

INTERFERENCE HUNTING

Potential Sources of Interference

With the rapid expansion of wireless communications, the need for robust networks relatively free of interference continues to grow. Capacity is degraded by the presence of illegal or unlicensed signals that interfere with legitimate transmissions. These signals can be periodic or be present at different frequencies over time, making the discovery and removal of these sources of interference a significant challenge.

COMMON SOURCES OF INTERFERENCE INCLUDE:

Radio microphones: Commonly used in music venues, conference centers, and churches. These products are low cost transmitters that often have poor spectral emissions. They may also be purchased and used without due consideration to the local spectrum licensing laws.

Cable TV interference: Older or improperly installed cables can leak RF interference into the environment. Underground cables are regularly damaged by rodents that eat through the shielding facilitating emissions. Outside signals (such as those in the cellular band) can also leak into the cable TV system causing degradation of the video signal.

Illegal AM/FM/TV broadcasts: Not only can these signals disrupt legitimate broadcast transmission, they can also be a public safety hazard. FM frequencies lie adjacent to those frequencies used by airports for tower-to-airplane communications. Improperly designed or illegally used FM signals can disrupt these airport frequencies.

Jammers: Although illegal in many countries, jammers can be purchased online and used in improper ways. Because jammers can interrupt a wide spectrum of frequencies, they can cause problems with many types of communications.

Cellular cross-border interference: Uncoordinated frequency allocations across international borders causes degradation of wireless networks and mitigating these types of interference has become a high priority with government regulators.

DECT phones: DECT frequencies vary in different countries, providing the potential for interference when transported, such as their use in cruise ships. DECT phones brought by travelers from other countries can often cause interference in the countries they visit.

Illegal GSM transmitters: Portable GSM transmitters can be set up in a vehicle and broadcast throughout a wide geographic area, transmitting advertorial text messages. The transmissions are both illegal and cause interference with the legitimate network operator signals.

Interference from both illegal and unintentional signals is a significant problem for mobile service providers, security services for public safety and airports, government regulators, positive train control (PTC) systems, and satellite earth stations. Interference can often degrade network performance, causing critical communications to be interrupted. Locating these sources of interference has traditionally been labor intensive and time consuming. Anritsu's portfolio of interference hunting products provide those at risk with the optimal solution for discovering and resolving interference.

Anritsu Solutions for Interference Hunting



MS27101A Remote Spectrum Monitor

The MS27101A is designed for such applications as white space monitoring, harm claim threshold detection, in-building interference monitoring, positive train control monitoring, and for research/university applications. The MS27101A is housed in a small form-factor designed for indoor rack-mount deployment. External ports include power, RF Input, Gbit Ethernet, two USB ports, External Ref In, and GPS antenna.



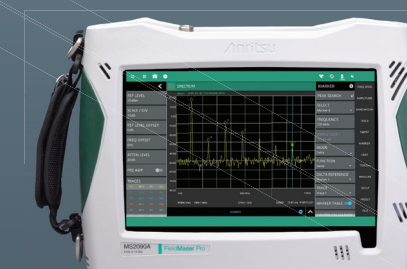
MS27102A Remote Spectrum Monitor — IP67 Outdoor

The MS27102A is rated to IP67 standards for outdoor deployments. Capable of sweeping at rates up to 24 GHz/s, the MS27102A allows capture and measurement of many types of signals. This includes periodic or transient transmissions as well as short "bursty" signals. Also featured is a high dynamic range, high sensitivity and low spurious signals to ensure only true interferers are identified. The MS27102A can be controlled using the integrated web server, with Anritsu Vision software or with system integrators' own applications. With monitors potentially being deployed in remote locations, far from the control center, special attention has been paid to ensuring they remain operational under a wide range of hostile conditions.



MS27201A and MS27103A Remote Spectrum Monitors — Up to 24 Multiport RF Inputs or 54 GHz Coverage

The MS27201A and MS27103A take a lot of the guesswork out of identifying causes for slow data rates or dropped calls in cellular networks. Using the Anritsu Vision software or your own applications, you can identify patterns of interference, record spectrum history and geo-locate the sources of problem signals. These instruments are also highly scalable. Additional monitors can be added to your network seamlessly as the need for interference mitigation grows. Also, new features and options that become available can be added remotely.



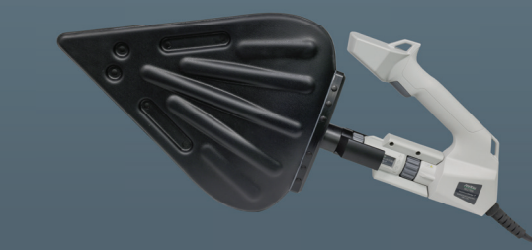
Field Master Series Spectrum Analyzers

The Field Master series supports advanced interference hunting features with models that meet your needs.

The Field Master Pro offers frequency ranges up to 54 GHz, covering all the common frequency bands required during interference hunting. It offers the highest RF performance of all Anritsu's handheld spectrum analyzers, with additional powerful options such as 110 MHz analysis bandwidth and real-time capability.

The Field Master MS2080A is designed for the field technician, integrating the most commonly used instruments into a single package. It improves on legacy offerings with better field durability, faster sweep speeds, smarter measurements, and also has additional powerful options such as 40 MHz analysis bandwidth and real-time capability.

The Field Master MS2070A offers an unrivaled combination of performance and features for standard spectrum analysis to 3 GHz. The MS2070A includes much of the same performance and field durability as the MS2080A, all at an affordable price.



MA2700A Handheld InterferenceHunter

The ergonomically designed MA2700A Handheld InterferenceHunter connects to any Anritsu handheld spectrum analyzer for interference hunting on foot. It is equipped with a GPS receiver and antenna, an electronic compass, and a user-selectable preamplifier. It enhances the Interference Mapping option on Anritsu handheld instruments. With the MA2700A, a vector line to an interfering signal can be drawn on a map on the instrument with a click of the integrated trigger. Digital maps can be downloaded directly into the Field Master using an Ethernet or Wi-Fi connection to the Internet.



MX280007A Mobile Interference Hunting System

The Anritsu Mobile Interference Hunting System installs in a vehicle and automates the interference hunting process over a range of up to five kilometers. As the vehicle moves, power and position measurements are taken and processed using the MX280007A software. Key components include mapping software, a Windows laptop/tablet, an Anritsu handheld spectrum analyzer, and an omnidirectional antenna. Directions and voice prompts are provided in this system to guide the driver to the source of interference. The patent-pending algorithm in the Anritsu Mobile InterferenceHunter™ software uses power-of-arrival technology to quickly measure and locate sources of interference.