Valor MSS Quality Management

Quality Management module is a complete paperless solution for capturing and managing quality data during electronic assembly, test and inspection processes from single board (or panels) through complex system assembly.

MAJOR BENEFITS:

- Mistake-proof manufacturing
- Improve market quality
- Assurance of compliance to requirements
- Lower cost of process traceability and device history
- Reduce repair time
- Reduce cost of test
- Improve production yield
- Track and measure correction action
- Reduce waste

Overview

The Valor MSS Quality Management (QM) module is a comprehensive paperless quality management solution with full product and process traceability. The QM module meets electronics manufacturer's quality and compliance needs, ultimately assisting the enterprise toward the goal of zero defects. The QM module also addresses skills management, paperless document delivery & data collection, product routing, automated test data collection from AOI and ATE systems, defect management with closed loop repair, compliance requirements, and quality data capture and storage. QM tracks uniquely identified PCB panels, assemblies and sub-assemblies through all phases of manufacturing, inspections and test and repair processes, ensuring that all steps for manufacturing are correctly executed.

Product Structure

Valor MSS Quality Management module comprises three distinctive shop floor clients:

Automated Test Machine Interface: This client provides automated quality data collection from any automated inspection and test platform, via the data log output of the platform. Most major ICT, Flying Probe, AOI and AXI machines are supported. The test and inspection logs include errors or failures which are classified by the automated tester interface as symptoms until they are analyzed and assigned to a defect code causing the symptom. This is done in the Analysis and Repair client.

Manual Assembly and Inspection: This is a manual client for PCB assembly and system level assembly inspection operations. Includes defect input and test results input through the user interface, hierarchal BOM & panel management, along with WIP (Work-In-Process), AQL (Acceptable Quality Level) and creation of process history reports.

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Analysis and Repair: Whenever reported test results (symptoms) need to be diagnosed or validated as a particular defect type and location, the Analysis and Repair client is used. This client provides for both board level and system level defect analysis through visualization of integrated CAD data attributes and netlist logic. In this way each symptom is confirmed and correlated to Reference Designator location, component part number, pin number, net name and specific defect is applied.

Each failure is logged to the PCB ID number and the PCB status is set to FAILED. Once the correct repair is made the product is successfully retested, the status is automatically upgraded to PASS and allowed to proceed to the next process step in the production sequence. The Analysis and Repair client also includes hierarchal BOM & panel management.

