

TLS Customer Support Plan



Protecting Satellite Assets
Around the World



Safeguard the Heart of Your Business

Congratulations! With a TLS geolocation system, your company now has the most sophisticated in-house satellite interference location capability available. Today, this system has proven itself in the ground-based support network of every major satellite operator. By choosing the current TLS Apex Geolocation System, you make a commitment to the highest levels of customer service — now and into the future.

Even with a TLS geolocation system, occasionally, unique interference issues arise that require problem-solving expertise and resources not resident within your organization. You can further protect your valuable TLS investment with access to the operational support, specialized resources, and comprehensive system maintenance that will enable your immediate response to time critical interference situations.

At **Transmitter Location Systems, LLC**, we understand that even a brief period of downtime can mean the loss of thousands of dollars for your business. So when unexpected interference occurs, you can feel confident and secure with the TLS Customer Support Plan.

Leverage Our Quick-Response Team

The **TLS Customer Support Plan** is a long-term, comprehensive program that provides your TLS geolocation system round-the-clock expert analysis, maintenance, repair, warranty, upgrade, and training services.

As part of the program, our experienced scientists, engineers, and operators are online 24 hours a day, 7 days a week. They monitor your system's vital signs, offer real-time consultation for unique interference cases, and help restore your operations with emergency-room attention and precision.

Our knowledgeable and incisive experts have processed many thousands of satellite interference cases, making TLS recognized as the world leader in satellite interference detection.

Maintain the Pulse of Your Operations

The TLS Customer Support Plan covers an all-inclusive spectrum of support services. Together these services protect your investment in a world class geolocation system; they stabilize and support your operations when complex interference issues occur; and they optimize geolocation system performance.

Online System Diagnostics

Extended Warranty Service

Routine Maintenance Visits

Calibrator & Oscillator Verifications

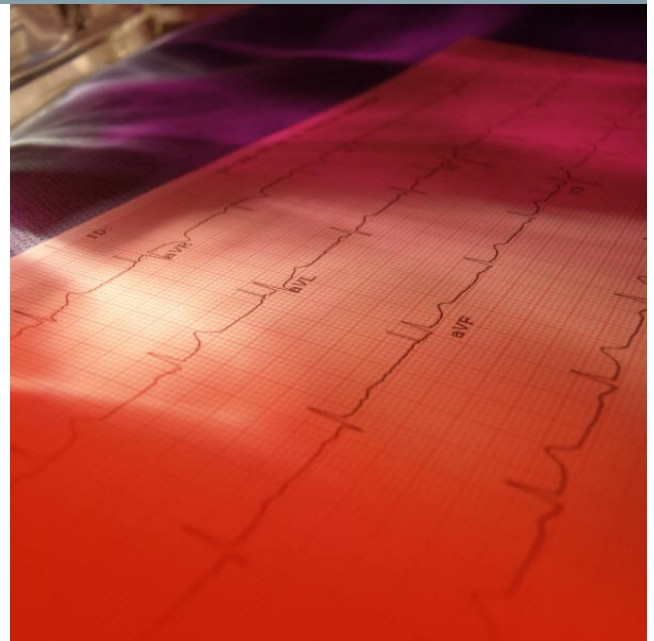
Software Updates

Operator Proficiency Training

Airborne TLS FINAL SEARCH™

24/7/365 Consultation & Analysis

Through the its Customer Support Plan, TLS will stand behind your geolocation system investment so that your commitment to uninterrupted satellite communications is clearly demonstrated to users and customers of satellite services.





Features

Online System Diagnostics

TLS geolocation equipment is designed and manufactured to provide the highest level of reliability available. However, in the event of a malfunction or failure, the system's remote operating capability allows TLS experts to perform comprehensive diagnostics that rapidly isolate and identify problems down to field replaceable unit level. Often, TLS engineers can reconfigure the system to continue limited operation pending repair or replacement of the failed item and return of the geolocation system to full operating capacity.

Extended Warranty Service

The TLS Customer Support Plan includes an extended warranty that takes effect at the end of our standard (initial purchase) warranty. As part of the extended warranty, we will remotely diagnose and identify any failed or malfunctioning component at the board or chassis level, and provide you with replacement parts from our spare parts depot. On an annual basis, you may also purchase the TLS Premier Extended Warranty, which provides on-site service and repair.

Routine Maintenance Visits

We will annually visit your site to perform routine and preventive maintenance on all TLS hardware. We will replace high-mortality rate items such as chassis cooling fans, conduct diagnostic tests to identify any components that may be approaching failure, and verify proper equipment calibration and operation.

Calibrator & Oscillator Verifications

To ensure optimal performance, position calibrator and phase calibrator database information must always be current and correct. Additionally, the frequency offsets between the corresponding transponder local oscillators on all primary and adjacent satellite pairs must be routinely measured. These routine “housekeeping” functions must be kept current for all satellite-transponder pairs utilized in TLS searches.

