P-1111A-11 COMMERCIAL PACKAGING

CHANGE HISTORY:

REV 11 Rewrote A.1 and included "cables and harnesses". Split A.2 into two paragraphs. A.2.1 and D.1.1 contains a more detailed description of materials and document types. Added "FOD free and cleanable " to A.3. Added A.5 and renumbered all following "A" paragraphs. Added paragraph A.10. Defined UFC within paragraph B. Added ISPM 15 to paragraph C. Added Labelmaster to D.1.2. 11-04-09

* This attachment is provided to describe Raytheon Company's minimum packaging requirements. *Shipments are to be delivered to their final destination with minimal damage to the package and no damage to the contents.* This document is superseded by any special requirements listed on drawings, specifications, requirements, and notes provided with the procurement data package. Any questions concerning packaging or materials should be directed to the buyer referenced on the Purchase Order.

A. Packaging, packing and preservation:

*A.1. The Supplier shall follow ASTM-3951 (Standard Practice for Commercial Packaging) when packaging items; except for ammunition, explosives, hazardous materials, tape and reel components, Plastic Encapsulated Microcircuits (PEMs), and cables or harnesses.

*A.2. Packaging of Hazardous Materials: Packaging, packing and marking of hazardous materials shall comply with applicable regulations of the United Stated Department of Transportation (DOT). Import or export of hazardous (dangerous goods) and magnetized materials shall comply with the applicable regulations of the DOT, United Nations and the country of origin.

*A.2.1 Suppliers of assemblies containing Hazardous Materials must supply Raytheon Packaging Engineering with a copy of the CAA/EX letter (this is an FHC by definition) or Interim hazard classification letter, chemical composition, Net Explosive Weight (NEW), and Special Permit letter for pressurized gas bottles.

*A.3. Packaging shall be performed in a manner that protects parts and eliminates Foreign Object Debris (FOD) contamination. At a minimum this means packaging shall be sequenced to facilitate cleanliness, handling, shipping, and storage. The inner (unit) packaging shall be FOD free and cleanable. Specific packaging materials to avoid include loose fill cushioning materials; such as, shreds of paper, tissue, plastic, popcorn, peanuts, news print, Shredded fiberboard, or silicon plastics. Specific methods and materials to be used or avoided may be written into the Purchase Order.

A.4. Electrostatic Discharge Sensitive devices, ESDS, shall be initially wrapped in material conforming to MIL-PRF-81705, Type II or Type III, or cushioned in material conforming to AA-3129, Type I, Grade B, or PPP-C-795, Class 2 or A-

A-59135, Class 1, Grade B, or PPP-C-1797, Type II, to prevent bag puncture, and unit packed in a heat sealed bag conforming to MIL-B-117, Type I, Class F, Style 1. Reclosable cushioned pouches conforming to MIL-P-81997, Type I or II, may be used in lieu of initial wrap or cushioning. Lead or terminal configurations for all items shall be maintained as manufactured without causing loads or stresses capable of causing damage to the item. Materials used to maintain item position and lead or terminal configuration shall permit item removal without damage to the item. Electrostatic Discharge Sensitive, ESDS, caution labels shall be applied to the barrier bag or unit container. Pink poly materials may not be used for Electrostatic Discharge Sensitive device shielding purposes.

*A.5. Contaminant-sensitive components (optics), shall be packaged within low out gassing materials with a Total Mass Loss (TML) less than 1% and Collected Volatile Condensible Material (CVCM) less than 0.1% when tested in accordance with ASTM-E595. Material shall not transfer non-volatile residue (NVR) such as silicones to packaged items.

A.6 Commercial equivalent materials may be used in place of mil-spec materials when certified as equivalent. Use only amine free packaging materials which protect items from corrosion in accordance with MIL-STD-3010, Method 3005, contact corrosion testing for long-term storage and in-plant handling. In addition; pink poly packaging materials may be used for non-ESD shielding applications, provided the material complies with MIL-STD-3010, test method 3005.

A.7. Packaging of Tape and Reel Components

A.7.1. Axial Devices: Suppliers of axial lead configuration devices shall tape and reel components in accordance with ANSI/EIA-296. The inside tape spacing is to be 2.063 $\pm$ 0.059 inches. Lot sizes 200 or greater shall be taped and reeled. A minimum 12 inch leader is required on reeled components and only on the finished length of taped components attached to the hub of the reel. Lot sizes less than 200 shall be taped and may be ammo packed in lieu of reeling.

