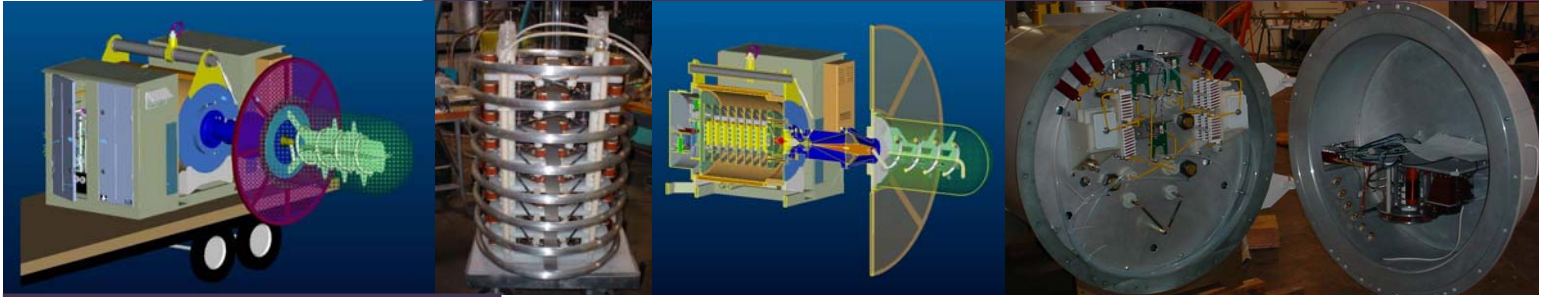




# High Power Microwave Wideband Threat Systems



## HPM WBTS Capability Summary

- Produces wideband radio frequency electric fields that can be used for asset susceptibility testing
- Transportable and capable of relocation between test sites
- Provides flexible emission to simulate HPM sources in several frequency bands
- Capable of remote and mobile operation
- Being developed by L-3 Communications Pulse Sciences of San Leandro, CA
- Available from White Sands Test Center

The High Power Microwave (HPM) Wideband Threat Systems (WBTS) Capability is being developed by the Directed Energy Test and Evaluation Capability (DETEC) project. The capability produces wideband radio frequency (RF) electric fields that can be used for asset susceptibility testing. This capability is being developed to resolve a high-priority shortfall identified by the 2004 DETEC Tri-Service Study, which developed, scoped, and prioritized directed energy (DE) test and evaluation (T&E) infrastructure shortfalls. This shortfall represents a need for an HPM source that accurately portrays wideband HPM characteristics.

## HPM WBTS Overview

The HPM WBTS Capability provides wideband HPM emission sources that mimic opposing-force HPM weapons to allow testing of assets for susceptibility to such emissions. The capability provides the ability to test over a broad range of frequencies, pulse repetition rates, pulse widths, and other parameters. The capability is transportable, may be relocated between sites in the Major Range and Test Facility Base (MRTFB), and may be set up and ready to test in a matter of days.

The HPM WBTS Capability covers the frequency range from 200 MHz to 6000 MHz in nine frequency bands. For each frequency band, the system is configured to provide a specific frequency range about a center frequency. The HPM WBTS system consists of a power conditioning, an RF source, a load (antenna), controls, and diagnostic ability. In addition to susceptibility testing, the HPM WBTS can be used to test warfighting systems by providing flexibility to generate RF electromagnetic fields in a number of applications and scenarios.

## Operational Description

The HPM WBTS Capability supports HPM testing of systems by providing wideband HPM emission sources that mimic opposing force HPM weapons and other sources of microwave emission, such as radars, in order to allow testing of Blue force assets for susceptibility to such emissions. The HPM WBTS also emulates a source that is in operation while moving on a vehicle, aircraft, or projectile platform.

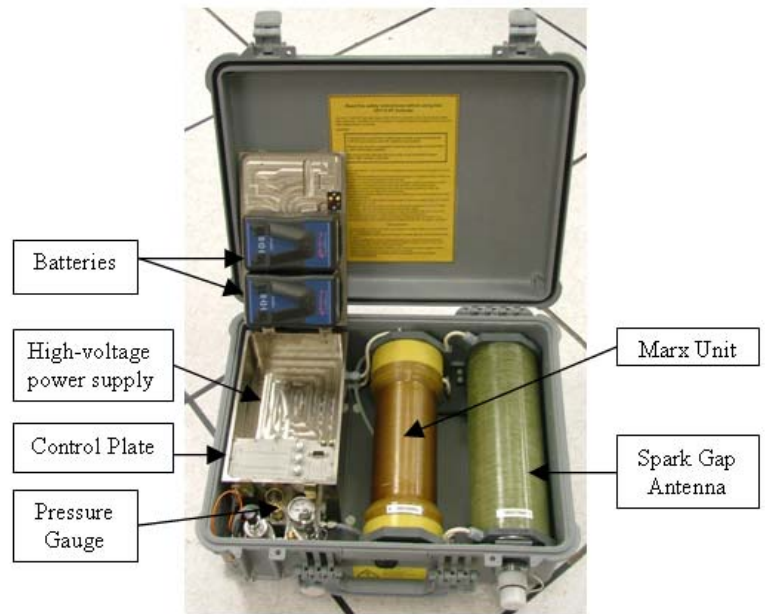
## HPM WBTS System Specifications

- Frequency spectrum: 200-6000 MHz
- E-field at target: 30-110 V/m/MHz (depending on frequency)
- Pulse length:  $\geq 1$  ns
- Pulse repetition frequency: 1-100 Hz
- Bandwidth:  $\geq 10\%$  center band frequency
- Pulse per run: 1-500 pulses
- Pulse field consistency: 20%

