Technology Service Corporation

Infrared/Ultraviolet Simulators and Related Systems

Infrared and ultraviolet missile warning sensors and infrared directional infrared countermeasures (DIRCM) are being deployed on United States and allied aircraft to protect against surface-to-air and air-to-air missile threats. Systematic test and evaluation (T&E) of these electronic warfare systems is required at all levels, including hardware-in-the loop (HITL), installed system test facility (ISTF), and open-air range (OAR). High-fidelity simulations that reproduce the spectral, temporal, and spatial characteristics of threat missile signatures are critical to accomplishing the T&E requirement. Infrared monitoring systems for evaluating the countermeasures performance are also required.

Technology Service Corporation (TSC) has developed and demonstrated infrared and ultraviolet missile signature simulators, DIRCM monitors, and related components for HITL, ISTF, and OAR applications.

- The **IR/UV Source Stimulator** (IRUSS) system developed for the Benefield Anechoic Facility (ISTF) at Edwards Air Force Base consists of computer-controlled IR and UV point sources that simulate the spectral, temporal, and spatial characteristics of surface-to-air and air-to-air threat missiles. Spatial simulation is accomplished by coupling the output of an IR/UV source via fiber optic cable to a computer-controlled motion rail system. TSC has largely developed a compact infrared detector array for monitoring of DIRCM performance.
- The **OAR IR Simulator and Target Array** (ISTAR) system was developed for the Electronic Combat Range at China Lake Naval Base. The IR Simulator consists of ten trailer-based liquid-propane flame sources that are configured and sequentially operated to simulate surface-to-air missile signatures. Target or detector arrays are mounted in front of the sources for declaration and monitoring of the DIRCM beam and verification of the DIRCM waveform. Infrared bands I, II, and IV are monitored simultaneously at a 100 kHz sampling rate, with real-time data processing utilizing state-of-the-art Field Programmable Gate Array technology. The IR Simulator sources are remotely controlled via an RF modem communication system (2 km range).

INFRARED SOURCE TRAILER

- TSC has also developed a **computer-controlled multi-color filter system** for the HITL IR Simulation at the Air Force Electronic Warfare Evaluation Simulator facility in Fort Worth, Texas. The multi-color filter system is used to dynamically shape the spectral output of xenon lamps used to simulate aircraft and flare countermeasures signatures.

WHY TSC?

TSC has over 15 years of hands-on experience in developing IR/UV simulator and detector array systems for HITL, ISTF and OAR applications. Our IR/UV simulator and detector array technology and experience can be applied to any number of operational test requirements involving IR and UV sensor systems.

CONTACT INFORMATION

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