

SUPPLIER REQUIREMENTS FOR QUALITY, DESIGN & MANUFACTURING

1.0 PURPOSE

The purpose of this document is to define the requirements of Anaren Microwave, Anaren Ceramics and MS Kennedy (collectively Anaren) regarding the quality as well as the design and manufacture of purchased material. **As a supplier, you are essential to Anaren's success and significantly contribute to product conformity, including product safety requirements.** This requirement is not meant to discourage suppliers from making product or process improvements. It is intended to ensure that when changes are made, they are done so in a manner that will ensure product integrity is maintained. All exceptions and /or deviations to any requirements defined herein shall have prior approval from Anaren Procurement.

2.0 SCOPE

This procedure applies to all material purchased by Anaren when this document is specified on the Purchase Order, and also flows down applicable requirements to sub-tier suppliers.

Definitions

Commercial Off The Shelf (COTS) Part: Any item for which the requirements are defined and controlled solely by the manufacturer/ supplier, and which Anaren is purchasing to the manufacturer/ supplier specifications. Note that items which contain ANAREN specified changes or alterations to a COTS item shall NOT be considered a COTS item for the purposes of this document.

Source Controlled Document (SCD): Any drawing or document for which the requirements are defined and controlled solely by Anaren and purchased to the specifications and/or source outlined within the drawing or document. Anaren specified changes or alterations to a COTS item shall be considered a SCD item for the purposes of this document.

Packaging Material: Any material defined either as COTS or through a SCD which is purchased with a sole function of packaging Anaren finished goods for shipment. Typical packaging material may include, but is not limited to, cardboard boxes, Pelican hard cases, custom foam inserts, ESD bags, bubble wrap, and plastic shipping trays.

3.0 ORDER OF PRECEDENCE

When the requirements of documents conflict, the document of higher precedence shall govern. The order of precedence is as follows:

- 1) Purchase Order
- 2) Anaren Quality Provision # 81000
- 3) Anaren Drawing (IE: Master Drawing, SCD, etc.)

4.0 QUALITY REQUIREMENTS

The fundamental requirement is to ensure that workmanship and material is controlled to ANAREN requirements and/or accepted industry standards. Furthermore, Anaren wants to ensure no counterfeit material is supplied or utilized in **ANY FORM, FIT or FUNCTION** of Anaren product. The following specifies SUPPLIER actions required to show that they have the proper documentation, system, and operator training in place to consistently provide product with verifiable raw material and workmanship quality.

All purchased raw materials shall have documented verification retained by the SUPPLIER to assure source of origin from an Original Equipment Manufacturer (OEM) and eliminate potential counterfeit material. The documentation will be available upon request to Anaren Microwave. If material must be obtained from a non-franchised distributor, Anaren Procurement must provide prior written approval for SUPPLIER to procure such material to confirm that the source of the material meets ANAREN requirements prior to shipment to ANAREN.

4.1 Recurring Quality Requirements:

1. Visual inspection is required after each critical operation.
2. Data and records for each product produced for ANAREN will be retained by the SUPPLIER for a period not less than seven (7) years. This information will be available to Anaren upon request.

4.2 Other Quality Requirements:

1. Supplier shall **conform** to and maintain a Quality Inspection system which is in conformance with MIL Specification MIL-I-45208 "Inspection Systems Requirements", MIL-Q-9858, ISO 9001, AS9100, **or** is subject to Anaren approval.
2. The Supplier's calibration system shall conform to MIL-C-45662A, Z540-X, or equivalent, **or** is subject to Anaren approval.
3. Anaren Visits:
All facilities Quality Control, Inspection Systems, Manufacturing Process and documentation used to manufacture material shall be open to inspection, review, verification and analysis by ANAREN, Anaren's Customer, or Regulatory Agency at all reasonable times. ANAREN will give reasonable notice, and obtain SUPPLIER concurrence prior to any visit or inspection.
4. Material Review Board (MRB) Authority:
The SUPPLIER is not granted MRB authority for Repair or Use As Is dispositions. Requests for these dispositions are to be made through Anaren Procurement. Rework is defined as restoring the item to drawing specification.

