

Extending RFID's Reach in Europe

Palomar has produced passive UHF tags that can be read from 4 meters away with a 500-milliwatt reader.

March 10, 2002 - Faced with regulations that currently limit RFID transmitter power to only 500 milliwatts, European companies have found that passive tags often fall short of the read range they need. But a consortium of European RFID vendors promise to change that.

Working together on the European Commission-sponsored Palomar (PASSive LONG Multiple Access RFID) project, the equipment makers developed a UHF-based system (868 MHz) that can read a passive tag from up to 4 meters (12 feet) away using a 500-milliwatt reader.

In a pilot installation in Finland, a paper manufacturer used a 500-milliwatt Palomar system to successfully read passive transponders placed in the middle of paper rolls with a radius of 2 meters, according to Michael Fislage, RFID marketing manager for Atmel of Heilbronn, Germany, which makes the integrated-circuits used in the tags.

Once the EU changes the regulations to allow readers to transmit at 2 watts, Fislage expects a modified reader will be able to read a passive transponder placed inside a paper roll with a radius of up to 4 meters. In open-air tests, where the tag is unencumbered by thick rolls paper, which can absorb RF signals, the Palomar system will read a tag from up to 8 meters away using 2 watts.

Potential Palomar customers can witness the system in action on March 12 in Hamburg, Germany, where it will be demonstrated by Atmel and fellow Palomar consortium member Idesco, an RFID tag and reader maker based in Oulu, Finland. (Other members of the project are VTT Technical Research Center of Finland and Rafsec of Jyväskylä, Finland.)

"We'll have measuring equipment with us to show that the chip can really bridge the distances using only 500 milliwatts, because some people cannot believe that it's possible," says Fislage.

The group was able to extend the read range by designing a highly power-efficient system. "Unlike other UHF solutions, which need up to 500 microwatts, the Palomar chip on the transponder needs only 22 microwatts of RF power at the antenna pin for full operation," he says. "That's the input power the antenna needs for full operation. The Palomar chip itself actually needs less than 10 microwatts."

But the Palomar system provides more than a long operating range, according to Fislage. It offers anti-collision capability that isn't affected by the number of tags in the field, and it has 1 kilobit of re-programmable EEPROM memory.

"The EEPROM technology we have chosen is very stable from the data-retention point of view," says Fislage. "We guarantee the chip will retain data for at least 24 hours at temperatures as high as 250 degrees Celsius."

Because of the chips' high-temperature data retention, automotive manufacturers have expressed an interest in using Palomar tags on their cars, Fislage says. And because the Palomar hardware and software can be easily

modified for use in North America, the company has already been in talks with U.S. paper manufacturers.

Atmel and its partners expect to make the tags and readers available for pilot installations within the next six months.

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