



# PROTECT YOUR BRAND

WITH SECURE RAIN RFID  
PRODUCT AUTHENTICATION

*How high-value fashion brands and  
pharmaceutical manufacturers can  
combat counterfeiting and  
channel diversions with  
UCODE DNA Track*

[www.nxp.com/ucode-dna-track](http://www.nxp.com/ucode-dna-track)



# THE HIGH COST OF VULNERABILITIES IN THE SUPPLY CHAIN

At first glance, it might not seem like high-end fashion brands and the producers of pharmaceuticals have a lot in common, but they both depend on **secure supply chains** for their success.

Whether it's a luxury purse or a prescription medication, the complex network of partners used to deliver products and hold inventories also serves to meet consumer expectations for quality and authenticity.

A robust supply chain, trusted to deliver genuine articles, is central to maintaining consumer confidence and fostering trust in the brand. And yet the supply chain is also where you'll find two of the biggest threats to the brand's value –

counterfeit products and channel diversions. That's because weak supply chains are vulnerable to manipulation, and give fraudsters, thieves, and unauthorized resellers the opportunity to profit at the brand's expense.

The counterfeit products and channel diversions associated with unprotected supply chains can damage brand reputations, lower revenues, and, in the case of medications and other consumables, do physical harm.

## COUNTERFEIT PRODUCTS

The presence of fake products in the supply chain can devalue a brand in several ways. If consumers buy products that they believe are authentic, but find that the quality is less than they expected, their confidence in the brand might go down.

Also, if there are too many reports of counterfeit products, consumers can lose faith in their ability to tell genuine products from fake ones, and can turn away from the brand.



**Fake fashion items** are often inferior in look, quality, and performance, and create a negative impression.



**Fake medicines** often use different ingredients and formulas. They may not work effectively and can even be toxic.

## CHANNEL DIVERSIONS

With channel diversions, an authentic product is bought at a discounted price in one region and then sold at a higher price in another region. The result is often a significant financial loss for the brand owner. What's more, criminal resellers may mix counterfeit products into the resale market, creating an even bigger loss for the brand owner. In the case of prescription drugs, unauthorized diversion can lead to shortages of essential medications in low-price countries.



Unprotected supply chains can hurt **reputations** and **lower revenue**

## SECURE RAIN RFID TO THE RESCUE

### HIGH-LEVEL PROTECTION ALONG THE SUPPLY CHAIN

To strengthen their supply chains, and minimize the threat posed by **counterfeit products** and **channel diversions**, brand owners and producers of pharmaceuticals can use secure product authentication.

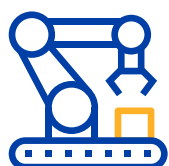
Secure product authentication can help to protect the supply chain by making it easier to identify and track genuine products. **RAIN RFID**, a wireless technology that connects items to the cloud, helps businesses identify, authenticate, engage, and locate each item in real time. Every item equipped with a secure RAIN RFID tag has its own unique identity embedded in its tag and allows supply chain participants to securely authenticate that identity. RAIN RFID offers supply chains a significant advantage because it helps prevent manipulation by using advanced methods to securely identify the product's originality.









Using RAIN RFID tags that offer secure product authentication lets stakeholders along the supply chain identify, track, and verify the origin of a given item.

That means warehouse workers, customs inspectors and delivery personnel can use the security functionality of the smart label for product authentication to confirm that the product – for example a high-value fashion item or medication – they're dealing with is genuine and being sold through an authorized channel.

Because secure product authentication can happen at different points in the supply chain, from the source to the store, there are also fewer opportunities for fraud to take place. Brand owners and pharmaceutical manufacturers can securely and efficiently track the production of raw materials, and follow items as they proceed through shipment, in a container, to the warehouse of a distribution center and the display shelf of a retail outlet.

