



REVISION HISTORY			
REV	DATE	ORIGIN	REASON FOR CHANGE(S)
A	03/31/17	Brian Davis, Rachel Perry, Travis Quinn	New
B	12Oct17	Rachel Perry	Added 3 rd part lab for cross section report
C	16Apr18	Rachel Perry, Thang Tran	Multiple updates through-out
D	04May18	Daniel Crouse	Added PCN language
E	21Jun18	Rachel Perry, Thang Tran	Added Checklist for Documentation Requirements
F	28Aug18	Rachel Perry, Thang Tran	Need to remove reference to MIL-STD-1580 listed in Cross-Section Report – two locations and Update Cross-Section Report to Match Checklist for 6x Thermal Stress.
G	30Oct18	Joyce Conn	Added hyper corrosion requirement
H	31Oct18	Rachel Perry, Thang Tran	Q-code update needed for updates to ViaSat Product Assurance Manual for Ni/Au plating
I	14Aug19	Rachel Perry, Sarah Smith	Update for requirement to include Lot and Date code on the CoC.

Q-CODE Q42D QUALITY REQUIREMENTS

The following are the quality requirements for product purchased under Q-code Q42D. These requirements are specific to our customer ViaSat Inc. This includes but is not limited to granting the right of access to the supplier’s facilities and all applicable records to Plexus, their customer ViaSat Inc and regulatory authorities with the acceptance of this Purchase Order, flow down all applicable requirements to sub-tier suppliers including key characteristics and retention of all records (all documentation and cross sections) for a minimum of 15 years that support the manufacturing or material per the requirements of this Plexus customer. Unless a written waiver is received from Plexus, the supplier agrees to abide by the quality requirements listed below **for Acceptance of Printed Circuit Boards/Printed Wiring Boards.**

In addition to the PO requirements and requirements set forth below, all parts and products produced against this purchase order must also comply with ViaSat Quality Assurance Procurement Provisions (PR000512). This document can be located at the following: <https://www.viasat.com/supplier-quality-documents>.

ALL Shipments:

Shipments and handling of Export Controlled Items, Data, or Services – Supplier will be required to meet the documentation and quality requirements as follows:

The Supplier agrees to comply with The Arms Export Control Act, 22 U.S.C 2751-2794, the International Traffic in Arms Regulation (ITAR), 22 C. F. R. 120 - 130, the Export Administration Act, 50 U.S.C. app 2401-2420, and the Export Administration Regulations, 15 C.F.R. 730-774 for this product, all specifications, and associated documentation. This includes, but is not limited to:

- Export controlled items, data, or services, or any element thereof, will not be exported from the United States without U.S. Government authority and the express written authorization of a Plexus ITAR Empowered Official.

*Notice: This document is considered “UNCONTROLLED” when it exists in any printed form. See the Partner - Supplier section of the Plexus Web page for the current master of this Q-code.

- Export controlled items, data, or any element thereof, will not be transferred or disclosed to foreign persons including transfer to foreign persons employed by or associated with, under contract to Sub-tier suppliers including transportation carriers.
- Import Licenses will be provided with all shipments where applicable.
- **Checklist listed below lists documentation requirements. Please see Pages 4 and 5.**

First Production Run/Pre 1st Shipment/Change to Product - Before a product can be released for production the supplier will be required to meet the documentation and quality requirements as follows:

- A. First Article Inspection Requirement** - Supplier will execute the Aerospace First Article Inspection requirements of the SAE standard, AS9102 and provide the results to Plexus with each shipment in which the requirement is to be executed.
- B. Additional First Article Inspection Requirements:**
- Only one part or assembly will be selected and inspected as part of the First Article Inspection.
 - Only one part of assembly should accompany the FAIR unless otherwise requested.
 - Raw materials must have direct traceability with the chemical and physical properties submitted to Plexus.
 - Special processes utilized by the supplier will require written approval from Plexus prior to performing for review and approval. If approved, a certificate of conformance is required that includes the applicable name of, specification number, type and class of material or process used.
- C. For all shipments of Printed Circuit Boards/Printed Wiring Boards, the following requirements must be completed for Acceptance for the 1st Shipment:**
- **A. First Article Inspection Report** – All dimensions 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/parts can be shipped.
 - **B. Cross-Section Report** - A/B coupons or manufacturer's potted A/B samples shall be evaluated by a third party. This report will include data, results and pictures to ensure conformance to the customer fabrication drawing and procurement specification. The measurements shall include Nickel thickness for any PWB that is Ni/Au plated and photo of cross-sectional view of circuit or pad to facilitate overhang and vertical sidewall review. Qty 2 Reports are to be completed, one report provided by supplier, one report by a third party (NTS Anaheim or ViaSat approved alternate lab). Third party cross-sectioning report as required per specification for all panels. The physical cross sections are not to be sent. Supplier cross-sectioning with 6x Thermal Stress @ 230C report for all panels as required per specification. Third party cross-sectioning report as required per specification for all panels. The physical cross sections are not to be sent. Supplier cross-sectioning with 6x Thermal Stress @ 230C report for all panels as required per specification.
 - **C. Hyper-corrosion Test Report** - 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 provide to Plexus on request.
 - **D. Contamination Test Report.**
 - **E. PCB for Solderability Sample** – Qty 2 complete and physically intact PCBs or Arrays as supplied for the Part Number. This should be segregated and boldly identified. The box

