Consumption Based
CBMR
Material Replenishment

Radio Frequency Identification (RFID) Supplier Familiarization

LOCKHEED MARTIN

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Overview

- Shipments to LM Aeronautics require RFID tags if you are a user of TMS
- NO Software or Hardware are required to be purchased or implemented to comply with this requirement
- Tags are pre-encoded, and can be purchased from Tag suppliers (ref Slide 6) for less than $1/tag
- RFID Tag Value must be entered into TMS and Tag affixed to shipment to LM Aeronautics
- IT IS EASY!

Who This Applies To

- Users of TMS – Transportation Management System
- Shipments to Lockheed Martin Aeronautics
  - Currently checking compliance on deliveries to Marietta and Fort Worth Plants
- PM5010H (or later version) (See Sec 8.0)
  - Reference PO Header Text, Supplemental Clause Section 4 Shipping Instructions or Appendix QI

Benefit to you

- Quicker payment after LM receipt of shipment
- Compliance with DoD requirements

What You Need To Do

- Pre-Requisites
  - Use TMS
  - Procure pre-coded Labels (Passive)
  - *No new hardware or software required to be RFID Compliant*

- RFID Label is for Shipments only – not for parts
  - Affix label to THU (Transportation Handling Unit)
  - Enter 24 character Label ID into TMS
    - Can be entered via barcode reader, or by hand

Cost of Labels

- Costs will vary by order quantity, label supplier you choose
- Example Quotes
  - $32 delivered for 50 labels (min order - $.65/label)
  - $24.75 for 25 labels + shipping (no min order - $0.99/label)
  - Received quotes ranging from $0.35/label – $2.00/label for order sizes from 1000 – 200 labels respectively.
  - ***Cost will vary based on vendor, order size***

Potential Label Suppliers

- Select a label vendor
  - Listed below are nine *potential* sources for the RFID pre-coded labels. There is no LM Aero requirement to use these sources.
  - The suppliers are familiar with LM Aero's requirements and the DoD-96 RFID spec:

- *North America:*

For Larger Orders (>150), Likely Lower Cost:

- **William Frick & Company**
  Libertyville, IL
  Telephone:(866) 669-7590; (847) 918-3700 (Outside US)
  http://www.fricknet.com

- **Venture Research**
  Plano, TX
  Telephone: 469-246-4000; Toll Free: 1-866-RFID-111
  http://www.ventureresearch.com

- **ContiSystems**
  Flower Mound, TX
  Telephone: 800-479-9333
  POC: Bethany Miller, 972-464-6577
  http://www.contisystems.com

- **EMS Barcode Solutions**
  Plano, TX
  Telephone: 972.535.5555
  POC: Terry Logan 972-200-1982
  info@emsbarcode.com

- **MPI Label Systems**
  Alliance, OH
  Telephone: 330-238-4200
  POC: Jimi Brantingham 330-238-4184
  jimb@mpilabels.com

For Smaller Orders (<150), Likely Lower Cost:

ODYSSEY
Florence, KY
Telephone: (859) 449-7068
http://odysseydcs.com

EasySoft
Harvard, MA
Telephone: (877) 765-5511
POC: Shawn Bredberg
http://www.easysoftcorp.com/pre-printed/dod-rfid-tags.html

