

**Having carried out technology trials involving passive EPC Gen 2 UHF tags and active 433 MHz active tags, the company is now ready to implement the technology "at the push of a button."**

By Rhea Wessel

June 17, 2009—[Emirates SkyCargo](#), a division of [Emirates Airlines](#), has completed a number of technology trials that demonstrate RFID's ability to deliver significant business value for tracking unit load devices (ULDs) and large storage pallets (LSPs) used to transport cargo, according to Vasih Khan, a cargo systems analyst at Emirates Airlines. The company, Khan told attendees at this week's [RFID Journal LIVE! Middle East](#) conference, has completed tests to determine the feasibility and benefits of using RFID at its new cargo terminal, but has yet to decide whether and when to permanently implement the technology. Nonetheless, he said, Emirates SkyCargo has gained invaluable experience, and is now ready to implement RFID "at the push of a button."

According to Khan, his company proved it could employ 433 MHz active RFID tags and 868 MHz EPC Gen 2 passive ultrahigh-frequency (UHF) RFID tags to provide a real-time view of the locations of ULDs and LSPs as they passed through chokepoints or as determined by means of trilateration—a process of utilizing at least three interrogators to calculate a particular tag's whereabouts. Further benefits include the ability to manage just-in-time (JIT) products more efficiently by reducing human shipping errors, such as the incorrect loading or retrieval of ULDs and the spoilage of fresh food.



Vasih Khan

In 2004, Emirates Airlines began planning the tests and a possible implementation of radio frequency identification (see [Emirates Will Use RFID to Track Air Cargo](#)) as it designed its Cargo Mega Terminal, a massive new warehouse facility in Dubai that can process roughly 1.2 million tons of cargo. At that time, the company prepared to migrate its IT systems to a proprietary system known as SkyChain.

In early 2005, Emirates Airlines began conducting the tests to determine which RFID technology and systems would work efficiently in Dubai's harsh weather conditions, such as bright sunlight, extreme heat and frequent condensation. The airline mapped its processes and designed tests to help it determine which RFID software, hardware and systems were best suited for its specific needs, in terms of functionality, technical specifications and quality, scalability and endurance.

As part of that research, the company tested 433 MHz and 868 MHz RFID systems at its Cargo Mega Terminal. The warehouse has 43,600 square meters (469,310 square feet) of floor space, including 3,927 square meters (42,260 square feet) of cold storage where temperatures range from -10 degrees Celsius to +4 degrees Celsius (14 degrees Fahrenheit to 39 degrees Fahrenheit). The facility can accommodate roughly 2,500 ULDs and 10,000 LSPs (Emirates Airlines owns more than 60,000 ULDs used worldwide).

Passive 868 MHz EPC Gen 2 RFID technology was successfully used to track the passage of ULDs through chokepoints, such as the gates leading into and out of cold storage, and for item-level tracking and tracing. Such a system could allow the implementation of business rules that would trigger the necessary actions with an auto-alert system—for instance, if a tagged item were to enter an area it shouldn't be in, the appropriate personnel would be informed. Managers could then utilize the technology to monitor and control the processes.

The testing, Khan said at the conference, also demonstrated that RFID could provide a range of other business benefits, including a reduction in cargo-handling cycle times, and the ability to locate misplaced LSPs, ULDs and shipments. Emirates SkyCargo, he noted, could employ RFID to automate a number of processes, thereby enabling the firm to minimize the incorrect loading of ULDs and LSPs onto aircraft, to prevent perishable goods from being left outside of cold storage and to control the movement of high-value goods.

In addition, the company has also tested the technology's application for tools and parts security (including a 2008 tool-tracking pilot in Dubai), for baggage systems (see [Emirates RFID Bag-Tracking Pilot Takes Off](#)) and for in-flight entertainment systems.