cont

- aining the solderability sample must also be identified as such.
- **F. 100% Net List Certificate**, including test data results on the certification.
 - **G. Certificate of Compliance** – Must state compliance to all applicable specifications (drawing, PO, customer specifications, Plexus G9000-3, IPC specifications, etc. . .). The statement of compliance **Must** include the name and location of the facility that manufactured the Printed Circuit Board/Printed Wiring Board and the Lot Number and Date Code.
 - **H. Interconnect Stress Testing (IST)** – IST testing and A/B coupon testing to be completed by supplier and IST Report provided with shipment.
 - **I. XRF Test Report** – XRF testing must be performed on PCB pads (including wire bond pads if applicable) and test results provided per requirements:
 - Non-destructively measure Nickel and Gold Thickness at indicated locations on drawings. One board per panel. Various board locations shall be inspected on different panels.
 - **I.** All cartons, packing slips, reports and certificates must have Plexus Part Number, EC level or Revision, quantity and PO Number listed on them.

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

A. First Article Inspection Requirement – Supplier will execute **First Production Run requirements** and provide the results to Plexus with each shipment following any subsequent change that invalidates the previous First Article Inspection result per AS9102. In addition, products/parts held in inventory by the supplier for 2 or more years or not received by Plexus in 2 or more years **Must** have the **First Production Run requirements** performed to assure no revision change or product/part deterioration during storage.

B. Cross-Section Report – A/B coupons or manufacturer’s potted A/B samples shall be evaluated by a third party. This report will include data, results and pictures to ensure conformance to the customer fabrication drawing and procurement specification. The measurements shall include Nickel thickness for any PWB that is Ni/Au plated and photo of cross-sectional view of circuit or pad to facilitate overhang and vertical sidewall review. Qty 2 Reports are to be completed, one report provided by supplier, one report by a third party (NTS Anaheim or ViaSat approved alternate lab). Third party cross-sectioning report as required per specification for all panels. The physical cross sections are not to be sent. Supplier cross-sectioning with 6x Thermal Stress @ 230C report for all panels as required per specification.

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 provide to Plexus on request.

D. Contamination Test Report.

E. PCB for 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.

F. 100% Net List Certificate, including test data results on the certification.

G. Certificate of Compliance – Must state compliance to all applicable specifications (drawing, PO, customer specifications, Plexus G9000-3, IPC specifications, etc. . .). The statement of compliance **Must** include the name and location of the facility that manufactured the Printed Circuit Board/Printed Wiring Board and the Lot Number and Date Code.

H. Interconnect Stress Testing (IST) – IST testing and A/B coupon testing to be completed by supplier and IST Report provided with shipment.

I. XRF Test Report – XRF testing must be performed on PCB pads (including wire bond pads if applicable) and

test



results provided per requirements:

- Non-destructively measure Nickel and Gold Thickness at indicated locations on drawings. One board per panel. Various board locations shall be inspected on different panels.

I. In addition to all other requirements listed, all required documentation, labels, packaging and packing slips must have Plexus part number, EC level or Revision, quantity and PO number listed on them.

When the revision of the product/part changes, **First Production Run requirements** Must be completed as a new part Before the shipment of product/part to Plexus.

The above listed required documentation must be submitted with each shipment. Shipments received without the completion and proper execution of these Quality Requirements is considered non-conforming and Plexus reserves the right to return to the supplier at the supplier's expense.

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.

See Pages 4 and 5 for Checklist



Printed Wiring Board Documentation Requirements

Supplier:	Customer P/N & Revision:	Plexus P/N & Revision:
Verified By and Date:	Reviewed By and Date:	

PWB documentation requirements prior to shipping product to Plexus:

Refer to customer's specification for required documentation, and this documentation package will have:

- Packing list
- Revision check of Paperwork against latest (supplier system or Agile) Revision _____
- Certificates of Conformance (with the correct specification of (IPC - _____) against what called out on the drawing is (IPC - _____) and included with any deviations to the drawing noted. For ENIG, certificate of conformance to IPC 4552 as per Plexus G9000 specification.
- Serial number log
- IST report

*Notice: This document is considered "UNCONTROLLED" when it exists in any printed form.
 See the Partner - Supplier section of the Plexus Web page for the current master of this Q-code.
<http://www.plexus.com>



- f. Wire Bond coupons (as applicable)
- g. Wire Bond pulls data report (as applicable)
- h. Supplier cross-sectioning with 6x thermal stress @ 230C report for all panels as required per specification (do not send coupons).
- i. Third-party cross-sectioning report as required per specification for all panels shall include photo of cross-sectional view of circuit or pad to facilitate overhang and vertical sidewall review for Nickel thickness measurements.
- j. Ionic Contamination report
- k. Electrical Test Certification of Conformance report (based on the reference specification on the drawing)
- l. Impedance Test Report
- m. XRF test report (with objective evidence that references locations identified for XRF on the drawing)
- n. SAE AS9102 Detail & Full FAI report (as applicable for new parts, new revisions, or if it hasn't been built for 2 years)
- o. Customer drawing
- p. Final Inspection checklist (from supplier Final QA)
- q. HDI via fill services (as applicable)
- r. All associated raw material supplier reports (Material CoC)

Comments: _____

