MAGNALYTIX®

Objective Evidence per IPC-J-STD-001H
How do I get started?

Qualified Manufacturing Plan (QMP)

Class II and III operations will need to qualify your manufacturing processes. This qualification validates all assembly, soldering (both inline and selective), as well as rework and cleaning operations result in acceptable levels of all process residues that may remain on your assemblies. ***The standards apply to ALL assemblers.*** It does not matter if you use no clean flux, water washable flux or any flux that you clean ~ this standard and its requirements apply to you!

PCB materials, SMT soldering process steps, and secondary soldering process are the source of the PCBA contamination level on your assemblies. Excessive or undesireable Ionic and/or Non-Ionic residues left on the completed assembly can cause intermittent or complete device failure when exposed to climatic temperature and humidity. The Objective Evidence is proof that that the manufacturing process does not leave excessive or undesireable residues that may cause field failures.

What is Required to meet IPC J-STD-001H – Section 8?

You must have supporting objective evidence developed by electrically testing your assemblies in hot, humid conditions over a 168-Hour time period. The preferred test methods used to develop objective evidence for certification of a qualified manufacturing plan is:

SIR (Surface Insulation Resistance) testing.

- The SIR method subjects an assembly to electical bias and resistance measurements during extended hot/humid conditions.
- The SIR method tests for the effects all process residues (including selective solder, touch up and rework).
- The test regiment allows the assembler understand the site specific challenges presented by the component design elements in their assemblies folowing all assembly operations and enables focused troubleshooting if required.

NOTE: Ion Chromatography (IC) is an extraction-based chemical analytical method for determining what ions, and in what amount are on our assembly. IC is not ”required” for a QMP process but is invaluable for major and minor change testing.

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Information that OEMs will want as part of your Objective Evidence

- Date when boards were assembled and tested
- Facility and Equipment Location used to Assemble and Clean
- Solder Paste and Liquid Flux used along with Reflow Parameters (convorized, selective and rework)
- If Cleaned – Cleaning Agent, Cleaning Machine, and Process Parameters
- Was the test sample representative of the same materials and processes used for the customers' product?

Magnalytix Testing Services

SIR, IC, and Additional Testing Services to help OEMs and CMs develop your QMP

- Surface Insulation Resistance (SIR)
  - IPC TM-650 2.6.3.7
  - IPC TM-650 2.6.3.3
  - Custom Test Requirements
- Ion Chromatography (IC)
  - IPC TM-650 2.3.28
  - Custom Test Requirements
- Foresite C3 Testing Device
  - Site Specific Extraction
  - Remove Component followed by Site-Specific Extraction
  - IC Testing on Extract
- X-Ray of Components that fail SIR Testing
- Scanning Electron Microscopy (SEM) with Energy Dispersive X-Ray (EDX) Characterization and Analysis
- High Magnification Analysis

Reporting – All Magnalytix SIR Testing Services include a basic report at the conclusion of the testing protocol. This report provides measurements and environmental data observed during the test.

Magnalytix also offers an **In-Depth Report** which begins with the basic findings plus an executive summary with detailed recommendations. The detailed report of the data findings, root causes, and recommended corrective actions provides the needed information and objective evidence to characterize and validate the process.

Magnalytix will set an appointment to review your report in detail.

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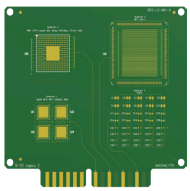
Magnalytix Analytical Services In-Depth Test Report

- Executive Summary
  - Test Objective
  - Summary of the Findings
  - Inferences from the Data Findings
  - Recommendations
- Technical Data Findings
  - Test Methodology Employed
  - Data (SIR or IC) for each board tested
  - Summary Statistics
  - Visual Images
  - Correlation of the Images to the SIR test results

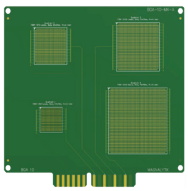
Magnalytix SIR Test Boards + Dummy Components

Surface Mount:



Magnalytix - MGX B-52 Legacy 2

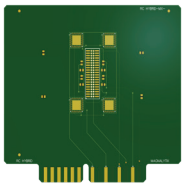
The MGX B-52 Legacy 2 SIR test board evaluates the activity of flux residue at both the I/O and under component terminations. MGX B-52 Legacy 2 is used to characterize solder paste, process development, and process control. The B-52 Legacy 2 card is one of our most popular test cards.