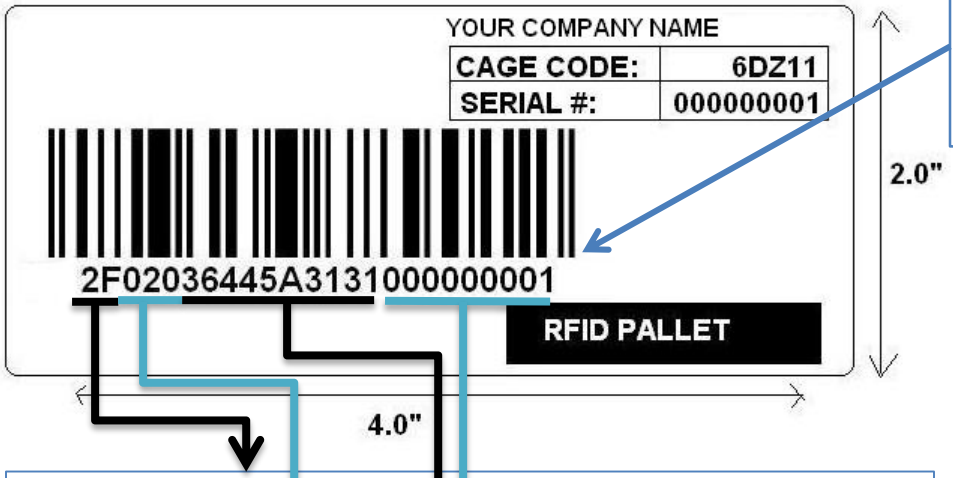
SimplyRFID
Warrenton, VA
Telephone: (703) 343-1689
http://www.simplyrfid.com/order-pre-programmed-dod-rfid/?gclid=CM6Jg8z9wsECFcyyMgodKDAA4Q

- *Europe:*
  - **Rotas Italia s.r.l.**
    Treviso, Italy
    Tel. +39 0422 433100 Fax +39 0422 430413
    http://www.rotas.com
    Mr. Alberto Betteti

Label Data

- Supply label vendor with the following information:
  - Labels must be DOD-96 compliant (96 bit definition for the tag/label)
  - http://www.acq.osd.mil/log/sci/.AIT.html/DoD_Suppliers_Passive_RFID_Info_Guide_v15update.pdf
  - UHF, (433MHz, 860-960MHz)
  - Your company CAGE code (label vendor will convert)
    - Link: https://cage.dla.mil/Search
  - Container Type: case or pallet
    - If you ship with cases and pallets, it is ok to choose 1 RFID Tag type, don't have to buy multiple tag types
      - 0000 – pallet
      - 0001 – Case
      - All other combinations reserved for future use
  - The Starting Serial Number for the Tags you are ordering, Tag serial number must be 36 bits, left padded with zeros.
  - Note: Cage and tag serial number combination must be unique
    - no repeats of serial numbers if you change label providers. First order would start with serial number 1. Next Order would be Last Tag Serial Number +1.
- If in doubt, send us a sample and we'll test it, contact information at end of presentation

Label Example



RFID Tag ID – Enter into TMS on THU Create Screen. Barcode can be used to populate field in TMS

RFID inlay

DOD Header 2F (Static)
Filter 0 (Pallet) (Variable)
Space-Pre CAGE 20 (Static)
Cage 36445A3131 (Variable-hex)
Label Serial Number 000000001 (Variable-hexdec)
Total Characters - 24

Note: These tags are for example purposes only. Other acceptable tag sizes and inlay configurations exist, the RFID Tag needs to be DOD 96 compatible.
DoD96 Guide:
http://www.acq.osd.mil/log/sci/.AIT.html/DoD_Suppliers_Passive_RFID_Info_Guide_v15update.pdf

Label & Shipping References

- Links to U.S. DoD and EPC RFID Data Syntax and Standards:
  - DoD Automatic Info Tech (AIT) website: http://www.acq.osd.mil/log/sci/ait.html
  - Reference link (DoD 96 bit tag construct):
    http://www.acq.osd.mil/log/sci/.AIT.html/DoD_Suppliers_Passive_RFID_Info_Guide_v15update.pdf
  - CAGE code lookup:
    - https://cage.dla.mil/Search
- LM Shipping Instructions and PM5010
  - http://www.lockheedmartin.com/us/aeronautics/materialmanagement/scm-shipping/scm-shipping_shippinginstructions.html
  - The Document table in the link above will contain the current version of PM 5010 and a PM5010 Archive
  - This Document
    - http://www.lockheedmartin.com/content/dam/lockheed/data/aero/documents/scm/shipping/shippinginstructions/RFID_InfoPkg.pdf
- TMS Help Desk Number and link – 888-875-9801
  - http://www.lmaeronautics.com/tms/Documentation_Template.htm#HOME.htm
- TMS On-Boarding; Jacque Keeney – 817-777-4464
  - Email: supplier-integration.gr-aero@lmco.com

