



Whitepaper

Retail Compliance an Alien Technology® Viewpoint

Introduction

In 2003, Wal-Mart made the retail industry's initial steps with a RFID (radio frequency identification) supplier requirement when it announced a pallet and case level tagging initiative. Currently, over 600 suppliers are participating in the initiative. In November 2007, Sam's Club built upon this and other similar retail requirements by announcing that its suppliers should begin EPC (Electronic Product Code) tagging according to a provided specification and schedule. Through these defining initiatives, the retail industry continues to realize the tremendous gains derived from RFID technology and its application throughout the retailer/supplier distribution chain.

Today, most retail industry RFID compliance initiatives require tagging at the case and pallet level. Case read requirements are typically limited to conveyor reads, where tags are singulated and in motion. Pallet tag read requirements are commonly limited to placard tags (e.g. a single tag on a SSCC or SGTIN label adhered to the stretch wrap) which are read as the pallet passes through a dock portal.

This paper serves to address some of the more common questions raised when preparing to meet current retail supply chain RFID compliance initiatives, including:

- › Where do I start?
- › How do I successfully begin tagging at the pallet level?
- › What options do I have for tagging at the case level?



Building a Foundation

First time RFID compliance initiatives can be intimidating. Fortunately, the technology has matured into easy to use solution sets that, in many cases, have become virtually transparent. Nonetheless, whether starting a compliance effort or working to expand one's first steps towards compliance, nothing is more beneficial than establishing a solid foundation of knowledge through training.

With several years and hundreds of installations now behind the industry learning curve, lessons learned are contributing to an expanding body of best practices. Well designed and delivered educational programs are in place for both those needing to gain a fundamental understanding of the technology (e.g. a systematic overview of the capabilities and limitations) and for those seeking more in-depth, real-world implementation experience.

The first step to a successful compliance initiative is to develop foundational RFID knowledge and practical, hands-on experience through education.

Seeking Expertise

A second method of leveraging the expanding body of knowledge is to call upon the expertise of solution providers with proven integration experience.

Third-party organizations come in many shapes and sizes with specialties ranging from niche services to complete system design and integration. Engaging such an organization allows one to learn from the organization's experience while ensuring a successful path to compliance.

Tagging Pallets

Most retail industry tagging requirements begin with tagging at the pallet level. Retailers, when receiving tagged pallets at the distribution center benefit from the visibility of inbound receipts and of outbound shipments. For the suppliers, benefit comes from real time visibility of inventory in the supply chain, improving forecast accuracy, dampening the inventory bullwhip effectively and assisting with freight claims processing.

Pallets are usually tagged at either the point of aggregation, at a stretch wrapper, or at the point of shipment. Tags may either be pre-commissioned (i.e. purchased from a third party with unique identification numbers) or printed and programmed as needed using a "desktop" printer. In either case, tags are a temporary, one-time use item durable enough to survive the supply chain environment.

Some adopters of RFID have affixed "permanent" tags directly to the pallet. These tags, typically enclosed in robust packaging, are meant to be reused, monitoring the pallet through the supply chain.

When placing a temporary pallet tag, the tag needs to be located so that it can be easily accessed for reading with either fixed or hand-held readers. An EPCglobal Accredited Performance Test Center is an excellent resource to assist suppliers verify appropriate tag placement.



Pallet Tagging Example

For typical pallet tagging, the EPC tag must be placed on a side of a pallet that can be determined to be the “front” of the pallet (40 inch side) upon arrival at the Distribution Center. The EPC tag must be placed in the middle (horizontally) and approximately 30 inches from the floor (vertically). The EPC tag must be applied on the outside of the stretch-wrap.

Achieving pallet tagging compliance generally requires minimal RFID system investment. However, one should carefully consider the benefits beyond compliance when designing a pallet tagging solution. Investing in as little as a dock door portal to capture and track shipping information could pay off down the road.

Tagging Cases

Most retail industry requirements have evolved to include the tagging of cases. Case tagging provides an additional layer of visibility and benefit as it captures the movement of products shipped directly to the store, as well as movement between the store backroom and the sales floor. Visibility of product moving to the sales floor is also of benefit to the supplier.

Unlike the tagging of pallets, the tagging of cases may be either a manual or an automated process.

Manual Application

For many retail suppliers the apparent entry into case tagging involves printing or acquiring tags which are then applied to cases manually. This process, commonly referred to as “Slap & Ship”, may be cost justified for low initial volumes. However, manual tag application has several disadvantages, including:

- › Not easily scalable as the number of cases to be tagged increases
- › Lack of tag placement control may result in poor performance with minimal repeatability
- › Limited corporate system integration results in minimum data collection
- › Induces secondary operations reducing opportunity for internal Return on Investment (ROI)

While the manual tagging method does have long-term disadvantages, it does minimize in-line process changes and allows the supplier an opportunity to grow into the technology, expanding as they become more experienced or as demand requires.

Manual tagging most often occurs for a small, select number of products. Rather than tagging along the packaging line, tagging typically occurs at the point of shipment. Tags are either acquired pre-programmed by a third-party provider or they are generated using an RFID-enabled desktop printer driven by software which generates unique tag identification numbers.



Before settling on the manual tagging approach, be sure to do a thorough business analysis.

Integrated In-line Application

An alternative to applying tags manually is to incorporate tag application into the packaging process. This process is most appropriate for higher volumes and carries with it several long-term benefits including:

- › A more controlled, repeatable, and scalable approach
- › Improved results from an automated process that consistently places tags on the product
- › Increased opportunity for ROI as tags are applied early in the process

The automated tagging method does have long-term advantages, but it sometimes requires in-line process changes and a higher initial capital equipment investment.

In-line tagging typically occurs along the packaging line. Blank tags are programmed with a unique identification number, often printed with human readable information, and applied directly to the case as it passes down the conveyance line. Photo eyes are commonly used to trigger the start of the process and enterprise software is used to drive the data produced on the tag.

Though in-line tag application requires greater up-front process analysis and investment, its scalability, repeatability, and minimal human intervention allows for a greater ROI.

Like pallet tags, most case tags are temporary, one-time use tags applied to the outside of the case. However, selecting a case tag along with its position and orientation, takes a little more consideration as the tag's performance may be altered through interaction with the material inside the case. When placing a tag on the case, it needs to be located so that it can be easily accessed for reading with either fixed or hand-held readers.

Case Tagging Tips

Regardless of the tag application method used, case tagging success increases when:

- › The RF polarization of the tags is vertically oriented on the case
- › Tags are placed as high on the case as possible to take advantage of inherent air gaps within the case
- › Tags are not folded over corners
- › Tags are placed on double corrugate flaps
- › Tags are positioned furthest from absorbent materials (e.g. aqueous liquids) or reflective foils
- › Tags are asymmetrically placed on the long "service" side of the case

Achieving case reads on a pallet generally requires a greater investment in time, planning, and the implementation of an RFID system. Be sure to glean on the lessons learned across the industry before jumping into a compliance effort.



Summary

Since the first retail industry compliance initiatives, retailers and suppliers alike have influenced significant advances in RFID. Today's hardware systems are much smaller and more easily integrated into the manufacturing and distribution process; tag performance has increased dramatically as the price for tags continues to fall; and the benefits of RFID are being realized as suppliers leverage the RFID infrastructure for internal applications. Pallet and case level tagging initiatives will surely evolve with these advances and in the near future could begin to include the use of RFID for brand authentication, security, e-retail, and more.



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