

Navy Primary Standards Laboratory Accepts Delivery of the NIST Direct Comparison Measurement System



Shown in the photo are John Juroshek, National Institute of Standards and Technology, instructing Jim Wheeler, NPSL Electronics Engineer, and Jim Millspaugh, NPSL Electronics Technician, on procedures for using the new Direct Comparison Measurement System (DCMS). The DCMS system is used to support various microwave coaxial thermoelectric and diode RF power sensors and RF thermistor mounts in the Navy inventory. The system reduces the uncertainty and increases measurement throughput of the power sensor line of devices at NPSL. The DCMS is based on a well characterized RF Splitter calibrated at NIST Boulder. The customer devices' Reflection Coefficient (Γ) is measured using the HP 8510 Vector Automatic Network Analyzer (VANA) prior to measuring Effective Efficiency (N_e) with the DCMS.

The 2.4 mm connector system standard include a new Thin Film Thermistor Mount developed by both Hewlett Packard in Santa Rosa, CA and National Institute of Standards and Technology (NIST) in Boulder, CO. The mount supports frequencies from 50 MHz to 50 GHz. This new technology and the DCMS were supported with funds from the DOD Microwave Calibration Coordination Group (CCG). The DCMS will be used to calibrate the Hewlett Packard Model 8487A RF Power Sensor used on CASS.

A CN Type Thermistor Mount is used as a standard to support Type N connector devices from 50 MHz to 18 GHz.

A 3.5 mm connector version of the standard will be available at NPSL in late FY 99. This will support 3.5 mm connector devices from 50 MHz to 26.5 GHz.

These standards are directly calibrated using a micro-calorimeter located at NIST Boulder, CO. The micro-calorimeter is a measuring system that compares heat (calorie) to RF Power. This type of comparison decreases the uncertainty NPSL reports to their customers due to the reduction of traceability steps between NIST and NPSL.