RFID PLAYBOOK APPAREL

RFID Apparel Playbook Version 1.4
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General Overview

What Industry Standards to Follow?

Kroger is following all industry standards set forth by GS1 RFID serialized encoding standard, Auburn University RFID Lab tag placement standards, and ARC inlay standards. All tagging requirements must meet these standards prior to arriving in our stores.

What Is in Scope For RFID?

All brands that are being shipped into and sold at any of our Fred Meyer stores within the Apparel, Footwear, and Accessories categories. This includes all national and private brands. Only sellable units should be tagged.

Getting Started

The following outlines a standard framework to integrate RFID into packaging. This includes major points and areas that should be considered; However, every company must tailor these steps to fit the needs of their business and supply chains.

- Identify the ways that RFID can help improve your operations. Refer to the "RFID Use Cases for Suppliers" section for details.
- Develop an internal team.
- Engage with your packaging provider and if needed you will also need to engage with an approved RFID Inlay Manufacturer.
- Begin procurement discussions and provide forecasts to your packaging and RFID Inlay provider.
- Begin data management and serialization discussions with your RFID packaging provider. Refer to the "RFID Encoding & Serialization Requirements" section for details.
- Develop quality check process to ensure all items are tagged according to all requirements in this playbook.

Select RFID Inlay Spec

The following set of ARC inlay specifications have been performance approved by the Auburn University RFID Lab.

The Auburn University ARC standard ensures RFID tags meet or exceed the levels of performance and quality necessary to provide benefit in a consistent and cost-effective manner.

Refer to the chart below to see what spec has been assigned to each category. You can only use an approved inlay from an item's associated inlay list.

Apparel

Category	Inlay Spec	Approved Inlay List
Apparel	R	https://rfidlab.org/arc/spec-r.php
Shoes/Footwear	R	https://rfidlab.org/arc/spec-r.php
Accessories	R	https://rfidlab.org/arc/spec-r.php
Sunglasses	W5	https://rfidlab.org/arc/spec-w5.php
Other	Contact Us	Contact Us

Determine Inlay Manufacturer

Suppliers may only select from the approved list provided on the Auburn University RFID Lab's Website from the appropriate Spec. Any inlay manufacturer not listed on the appropriate Spec cannot produce inlays for packaging being shipped to your retailer. Even if using an approved inlay provider, you must still submit the final production samples to the Auburn University RFID Lab for ALEC approval.

The latest version of the ARC approved RFID inlay manufacturer and contact information is available at https://rfidlab.org/inlaycontacts/

Determine Packaging Resource, RFID Encoder/Service Bureau

National, Proprietary & Supplier Brands

Suppliers can utilize their own RFID packaging resource to develop and print their RFID inlays but must adhere to the GS1 standards and ARC standards and obtain approvals from the Auburn University RFID Lab.

A list of RFID packaging resources is available at https://rfidpackagingresources.org/ These are packaging providers that have supplied packaging for other RFID Programs. This is NOT an endorsement or list of nominated suppliers.

Suppliers can also utilize other RFID packaging providers that are not listed. All label providers or packaging resources will need to source an Auburn university ARC approved RFID inlay.

Private Brands

For Private Brands, please communicate with your merchant to ensure you meet all RFID labeling requirements.

Primary RFID Provider: All suppliers of the following private label brands will exclusively use Integra Trim for RFID needs:

- Dip
- TRAJ3CTORY
- Heart & Heritage

Exclusions: Suppliers of basic items such as socks, underwear, intimates, etc., are exempt from ordering through Integra Trim. They may source RFID tags from:

- The playbook supplier list or
- Their existing RFID provider.

No Exceptions: The requirement for Integra Trim RFID applies exclusively to the brands listed above. All other product categories will follow their designated sourcing guidelines.

Identify Inlay Size

Use the largest RFID inlay size available that fits your packaging.

If your packaging does not fit the smallest inlay size available within the approved spec, add a generic embedded inlay hangtag or a separate paper-based sticker to your item.

