



WALMART RFID PLAYBOOK

Apparel

For Walmart U.S. Stores

The requirements in this version supersede all previous playbooks.

General Overview

What Industry Standards to Follow?

Walmart is following industry standards set forth by the GS1 EPC Tag Data Standard, GS1 RFID tag placement standard, and Auburn University RFID Lab ARC inlay standard. Tagging requirements must meet these standards prior to arriving in our stores.

In-Scope for RFID tags:

All items within the Walmart Apparel Departments are required to have RFID tags, unless listed in the Out-of-Scope section of this playbook.

Apparel Departments:

23 - Men's Apparel	31 - Accessories
24 - Boys' Apparel	32 - Jewelry
25 - Shoes	33 - Girls' Apparel
26 - Baby & Toddler Apparel	34 - Women's Apparel
29 - Intimate Apparel	41 - Team Sports Merchandise

Out-of-Scope for RFID tags:

- 3P Marketplace items
- Ecommerce only brands (i.e., brands not carried in stores)
 - **Note:** If the brand is carried in stores, all items under that brand must be RFID tagged except for 3P Marketplace items.
- “Championship” team sports merchandise (e.g., Superbowl, World Series, NCAA Championship, etc.)
- Items where RFID tags are not compatible with the product, as identified through the Auburn University RFID Lab.
- Pay-for-Scan items

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, also 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

Walmart has a set of ARC inlay specifications that are performance approved from 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 at <https://rfidlab.org/arc/WalmartSpec/> to see what spec has been assigned to each category. You can only use an approved inlay from an item’s associated inlay list.

NOTE: All items within the Apparel Departments are required to transition to an ARC approved **Spec R** inlay unless otherwise directed by the RFID Lab. The approved Spec R inlay list can be found here: <https://rfidlab.org/arc/spec-r.php>.

Any on-going item tagged with a previously approved inlay spec (W1, W2, W3, W4, W5, and W6) will need to transition to the Spec R inlay no later than August 1, 2025, MABD (must arrive by date). New items should utilize the Spec R inlays at once.

Department	Subcategory	Inlay Spec	Approved Inlay List	MABD to Transition On-Going items
23, 24, 25, 26, 29, 31, 32, 33, 34, 41	Apparel, Headwear, Footwear, Accessories, Watches, Jewelry	R	https://rfidlab.org/arc/spec-r.php	No later than August 1, 2025
32	Watch Batteries, Small Boxed/Carded Jewelry, Jewelry Parts/Hardware	Contact RFID Lab	https://rfidlab.org/alecontactform/	No later than August 1, 2025
23, 41	Non-Apparel Items (e.g., souvenirs, sports hardlines)	Contact RFID Lab	https://rfidlab.org/alecontactform/	No later than August 1, 2025

Determine Inlay Manufacturer

National, Proprietary & Supplier Brands

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 Walmart. Even if using an approved inlay provider, you must still submit the final production samples to the Auburn University RFID Lab for approval.

Private Brands

All Walmart private brands must use one of the following approved inlay manufacturers from Auburn University website. Note: This is not about serialization of the tags but pertains to the manufacturing of the blank inlays only. Even if using an approved inlay provider, you must still submit samples to Auburn for final approval.

Walmart nominated packaging resources are required to purchase their blank inlays from:

- Avery Dennison Smartrac
- Arizon
- Checkpoint
- Hana
- Paragon ID
- SML
- Tageos

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.

Private Brands (must use Walmart nominated service bureaus)

Product suppliers will continue to use the same packaging matrix we have in our private brand packaging toolkits posted on Retail Link. The only change is you will now incorporate RFID inlays into those branded or generic packaging types.

Retail Link path to apparel private brand packaging toolkits:

[Retail Link >> Apps >> PLUM >> Packaging Toolkit \(select appropriate brand/toolkit in drop down\)](#)

D32 Jewelry (all brands)

Due to its complexity, Jewelry Suppliers are required to follow Walmart designated suppliers listed on the Jewelry packaging toolkits on Retail Link.

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

The below guidelines are general in nature. Consult the GS1 Apparel Placement Guideline manual for product specific placement and adhere to GS1 standards.

