Mobile Interference Hunting System

Figure 1: Anritsu Mobile Interference Hunting System

Introduction

Interference from both illegal and unintentional signals is a significant problem for mobile service providers, security services and government regulators. 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. Traditional methods 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.

The Anritsu mobile interference hunting system automates the interference hunting process. Multiple measurements are automatically taken and processed using the MX280007A InterferenceHunter™ software. Using this interference localization software resident on a Windows® laptop/tablet, figure 1, 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.

Figure 2: MX280007A Mobile InterferenceHunter™ on Windows PC Tablet with Spectrum Master™ in Vehicle

This application note will focus on the operation of the mobile interference hunting system. Settings for both the MX280007A software and for the spectrum analyzer will be outlined, consistent with both the type of interference to be hunted and the terrain in which the interference hunt is to take place, see figure 2. Various use case scenarios will also be examined to illustrate how the system is optimized for finding various types of interference.

Recommended Accessories for Pin-pointing Interference

The following accessories are required to operate the Mobile Interference Hunting System.

1. MX280007A Software with license
2. Windows table/PC (Windows Operating System 7 or 8)
3. Magnet Mount Omnidirectional Antenna
4. GPS Antenna
5. Anritsu handheld spectrum analyzer

Accessories which are not required, but highly recommended include the following:

1. Directional antenna
2. MA2700A InterferenceHunter™ handheld direction finding system (Option 25 is required on the spectrum analyzer)
3. Mounting hardware for tablet/PC
4. Bandpass filter
5. Automotive power adapter (for spectrum analyzer)

The description below provides a brief overview of directional antennas, the MA2700A and bandpass filters that may be used in the hunting process. Further information on these and other accessories can be found at the Anritsu web site.

Directional Antenna

In certain circumstances, a mobile interference hunting system cannot always pin-point the source of interference. Examples include interference signals generated from the top of buildings, see figure 3, located off-road or in general anywhere inaccessible to a vehicle, see figure 4. See figures below for examples where a portable system may be needed to pin-point interference.
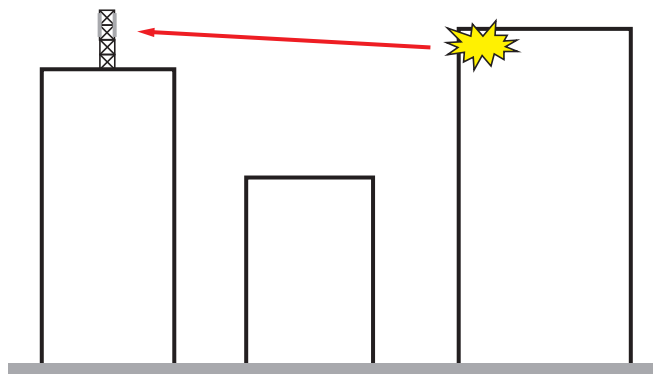

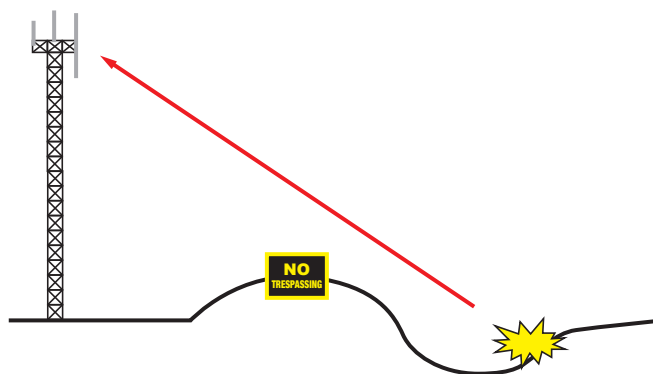Figure 3: Interferer located at top of building

Figure 4: Access may be denied to vehicle

For this reason, it is recommended that the driver bring along a directional antenna to precisely identify the interference source location. The objective of the mobile hunter is to arrive within walking distance of the interferer so that the final step of pin-pointing the interferer can easily be accomplished with a portable system in a minimum amount of time. Several directional antenna types are shown below (figures 5 and 6) along with a corresponding radiation pattern (typical), see figure 7 and 8.

Figure 5: Yagi Antenna: Highly directional, but narrow bandwidth (2.4 GHz – 2.5 GHz) Anritsu part number 2000-1415-R
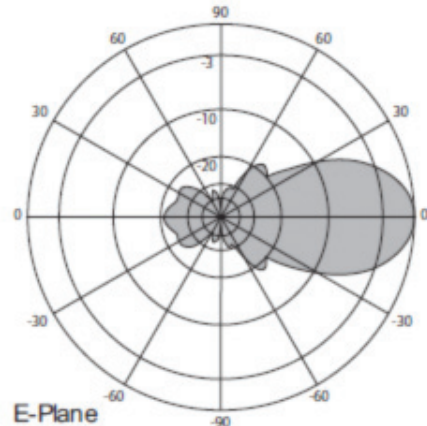

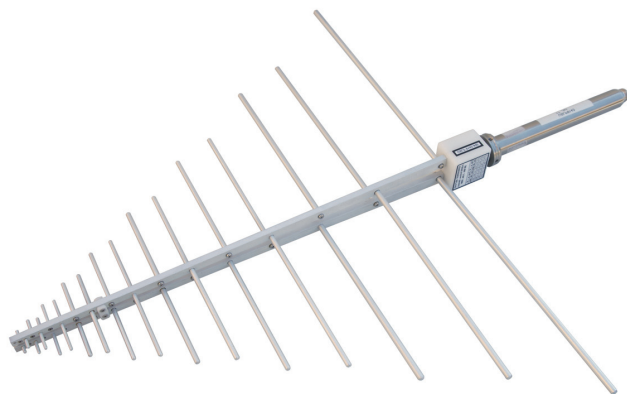*Figure 7: Radiation pattern for Yagi antenna*

