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RFID Tag Installation and Traceability

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Overview

This document describes the procedure for attaching and removing radio frequency identification (RFID) tags, and the requirements for capturing the unique identity or serial number programmed into them.

Audience

This document is intended for use by internal manufacturing, external manufacturers, suppliers, and operations engineers who are involved in the installation of RFID tags on Oracle hardware systems and/or sub-systems.

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Introduction

RFID tags are applied to rackmount system hardware products to meet the requirements of the Financial Services Technology Consortium (FSTC) and its member institutions. Oracle uses several versions of metal-mount RFID tags such as 542-0254-01, 542-0353-01 and 7309566. More information about the programming and specification of the tags can be found in *RFID Tag for Asset Tracking Specification,* 950-6021-xx, and in *Procurement Specification of RFID Tag Manufactured by RCD Technology*, 950-6070-xx.

1.0 Verification of Readability and Content of an RFID Tag

The functionality and the programmed unique identifier in the RFID tags are verified by the tag supplier prior to delivery to the system factories.

2.0 Attaching an RFID Tag

Thoroughly clean and dry the area where the tag must be attached to, removing oil and other contaminants.

Carefully read and follow the manufacturer's precautions and directions when using a solvent or cleaning solution.

NOTE: RFID tags are not sensitive to ESD.

Peel the liner or backing to expose the adhesive on the backside of the RFID tag.

Ensure the tag is oriented correctly and place in the location specified on the applicable Oracle drawing or specification. Then press firmly to adhere the RFID tag to the product. If the product does not have a dedicated locator or recess for the tag, it must be aligned using an alignment fixture, in which case the tolerances for placement, unless otherwise specified are the following:

Vertical and horizontal: 0.5 mm

Skew: 1.0 degrees from the horizontal or vertical

3.0 Removing an RFID Tag

In the unlikely event a RFID tag is damaged and requires replacement, the following **removal** procedures outline the steps to ensure that that the substrate, surface, or assembly that the tag is *mounted or adjacent to* is not damaged. The operator must be conscious of this before beginning removal. Contact manufacturing or industrial engineering if you are uncertain about any of the steps outlined in this procedure.

Tools Required:
- 1/2"-3/4" Masking Tape
- **Precision** plastic wedges or separator tool (plastic scraper/blades etc.)
- Variable temperature heat gun (rated between 120-500F in low setting)
- 2-3' Nylon or braided string (for flat surfaces)
- Optional: Non-marring, soft jawed pliers (for flat, fixed surfaces)

3.1 Removing a Tag installed in a Recess

In applications where RFID tags are mounted to an ear, lever, or bezel, determine if access holes are provided by positioning part to see rear of tag mounting area and inspecting for holes. See examples below, Figure 3-1 shows a lever with no access holes and Figure 3-2 shows a lever with access holes.

