Rambus

CRYPTOGRAPHY RESEARCH
DPA Countermeasures
Product Brief

DPA Workstation Testing Platform

Powerful, flexible, and customizable testing platform for side-channel analysis.

Overview

Our DPA Workstation™ Testing Platform evaluates device resistance to side-channel attacks, including SPA, DPA, HO-DPA, and EMA. Side-channel attacks are low-cost, non-invasive methods that enable attackers to extract secret cryptographic keys from electronic devices during normal operations.

Our testing platform is used by cryptographic device vendors, system integrators, and testing labs to assess the robustness of side-channel attack countermeasures.

The platform is useful for non-invasive side-channel testing of complex systems and SoC-based designs. Devices that can be analyzed by the DPA Workstation include:

- Mobile computing devices
- Payment systems, Point of Sale terminals (POS)
- Authentication products
- ASIC and FPGA
- Content protection, Pay TV
- Secure communication devices
- Embedded and general purpose CPUs

DPA Workstation Testing Platform

Highlights

Complete Testing Solution
- Turnkey platform for power and electromagnetic analysis (SPA, DPA, HO-DPA, SEMA, DEMA)

Powerful Analysis
- Specialized software

User-friendly, Powerful Data Visualization
- Highly-intuitive user interface, dynamic displays and high performance

Project-oriented Analysis Environment
- Highly-integrated and project-centric design to optimize the efficiency of side-channel analysis

Third-party Tool Integration
- Easily integrates with Matlab, Python, etc.

Device Flexibility
- Supports multiple side-channel sensors, device protocols, and form factors

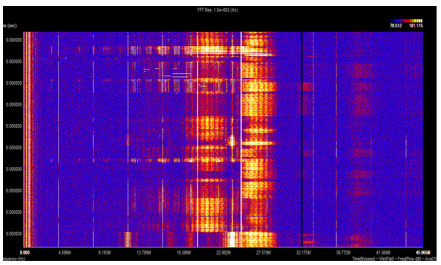
Full Cipher Coverage
- AES, RSA, ECC, DES, SHA, and others

Large Dataset Handling
- High-speed analysis of billions of traces, improving sensitivity and coverage

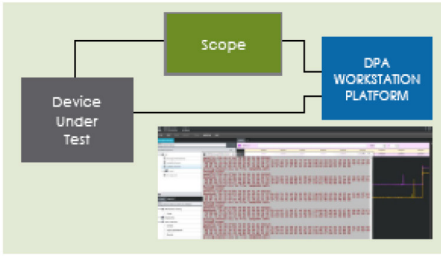
Compatibility with Security Testing Profiles
- Common criteria, FIPS 140, EMVco, DoD Anti-tamper, Payment and Card Industry (PCI), and GlobalPlatform

Customizable
- Source code access

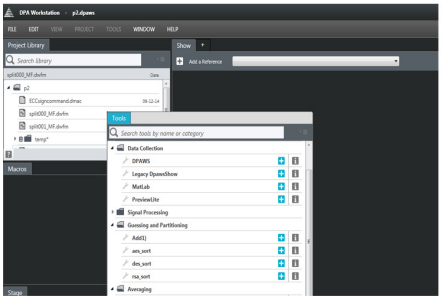
Our testing platform includes wizard-like tools, as well as scripts to guide users through workflows, providing extraordinary visualization and analysis.



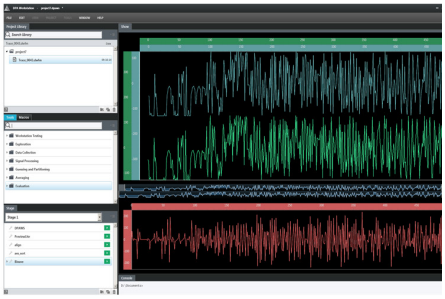
Explore signals to identify leakage



Collect data via automated device interactions



Process with alignment and signal compression tools



Evaluate and perform leakage analysis

Capabilities

Data Collection	Scriptable data collection environment automates device interactions and data collection. A variety of connection interfaces, communication protocols, and sampling equipment, including RF receiver and EM probes for EM emissions are supported.
Signal Visualization	The DPA Workstation Show tool enables efficient signal navigation and visualization, offering quick operator feedback at all stages of the analysis process. It is an interactive visualization and signal processing tool for isolating signals of interest from noise and interference. Filters can be applied to power/EM traces being captured in real time, or on pre-recorded data.
Signal Processing	Includes alignment and signal compression tools for improving the quality of collected data.
Leakage Analysis	A comprehensive toolkit performs leakage analysis and key recovery for a variety of cryptographic implementations (AES, RSA, ECC, DES, SHA, and others).

Deliverables

Analysis workbench

- DPAWS device interface and data collection environment
- Signal processing
- Hypothesis generation
- Optimized DPA analysis utilities
- Analysis tools

Hardware

- Custom-configured workstation oscilloscope
- Support for DPAD FPGA testing platform
- Smart card test fixture
- Support for PCI high-speed sampling cards
- Power supply

Proprietary software and source code to allow to customization and adaptation

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