Figure 6: Log Periodic Antenna: Less directional, but wide bandwidth (300 MHz – 7 GHz) Anritsu part number 2000-1747-R
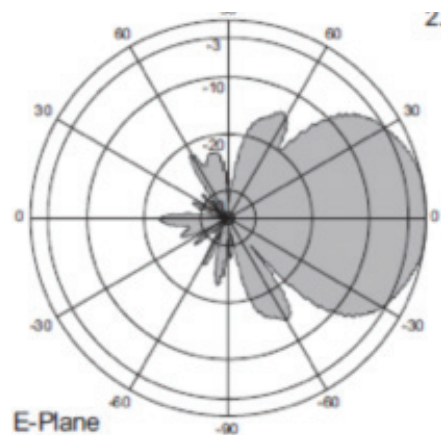

Figure 8: Radiation pattern for Log Periodic antenna

MA2700A

As part of the final step in pin-pointing the interference source, the MA2700A handheld InterferenceHunter device, figure 9, can be used with a directional antenna, figure 10. The MA2700A is equipped with a GPS receiver, an electronic compass and a user-selectable preamplifier. A bandpass filter can also be easily installed between the antenna and the MA2700A. To use this system, option 25 (Interference Analysis) will need to be present on the spectrum analyzer.

Figure 9: Pinpointing interference location with the MA2700A Handheld InterferenceHunter

Figure 10: MA2700A Handheld InterferenceHunter with directional antenna and channel filter.

Bandpass Filter

In hunting interferers in areas of high signal strength, it is highly recommended that a bandpass filter be used, see figure 11. The bandpass filter should include the frequencies of interest for the hunt, while attenuating signals outside those frequencies. In cellular networks, channel filters can be used that pass frequencies used by the BTS receiver. These filters protect the spectrum analyzer from being overloaded by downlink signals close in frequency to the interference being targeted. Cellular base station downlink signals are often transmitted at a much high power level than uplink signals. Bandpass filters, figure 12, are typically inserted in line between the spectrum analyzer RF IN port and the RF omnidirectional antenna used in the system, as shown in figure 13.
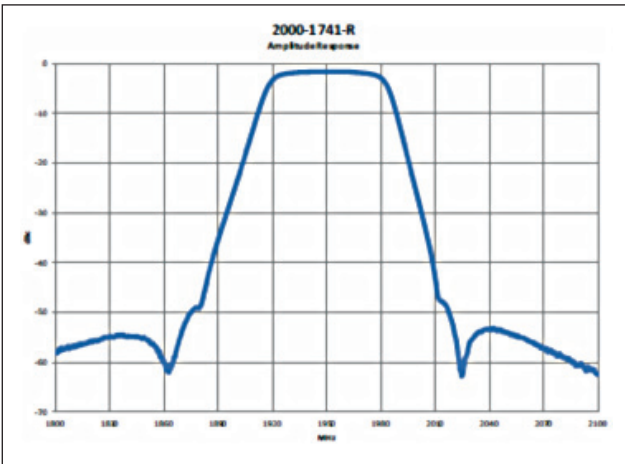

Figure 11: Bandpass filter frequency response

In the Mobile Interference Hunting system, bandpass filters can be inserted in line between the omnidirectional antenna RF cable and the spectrum analyzer. See Figure below for a typical use case for incorporating the filter.

Figure 13: Bandpass filter inserted between spectrum analyzer and RF antenna cable

Figure 12: Bandpass filter

4

Getting Started

Setting up Mobile Interference Hunter Hardware

Setting up the hardware for the hunting system involves only a few steps.

1. Place the RF magnet mount omnidirectional antenna on the vehicle rooftop and run cables to the interior

2. If the RF antenna in step one does not also contain a GPS antenna, mount the GPS antenna on the roof

3. Secure the spectrum analyzer in the passenger seat. Use seat belt if available.

4. Set up car mount (if used) and attach Windows tablet.

5. Make all connections. A USB cable is used to connect the tablet/PC to the spectrum analyzer.

Identifying the Interference Signal

Before starting an interference hunt, the user must first be able to "see" the interferer on the spectrum analyzer trace display. If the frequency of the interference signal is not known beforehand, the user may want to conduct a sweep to include all frequencies of interest.

In cellular networks, the presence of an interferer may first be suspected when problems in the network occur. Higher incidences of dropped calls, slow data rates or elevated noise floors can be reported through the operator's network statistics. These are reports generated from the network that flag unusual behavior. However, problems in network performance do not always indicate the presence of interference. Issues such as PIM (Passive Intermodulation), base station firmware problems or equipment malfunctions can all serve to degrade network performance. In these cases, it may be advisable for the technician to first travel to the BTS location where the problem was reported. By connecting a spectrum analyzer to the BTS receiver redundant port, the spectrum can be clearly seen. The presence of interferers (as well as their frequencies and shapes) can then be identified if present.

In cases where traveling to a base station site is not feasible, the technician will need to travel to the sector where the problem was reported. Using the omnidirectional antenna mounted on the vehicle roof, a frequency scan can be taken while driving through the area of concern. The frequency span on the spectrum analyzer can generally be set to the bandwidth allocation of the BTS receiver for that sector. Once the interfering signal is identified, a narrower frequency span can be set.

In non-cellular applications (or when looking for illegal transmissions), the user will need to travel to the area where problems are suspected. A wideband sweep can be done over a large frequency range to identify interference problems. Similar to the procedure used with cellular networks, once the problem signal is found, a narrow frequency span should be used. Since the Mobile Interference Hunting System uses channel power measurements for hunting signals, the channel power span should be set to be slightly wider than the bandwidth of the interference signal. A description of the use of channel power is mentioned in the 'Spectrum Analyzer Settings' section.

Spectrum Analyzer Settings

In order to view low-level signals, the RBW/VBW settings on the spectrum analyzer should be set as low as possible. Typically, a setting of 1 kHz/300 Hz for the RBW/VBW respectively is a good starting point. Lowering the RBW/VBW settings further will reduce the noise floor of the spectrum analyzer at the expense of a slower sweep speed. Additionally, turning on the preamp of the spectrum analyzer (if so equipped) will result in a noise floor improvement of approximately 10-15 dB. This enables the user to view a low-level interference signal from a greater distance.

The user should also consider using the Fast Mode setting on the spectrum analyzer. At the expense of some amplitude accuracy, Fast Mode increases the sweep speed on the analyzer. The algorithms used in the Mobile Interference Hunting System utilitze power of arrival technology. Absolute signal levels are not as important as is their relative change in amplitude as the user approaches or moves away from an interference source.