5. Non-Conforming Material:

- a. Non-conforming material rejected by ANAREN and determined to be SUPPLIER responsibility requires the SUPPLIER to respond to ANAREN's request for root cause and corrective action. Supplier shall also state whether items were reworked or replaced and if reworked what rework was performed. Supplier's statements must be executed and returned with the shipments. Failure to respond within the time frame requested could affect the future procurement and/or status as an ANAREN approved SUPPLIER.
- b. If it is determined that nonconforming material has been delivered to ANAREN, the SUPPLIER shall notify Anaren Procurement immediately.
- c. Request for Deviation to specification
 1. In the event that ANAREN agrees to use non-conforming material, the SUPPLIER will not ship product without receiving an approved deviation from Anaren Procurement for the affected product.
 2. A copy of the approved deviation shall be included with each shipment of affected product. Either the deviation number shall be noted on the Supplier C of C, OR the deviation itself shall be attached to the Supplier C of C.

6. Responsibility for Inspection:

Unless otherwise specified in the contract or Purchase Order, the SUPPLIER is responsible for the performance of all inspection requirements as specified herein. The SUPPLIER may utilize their own facility or any suitable Laboratory unless disapproved by ANAREN. ANAREN reserves the right to perform any of the tests set forth in this Quality Provision where such tests are deemed necessary to ensure material(s) and services conform to prescribed requirements. The SUPPLIER shall have evidence of a working operator training and verification program. This program shall also include a written description of each process available to the operator.

7. First Article Inspection (FAI):

Unless otherwise specified on the Purchase Order or Drawing, a 100% dimensional and, when applicable, electrical verification shall be conducted on a minimum of one (1) part from the first production run, excluding prototype parts or parts using methods, materials and/or equipment different than intended for production. The data (cross-referenced to a copy of the drawing) and the actual measured parts(s) shall be included with the part submission. Unless otherwise specified by the Purchase Order, or drawing, first article inspection data is not required for standard COTS catalog items or packaging material as defined in section 2.0.

8. Manufacturing Lot Inspection (MLI):

Unless otherwise specified on the purchase order or drawing, the supplier is responsible to use appropriate process controls, test, and/or inspection methods in order to ensure that 100% of all delivered product is compliant to drawing and PO requirements. When the supplier uses sampling inspection as a means of product acceptance, the sampling plan shall be justified on the basis of recognized statistical principles and appropriate for use (i.e., matching the sampling plan to the criticality of the product and to the

process capability). Critical items are identified by a D[#] or K[#] symbol on the drawing. When so identified, the supplier shall measure and retain records of these characteristics consistent with drawing requirements and the suppliers own measurement, test or inspection plan. When so directed by the purchase order or accompanying statement of work, the plan shall be submitted for Anaren approval.

9. Shelf Life Material:

Item(s) that are controlled by shelf life will have at least 3 months of the item's shelf life remaining upon receipt to Anaren or a minimum of 75% of the item's shelf life remaining upon receipt to ANAREN.

10. Counterfeit Material Mitigation Policy:

Material used in "ANY FORM FIT OR FUNCTION" of Anaren product is required to be received only through the original manufacturer or an authorized distributor which is defined as an entity that has a contractual agreement with the original manufacturer to stock, repackage, sell and distribute its product lines.

11. Certificates of Compliance (C of C), Certificates of Analysis (C of A) and Other Deliverable Documentation

12. Ethics and Business Conduct

Please reference Anaren's website for requirements on Code of Conduct:
<https://www.anaren.com/code-of-conduct>

A C of C or C of A shall be included with each material shipment. The minimum information required in the C of C or C of A is defined in Table 1.

Required Content in C of C or C of A	Product Type		
	COTS Parts	Non-COTS Parts	Non-COTS parts fabricated from metal
Supplier/ manufacturer Name	O	R	R
Supplier/ manufacturer issuing location	O	R	R
Anaren Part Number	O	R	R
Anaren Part Revision	O	R	R
Manufacturer's Part Number	R	R	O
Qty Shipped	R	R	R
Purchase Order #	R	R	R
Date of issue/ approval	R	R	R
Signature and/ or name & title of Authorized agent	R	R	R
Manufacturer's Lot/ Serial Number	O	R	R
Statement of RoHS Compliance	W	W	W
Date of Manufacture	S	S	N/A
Expiration Date	S	S	N/A
Certificate of Analysis/ Origin (see section 12)	O	W	R

