven Display Walls:** Support for unlimited display walls with various trace display modes ensures efficient collaboration in a polling monitoring context. Import, export, and share functionalities facilitate seamless information exchange among monitoring teams.
3. **Comprehensive Dashboard for Unattended Monitoring:** The intuitive dashboard keeps you informed about crucial aspects, including alarm status, recording status, instrument connection status, data metrics, and software information. Tailored for automated, unattended spectrum monitoring.
4. **User Management Excellence:** Spectras-GEO boasts unlimited users with advanced compartmentalization and user level-based permissions. Achieve streamlined access control, including seamless compatibility with Active Directory and LDAP.
5. **Infinite Instrument Connectivity:** Connect an unlimited number of spectrum analyzers and external switch instruments, ensuring flexibility in instrument pairing based on the number of connected devices. The system adapts to the dynamic spectrum landscape effortlessly.
6. **Advanced Tools for Intelligent Monitoring:** Utilize powerful tools, including snapshot modes (toggle between LIVE and POLLING) and alarm reporting in visual, audio, email, SNMP, and API call modes. Benefit from unlimited active alarms per spectrum analyzer, ensuring comprehensive monitoring.

LICENSING OPTIONS:

The Spectras-GEO license combines the Spectras-Base license and integrates both live and advanced polling-based monitoring features, establishing it as the ultimate solution for automated spectrum monitoring. The Spectras-GEO license is perpetual, allows for multiple simultaneous users and installations, includes free software updates, is tied to a specific instrument, and is non-transferable.

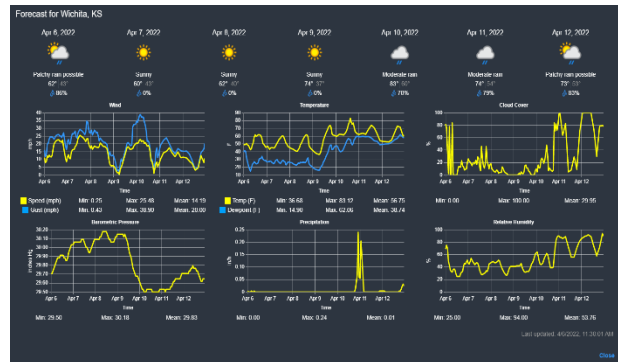
SPECTRAS-NIMBUS:

Revolutionizing Spectrum Monitoring with Weather Integration

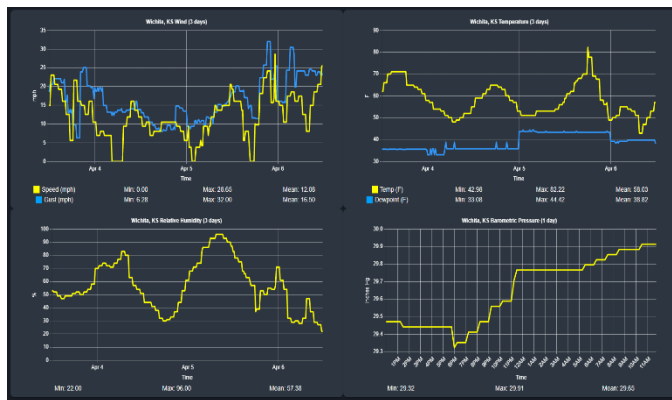


Elevate Your Spectrum Management with Weather Intelligence

Spectras Nimbus seamlessly integrates spectrum monitoring data with real-time weather information, providing an unparalleled solution for industries where environmental conditions impact radio frequency (RF) communications. Explore the advantages of this groundbreaking integration and discover a new level of adaptability and reliability in your RF communication systems.



ADVANTAGES OF WEATHER INTEGRATION IN SPECTRUM MONITORING:



- ✓ Dynamic Spectrum Management
- ✓ Enhanced Reliability for Satellite Communications
- ✓ Early Detection of Atmospheric Interference
- ✓ Environmental Monitoring and Forecasting
- ✓ Interference Mitigation
- ✓ Improved Wireless Network Planning
- ✓ Improved Spectrum Efficiency in Wireless Broadband
- ✓ Optimized Antenna Alignment

Taking Control with NIMBUS

Integrate weather intelligence for a holistic view of environmental factors impacting spectrum performance. Spectras Nimbus is your key to robust, adaptable, and efficient RF communication systems. Elevate your spectrum management capabilities with the power of weather integration.

