CSIR™
Synopsis

Technology Overview

CSIR™ is the latest innovation from Glowlink that addresses some of the most vexing problems in communications systems. It re-defines the extent to which active interferences can be isolated and removed from a modulated communications signal, and by extension the separation of two or more signals in overlapping transmissions found in a variety of communications systems: space or terrestrial, fixed or mobile, wired or wireless, broadband or narrowband.

CSIR™ is a real-time streaming technology using state-of-the-art digital signal processing (DSP) technology and sophisticated communications algorithms. It can be implemented on a variety of platforms ranging from a complete turnkey system consisting of multiple chassis (e.g., signal monitoring and analysis) to small form factor appliances (e.g., cable/satellite TV set top boxes), to VHDL core on a chip (e.g., smartphones). Its applications are equally diverse: communications signal interference removal and noise reduction, communications signal separation, signal monitoring and analysis, geolocation of satellite signal emitters, etc.

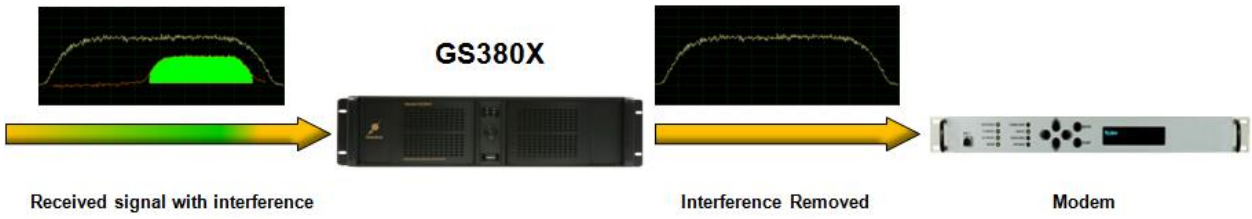
In addition to streaming applications, CSIR™ can also support buffered or other types of non-streaming or non-real-time applications, making them more robust and efficient.

Example Applications

Interference Removal and Noise Reduction

One example of CSIR™ application is the removal of interferences from a communications carrier to improve the latter's signal-to-noise ratio. With CSIR™, interferences--whether intentional or unintentional--can be removed in real time from the communications signal. This application is embodied in the Glowlink Model GS380X Interference Removal System.

The Glowlink GS380X Interference Removal System is designed to excise interferences in real-time, steaming fashion from a communication signal before the signal reaches the receiver. Thus, the demodulation part of the communications channel never "sees" the interference and is therefore never adversely affected by it. Applications of the GS380X include the protection of airborne communications/telemetry, satellite/space communications, terrestrial communications, and shipboard communications. The user of this technology does not need any *a priori* knowledge of the precise characteristics of the interference or the communications signal. The only information required is an approximate knowledge of the user's carrier center frequency, bandwidth and modulation. Armed with that information, CSIR™ will precisely measure these parameters, and proceed to remove *in real time* any interferences. The following diagram illustrates this application.



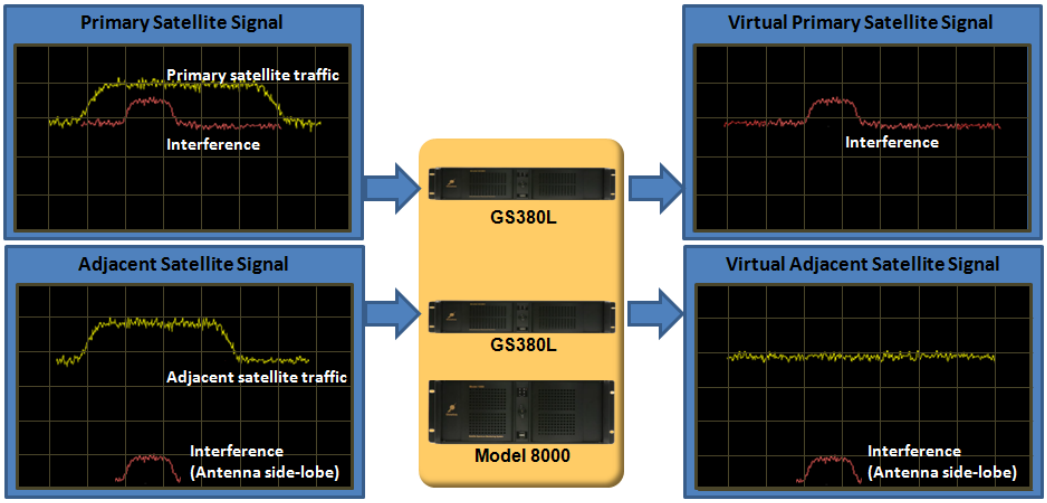
GS380X Streaming Interference Removal Improves Receive Performance

Satellite Interference Geolocation

Satellite communications are vulnerable to interferences, which can render an entire transponder or multiple transponders useless. The ability to find the source of the interference is the key to resolving the problem, especially in cases where the interfering signal is intentional or due to equipment fault. Furthermore, geolocation can be the only way to locate and mitigate rogue transmissions, such as pirating or unauthorized transmissions.

