

## ThingMagic and WJ Communications introduce low-cost multiprotocol RFID readers for installation in label encoders and printers and other devices.

By Jonathan Collins

Sept. 13, 2004—Targeting the rapidly emerging market for embedded RFID readers, two companies are introducing low-cost multiprotocol RFID readers for installation in printers and other equipment. RFID reader designer [ThingMagic](#) describes its new credit card-size new Mercury 4e (M4e) reader as the smallest, fastest and most powerful reader available. RF semiconductors company [WJ Communications](#) believes its new MPR 6000 RFID Card is the first multiprotocol UHF reader to come in the form of a PCMCIA (Personal Computer Memory Card International Association) Type II card.

The new Mercury 4e, which is shipping immediately, is a scaled-down version of ThingMagic's Mercury 4 reader launched in July this year (see [ThingMagic Bets on Smart Readers](#)). The new reader uses the same Texas Instruments digital signal processors to operate the same ThingMagic firmware used in its Mercury4 reader, but the company managed to reduce the size of the M4e by removing the separate power and networking capabilities of the larger reader and offloading those functions to the machine in which the Mercury4e will be embedded.

The company has also reduced the cost of the smaller reader from its larger relative. "A year ago it wouldn't have been possible to build such a small reader at a low cost, but by using technology developed for multimedia cell phones, we can leverage the volume production of these processors to cut the cost of the M4e," says Matt Reynolds, cofounder of ThingMagic, which is based in Cambridge, Mass. According to company, the M4e will be priced in the hundreds of dollars as opposed to the thousands of dollar for its M4 fixed reader.



*ThingMagic's Reynolds*

Because the M4e will be embedded in its customers own products rather than being stand-alone products, ThingMagic is taking a different route to market with its new reader. Previously, ThingMagic has licensed its designs to reader manufacturers such as [Omron](#) and Tyco International's [Sensormatic](#) division. With the M4e, ThingMagic says it has to be responsible for manufacturing the product albeit using contract manufacturers. "It's a different business approach because the M4e is a part, not a product," says Kevin Ashton, ThingMagic's vice president in charge of marketing and business development.

ThingMagic is convinced that the embedded reader market represents a significant potential market for the company. "The market for embedded readers is as high or even higher on a volume basis in the short term, as a lot of companies are aiming to meet retail mandates are focusing on making labels for cases and pallets before deploying fixed readers for portals. We expect to see the market grow significantly in 2005-2006," says Reynolds.

The M4e reader uses software-defined radio technology to enable it simultaneously read UHF tags based EPC Class 1 and 0 protocols, as well as ISO 18000-6B and Philips UCODE EPC 1.19. This architecture will also allow the unit to be upgraded for up-and-coming "air-interface" protocols (the way tags and readers communicate), including the forthcoming EPC Class 1 Generation 2. Typical upgrade time, says the company, is 10 seconds.

The reader can be configured to work with one or two antennas that both transmit and receive or with two antennas where one antenna transmits and the other receives. To communicate with a printer or other device in which it is embedded, the M4e uses a RS232 TTL 10-pin serial port.

WJ Communications' MPR 6000 RFID Card, on the other hand, uses a 68-pin PCMCIA connector. PCMCIA is a standard designed to provide interchangeability among mobile computers and other devices where ruggedness, low power and small size are critical. PCMCIA cards are used in mobile computers as well as digital cameras, cable TV, set-top boxes, and automobiles.

The Milpitas, Calif.-based company chose to use the PCMCIA format for its new multiprotocol reader so that the reader can be easily and quickly installed in any device that has a device that has a PCMCIA Type II slot, including handheld PocketPCs, bar code readers and printers, and smart label printers and applicators.

Set to start shipping in the fourth quarter, the MPR 6000 has two antenna ports that can both transmit and receive simultaneously. The device can read EPC Class 0 and EPC Class 1 tags and encode EPC Class 1 tags. It will also be upgradeable to read and encode tags based on the UHF Gen 2 standard through a software upgrade.



WJ's MPR 6000 reader

WJ Communications believes that the relatively low cost of the PCMCIA readers (the company plans to announce pricing within the next few days) gives users a way to circumvent the expense of trying to deploy RFID readers to get 100 percent read rates. Low-cost readers provide the option to put redundancy into any RFID reader system, according to the company, so that if a portal isn't getting 100 percent reads, additional affordable readers can be deployed.

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