### EFFICIENT AND SECURE AUTHENTICATION FROM SOURCE TO STORE NARROWS DOWN THE WINDOW OF FRAUD



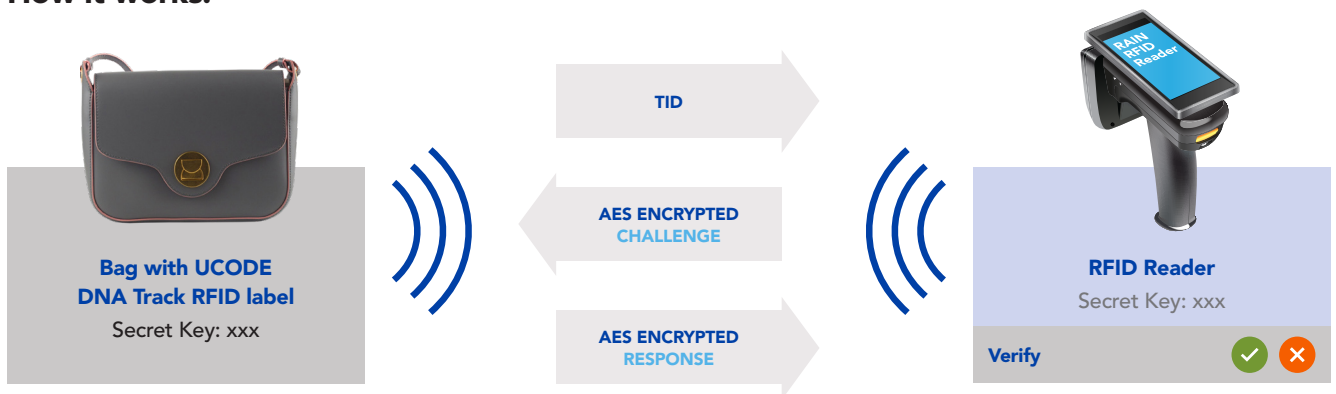
PRODUCTION	SHIPMENT	DISTRIBUTION CENTER	STORE
Verify	Verify	Verify	Verify
 	 	 	 

## SECURE AUTHENTICATION WITH UCODE DNA Track

NXP's UCODE DNA Track IC (microchip) uses RAIN RFID technology and is designed to enable secure product authentication. Embedded in a tag, label, the product itself, or attached to a package, UCODE DNA Track can help brand owners and pharmaceutical producers to securely and efficiently track their goods along the supply chain. The long-range IC can be read over distances of several meters without line of sight, and allows to track goods from source to store. A RAIN RFID reader, which is used to communicate with the tag, supplies the necessary energy for communication, and therefore UCODE DNA Track works battery-less. The RAIN RFID reader can also perform bulk reads of multiple RAIN RFID tags in seconds, so items can be processed quickly and in an automated fashion with very little to almost no human interaction.

The secure authentication process supported by UCODE DNA Track is based on secret cryptographic keys and uses a standardized authentication scheme to achieve its security objectives. The type of cryptography used is called Advanced Encryption Standard (AES) and it works with private keys, which contain the secrets used to verify the authenticity of the product. These secrets are stored in a secure vault inside the chip and are never transmitted from the tag to the reader, and therefore protected from cloning. These features help to make the authentication process both secure and trustworthy.

### How it works:



- Secret keys are never transmitted
- Secret keys are locked and cannot be read
- Challenge and Response use keys, random numbers and TIDs as input parameters
- Challenge and Response bit streams change for each authentication sequence
- The encryption method (AES) is standardized and public
- Only if the two keys are the same, the verification becomes successful

## UCODE DNA Track IS DESIGNED TO DELIVER SECURITY, AUTOMATION, AND SPEED



### Benefits for high-value fashion brands

- Helps prevent channel diversion and unauthorized average sales price erosion
- Helps increase sales quantity of brand original products
- Helps prevent compromising the perception of high quality



### Benefits for pharmaceutical manufacturers

- Helps ensure pharmaceutical products are original and thus will work as expected
- Helps pharmaceutical manufacturers prevent product diversions
- Helps pharmaceutical manufacturers keep sales and not lose them to fakes