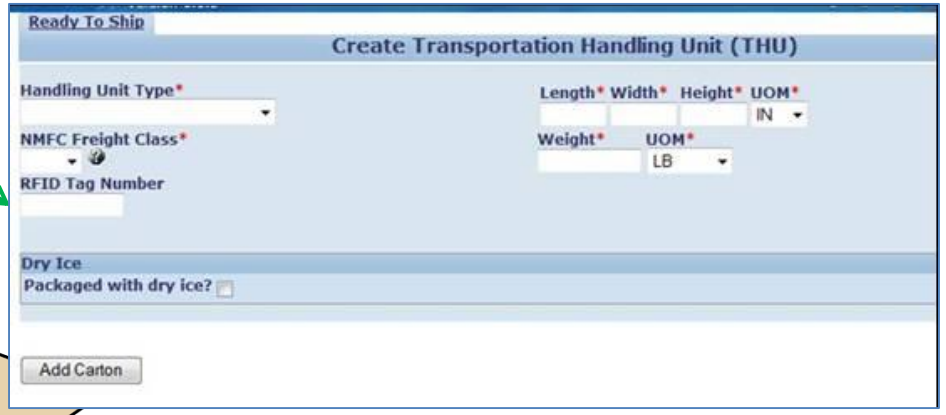
How to Ship with TMS and RFID

Supplier TMS Process w/ RFID

1. Utilize the TMS process and…
   - Complete RFID field in the initial Ready To Ship screen
   - Attach RFID label to the THU shipping package
2. Ship specified quantity to LM Aero

Input RFID 24 digit Tag Number here:
Tip: with cursor in RFID Field, use a bar code scanner to read the barcoded RFID tag, will populate RFID Tag field in TMS.

