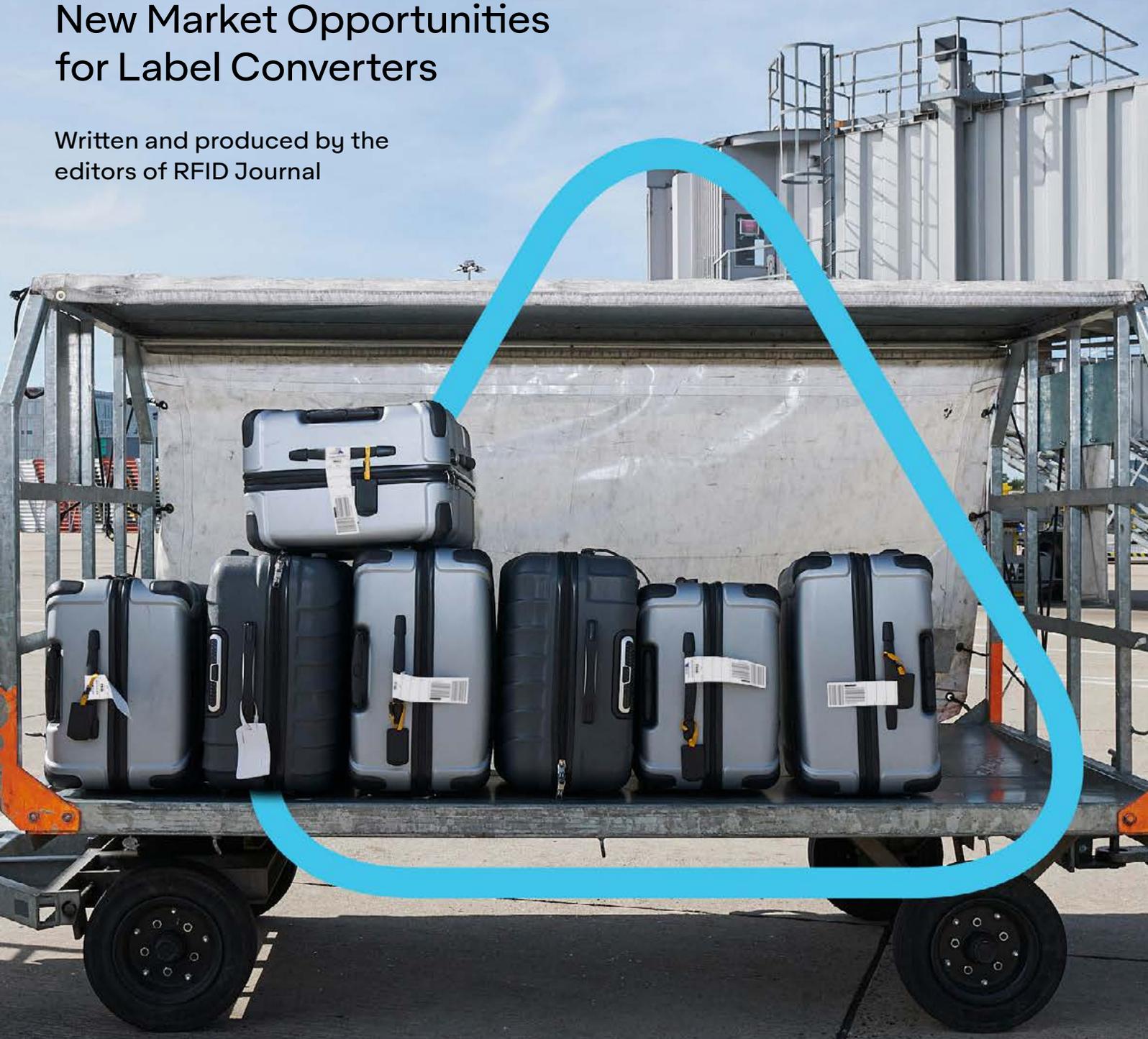


# New Market Opportunities for Label Converters

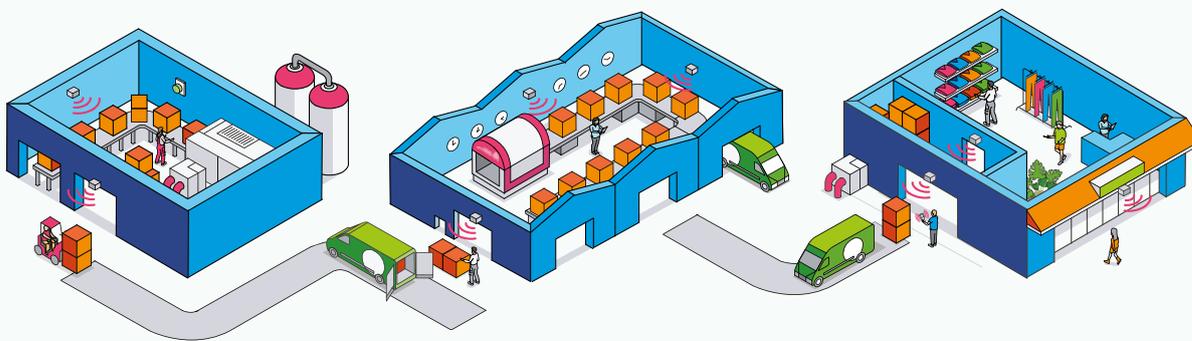
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Radio frequency identification (RFID) has been used to identify, track and manage objects for several decades. For most of that period, the technology was used in niche applications, such as tracking nuclear materials, automated toll collection and access control. Over the past decade, intelligent labels embedded with an RFID inlay have proven to deliver big benefits to apparel retailers. This year, more than 16 billion inlays will be consumed and an estimated 10 billion of those will be used to track apparel in retail application.



In the past three years, RFID has begun to gain a foothold in other sectors, including cosmetics and beauty, food production and distribution, aviation, automobile manufacturing and logistics and fulfillment. IDTechEx Research, a firm that has been tracking the RFID market for nearly 20 years, estimates that the market for RFID products will grow to \$13.4 billion in 2020, from \$11 billion in 2018. Other research firms are predicting even faster growth.

The adoption of intelligent labels in new industries is creating additional opportunities for label converters. This white paper provides insights into where the biggest market opportunities are and how to seize them. At the end of the paper, we will provide additional resources that label converters can use to aid expansion into the RFID market.

RFID has begun to gain a foothold in other sectors, including:



Aviation



Cosmetics  
& Beauty



Food Production  
& Distribution



Automobile  
& Manufacturing



Logistics  
& Fulfillment

## Market Opportunities



### Aviation

In 2018, the International Air Transport Association (IATA) voted to require its airline members to begin tracking passenger luggage starting in 2019. At its 75th annual General Meeting, held in Seoul, South Korea, in June of 2019, IATA adopted a resolution supporting the global deployment of RFID tracking for checked airline baggage. The move to RFID has been a wide-scale collaboration between all stakeholders across the industry, including airports, airlines, luggage handlers and technology providers.

IATA reports that it plans to work with airlines and airports to bring RFID to 80 percent of checked for air travel baggage within the next three years.