In most cases, the use of averaging on the spectrum analyzer is not required. The MX280007A software automatically performs the appropriate level of averaging according to the sensitivity level set in the program. More discussion on sensitivity levels and other parameters in the interference hunting software will be discussed later in this document.

When viewing the signal of interest, the user should note any special characteristics such as modulation type (if modulated), bandwidth, whether the signal drifts in frequency over time, etc. Since the mobile interference hunting system uses channel power to measure the interfering signal, the appropriate span should be set to include the signal's bandwidth. If the signal of interest drifts in frequency, the channel power span should include the full range of the frequency change. When the spectrum analyzer and Windows table/PC are connected and operational, the spectrum analyzer is automatically set into channel power mode.

Channel power measurements are important in tracking wideband signals (see figure 14 for a typical channel power measurement display). Typically, the channel power span is set to include the frequency bandwidth occupied by the interference signal. Additionally, channel power measurements are essential for finding interference that varies in frequency over time. Interference from cell phone boosters is an example of signals that can vary in frequency. The user can determine the frequency variation either by inspection of the signal on a spectrum analyzer trace or use a spectrogram. Figure 15 shows a spectrogram trace for a signal varying in frequency over time.
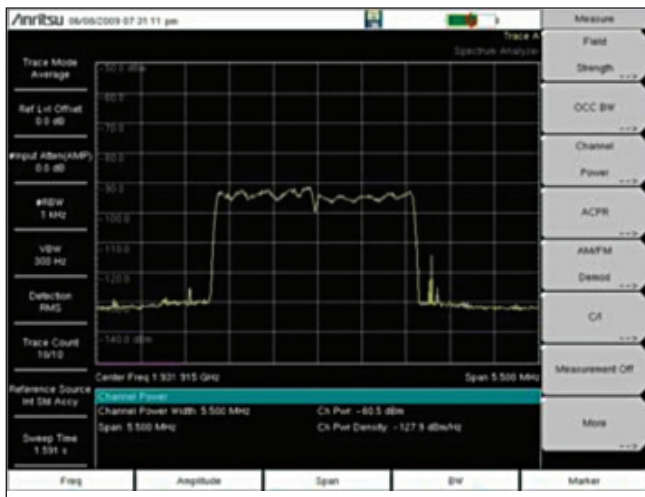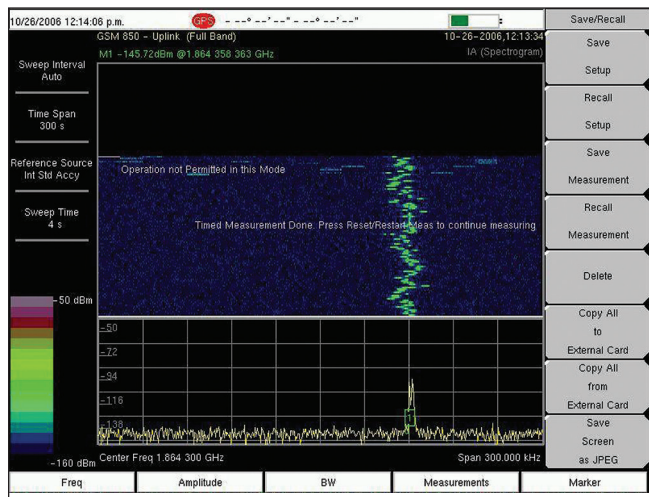

Figure 14: *Channel power measurement*

Figure 15: *Spectrogram screenshot. Signal shown is not frequency stable.*

Mobile Interference Hunting System Startup

MX280007A Licensing

In order to operate the Anritsu mobile interference hunting system, a license key is required. Licenses are small text files that reside on the Windows tablet/laptop. Licenses are created using an encrypted version of the model and serial number of the spectrum analyzer used in the hunting system. When a spectrum analyzer is connected to a Windows tablet/laptop, the license provides a signal that allows each device to communicate. Each license is operational for one or many spectrum analyzers, depending on the number of interference hunting systems purchased. If more than one system is purchased, a single license file can provide the needed authorization to communicate with the appropriate number of analyzers. License files can be copied and placed on to multiple tablets/laptops; however, they will only work with the specific spectrum analyzer(s) associated with the license.

Licenses can be loaded into the MX280007A software by dragging the file on to the InterferenceHunter display on the Windows tablet/PC. Alternatively, licenses can be loaded by clicking on the Help menu and navigating to the 'Import Licenses' tab. Once license(s) are attached to the hunting software, they remain attached when the tablet/laptop is rebooted. Additionally, any version updates of the software will automatically be attached to the license. Attaching the license to the software is a one-time procedure.

To confirm that the license has been properly attached to the MX280007A software, the user can click/touch the Help button at the top of the software display screen and navigate to the 'About Anritsu Mobile InterferenceHunter' tab. Once can then view the license key and each analyzer (Model and Serial Number) with which the key is associated.

Using Maps

The mobile interference hunting system works with two types of maps: GoogleMaps™ and OpenStreetMap™. Either mapping alternative is loaded by clicking/touching the 'Settings' menu at the top of the MX280007A display and touching/clicking 'Map Source' (see figure 16). The user is then able to choose GoogleMaps or OpenStreetMap. Additionally, if previous maps have already been installed, a selection named 'Installed Map Files' can be chosen to recall a previously used map.

Figure 16: Map selection menu for MIH

The use of GoogleMaps requires an internet connection for the duration of the interference hunt. Typically, a cellular USB modem is attached to the tablet/laptop for that connection. Care must be taken to insure that the frequencies generated by the modem do not conflict with the interference frequency.

OpenStreetMap is a downloadable file that resides on the Windows tablet/laptop. The Anritsu MX280007A webpage contains a link where OpenStreetMaps can be downloaded. The URL for Anritsu's map site is: http://www.anritsu.com/en-us/products-solutions/products//maps.asp. Figure 17 shows a screenshot of this webpage.

