

**Intellex will supply a chip for the passive tags Boeing wants placed on parts for its Dreamliner jets, but the chips will have one-eighth the memory Boeing originally requested.**

By Mary Catherine O'Connor

Apr. 4, 2006—[Boeing](#) announced today that San Jose, Calif., RFID technology company [Intellex](#) will provide the chips to be used in the passive RFID tags Boeing is requesting its suppliers place on many parts to be used in its upcoming family of 787 Dreamliner jets. The tags will be used to identify and track the parts' maintenance history.

Last fall, when Boeing first announced its intention to use RFID-tagged parts in the Dreamliner, it had envisioned an EPC tag that could hold 64 kilobytes of data (see [Boeing Wants Dreamliner Parts Tagged](#)). The most data current Gen 2 UHF EPC passive tags can hold is 96 bits, and though a number of semiconductor companies told Boeing they could create a 64-kilobyte chip for a passive tag, such chips wouldn't be available for at least 18 months—much too late for Boeing to meet its ambitious goal of getting smart labels to its suppliers and having the parts tagged and tested in time to meet the Dreamliner production schedule. The first jets are due in the spring of 2008.



*Suresh Palliparambil,  
Intellex*

Intellex, however, told Boeing it could provide a 64-kilobit chip for the tag in a much tighter turnaround time because the chip was already in development. "We had a huddle at Boeing and decided that we would go with the Intellex chip because it would jump-start the process by a year [over the timeline for the 64-kilobyte chip]," says Kenneth Porad, Boeing's program manager for automated identification programs.

"High-memory UHF chips are our core product," says Suresh Palliparambil, director of business development for Intellex. "We'd already been designing a chip for EPC Class 3 battery-assisted passive tags for more than a year." (Battery-assisted passive tags operate like passive tags but use an onboard power supply to extend the tag's range.) Thus, when Boeing announced it was looking for a high-memory passive chip, Intellex was quickly able to design a subset of its Class 3 high-memory chip to make it useable in a passive tag.

Once the chip is in production and Boeing releases its final list of the Dreamliner parts requiring tags—both of which are expected to happen soon—Intellex will begin providing the 64-kilobit chips to tag makers, who will design and manufacture inlays for the specific parts. "We are going to the sole provider of the integrated circuit, but we will supply it to any tag maker," says Palliparambil. The inlays will then be converted into various types of RFID labels, or nameplates.

Porad says he wants these finished nameplates to be in the marketplace and available to Boeing's parts suppliers, such as [Rockwell Collins](#) and [Honeywell](#), by December 2006.

The exact form factors these inlays and nameplates will have will depend on the parts to which they will be attached. Some will be rigid, others flexible, depending on their applications. They will come in different sizes, as well, but none will be smaller than 1 inch by 1 inch. The tag makers or converters that produce the final nameplates will also need to incorporate the human-readable data and bar codes currently printed on the part identifiers, or nameplates. Parts suppliers are likely to request that the RFID nameplates have the same footprint as the nameplates currently in use, so that the parts won't require any redesign to accommodate them. Boeing is requiring that the tagged parts be readable from a distance of 10 feet, using a handheld interrogator, says Palliparambil.

"Sixty-four kilobits does have some limitations," says Porad. Therefore, the [Air Transport Association \(ATA\)](#) working group focused on setting RFID usage standards is in the process of identifying the data most important to the participating stakeholders: the companies that will supply the Dreamliner parts, the airlines that will purchase the planes and the maintenance crews that will repair them. It's important that the ATA decide how this memory will be used, he says, because it is setting standards for all RFID-tagged airline parts, no matter if they are used in a Boeing plane or one made by another manufacturer, such as [Airbus](#).

"We've identified and agreed to 19 data elements that [parts suppliers] must write to the tag prior to a part's delivery. Things like part number, serial number, date of manufacturer, lot number, weight and the part's name in English," says Porad.

The amount of additional memory, however—which will be used for maintenance history—will be much more limited in the 64-kilobit tag, compared with the originally proposed 64-kilobyte tag. "They will have to use that memory economically," says Porad.

The ATA is still conducting a threat and risk analysis to determine its RFID tag security protocol, so whether the data written to the tag will be encrypted or not, Porad says, has yet to be determined. The tags will support password protection, says Palliparambil, because the Intellex chips support passwords.