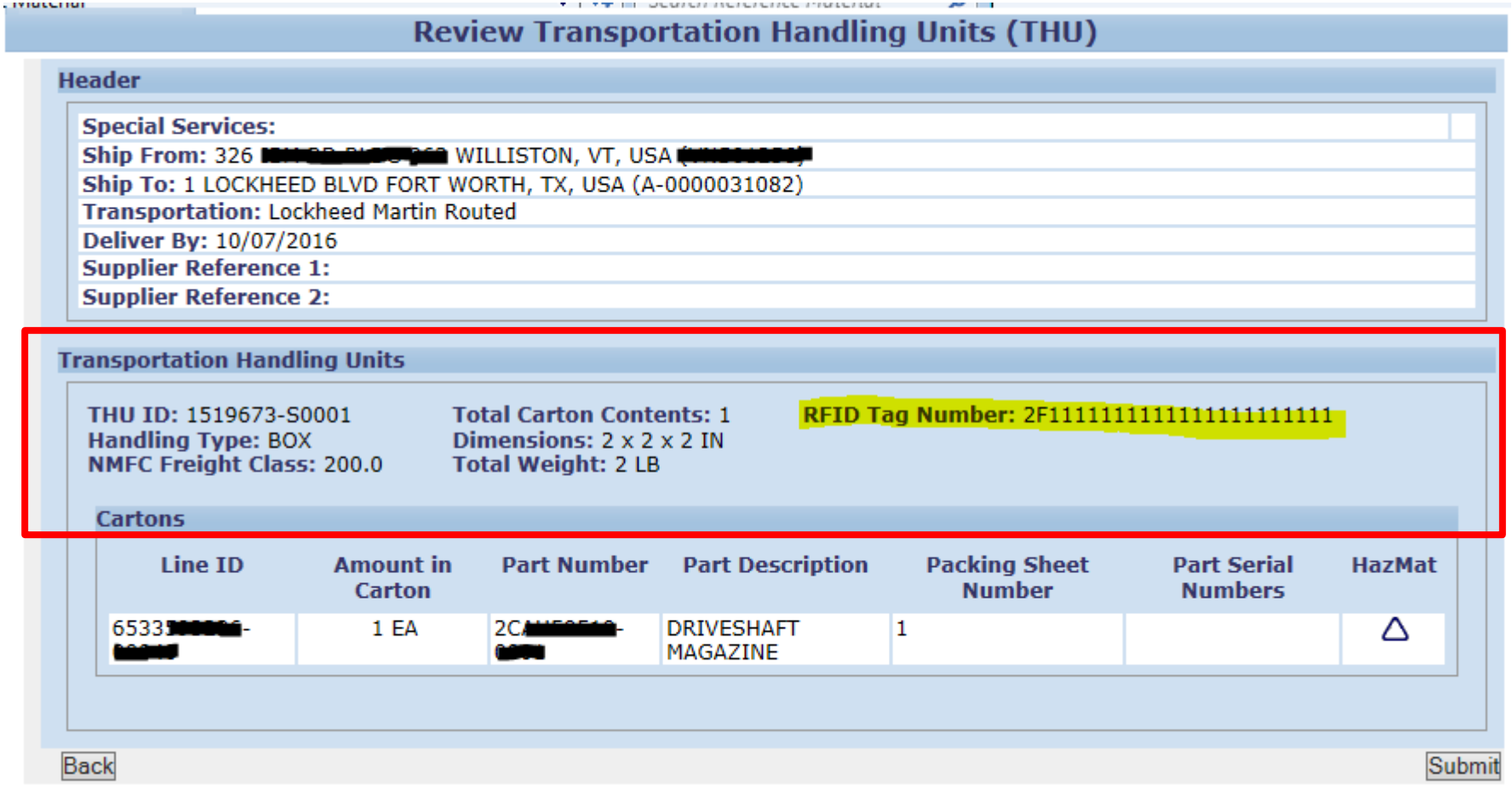
TMS - Create THU screen



It's that easy!

Successful RFID Entry in TMS

- IF the RFID Value was successfully entered in TMS, it will show in the Review THU Screen



Unsuccessful RFID Entry

- If no RFID Tag Value is entered in TMS, *No RFID data* will be displayed on Review THU screen
  - Go Back to Create THU Screen and re-enter RFID data

Ready To Ship

Review Transportation Handling Units (THU)

Header

Special Services:
Ship From: [redacted]
Ship To: 1 LOCKHEED BLVD FORT WORTH, TX, USA (A-0000031082)
Transportation: Lockheed Martin Routed ()
Deliver By: 12/15/2016
Supplier Reference 1:
Supplier Reference 2:

Transportation Handling Units

THU ID: 1520418-S0001
Handling Type: BOX
NMFC Freight Class: 200.0

Total Carton Contents: 1
Dimensions: 2 x 2 x 2 IN
Total Weight: 2 LB

Cartons

Line ID	Amount in Carton	Part Number	Part Description	Packing Sheet Number	Part Serial Numbers	HazMat
6533[redacted]	1 EA	2W[redacted] 0001	RIB DOUBLER [redacted]	1		△

Back Submit

Review/Next Steps

- Identified Requirement and Applicability
- What is needed/What to do
- Who can provide
- What it should cost
- How to Ship with RFID
- Need an ECD for shipment with RFID
  - Provide to Buyer or Aaron Dahnke

