

ILS Geolocation

Setting the benchmark for satellite interference geolocation Fully integrated carrier monitoring and geolocation system

With the increase in satellite communication around the world, satellite operators and service providers are more and more challenged by interference issues on their satellites. Interference that impairs signal quality and availability is a direct threat to their business models and revenue - and may even be a cause for penalty payments, if they cannot provide the service quality guaranteed in the service level agreements they signed with their customers.

Therefore, satellite operators and service providers spend a significant amount of time and money on attempts to localize sources of interference. However, detecting interference is one thing; localizing its source is another time-consuming issue.

As a result, satellite operators invest in high-quality geolocation tools or subscribe to external geolocation services as well as personnel training targeted at identifying and reducing sources of interference. The main problem with these strategies is that localizing an interference source often takes days - an unacceptable amount of time for service providers, who are trying to avoid potential damage claims and the risk of losing customers.

What is worse, there are usually no alternate frequencies available to shift the interfered channels; and if a transponder is available, every customer would need to set their equipment to the new frequency.



"Thanks to using measurement data from different monitoring sites in SkyMon ILS Geolocation, we can localize a CW interferer with an accuracy of a few hundred meters in just a few hours - fully automatically and integrated into the SkyMon carrier monitoring system."

Customer Feedback



Integrated solution for optimal results

Because the number of satellite users and satellites positioned in the geostationary orbit has continuously grown in recent years – and especially because very small aperture terminal (VSAT) networks are more and more commonly used – the number of interference incidents is also increasing. Several hundred of these events are recorded every year, and this number is likely to grow as traffic increases and VSAT networks become more prevalent. While the majority of these incidents may be accidental, the potential of intentional interference is growing as both the availability of the equipment and the understanding of the technology improves.

Faster results

To optimally support satellite operators and save both time and money, Atos - one of the leading suppliers of satellite monitoring and geolocation systems - has developed SkyMon ILS. It is seamlessly integrated into SkyMon, follows the same operating routine, and can be used by any operator without specialist expertise. SkyMon ILS doesn't even require configuration: It uses data already available in the system, including satellite connectivity and reference carrier traffic plans. As a result, SkyMon ILS sometimes locates an offending emitter's position on earth within just a few minutes, thanks to its advanced geolocation, interference detection, and classification capabilities.

Catch the tough ones - hidden and short term interferences

Depending on its power level, the interference may not be visible with standard spectrum analyzers (hidden interference). That is why SkyMon ILS is designed to scan, detect, and classify satellite communication signals including hidden carrier interference and signals disrupting and/or overwriting legal services.

The geolocation task then uses signal acquisition, digital signal processing (DSP), and dedicated geolocation-specific post- data processing to locate the geographical position of the interfering uplink station. For shorter or

Your benefits at a glance

SkyMon ILS is:

- an integrated interference detection system
- a fully-fledged geolocation system
- easy to operate even for unexperienced operators
- offering superb geolocation accuracy that is much faster than standard geolocation systems
- requiring no specialist knowledge

sporadic incidents that don't last long enough for online analysis, SkyMon ILS can also immediately acquire and store the raw data for later processing.

Highest accuracy

In order to achieve the highest localization accuracy, SkyMon ILS can also automatically repeat its measurements several times and calculate an average localization estimation value with much higher precision compared to a single localization measurement. This is especially helpful for CW interferences, since in this case no time difference of arrival (TDOA) calculation is possible. In addition, the system automatically presents the best suitable adjacent satellite and reference carriers to be used for each measurement. To further minimize localization inaccuracies, SkyMon ILS also corrects localization errors caused by incorrect

ephemeris data. In addition, SkyMon ILS deploys traffic reconstruction, subtraction, and signal linearization tasks to reduce the required processing gain, which directly increases the achievable localization accuracy.

SkyMon ILS: Faster and more accurate

Wherever interference issues in satellite communications occur, SkyMon ILS is the swift solution for detection and geolocation. Integrated into SkyMon, the system offers high-performance tools for a comprehensive analysis of the interfering signal and its origin. With SkyMon ILS, you can take quick action to restore signal quality to the levels your customers have come to expect from you, saving both time and money and strengthening your excellent reputation.