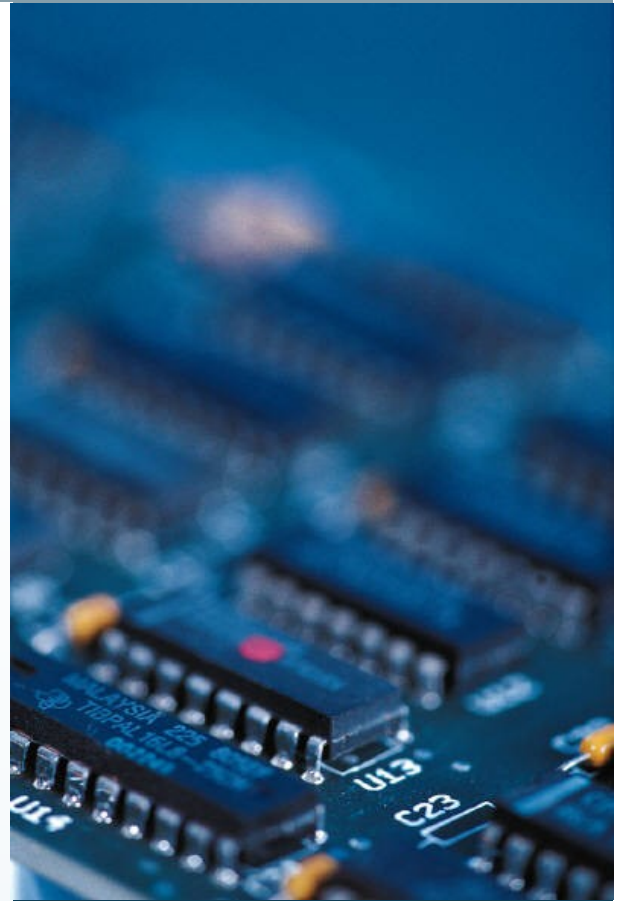
Without regular system maintenance, resolving an interference event requires the collection and updating of this information prior to interference analysis—which can add several hours to the process and require up to one full-time equivalent staff position. Under the TLS Customer Support Plan, our TLS operators perform these housekeeping functions, thereby maintaining your system’s readiness and significantly reducing the operational demand on your station personnel.

Software Updates

TLS regularly produces software updates consisting of the rare bug fix and new feature enhancements to TLS geolocation system software. In order to continue to provide you with the best interference geolocation capability possible, under the Customer Support Plan, you receive these updates to your existing software as soon as they become available. This provides for you the most capable geolocation system available both when it is new and in the years that follow.

Operator Proficiency Training

In conjunction with our annual maintenance visits, we provide proficiency training to your TLS operators. This training may include a combination of initial instruction for new or additional TLS operators, as well as proficiency maintenance training for existing ones.





These latter training sessions are useful when detailed instruction is needed in specialized aspects of system operation or when new or enhanced TLS procedures are introduced.

TLS Geolocation Services

We operate our own geolocation systems from the TLS Global Operations Center in Chantilly, Virginia, USA. TLS, LLC provides geolocation services on satellite transmissions that can be received at that location.

Airborne *FINAL SEARCH*[™]

The ultimate objective of any TLS search is the unique identification of the source of the interfering signal so that steps can be taken to eliminate it as quickly as possible. In many cases, the localizing of the interference source to a small geographic region and its comparison with transmitter locations from satellite user databases can accomplish this objective. Sometimes, however, even the smallest geolocation ellipse still does not permit a positive identification.

Enter **TLS FINAL SEARCH[™]**—an aerial search of the position ellipse that positively identifies the specific antenna causing the reported interference.

Using the position ellipse provided by a TLS geolocation system, a helicopter or other aircraft carrying **FINAL SEARCH[™]** receiving equipment conducts a systematic search of the designated area. With careful selection of the search altitude, the beam from even a relatively large antenna is sufficiently wide enough to fly through while following a predetermined search grid.

The TLS expert selects the search altitude and search grid using all available information—including the expected antenna azimuth and elevation based on the satellite location, the signal strength in the adjacent satellite, and aviation-related factors such as airspace control issues, local traffic patterns, proximity to nearby airports, terrain, and weather.

FINAL SEARCH™ techniques and equipment ultimately identify the offending transmitter antenna—including its street address—so that the antenna owner can be contacted and the interference problem solved.

