VIAVI Solutions

Case Study

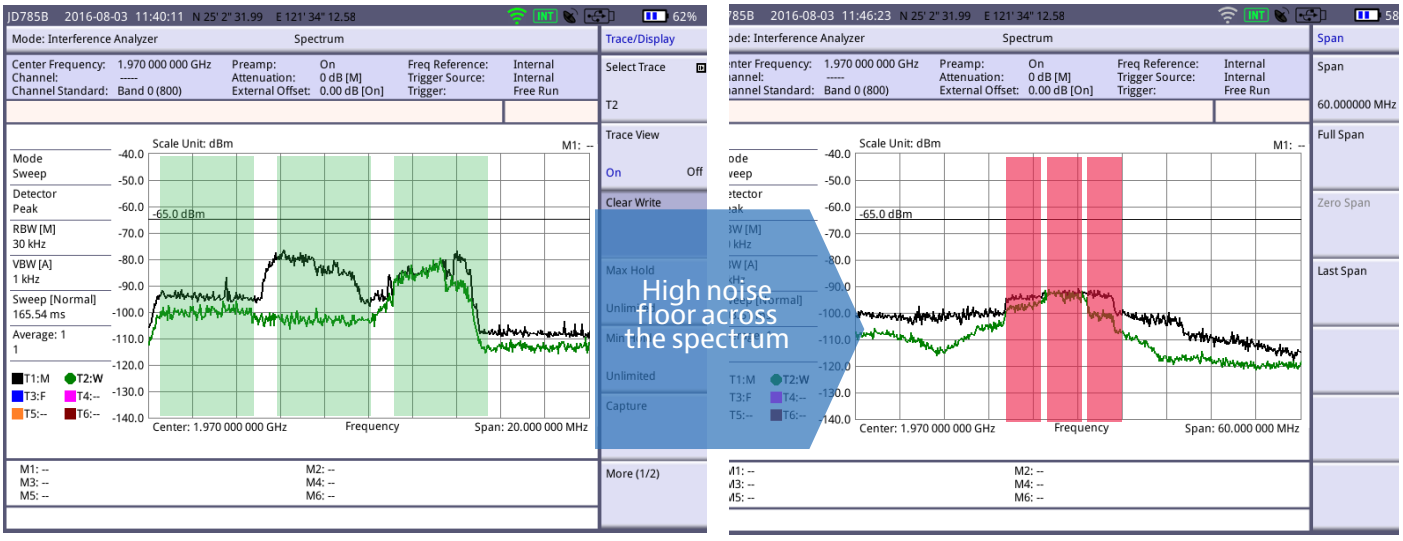
Distortion in UL Service Bands Repeater Saturation Resolved with InterferenceAdvisor

RF repeater saturation caused wide band noise, affecting all WCDMA service bands.

A Taiwanese operator reported a serious problem in a specific area in the city of Taipei. The VIAVI team was invited to help them locate the interference source using VIAVI InterferenceAdvisor™, the automated interference hunting solution.

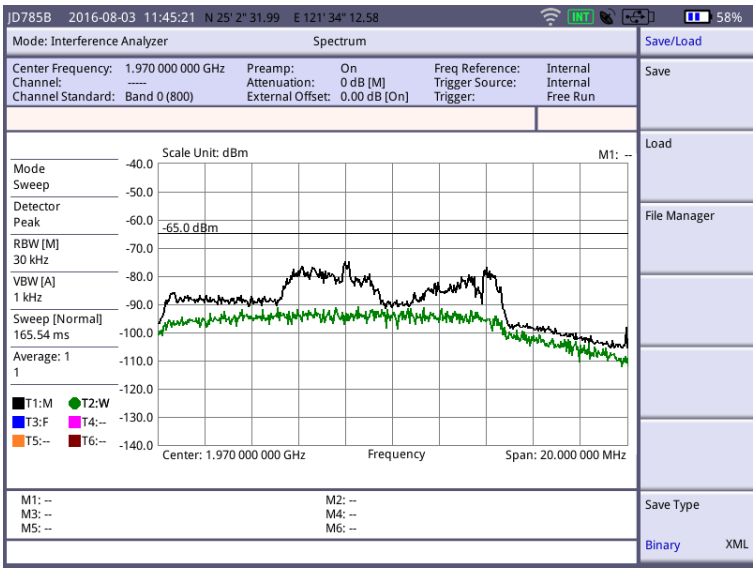
The operator reported the following problems:

- Wide band noise was causing serious service problems due to a saturation of RF repeaters located in a residential area
- This saturation was causing large distortion in the all-UL bands and disrupting services



Understanding the interference characteristics

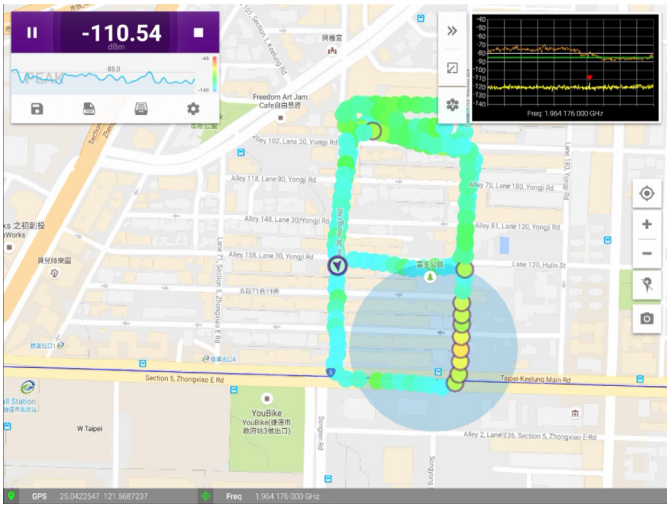
While driving the affected area, the team discovered that the noise floor would rise across the spectrum, causing serious call problem in all WCDMA service bands.



Noise floor goes up across the spectrum affecting all service bands (GRN trace)

Driving around to find the source area

After the team optimized the EagleEye™ software to track down the band noise interference source using its peak power mode, InterferenceAdvisor successfully located the suspected area.



Suspected area found by EagleEye software (blue circle)

Manually locating the source in the suspected area

An RF engineer conducted a local interference hunt with VIAVI CellAdvisor™ and AntennaAdvisor to locate the interference source on foot.

Manually locating the source in the suspected area

The source of the interference was quickly identified as a repeater installed on the first floor of one of the residences. Due to its saturation, the adjacent cell site received an unusually high signal, raising the noise floor across all service bands. Proper gain control of the repeater resolved the problem.

Best Practices

- Start with the problem site
- Drive around a relatively large area to understand the problem details and the interferer's characteristics (e.g. intermittent, single-tone, multi-peak, oscillating, drifting, band-noise, etc.)
- Optimize EagleEye settings using three different tracking modes (RSSI, Channel Power and Peak Power)
- Drive in the direction of the strongest signal to estimate the most probable location of the source (circle indication, directions , and navigation)
- Manually pinpoint the source using AntennaAdvisor within the area estimated by EagleEye

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