CASE STUDY

Interference Detection for Wireless Carriers

Detect, classify, and locate interference with remote spectrum monitoring and analysis tools

KEYSIGHT

Wireless Communications

- RF Specialists who identify and resolve interference issues

Challenges

- Monitoring broad areas
- Detection, identification, and location of interference
- Documentation of interference

Solutions

- Keysight's remote spectrum monitoring and analysis tools
  - N6820ES Surveyor 4D software
  - N6841A RF sensor
  - 89600 VSA software

Results

- Automatic monitoring of several wireless areas simultaneously
- Proactive location and resolution of interference issues
- Fewer expensive Tier 3 truck rolls to areas with regular interference problems

Today's wireless environment

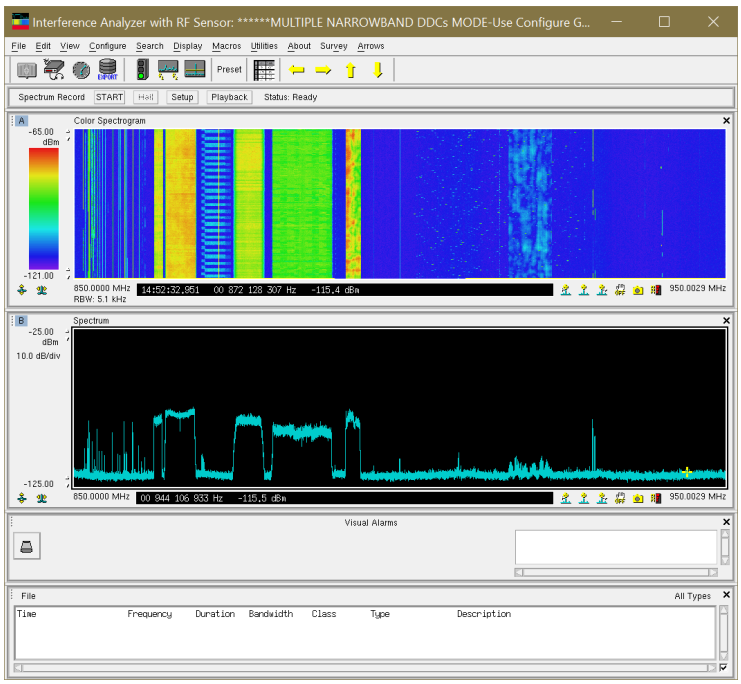
With new wireless services coming online, others reallocating to different frequency bands, and the proliferation of unlicensed devices, the chances for localized interference have never been greater. 5G services are growing exponentially, and when combined with the low power levels of user devices, low-level interference can cause problems over large areas.

Challenge

This situation makes Tier 3 radiofrequency (RF) specialists, the experts in charge of the automatic allocation of radios to frequencies, in high demand and keeps them busy working to identify and resolve interference sources. In addition to identifying sources of interference, RF specialists must provide documented proof that a signal is infringing on other signals before taking corrective action. Detecting, classifying, and locating interference signals requires specialized tools, tools that are robust and highly configurable to span all the possible signal scenarios they may encounter.

Solution

Keysight's remote spectrum monitoring and analysis tools improve the efficiency and reach of Tier 3 RF signal analysis by enabling RF specialists to monitor multiple problem areas from a centralized service desk. The capable spectrum monitoring and signal analysis software can control low-cost RF sensors used to detect signals in defined areas. The sensors, combined with high-performance software features and functions, detect, record, and locate in-band or out-of-band interference events without the constant attention of a specialist.



Results

Automatic monitoring of several wireless areas simultaneously reduces the need for expensive truck rolls, where technicians are dispatched in a vehicle to search for and resolve interference problems. The remote spectrum monitoring and analysis tools enable the service team to be more proactive in locating and resolving interference issues rather than reacting when problems occur.

RF specialists can set up in-band interference for automatic detection, IQ recording, and alerts via email with Keysight's Surveyor 4D interference analyzer. The software can also produce spectrum recordings enabling analysis of pre-event conditions. The monitored data includes precise locations and is time-stamped to correlate the interference event with construction, service, traffic, and other schedules to identify signal interference.

Related information

- N6820ES Spectrum Monitoring Surveyor 4D software
    - The Keysight Technologies N6820114E Surveyor 4D software is a spectrum monitoring tool, capable of automating signal search and survey functions. It tasks internal or external processes to capture and analyze spectrum events or conduct comprehensive surveys of the RF environment. Its powerful detection, triggering, and alarm functions are unrivaled in the commercial spectrum monitoring industry.
- N6841A RF Sensor for Spectrum Monitoring

- N6850A Broadband omnidirectional antenna
- PathWave Vector Signal Analysis (89600 VSA) software
    - Keysight's vector signal analyzer (VSA) software can play back the IQ recordings for signal classification, using methods in line with Recommendation ITU-R SM.1600, which describes processes, methods, and tools for the technical identification of digital signals.

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