Determine Placement of RFID Tag

Please consult the GS1 US Tagging Guideline at:
https://documents.gs1us.org/adobe/assets/deliver/urn:aaid:aem:d9f715f6-f0d6-4f32-abf3-860e2dccb5d6/Guideline-Format-And-Symbol-Placement-for-the-Electronic-Product-Code-EPC.pdf

If your item is not represented in the Placement Guideline, please contact the Auburn University RFID Lab using the ALEC Contact Form: https://rfidlab.org/aleccontactform/

Tagging Requirements

- Please make sure that that there is only **ONE RFID TAG** per product.
- RFID tags must be removable by the customer. If sewn in, they must be removable.
- RFID tags can be placed inside the packaging if the EPC symbol is visible from the outside of the packaging.
- RFID tags cannot be integrated into the product.
- RFID tags or inlays cannot cover any text or images.
- If an item is being stickered, the domicile with the country of origin should not be covered up - it needs to be visible to the customer. The supplier can print the country of origin on the RFID sticker if needed.
- The RFID tag should not fall off from the product easily.
- No staples, perforations, swiftachs, folding, or die cuts through the inlay as it will make the inlay unreadable.
- When choosing the tagging location, RFID readability should be considered while product is in salesfloor, backroom, and case pack. For example, the RFID tag cannot be placed on the bottom of a product since the tag will most likely be in direct contact with metal.
- RFID tags can be used in parallel with EAS tags but **CANNOT** be used on top of each other.
- If the product could be merchandised without the packaging, the RFID tag should be attached to the product.
- If the product comes in multiple cases, please ensure that there is only one tag on one of the cases. Please contact Auburn RFID Lab to determine the case to be tagged.
- No metal foils, holograms or metallic inks should be used on any packaging containing the RFID inlay. If so, you **MUST** receive the RFID Lab approval prior to bulk production of the printed packaging.
- No RFID inlay placement on the bottom of polybags, bottom of boxed items, on glass, on liquids, on Silvadur, or near metal/foil.

- The performance of the RFID inlays could be affected by metals, foils, liquids, and glass. Special consideration must be taken when choosing tagging format and location for such products. Please contact the RFID lab at https://rfidlab.org/aleccontactform/ with questions.

EPC Symbol

- The EPC logo example represents the bare minimum of information that should be shown on your packaging to identify RFID tagging.
- Any packaging that has an RFID tag must have the Electronic Product Code (EPC) symbol displayed on the packaging for the customer and store associates to recognize.
- The EPC symbol should not be shown on any packaging that does not contain an RFID inlay. The EPC logo is an industry standard to inform the customer and store employee that the tag contains RFID. Having tags with an EPC logo and/or inlay but not properly encoded can cause major confusion within the process.
- See this link for the EPC Symbol image file and related documentation: https://www.gs1.org/standards/epc-rfid/guidelines

2D Barcodes

We strongly encourage the use of a QR code with GS1 Digital Link or a GS1 DataMatrix on the label to ensure the product identifier in the RFID tag (SGTIN) can also be included in a barcode format. This will allow the industry to begin leveraging the 2D barcode at point-of-sale to track serialized item identities at checkout.

For more information on 2D barcodes and the Sunrise 2027 initiative, please visit: https://www.gs1us.org/industries-and-insights/by-topic/sunrise-2027

(SGTIN #1) (SGTIN #2)

RFID Encoding & Serialization Requirements

- All tags are to be encoded appropriately per EPC Tag Data Standards (TDS), resulting in unique serialization for each item. The SGTIN-96 tag encoding standard maintained by GS1 is to be used

- Please keep in mind that each serial number must be unique to that item and can run a risk of having duplicate numbers if not managed properly throughout the development process.
- Please ensure unique serialization is managed when using multiple packaging providers for the same SKU. See the link below for more information.
- https://documents.gs1us.org/adobe/assets/deliver/urn:aaid:aem:5f88064e-0dbb-495b-9f29-a9ce3758caed/Developing-an-RFID-Serialization-Plan.pdf
- Tags must be permalocked to prevent tampering.
- All tags must undergo quality and data integrity checks prior to entering the supply chain.
- The EPC Encoder/Decoder Tool may be found below:
  https://www.gs1.org/services/epc-encoderdecoder

ALEC - Approval of Production RFID Packaging Samples

- Auburn University RFID Lab's ALEC program helps Suppliers ensure that their RFID tagged item meets all the industry requirements.
- Refer to the ALEC submission guide at https://rfidlab.org/wp-content/uploads/General-Form-Submission-Guide.pdf for detailed instruction before starting this process.
- Before any shipment of goods can begin, you **must** receive RFID lab Approval.
- **If you have an item that has already received approval from ALEC, you can add a retailer to the existing approval using the following form:** https://rfidlab.org/submissionupdate/
- Send Five (5) EPC tag samples of the same item only (no product or packaging) to the RFID Lab for ALEC validation prior to bulk production. These may be branded hangtags, generic hangtags, or stickers.
  - One UPC per submission.
  - Not all UPCs supplied by a supplier requires a validation, select one representative UPC (SKU) per:
    - Product Supplier
    - Brand
    - Packaging Type
    - Packaging Provider
    - RFID Inlay Model
    - Tagging Location

