

Finding the Cause of Interference Affecting an LTE Physical Resource Block

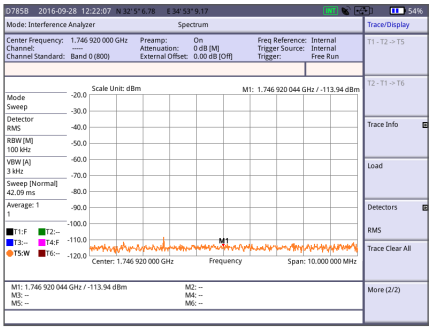
TV signal booster caused high RSSI problems

A customer in Europe was experiencing single-tone interference that was continuously affecting a specific LTE physical resource block (PRB). The interfering signal could be easily observed at the radio unit (RU) on the tower, but was very difficult to detect on the ground due to a low signal level. Despite this, it was affecting LTE uplink throughput.

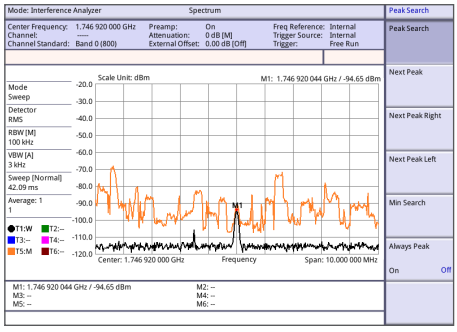
Description of the customer issue / problem

Two sites repeatedly reported high RSSI in LTE services. A specific PRB was seriously affected by the single-tone interference affecting uplink throughput.

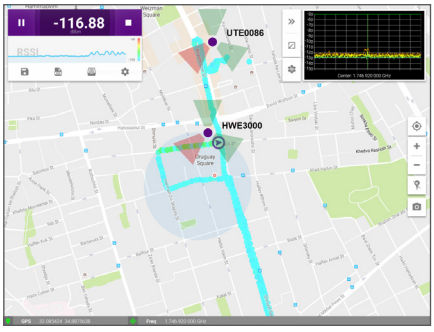
- The high RSSI problem was reported from two sites that were 400 meters apart
- All of the streets between those two sites had to be covered to identify the location of highest power (minimum number of reflections) of the interference source



Interferer was difficult to detect from the ground



Interferer could be easily identified on-site

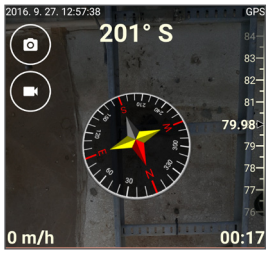


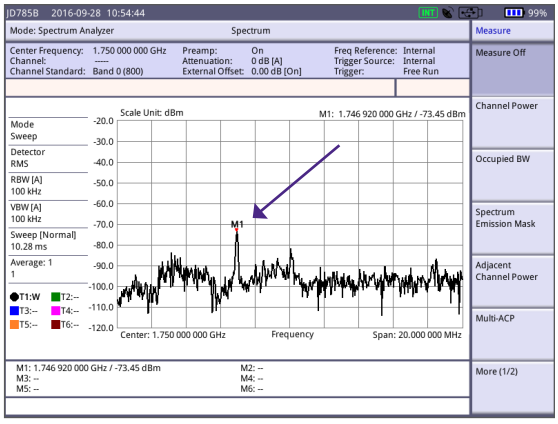
Sites where high RSSI was reported

On-site verification

The Viavi team performed on-site measurement, as the interferer could not be seen from the ground level. From the tower, using Viavi's log periodic antenna, the team detected a single tone interference at PRB #33 (around -96.25 dBm) from 201° South.







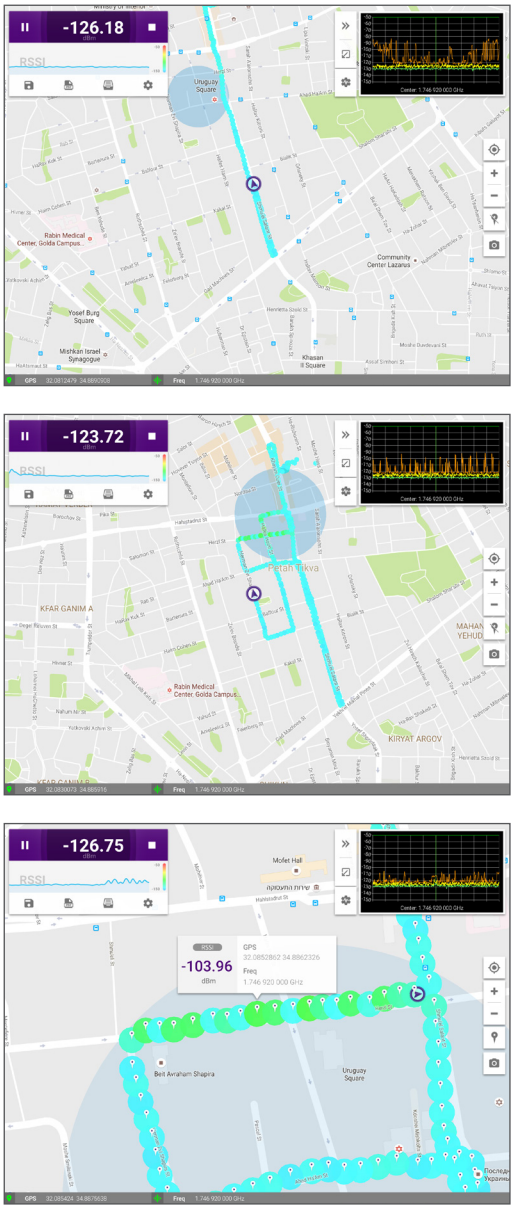
Single-tone interferer affecting LTE services with pre-amp

Results

Drive around to find the source area

The team conducted a drive test starting at the problematic site by following the EagleEye software on Viavi InterferenceAdvisor. The software successfully indicated the most probable area after just 6 minutes of driving.

The team parked the car near the suspected area and performed a manual hunt using AntennaAdvisor.



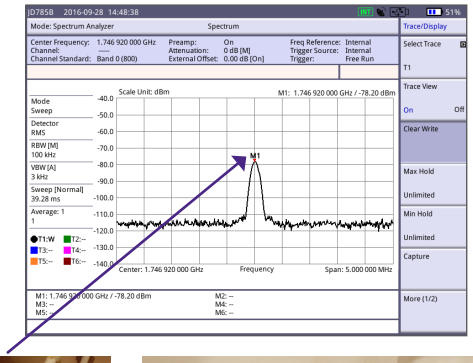
EagleEye successfully indicated the most probable area after 6 minutes of driving

Manually locate the source in the suspected area

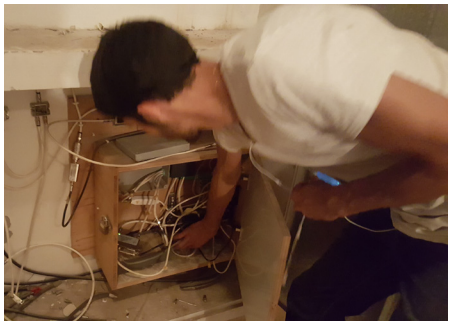
The manual hunt showed that the strongest signal was coming from a TV signal booster on the 9th floor of an apartment building, explaining why it was difficult to detect the signal from the ground.



RF engineer points the antenna at the suspected building







As soon as the TV booster was removed, the problem was eliminated.

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 estimated area

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