

Effective Date: 09/25/2013

**Q238 Requirements for Production Control Analysis Testing of Multilayers Printed Wiring Boards**

Suppliers shall perform in-process inspection on all multilayer board lots as defined below. A lot is defined as all boards of the same part number and same date code. The date code shall represent the date the lot was processed through etchback.

PCA SHALL APPLY TO:

All received lot sizes as displayed elsewhere in this Purchase Contract. PCA shall also apply to supplier lot quantities of 5 or more Printed Wire Boards (PWB's).

In-process inspection shall be performed at all three points in the fabrication process on one sample board per lot. The in-process inspection shall be incorporated into supplier travelers.

PROCEDURE

The in-process samples shall be removed from the sample board at the approximate center of the panel. These cross sectioned samples shall contain a minimum of three through holes of each via type (blind, buried, through etc.). Samples should be evaluated per the requirements used for quality conformance test coupons and applicable acceptance documents.

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

Aerojet Rocketdyne  
Attention: Engineering M&P Laboratory Lab Samples  
9001 Lurline Avenue  
Chatsworth, CA 91311

ETCHBACK

A sample shall be removed from the sample board just after etchback and shall be reviewed in cross section. When the etchback step must be repeated, an additional sample shall be removed from the board until etchback is acceptable per the acceptance documentation.

It is recommended that a copper strike be plated onto the test sample before measuring etchback. The sample board shall not be plated until the etchback measurement is acceptable per the acceptance documentation.

FINAL PLATING

A sample shall be removed from the sample board just after final plating and shall be reviewed in cross section. If additional plating is required, another sample shall be

removed from the board until the plating is acceptable per the acceptance documentation.

### COMPLETED BOARD

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

### FAILURES

All anomalies that cannot be corrected by further processing shall be reported to Aerojet Rocketdyne via Supplier Portal (reference supplier submittal quality clause Q219).

### REFEREES

The board vendors will be allowed to perform Referee Testing on finished boards when the in-process sample is inadvertently destroyed during fabrication or when defects can be traced to affected panels. The Aerojet Rocketdyne Quality Engineer will determine if Referee Testing is permitted. Aerojet Rocketdyne Materials and Processes Engineer shall be present during the retest and shall evaluate all in-process referees.

### DEVIATIONS

Deviations in the test procedure shall be allowed provided prior written approval has been granted by the Aerojet Rocketdyne: Responsible Design Engineer, Materials and Process Engineer and Quality Engineer. It shall be Seller's responsibility to maintain documentation of each of these deviations and provide a copy of these deviations with their shipment.

The deviation must be coordinated through Buyer's Supply Management department and included in this Purchase Contract via formal Change Notice, prior to shipment.