



IPC-TM-650 TEST METHODS MANUAL

1 Scope The purpose of these tests is to characterize changes in individual interconnection resistances as a function of exposure time in various environmental aging conditions for both flex to PWB and flex to indium-tin-oxide (ITO) coated glass bonds.

2 Applicable Documents

IPC-3408 General Requirements for Anisotropically Conductive Adhesive Films

3 Test Specimens

- 3.1 0.2 mm line/space test boards
0.2 mm line/space flex test circuits

4 Apparatus

- 4.1 ITO coated soda-lime glass test slides, 20 ohms/sq. mm
- 4.2 Polypropylene trays for sample storage in chamber
- 4.3 Instrumentation to permit four-probe resistance measurement
- 4.5 Required environmental test chamber(s):
 - a) Thermal aging, 100°C
 - b) Thermal cycling, -55°C to >125°C, five hour period
 - c) Humidity aging, 60°C/95% RH

5 Procedure

5.1 Sample Preparation

5.1.1 Cut the flex test circuits to the appropriate length (see Figure 1 and Figure 2). If flex board samples are being prepared, all traces on the flex should be shorted together on one end.

5.1.2 Use of new PCB is recommended. If new boards are being used, there should be no need for any special cleaning procedure. If used boards are to be used, they should be inspected to ensure that:

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- a) Protective metalization (Au or Pb-Sn) is intact.
- b) FR-4 isn't significantly discolored from prior high temperature exposure.
- c) The board is free of any residue from previous tests.

5.1.3 Refer to 5.2 for proper bonding procedure.

5.2 Sample Procedure

5.2.1 Prepare at least three test samples for each test condition to be run. For the flex board case, it is possible to mount two test samples on each board. Refer to IPC-3408 for proper bonding procedure.

5.2.2 After bonding is completed, each sample should be identified by a test number. Test numbers should be written on the test substrate using an indelible marker.

5.2.3 Clamp the unbonded end of the flexible circuit to the matching board traces to make electrical contact, with an elastomeric compliant layer behind the flex to maintain uniform contact force.

5.2.4 Initial interconnection resistances should be measured and recorded. The recommended measurement technique is illustrated in Figure 3. This technique can be used with either test sample type.

Note: This technique doesn't allow for the measurement of the first and last circuit trace. There are 15 measurements to be made on each sample.

5.2.5 Samples should be placed in the polypropylene trays, and the trays placed in the appropriate chamber. The time and date should be noted for the purpose of computing elapsed time.

5.2.6 Samples should be removed from the chambers for resistance measurement after 24-hour, one-week, three-week, and six-week time points. All environmental tests are considered complete after six weeks. Samples should be allowed to equilibrate at ambient conditions for at least 30 minutes prior to measurement.

