

# Detecting and Geolocating the Source of GPS Interference

## Repeating antenna causing issues for Telco

It had long been suspected that a Telecom Operator's site was under the influence of some external GPS signal interference based on the history of alarms and quality metrics being generated by on-site timing equipment.

The site had always been a problem. A locally situated Synchronisation Supply Unit (SSU) system had been reporting loss of signal and poor quality timing from the upstream GPS receiver. Detection of the issue had remained difficult due to the sporadic nature of the events; there would be quiet periods of months in between events or continuous streams of events for weeks at a time.

The site had been visited many times to replace equipment, re-install cables, boost signal strength via line amplification and relocation of the antenna to reduce the cable length. While some of these changes appeared successful, apparently resolving the issue, the faults returned and the cycle of changes began again.

It became clear that the issue might be caused by outside interference so a SENTINEL 24x7 GPS interference detection probe was installed onsite and confirmed the presence of interference.

During one of the site visits the Chronos support engineers discovered that while on the roof both a handheld GPS receiver and two mobile phones were unable to obtain lock and showed significantly reduced GPS signal strengths. This confirmed the potential interference however it was not possible with this equipment to detect where the source of the interference was coming from given the amount of equipment located on the roof.

The engineers were also able to confirm degraded GPS coverage within a 200ft radius at street level. The area included the entrance to a large shopping arcade which was in constant use by buses.



Repeating antenna is circled in red with GPS antenna in foreground



CTL3520 handheld GPS jamming detector with direction finding capability



CTL3500 handheld GPS jamming detector

Chronos re-visited the site with handheld GPS interference detectors, CTL3500 and CTL3520, to determine the source of interference. Within a few minutes the source was discovered and located using the CTL3520 handheld with GPS direction finding capability. Once the offending antenna was detached, all the affected GPS systems reported stronger signals and began to lock.

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