

# Impinj Introduces Two New Gen 2 Chips

The Monaco/64 and Monza/ID chips are designed for additional user data and product authentication, respectively.

By Mary Catherine O'Connor

Aug. 11, 2006—RFID chipmaker Impinj is making two new RFID chips, the Monaco/64 and Monza/ID, in response to market demand for RFID tags able to carry more user-programmable data than just a 96-bit EPC, and that can be used for product authentication. Both chips are available to tag-makers in production quantities today.

The Monaco/64 chip is designed for applications in which users need to add rewritable data to a tag. Manufacturers could use the chip's 64 bits memory to store such things as product information, warranty or expiration and lot data. Airlines using RFID-enabled baggage tags could use it to store data relating to baggage inspections and airports where the baggage has traveled. Pharmaceutical companies might use the memory to encode a drug's chain of custody. Since the chip is compliant with the EPCglobal Gen 2 standard, the available 64 bits of data—in addition to the 96 bits used for an EPC—can be password-protected so that only authorized parties could alter it.

The Monza/ID chips, which also have 64 bits of extra memory, are used to encode a unique, unalterable identifier programmed by Impinj when the chip is being produced. The ID will be used to authenticate the product or asset to which the finished tag is attached. Bill Colleran, president and CEO of Impinj, provides a hypothetical example of how tags made with the Monza/ID could be used to authenticate products: Today, he poses, a maker of high-value shoes such as Nike might place an order with a third-party manufacturing company for 1 million pairs of shoes. There's nothing to stop that manufacturing company from fulfilling the order, he says, then producing thousands more to sell illicitly, because neither the shoemaker nor the downstream retailers or logistics providers have a means of authenticating the product. However, if Nike ordered a million Gen 2 tags with Monza/ID chips to be embedded in each left shoe, Impinj could encode a serialized, unique ID to each chip. This number, along with the EPC encoded to each finished tag, would be sent to Nike and shared with its supply-chain trading partners, who would use the numbers to authenticate the finished products they transported or sold.

As a second verification, Impinj uses a bit that is part of the chip's configuration registry to indicate the authenticating ID is factory-encoded. This same bit in the Monaco/64 chip is set to signal that the additional 64 bits will be encoded by the user. (The Monaco/64 chip does not include a unique ID.)

According to Colleran, Impinj considers 64 bits the most appropriate amount of additional memory for its first extra-memory chips.

"Adding just 32 bits wouldn't have provided enough memory for the current needs of most end users," Colleran explains, "and would not have been cost-effective for us to produce, while more than 64 bits of memory is more than most users need, so we couldn't have justified the cost." Still, he expects the need for more memory to grow as RFID deployments become more sophisticated and end users' needs change. "Think

back to early PCs. People never thought they'd need more than a 32-megabyte hard drive."

Monaco/64 is the first in a line of high-memory RFID chips Impinj is planning, and the company expects to market chips combining both authenticating IDs and extra user memory. Collieran says both the Monza/ID and Monaco/64 chips carry a "5 to 25 percent" premium over the cost of the Monza chip, which the company introduced in April 2005 (see [Impinj Announces Gen 2 Tags, Reader](#)). He would not reveal what tag makers are paying for the Monza, claiming it varies greatly on volume.

Last September, EPCglobal certified the Monza chip as conformant to the Gen 2 standard (see [EPCglobal Certifies Gen 2 Hardware](#)). The Monza/ID and Monaco/64 are "minor variations" of the original Monza chip, Impinj says, and it is not yet clear whether it will be required to recertify or take any additional steps to certify the new chips with EPCglobal. Until recently, the Monza was the only Gen 2 chip available in large quantities. Last week, [Texas Instruments](#) (see [Texas Instruments Rolling Out Its Gen 2 Chips](#)) announced a rollout of its Gen 2 chip, which does not offer extra user-rewritable memory. This chip does carry a unique ID but can be overwritten, and is designed not as a tool for authentication but as a means for tag makers to singulate chips during the tag-making process. This week, [STMicroelectronics](#) announced it was now shipping large quantities of its Gen 2 chip to tag makers (see [STMicro Ramps Up Production of Its XRAG2 Chip](#)). That chip holds a total of 432 bits of memory, which can be configured to accommodate either a 256-bit EPC or a 128-bit EPC and 128 bits of user programmable memory.

Collieran says Impinj shipped 300 million to 500 million Monza chips to tag makers this year, in addition to the 50 million it shipped in 2005. Drew Nathanson, director of the AIDC/RFID technologies practice at [Venture Development Corp.](#), has estimated that 175 million finished Gen 2 tags have thus far been produced.

The Monza/ID and Monaco/64 chips are based on the Monza chip's design. Thus, Impinj says, tag makers can make complete Gen 2 inlays by combining them with the same antenna designs used with the Monza chip. Impinj is selling the chips in wafer form.

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