



**Dynamic, contextual consumer engagement and item-level authentication delivered in a single NFC tag**



## NFC OpenSense™ Tags

**With the tap of a mobile phone, OpenSense smart tags connect your products directly to consumers and trusted partners.**

### Enhance Consumer Engagement

- Create a one-on-one dialogue between your brand and the consumer.
- Tag sensors identify a product's or package's sealed or opened status, letting you deliver personalized and contextually relevant messages.
- Pre-purchase: deliver key information to consumers in-store such as product origin, reviews, and promotional offers.
- Post-purchase: enrich the consumer experience by suggesting ways to best use and enjoy products.
- Drive brand loyalty, share your story, prompt reorders, and identify nearby store locations.

### Enable Product Authentication

- Thin, flexible tags are easily integrated into everyday items.
- IDs are permanently encoded into each tag during their manufacture to fight copying and hacking.
- Integrated sensor supports product safety along the supply chain, alerting manufacturers, suppliers, and consumers to possible tampering.

### Markets & Applications

- Wine, spirits, and craft beer
- Pharmaceuticals and over-the-counter medication
- Specialty foods
- Health and beauty products
- Industrial and household chemicals
- Medical devices

### Bring intelligence and connectivity to your products

Combine OpenSense tags with ThinFilm's cloud-based marketing platform to enhance consumer engagement.

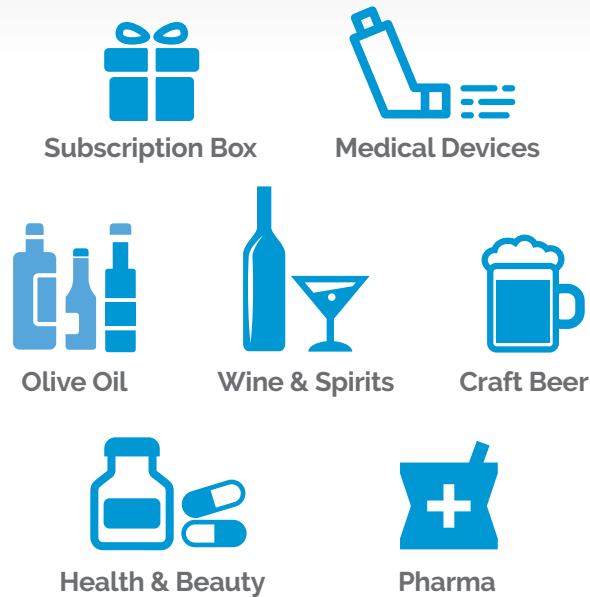
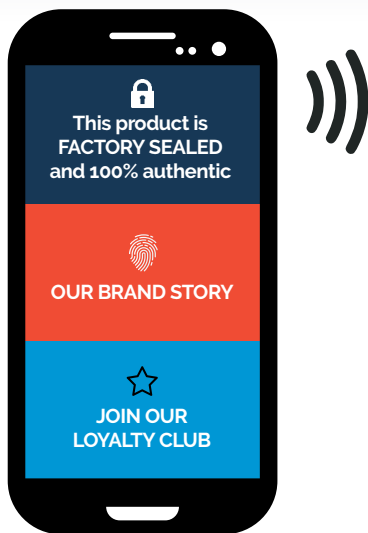
- Influence in-store purchase decisions
- Understand when and where users are interacting with products
- Program campaigns based on time, geolocation or other attributes
- Leverage physical products to drive web traffic
- Enable e-commerce to allow instant purchase

## High-Value Benefits

- Provides individual item traceability, electronic verification, and anti-counterfeiting protection. Tags have a two-state ID that changes when the factory seal is broken.
- Integrated sensor determines the sealed or opened status of a product, enabling dynamic, personalized, and contextual content.
- Consumers can verify authenticity at the point-of-purchase and learn more about how the product has been produced.
- Tags can be integrated into a wide variety of mass market products and packages; easily read with commonly available NFC-enabled smartphones, tablets or industrial readers.
- OpenSense is the first NFC solution supported by the World Customs Organization (WCO).

## Key Specifications

- 13.56 MHz High Frequency (HF) operation for compatibility with fixed and mobile NFC readers, from smartphones to industrial readers
- 128-bit Read Only Memory (roadmap to 256 bits)
- Adheres to subset of ISO 14443 Type-A RFID standard
- 106 Kbit/sec data transfer, Manchester bit encoding and OOK load modulation at 847 kHz
- 16-bit CRC for data integrity and verification
- Up to 20X faster read-speed than standard NFC solutions; ideal for high-speed, high-volume production
- To fight cloning, tag memory is permanently encoded and cannot be electrically modified; Tags-Talk-First (TTF) protocol makes tags resistant to cloning
- Passive operation; tag powers up when in an RF field; does not require a battery



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