- Items with the same product supplier, brand, packaging type, packaging provider, inlay model, and tagging location can be submitted together.
- Send five inlay samples of the one representative UPC.
- The RFID Tags MUST be production quality.
- Within the submission form, you may be asked to add a list of all SKUs that fall under the same criteria as the representative SKU.
- Please complete and submit the online submission form at https://rfidlab.org/alecsubmissionform/. **Please print the PDF confirmation and include it along with the samples.**
- Testing will not begin until the printed confirmation form has arrived at the lab.
- Actual product or packaging will only need to be sent when specifically requested by the RFID Lab. Please note: Any product sent to the RFID Lab will **NOT** be returned to the product supplier.
- **Watches, Fine Jewelry, Costume Jewelry and Shoe & Jewelry Care suppliers MUST send actual product packaging along with RFID tags attached to item.**
- Product Suppliers are responsible for submitting their own samples to the RFID Lab. Packaging resources CANNOT submit samples on behalf of the Product Suppliers to the RFID Lab.
- Product Suppliers who decide to switch Packaging Providers and/or Service Bureau AFTER receiving validation from the RFID Lab, will need to re-submit tag samples again for validation.
- Product Suppliers who decide to change/add new packaging with materials that may interfere with readability, will need to re-submit tag samples again for validation.
- Once you receive an email approval from the RFID Lab, you are approved to move into bulk ordering and production.

Supplier Accountability

- Product suppliers are required to have a process in place to ensure all tags leaving your facility are completely unique.
- Quality checking includes ensuring there are no duplicate serial numbers and that each tag is properly encoded for the item it is on.
- Any errors arriving at the stores will be the responsibility of product suppliers and all costs incurred.

RFID Use Case & Technology Options for Suppliers

Please refer to the following research paper published by Auburn University for potential uses of RFID in your operations and supply chain.

https://rfid.auburn.edu/papers/rfid-item-level-quantity-auditing-for-apparel-supplier-distribution-centers-12/

https://rfid.auburn.edu/wp-content/uploads/2021/02/Empirical_Study_of_RFID_in_Supply_Chain.pdf

https://rfid.auburn.edu/wp-content/uploads/2021/02/CHIP-Proof-of-Concept-Results-Auburn-RFID-Lab.pdf

RFID is being used by suppliers to automate inbound audit processes, improve Inventory accuracy, and outbound validation.

RFID Shipper Case Markings

For stores to easily identify which cases contain items that have packaging with RFID labels. The Shipper Case Markings must include the word RFID.

Carton or carton labels do not carry any RFID inlays. Only the selling unit packaging carries the RFID inlay.
The RFID marking is in addition to all other case markings and should not interfere with any other printed case markings, case labels, federal and state laws, or any other compliance related markings. If the product inside the case is not RFID labeled, do NOT use the updated RFID marking. Please contact your retailer for any questions.

Acronym Summary

Acronym	Meaning
ALEC	Auburn Lab EPC Compliance
ARC	Arkansas (Auburn) Radio Compliance
EAS	Electronic Article surveillance
EPC	Electronic Product Code
GS1	Global Standards Organization
RFID	Radio Frequency Identification
SGTIN	Serialized Global Trade Item Number
SKU	Stock Keeping Unit
TDS	Tag Data Standards
UPC	Universal Product Code

Contacts

Auburn University RFID Lab

General Questions: https://rfidlab.org/aleccontactform/

ALEC RFID Tag Samples Validation Submission Form: https://rfidlab.org/alecsubmissionform/

Submission Update Form: https://rfidlab.org/submissionupdate/

Submission Tracker Tool: https://rfidlab.org/alec-lookup/

ARC Website: https://rfid.org/arc/

GS1 US

Website: www.gs1us.org

Supplier-oriented introduction to RFID: https://site.gs1us.org/RFID-success.html

Serialization Guide: https://documents.gs1us.org/adobe/assets/deliver/urn:aaid:aem:5f88064e-0dbb-495b-9f29-a9ce3758caed/Developing-an-RFID-Serialization-Plan.pdf

Tag Data Standards: https://www.gs1.org/standards/tds

EPC Encoder/Decoder Tool: https://www.gs1.org/services/epc-encoderdecoder