

Expert Troubleshooting & Repair System™ (ETRS)

Automated Test Equipment (ATE) Optimizing Software



Features and Benefits

- Reduces “no fault found” (NFF) problems
- Analyzes & isolates repairs for faulty units
- Maximizes investment in existing ATE hardware
- Reduces “test escapes”
- “Soft fault” detection
- Improves test coverage of digital and mixed-signal circuit boards
- Seamless integration with Air Force Versatile Depot Automatic Test Station (VDATS)
- Reduces mean time to repair (MTTR) in complex boards

General Description

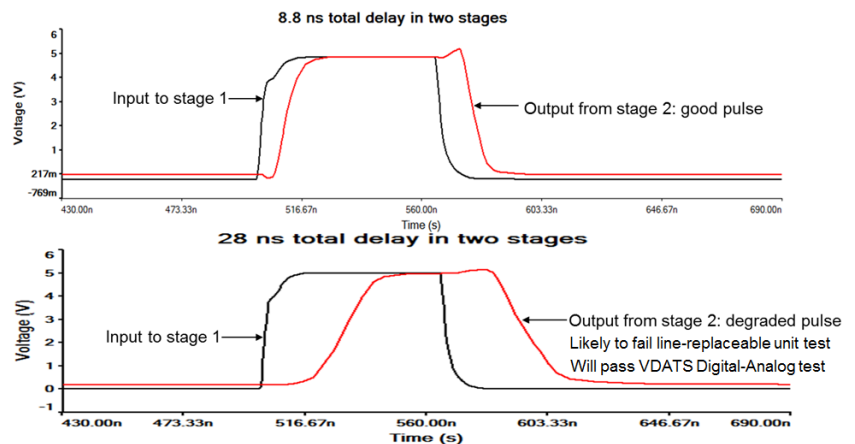
One of the greatest inefficiencies in modern electronics is when problems reported in the field are not reproducible at repair depots. These “bad actor” circuit card assemblies (CCAs) waste millions of dollars a year for organizations such as the U.S. Air Force. Ridgetop has developed the Expert Troubleshooting & Repair System (ETRS™) to address this and related issues. ETRS extracts test information from CCAs in order to improve the detection and identification of faulty circuitry.

ETRS delivers improved speed and accuracy of fault isolation via advanced anomaly detection methods and fault tree analysis (FTA), leveraging Lean Depot Management System (LDMS) data as well as other historical repair information.

Besides the substantial savings realized by reducing NFFs (“no fault found”), CNDs (“could not duplicate”), RTOK (“Retest OK”) and similar codes, ETRS software extends the life and power of existing ATE systems without costly hardware upgrades. ETRS employs advanced algorithms that address “off-nominal” performance of modules due to aging and wear-out mechanisms.



U.S. Air Force VDATS system

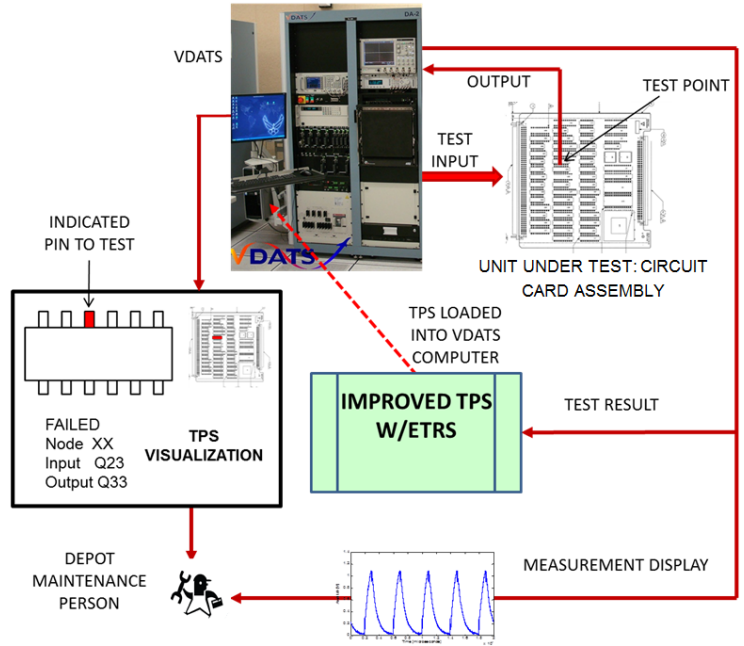


Plot of a non-degraded (top) and a degraded (bottom) output digital bit

What ETRS Does

ETRS improves the fault and test coverage of existing Test Program Sets (TPS). Based on historical maintenance data pertaining to individual CCAs, the design of the CCA, and advanced anomaly detection algorithms, ETRS generates a prioritized troubleshooting procedure. This enhanced soft fault detection procedure is used to improve the existing TPS, and the new TPS is then placed into the repository for future application.

The improved TPS is loaded into the VDATS or other ATE system to provide enhanced troubleshooting and repair guidance for each CCA type. This guidance includes visualization aids to help the operator probe the CCA and interpret the test results.



ETRS: VDATS environment with improved TPS

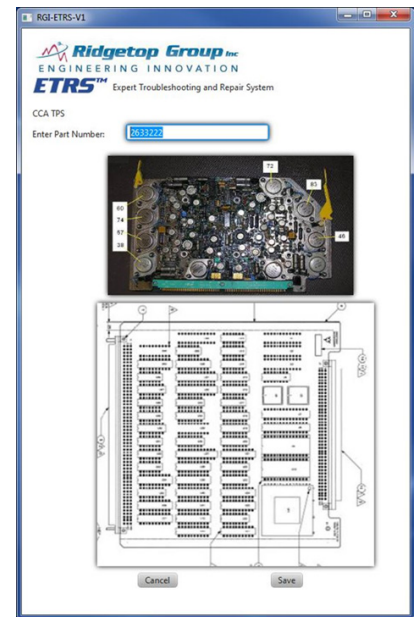
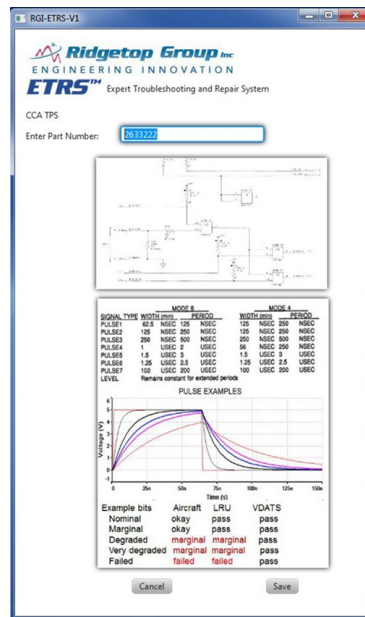
Inputs

- "Bad actor" CCA list
- Parts usage/maintenance history
- Existing Test Program Sets (TPS)
- Circuit schematic
- Design-for-test data (if available)
- Wiring/board layout/diagram
- Parts list

Samples from graphical user interface

Outputs

- Troubleshooting sequence
- Improved TPS
- Code ready for inclusion in TPS library



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