

**REVISION HISTORY**

<u>REV</u>	<u>DATE</u>	<u>ORIGIN</u>	<u>REASON FOR CHANGE(S)</u>
A	12Apr18	Jason Mao	New
B	04May18	Daniel Crouse	Added PCN language
C	11Oct18	Daniel Crouse	Added cross section for ENIG boards for hyper-corrosion check per IPC 4552, section 3.6.1.2
D	30Oct18	Joyce Conn	Revised hyper-corrosion requirement

**Q-CODE Q22D QUALITY REQUIREMENTS**

The following are the quality requirements for product purchased under Q-code Q22D. This includes additional requirements specified for our customer CalAmp. Unless, a written waiver is received from Plexus, the supplier agrees to abide by the quality requirements listed below.

**1st Shipment** - The documentation and quality requirements for the 1st shipment are as follows:

- A. First Article Inspection Report - All dimensions, notes and specifications on drawing must be verified and within print tolerance. Plexus must approve any dimension that is not within print specification in writing before product can be shipped.
- B. Cross-Section (with inspection data) per IPC-6012 section 3.6.2, including:
  - B.1 Validate and report stack-up thicknesses
  - B.2 Validate and report IPC6012B plating thickness and copper roughness
  - B.3 Validate and report gold thickness per IPC-4552 (not currently specified in fab drawings).
- C. Hyper-corrosion – For ENIG boards, process controls shall be implemented as per Plexus PCB specification G9000-3. Results and applicable cross-sections shall be retained by the supplier and provided to Plexus on request.
- D. SEM/ EDS analysis Report of ENIG plating
  - Obtain target Phosphorus content % for plating from board house
  - Validate content percent and/or identify for Nickel corrosion spikes
  - Identify for Black Pad mud-cracks on the nickel plating
- E. Contamination Test Report
- F. Solderability test and Report:
  - Complete Dip test and inspection for wetting.
  - Include PCB for a Solderability Sample - Complete and physically intact PCB or Array as supplied for the Part Number. This should be segregated and boldly identified. The box containing the solderability sample must also be identified as such.
- G. 100% Electrical Testing Certificate or Stamp. Including an Impedance Report on impedance designs.
- H. Certificate of Compliance – Must include a statement of overall compliance to all the applicable

specifications (statement is not required to list, but shall cover all the applicable specifications such as; drawing, PO, customer specifications, Plexus G9000-3, IPC specification, hyper-corrosion acceptability, etc). The statement of compliance **must** include the name and location of the facility that manufactured the Printed Circuit Board.

- I. All cartons, packing slips, reports and certificates must have part number, EC level or revision, quantity and P.O. number listed on them.

**Subsequent Shipments** - The documentation and quality requirements for all subsequent shipments will be as follows:

- A. Complete Dimensional Report - List all dimensions, tolerances and the actual measurement result. Report should include Board dimensions, Finished Hole Size and overall board thickness.
  - B. Cross-Section (with inspection data) per IPC-6012 section 3.6.2, including:
    - B.1 Validate and report stack-up thicknesses
    - B.2 Validate and report IPC6012B plating thickness and copper roughness
    - B.3 Validate and report gold thickness per IPC-4552 (not currently specified in fab drawings).
  - C. Hyper-corrosion – For ENIG boards, process controls shall be implemented as per Plexus PCB specification G9000-3. Results and applicable cross-sections shall be retained by the supplier and provided to Plexus on request.
  - D. SEM/ EDS analysis Report of ENIG plating
    - Obtain target Phosphorus content % for plating from board house
    - Validate content percent and/or identify for Nickel corrosion spikes
    - Identify for Black Pad mud-cracks on the nickel plating
  - E. Contamination Test Report
  - F. 100% Electrical Testing Certificate or Stamp - Including an Impedance Report on impedance designs.
  - G. Certificate of Compliance – Must include a statement of overall compliance to all the applicable specifications (statement is not required to list, but shall cover all the applicable specifications such as; drawing, PO, customer specifications, Plexus G9000-3, IPC specification, hyper-corrosion acceptability, etc). The statement of compliance **must also** include the name and location of the facility that manufactured the Printed Circuit Board.
  - H. Solderability test and Report:
    - Complete Dip test and inspection for wetting.
    - Include a Solderability Sample as defined in D when a revision is made that affects the physical shape or the outerlayer artwork.
  - I. All cartons, packing slips, reports and certificates must have part number, EC level or revision, quantity and P.O. number listed on them.
-



**Quality Code Q22D**

The above listed documentation must be submitted with each shipment. Any shipment received without this documentation will be considered defective.

**Product change notification**

Upon acceptance of conforming product, documentation, and the requirements of this Q-code, the supplier's manufacturing process shall be considered "qualified". All changes require written approval from Plexus prior to implementation. Product or Process change notification requests (PCNs) shall be submitted to [pcns@plexus.com](mailto:pcns@plexus.com).