

# ETSI Group Plans Dense-Reader Trial

The standards agency will test two methods for improving the performance of dense RFID interrogator deployments in Europe.

By Jonathan Collins

June 7, 2006—This summer, a [European Telecommunications Standards Institute](#) (ETSI) task group plans to carry out a major trial of two methods for improving the performance of dense RFID interrogator (reader) deployments in Europe.

The trial will include at least 20 interrogators operating within close range of each other. The goal is to help determine the feasibility of reader synchronization and channel spectrum management in real-world European deployments.

The trial will be carried out as part of the work of [ETSI's Electromagnetic Compatibility and Radio Spectrum Matters Task Group 34](#) (ERM TG34). The task group is charged with representing the interests of the RFID industry within ETSI for all RFID products and devices.

At a TG34 meeting held last month in Mainz, Germany (see [ETSI Group Explores RFID Spectral Needs](#)), representatives from RFID vendors and end user companies saw demonstrations of two synchronization techniques designed to enable many interrogators, operating close to each other, to share the same frequency simultaneously.

One demonstration used a single centralized reader controller developed by [Reva Systems](#), a company dedicated to hardware offerings for managing networks of RFID readers. This device controls when readers are allowed to operate. Fitted with an RF receiver, it listens for RF transmissions and permits the operation of readers connected to it by an Ethernet cable.

The second technique was developed by German reader and antenna manufacturer [Feig Electronic](#). Using Feig's method, the reader synchronization instructs the first interrogator to emit a unique pre-pulse RF signal immediately prior to its interrogation routine. This pre-pulse tells all other readers within range that the channel is available and, if required, they may transmit on it.

"Both demonstrations were very effective," says John Falck, chairman of TG34.

While a hard-wired solution such as Reva's offers greater reliability than using RF signals, it also means additional hardware (the controller) and potential cost. Moreover, the solution cannot handle portable readers such as might be used on forklift trucks. However, an additional demonstration at the meeting showed that the two systems could work together. A consensus decision at the meeting concluded that both synchronization methods can be incorporated into the ETSI guidelines for the installation and commissioning of UHF RFID equipment.

Published by ETSI in December 2005 as [ETSI TR 102 436](#), the guidelines contain recommendations only.

Observance is voluntary, just as ISO standards are voluntary.

In addition, TG34 members at the meeting reached a consensus that synchronization has to be carried out in conjunction with the EPC Gen 2-specified dense-reader mode, a configuration dictating that tags respond to readers in the side frequency channels adjacent to the channel used by the reader. The TG34 group determined that a channel plan for implementing RFID deployments has to be developed to ensure that adjacent RFID deployments do not interfere with each other. Two proposals—one dedicating four channels, and the other, five channels—will also be tested as part of the synchronization tests this summer.

TG34 members deemed the results of earlier trials worthy of inclusion in the configuration in ETSI's guidelines. Tests had shown read performance benefits to be gained from deploying an RFID portal using two readers with two antennas each, instead of one with a single interrogator and four antennas. This will be particularly beneficial in applications requiring the reading of large numbers of tags on a load, says Falck.

Another goal of the meeting had been to identify the future spectral requirements of UHF RFID in Europe, but the attendees resolved that further investigation is required before that could be achieved. The group believed a new report should be generated within ETSI, and should include a market study, an economic impact assessment and technical requirements. The report would subsequently be submitted to the European Conference of Post and Telecommunications Administrations (CEPT), Falck says, then forwarded by them to the European Commission (EC) for their consideration. CEPT is a collaborative organization for telecommunications regulators in 46 European countries. The organization deals with questions regarding radio and telecommunications, as well as the harmonization of spectrum usage.

Falck delivered a presentation regarding the spectral issues facing UHF RFID to an EC Workshop in Brussels on June 2. The meeting was one of a series being held this year as part of a wide-ranging initiative designed to help speed RFID adoption across the European Union (EU).

Current regulations on RFID in Europe have led to concerns over the ability of European companies to deploy UHF RFID systems effectively at large sites where many interrogators would operate in close proximity. The companies hope, however, that the present work on synchronization will go a long way toward resolving these concerns.

RFID UHF bandwidth across the EU is set at 3 MHz (2 MHz at 2 watts), compared with the 26 MHz available in North America. Meanwhile, European channels are just 200 kHz, versus North America's maximum of 500 kHz. In addition, European readers are required to adhere to a "listen before talk" mode of operation that some users insist has hampered the effectiveness of UHF RFID in their countries.

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