KEY FEATURES:

1. **Weather Integration:** Seamlessly integrates meteorological events with spectral data.
2. **Weather Stations Connectivity:** Connect weather stations for accurate and real-time weather recording.
3. **7-Day Forecast:** Provides a 7-day forecast for effective planning.
4. **Weather Widget:** Updates Dashboards with a Weather Widget for quick access to current weather and forecasts.
5. **Expanded Forecast:** Offers an hourly forecast with detailed weather information.
6. **Weather Trace:** Unlocks a Weather Tab in Single Trace View, showing current weather conditions.
7. **Weather Walls:** Create customizable Weather Walls for historical records or forecasts.
8. **Weather Measurements and Alerts:** Tracks various weather attributes, allowing the setup of Weather Alerts.
9. **History Reflection:** Powerful tool for retrieving and analyzing trace data filtered by weather conditions.
10. **Forecast Reflection:** Generates insights into potential trace responses and the timeline of meteorological conditions.

❖ Reflection:

- **Definition:** Reflection tools retrieve and present averaged traces over a specified period.
- **Purpose:** Understand how weather conditions impact signal quality and carriers.
- **Measurement Filters:** Users can add filters to focus on specific weather conditions.

ADVANTAGES:

- ✓ **Operational Insights:** Gain valuable insights into how weather conditions impact carriers.
- ✓ **Real-time Monitoring:** Ensures accurate and up-to-date information with weather station integration.
- ✓ **User-Friendly Interface:** Easy access and interpretation of weather-related data.
- ✓ **Customization:** Tailor Nimbus to specific needs with customizable features.
- ✓ **Collaboration and Sharing:** Facilitates collaboration and information sharing within the organization.

In summary, Nimbus provides a comprehensive weather monitoring and analysis solution, offering real-time data, customization options, and powerful reporting tools for operational insights and decision-making.

PRICING OPTIONS:

1. Option#1: Annual License
 - Duration: Per Location, billed annually
2. Optio#2: 3-Year License
 - Duration: Per Location, billed every three years
3. Option 3: Perpetual License
 - Duration: Per Location, one-time payment for indefinite us

SPECTRAS-TIME-SHARE:

Unlocking Collaborative Spectrum Analysis with TS



Experience the Future of Spectrum Analysis

Discover the future of spectrum analysis with Spectras' revolutionary Time-Share Module, a groundbreaking advancement that transforms how multiple users interact with a single analyzer. This innovative feature allows simultaneous access for multiple users, each examining different frequencies without requiring individual devices. Dedicated time slots ensure exclusive access for each user, optimizing the efficiency of spectrum monitoring and fostering a collaborative approach.

User	Snapshot	Sweep Time
Super User	11803 SES3 Trans 06K V	54 ms
test	11823.27 SES3 Trans 06K V	54 ms

ADVANTAGES OF USING SPECTRAS TIME-SHARE:

- ✓ Enhanced Integration with External Systems
- ✓ Efficient Data Exchange
- ✓ Customized Reporting and Analysis
- ✓ Automation of Workflows
- ✓ Interoperability with Third-Party Devices
- ✓ Real-Time Notifications and Alerts
- ✓ Improved Collaboration
- ✓ Scalability and Futureproofing
- ✓ Secure Access and Authentication
- ✓ Custom Development and Innovation

KEY BENEFITS:

1. **Simultaneous Access:** Spectras' Time-Share Module allows multiple users to access a single analyzer concurrently, revolutionizing collaborative spectrum analysis.
2. **Dedicated Time Slots:** Each user benefits from dedicated time slots, ensuring exclusive access to the spectrum analyzer and focused examination of their specified frequency range.
3. **Optimized Efficiency:** By providing a shared platform, the Time-Share Module optimizes the efficiency of spectrum monitoring, enhancing the overall user experience.
4. **Seamless Collaboration:** Facilitating seamless collaboration between numerous users, the module accommodates diverse frequency requirements within a unified system.
5. **Versatility and Resourcefulness:** Spectras' commitment to versatility and resourcefulness shines through in the Time-Share Module, making it an invaluable tool for applications in telecommunications, broadcasting, and radio frequency research.

LICENSING OPTIONS:

The licensing for the Spectras Time-Share module is analyzer-specific and operates independently of all other monitoring modes.

