



## DIRCM Monitor System for ISTF Testing

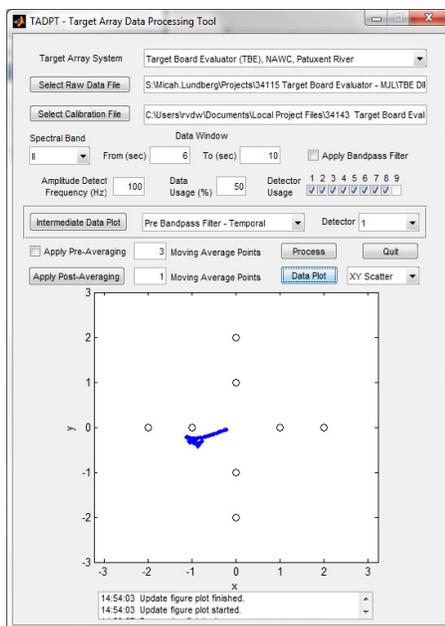
Test and evaluation (T&E) of Aircraft Survivability Equipment (ASE) missile warning and countermeasure systems is essential for verifying and optimizing ASE system performance. Specialized test equipment is required to evaluate the performance of ASE Directional Infrared Countermeasures (DIRCM) systems. DIRCM pointing accuracy and jitter, energy on target (EOT), and target acquisition time (slew and track initiation) must be systematically assessed. The DIRCM waveform must also be verified.

Technology Service Corporation (TSC) has developed a DIRCM Monitor System (DMS) for T&E of DIRCM systems at an Installed System Test Facility (ISTF). The DMS is based on a DIRCM test system developed for the U.S. Navy Air Combat Environment Test and Evaluation Facility (ACETEF), Patuxent River. The DIRCM Monitor System consists of Infrared Source and DIRCM Monitor subsystems integrated into a DIRCM Monitor Head, a PC-based DMS Controller,



DIRCM Monitor Head

and a QCL Power Supply/Controller for operating the 1 W mid-wave infrared (MWIR) Quantum Cascade Laser (QCL) used in the Infrared Source. The Infrared Source simulates missile plume temporal signatures with a 1 kHz update rate to the DIRCM system under test, and the DIRCM Monitor, which consists of a cruciform array of eight lead-selenide (PbSe) detector packages, records the DIRCM response. The detector packages have three MWIR detector channels corresponding to bands I, II, and IV. The central position of the cruciform array is reserved for the Infrared Source radiating aperture. The DIRCM Monitor samples at 100 kHz, ensuring faithful recording of the DIRCM waveform in the three bands. A neutral density (ND) filter plate is configured with the DIRCM Monitor to preclude saturation of the detectors. The DMS Controller features a highly-developed and intuitive LabVIEW GUI for operation and checkout (built-in test) of the DIRCM Monitor Head. DIRCM Monitor data can be acquired for up to 10 sec per simulation run. A Target Array Data Processing Tool (TADPT), hosted on the DMS Controller, is available for post-run analysis of the DIRCM Monitor data and display of the DIRCM performance. The TADPT measures, e.g., at a 100 Hz rate, the DIRCM X-Y impact point on the array and the DIRCM central-beam irradiance. Impact-point data can be displayed in an X-Y Scatter format or X vs. Time and Y vs. Time formats. Raw and intermediate data plots can also be displayed. The DIRCM pointing measurement resolution is on the order of 20 microradians.



Target Array Data Processing Tool

### ABOUT TSC

TSC has over 20 years of hands-on experience in developing IR/UV simulator and detector array systems for HWIL, ISTF and OAR applications. Our IR/UV simulator and detector array technology and expertise can be applied to any number of operational test requirements involving IR and UV sensor systems.

### CONTACT INFORMATION

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