Hundreds of cities in multiple regions around the world have already been compiled for easy download. Additionally, instructions are provided for a 3-step process to create one's own maps. Once downloaded to the tablet/laptop, the map file can be dragged and dropped on the MX280007A display. This procedure will automatically attach the map to the mobile interference hunter system.

Alternatively, the OpenStreetMap can be loaded by using the 'Open Map' selection under the 'Settings' menu in the MX280007A application.
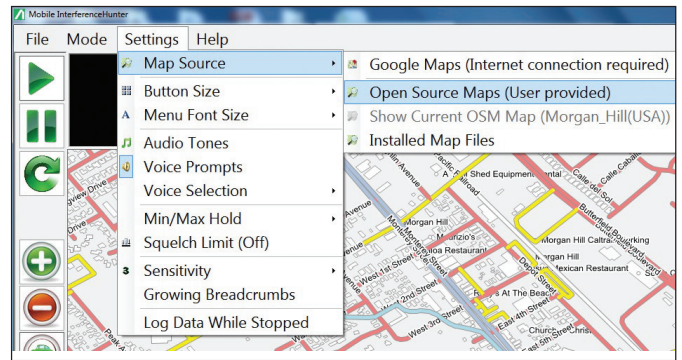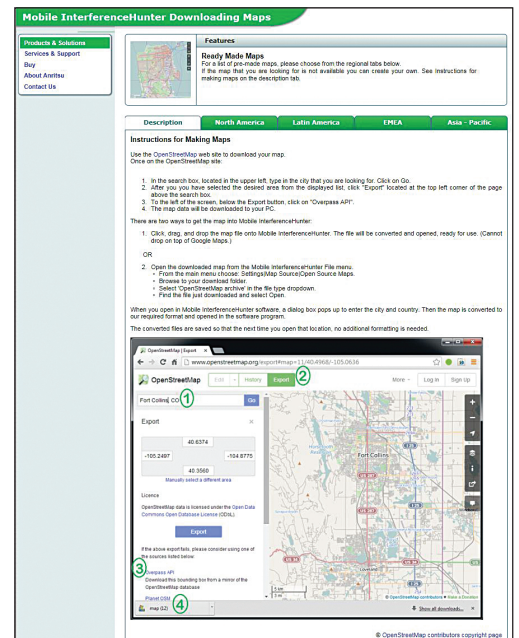

Figure 17: View of Anritsu MIH mapping webpage

MX280007A Settings

The 'Settings' menu in the MX280007A program contains a number of options available to the user to optimize the hunting system. As a personal preference, one can change the menu font size and button size in the display. Buttons are the various icons shown along the left column of the screen. Other setting options are shown below, listed in the order in which they appear in the software menu.

Audio Tones

With audio tones set to ON, a tone is played for the duration of the interference hunt. The pitch of the tone increases in frequency as the signal strength increases. This provides an audio indication that the driver is approaching the interference source. Tones are one tool to alleviate the need to frequently look at the map while driving.

Voice Prompts

Voice prompts can be set to ON/OFF. These prompts provide verbal directions to guide the driver towards the interferer, relieving the driver of the need to frequently view the map while driving. Commands such as 'left', 'right', 'forward', 'back' are played for the duration of the interference hunt. Prompts are given based on position awareness provided by system GPS, not the actual street positions shown on the map. For example, a command to turn left may be provided where the near-term ability to turn left may not exist. The driver should turn left when possible or follow an alternate voice prompt instruction when given.

Voice prompts provide the general direction of the interferer relative to the heading taken by the driver. Using GPS to sense the driver's direction of movement, the MX280007A algorithms indicate whether the user's vehicle is moving toward or away from the interferer. By obtaining additional measurement points during the drive, the interference hunting software identifies more precisely the interference position. A voice prompt command to turn left, for example, indicates a probability the interferer is to the driver's left. The user should navigate through whatever streets are available to move in that direction. Further information on the use of voice prompts is shown later in this document.

Min/Max Hold

Min Hold is ideal for finding interferers in frequency bands where a lot of intermittent signals are present. Possibly the most frequent use case is to measure interference signals in the LTE uplink bands. LTE uplink traffic signals can completely mask the interferer at any given point in time. However, LTE traffic signals are "bursty" in nature. Applying a Min Hold setting results in removing the LTE signals from the measurement, leaving only the interference. After the interference is measured, the Min Hold setting is re-set. This allows a new interference signal measurement to be taken at a later time. The time period for resetting the Min Hold parameter is set by the user. As a rule of thumb, Min Hold can be adjusted to reset every 3-5 seconds. However, the timing may need to be adjusted according to LTE uplink traffic intensity and vehicle speed. See figure 18 below for a screen shot comparison where Min Hold is applied. The interference signal can clearly be seen on the screenshot shown on the right after Min Hold is used.
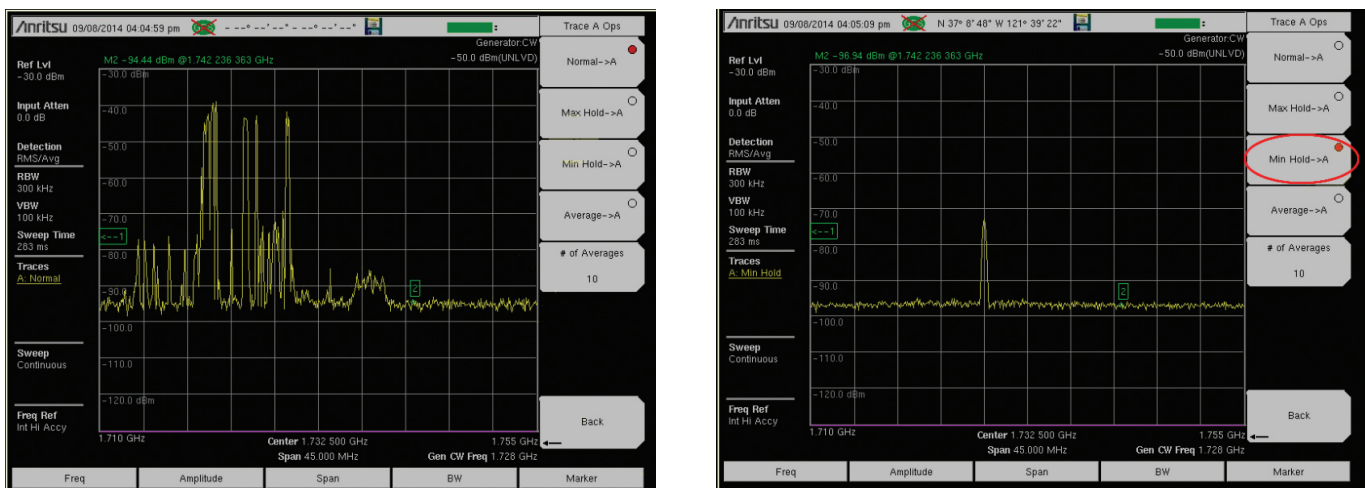

Figure 18: Comparison of LTE Uplink Band screenshots taken before and after MIN HOLD applied. Interferer obscured by the LTE traffic of left can clearly be seen on screen on right.

