

Alien Technology Announces New EPC Gen 2 Chip

The Higgs 3 chip is more sensitive to RF signals than earlier models, sports a read password to secure data and comes with 512 bits of user memory.

By Mary Catherine O'Connor

April 7, 2008—[Alien Technology](#) has announced the Higgs 3, its latest chip for EPC Gen 2 Class 1 UHF passive tags. In response to demand from end users, Alien has built a number of features into the chip that go beyond simple track and trace functionality, says Bill Brown, the company's senior manager of product marketing. These features include a means of locking the data encoded to the Higgs 3 chip, for privacy applications, as well as 512 bits of user memory, so users can save more than just an Electronic Product Code (EPC) to the tag.

In addition, the Higgs 3 is pre-encoded with a 64-bit unique tag identification number (TID) that comes standard, whereas the Higgs 2—which has been shipping since December 2006—supported a TID no bigger than 32 bits. By reading a tag's TID and associating it with the EPC, or with any other tag data encoded to the chip, an end user can authenticate the tag as it moves through a supply chain.

Brown says Alien engineers have leveraged the existing write password function that is part of the EPC Gen 2 standard in order to build a read password function into the Higgs 3 chip. A write password prevents an authorized third party from changing the data encoded to a Gen 2 tag, but does not prevent a third party from reading the tag's data, which could be done with any standard Gen 2 interrogator. "Our customers want the option to make Gen 2 tags unreadable through the use of a password," Brown says. Any EPC Gen 2 reader with the standard Gen 2 write password functionality, he adds, could be used to enact the read password function on a tag with a Higgs 3 chip.

According to Brown, Alien opted to give its new chip 512 bits of user memory—beyond the 96 bits allotted for an EPC—to make tags containing the Higgs 3 chip more attractive to end users looking to encode the tag with data that is associated with the product or asset to which that tag is attached, such as a chain-of-custody record, or maintenance history. Examples of applications in which end users could benefit from the additional user memory, Alien notes, include tracking airline baggage or establishing a chain-of-custody record for pharmaceutical products.

What's more, Brown says, the tag's additional memory could be used to accommodate EPCs longer than the standard 96 bits. The Gen 2 data construct allows for an EPC of up to 496 bits, he explains, and the unique identification numbers that [U.S. Department of Defense](#) suppliers must use are also longer than 96 bits.

Brown says tests conducted by Alien show tags made with the Higgs 3 chip to be 25 percent more sensitive to RF signals than those made with the Higgs 2 chip—which, he says, are 25 percent more sensitive to RF signals than other tags currently available. As the chip's read sensitivity increases, the amount of power required for it to operate, or to be activated by the interrogator, decreases. Moreover, the more read-sensitive a

tag's chip is, the greater the read range (or distance from a reader) the tag can support. Last week, RFID chip maker [Impinj](#) unveiled its Monza 3 chip, which it claims is 40 percent more sensitive than other Gen 2 chips now on the market (see [Impinj Announces Next-Gen Monza Chip](#)).

RELATED_ARTICLES There is no standardized method for measuring a tag's sensitivity, Brown says, which has direct impact on that tag's read range, and on the ability to perform such tasks as quickly encoding and reading large populations of Gen 2 tags en masse. Test results can also vary widely according to the performance level of the tag's antenna. However, he says, [EPCglobal](#) is currently developing a standard test to measure a Gen 2 chip's sensitivity.

The Higgs 3 IC is currently being sampled with partners and customers, and is slated to become generally available in late July. As with the Higgs 2, the new chip will be offered in several forms, including in a strap and as a flip chip. Brown says the Higgs 3 chip will have a "slight premium" over the Higgs 2—and, thus, so will the final price for Higgs 3 tags sold by Alien. The company says it will continue to make Higgs 2 chips and tags, which it considers to be workhorses for basic EPC applications that don't require extra tag memory.

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