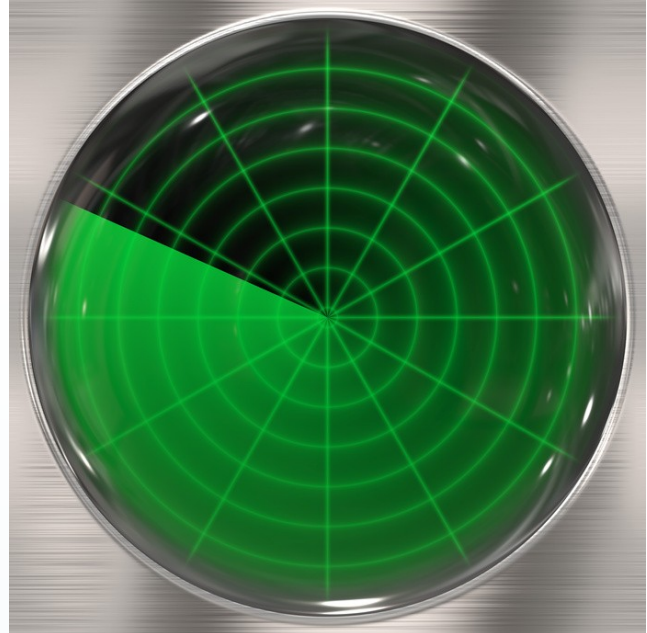
FINAL SEARCH™ is the ultimate defense against satellite interference. Since implemented in 1994, it has never failed to locate the interfering transmitter.

[24/7/365 Global Consultation & Analysis](#)

While routine operation of TLS geolocation systems are greatly simplified by the intuitive and logical structure of the TLS operating software, some interfering signals present operators with unique challenges. Our experts are available 24 hours per day, 7 days per week, to evaluate these special situations and provide in-depth consultation and analysis.

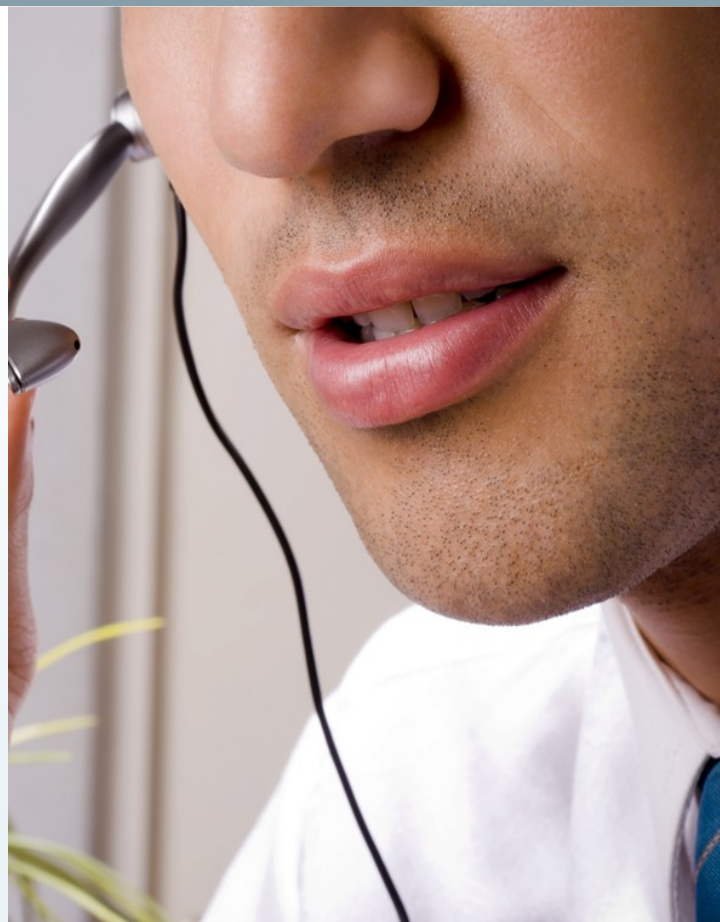
TLS is staffed by a highly trained team of operators, design engineers, and scientists who have comprehensive knowledge of TLS equipment as well as a thorough understanding of the scientific principles and state-of-the-art engineering practice that provides the basis of the successful operation of TLS geolocation.

Additionally, TLS experts can conduct full searches on your behalf using the TLS remote operation capability - which provides you with a "virtual" TLS expert on staff around the clock.



At the discretion of that TLS systems operator, TLS personnel can securely connect to ongoing operations at remote TLS geolocation system sites via the public internet. In this way, they can directly view the progress of system operations and data collection providing a basis for interactively consulting with onsite operators in real time. If desired, there is the additional option for TLS experts to further assist by remotely operating the TLS equipment themselves.

Ultimately, TLS experts can conduct full searches on behalf of customers using this TLS remote operation capability, providing to them a "virtual" TLS expert on staff around the clock. Accordingly, regardless of the demands of high priority fleet operations, critical interference resolution is only a phone call away. This broad array of support services offers the ultimate flexibility in meeting fluctuations in customer staff workload in a cost-effective manner.



For more information, contact:

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