LM Aero POC Information

- Questions…
  - Contact:
  - your respective LM Aero Buyer or

  - Aaron Dahnke
    817-777-2994
    aaron.c.dahnke@lmco.com

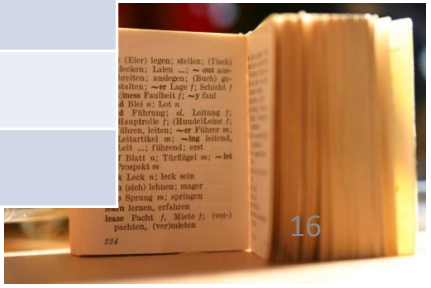
  - US Mail:
    LM Aeronautics
    P.O. Box 748
    Mailzone: 1440
    Fort Worth, TX 76101
    Attn: A. Dahnke

FEDEX:
LM Aeronautics
1 Lockheed Blvd
Bldg: 15 MZ: 1440
Fort Worth, TX 76108
Attn: A. Dahnke

BACKGROUND INFO

Acronyms

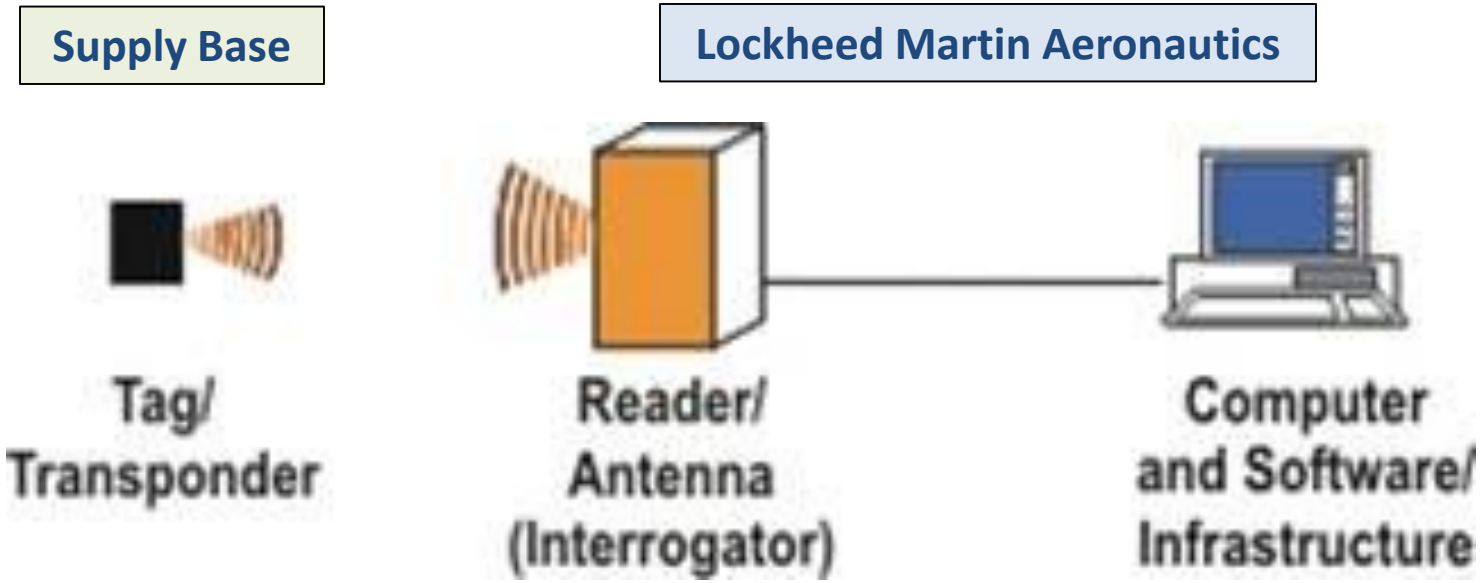
DoD	Department of Defense
EPC	Electronic Product Code
LM Aero	Lockheed Martin Aeronautics
LM	Lockheed Martin
PO	Purchase Order
POC	Point of Contact
RFID	Radio Frequency Identification
ID	Identification
THU	Transportation Handling Unit
TMS	Transportation Management System
PM5010	Lockheed Martin Packaging, Labeling, and Shipping Guidelines Document



Basic System - RFID

A basic RFID system consists of three components:

1. An antenna or coil
2. A transceiver (with decoder)
3. A transponder (RF tag) electronically programmed with unique information



RFID FAQ's

Q: Can multiple packages (i.e. THU) be sent under the same ASN?