### HPM Small Wideband Test Source

The HPM Small Wideband Test Source (SWBTS) is a commercially available source made by Diehl that DETEC acquired to evaluate its performance through a variety of tests and assessments. The Diehl DS110T is a tunable high power RF test source for rapid and cost effective target effects testing in realistic scenario environments. The antenna is mechanically tunable over a principal frequency range from 100 – 300 MHz using a 5.5-turn knob. A timer is included for fully autonomous or remote operation. The DETEC SIC completed testing of the HPM SWBTS device.

DETEC loaned the device to the Government to support testing during the summer of 2007 and formally delivered the device to the Government in October 2007. In March 2009, DETEC acquired and delivered a second HPM SWBTS device. The first HPM SWBTS device is hosted by White Sands Missile Range, while Pax River is hosting the second device.



To schedule use of one of the HPM SWBTS devices, please contact Mr. Russell Blundell, 575-678-5584 • email: [Russell.blundell@us.army.mil](mailto:Russell.blundell@us.army.mil) or Mr. John Crim, 301-757-3612 • email: [john.crim@navy.mil](mailto:john.crim@navy.mil)

### Program Status

The DETEC Systems Integration Contractor (SIC) is managing the development and fielding of the HPM WBTS Capability. The DETEC SIC competitively awarded the HPM WBTS Capability development contract to L-3 Communications Pulse Sciences of San Leandro, CA. The HPM WBTS resides at its host site, White Sands Test Center (WSTC), and is available for the T&E community to use.

### HPM WBTS Integrated Product Team

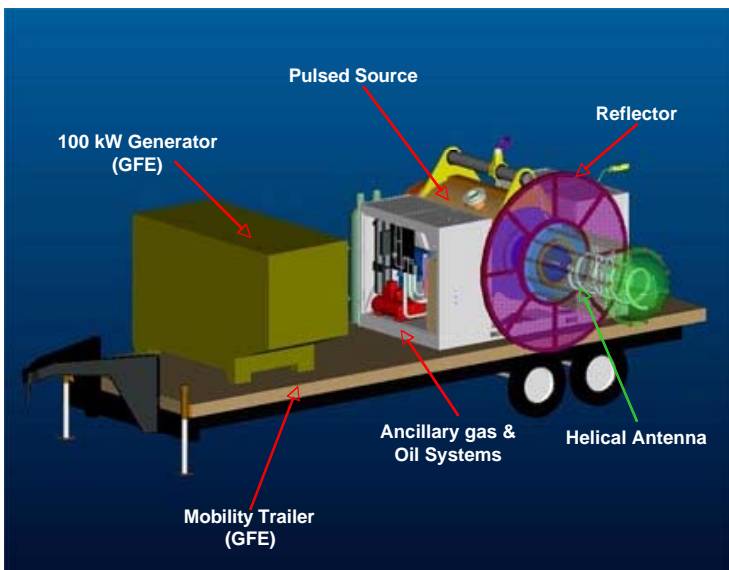
To guide the development process, DETEC formed the HPM WBTS Capability Integrated Product Team (IPT) with representatives from the MRTFB, the military Services, and the HPM community. The IPT represents future users of the

HPM WBTS Capability. The DETEC SIC structured the HPM WBTS development to engage the IPT members to actively participate in the development effort by providing guidance and expert advice. The HPM WBTS IPT members also participate in key reviews at significant points during design, manufacturing, testing, and fielding to verify the benefits and completeness of the capability for its intended users.

### About DETEC

DETEC is funded by the Department of Defense Test Resource Management Center's Central Test and Evaluation Investment Program (CTEIP) funded program to address joint service DE weapon system T&E infrastructure needs and implement solutions to these identified needs. DETEC develops and fields capabilities to address high-priority shortfalls identified in the 2004 CTEIP-funded Tri-Service Study.

The DETEC SIC, Science Applications International Corporation (SAIC), implements the DETEC project by working with Government and industry teammates to develop functional specifications for certain DE T&E infrastructure capabilities. The SIC acquires these capabilities in competitive procurements and integrates the capabilities into the MRTFB to help meet the testing requirements for current and future high energy laser and high power microwave weapon systems. ■



HPM WBTS

For further information about the HPM WBTS Capability, please contact the DETEC team at [detec@saic.com](mailto:detec@saic.com)

To schedule time with the HPM WBTS Capability contact Mr. Russell Blundell, HPM WBTS Host Site Manager, 575-678-5584 • email: [Russell.Blundell@us.army.mil](mailto:Russell.Blundell@us.army.mil)