

EM Microelectronic Releases Second-Generation Dual-Frequency RFID Chip

[EM Microelectronic](#) has introduced its second-generation dual-frequency RFID chip. The em|echo-V combines passive UHF RFID and passive HF RFID, using the Near Field Communication (NFC) protocol. The company says the two technologies are complementary and that the new chip will enable new retail applications.

Retailers have been using passive UHF RFID to track items in their supply chain, manage inventory in stores and improve store operations. Some manufacturers have used NFC to authenticate goods or engage consumers. But as the two types of RFID cannot be read using the same reader, goods would require two tags to enable all of these applications. The em|echo-V RFID chip is intended to resolve this issue by enabling inlay and label manufacturers to provide an RFID tag with a single chip able to utilize UHF for long-distance reading and NFC for authentication and customer-facing applications.



The chip features shared memory and one serialized number.

This dual-frequency chip “enables an RFID tag with the multiple uses throughout the whole product lifecycle,” says Maria Mishunicheva, EM’s sales and business-development manager. The company envisions retailers using the chip’s UHF capabilities for supply chain management, inventory and stock management, and in-store operations.

As NFC tags can be read by virtually all smartphones currently on the market, the chip’s NFC capabilities will be used for customer engagement. “We can imagine that the product information and product storytelling will come from the screen of the smartphone,” Mishunicheva says. “The NFC-enabled smartphone becomes like a salesperson. If the item is not available in the right size or color, by tapping their smartphone on the RFID tag, the customer can be redirected to the retailer’s online store.”

At home, customers could tap the RFID tag to gain quick access to care instructions for garments before washing them, or to view warranty information or gain access to the product’s user manual. “The consumer can also reorder products such as makeup or creams,” Mishunicheva says, “by tapping the NFC tag and using their phone.” The chip features an NFC Type-5 cryptographic engine that enables product authentication and anticounterfeiting via any smartphone, as well as enhanced privacy protection via the chip’s passive UHF portion.

Different versions of the chip are available. The entry-level version, V11, provides basic functionality with improved NFC and UHF reading performance. V12 features everything in V11, with the addition of Web authentication for brand protection and authenticity checks. Consumers can use the Web authentication feature to determine if a product they are about to purchase is legitimate or a knockoff. V13 offers everything in V12, plus the Advanced Encryption Standard (AES) for authentication via a custom application installed on a smartphone. Finally, V14 is the same as V11 but adds AES encryption only.

“The combination of NFC and UHF RFID makes em|echo-V a powerful all-in-one tool that is functional throughout the entire product lifecycle,” Mishunicheva states. Using a single chip for all applications, according to the company, is a cost-effective option for retailers that want to both manage their inventory with UHF RFID, as well as engage customers and authenticate products with NFC tags. The chips are available immediately.