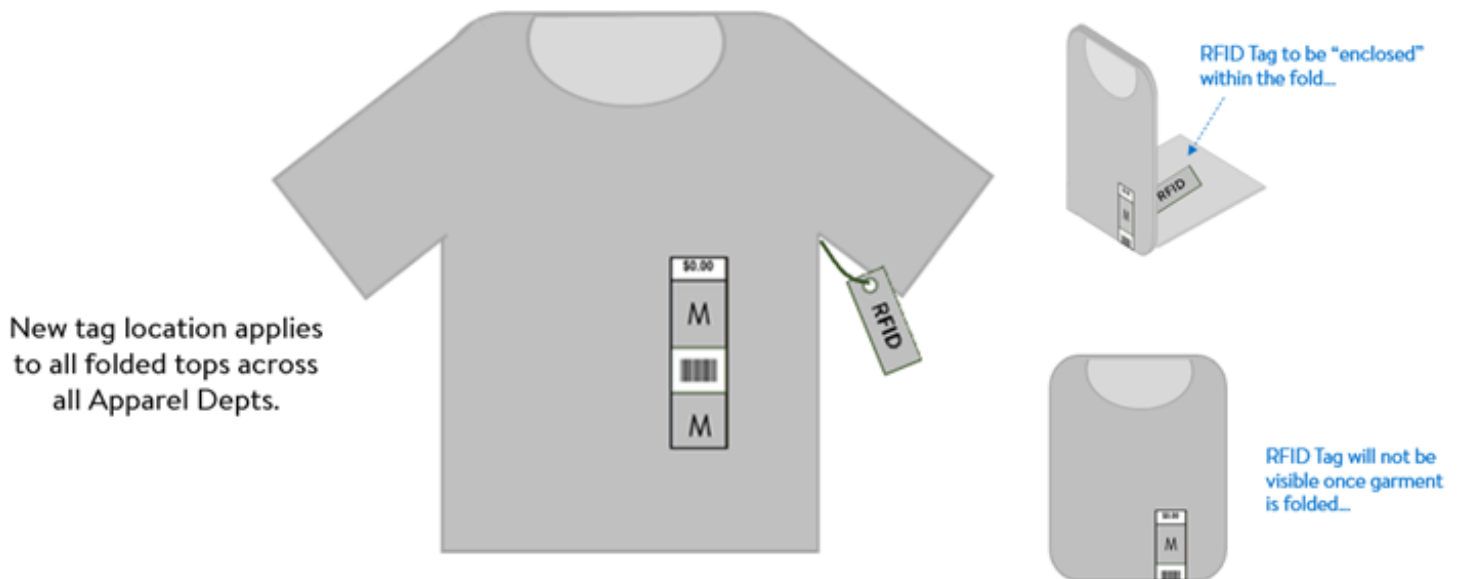
https://documents.gs1us.org/adobe/assets/deliver/urn:aaid:aem:d9f715f6-f0d6-4f32-abf3-860e2dccb5d6/Guideline-Format-And-Symbol-Placement-for-the-Electronic-Product-Code-EPC.pdf?_gl=1*sxmp3*_gcl_au*MTM5NzUxMzYxMi4xNzlyOTcyODU4

EXISTING PRODUCT/PACKAGING TYPE	RFID APPLICATION
Backer Card	Add a separate paper-based sticker.
Bellyband	Add a separate paper-based sticker.
Blisters/Clamshells	Add a separate paper-based sticker.
Collar Card	Add a Branded embedded inlay hangtag.
Folding Carton	Add a separate paper-based sticker.
Graphic Tee	Add a secondary RFID hang tag under wearer's left armhole.
Hardware/Parts	Place sticker as far away from metal as possible within the packaging.
Header Card	Add a separate paper-based sticker.
Jewelry - Fine	<ul style="list-style-type: none"> - No metal foils, metal containers, holograms or metallic inks should be used on the packaging. If so, you must receive Auburn approval prior to bulk production of the packaging. - RFID sticker to be placed on bottom of fine jewelry box. - Out of box chains will use a rattail label.
Jewelry – Fashion & Bridge	<ul style="list-style-type: none"> - No metal foils, metal containers, holograms or metallic inks should be used on the packaging. If so, you must receive Auburn approval prior to bulk production of the packaging. - RFID sticker to be placed in the back of carding, as far away from metal as possible.
Jewelry - Care	<ul style="list-style-type: none"> - RFID Sticker cannot be placed on bottom; place on backside or side of packaging. - For items containing liquid or metal, Contact Auburn: https://rfidlab.org/alecontactform/
Jewelry Carding/Box	Add a separate paper-based sticker/ For further direction, Contact Auburn: https://rfidlab.org/alecontactform/
Joker Ticket/Sunglasses	Add a separate paper-based sticker or embed inlay into joker.
Metal Can	Contact Auburn: https://rfidlab.org/alecontactform/
Plastic Bottle	Add a separate paper-based sticker.
Polybag	Add a separate Generic RFID embedded hangtag into the polybag.
Primary Branded Hangtag	Embed inlay into hangtag.
Size Strip	Add a joker ticket or embed inlay into primary hangtag; RFID <u>cannot</u> be placed within the size strip.
Wallet/Belt/Watch	Add a separate paper-based sticker or attach hangtag directly to item.