SPECTRAS-API:

Empowering Connectivity and Innovation



Experience Connectivity. Embrace Innovation. Integrate with SPECTRAS API

Swagger
by SMARTBEAR

Spectras API 1.13.0 OAS3

LP Technologies Spectras API documentation

Analyzer Licenses

- POST** /api/analyzer-licenses Insert analyzer license into database
- GET** /api/analyzer-licenses/{serial} Check whether an analyzer's serial number matches an uploaded and validated license
- POST** /api/analyzer-licenses/check-license-modules Check which module types are associated with licenses

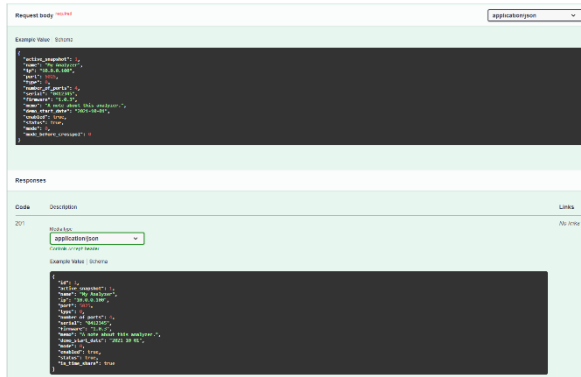
Analyzer Modules

- POST** /api/analyzer-modules Insert analyzer module into database
- GET** /api/analyzer-modules Get all current analyzer modules
- DELETE** /api/analyzer-modules/{id} Delete analyzer module

Analyzers

- POST** /api/analyzers Insert analyzer into database
- GET** /api/analyzers Get all analyzers
- GET** /api/analyzers/{analyzerId} Get analyzer by unique analyzer ID

ADVANTAGES OF USING SPECTRAS API:



- ✓ Enhanced Integration with External Systems
- ✓ Efficient Data Exchange
- ✓ Customized Reporting and Analysis
- ✓ Automation of Workflows
- ✓ Interoperability with Third-Party Devices
- ✓ Real-Time Notifications and Alerts
- ✓ Improved Collaboration
- ✓ Scalability and Futureproofing
- ✓ Secure Access and Authentication
- ✓ Custom Development and Innovation
- ✓ Streamlined Compliance Reporting)

KEY BENEFITS:

6. **Extensive Data Access:** SPECTRAS offers a comprehensive library of API calls, providing technology partners unrestricted access to all data. Empower your applications with rich and dynamic information from the SPECTRAS platform.
7. **Modern REST and Web Socket Integration:** Harness the power of modern technology with SPECTRAS API. Built on REST and Web Socket protocols, our APIs are designed for easy use and seamless integration, ensuring a smooth and efficient communication experience.
8. **Online Hosted Library:** Our API library is hosted online, offering a centralized and easily accessible resource. The online platform ensures quick access to the latest updates, facilitating a streamlined integration process for developers and integrators.
9. **Swagger Documentation:** Experience unparalleled clarity with well-documented Swagger specifications. Say goodbye to traditional PDFs as SPECTRAS updates its API documentation using Swagger, providing developers with a user-friendly and dynamic reference.
10. **LP Technologies Support:** Count on LP Technologies for unparalleled support. Our commitment extends to integrators and developer communities, ensuring a collaborative environment for seamless integration and optimal utilization of the SPECTRAS API.
11. **RESTful API Communication:** The Spectras API operates as a **RESTful** API, acting as the primary communication channel between the Spectras Client and the database. The backbone enables users to log in, access historical data, set and receive alarms, and execute nearly every other operation seamlessly.
12. **Empowering Innovation:** SPECTRAS API is more than just a communication tool; it's a catalyst for innovation. Providing advanced capabilities, real-time data access, and a developer-friendly environment empowers you to push the boundaries of what's possible in spectrum monitoring.
13. **Future-Proof Integration:** Stay ahead in the dynamic landscape of spectrum monitoring. With SPECTRAS API, you're not just integrating with today's technology; you're future-proofing your applications by leveraging cutting-edge communication protocols.

LICENSING OPTIONS:

