

Very high bandwidth contactless transmission

> Description

Very high bandwidth contactless transmission is a system for transmitting a video flux via a contactless interface to take advantage of the performance of contactless reader or “cart-to-read” links depending on bit rate. This device improves image fluidity as bit rate increases.



• Contactless transactions - Extension of standard ISO 14443

Presentation

Increasing the bit rate of contactless interfaces should enable ever-larger quantities of data to be exchanged between readers and cards without making transaction time prohibitive. The applications we are aiming at include electronic passports an biometric data, the future national health card with X-rays, or NFC phones exchanging data such as photos, videos and music. Increasing the performance of a proximity contactless link (several centimetres, 13.56 MHz frequency) should make it possible to maintain confidentiality in exchanges of this type, in contrast to conventional radio transmission systems such as WiFi or Bluetooth.

To ensure the interoperability of all objects using this new technology, Leti is participating in international standardisation groups to promote the adoption of these developments, such as an extension of standard ISO 14443, the standard currently applying to contactless cards, which is included in the NFC (Near Field Communication) standard.

As far as the bit rate between a reader and contactless card is concerned, the current standard proposes 106 Kbps, 424 Kbps and 848 Kbps. This increase in bit rate is achieved by simply reducing the symbolic time. The Leti proposes to go beyond the 1Mbps barrier by using multi-level modulations to avoid penalising the system's passband, which is inversely proportional to the system's capacity to transmit energy to the passive card.

Today Leti proposes bit rates of 1.7Mbps, 4.4Mbps and 5.1Mbps, using multi-level amplitude or phase modulation on the carrier in the reader-card direction and multi-phase modulation on a sub-carrier in the card-reader direction.

Technologies developed

- 13.56 MHz contactless reader
- Reader and card antennas
- Multi-chip contactless smartcard

Associated research topics

- Inductive energy transfer at 13.56 MHz
- Multi-level modulation / encoding in HF domains
- Signal processing
- Embedded numerical processing on programmable circuits
- Design of analogue integrated circuits

Potential fields of application

- Electronic passports
- National health cards
- European citizen cards
- Mobile Phones