Max Hold works by displaying only the largest signals in the band during the time period measured. Max Hold is ideal for finding pulsed or "bursty" signals. A common pulsed signal is radar, where a short pulse is sent. The radar system then waits a period of time to measure the time for reflections to be received before sending another pulse. Similar to Min Hold, the period for resetting Max Hold each time is settable by the user.

When either Max Hold or Min Hold is selected, a sliding bar appears at the top-right corner of the MX280007A interface. The user can select the time (in seconds) until Min or Max Hold is reset. Max Hold is reset. See figure 19 for Min or Max Hold setting display. The red oval shows the setting position.

Figure 19: Upper right section of software interface showing position for user to set Max or Min Hold settings (in seconds)

Squelch Limit

Very often low-level signals might exist which are of no interest to the interference hunter. If these signals exist within the channel being measured, and they exceed the squelch limit, they will be incorrectly interpreted as interfering signals. Squelch limits can be set such that all signals whose power falls below that limit are ignored by the interference hunting system. Squelch limits are set by the user in units of dBm.

Sensitivity

Sensitivity settings are provided to enable the user to optimize the interference search algorithm given the terrain in which measurements are made. Sensitivity settings are fixed in a range of 0 to 5 as shown in the table (see figure 20).

Instantaneous measurements are generally not utilized in calculating the power level of an interference signal. Instead, instantaneous measurements are incorporated into a moving average, the length of which is proportional to the sensitivity setting. The exception here is a sensitivity setting of '0', where no averaging is conducted.

Sensitivity	Terrain
0	(No Averaging)
1	Rural (high sensitivity)
2	Light Suburban
3	Suburban
4	Urban
5	Dense Urban (high sensitivity)

Figure 20: Sensitivity settings available in interference hunter software

Increased averaging is required for environments where high levels of multi-path exist, figure 21. Typically, one will find increased levels of signal multi-path in urban environments where tall buildings and other obstructions are prevalent. Low level sensitivity settings are optimal where relatively little multi-path exists. The advantage of low level settings is that the software algorithms will incorporate the measurements more quickly, potentially decreasing the time to localize an interferer. In hunting interference in urban areas or in environments where high levels of multi-path are suspected, settings of '4' or '5' should be used. See figure 21 for multi-path illustration.

Figure 21: Multipath in urban environment

Peak Detection Threshold

In the 'Sensitivity' section of the software menu, another parameter called 'Peak Detection Threshold' can be set. Options for the threshold settings are Low, Medium and High. These options correspond to the required degree of change in interference signal level that must occur before a location estimate is provided. In most cases, leaving the Peak Detection Threshold on High will provide satisfactory performance. Placing Peak Detection Threshold on Low or Medium is helpful when looking for low-level signals causing interference in a small geographical area.

Growing Breadcrumbs

Colored dots (called 'breadcrumbs') are are placed on the map along the path taken by the driver hunting interference. The colors of each dot are proportional to signal strength measured at each location. In areas of high sunlight where the Windows tablet colors may not be clearly seen, a 'Growing Breadcrumbs' selection can be made so that not only the color but also the size of each dot is proportional to signal strength.

Log Data While Stopped

Under normal operation, measurement data is not taken while the vehicle is stationary. A setting called 'Log Data While Stopped' can be checked to allow data to be continuously taken regardless of vehicle movement. This option may be used for hunting mobile interferers.

Modes

Single Emitter

Single Emitter mode is the standard mode of operation for the mobile interference hunting system. A single interferer is hunted and localized.

Multiple Emitters

In 'Multiple Emitter' mode, any number of interference signals may be hunted. Each signal must operate at the same frequency. This option is useful for hunting interference generated by cable TV leakage. Cable TV systems are generally deployed in entire neighborhoods in one installation. Over time, connectors and other components in the cable system can wear out and leak radiation. Frequencies of CATV radiation can range anywhere from several hundred MHz to 1 GHz, depending on area and time period of installation.

To search for cable TV interference (or other forms of multi-emitter radiation), select the 'Multiple Emitter' setting. A window will appear allowing the user to set a threshold level. This is the height (in dB) a peak must rise above a local minimum to be considered an emitter source. Once the threshold is set, the user can drive through the neighborhood grid. A marker will then automatically appear on the map at each location where an interferer is suspected. The user can then take a snapshot of the map by navigating to the 'File' menu and selecting 'Capture Screen'. Alternatively, the user can type Ctrl-C if using a keyboard with the tablet/laptop. See figure 22 for an illustration of a cable TV signal.
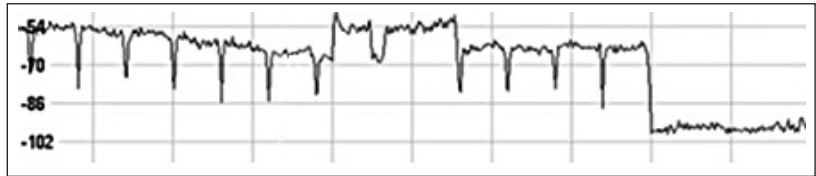

Figure 22: Typical Cable TV (CATV) Signal

Spectrum Clearing

Spectrum clearing can be used to place a marker on the map whenever a signal is measured that falls above a threshold set by the user. Images can be saved at each location where the threshold violation exists.