Spectras API is free

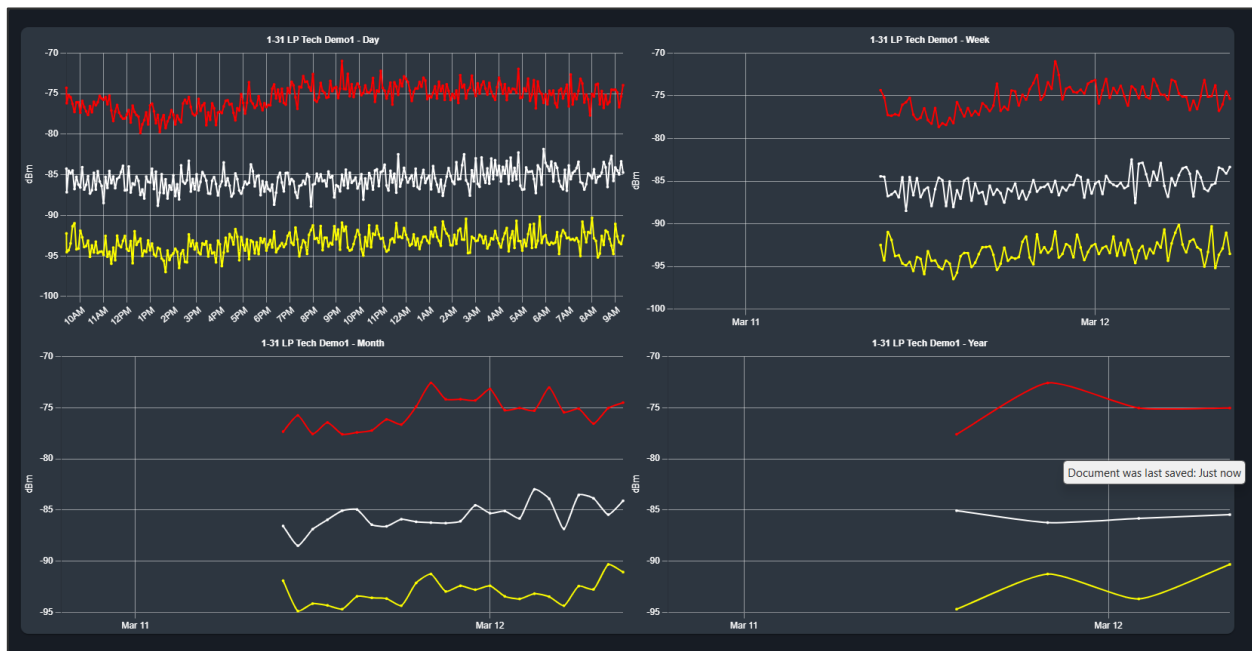
SPECTRAS-ADVANCED HISTORY:

Unlocking Insights with Spectras Advanced History



Discover the Power of Graphs and Trend Reports

Spectras not only records spectrum activity but also transforms raw data into actionable insights for enhanced spectrum management. Utilizing recorded trace data, Spectras Advanced History produces dynamic graphs and trend reports, providing a visual representation of spectrum usage patterns over time. Dive deeper into your spectrum data to uncover valuable insights for optimizing your RF environments.



Advantages of using Spectras Advanced History:

- ✓ Visual Representation
- ✓ Identifying Pattern
- ✓ Data-driven Decision Making
- ✓ Performance Monitoring
- ✓ Forecasting
- ✓ Comparative Analysis
- ✓ Communication and Reporting
- ✓ Resource Optimization
- ✓ Root Cause Analysis
- ✓ Continuous Improvement
- ✓ Streamlined Compliance Reporting)



KEY BENEFITS:

1. **Troubleshooting and Analysis:** Historical data allows for analyzing past spectrum activity, aiding in troubleshooting intermittent or historical issues. Reviewing past events allows users to identify patterns and root causes of interference, leading to more effective problem resolution.
2. **Predictive Maintenance:** By analyzing historical trends, operators can anticipate potential issues before they occur, allowing for proactive maintenance and optimization of network performance.
3. **Regulatory Compliance:** Maintaining a historical record of spectrum activity assists in compliance with regulatory requirements. Having detailed records enables operators to demonstrate adherence to frequency allocations and regulatory standards during audits or investigations.
4. **Performance Optimization:** Historical data provides insights into spectrum usage patterns, enabling operators to optimize frequency allocation and usage. By identifying underutilized or congested frequency bands, operators can improve overall network efficiency and performance.
5. **Legal and Regulatory Support:** Historical data can serve as evidence in legal or regulatory matters, providing a detailed record of spectrum activity. This supports investigations, enforcement actions, and resolution of spectrum-related disputes.
6. **Network Planning and Design:** Analysis of historical data assists in network planning and design by providing insights into the current spectrum environment. Operators can use this information to design interference-resistant wireless networks and optimize spectrum allocations.
7. **Quality of Service Monitoring:** Historical data enables continuous monitoring of Quality of Service (QoS) metrics over time. Operators can analyze trends and patterns to ensure that services meet performance standards consistently.
8. **Situational Awareness:** Operators gain enhanced situational awareness by capturing historical spectrum dynamics. They can analyze past events to better understand spectrum behavior during critical situations, improving decision-making in real-time scenarios.

LICENSING OPTIONS:

Spectras Advanced History requires a server-level license.

ABOUT LP TECHNOLOGIES, INC.

With over 25 years of expertise, LP Technologies, Inc. is a leader in cutting-edge hardware and software solutions for satellite detection and interference monitoring. Renowned for pioneering advancements in multi-port remote-controlled spectrum analyzers, LPT remains at the forefront through relentless innovation. They focus on simplifying spectrum analyzers, reducing costs, enhancing connectivity, and addressing complexities. Trusted across diverse industries, LPT is the preferred choice for reliable, advanced satellite technology.

For More Information,

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