

Calif. Startup Develops RFID-enabled Products to Track Medical Tests

Smart Medical Technologies' line of RFID-enabled test tubes, vials and other containers incorporates proprietary 13.56 MHz tags that can store up to 4 kilobytes of data.

By Beth Bacheldor

Aug. 15, 2006—As the health-care industry continues to intensify its interest in radio frequency identification, more companies are stepping up to deliver RFID hardware and software designed specifically for that market. [Smart Medical Technologies](#) (SMT), a designer of medical and laboratory devices, is developing a line of RFID-enabled 5- and 10-milliliter test tubes, analytical vials, patient wristbands, specimen-collection containers and other products used for medical testing.

Earlier this month, the Rancho Santa Margarita, Calif., firm announced its RFID system for the health-care and analytical laboratory sectors. Designed to reduce errors in tracking patient and specimen data, the system consists of passive read-write 13.56 MHz tags manufactured by [Maxell Corp. of America](#), RFID interrogators connectable via USB to a computer or electronic clipboard, and SMT's Electronic Test Request Information Management System (e-TRIMS). This system correlates the information stored on the tags with other medical applications and contains an interface allowing users to program the tags with the necessary data. The tags are integrated in test tubes, bottles, vials and other containers used in clinics and medical labs.

The tags use a proprietary protocol developed by [Maxell](#) (see [Putting Tags on Test Tubes](#)). According to Martin Ebneshrashoob, marketing manager for SMT, the tags act more like storage devices than traditional RFID tags because they can store up to 4 kilobytes of data, such as patient information, date and time logs, doctors' instructions and the prescription drugs the patient is taking.

According to Ebneshrashoob, SMT chose to use proprietary tags for its system largely because they provide more protection than standards-based tags. "One of the large, much publicized roadblocks to RFID adoption has been the potential to exploit and utilize information contained on RFID products, oftentimes because the devices do conform to published standards that almost anyone can reverse-engineer," he says. "Our product line derives additional security benefits because only an individual with our readers and test tubes, for example, can read or write information to the RFID chips. Similarly, one cannot purchase other vendors' RFID products and attempt to read or write to our devices."

In addition, the data written to tags' chips is encrypted, and the tags have an ultra-short read range to ensure that the "chips are powered down when not in use, reducing the likelihood of inadvertent transfers," Ebneshrashoob says.

The RFID tags on the tubes, vials and other containers are designed to replace the paper documents clinicians currently submit to laboratories along with specimens. The tags also can replace bar-code labels and any data-entry tasks associated with a bar-code system, which requires manual scans of the labels. All of those processes can introduce errors—the paperwork can get lost, for example, and employees can forget to scan bar

codes.

SMT has been showcasing its products at industry trade shows in Chicago and Italy. The company has also conducted tests with the Southern California Reference Laboratory in Tustin, Calif. "The technicians were able to read and write information to the chip from when the samples were drawn, throughout testing and in post-processing with insurance," Ebnesahrashoob explains. "The RFID chip was able to sustain conditions encountered in the lab, from temperature variations via refrigeration, to centripetal forces exerted during centrifugation of the samples."

Although SMT currently does not have any customers using its RFID-enabled products, it is optimistic about future demand. "SMT is fully aware of the fact that this technology will not find widespread use overnight, and must follow its natural curve as it enters the market," says Ebnesahrashoob. The privately funded company continues to develop new products incorporating RFID. In the near future, it will introduce RFID-enabled blood bags, IV bags and general-purpose adhesive RFID labels.

"SMT's founders are passionately committed to seeing this technology take off in a big way," Ebnesahrashoob says.

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