Is UHF RFID Adoption a Problem?

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RAIN RFID

Recently I read an article that suggested that UHF RFID (RAIN) adoption is not progressing at the speed that was expected and that there are several areas that the industry needs to address to increase adoption rates. I sat and thought about this for a while and decided that a little history lesson was needed before I could address the real issue.

RFID History

RFID, as we all know, has been around for a long time. Depending on who you believe, the technology goes back to the 1940's as "Friend or Foe" identification of aircraft, with adoption of RFID as we think of it starting in the 1960s or 1970s. The early applications were mostly about identification for access purposes (building access, parking access, etc.) or animal identification.

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It wasn't until the first standards for RFID that were published that the technology really started to take off. This was early 1990s for LF animal ID, mid 1990s for the HF standards, and around 2004 for the UHF standards. These standards have all gone through revisions over time, but the existence of the standard has meant that the technology became available from a variety of manufacturers.

Of course the existence of the standards is only one step in the broad adoption of the technologies and even though this has encouraged manufacturers to become involved in the technologies, competing with each other to bring prices to a reasonable level, we still have to look at the other factors that result in the acceptance of a technology.

Probably the biggest factor in the acceptance of any technology is knowledge. As I have already stated, UHF RFID didn't have any standards until about 2004, but of course there were examples of UHF technology in use before this. These "proprietary" technologies had gained some traction in closed loop applications, but they had not received the acceptance that they were looking for.

In 2004/5 the standards community were working on a new UHF air-interface standard that was published as EPC UHF Gen2 (later published as ISO/IEC 18000-6 Type C). This new air interface standard was for a much improved technology and for the first time we began to see the type of performance that might make UHF RFID a widely accepted technology.

EPCglobal™ UHF Gen2/ISO/IEC 18000-6 Type C (later to become ISO/IEC 18000-63) was broadly backed (both in the standardization phase and later in manufacturing) by many companies. We now had a technology that was capable of being scaled and used in large open applications. And over time we have modified those standards moving towards UHF Gen2v2 (and the new ISO/IEC 18000-63 to be published later in 2015), adding new features and growing the capabilities of the technology while maintaining the backwards compatibility to allow existing systems to keep going.

RFID Progress

For all that RFID is not a new technology; the growth of the technology has been astounding. If we think about the progress of bar codes in the retail system it took about 25 years before it became widely used, from the first package of Wrigley's gum, sold in June 1974, to over one million companies globally using the U.P.C. symbol (now called an EAN symbol).

In RFID, especially in UHF RFID, we have only had a good technology for ten years and one of the chip manufacturers

announced that they have just sold their 10 billionth UHF RFID chip. In fact sales of UHF chips in 2015 are projected to be about seven billion chips (from all manufacturers). By the year 2020 the estimates show that there will be about 100 billion UHF RFID tags in circulation.

Is Adoption Slow?

If you look at the numbers, then adoption of RFID technology is moving ahead at a very good pace, but of course it can never happen fast enough for the manufacturers of the equipment. So where have we gone wrong?

The question can be broken in two parts: the lack of solutions and the lack of marketing. The initial use cases for RAIN RFID were based on pallets and cases and it soon became apparent that this was not the best use case for UHF RFID. Although on the surface it appears to be a perfect fit, the difficulty to create a reliable solution meant that it did not gain the acceptance that was forecast. The development of technology improvements has led to the identification of new use cases that better suit the technology.

The answer also partially lies in the marketing of the technology. Until recently we have not had an organization focused on marketing the technology and explaining (educating) what the technology is about and what it can do.

RAIN, the UHF RFID Alliance was formed as a part of AIM in 2014 to do exactly that. The Alliance was formed to be a marketing organization whose sole purpose is to increase adoption and grow the market for passive UHF RFID. Founded by Google, Impinj, Intel, and Smartrac, the Alliance grew to 90 members worldwide in its first 18 months. The members meet regularly by phone and in person to look at ways to share information about the technology and its use.

If we look at the numbers, then we see that from 2012 to 2014 the compound annual growth rate (CAGR) of RAIN RFID was 17.8%, resulting in 3.84 billion RAIN RFID tags being sold in 2014, according to IDTechEx Research. The CAGR from 2015 to 2020 will be 26%, with 18.8 Billion RAIN RFID tags expected to be sold in 2020. These are pretty impressive numbers but do not tell the whole story. This kind of growth is very promising in an industry like ours, but I suspect that it could be much higher if we have a mechanism to tell potential users about the technology and the capabilities it offers. This is the goal of RAIN, to be that one stop place where a potential user of the technology can get the information they need.

Future Adoption

Obviously it is not a lack of technology, capability or interest that could be holding back adoption, so what are the key issues that we can look at?

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The biggest issue is marketing. The industry has done a poor job of marketing this technology. Many companies do a great job of marketing themselves, but they have not explained what the technology is, what is does, and how it can best be used. This is where the RAIN Alliance steps in. With members from all sectors including users, RAIN is identifying where there is a need to market and promote the technology. The various workgroups are working to produce white papers, case studies and other material that will help the community to understand what can be done.

While we are looking at the “educational” aspects of the technology, we are also reviewing some of the technical issues. Members of the RAIN RFID Alliance are investigating the issues associated with tag testing and starting to pull together some material to help companies decide on the best fit for tags for their application.

We are also just starting to look at the issues around interoperability. Many people know that a new version of the

GS1 EPC UHF Gen2 specification was released in 2014, but many do not understand that the significant changes introduced in this document are not all compatible with each other. While the new specification introduced many new concepts and useful features to passive UHF RFID, many of these new ideas are options in the specification. The differences in the various versions of the specification are detailed in the RAIN publication "v1 vs v2". RAIN's work on interoperability will make these options easy to understand and easy to specify as tags and readers are specified and ordered.

Summary

There are many reasons why adoption of a particular technology can be seen as slow:

- Too soon after creation (technology not sufficiently developed)
- Lack of information, or single source to get information about the technology
- Lack of well-developed solutions
- Lack of education about the capabilities and value
- No market recognition
- No perceived benefit
- Confusion

RAIN is working to eliminate all of these issues and make the name RAIN become synonymous with a functional, reliable, capable, secure technology – passive UHF RFID.

Let it RAIN!!

ABOUT RAIN RFID ALLIANCE

The RAIN RFID Alliance is an organization founded in April 2014 to promote awareness, increase education and support the universal adoption of UHF RFID technology. RAIN members are manufacturers, distributors, resellers and researchers working with the EPC Gen2 UHF RFID specification, incorporated into the ISO/IEC 18000-63 standard.

RAIN RFID is a wireless technology that connects billions of everyday items to the Internet, enabling businesses and consumers to identify, locate, authenticate and engage each item. For more information, visit www.RAINRFID.org.

The RAIN RFID Alliance is part of AIM Global, the worldwide authority on automatic identification, data collection and networking in a mobile environment. AIM is dedicated to accelerating the growth and use of Automatic Identification and Mobility technologies and services around the world. For more information, visit www.aimglobal.org.

RAIN RFID

One Landmark North
20399 Rte 19
Cranberry Twp., PA 16066

If you're interested in having your company become a member of RAIN or have any questions about the RAIN alliance, please send RAIN an e-mail: info@rainrfid.org