A: Yes. The THU screen allows the user to assign multiple THU's to a single ASN. *An RFID label must be applied to each THU.* Each THU needs to have a unique RFID label code in the RFID field on the THU screen that matches the RFID Tag put on the THU.

Q: Is RFID part specific? Does each part or P/N need an RFID label?

A: **No. RFID is *shipment* specific. Labels are attached to the THU exterior packaging.**

Q: What is the timing to implement the RFID process?

A: LM expects the supplier to be at 100% compliant on TMS shipments 30 days from the Familiarization Session date or TMS onboarding date.

Q: What is the LM specification for RFID?

A: LM is following the DoD96 specifications and guidelines for RFID. A link is provided in this presentation for the supplier to access.

Q: Will LM provide the names of suppliers for procuring RFID labels, hardware, etc…

A: LM will not endorse specific suppliers for RFID labels, but RFID Vendors that other suppliers have used are listed in this presentation. Google search: "RFID labels DoD96" (search results will provide potential suppliers)

Q: Is RFID applicable to all LM Aero sites and programs?

A: Yes, However, since FWT and MAR are the sites set up to receive with RFID, RFID Compliance is checked on shipments to those plants.

Q: Is IUID the same as RFID?

A: No, they are exclusive of each other.

Q: Is the LM RFID process different from the DoD WAWF?

A: LM's TMS system w/ RFID is the equivalent of the DoD WAWF in that both utilize RFID and ASN's, however they are different systems and processes.

FAQ's cont'd

Q: Additional LM Aero sites w/ RFID capability?

A: None at this time. We will update the supply base as additional sites are added.

Q: Are multiple packaging identifiers on labels (case, pallet, etc…) required when the supplier uses more than one of these methods to ship?

A: No. Suppliers that use multiple types of packaging methods (i.e. cases, pallets, etc…) can pick one identifier from the pre-coded RFID label info (printed) and use that even if it doesn't match the physical shipment type.

Q: What information is required on the RFID label?

A: Please refer to slides #7-9 for label content, example, and links to further information.

Q: What size should the label be?

A: There is no requirement for label size, but it should not be larger than the package sent. Recommend 2x4 to 4x4

Q: What is the EPC standard?

A: Field 1 - EPC Header identifier for DoD-96 is **2F**

- Field 2 - filter value (Case, pallet, etc…)
- Field3 - Cage code (Government Managed ID)
- Field4 - Serial number (This number is uniquely managed by each cage code holder; LM does not supply the SN it is the responsibility of the Cage Code owner to manage the uniqueness of the serial number. The Cage and serial number are combined to create a Globally unique ID.)

Q: What are the RFID label constructs?

Tag construct must follow the DOD 96 bit or EPC encoding as follows:

DOD 96

Header (8 bits)	Filter (4 bits)	CAGE Code as ASCII* (48 bits)	Serial Number (36 bits)

See pages 14 through 18 on the DOD RFID Suppliers Guide (v15) for specific guidance.

A: http://www.acq.osd.mil/log/sci/.AIT.html/DoD_Suppliers_Passive_RFID_Info_Guide_v15update.pdf

FAQ's Cont'd

Q: What is the relationship between PM5010 and MIL-129?

A: PM5010 outlines the requirement to use an RFID tag on a THU and other shipping/labeling instructions

MIL-129 is referenced in PM5010 as to where/how to place the RFID tag

- (as of Feb '15 PM 5010 was modified to eliminate the ref to Mil 129 and explain where a label should be placed) – NEXT TO THE TMS ASN Label.