Delta Airlines has already transitioned to RFID hands-free technology at 84 of its largest domestic stations, which handle, more than 85 percent of the bags in the Delta system. Delta says that due to its use of RFID, 99.9 percent of bags are now being accurately scanned and tracked, compared to an industry average of 85 to 90 percent with bar codes.

Airlines served more than 4 billion passengers in 2018 and handled 4.86 billion bags. With the current handling system, an estimated 27 million bags will be lost in 2020 and will cost the industry \$2.7 billion, creating a powerful incentive for airlines to adopt RFID technology. And with passenger traffic expected to nearly double to 7.8 billion in 2036, the number of baggage tags required will also likely double, creating a huge opportunity for label converters in this sector.



### Cosmetics & Beauty

According to a 2018 report by Zion Market Research, the half a trillion dollar global cosmetic products market is expected to consistently grow by about 7 percent a year through 2024. Cosmetics has

typically been a tricky product to track with RFID due to the problems created by the small size of many of the products (lipstick, eyeliner, and so on) and the materials used in some of the packaging. But recent

advances in inlay designs have largely overcome these issues. Avery Dennison, for example, has developed the AD-163u8 (60mm by 4mm) and the AD-180u7 (26mm diameter) RFID inlays specifically for cosmetics.



### Food Production & Distribution

Roughly \$1 trillion worth of food produced annually is wasted, according to the Food and Agricultural Organization of the United Nations. That's about \$130 worth of food for every man, woman and child on Earth each year. In developing countries, about 40 percent of losses occur at post-harvest and during processing. In industrialized countries, more than 40 percent of losses happen at retail and consumer levels.

RFID can reduce food waste by up to 20 percent by accurately aligning inventory with variable demand, improving processes, optimizing production, increasing visibility of expiry dates and facilitating food donations. In fact, food traceability technologies, including RFID, can enable food loss reduction by 85 million tons by 2030, according to the World Economic Forum.