A.7.2. Radial Devices: Suppliers of radial lead configuration devices shall tape and reel components in accordance with ANSI/EIA-468. However, the height to seating plane dimension shall be 0.650 inches minimum to 0.885 inches maximum. A tape trailer of at least 3 feed holes is required at the end of the tape to feed the last component into the dispensing head. Lot sizes 200 or greater shall be taped and reeled. Lot sizes less than 200 shall be taped and may be ammo packed in lieu of reeling.

A.7.3. Surface Mount Devices: Suppliers of surface mount configuration devices shall tape and reel all components in accordance with ANSI/EIA-481. Ammo packing is not allowed. However, the tape and reeled lot is to be packaged (overpacked) for shipment in accordance with ASTM-3951.

A.8. Packaging, handling, and marking of Plastic Encapsulated Microcircuits, PEMs, shall be in accordance with JOINT INDUSTRY STANDARD, IPC/JEDEC J-STD-033. All packages of PEMs shall be labeled with the appropriate moisture sensitive caution symbol and applicable moisture sensitivity level (level 1 through level 6) on unit, intermediate and shipping containers. Major categories are (but not limited to): J-bend and gull-wing leaded packages such as Plastic Leaded Chip Carriers (PLCCs), Small Outline Integrated Circuits (SOICs), Plastic Quad Flat Packs (PQFPs) and Thin Small Outline Packages (TSOPs).

A.9. Packaging of Non-Tape and Reel Components shall be in accordance with this document, unless noted otherwise on the Purchase Order.

*A.10. Packaging of Harness and Cable Assemblies

A.10.1. Electrostatic Safe packaging materials, connector caps and bags shall be used at all connector locations. Large cables and harnesses may be packed directly into clean shipping containers or tubes in good condition in lieu of bags. However, packaged (overpacked) for shipment in accordance with ASTM-3951.

A.10.2. Handle and package item and components in a manner that does not strain or distort preformed shape and bends. Unless cable or harness has preformed bends packing in straight lengths is preferred. Coil as necessary to reduce container cube, distribute weight evenly, and to ease handling. Unbagged large cables or harnesses must have all connectors capped or individually bagged. It is preferred that all male connectors have pin protectors installed. Cushion large connectors to prevent cable damage. Silver plated or tarnishable metals must be bagged with a sheet of silver saver paper. Heat seal, staple or tape bags closed with a minimum of enclosed air.

B. Shipping Containers:

Containers shall be packed to ensure carrier acceptance, safe delivery and adequate storage at end location. Containers shall be in accordance with the rules and regulations of carrier applicable to the mode of transportation. Containers shall be domestic and a minimum size to provide a snug fit for the item. Unit containers shall also be constructed so as not to permit damage to the contents and to facilitate subsequent handling.

*Rule 41: Raytheon insists on strict compliance with Uniform Freight Classification (UFC) Rule 41 as minimum requirements of fiberboard containers (regarding weight and size limitations).

*C. Skid Requirements:

To accommodate movement during shipment and after receipt, large, heavy or bulky boxes shall be provided with skids in good condition and of adequate construction to support the load. Wooden or plastic pallets must be used. Wooden pallets shall be HT stamped lumber per ISPM 15.

D. Markings

*D.1 Marking shall be in accordance with carrier rules and regulations. Hazardous materials or restrictive items must be properly marked per Department of Transportation (DOT) requirements. A copy of the DOT Competent Authority document, EX, CAA, or Interim Hazard Classification (IHC) shall be attached to the exterior container.

D.1.1. U.N. markings for hazardous materials:

Exterior shipping containers shall be marked with U.N. certification markings (POP) indicating the level of performance achieved through testing.

*D.1.2. Magnetic sensitive and electrostatic discharge sensitive items must be properly marked, labeled, or stenciled with proper cautionary information as described within Labelmaster catalog or equivalent.

D.2. Minimum Container Marking:

Each unit and outer container shall be marked with Raytheon part number and quantity. Unit containers are exempt from marking only if they hold one (1) part each and the Raytheon part number is visible on the part, through the container (i.e. a clear plastic box).

D.2.1. Reusable shipping container markings:
Reusable shipping containers shall have all old labels and markings, those which no longer apply, obliterated or obscured (i.e. "Empty" labels, "BOX _ of _" markings, UPS labels, etc.). The only acceptable markings will be those that are applicable to the current shipment.

* ADDITION/REVISION