Buyer Example Text

Supplier Info Text

Lockheed Martin Aeronautics Ft Worth and Marietta sites have implemented Radio Frequency Identification (RFID) technology to further automate the receiving process. This requirement is flowed to our suppliers through the PM-5010 document, version H or later, referenced in your PO documentation via the Supplemental Clauses. At this point, our records indicate that your shipments do not include the proper RFID labeling. We are requesting that you review the following steps and comply with this requirement within the next 60 calendar days. Please provide confirmation back to the Buyer and Aaron Dahnke no later than xx/xx/xxxx.

A RFID label is required on all Transportation Management System (TMS) shipments to LM Aero Ft Worth and Marietta sites. You may choose to purchase pre-encoded labels, for a nominal fee, or utilize an RFID capable printer. In most cases acquiring pre-encoded labels is the most economical and easiest way to meet our requirement. Once RFID tags are acquired, simply, affix the RFID label to the exterior of the shipping package (i.e., box, pallet, crate, etc…) and input the 24 digit RFID serial number in TMS when creating the shipment.

For your convenience, the attached PPT (RFID_FAM_infopkg_xxxx.pptx) provides a few sources from which you may purchase RFID pre-coded labels, but you are not limited to these sources. Additionally, RFID familiarization sessions can be scheduled as necessary to assist with any questions or concerns. Individual company conference calls can be scheduled upon request for RFID Q&A due to confidentiality constraints. Contact Aaron Dahnke or (your name) for further information or scheduling. Aaron may be reached at (817) 777-2994 or aaron.c.dahnke@lmco.com.

Thank you.

PO Text

SHIPPING:

IF THIS IS A NORMAL PURCHASE ORDER, OR CONTRACT, WITH ONE OR MORE ITEMS TO BE SHIPPED, PM5010 - SUPPLIER SHIPPING
INSTRUCTIONS, LATEST REVISION IS HEREBY INCORPORATED
IN THIS PURCHASE ORDER, OR CONTRACT, BY REFERENCE AND
APPLIES TO ALL ITEMS, OR WORK, SHIPPED EXCEPT THOSE ITEMS,
OR WORK, IF ANY SPECIFIED FOR SHIPMENT ON DD250 IN
ACCORDANCE WITH PM-801. PM5010 AND PM-801 MAY BE OBTAINED FROM BUYER'S WEBSITE:
"HTTP://WWW.LOCKHEEDMARTIN.COM/AERONAUTICS/MATERIALMANAGEMENT" UNDER "SHIPPING
INFORMATION"

Buyer Alternative Example

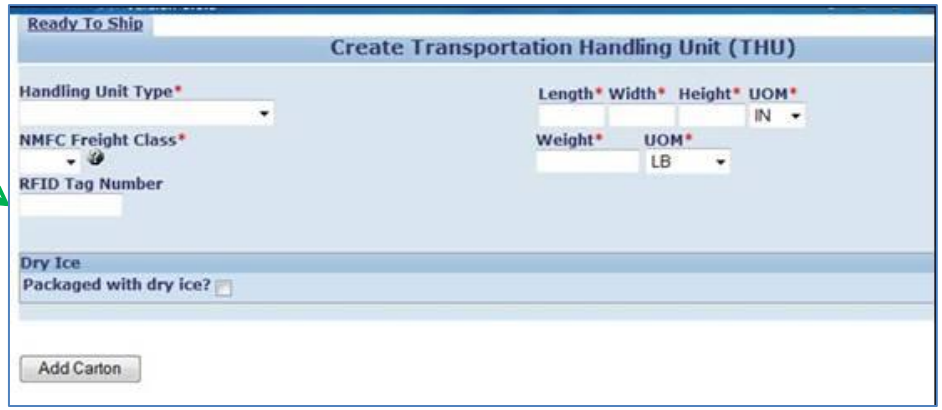
Compliance is Simple:

1. Acquire RFID Tags (information in link)
http://www.lockheedmartin.com/content/dam/lockheed/data/aero/documents/scm/shipping/shippinginstructions/RFID_InfoPkg.pdf)