Given that the Earth's population is expected to grow from 7.7 billion today to nearly 10 billion in 2050, the demand for food and the need to reduce waste is likely to drive demand for improved tracking and management of food from farms to tables. New RFID tags, such as Avery Dennison's WafeSafe™ (AD-25Xr6-P), which is suitable for accidental microwave usage, making tracking food easier, safer and more efficient.



## **Automobile Manufacturing**

Global automobile sales topped \$4 trillion in 2018, and while growth has slowed, global competition amongst automobile companies has increased. This growth is pushing companies to look for greater efficiencies to improve margins and gain a competitive advantage. Some companies, such as Johnson Controls, have begun tagging parts bins (Johnson Controls has tagged

nearly 1 million containers to date) to reduce the need to buy additional containers each year and to have better supply chain visibility. Key manufacturers and other parts suppliers are also starting to track critical parts to ensure customer safety, and this trend will accelerate in the coming years. RFID is an efficient and reliable option for this segment.



## **Logistics & Fulfillment**

UPS says it ships 20 million packages a day and while FedEx delivers another 14 million. With e-commerce continuing to grow in popularity – global e-commerce sales grew 18 percent in 2018, according to Internet Retailer – the pressure on logistics and fulfillment companies

is increasing. Some leading companies such as Deutsche Post have turned to intelligent labels to track packages. Growth in this sector is just beginning to accelerate, but the market potential is massive as RFID increases in popularity and ease of use.

## **Other Opportunities**

These are not the only market opportunities for label converters looking to expand in the intelligent labels market. Health care is a growing market, as more hospitals use RFID to track consumables, such as bandages, gauze, surgical sponges, intravenous fluids and even patients and other personnel. Some pharmaceutical distributors are using RFID internally to

manage shipments and deliveries. Events companies are using RFID to manage attendees, and more hotels are beginning to use RFID to manage linen and consumables, such as soap and shampoo. In addition to these industries, companies in other industries are continually finding new uses for RFID, creating business opportunities for label converters.

## Seizing the Market Opportunity

The first step toward growing your business by offering intelligent labels is to become more knowledgeable about the basics of RFID and the value it can provide. Label converters do not need to be experts in the technology or its application, but sales staff need to be able to speak intelligently to customers about the difference between Near-field communication (NFC) and passive UHF RFID (RAIN RFID), about inlays that will work on different products and environments and about the range of label options for each individual use case.

Manufacturing teams need to develop skills in converting regular labels into intelligent labels. They need to understand the different substrates available for inlays, how different antenna shapes perform in different applications, and other factors that relate to how customers use intelligent labels in their operations.

Resources available to educate sales and manufacturing staff are listed at the end of this white paper.

## Technology Required

High-end RFID inlay insertion equipment can be expensive, but label converters can get into the RFID market without investing hundreds of thousands of dollars. For small to mid-size volumes, converters can use a “wet” RFID inlay (one with adhesive) in a traditional label application process to produce intelligent labels. This low-cost approach is ideal for jobs that don’t require a high level of customization labels.

For mid- to high-volume orders, converters can purchase dry inlays from a company such as Avery Dennison and use an on-pitch inlay form and a lamination/multi up converting process. This allows for a custom face stock, but requires a Servo press. The same process can be used with Avery Dennison’s

Smartface™ technology, which replaces the PET substrate with a paper substrate to reduce the environmental impact of inlays.

Converters will also need to invest in an RFID verification reader to ensure intelligent labels have not been damaged during the converting processes. Antistatic material on the floor is recommended around working stations to reduce the chance of damaging intelligent labels with an electrostatic discharge (ESD). Employees handling finished labels should also wear special clothing and shoes to reduce ESD damage.

As a converter’s business grows, it can consider investing in a high-end inlay insertion machine from a company such as Bielomatik, Melzer, Muhlbauer or Tamarack.

## Choosing an Inlay Provider

The key to developing a successful intelligent labels business is choosing the right inlay provider. An inlay is the RFID transponder embedded or inserted in the label structure, thus making it an intelligent label. There are several key factors you should consider when choosing a provider.

### Product Portfolio

It is important to choose an inlay provider that has a broad product portfolio so that tags with inlays will work on a wide variety of products. Avery Dennison, for example, provides not just passive HF, NFC and passive UHF RFID inlays, it provides an array of inlay sizes and shapes to ensure its label converter partners can meet the needs of their customers.