Magnalytix - MGX BGA 10

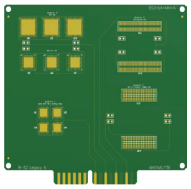
MGX BGA 10 SIR test board is effective at evaluating multi-chip modules and processing chips. The BGA platform enables chip makers to characterize solder pastes, low temperature solders, and underfills.

Mixed Technology:



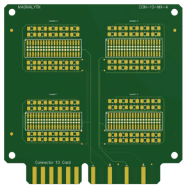
Magnalytix - MGX QFP 48-11 4-Up Panel

The MGX QFP 48-11 4-Up Panel test set is designed to test SMT Top Side, SMT Bottom Side and Selective Soldering processes. Quadrant 1 is designed to test the QFN components on the top side of the board. Quadrant 2 is designed to test the QFN components on the back side of the board. Quadrant 3 is designed to test the SMT connector and 0805 caps on the top side of the board. Quadrant 4 is designed to test the TH pins and 0805 caps on the bottom side of the board. This multifunctional test board is ideal for evaluating No-Clean and Cleaning processes.



Magnalytix - MGX B-52 Legacy 4

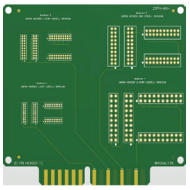
The MGX B-52 Legacy 4 SIR test board is excellent for evaluating the design margin represented on assemblies populated with bottom terminated components. The QFN designs incorporate large thermal lugs, which can underfill the bottom termination with flux residue.



Magnalytix - MGX Connector 10

MGX Connector 10 SIR test board allows an assembler to evaluate multiple soldering steps on surface mount caps on the top and bottom side with a high density SMT/TH connector. The MGX Connector 10 allows an assembler to test no-clean processing across multiple soldering steps including Surface Mount, Thru-Hole and Rework.

Thru-Hole:



Magnalytix - MGX 20 Pin Header

The MGX 20 Pin Header SIR test board is designed to test both wave solder and selective solder processes. Each quadrant has a change in pitch from 1 mm/1.27 mm/2 mm/2.54 mm. The reduction in pitch allows the assembler to dial in their selective soldering and wave soldering processes on highly dense component geometries. This board is also capable of doing paste in-hole.

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		B-52 LEGACY 2	B-52 LEGACY 4	BGA 10 CONNECTOR	QFP 48-11 4-UP	20 PIN HEADER
BTC	QFN 48-1 (0.5 mm Pitch)	•	•			
	QFN 48-11					•
	QFN 88-1 (0.5 mm Pitch)		•			
	QFP 160-1	•				
	QFN DR 124-1 (0.5 mm Pitch)		•			
CHIP COMPONENTS	0201 CAP	•				
	0402 CAP	•				
	0603 CAP	•				
	0805 CAP	•				•
	1206 CAP				•	
BGA/LGA/MCM	BGA 244	•				
	BGA 256 (1.0 mm Pitch)			•		
	BGA 572 (1.0 mm Pitch)			•		
	BGA 1020			•		
	BGA 1932			•		
THRU HOLE CONNECTORS	CUSTOM 64 SMT CONNECTOR		•			
	SMT TH-40 PIN CUSTOM CONNECTOR		•		•	•
	20 PIN CONNECTOR (1.0 mm Pitch)					•
	20 PIN CONNECTOR (1.27 mm Pitch)					•
	20 PIN CONNECTOR (2.0 mm Pitch)					•
	20 PIN CONNECTOR (2.54 mm Pitch)					•
	2 PIN HEADER SHUNT (JUMPER)		•			•

For more information please contact Magnalytix at 615-983-8866 or click here.