5.2.7 All resistance data should be tabulated and/or graphed to facilitate proper interpretation of the results.

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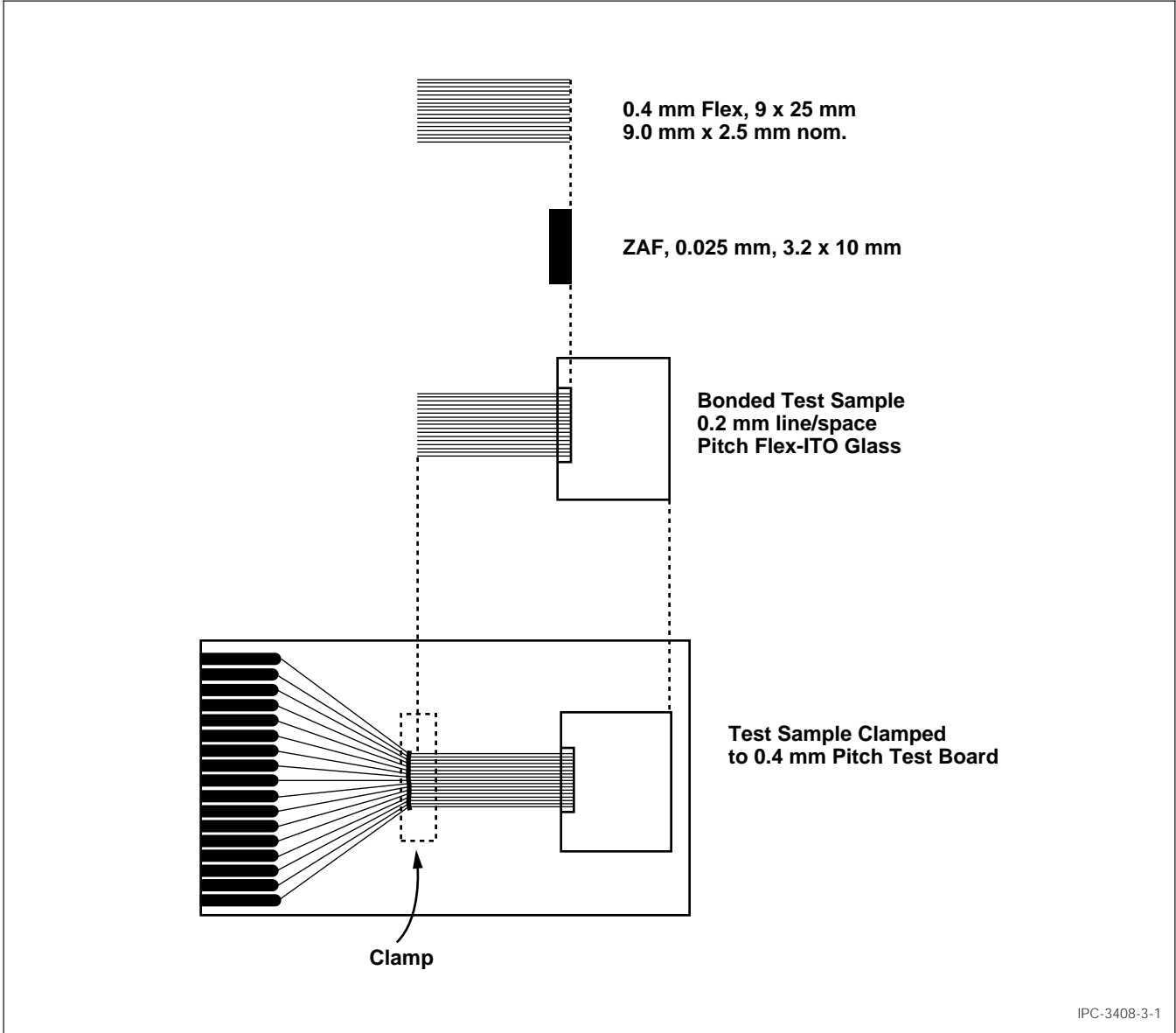