Figure 3-1 Example RFID Pocket Without Access Holes

Figure 3-2 Example RFID Pocket With Access Holes

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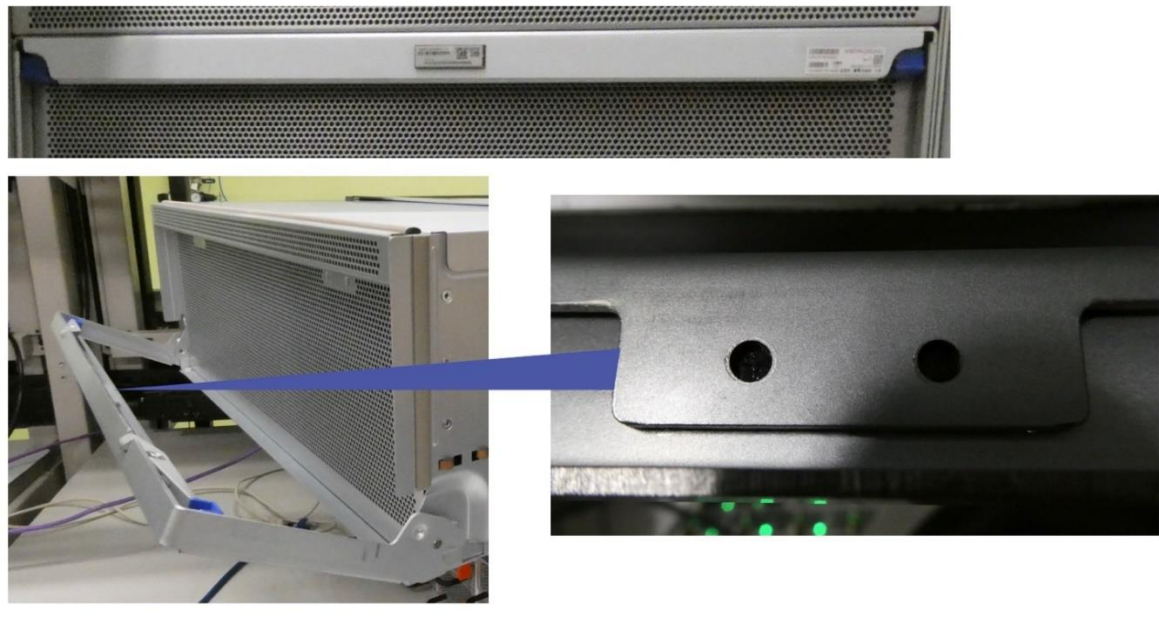
If holes are present, see section 3.1.1 and if holes are not present see section 3.1.2.

3.1.1 With Recess Access Holes (Per RFID Tag for Asset Tracking Specification, 950-6021-0156-xx)

1. In applications where RFID tag s are mounted to a device ear or lever, determine if access holes are provided behind the surface that a tag in mounted on by rotating the ear and inspecting the rear of the mounting surface. In these cases, carefully push the tag out from behind with a pointed tool or probe to detach while supporting the assembly.

2. Discard the removed tag in accordance with the applicable regulations. Do not attempt to rework or reuse the removed tag.

3.1.2 Without Recess Access Holes

1. In applications where a RFID tag is mounted to a device ear or lever and no access holes are provided, begin by masking the perimeter of the RFID tag with strips of 1/2 - 3/4" masking tape. Note: if the RFID is on a moveable lever it helps to use the tape to secure the lever as well as protect the adjacent areas.

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Figure 3-3 Mask Area Around RFID Tag

2. Find an appropriately sized precision nylon wedge (spudger, pry or separator) tool. The pry edge should be roughly 1mm. A precision wedge tool example is shown in Figure 3-4 below. Note, these tools are made of a soft material that can be *custom shaped* for your application using a flat file.

Figure 3-4 Example Precision Wedge Tool

3. Attempt to lift and separate the adhesive bond at *one end* of the tag. While holding the lever firmly in the closed position, slowly force and manipulate the wedge between the tag and substrate from the bottom of the recess until the tag begins to lift and detach.

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Figure 3-5 Example Pry Points

4. A heat gun set at its **low heat setting** (120-200F) can also be utilized to apply heat in an undulating motion only (not direct) and combined with the method above. **Caution: Avoid overheating or damage to labels or surfaces in the surrounding area.** Do not proceed with this step if you are unfamiliar with using heat to remove labels or emblems etc. A simple heat shield can also be fabricated with a cut-out of the tag dimensions.

5. If the bezel or front of the product becomes damaged beyond the limits of allowable cosmetic defects as specified in *Global Cosmetics Quality and Workmanship Standards,* 923-2001, replace or rework the damaged part or assembly.

6. Discard the removed tag in accordance with the applicable regulations. Do not attempt to rework or reuse the removed tag.

3.2 Removing a Tag installed on a Flat Surface

1. Mask the perimeter of the RFID tag with strips of masking tape.

2. Begin by using appropriately sized precision nylon wedge (spudger, pry or separator tool as shown in Figure 5-1) to attempt to lift and separate the adhesive bond at *one end* of the tag. Slowly force and manipulate the wedge between the tag and substrate until the tag begins to lift and detach. or, use soft jawed, non-marring pliers instead of a wedge. This tool works well on flat, fixed surface where the edges of the tag protrude enough to be grasped by its jaws.