MX280007A User Interface

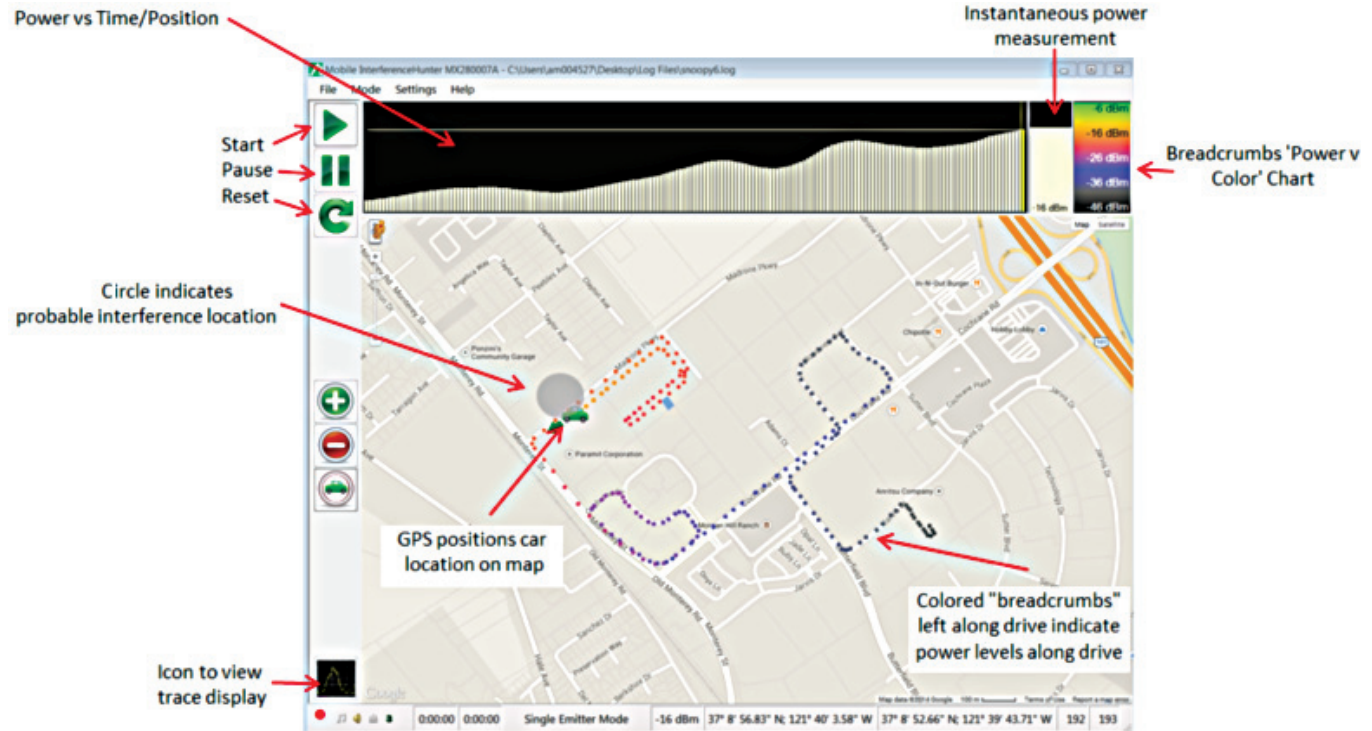The snapshot below (figure 23) illustrates the MX280007A display with various features highlighted.

Figure 23: MX280007A display on Windows tablet

Power vs Time/Position Chart

The power vs time/position chart at the top of the display (see figure 24) shows rectangles whose height is proportional to signal strength. As the driver moves along in the interference hunt, rectangles are drawn in the display from left to right on the screen.

Given the computational limitations of many tablets/laptops on the market, only 350 measurement points are considered in the algorithm which calculates the interference position. As more than 350 measurements are taken, signal measurements calculated at the beginning of the hunt are no longer considered while most recent measurements are added in a one-for-one exchange. The picture below shows the power vs time/position chart with greater than 350 measurement points taken. Notice the color change in the chart. Signals measured at the beginning of the interference hunt (shaded in grey) are no longer considered by the MX280007A program to calculate the interferer position. The region shown in yellow (on the right-hand side of the chart) is considered.
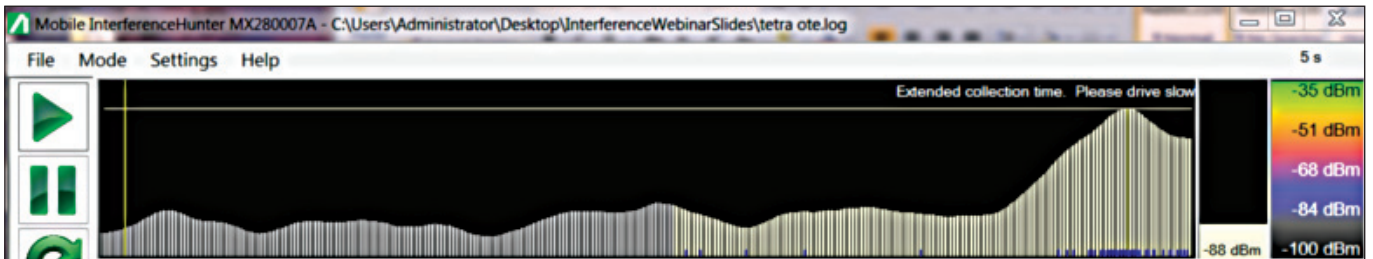

Figure 24: Screen shot of power vs time/position chart. Measurements colored grey (left-hand side) not considered in interference finding algorithm.

On the same figure shown above, notice the vertical yellow line in the power vs time/position display (located at the left portion of the chart). Users can move this yellow line backward or forward in time to view the position on the map (shown by the green car icon) where the measurement was taken. In some circumstances, users may want to drive back to the location(s) where interferer amplitude peaks were seen.

There may be some situations where the user may want to revisit an area where a previous peak was located. The driver can pause the program and slide the vertical yellow bar in the power v time/position chart to any position. The car icon will move to the location on the map where that measurement was taken.

