

Spectrum Monitoring with Anritsu's Field Master Pro Series Spectrum Analyzers

Introduction

Radio frequency (RF) spectrum is a scarce and valuable resource that enables wireless communication across the globe. However, it also faces many challenges from interference and congestion. Spectrum monitoring is an essential activity for ensuring that radio spectrum is used efficiently and effectively, and for detecting and mitigating sources of interference that might affect communication systems.

Anritsu's Field Master Pro Series is an excellent choice for spectrum monitoring needs, offering a wide frequency range, high measurement speed and accuracy, advanced signal analysis capabilities, user-friendly interface, and battery powered portability. In this application note, we will discuss how Anritsu's Field Master Pro Series can help spectrum monitoring professionals to perform their duties effectively and efficiently.



Figure 1. The Author Tom Brinkoetter from RadioSiteTest is Using the MS2090A with a 50 MHz to 1.2 GHz Discone Antenna to Survey a Busy Radio Site

Spectrum Monitoring Process

The author visited the Jamaican Spectrum Management Authority (SMA) to learn about their spectrum management process. The SMA has three engineering teams: Monitoring and Inspection, Frequency Coordination and Planning, and Operations and Special Projects. The teams work together to evaluate, license, monitor, and resolve spectrum issues in Jamaica.

The SMA employs a multi-stage process to monitor and resolve interference issues in the country. It uses various technologies and equipment to detect, locate, and eliminate interference sources.

Stage 1: Proactive Monitoring and Initial Investigation

The SMA has 13 remote monitoring stations around the country that use Angle of Arrival (AOA) and Time of Arrival (TOA) technology to measure the direction and location of signals. These stations provide data on the frequency, bandwidth, and location of potential interference sources.

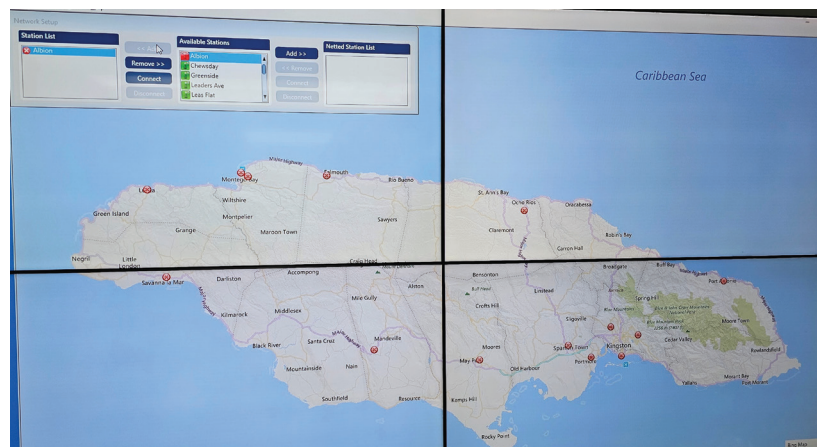


Figure 2. The SMA has 13 Remote Monitoring Stations around the Country that Use Time of Arrival (TOA) Technology to Detect and Locate Interference Sources



Figure 3. At the Top of this Tower Located on the Highest Building in Kingston Jamaica is an AOA and TDOA Receiver. There are 12 Similar Sites Around Jamaica, All Interconnected to the Headquarters in Kingston.



Figure 4. Drone Mounted with Anritsu MS2760A Ultra-Portable Spectrum Analyzer



Figure 5. The SMA also has Two Vehicle-Mounted Monitoring Stations that Use Angle of Arrival (AOA) Technology to Pinpoint Interference Sources More Precisely

Stage 2: Precise Localization

The SMA has two vehicle-mounted monitoring stations that use the same technology as the fixed stations to determine the direction and location of signals. These stations can drive closer to the interference sources and narrow down the search area.

The SMA also uses a drone-mounted spectrum analyzer to locate interference to point-to-point microwave systems. It can fly up to the level of the point-to-point microwave systems and locate interfering signals coming into the receiving antenna. The SMA chose the Anritsu MS2760A Ultra-Portable spectrum analyzer to perform this task. The MS2760A Ultra-Portable spectrum analyzer is a small and lightweight device that can measure signals up to 110 GHz with high accuracy and speed.

Stage 3: Final Localization

The final stage in the process of locating interference is “feet on the ground” with a hand-held spectrum analyzer and directional antenna. The SMA uses the Anritsu Field Master Pro™ MS2090A spectrum analyzer for this purpose. The Field Master Pro™ MS2090A is a powerful device that covers frequencies from 9 kHz to 54 GHz with fast sweep speeds, high dynamic range, low noise floor, and high-resolution bandwidths. It also supports various signal analysis functions, such as real-time spectrum analysis, channel power, occupied bandwidth, adjacent channel power ratio, interference analysis, modulation analysis, and more.

The Field Master Pro™ MS2090A features a large touchscreen display with intuitive menus and customizable settings. It also has easy-to-use buttons and knobs for quick operation and configuration. The Field Master Pro™ MS2090A is lightweight and compact with a battery life of up to 3.5 hours of operation away from power sources.

The portability and performance of the Field Master Pro™ MS2090A allows the SMA to use it in a wide variety of situations. In one case it used the Field Master Pro™ MS2090A with a small directional antenna in a helicopter to locate the source of elusive interference to a point to point system.



Figure 7. Anritsu Field Master Pro™ MS2090A being Used in a Helicopter to Locate a 6.2 GHz Point to Point Microwave Interference in Mountainous Terrain

Conclusion

Spectrum monitoring is a vital activity for ensuring the efficient and effective use of radio spectrum and for detecting and mitigating interference sources that might affect communication systems. Anritsu's Field Master Pro Series is an excellent choice for spectrum monitoring needs, offering a wide frequency range, high measurement speed and accuracy, advanced signal analysis capabilities, user-friendly interface, and battery powered portability. Anritsu's Field Master Pro Series can help spectrum monitoring professionals to perform their duties effectively and efficiently. For more information on Anritsu's Field Master Pro Series, please visit www.anritsu.com.



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