3. If the tag is difficult to lift, you can also employ the use of monofilament or braided nylon line. Place the center of the line between the tag and mounting surface. Pull the line across and perpendicular to the

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tag in a sawing motion between the substrate and tag. Pull the tag at an angle greater than 90 degrees to break the adhesive bond.

4. Finally, if none of the above methods work, a heat gun set at its **low heat setting** (120-200F) can also be utilized to apply heat in an undulating motion only (not direct) and combined with the methods above. **Caution: Avoid overheating or damage to labels or surfaces in the surrounding area.** Do not proceed with this step if you are unfamiliar with using heat to remove labels or emblems etc. A simple heat shield can also be fabricated with a cut-out of the tag dimensions.

5. If the bezel or front of the product becomes damaged beyond the limits of allowable cosmetic defects as specified in *Global Cosmetics Quality and Workmanship Standards,* 923-2001, replace or rework the damaged part or assembly.

6. Discard the removed tag in accordance with the applicable regulations. Do not attempt to rework or reuse the removed tag.

4.0 Applying EZ Labels

The RFID tags are designed to allow space for EZ labels (e.g., 263-4394-xx) to be adhered in the corner of the tag as shown below in *Figure 4-1 EZ Label Placement*. Refer to the *Identification, Labeling, and Bar-coding Standards for Assemblies*, 950-4477-xx, for more information about the EZ Label.

Figure 4-1 EZ Label Placement
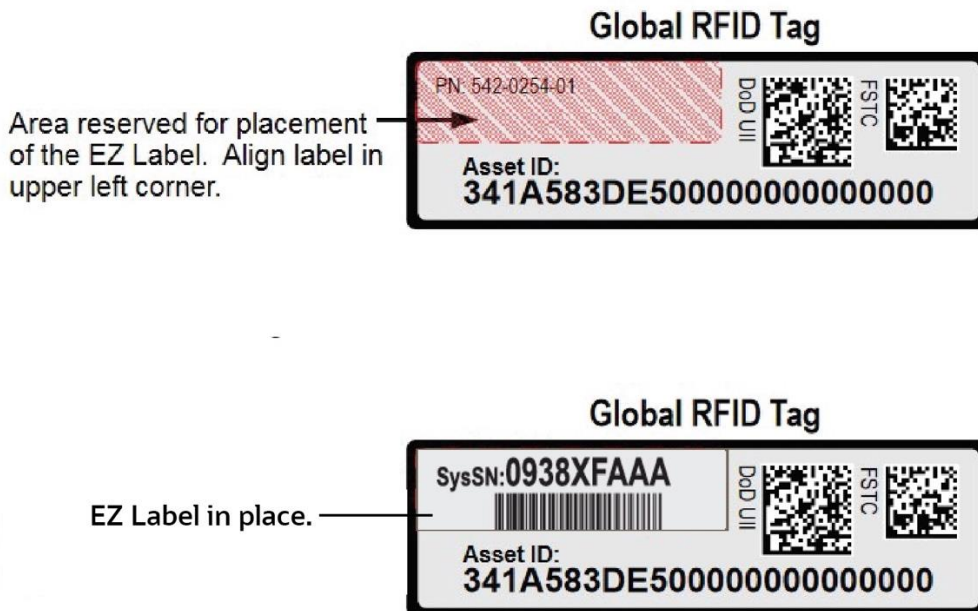
5.0 Capturing, Retaining, Recording and Transmitting the Serial Number of the RFID Tag

The RFID tag is a serially controlled part, and the Asset ID is used as its serial number.

1. Once the tag is adhered to the system, capture the 24- character serial number (Asset ID) by doing one of the following:

• Cover the 2D bar-code labeled DoD UII, then scan the other 2D bar-code, labeled FSTC, with a 2D-capable bar-code scanner. Refer to Figure 4-1, EZ Label Placement, above.