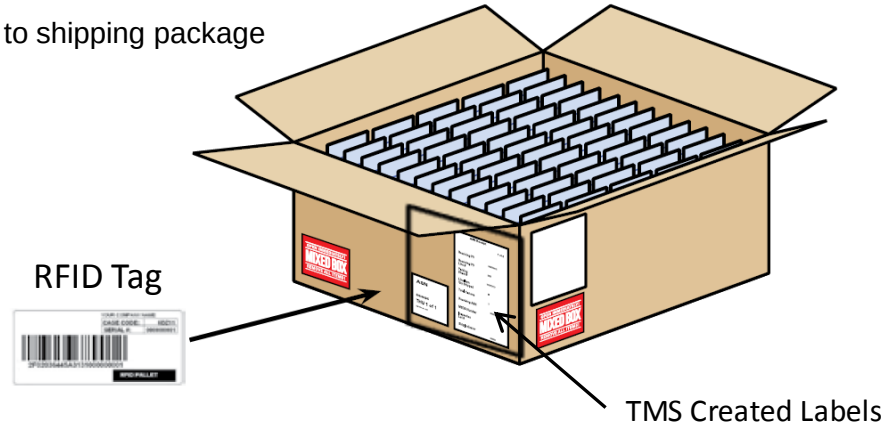
2. Enter RFID Tag value into TMS

Input RFID 24 digit Tag Number here:
Tip: with cursor in RFID Field, use a bar code scanner to read the barcoded RFID tag, will populate RFID Tag field in TMS.

TMS - Create THU screen



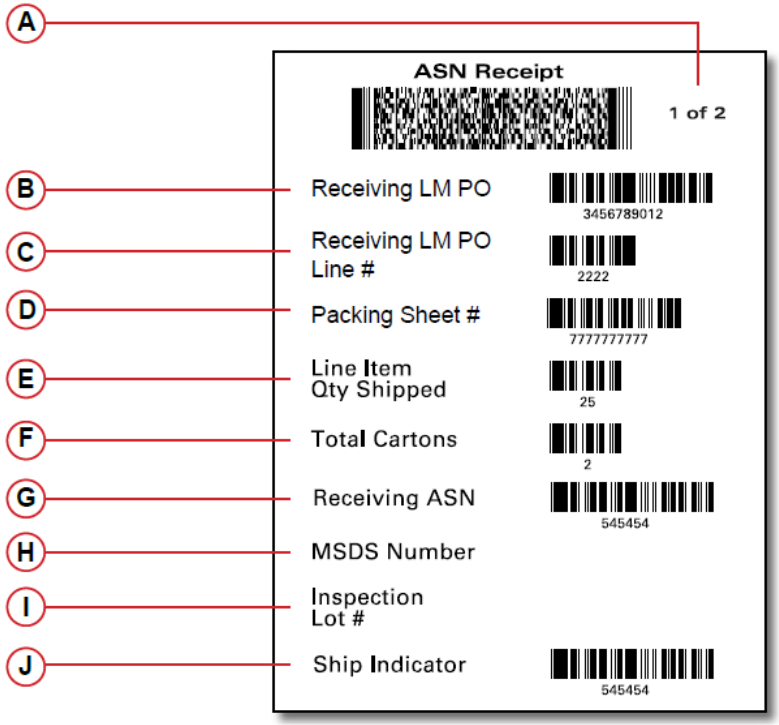
3. Affix RFID Tag to shipping package



TMS Labels

8.2.1.1 Transportation Handling Unit (THU) Label

A. Receiving ASN #

8.2.1.2 ASN Receipt Label

A. Carton Number and Total Number of Cartons
B. Receiving LM PO
C. Receiving LM PO Line Item Number
D. Packing Sheet Number (maximum 12 character limit)
E. Line Item Quantity in Shipment
F. Total Cartons
G. Receiving ASN
H. MSDS Number (only if hazardous)
I. Inspection Lot Number (only if inspected at source)
J. Shipment Indicator (required for Classified part shipments only)