R = Required
O = Optional
W = When specified on the PO
S = Items with a limited shelf life
N/A = Not applicable

Table 1

13. Certificate of Analysis/Origin for Metal items:

Unless otherwise specified on the Purchase Order, a certificate of metal analysis and country of origin shall be included with each metal shipment. At a minimum, the following information shall be provided on the certificate:

- 1) Name and address of base metal SUPPLIER issuing location
- 2) Supplier's Purchase Order #
- 3) Date of issue/approval
- 4) Lot/Serial Number
- 5) Statement of RoHS compliance (when applicable)
- 6) Metal Material Country of Origin

14. Government Review:

Government Inspection or release of product item prior to shipment is not required unless otherwise specified on the Anaren purchase order. Supplier shall provide a copy of the Anaren Purchase order to its government representative upon request.

5.0 DESIGN & MANUFACTURING REQUIREMENTS

5.1 Requirements for change notification:

The SUPPLIER shall not make any changes to the design, materials, manufacturing process, or manufacturing location without prior notification and approval from ANAREN. ANAREN reserves the right to request documentation of the testing and/or verification of any changes before approving such changes.

A SUPPLIER that desires to make a change in design, materials, manufacturing processes or manufacturing location shall obtain written approval by Anaren Procurement a minimum of sixty (60) working days prior to the planned implementation date of the change. The SUPPLIER shall provide, in writing, a description of the change, planned implementation date of the change, and verification plan used to insure the change will not affect product form, fit, function or reliability. Upon review, ANAREN may subsequently request copies of data taken during the change verification.

5.2 Process Interruption Notification:

ANAREN is to be notified in writing at least ten (10) business days prior to any routine scheduled preventative maintenance activities with regards to critical manufacturing processes. If critical manufacturing processes experience an unplanned interruption, ANAREN is to be notified immediately.

5.3 Foreign Object Damage practices:

The SUPPLIER shall establish and maintain an effective Foreign Object Damage (FOD) Prevention Program to reduce FOD using NAS412 or equivalent.

The material supplied to ANAREN shall be manufactured in an effective FOD Prevention Program to reduce FOD using NAS412 or equivalent. The material supplied to Anaren shall be manufactured in an environment that is free of foreign objects. Material supplied to Anaren shall be free to foreign objects. The SUPPLIER's program shall utilize effective FOD prevention practices. The program shall be proportional to the sensitivity of the design of the product(s) to FOD, as well as, to the FOD generating potential of the manufacturing methods.

The written procedures or policies developed by the SUPPLIER shall be subject to review and audit by ANAREN and disapproval when the SUPPLIER's procedures or policies do not accomplish their objectives.

The intent of this section is not to necessarily change manufacturing processes, but maintain continual awareness of the need to eliminate foreign objects for all material supplied to ANAREN.

5.4 Plating, Surface Finishes, and Conditioning Requirements:

5.4.1 If the material supplied to ANAREN contains plating, surface finishing or conditioning, the SUPPLIER retains responsibility for monitoring performance and compliance of sub-suppliers or internal processes. With exception of piece parts, components, and/or assemblies that are manufactured in accordance with (or manufactured to meet the requirements of) a Military, Federal, or Commercial Specification Part Number (Examples: QQ-N-290, JANTX, M39014, MS15795, NAS, RNR, MIL-PRF-39012), the SUPPLIER will comply with one of the following requirements:

- a. Condition I - Plating, surface finishes or conditioning shall be performed by an approved NADCAP (National Aerospace and Defense Contractors Accreditation Program) supplier. **
** List of NADCAP approved suppliers can be found at www.eauditnet.com.
- b. Condition II - Anaren approved sub-supplier for plating, surface finishes or conditioning processes.
- c. Condition III - ANAREN approved supplier with in-house plating capability.

Plating, surface finish or conditioning specifications required by the ANAREN drawing and provided to a commercial or military specification controlled herein, shall comply with the requirements of this provision.

