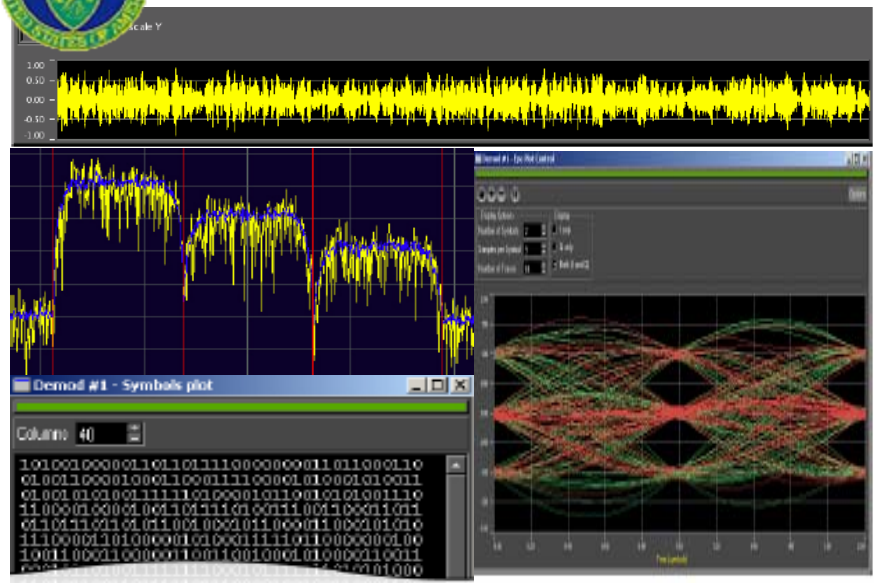
Extreme Measurement Communications Center (EMC^2)



EMC^2 Program Benefits:

- EMC^2 formalizes the testing of industrial wireless networks to quantify the latency, throughput, security and fault-tolerance (Interference and Noise)
- The Wireless Industrial Networking Alliance (WINA) has accepted EMC^2 as its product testing and characterizing center for member companies
- Investigate robust wireless technologies; ultra wide band, Hybrid spread spectrum and related protocols for robust communication links in harsh environments
- Help develop or improve existing standards in industrial wireless networks to include measurement, verification and reliability of network and device parameters
- Study Co-existence and Interoperability issues among different wireless technologies (802.15.4, 802.11, 802.15.1 etc)
- The center is being developed both as a user facility and an on-site testing provider using portable test equipment

Operational Capability:

The DOE EMC^2 provides modeling, simulation and characterization support for industrial and other harsh environment wireless networks.

This facility is equipped with parallel computing resources as well as state-of-the-art measurement equipment for high performance wireless and wired network characterization from the physical layer to the application layer

Broadband RF record and playback instrument can simulate and generate characteristic waveforms to help in-lab study of the wireless device's behavior in harsh industrial environments

State-of-the-art microwave and digital microprobing tools for high-frequency device and circuit characterization, temperature-controlled measurements, RFIC functional testing, on-wafer TRL support, high-speed interconnect, package, and device testing

Multi-modal wireless testbed for co-existence measurement and analysis

Milestones, Deliverables, & Contact:

Key Milestones: Alliance with WINA and member companies for technology assessment and characterization; Provides large-scale network modeling and simulation support; Provides ambient RF measurement surveys of harsh industrial environments.

Deliverables: Standards-based report generation for different wireless devices and network layouts; Software development for characteristic network testing; RF survey reports of harsh industrial floors and machinery

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