The Institute for Interconnecting and Packaging Electronic Circuits
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IPC-TM-650
TEST METHODS MANUAL

Number	
2.5.27	
Subject	
Surface Insulation Resistance of Raw Printed Wiring Board Material	
Date	Revision
3/79	
Originating Task Group	

1 Scope This test method is designed to determine the surface insulation resistance of dielectric material after the prescribed conditioning cycles.

2 Applicable Documents

MIL-STD-202 Method 106, Electronic Components

3 Test Specimens

3.1 At least two specimens, modeled after the IPC-B-25 (see Figure 1) shall be made. The copper foil shall be removed by chemical etching, using standard commercial practices.

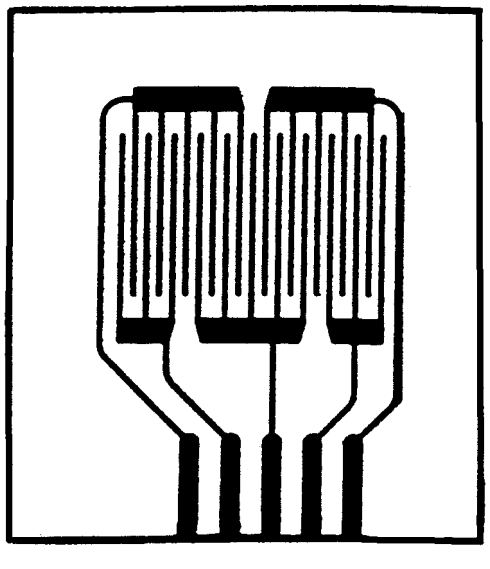

Figure 1 Surface Insulation Resistance Test Pattern
(Modeled after IPC-B25 Test Board)

4 Apparatus

4.1 A test chamber capable of meeting MIL-STD-202, Method 106, and elevated temperature of 150°C

4.2 A meter capable of applying 500 VDC to the specimens for a period of 60 +5/-0 seconds and measuring resistance values between 1 megohm and 10 million megohms with measurement error of less than 1% — A H/P Model 4329A, High Resistance Meter, or equivalent

5 Procedure

5.1 Preparation

5.1.1 Double-clad material shall have one side completely etched. The other side and single-clad material shall be etched as specified in 3.1.

5.1.2 Specimens shall be dried for a period of 24 ± 2 hours at 50°C ± 5°C. Measurements shall be made immediately after removal from the chamber.

5.1.3 Specimens shall be subjected to the conditioning cycle of MIL-STD-202, Method 106 (except steps 7a and 7b). The measurements shall be made inside the chamber after completion of the cycle.

5.1.4 Specimens shall be subjected to elevated temperature for 24 hours at 150°C ± 5°C. Measurements shall be made within 30 minutes after the completion of this cycle.

5.2 Test

5.2.1 Measurements shall be made after each conditioning phase. The specimens shall be removed from the chamber before measurements specified in 5.1.2 and 5.1.4 are taken. Specimens shall be left inside the chamber for taking measurements specified in 5.1.3. Four readings per the comb pattern shall be taken for each specimen; readings shall be between pins 1 & 2, 1 & 3, 3 & 5, and 4 & 5 (see Figure 1).

5.2.2 Turn the megohmmeter on prior to the removal of the specimens from the chamber. Allow the meter to warm up for a minimum of 30 minutes.

5.2.3 After warm-up, calibrate the meter and set the voltage to 500 VDC.

5.2.4 Connect the leads to the appropriate pins (see Figure 1).

5.2.5 After allowing the meter to ''charge'' for 60 seconds, switch to ''measure'' and read the meter in megohms after the indicator settles down (usually within 60 seconds).

5.3 Evaluation Readings shall be recorded to two significant digits in megohms.

6 *Notes*

6.1 This method can be used in substitution for surface resistance. Volume resistivity cannot be replaced by this method, but other tests such as dielectric strength, dissipation factor, and dielectric constant will give a better indication of the electrical properties than volume resistivity.