Modes of Operation

The Valor MSS Quality Management client is set to operate in the correct mode by the Administrator based on the operations required by the user. Each operator will
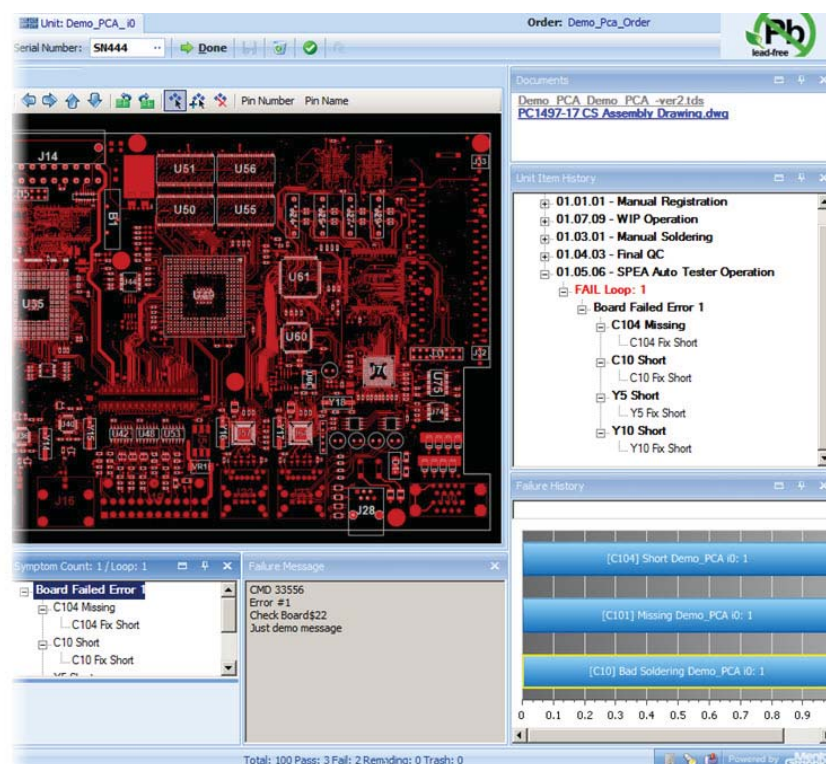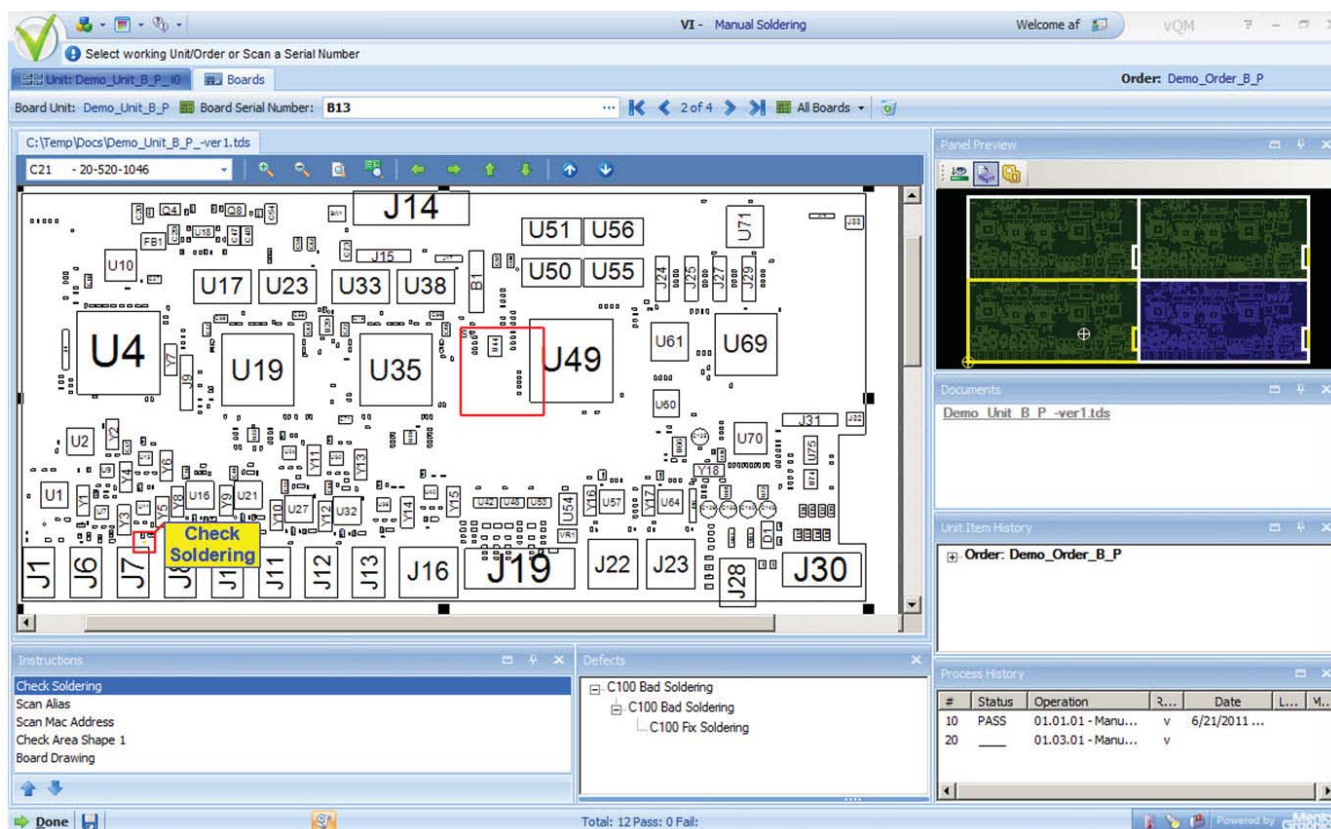

Quality Management module in TAR and AR modes shows the Board Viewer designed for easy graphical navigation though through the CAD data and netlist , specific work instruction documents attached for the current operation, the compete item history of the board, test/inspection failure history, specific failure message per each recorded symptom, and the complete symptom list
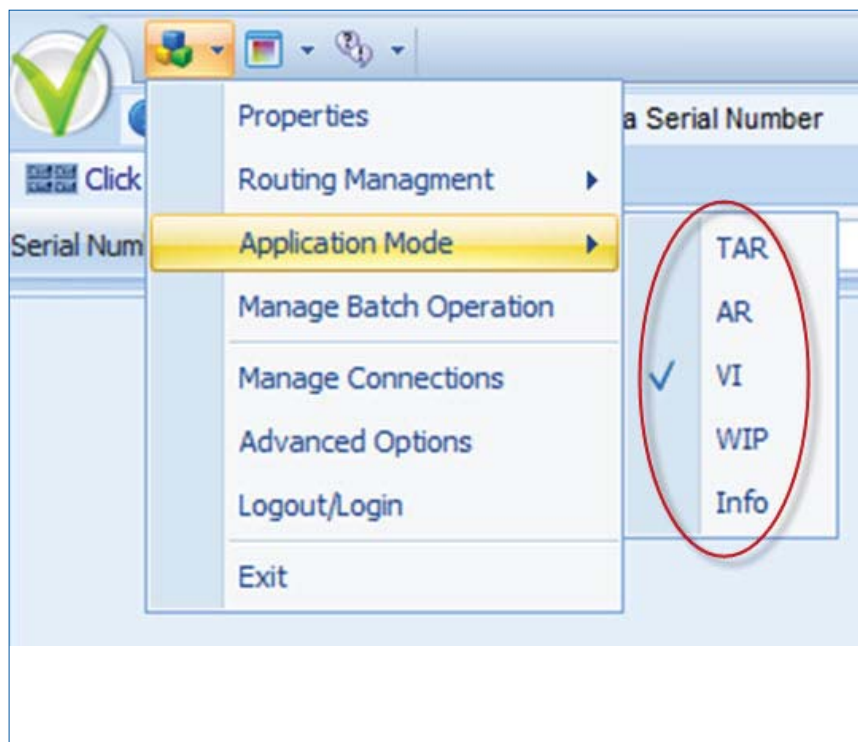
have the correct range of capability available based on the client configuration for the process steps covered by a particular work station and the login credentials of the user.