This function can only be used if the mobile interference hunting program is set to 'Pause'. This is done by clicking/touching the double green bar icon located at the top left position of the screen. To continue running the program, touch the triangular icon above the pause button. As a safety feature, all settings are made inoperable when the program is running (and the user is driving).

Voice Prompts and Map Direction Indicators

The MX280007A software provides directions to the interference source by placing green arrows in the path of the car icon. Direction indicators such as 'forward', 'back' and 'left-right' are provided. See figures 25, 26, and 27 below for several examples.
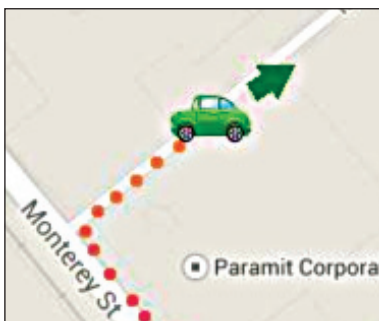

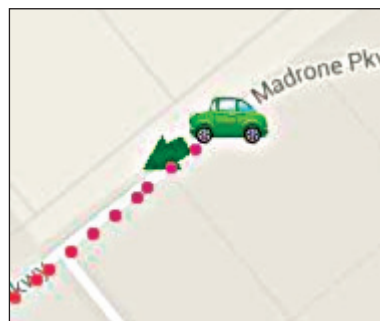Figure 25: Driver to proceed in forward direction

Figure 26: Driver to turn back

Figure 27: Driver to make turn, either left or right

When a left-right direction is given, the user has the option to turn in either direction. The program constantly measures power levels and will issue a 'back' command if the turn is made in the wrong direction. The purpose of this command is to provide additional data points for the software to more precisely determine the interferer location. Figure 28 depicts a situation where the driver might be given a left-right direction. By making a turn at the next intersection, the MX280007A algorithms will then determine whether the driver should proceed or move in a different direction.
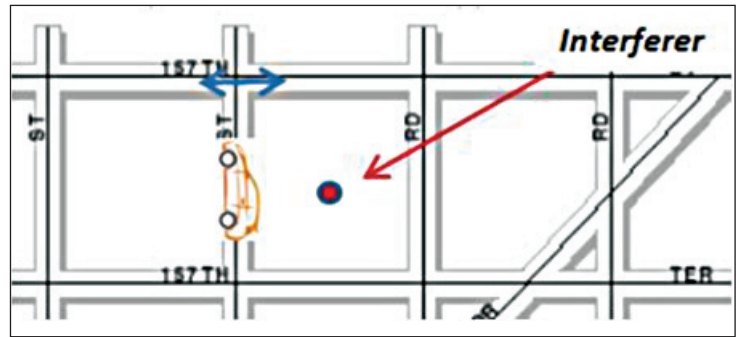

Figure 28: Illustration of situation where a 'left-right' direction command is given.

In addition to direction arrows being shown on the map, voice prompts are also given. Voice prompts mirror the directional arrows. For example, an arrow on the map instructing the drive to continue forward will be accompanied by the voice prompt 'forward'. Voice prompts relieve the driver of the constant need to reference the map, thus enabling one-person operation.

Additional voice prompts include 'back left' and 'back right'. The driver needs to turn around and bear left or right respectively.

Maps used in the program are overlays, ie not "terrain aware". For example, there will be instances where a left turn is prompted, but no left turn is possible for some distance. Drivers will need to use their discretion to move into the area where the left turn was prompted. Additional voice prompts may also be given to assist the driver when an initial command cannot be obeyed.

Finding the Interferer Position

Once the spectrum analyzer and tablet software have been set up, the interference hunt can begin. Simply touch the green triangular shaped icon at the top left position of the user interface and begin driving. Directions will not be provided to the interference source until a sufficient number of measurements are taken. Generally this process is completed in the first few minutes of driving.

The frequency spectrum can be also viewed while driving. Touch the spectrum icon in the lower left portion of the screen. This will show the spectrum at the top. See figure 29 below for an illustration.
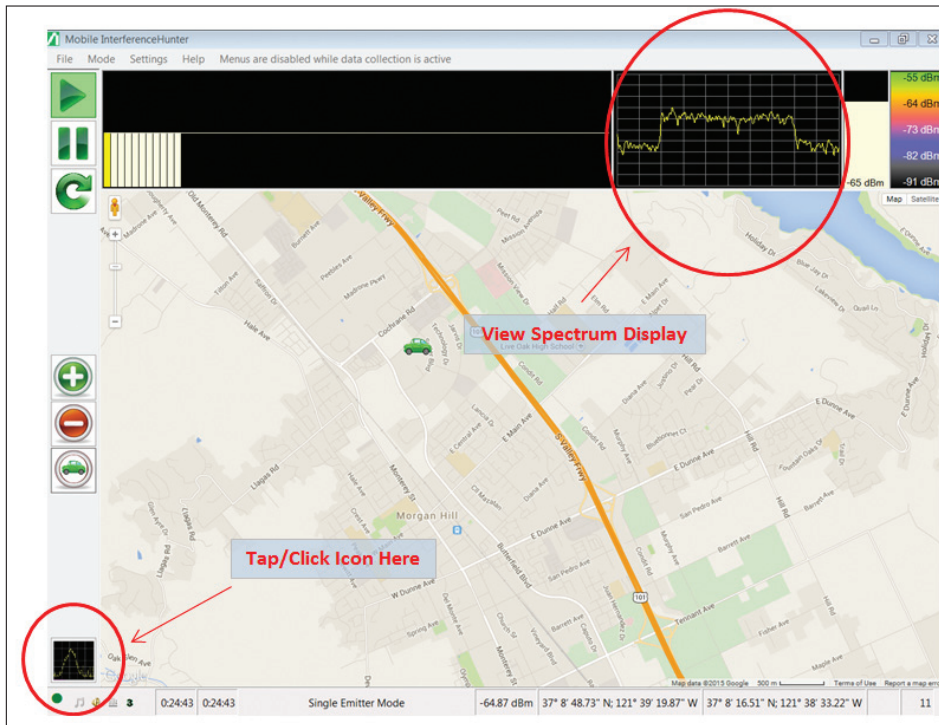

Figure 29: Tapping the spectrum icon at lower left will display the spectrum as shown here.