However, geolocation systems are constrained by the fact that interference, especially its weak replica on the adjacent satellite, can be masked by normal traffic carriers on the adjacent satellite. This makes geolocation inaccurate and quite often impossible. CSIR™ technology is used to remove the masking carriers so that the underlying interference and its replica can be exposed for geolocation.

This application is embedded in the Glowlink GS380L Geolocation Signal Enhancement System, which removes an obstructing carrier to expose the interfering signal so it can be better geolocated. Used in conjunction with the Glowlink Model 8000 Geolocation System, the resulting performance improvement from the GS380L is 70+ dB, and when coupled with the processing gain offered by the Model 8000 itself, the net processing gain is in excess of 142+ dB! This level of performance practically ensures that the interference geolocation operation will *always* succeed, even when other legacy geolocation products on the market fail to yield a geolocation result. This application is illustrated in the diagram below.

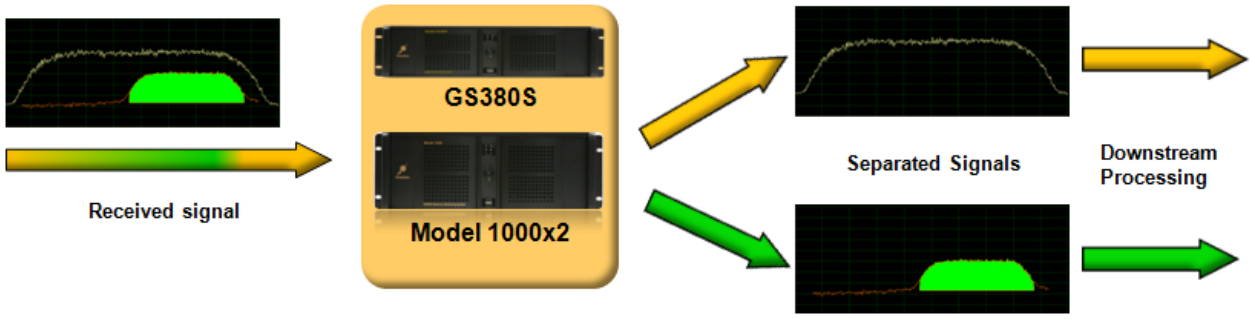


GS380L Removes Obstructing Signals to Enhance Geolocation Performance

Signal Reception, Monitoring and Analysis

Another application of CSIR™ technology is in signal reception, monitoring and analysis, where it is desirable to separate a composite communication signal for further downstream processing. CSIR™ can separate two overlapping communications carriers and preserve the fidelity of each. This can be used to separate signals that intentionally overlap, such as those found in paired-carrier transmissions used in satellite communications. The separated signals can then be further processed downstream for a variety of purposes as shown below.

This application is embodied in the Glowlink GS380S Signal Separator System. Working in conjunction with a Glowlink Model 1000x2 spectrum monitoring system, the GS380S takes two overlapping communications carriers and processes them *in real time* to produce two separate signals, while preserving the fidelity of each signal. This is illustrated in the diagram below.



GS380S Separates Signals for Downstream Processing

Other Applications and Licensing

CSIR™ is a powerful technology platform that is almost limitless in its possible application. The patented technology is also available for licensing to fit a variety of customer applications. For inquiries about licensing and how CSIR technology may be applied to your communications system, please contact sales@glowlink.com

About Glowlink Communications Technology, Inc.

Based in the Silicon Valley, United States, Glowlink Communications Technology, Inc. provides equipment and services that improve the performance of broadband communications, both satellite and non-satellite based. It is a recognized industry leader of innovative solutions for broadband communications, carrier spectrum monitoring, interference detection/mitigation, geolocation, network management and other applications. Contact the company at sales@glowlink.com for additional product and purchase information. Website: www.glowlink.com.