VI (Visual Inspection) Mode – Manual assembly and inspection point; Allows the operator to see work instructions, perform inspections, report defects, make repairs, provide PASS and Trash status, and perform assembly work on the panel or system

TAR (Test, Analyze and Repair) Mode – Manual test, analysis and repair point; Allows the operator to see the Board Viewer, manually report symptoms, defects and repairs, provide PASS and Trash status, and perform assembly work on the panel or system

Quality Management module in VI mode shows the visual instructions for the specific work station according to the operation at that step for the scanned ID number of the PCB. Work instructions can include assembly tasks or visual inspection tasks.

AR (Analyze and Repair) Mode – Automated test, analysis and repair point; Receives automated inputs from test and inspection machines; Allows the operator to see the Board Viewer, report defects and repairs, provide PASS, and Trash status. Repaired status requires a re-test at a qualified test station.

SA (System Assembly) mode – Allows operator to see work instructions, perform box build assembly, and manually report defects and repairs.

System Flows with the Operation Plan

The Valor MSS Quality Management system guides and controls the production of units defined either as PCB assemblies or higher level systems that incorporate multiple PCBs, along with other components or sub systems according to the hierarchical BOM. The units are guided through the manufacturing process by an Operation Plan in a completely paperless fashion. The Operation Plan contains a sequence of Operations and each Operation represents a specific function (i.e. mass

assembly, manual soldering, AOI, visual inspection, ICT etc.). Each Operation has one or more pieces of equipment linked to it. Each piece of equipment will usually represent a physical work station, such as a computer used at an assembly/inspection point or a test machine. When the Unit is scanned into a work station the correct Work Instruction is displayed per the rev level of the work order.

Leverage and Use of Quality Data

As production flows along the Operation Plan, each station captures date and times, test and inspection results, pass/fail status so that each operation adds to the devise history of the unit. At the end of all processes, a complete history of each unit is achieved. Valor MSS Quality Management module stores and manages all data as part of the device history. Devise history reports provide objective evidence of compliance to all requirements. This data is also shared with other Valor MSS modules, such as Valor MSS Business Intelligence module which links the quality data with raw material traceability data and line performance data.

In some cases, a unit may inadvertently get out of sequence according to the operation plan. When this happens, the scanned ID number returns an error message to the operator and does not allow the operation to proceed. This provides clear and unambiguous assurance that each required process step is completed according to the requirements.
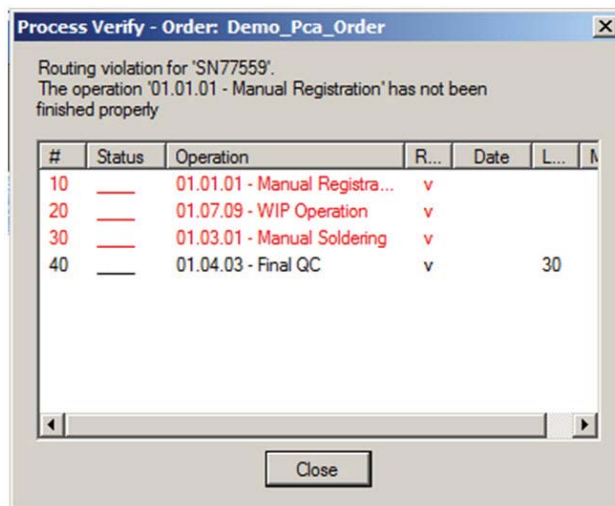
If the serial number scanned violates the routing control, you will be notified. Notification message includes the route steps as well as the last station that passed the Serial Number of the Unit, and where the Unit is expected to go next.