

## Terms and Conditions

**Clause Number: Q504**  
**Effective: 01/10/2024**  
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### REQUIREMENTS FOR DESTRUCTIVE PHYSICAL ANALYSIS (DPA) TESTING OF MULTILAYER BOARDS

When Boeing Specification BSPS-23-001 or DPA to IPC-6012, IPC-6013, or IPC-6018 are invoked, DPA testing shall be in accordance with the requirements as defined in the specification and Engineering drawing. Otherwise, when DPA testing is required on purchase orders it shall be in accordance with the following:

Sellers shall perform DPA testing on all multilayer board lots. A lot is defined as a group of Printing Wiring Boards (PWBs) that are processed together through lamination, drilling, plating, and final finish and are inspected together as a lot. A lot shall consist of only one part number, and all boards in one lot shall have a common date code.

#### Procedure

One board from each production lot that has passed electrical testing and has passed quality-conformance acceptance, and has the equivalent to the thinnest copper plating within the lot shall be evaluated by DPA. The DPA board shall be thermally stressed three times in accordance with IPC-TM-650 Method 2.6.8. If the DPA board is too large to be thermally stressed, a test specimen measuring a minimum of 4 square inches may be removed from the board for the thermal-stress testing. After thermal stress, three holes for through-holes and each via type (blind, buried, through, etc.) shall be microsectioned and evaluated per the performance requirements used for quality-conformance test coupons.

#### ALL TEST SAMPLES AND REMAINING PORTIONS OF THE SAMPLE BOARD SHALL BE DELIVERED TO BUYER

#### Completed Board

A minimum of 4 sq. in. (2" x 2") of the sample board shall be thermally exposed per the acceptance specification. When the board is less than 4 sq. in., the remaining portion of the board shall be thermally exposed. This sample shall be cross sectioned and reviewed and shall meet the following: solderability, marking ink tape test, and cross sectional requirements of the applicable acceptance documentation.

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### DPA Failures

DPA failures that may be considered for possible referee testing shall be documented by the Seller and reported to Buyer's Quality Engineering and Boeing Huntington Beach M&P (CAGE 18355).

### DPA Referees

Referee testing in accordance with IPC specification must be approved by the Boeing Huntington Beach M&P (CAGE 18355) or by the Boeing Program Design Authority.

### DPA Test Procedure Changes

Changes in DPA testing procedures may be allowed provided the responsible Design Engineer, Materials and Processes Engineer, and Buyer's Supplier Quality Engineer have granted prior written approval. It shall be the responsibility of Seller to maintain documentation of such changes and to provide a copy to Buyer's Authorized Procurement Representative prior to implementation.

Any DPA Test Procedure Change must be coordinated through Buyer's Authorized Procurement Representative and shall be included in the contract via formal change, prior to shipment.