Watches - Cuff Stands	<ul style="list-style-type: none"> - Watches displayed in a watch cuff only, requires a special inlay. - If the base is thicker than 15 mm the RFID sticker should be placed in the top of the base, otherwise Contact Auburn.
Watches - Boxes	<ul style="list-style-type: none"> - RFID Sticker cannot be placed on the bottom; side of box is preferred. - No metal foils, metal containers, holograms or metallic inks should be used on the packaging. If so, you must receive Auburn approval prior to bulk production of the packaging.
Watches - Batteries	Packaging may need to be redesigned to accommodate RFID inlay, Contact Auburn.

RFID Tag Location | Folded Tops (new direction)

Tag to be placed in the seam under left armhole of folded tops (previous direction was to tag at neck); New location reduces risk of RFID tags contacting metal fixtures in stores – e.g., spinner racks, shelves, etc.



Review RFID Application Formats

Branded Embedded Hangtag (Private Brands Only)



- Any changes to die lines or artwork will be managed through Walmart U.S. Packaging Team.
- Inlays must be embedded into branded hangtag.
- 4 mm gutter or greater around the embedded inlay.

Generic Embedded Hangtag Format

- Swiftach embedded inlay hangtag through the inside left armhole seam. Swiftach length is ½ inch and the embedded hangtag will need to be tucked inside the shirt or pant.
- If the item contains a joker ticket, embed inlay into joker or wet inlay sticker on back of Joker.

Generic Embedded Hangtag Format



Generic embedded hangtags should only be used when size strip or hanger collar card is the core branded packaging, or if the inlay sizes available do not fit your current packaging. It must be placed behind the primary hangtag.

Hangtag dimensions: 83mm x 25mm

Specifications:

- Embed inlay between C2S paper stock.
- Material: ~14pt. C2S (minimum; glossy both sides).
- Font: 12pt. Bogle Regular (centered vertically & horizontally from left side of logo to right side of swift tack hole).
- EPC logo: Centered vertically and placed as shown.
- Prints: Black ink on one side of tag.
- 4 mm gutter or greater around the embedded inlay.

Minimum Copy Requirements:

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- UPC # (no bars; human readable)
- EPC Logo
- Item Description (picked up from other primary packaging)
- Additional information is allowed

Hanging Programs - Long Sleeve (all brands)

- Armhole placement is allowed.

D25 Shoe Hangtags (all brands)

