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IPC–9242

Guidelines for Microsection Evaluation

If a conflict occurs between the English language and translated versions of this document, the English version will take precedence.

Developed by the IPC–9242 Microsection Subcommittee (7–12) of the Testing Committee (7–10) of Global Electronics Association.

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Guidelines for Microsection Evaluation

1.0 SCOPE This document describes the methods used to evaluate and measure internally observable characteristics as referenced in IPC-A-600. The purpose of this document is to demonstrate methods and not give acceptability criteria.

Microsection evaluation is performed after the printed board coupons are prepared in accordance with IPC-TM-650 Method 2.1.1. Evaluation is performed on the visible surface of the polished microsection. This technique can be used for in-process checks but may not be applicable for final acceptance as referenced in the performance specifications.

1.1 PURPOSE This document is intended to be used by the Microsection Evaluation Technician as a guide to help understand the techniques used in the measurement and evaluation of a Printed Board Microsection. The user should understand the acceptability requirements that are called out in the applicable performance specification or customer procurement documentation. As this document is a companion document to IPC-A-600, the evaluation and measurement techniques described herein can be applied to other applicable documents, such as customer drawing requirements.

Acceptability of actual microsections (also referred to as cross sections) should not be solely based on these or any photographs but through actual observation and interpretation of requirements. The text takes precedence over the images.

1.2 Classification This document does not use classification as this is a guideline document.

CLASS 1 General Electronic Products

Includes products suitable for applications where the major requirement is function of the completed assembly.

CLASS 2 Dedicated Service Electronic Products

Includes products where continued performance and extended life is required, and for which uninterrupted service is desired but not critical. Typically, the end-use environment would not cause failures.

CLASS 3 High Performance/Harsh Environment Electronic Products

Includes products where continued high performance or performance-on-demand is critical, equipment downtime cannot be tolerated, end-use environment may be uncommonly harsh, and the equipment must function when required, such as life support or other critical systems.

1.3 Measurement Units All dimensions greater than or equal to 1.0 mm (0.0394 in) will be expressed in millimeters and inches. All dimensions less than 1.0 mm (0.0394 in) will be expressed in micrometers and microinches.

Note: This Standard uses other SI prefixes (IEEE/ASTM SI 10, Section 3.2) to eliminate leading zeroes (for example, 0.0012 mm becomes 1.2 µm) or as alternative to powers-of-ten (3.6×10^3 mm becomes 3.6 m).

1.4 Abbreviations and Acronyms Periodic table elements are abbreviated in the standard.

1.4.1 IEEE Institute of Electrical and Electronics Engineers

1.4.2 ASTM American Society for Testing and Materials

1.4.3 DIC Differential Interference Contrast Microscopy

1.4.4 ENIG Electroless Nickel Immersion Gold

1.4.5 ENEPIG Electroless Nickel Electroless Palladium Immersion Gold

1.5 Terms and Definitions Other than those terms listed below, the definitions of terms used in this standard are in accordance with IPC-T-50.

1.5.1 Arrowheading Arrowheading, also known as penciltipping, is a condition where the inner layer copper is tapered at the hole wall plating interconnection.

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