

Secure Authentication for Retail, Automotive and Pharma

Combining cryptographic AES-128 authentication with large EPC and user memories, tags using UCODE Guard can enable stronger brand protection while increasing the efficiency and accuracy of inventory control.

Target Applications

- Empowering brand owners to verify the authenticity and integrity of products helping to ensure brand reputation
- Enabling circular economy retail reuse, re-sale and leasing models by proving product originality
- Preventing fraudulent item returns in e-commerce and in-store returns transactions
- Authentication of components and products during supply chain inbound-outbound operations
- Proving originality of safety critical components during vehicle and aviation manufacturing and maintenance
- Accurate automated long range inventory tracking with secure authentication

Key Markets

- High-value retail
- Automotive components
- Pharmaceutical and medical

UCODE Guard provides brand owners a mechanism to prove items are genuine, protecting both brand authenticity and user safety; all while conducting standard RAIN RFID inventory activities. Designed for compatibility with standard infrastructure, UCODE Guard simplifies design-in while ensuring a higher level of protection in the supply chain.



To help in the prevention of counterfeiting of high value items in high-volume applications, and ensure only authentic products are used, whether in pharmaceuticals, automotive spare parts, or high-value retail, UCODE Guard leverages NXP's deep security expertise as the first company to offer RAIN RFID ICs with standardized AES advanced security with 128-bit key.

Features

- Standard-based security with high-volume performance
- EPC and user memory capacity that meets global data standards; including VDA (German Association of the Automotive Industry) and the latest GS1 Tag Data Standards
- Compatible with NXP authentication services for product digitization at scale

Stronger Supply Chain

Counterfeit products represent a serious threat to brands by undermining consumer trust, reducing brand value, and even posing serious safety risks. Not only does UCODE Guard provide an efficient way to help reduce the number of counterfeit goods in the market, it can also help improve safety by ensuring only authentic parts are used in automotive repairs, reduce critical incidents from counterfeit medicines or vaccines, or even simply reduce the costs of a recall.

Key Benefits

- Protection against counterfeits and grey-market diversion
 - Retailers build trust and increase differentiation by selling products with proven authenticity
 - Brands grow stronger as fewer low-quality fake products are sold under their name
 - Consumers gain peace of mind knowing genuine products can be trusted
- Critical safety components can be authenticated before installation and at any point in the value chain
- Safety recalls become more targeted and more cost-effective

Large EPC and User Memories

UCODE Guard offers the 448 bits of EPC memory required for relevant global data structure standards, including the latest GS1 Tag Data Standards used by retailers and VDA for automotive components. UCODE Guard also includes 256 bits of user memory, so additional data, such as manufacturing status, supply chain information and use by dates, can be stored on the tag, too.

Easy Upgrades and Fast Deployment

NXP's UCODE Guard is designed for ensuring seamless communication between the tag and many RAIN RFID readers deployed today. UCODE Guard is developed to enable easy and fast implementation as a drop-in replacement into an extensive collection of existing inlay antenna designs.

Authentication and Key Management

There are various authentication methods when it comes to key management such as storing keys locally on the RAIN RFID reader, using a custom-built system owned by the brand or provided by a third-party system integrator, or leveraging the authentication services offered by NXP.

We empower our customers with the freedom to choose the authentication option that best aligns with their operational preferences and requirements.

In addition to 128-bit key for the AES cryptographic algorithm, UCODE Guard is supported by NXP's authentication services, which enable product digitization at scale. The service uses NXP's hardware security vault to store NXP- or customer-generated master keys, so it's easier for customers to build authentication verification into their existing solutions.

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