Figure 1 Interconnection Resistance Test Assembly; Flex to ITO Glass

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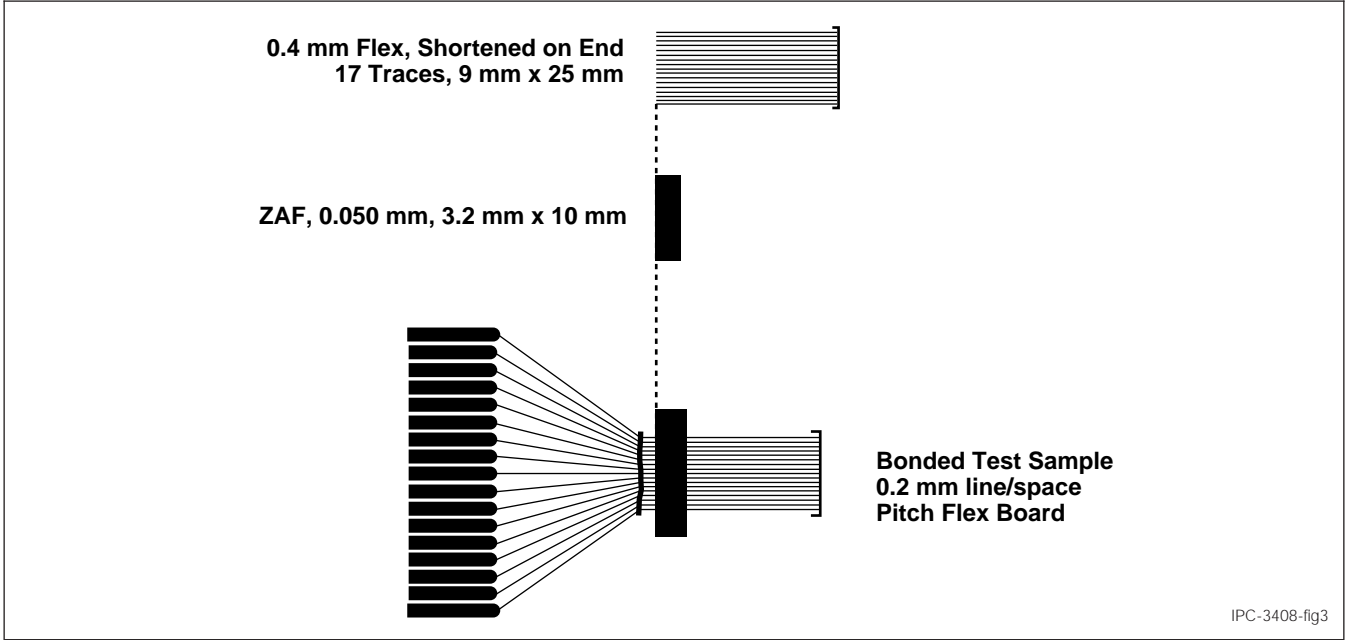


Figure 2 Interconnection Resistance Test Assembly; Flex to PWB

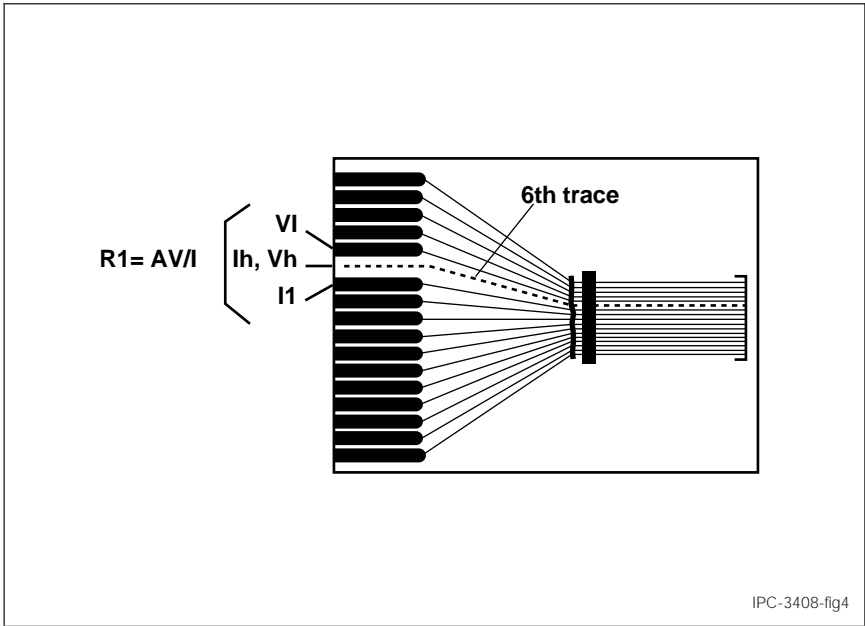


Figure 3 Four Probe Interconnect Resistance Measurement Technique for Flex to PWB and Flex to ITO Glass