5.4.2 Prohibition of Pure Tin

5.4.2.1 The uses of Pure Tin Plated finishes are strictly PROHIBITED. Any Tin Plating or Tin Solder processes shall contain NO LESS than 3 percent LEAD composition, unless specifically authorized in writing by the Anaren Procurement Agent. These restrictions apply for all types and levels of procurements, with the supplier responsible for communicating these restrictions to subcontractors or sub-tier suppliers as required.

5.4.2.2 EXEMPTION: If an Anaren Drawing or SOW referenced on this order specifies the use of pure tin finishes this prohibition is NOT applicable.

5.4.2.2.1 NOTE: if the Anaren drawing specifies a [Supplier](#) Part Number which contains pure tin, then the purchase order or Anaren drawing must specifically authorize the use of pure tin for the specified part number(s).

5.4.2.2.2 NOTE: Tin-plated finishes may be used if: (a) the seller has a written tin control plan in accordance with GEIA-STD-0005-2 that has been approved in writing by Anaren, and (b) the tin usage conforms with requirements of the plan. Lead-free solder processes may be used if: (a) the seller has a written Lead-Free control plan in accordance with GEIA-STD-0005-1 that has been approved in writing by Anaren, and (b) the lead-free solder usage conform to the requirements of the plan.

5.5 Electrostatic Discharge Control practices:

For electrical and electronic parts, assemblies, and equipment, susceptible to damage from Electrostatic Discharge (ESD), the supplier is responsible to establish and implement an ESD Control Program per the latest revision MIL-STD-1686 or equivalent. The supplier shall take the necessary precautions to ensure that static susceptible devices are adequately protected from ESD damage during manufacturing, test, inspection, packaging and shipping per MIL-STD-1686 and MIL-HDBK-263 or as applicable to Anaren Procurement documents. Packaging shall be marked with an ESD cautionary note or symbol.

Anti-Static, static dissipative packing material (pink poly formulation) must comply with Contact Corrosivity Testing in accordance with MIL-STD-3010 Method 3005 (formerly Federal Standard 101, Method 3005) or equivalent. This anti-static, static dissipative packing material may not be used in direct contact with Optics and Polycarbonates. [Product or packaging furnished shall not contain Pink Polyethylene or be contaminated externally by Pink Polyethylene or Amine.](#)

5.6 Process Restrictions

Mercury Usage

Supplies furnished shall not contain functional Mercury or be contaminated externally by metallic Mercury or Mercury compounds.

Functional Mercury is that Mercury or Mercury compound required for proper operation of the items delivered under contract. [Supplier](#) agrees to notify ANAREN before shipment if Mercury contamination is suspected or if Mercury is knowingly induced in the manufacturing process.

6.0 SUPPLIER SHIPMENT REQUIREMENTS FOR INDIVIDUAL PACKAGING

For the safety of handling packages (i.e.: boxes, cartons, containers, etc.), being received by Anaren, the following specifications are established for all incoming packages to Anaren:

1. Packages should be in good condition, with weight distributed evenly, as feasible, with no sharp edges or exposed staples.
2. [Supplier is responsible to use commercially acceptable methods and standards to ensure that packaging is adequate to protect the product during transportation, handling, and storage.](#)

3. Packages must not exceed 50 pounds gross weight.
4. Packages exceeding 50 pounds must be approved by Anaren in advance of shipment. These packages must have conspicuous warning signs or labels identifying the package as "Heavy" (or similar) with the actual weight printed on the package. Signs or labels must also denote that the package requires two-person lifting, mechanical device (hand truck, etc.) and/or similar warnings.

7.0 SUPPLIER TO ANAREN DELIVERABLES

1. Certificate of Compliance: A C of C shall be included with each [product](#)/material shipment.
2. When applicable, FAI data with cross-referenced copy of drawing traceable to measured features per section 4.2, item number 7.
3. When applicable, MLI data with cross-referenced copy of drawing traceable to Key measured features per 4.2, item number 8.
4. When applicable, a copy of the approved deviation shall be included with each shipment of affected [product](#)/material.
5. When applicable, Certification of Analysis with country of origin for the raw material used to produce metal items.
6. When applicable, a C of C from the plating supplier.
7. When applicable, expiration date of the material shall be clearly marked on the material packaging or container.
8. When applicable, data and records for product produced shall be included in shipment.