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Next Up: A Passive UHF Reader in Your Phone

The addition of Near Field Communication (NFC) technology to Apple's new iPhone is a big deal, because it will move NFC a step closer to being the de facto standard for electronic payments (see [An iPhone With NFC—at Last!](#)). I believe consumers also will need a passive ultrahigh-frequency (UHF)

radio frequency identification reader in their mobile phones, in order to be able to read tags on products and obtain pricing and other information.

This will not happen quickly—but I believe it *will* happen. It's difficult for me to believe that billions of items would be tagged with passive UHF RFID transponders based on the Electronic Product Code (EPC) standard, and yet smartphones wouldn't be able to read those tags.



I know what you're thinking: Phones don't read bar codes. That may be true, but the world is changing, technology is changing and shopping is changing. Consumers are used to going online, clicking on an item and viewing options for different colors, sizes and styles. They are also used to buying stuff online and increasingly on their phone.

So in the future, a consumer will be able to enter a store, read a garment's EPC via his or her phone, obtain information about that item and try it on. It might be possible to pay via a website or a retailer's custom application right there in front of the dressing room mirror, or to use NFC to pay at the point of sale.

If a customer pays via the Web or using a retailer's app, the system would know the item's EPC (since he or she had read the EPC using the phone). Therefore, after payment has been made, the retailer's database would be updated to indicate that, for instance, a dress with serial number E80R293MN00032 has been purchased. The consumer would then be able to walk out of the store carrying the item, because the RFID reader at the exit would know it had been paid for.

It is true that you can get information about some products using a QR code (though only a few retailers currently use them). A QR code can store a URL about an item to direct a shopper to a Web page containing information about that product. More retailers might use this as an interim step, but it is not a viable long-term solution for several reasons. One is that you would need to launch a separate application, orient the bar code to your phone's camera and scan the code. This would require some effort on a consumer's part (though the scanner could be built into a retailer's app).

The second reason is that with a QR code, there is no way to automatically determine that an item has been paid for. So even if person purchased a product via a mobile phone, he or she would still need to go to the point of sale to have that item's electronic article surveillance (EAS) tag deactivated.

It will still be several more years before UHF readers are embedded in mobile phone handsets. There is no reason to add a UHF reader until a greater number of products in stores contain UHF tags. The number of tagged items is growing rapidly each year, with more retailers announcing plans to use passive UHF to track individual items, but we are still a few years away from mass adoption.

It will also take time and money for a reader company to shrink the reader components down to a chip that can be placed inside a mobile phone. Businesses won't make that investment until they are sure mobile phone handset makers, such as Apple, Samsung and HTC, are going to buy those chips. But it wouldn't surprise me if some RFID reader companies were presently working on creating such a chip, and were in discussions with handset makers. It would be smart to anticipate demand for UHF mobile phone readers for consumers.

Now, you might be thinking that it isn't possible to put both NFC and UHF readers in a single device. Clearly, it is. They would not interfere with each other, as they would operate at

different frequencies and would likely be used at different times for different apps. And many mobile phones already have six radio devices in them—CDMA and GSM radios for calling, as well as Bluetooth, Wi-Fi, GPS and NFC. So what's one more radio?

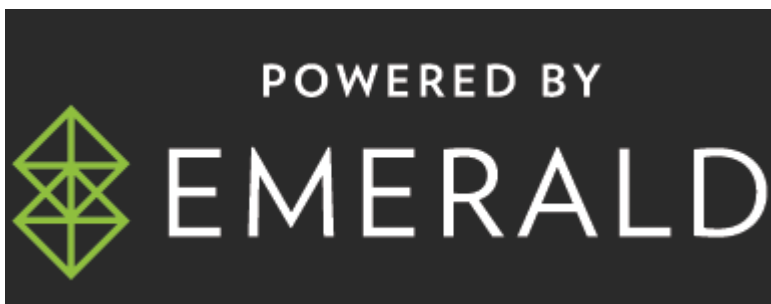
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