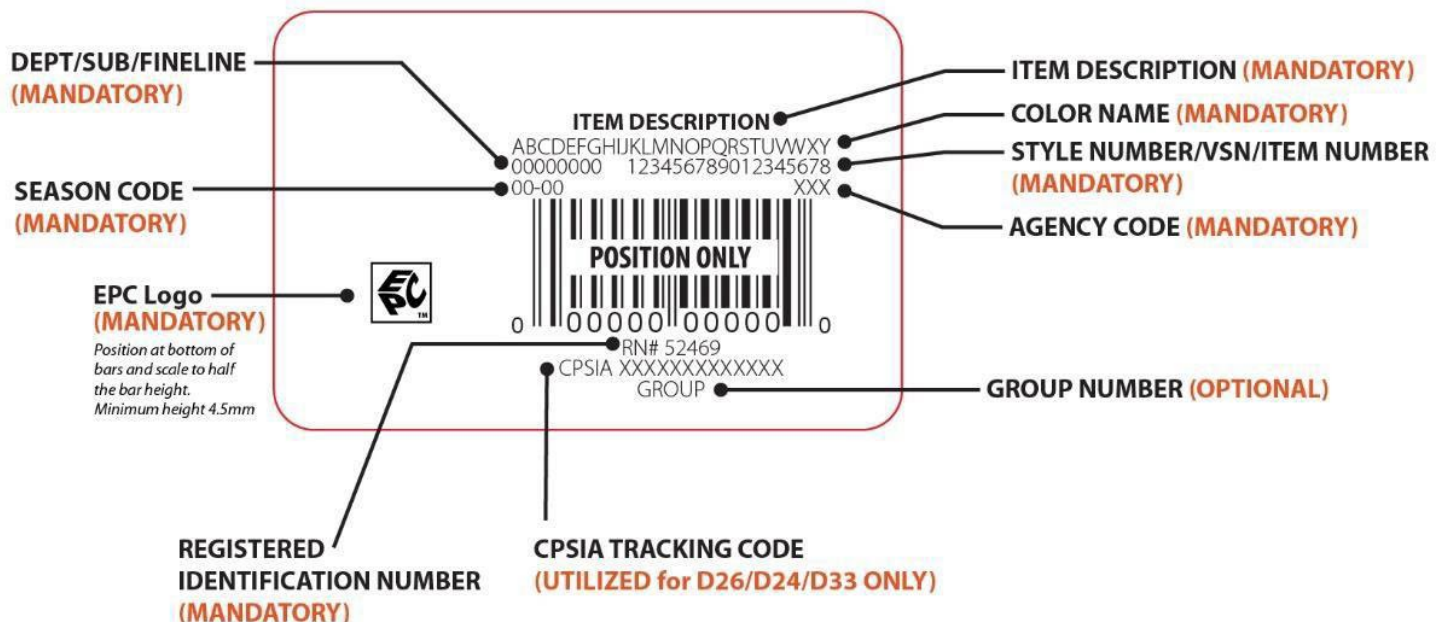
- RFID hangtag must be affixed to shoe (Only ONE RFID tag per pair of shoes).
- Embed inlay into branded hangtag.
- RFID stickers cannot be used or attached anywhere on the shoe box.

License Hangtags (All Brands)

- May use RFID embedded Walmart generic price ticket.

Generic Embedded Sticker WITH Scannable UPC Code

If you DO NOT already have a scannable UPC barcode already shown on pack, Walmart prefers to use an EPC combo sticker as shown below. Review private brand packaging toolkit for UPC information requirements.



Specifications:

- Embed Inlay: 50x30mm (+/- 2mm).
- Tag dimensions: Supplier determines.
- Material: Minimum 2pt Label stock.
- Font: Bogle 5.5pt.
- Prints: Black ink.
- Non-removable adhesive must be used when the label includes the UPC.

Minimum Copy Requirements - Private/Proprietary Brands:

- Barcode/UPC #
- EPC Logo
- Item Description (picked up from other primary packaging)
- Replenishment code

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- Season code
- Dept/Sub/Fineline
- Simplified color name
- Style number/VSN number

Minimum Copy Requirements - National/Supplier Brands:

- Barcode/UPC #
- EPC Logo
- Item Description (picked up from other primary packaging)
- Additional information is allowed

Private Brands Only

Tag options for plastic packaging are:

- If the packaging contains both paper and plastic, suppliers must place the RFID tag on the paper instead of plastic.
- If plastic is the only packaging for the product, suppliers must choose one of the following options:
 1. Place the RFID tag loosely inside the packaging. Ensure that the tag won't reach the bottom of the package during transportation/handling and touch the metal shelves.
 2. A hangtag attached to the packaging or product.

Tagging Requirements

- **Ensure that there is only ONE RFID tag per product.**
- RFID inlay stickers should be placed on packaging only.
- 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.
- No staples, perforations, swiftachs, folding or die cuts through the inlay as it will make the inlay unreadable.
- No RFID inlay placement on bottom of polybags, bottom of boxed items, near under wire for bras, on glass, on liquids, on Silvadur, or near metal/foil.
- RFID cannot be applied to an EAS tag.
- No two (2) scannable UPC barcodes are allowed on the same item.
- 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.

