Consumer-Facing NFC Comes to RFID Supply Chain Management System

eAgile's eLink brings NFC and UHF RFID together in a single tag that can be built into medication or product caps, seals or labels, so that it can be tracked through the supply chain via UHF and interrogated by consumers using an app.

By Claire Swedberg

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Aug 30, 2017—Internet of Things (IoT) technology company eAgile has released a dual-frequency RFID solution that will enable medication manufacturers and retailers to share content with consumers using a combination of ultrahigh-frequency (UHF) RFID and Near Field Communication (NFC) technologies. The solution, known as eLink, consists of dual-frequency tags built into medication caps, heat-induction aluminum seals or labels, as well as eAgile's cloud-based eLink software.

The technology release is timed around the launching of open NFC functionality in the iOS operating system with Apple's new iOS 11 operating system on iPhone 7 and 8. That release means that both iOS- and Android-based devices can now read NFC tags by simply having a user tap them near the tags. The company, located in Grand Rapids, Mich., has already been offering its eSeal solution in the form of an RFID-enabled seal or cap on medication products for the health-care industry since 2015, according to Gary Burns, eAgile's CEO (see Nutraceutical Company to Use eAgile's RFID Solution to Track Its Products).

Some companies use UHF RFID to enable the reading of tags at a distance, such as when products move through dock doors at warehouses, or come off manufacturing lines or enter stores. The RFID chip's ID number is typically linked to the product's name, serial number, dosage level, batch number, and manufacturing location and date. The tag can then be read by manufacturers following the bottling of their products (such as painkillers or other over-the-counter medications), as well as each time the goods pass through a chokepoint at the manufacturing facility, distributor sites or retailer locations.

Until now, however, the visibility stopped there, Burns says, and that meant little benefit for consumers. Since the UHF tags (most commonly used by medication brands) could not be read by smartphones, the only way for consumers to access data about a product was to utilize a QR code.

However, Burns says, with NFC technology on products, consumers can do much more. "The retail environment is changing very quickly," he states, and eAgile has been working to develop technology that would allow consumers to engage with products automatically using their smartphones. For instance, there are already pill-taking reminder apps to help patients and consumers track their use of medications on a daily basis. With eSeal, they could do this with the tap of a phone against product packaging. They could share the read data with the brand, the pill-taking app of their choice, or a brand's app.

In pursuit of a consumer-facing solution, eAgile has been working on a dual-frequency RFID label for medication and other health-care brands for several years. It has been in discussions with chip manufacturers for a dual-frequency chip, and EM Microelectronic provided the firm with its new EM4423 chip.

With the eLink system, if an individual needs to take a specific drug (such as an over-the-counter pain medication) at preset intervals, he or she could use an app to set up the protocol, and prompt that app to share the data with other parties, such as doctors or family members, if they so desire. In the case of a clinical trial for a new drug, the participants could share the data related to their medication doses with the trial administrators.

Users could then engage with the eLink dual NFC and UHF RFID tags. Each tag's EM4423 chip has both NFC (13.56 MHz, compliant with the ISO 14443A-3 standard) and UHF RAIN RFID functionality built into it. Each time a user taps his or her phone against the NFC tag built into the packaging (in the cap, seal or exterior label), the app could update the status of that person's account, indicating he or she has taken the medication at that specific time. If the individual forgets to take a medication, the eLink app could forward an alert to a family member or health-care provider.

The NFC functionality could provide other features as well, Burns says. Users could tap a phone against a tag to confirm the drug's authenticity, view dosage information, learn how to take the medication, look up its expiration date, access coupons, gain loyalty rewards or reorder the product.

In the meantime, Burns says, the UHF functionality will provide supply chain visibility for brands, distributors and retailers. "The eLink system can offer benefits across the enterprise," he states, by enabling users to view where goods are located at specific

times, appropriately route them according to expiration dates and ensure that no counterfeit products end up in the supply chain.