### Quality

Just as important as a broad product portfolio is a high quality product. A fraction of RFID inlays in a production run can have a short read range or be completely dead due to a defective chip or other issue. It's important that these not be converted into labels and delivered to customers. Avery Dennison has extensive quality control processes at each stage of the inlay production process to ensure that all inlays are working properly, and it not only marks defective inlays (as most inlay providers do), but also smashing the chip so the tag will not work, cannot be used and therefore will not enter the market. Avery Dennison has received ARC accreditation for quality from the Auburn University RFID Lab.

### Sampling Service

Getting sample tags quickly is important so that converters can provide samples to their customers, as they begin exploring whether RFID will work in their applications.

Avery Dennison will provide samples of most of its inlays within 24 hours. It also provides samples of all new inlays developed for its label converting partners when available.

### Technical Support

Choosing the right inlay for a specific item a customer wants to tag is crucial. It's important to work with an inlay provider that can provide advice on the right inlay to use and the right placement of the finished label on the product. In some cases, Avery Dennison will take product samples to its systems labs and reproduce the scenario in which the customer plans to use the intelligent labels (tracking cases moving past a portal or down a conveyor, for example). They will generate a professional analysis of the best inlay to use and the best location to place the finished label.

Some projects will also require custom tags. Avery Dennison design facilities can develop custom inlays, and if there is enough demand for them, the design can be created at no charge to the converter.

Avery Dennison also has deep expertise in label converting, can provide inlays in the proper formats (four dry inlays across a sheet, for example), advise on direct converting without inserting the inlays and ensure converters are producing the highest quality finished labels.

### Capacity

It's important to choose an inlay provider that has the manufacturing capacity to deliver the inlays you need in a timely manner. Avery Dennison, for example, has invested in expanding its capacity over the past five years, and it has set up distribution facilities around the world in order to deliver the inlays when and where they are needed. In September 2019, it opened a new RFID manufacturing facility in Timisoara, Romania. This facility will help service the demand for intelligent labeling across the European market.

### Market Development

Beyond the factors above, converters should also work with inlay providers that are helping to develop new markets. Avery Dennison has worked with GS1 to better understand the needs of retailers and other users of intelligent labels, participated in IATA meetings to understand the benefits of airlines using RFID to track baggage and engaged with the tire industry to help promote the use of intelligent labels to track tires. These efforts ultimately benefit label converters, as well as the inlay provider.

