

EM Micro Readies New RFID Chip

The Swiss semiconductor company will soon begin shipping a low-cost UHF chip for use in RFID labels.

March 20, 2003 - [EM Microelectronics](#) has developed an ultra-small microchip for RFID tags operating in the UHF band. The chip is just .5 millimeters by .5 millimeters and will sell for less than 10 cents in large volumes.

The [EM4222](#) is a simple, read-only chip designed for low-cost tags. It carries a 64-bit serial number that is programmed at the factory. The chip can operate at 869 MHz, 915 MHz or 2.45 GHz. Up to 120 tags can be read each second, and the tags have a read range of 2 to 20 meters (6 to 60 feet).

The EM4222 is an improved version of EM Micro's EM4022 UHF chip, which has been on the market for several years. The circuitry is optimized to take up the least amount of space on a silicon wafer. Since the cost of the wafer is the same, being able to cut more chips from it yields a lower unit cost.

EM Micro says the price of the chip in large volumes (tens of millions of units) will be below 10 US cents. The company is selling the EM4222 to label converters, who will attach the antenna and sell the finished tags. Prices for the finished tag will depend on the kind of antenna, the label stock, adhesive and other factors involved.

The new chip is already available in sample quantities. EM Micro will begin shipping commercial orders in the second quarter. The EM4222 will come in two versions. One will use a proprietary protocol for communicating with a reader. EM Micro is working on another version, which will be compliant with ISO 18000-6, a UHF air interface that is expected to be ratified by the end of the year.

The company says that the EM4222 chip can easily be adapted to make it compliant with ISO 18000-6A. That's because the chip's "front end" -- the analog part of the circuit, which runs the air interface -- doesn't need to change. Only the logic circuits, which runs the memory, bit encoding and so on, needs to be tweaked. The ISO 18000-6A version could also be adapted to handle and electronic product code.

EM has supplied samples and supporting material to several label manufacturers, including [ASK](#), [Cardintell](#), [IdealTag](#), [KSW Microtec](#), [Nagra ID](#), [Rafsec](#), [Sokymat](#), and others. The company is also working with a number of companies that produce readers. Among them are [AWID](#) and [SAMSys](#) and [iPico](#), which helped EM in the development of the EM4222 chip. iPico will also provide reader modules to other OEM manufacturers like [StId](#).

A number of manufacturers, including [Alien Technology](#) and [Matrics](#), have developed small RFID chips as a way to bring down the overall tag costs. Hitachi recently unveiled a prototype of the world's smallest chip (see [Hitachi Unveils Smallest RFID Chip](#)).

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