EPC Symbol

- The EPC logo example represents the bare minimum of information that should be shown on your packaging to identify RFID tagging.
- The EPC logo is an industry standard to inform the customer and store associate that the product contains RFID.
- The EPC symbol should not be shown on any packaging that does not contain an RFID inlay.
- See this link for the EPC Symbol image file and related documentation:
<https://www.gs1.org/standards/epc-rfid/guidelines>

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.

$$\text{UPC} + \text{Unique Serial Number} = \text{EPC (RFID)}$$

- 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. 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 Walmart supply chain.
- The EPC Encoder/Decoder Tool may be found here: <https://www.gs1.org/services/epc-encoderdecoder>.

Private Brands Only

- Private brands MUST use one of our current nominated packaging suppliers from our packaging toolkits for all serialization.
- Each private brand packaging supplier has been assigned their own unique 3-digit code issued from Walmart. This code is the first 3 digits of the serial number in decimal form. For example, if an agency had a leading RFID identifier of “099”, then the serial number in the range of 99 billion (99,000,000,000 to 99,999,999,999) would be allowed.

ALEC - Approval of Production RFID Packaging Samples

Auburn University RFID Lab's ALEC program is to help 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.

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.

- Submit one UPC per Submission Form
- You will need approval on a representative UPC (SKU) for
 - Every brand
 - Every packaging type used
 - Every agency used
 - Every RFID inlay model
 - Every Tagging location

You do not need to submit every individual sku separately. Only submit where differences occur from the list above.

Send five inlay samples of the one representative UPC.

- The RFID Tags MUST be production quality.
- Within the submission form, you will be asked to add a list of all items that follow the same criteria as the representative sku.
- Complete and submit the online submission form at <https://rfidlab.org/alec-submissionform/>. 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.
 - **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 RFID inlay models and/or inlay providers and/or Service Bureau and/or packaging providers and/or tagging location AFTER receiving the initial validation from the RFID Lab, will need to re-submit tag samples again for validation using the following form: <https://rfidlab.org/alec-submissionform/> This applies to all suppliers, packaging providers, and National/Private brands. No Exceptions.
- 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 using the following form: <https://rfidlab.org/alec-submissionform/>

- Once you receive an email approval from the RFID Lab, you are approved to move into bulk ordering and production.

Supplier Accountability

- The RFID solution (RFID Inlay Model, RFID packaging provider, tagging location) for all products shipped to Walmart must have a valid ALEC approval ID.
- Product suppliers are required to have a process in place to ensure all items that are delivered to Walmart have an ARC approved RFID tag.
- Quality checking includes ensuring there are no duplicate serial numbers and that each tag is properly encoded with the correct GTIN for the item it is on.
- Product suppliers will be responsible for all costs incurred for any RFID errors at store level.

RFID Use Cases for Suppliers

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 the stores to easily identify on cases which items have packaging with RFID labels. The Shipper Case Markings must include the word RFID. These will replace the current PINK stickers.

Refer to the Walmart Packaging Standards Master Document at the following link:

<https://corporate.walmart.com/content/dam/corporate/documents/suppliers/requirements/supply-chain-packaging-guide.pdf>

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.

Contact wmbarcodelabeling@walmart.com for any questions.

Resources & Contacts

Walmart

Corporate Website: <https://corporate.walmart.com/>

Retail Link RFID Page: <https://supplieracademy.wal-mart.com/mod/wiki/view.php?id=647>

Auburn University RFID Lab

General Questions: <https://rfidlab.org/alecontactform/>

ALEC RFID Submission Form: <https://rfidlab.org/alec-submissionform/>

ARC Website: <https://rfidlab.org/arc/>

GS1 U.S.

Website: www.gs1us.org

Tagging Location Guide: https://documents.gs1us.org/adobe/assets/deliver/urn:aaid:aem:d9f715f6-f0d6-4f32-abf3-860e2dcc5d6/Guideline-Format-And-Symbol-Placement-for-the-Electronic-Product-Code-EPC.pdf?_gl=1*sxmp3*_gcl_au*MTM5NzUxMzYxMi4xNzlyOTcyODU4

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 Standard: <https://www.gs1.org/standards/tds>