



Press Release

EECC study compares the capabilities of UHF RFID transponders; Special focus on sustainability in the circular economy

Neuss, 08.10.2019. At its Innovation Day in Neuss on 10 October, the European EPC Competence Center will introduce the latest version of the leading UHF Tag Benchmark Report. This comprehensive report compares 450 transponders, benchmarking their technical capabilities in all applications imaginable. This year's measurements focus on sustainability in day-to-day processes and the circular economy.

RFID tags enable sustainable processes

Conrad von Bonin, CEO of EECC, explains their ambitious goal: "Data stored on the tags will help optimise shipments with respect to packaging and routing. The affordability of UHF RFID lowers hurdles to large scale deployment, which in turn makes self-learning approaches possible." This AIDC technology provides a two-fold foothold for sustainability. For the first time ever, the study involves a compostable tag from Stora Enso, which makes intelligent technology feasible even for one-way processes.

Thomas Fell, CEO of GS1 Germany, also underscored the added value of standardisation: "Ideally, returnable load carriers are used in the circular economy, to eliminate waste. This is the most common application, served by a wide variety of standardised load carriers, ranging from small load carriers in the automotive sector, to diverse collapsible crates for dairy, fish and fresh vegetables, as well as complete pallets themselves."

The study takes this diversity into account, examining which transponders are best suited to specific applications and environments. Because payloads can also influence readability, a wide range of materials were measured. The result is an authoritative basis for the reliable selection of suitable tag type, thanks to new visual depictions (see diagram 1).

RFID tag interaction in IoT environment

Applied tag performance is not the only deciding characteristic that needs to be considered when choosing the appropriate tag. Deployment in increasingly diverse reader structures, in combination with sensor technology, increases the importance of tags as IoT devices, as well as the need to safeguard against misuse.

A number of the study's measurements are focussed on tag-network interaction, in terms of feasibility as well as security. The latest cryptographic methods -- for example, as implemented by the NXP DNA and EM aura-C chips -- are also examined in detail.

Last but not least, tags can also interfere with each other; dual-frequency tags such as the Lab IDs DF426 can even leverage UHF for logistic applications and NFC for payment applications in parallel. Accordingly, EECC engineers have taken all of these different possible interactions into consideration, with results depicted visually for structured, easy evaluation (see photo 2).

Targeted at experts since its initial publication in 2007, the study is the most important and comprehensive source of data for deployment of UHF RFID tags. The latter are increasingly showing up in everyday life, from automobiles to textiles and general merchandise, offering enormous opportunities for the optimisation of sustainable processes.

About EECC

GS1 Germany, Deutsche Post DHL and METRO Group established the European Competence Center (EECC) in 2004 as a leader for solutions and services around GS1's Electronic Product Code (EPC) and the exchange of related, event-based supply chain visibility data (EPCIS).

In its innovation lab in Neuss, EECC explains how to capture and use such data, developing new solutions and business models for industry, logistic and retail applications.

In 2005, EECC became the first European laboratory certified by EPCglobal as an EPC Performance Test Center.

Beginning in 2006, EECC's RFID Academy cooperates with the Auto-ID Lab St. Gallen / ETH and the RWTH International University in Aachen to provide intense training in the areas of EPCIS, Auto-ID, RFID and the applicable standards, software and architecture.

Since 2007, EECC's annually published "*UHF Tag Performance Survey (UTPS)*" serves as a global benchmark for RFID transponder testing and certification.

2011 saw EECC introduce elective certification of tags for specific applications.

EECC' designs EPCIS-based solutions that enable the handling of large volumes of serialised data. This portfolio includes custom-made software to enable the traceability and visibility of supply chain assets, across all data carriers (RFID, barcode, digital).

Tag manufacturers can have EECC test and certify their tags for specific applications.

EECC's own *EPCAT* platform was certified for compliance to GS1's EPCIS 1.1 in May 2015; the "+1" product family provides EPCIS event data to customers in real time. Also that year, EECC began to provide cloud-based software services, extending the portfolio to include SaaS (Software as a Service) in 2017.

The history of the study

- 2007: EECC's annually published "*UHF Tag Performance Survey (UTPS)*" serves as a global benchmark for RFID transponder testing and certification.
- 2008: EECC incorporated material-dependent models for the first time.
- 2009: Addition of a dedicated UTPS chapter regarding on-metal transponders.
- 2010: Proximity measurements -- the first of their kind -- are added for each transponder.
- 2012: World-first material-dependent backlink matrix.
- 2013: Dedicated chapter on chip sensitivity.
- 2014: Performance parameters for chip read/write operations.
- 2015: Considerations of susceptibility with respect to reader signals.
- 2016: Analysis of sensor functionality and supplementary features (e.g., memory).
- 2018: Examination of IoT features and *Untraceable* command.
- 2019: New structure and expanded IoT considerations.

The new **UTPS 2019/2020** is now available € 995 individually, or for €495 a year when ordered as a 5-year subscription.

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