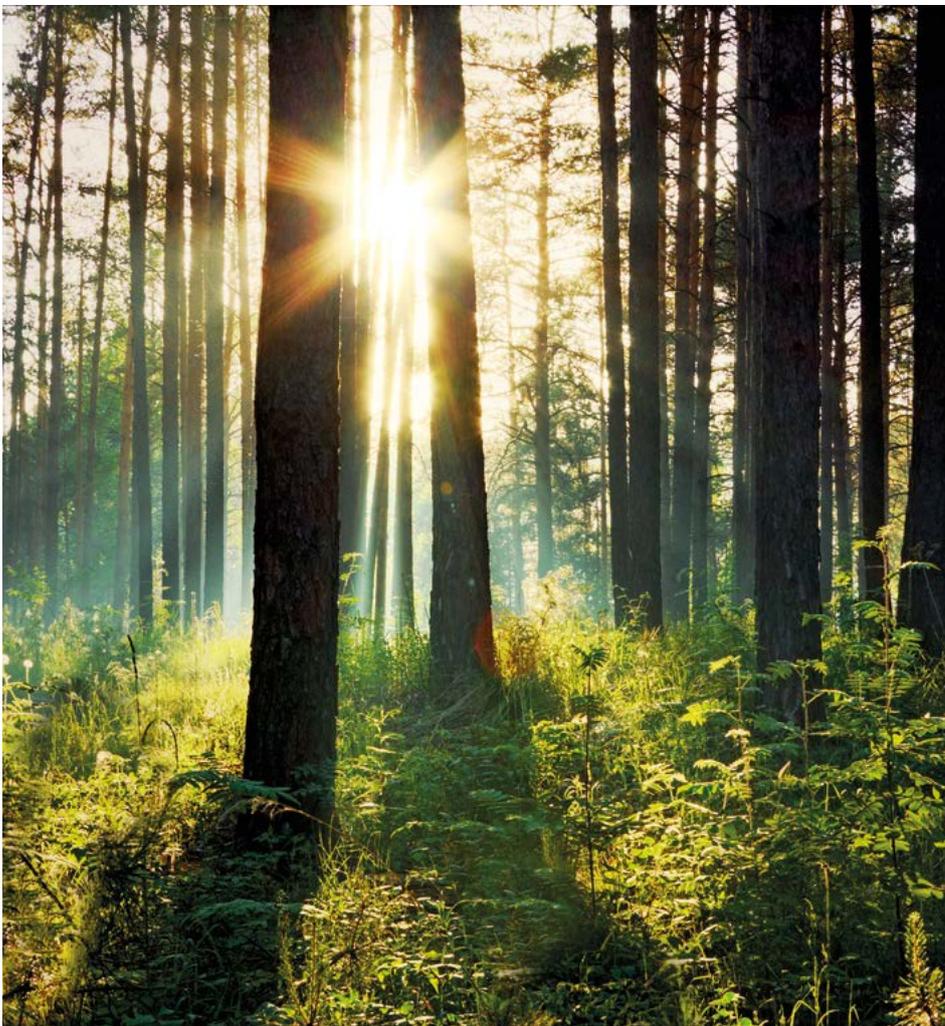
### Leads

Some inlay manufacturers will also steer customers to their label converter partners. Avery Dennison, exhibits at a wide variety of events worldwide, including RFID Journal LIVE! and Labelexpo, and meets with potential users of intelligent labels. It will then utilize its network of label converter partners to fulfill the orders. This is an important aspect of growing a label converter's business, especially when it first enters the intelligent label market. Avery Dennison also facilitates contacts with reader manufacturers and systems integrators.

## A Word about Sustainability

Governments around the world are looking to increase recycling and reduce waste going into landfills, especially waste that can leach chemicals into soil and groundwater. It's important to partner with an inlay manufacturer that takes sustainability seriously. A key is making sure that intelligent labels used on a product don't prevent that product from being recycled. Avery Dennison has been making its label materials more environmentally friendly for years, and it is also able to manufacture inlays on paper, rather than polyethylene terephthalate (PET), to reduce the contamination of the recycled paper with plastics.

Some label converters might go a step beyond looking at inlay manufacturers that provide environmentally friendly inlays and consider how the inlay is produced. Many companies use antennas that require harsh chemicals to etch away aluminum to create an antenna. Avery Dennison uses laser-cut aluminum antennas that require no chemicals and create no waste (the excess aluminum is reprocessed and can be used in future runs). The amount of aluminum in the antenna is typically less than the amount of metal used in decorative packaging.



## Free RFID Seminar for Label Converters

### Understanding the Value of RFID & the Future of Intelligent Labels

RFID-enabled intelligent labels are currently being adopted in many industries, and we are seeing an increase in demand for the technology from customers across multiple segments. RFID improves item-level visibility throughout the supply chain, which is enabling traceability and boosting efficiency, making it increasingly

important for companies across the world to adopt this transformative technology. This workshop, presented by Avery Dennison, will offer advice on how to enter and understand the RFID ecosystem.

Experts will explore the trends and demands shaping the future of RFID, provide insights into

selecting the appropriate chips and inlays, share best practices for the converting process and provide insight into what the future holds for connected products. Discover how intelligent labels can unlock new business opportunities.

For your free pass, please contact:  
[customerservice@rfidjournal.com](mailto:customerservice@rfidjournal.com).

## Additional Resources

### Avery Dennison RFID

Avery Dennison's website has information on how to get started using RFID, as well as information about industry solutions, Avery Dennison's large RFID product portfolio, as well as news about RFID.

### RFID Journal

RFID Journal is the leading source of news and information about radio frequency identification and its many business applications. RFID Journal publishes news stories about RFID products and deployments daily. In addition, premium members have access to a vast archive of end-user case studies and recording of presentations done at RFID Journal events.

### RFID Journal LIVE!

RFID Journal LIVE! is the world's largest conference and exhibition focused on radio frequency identification and its many business applications. It features keynote addresses by leading end users and an extensive conference program broken up into tracks focused on vertical-industry applications (retail, manufacturing, health care, etc.) and on various aspects related to RFID deployments, such as integrating RFID and blockchain technology. This year's event will feature a special educational seminar for label converters, hosted by Avery Dennison.

### RAIN RFID Alliance

RAIN RFID is a global alliance promoting the universal adoption of UHF RFID technology in a way similar to other wireless technology organizations including NFC Forum, WiFi Alliance and Bluetooth SIG.

### GS1

GS1 developed the standards for the Electronic Product Code numbering system and the original passive UHF RFID air interface protocol. It's website has a wealth of data about these standards as well as the application of them in retail, general merchandise, consumer product goods and other industries.



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