STMicroelectronics Launches UHF RFID Chip Fully Supporting EPCglobal Class 1 Specification

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STMicroelectronics a worldwide leader in radio frequency identification (RFID) technology, has announced the availability of a UHF (Ultra-High Frequency) RFID memory chip for supply chain and logistics applications, that complies with the Version 1.0 EPCglobal standards.

The new XRA00 is a full-featured yet very low-cost integrated circuit designed for use in RFID transponders, or tags, operating in the UHF frequency bands, which are increasingly being used for object tracking in areas such as consumer retailing and baggage handling. Such applications have traditionally been monitored using bar codes; however EPC tags enable automatic, non-line-of-sight reading and unique identification, and the low unit cost of the XRA00, coupled with its increased functionality, make it a highly competitive alternative to barcoding.

When connected to its tiny antenna, the chip's power is derived from RF energy produced by the RFID reader. It is categorized as a Very Long Range device, operating up to 10 meters from a reader. The UHF technology of the XRA00 is suitable for both the 902-928MHz band of the US market and the 866-868MHz band European market. Its non-volatile memory enables users to program tags at the point of application in the supply chain, allowing a dedicated code to be given to a specific item or its data to be updated as it progresses through the system - the programming time is typically 30ms.

The device contains a 128-bit memory organized as 8 blocks of 16 bits; the first block is used to store the 16-bit CRC (Cyclic Redundancy Check), as defined by the EPC specification, and the next six blocks store the 96-bit product code itself that is used during the inventory sequence. The last block is shared between eight Lock bits used to protect the memory contents, and an 8-bit Kill code.

The XRA00 will respond only after receiving a valid and appropriate command from the reader. It fully supports the EPCglobal Class 1b anti-collision protocol with a robust mechanism designed for the noisy and unpredictable RF conditions that are typical of RFID applications; anti-collision schemes are required for the common situation where many tags are within range of the same reader, such as in a retail environment.

For normal operation the device offers Inventory, Read, Program and Erase functions. Each bit can be read individually; writing is performed by 16-bit block. In addition it provides a KILL command - often referred to as a 'Privacy' command - which can be used to permanently deactivate the device at the end of its working life, for example as a customer leaves a store.

STMicroelectronics was an early member of the Auto-ID Center, an industry consortium dedicated to creating and implementing next-generation automatic identification solutions, primarily RFID. It was the Center that developed the 'ePC AutoID Class I-b UHF' open specification which defines the operation of Very Long Range RFID applications, and which is supported by the XRA00. Over a period of many years ST has promoted and supported the use of other worldwide standards for RFID products, such as ISO 14443 and ISO 15693 for Short and Long Range 13.56MHz contactless devices. (Administrative functions of the Auto-ID Center have now been subsumed into EPCglobal, a not-for-profit organisation charged with the promotion of the Electronic Product Code as a global standard).

Built using a highly reliable and mature CMOS technology with embedded EEPROM, the XRA00 is well-suited to address high volume, cost-driven markets. It features 40 year data retention and the capability of more than 10,000 Write/Erase cycles, ensuring support for the requirements of long life applications.

Samples of the XRA00 are available now and volume production is planned for the end of June 2004. US pricing is $0.05 per 100,000 units. It can be supplied as thin unsawn wafers, or as bumped and sawn wafers.

More information at www.st.com