• Read the programmed unique identity of the tag using an Ultra-High Frequency (UHF) RFID reader which is capable of reading Electronic Product Code (EPC) Class 1 Generation 2 passive tags and which is positioned between 24 in (60 cm) and 36 in (91cm) from the tag. If using a handheld reader, ensure that it is oriented in alignment with the tag, as shown in Figure 5-1 Reader Orientation on page 5.

Make sure that the power of the RFID reader is adjusted to read only the intended tag.

2. Retain and transmit the serial number of the RFID tag as required by Supplier Traceability Requirements, 923-3406.

3. Even though the RFID tag is not a FRU (Service Item), print the part number, serial number, and description of the RFID tag in the FRU List of the customer information sheet (CIS). Refer to Section 10 of the Customer Information Sheet Specification, 950-1647-xx

Figure 5-1 Reader Orientation

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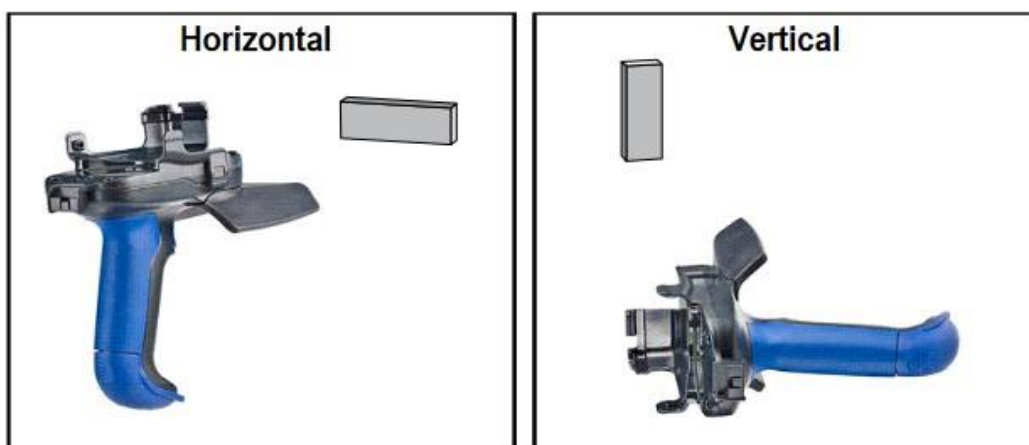
Reference Information

Reference Documents and Records

DOCUMENT TITLE	DOCUMENT NUMBER
Global Cosmetics Quality and Workmanship Standards	923-2001
Supplier Traceability Requirements	923-3406
Customer Information Sheet Specification	950-1647
Identification, Labeling and Bar-coding Standards for Assemblies	923-3406
RFID Tag for Asset Tracking Specification	950-6021
Procurement Specification of RFID Tag Manufactured by RCD Technology	923-3406

Document History

Rev	Date	Description of Change	Originator
01	21 Apr 2009	Initial Release	N/A
02	09 Jul 2009	Changed the reference 95-3899-xx to 950-5902-11 in the Introduction	N/A
03	13 Jan 2010	• Added references to global tag spec 950-6021-xx • Added image of global tag 542-0254-xx to Figure 1-2. • Added Section 3.2 to describe how to remove a tag that is installed in a recess. • Added Section 4 to describe placement of the EZ label on top of the RFID tag.	N/A
Fusion History			
04	07 Oct 2013	Applied new document template. Removed all information pertaining to the North American RFID tags. Added reference to the RFID tag used on Fujitsu-branded systems. Removed the requirements to verify the RF readability of the tag or that the programmed value matches that of the FSTC bar-code. Corrected references to 923-2001 and 923-3406. Updated the requirement to print the RFID tag on the CIS, requiring that it be printed in the FRU list section regardless of its status as a FRU (Service Item).	N/A
05	27 May 2015	Updated the introduction to include the three part numbers of current global metal-mount RFID tags.	N/A

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| 06 | 15 Jul 2022 | Update to Redwood format. Update document title. No content changes. | N/A |
| 07 | 01 Feb 2023 | Updated RFID tag removal instructions and overall section ordering. | N/A |

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