The user can also double-tap (or double-click) the trace data viewer to see a full-screen image of the spectrum. Tapping the spectrum display once then brings back the map. See figure 30 for illustration of the full-screen display.

Being able to view the spectrum while driving is an important feature of the interference hunting program. Particularly in the early stages of the interference hunt, viewing the signal strength of the interferer as you drive can be a good indicator that you are moving in the proper direction. Once verbal directions start being provided (or direction arrows appear on the map), you can then proceed according to the instructions given.

After sufficient data has been taken on the interference hunt, a circle will appear on the map indicating the direction for the driver to follow. The circle indicates an area of probability where the interference signal is located. See figure 31 for an example.

Figure 30: Full screen view of spectrum shown on table.

As noted in this figure, the circle may be multi-colored. The green portion indicates the area where measurements have already been conducted, but the orange 'slice' shows areas of uncertainty. To have a higher level of confidence for the interference location, as much of the orange 'slice' should be driven to accumulate additional measurements. The radial lines encompassing the orange slide can be extended to indicate the drive area. See figure 32 below for an illustration.
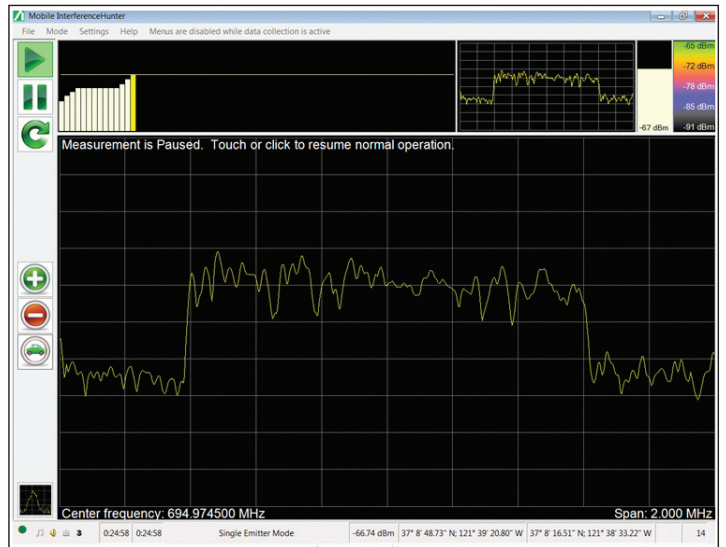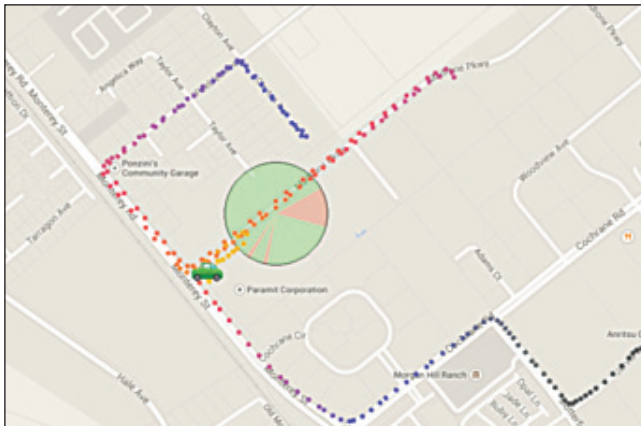

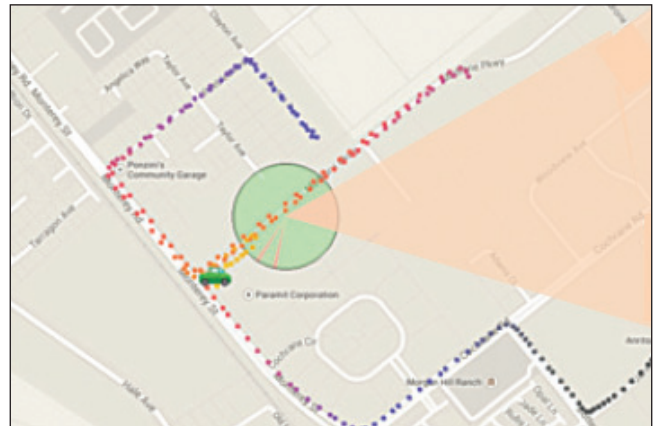*Figure 31: Screen shot shows circle during interference hunt*

Figure 32: Same screen shot with extended shaded area. User should drive in shaded area to increase signal localization probability

Once the additional measurements are taken in the region shaded in orange, the program may introduce another circle if the additional measurements indicate a region of higher probability for the interferer. Otherwise, the original circle will gradually turn a solid green. At this point the user looks for the peak power value in the power vs time/position chart for locate the interferer. If the inference source is not seen by inspection, the spectrum analyzer along with a directional antenna should be used to pin-point the interference source.

Pinpointing the Interferer Position

As noted earlier in this application note, the Mobile Interference Hunting System is designed to get the user close to the interference source. In some cases, the mobile unit will not be able to locate the exact signal position. For example, an interference source may be located in an office building, roof top or in a location inaccessible by the mobile unit. At this point, the driver will need to depart the vehicle and walk to the interferer position using a Yagi or other directional antenna. For this final step, the MA2700A Handheld InterferenceHunter mated with a directional antenna would be a good solution for pinpointing the interfrerence signal.

Summary

The Anritsu Mobile Interference Hunting System is designed to be flexible, allowing the user to tailor the software to most efficiently find the interference source. When not employed on interference hunts, the spectrum analyzer can be re-purposed for a variety of other applications including signal quality analysis and coverage mapping.

The MX280007A software will remember most user configurations, making these the default settings. In this way, setup time for future interference hunts can be kept to a minimum.

Log files and screen shots for the interference hunt can be saved by the user by clicking/touching the 'File' selections in the top menu. These log files can be played back at a later time for documenting the interference hunt for management and for further analysis of the hunt itself.

The Mobile Interference Hunting System is the ideal way for users to find signal sources. Whether you are looking for interference for regulators, operators or public safety, the Anritsu mobile hunting system is the ideal way to find, locate and remove sources of interference.

NOTES

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