

**Hundreds of Boeing suppliers will be affected by the aerospace giant's plan to require RFID smart labels on high-value parts used in its 787 Dreamliner. Boeing also plans to work with EPCglobal to develop its RFID program.**

By Mary Catherine O'Connor

Oct. 4, 2005—[Boeing](#) has announced that suppliers of many parts used in its 787 Dreamliner—a new family of high-capacity, low-emissions passenger planes—will be required to place RFID tags on the parts before shipping them to Boeing. The company hopes this will improve its ability to track and maintain service histories on the parts.

"This will be a requirement for selected suppliers of systems and equipment on the airline that we deem critical to service our customers," says Kenneth Porad, program manager for automated identification programs at [Boeing Commercial Airplanes](#). Production on the first Dreamliner aircraft is expected to start in 2006, with the first planes entering commercial service in 2008. Hundreds of Boeing suppliers and sub-suppliers will need to begin tagging parts with passive UHF tags, he said. These will not be your garden-variety passive UHF tags, however.



*Kenneth Porad, Boeing*

"We are going to generate the requirements for a robust, high-memory-capacity smart label for aerospace and defense [applications]," says Porad. "We're looking at 64 kilobytes, which doesn't exist [in a passive UHF tag] today. It will operate in the UHF band; it will be metal-mount-compatible; and it will be environmentally tested for changes in pressure, temperature and humidity; but it will not be inexpensive—these tags will likely cost several dollars. But that's okay, because they are going on expensive products. A primary flight computer on a Boeing 777 costs \$400,000. If you spend \$15 on a tag to manage its life cycle, that's okay." That's an extra cost Boeing's suppliers will have to bear.

Porad says Boeing has already communicated its plans to suppliers that will come under the requirement. The aerospace giant intends to hold meetings with them, likely starting in January, and expects there to be pushback from some suppliers.

Boeing is inviting more than 20 RFID chip and inlay manufacturers and smart label converters—as well as Sue Hutchinson, director of product management for [EPCglobal US](#), and members of the [EPCglobal Hardware Action Group \(HAG\)](#)—to a daylong event at Seattle's [Museum of Flight](#) on Oct. 25. At that gathering, the company will share a timeline for when it would like to have tags that meet its technology requirements available to the marketplace, so that vendors can have enough time to test them. "[The tag specification] we are creating might have its own EPCglobal name," says Porad. In order to ensure suppliers use RFID tags capable of these requirements, he hints, Boeing might work with EPCglobal to develop a tag specially designed for use on airline parts.

At the EPCglobal conference in Atlanta last month, EPCglobal US president Mike Meranda announced that Boeing had recently become an EPCglobal member. Porad describes this membership as a major indicator of Boeing's commitment to RFID. "It's not just Boeing Commercial Airplanes that joined EPCglobal, it is the whole enterprise: [Boeing Integrated Defense Systems](#), [Phantom Works](#), [Shared Services Group](#) and Boeing Commercial. We're going to have delegates join hardware and software standards committees. Boeing is going to be all over this thing," he says.

The company's goal is to have its first Dreamliners entered into service with tagged parts in 2008, Porad explains. "At a minimum, we want to deliver a service-ready airplane, meaning the airplane is ready, the airline is ready to receive it, the support products and services are ready, proven and tested. But the first planes we'll produce are flight test planes, and they may or may not have tagged parts."

Porad acknowledges that working backward from the 2008 deadline will mean a very tight production schedule for RFID vendors endeavoring to create an RFID tag able to meet Boeing's requirements, and for parts manufacturers needing to purchase and apply the smart labels. "I wish we'd made this requirement a year ago, but for many internal reasons we didn't," he says. "It normally takes a year to develop a new tag, but we're going to attempt to truncate that process—to jump-start it. That's why we're meeting with the vendors on the 25th."

In June, the [FAA](#) approved the use of passive RFID tags on airline parts (see [FAA to Publish Passive RFID Policy](#)). Whatever RFID tags Boeing suppliers end up using will operate from 860 to 950 MHz and follow all FAA guidelines, Porad explains.

Boeing wants the tags its suppliers use to meet the ISO 18000-6C candidate standard air interface protocol, based on the same specifications as EPCglobal's Gen 2 tag (see [Gen 2 Finds a Path to ISO Approval](#)). The extra capabilities, the addition of memory (Gen 2/ISO 18000-6C specifications require only 128 bits) and the ability to use the tag on metal objects and in extreme environmental conditions, however, would be built on top of that standard.

The Dreamliner parts earmarked for tagging include those regularly checked and, if required, replaced while the plane is being serviced between flights, such as the avionics box, or block box, as well as components that are expensive, are kept as spares or have with a limited life. Also tagged will be parts that must be changed out after a set number of flights, landings or flight hours. These include actuators, motors, belts, pumps and wheel-well components, say Porad.

According to Porad, Boeing is working with IT vendors to flesh out a software infrastructure able to support the RFID tag data and be integrated into the secure network the company currently uses to store and share important parts history and maintenance information with its airline customers and suppliers. This system, in use since 1995, utilizes data gathered through manual entry and scans from bar code labels presently placed on parts. "RFID will bring this system to a new level," says Porad. "There will be no data-entry errors, and there's a lot of information that can be saved on the tag and then synchronized in our database. When a mechanic services a part and writes a service bulletin to the

part, it'll then be updated with our main database."

The data stored on the RFID tag attached to each part will include not just a unique ID but also the part's maintenance and inspection data. This is in accordance with an industry standard developed for commercial aviation by the [Air Transport Association \(ATA\)](#), called the Air Transport Association Spec 2000 e-business standard. Boeing and Airbus worked together to develop the data specifications surrounding RFID, which Porad says should appear in the next annual revision to the standard, due out in early 2006.