



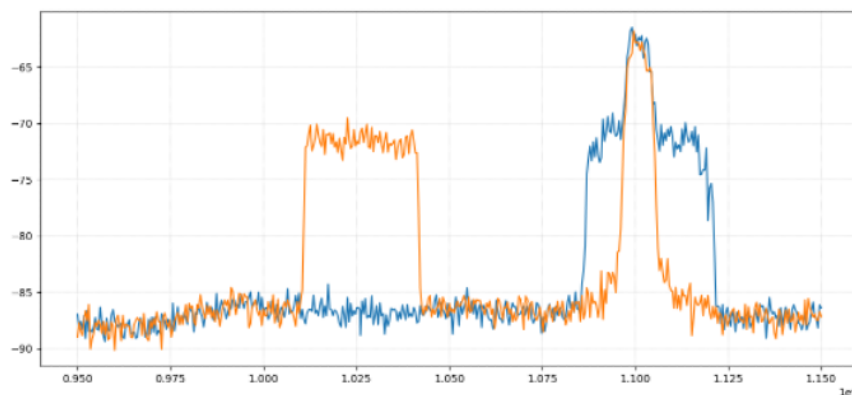
## CoLTS-ACE Jamming Simulator Configurable Link Test Set for Advanced Contested Environments

### Hardware-in-the-Loop Analog Interface for L-Band Modems

Welkin Sciences' CoLTS-ACE provides hardware-in-the-loop (HWIL) jamming simulation for military SATCOM. When a simulator is installed in the transmit path, it can inject jamming onto the Uplink (terminal-to-satellite) signal. Conversely, when the simulator is installed in the receive path, it can inject jamming onto the Downlink (satellite-to-terminal) signal.

HWIL simulation removes the need for jamming hardware or RF test equipment to perform Anti-Jam (AJ) verification. Traditional AJ testing for terminals required equipment to transmit jamming signals into the antenna. Testing of modems required injection of jamming waveforms using signal generators or arbitrary waveform generators. HWIL simulation, as provided by CoLTS-ACE, not only removes the need for extra equipment, but it is also parameterized, so several types of jamming may be controlled by software. This enables a wide range of advanced contested environments to be used in AJ testing.

The CoLTS-ACE HWIL simulator may be installed in a laboratory setting or in the field. This provides flexible training capabilities for SATCOM operators. For example, the simulator may run on operation equipment to test the warfighter's ability to recognize jamming and to perform appropriate response procedures. CoLTS-ACE can also operate in combination with other HWIL simulators (such as Welkin Sciences' COLTS-LC) to perform combined effects testing and training for both nuclear scintillation and jamming simultaneously.



**CoLTS-ACE Frequency-Follower Jammer  
Before and After Signal Frequency Detected**



## CoLTS-ACE Features & Benefits

- Eliminates the need for expensive field jamming equipment, manpower, and logistics
- Currently supports both Reactive and Non-Reactive jammers
- Additional jammer types can be developed as needed for the CoLTS-ACE platform
- Additive White Gaussian Noise (AWGN) generator with adjustable power can be added to DUT or Jammer
- Easy to use graphical user interface for creating complex jamming scenarios and viewing results
- Supports Simple Network Management Protocol (SNMP) for automated remote control of tests
- Parameterized jamming definitions allow for easy testing of a wide range of contested environments
- Simulated jamming can be injected in the Uplink or Downlink signal
- Future capabilities may include multicarrier jamming and wider instantaneous bandwidth jamming

## CoLTS-ACE Applications

- CoLTS-ACE can be used to verify that device-under-test (DUT) meets anti-jam requirements (VV&A)
- Provides flexible jamming scenario training for warfighters and SATCOM operators
- Can be used for combined effects testing for both jamming (CoLTS-ACE) and scintillation (CoLTS-LC)
- Operational flexibility for satisfying any SATCOM mission from any satellite terminal at any site

## CoLTS-ACE Capabilities

|                             |   |
|-----------------------------|---|
| Analog Signal Interfaces    | Tunable from 950MHz to 2150MHz (L-band)   |
| Jammer Types                | Currently supports Reactive and Non-Reactive Jammers  |
| Jammer Source               | Partial Band Noise, Internal Arbitrary Waveform, or scaled and delayed DUT signal                 |
| Frequency Agility           | Hop, chirp, or frequency follower   |
| Instantaneous Bandwidth     | 125MHz (anywhere in L-band)   |
| Monitor & Control Interface | 1 GbE with Web Browser GUI and SNMP scripted testing support                                      |
| Total Signal Power          | Receive: -5 dBm Max<br>Transmit: -40 to 0 dBm   |
| Chassis                     | Half rack-mount, 1 RU (8.2"x16"x1.7")<br>< 10 lbs, 110V, < 5amp, FCC, CE, manufactured in the USA |



## CoLTS-ACE GUI Dashboard

The CoLTS-ACE GUI is accessed via a Web Browser over a 1 GbE connection. The Dashboard allows the test to be defined with drag-and-drop elements in the Block Diagram area. The Signal Monitor Controls can be set for data capture, and the Signal Monitor plot displays the results. A Message Feed area communicates test status.



## Interfaces

The CoLTS-ACE provides two analog L-band interfaces (N-Type) for RF<sub>IN</sub> and RF<sub>OUT</sub>. Monitoring and control is provided with SNMP or Web Browser over a 1 GbE connection.



For further information on our products,  
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