



Designation: B 885 – 97

Standard Test Method for Presence of Foreign Matter on Printed Wiring Board Contacts¹

This standard is issued under the fixed designation B 885; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method defines a resistance probing test for detecting the presence of foreign matter on Printed Wiring Board (PWB) contacts or fingers that adversely affects electrical performance. This test method is defined specifically for such fingers coated with gold. Application of this test method to other types of electrical contacts or to fingers coated with other materials may be possible and desirable but may require some changes in fixturing, procedures, or failure criteria.

1.2 Practice B 667 describes another contact resistance probe method that has more general application to electrical contacts of various materials and shapes. Practice B 667 should be used for more fundamental studies. This test method provides a fast inspection method for printed wiring board fingers.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

B 539 Test Methods for Measuring Contact Resistance of Electrical Connections (Static Contacts)²

B 542 Terminology Relating to Electrical Contacts and Their Use²

B 667 Practice for Construction and Use of a Probe for Measuring Electrical Contact Resistance²

3. Terminology

3.1 *Definitions*—Terms used in this test method related to electrical contacts are defined in accordance with Terminology B 542.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *edgecard connector, n*—an electrical connector designed to connect physically and electrically with a compatible PWB equipped with gold fingers.

3.2.2 *printed wiring board (PWB) contacts, PWB fingers, n*—areas near the edge of a printed wiring board coated with gold and designed to function as electrical contacts when the board is plugged into a compatible edgecard connector.

4. Summary of Test Method

4.1 Two closely spaced electrodes are brought into contact with a single PWB finger in such a manner that they contact the surface with a minimum of wipe. A fixture loads each electrode to apply a force in the range of 0.5 to 0.7 N to the surface of the finger. Two electrical leads attached to each electrode are used to make a four-wire resistance measurement to detect elevated resistance indicative of the presence of a film or other contaminant on the finger.

5. Significance and Use

5.1 This test method provides a way to detect contamination on printed wiring board fingers that affects the electrical performance of such fingers. Such contamination may arise during PWB manufacture, circuit assembly, or service life and may include solder mask, solder flux, hardened lubricants, dust, or other materials. This test method provides a nondestructive method of inspecting such fingers at any point in the life of the product including after original manufacture, after assembly of circuit components to the PWB, and after time in service such as when returned for repair. Because this test method uses two probes to finger contacts in series, it provides a sensitive test for contaminants that may increase electrical resistance when the fingers are plugged into an edgecard connector that typically makes contact to the finger through only one contact to finger interface.

5.2 Practice B 667 describes a more general procedure for measuring contact resistance of any solid material in practically any geometrical form. The method in Practice B 667 should be used for general studies and fundamental studies of electrical contact materials.

6. Apparatus

6.1 *Four-Wire $m\Omega$ Meter*, with a resolution of 0.0001 Ω or better, capable of performing dry circuit resistance measurements in accordance with Test Method B 539.

6.2 *Two Gold-Tipped Electrodes (Probes)*, with a radius not less than 3.0 mm at the tips. Each electrode shall have two

¹ This test method is under the jurisdiction of ASTM Committee B-02 on Nonferrous Metals and Alloys and is the direct responsibility of Subcommittee B02.11 on Electrical Contact Test Methods.

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² *Annual Book of ASTM Standards*, Vol 02.04.