

**Anritsu** envision:ensure

# Interference Hunting 4 Steps to Success



## 1 KNOW YOU HAVE A PROBLEM

Customer experience suffers when interference causes reductions in capacity or throughput and makes handovers less successful. Discovering and resolving interference BEFORE customers are aware of the issue is a huge advantage in delivering superior experience in a highly competitive market.

Anritsu's MasterClaw™ Multi-Dimensional Service Assurance solution, coupled with our Remote Spectrum Monitors, identify possible interference by providing real-time visibility of communications network performance and specific RF-focused monitoring.



**Service Assurance systems software provides switch statics and service assurance insights**

MasterClaw provides Communications Service Providers with an unrivaled real-time view into network performance (handoffs, RSSI, data rates, etc.), which enables optimization of customer experience, better understanding of how customers use data services, and visibility of customer impacts. The solution provides unique visibility into the experience of ALL your customers, including how many users are impacted by any problem, which services are impacted, and when. Multi-Dimensional Service Assurance has actionable intelligence to identify, prioritize and resolve problems before they impact your customers.

Remote Spectrum Monitors are housed in an environmentally secure enclosure, can be permanently located outdoors and are tolerant of all weather conditions. By installing an array of these devices around a large geographic area, it is now possible to monitor for RF interference city- or even state-wide. Each Remote Spectrum Monitor is connected by Ethernet back to a central monitoring location. Using Anritsu Vision™ software, the RF environment may be monitored 24 hours a day, 7 days a week. Alarms can be set to automatically send alerts when interferers are identified.



**Remote Spectrum Monitors provide 24x7 monitoring and analysis**

## 2 VIEW BASE STATION SPECTRUM

Once possible interference issues have been identified, it's time to go to the nearest affected base station.

Checking the base station receive signal, typically at a RX test port, is a good place to start. Interfering signals will often be obvious at this point. Once spotted, it is important to decide if the interfering signal is being produced by a base station fault or is from an external source.

If it is coming from the base station, Anritsu has an array of test equipment to identify faults. Passive intermodulation, bad transmitters, damaged feedlines or antenna can all contribute to interference. Anritsu offers a full portfolio of base station test and measurement equipment for maintenance and optimization.

If the interference is coming from outside of the base station, a spectrum analyzer allows you to see the spectrum and better identify what type of interferer you are looking for based on the frequency, spectrum shape, time of day and spectrum analyzer setup.

The results of your testing should give you an initial estimate of the emitter location, at least identifying the sector.

**BTS Master™ now has a CPRI option for Remote Radio Heads**



**PIM Master™ identifies passive intermodulation**



## DRIVE TO INITIAL ESTIMATE

Traditional methods for locating sources of interference include manually making numerous measurements from multiple locations using a directional antenna. Triangulation is then used to approximate the signal location. This process is then iterated a number of times until the interferer is precisely located. Unfortunately this is often labor-intensive and time consuming.

The Anritsu Mobile InterferenceHunter™ automates the interference hunting process. Using an off-the shelf magnetic mount omnidirectional antenna, a Windows-based tablet, and a spectrum analyzer, multiple measurements are automatically taken and processed by the MX280007A software. Directions and voice prompts are provided to guide the driver closer and closer to the source of interference.

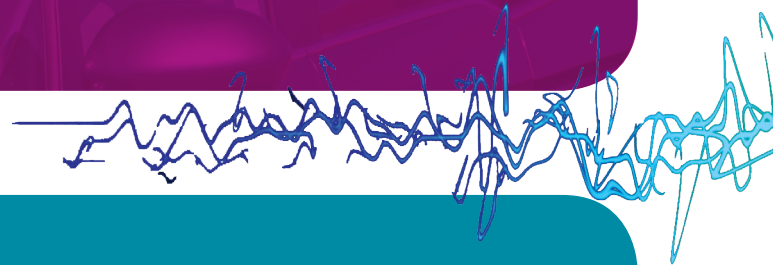
Mobile InterferenceHunter™ on Windows® PC Tablet



Magnetic mount antenna



Spectrum Master™ in Vehicle



## CONTINUE ON FOOT

Once the user gets close enough to the interferer location, the Anritsu handheld spectrum analyzer with a Yagi or other directional antenna can then be used to pinpoint the emitter. It is highly recommended that the Anritsu MA2700A Handheld InterferenceHunter™ device be used as part of this pinpointing operation. Anritsu offers a variety of antennas, filters and accessories to aid in this process.

### Types of Interferers Found

- Low power
- Narrowband, wideband
- Modulated
- Pulsed signals (similar to radar)
- Signals hidden in LTE uplink channels
- Pirate TV/radio stations and BTS cellular equipment operating illegally





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