



Calypso Application

License for card and portable objects.

1. License Policy General Presentation

Innovatron is at the origin of the developments of the smart card technology since 1974.

Since 1992, a major program of Research & Development in partnership with the RATP and the SNCF has resulted in Innovatron extending the application of the Smart Card technology, enabling its use through a contactless communication interface, particularly suitable for public transport applications.

During this program, Innovatron developed proprietary technology, the subject of many patent applications protecting the investments made, and used in particular in the European remote ticketing projects, called *Icare* and *Calypso*.

The *Calypso technology* and the international standard *ISO/IEC 14443 B* directly result from the research done by Innovatron.

Innovatron favors a wide deployment of these technologies and offers licenses of various kinds suiting the situations of different licensees, under fair and non-discriminatory conditions.

Besides patents license, Innovatron also offers licenses to access the Calypso specification, masked components and know-how transfer in order to ensure the best compatibility between the products for public transport.

Only portable objects manufacturers implementing these technologies need to be licensed.

A product integrator or user (public transport company or authority, parking applications, etc.) or a reader and terminal manufacturer do not have to take a license. If you are a user, you might find the right solution for your needs by contacting other Calypso users. In this case, please contact the Calypso Network Association (<http://www.calypsonet-asso.org>).

2. The “ISO14443 Type B” Patents

Some patents managed by Innovatron relate to contactless communication technologies used for example in the ISO/IEC 14443 standard. The license for these patents concern mainly the chip manufacturers (if you are a chip manufacturer, contact us for more information).

3. The Calypso Patents

The Applicative (Session/Ratification) patent family and technical elements are accessible under license to allow the manufacturing of Calypso cards and other portable objects.

The licenses are accessible to any company, under fair and non-discriminatory conditions, and includes access to the Calypso specifications. Indicative license conditions are given in the following pages.

Note that integrators and users utilizing readers and cards manufactured under license do not need to take a license nor pay any fee for them. For example a system integrator manufacturing terminals from Calypso OEM readers, and selling cards bought to a Calypso card manufacturer, may freely manufacture and sell terminals and cards.

Anyone may access the Calypso specifications. The Calypso specifications describe in detail the Calypso transaction between a Calypso contactless reader and a Calypso microprocessor card. They include the Calypso card and SAM specifications (see Chapter 7).

For more information, please contact us:

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5. License for Portable Objects Manufacturers (microprocessor cards)

The licenses for portable objects (e.g. cards) allow the use of the Applicative Patents to develop a Calypso compliant software and market the portable objects including it.

The duration of the license is the duration of the patents for the patents license and specification, and of the market for the contractual products. The acquirer has the possibility of terminating the contract at any time.

The financial conditions of the contract include an initial payment and royalties. The initial payment depends on the licensed territory and royalties chosen.

Note that integrators and users of cards and components manufactured under license do not need to take a license nor pay any fee (e.g. card embedders integrating OEM Calypso components).

This is the case for example when buying such products as:

- CD21 from STMicroelectronics, for embedding and card manufacturing,
- Celego G1 from Gemalto,
- Tango for Calypso from ASK.

Indicative examples of typical financial conditions for the license agreements for portable objects are given below.

“Applicative Patents for Portable Objects”

| <i>License</i> | <i>Low Royalties</i> | or | <i>Low Initial Payment</i> |
|---|----------------------------------|----|--------------------------------|
| Initial Payment | 75 k€ | | 10 k€ |
| Royalties (on the net selling prices, base of 2.5 euros min) | 2% 1.5% after 5 million units | | 4% 3% after 5 million units |

Licensees having access to the “Low Royalties” license, may also benefit from specific conditions for large scale deployment on multi-application java cards, such as SIM phone cards, based upon the quantities of such cards manufactured per year.

Indicative conditions for large scale phone card deployment are given below.

“Applicative Patents for Portable Objects: SIM phone cards”

| <i>Quantity</i> | <i>SIM Large Scale Royalty</i> |
|---------------------|--------------------------------|
| > 1 million / year | 0,0250 euro |
| > 5 million / year | 0,0125 euro |
| > 10 million / year | 0,0075 euro |

For more information about the Calypso standard, please visit the Calypso web site at:

<http://www.calypsonet-asso.org>

6. Terminals or OEM readers Manufacturers

Manufacturers of terminals and readers do not need a license.

The license rights are included in the Calypso SAM used in the equipment.

If you are a terminal or reader manufacturer, you may request a Calypso audit of your equipment in order to be listed in the Calypso product list. The audit process is described on the Calypso technical web site:
<http://www.CalypsoStandard.net>

7. Indicative summary of the Calypso specifications

The Calypso specifications define precisely the card / terminal transaction and allow the compatibility between different suppliers.

They also describe the security features of the Calypso transaction, including the SAM management.

The Calypso specifications comply with the following standard:

- ISO 7816 for the smartcard application.
- ISO 14443B for the contactless communication.
- ENV1545 for the transport data structures.

The Calypso specifications presently include the main following documents:

Calypso Specification for Ticketing

| <i>Documentation</i> | <i>Reference</i> |
|---|--|
| Calypso Specification Rev.3 - Portable Object Application | 060708-CalypsoAppli 060709-CalypsoFiles |
| Calypso Card Application Specification, Rev 2 | 010209-MU-CalypsoCardSpec 060908-MU-CalypsoR2Amd1 |

Calypso Technical Notes (to help implementing Calypso)

| <i>Documentation</i> | <i>Reference</i> |
|-------------------------|------------------|
| Calypso Technical Notes | CalypsoTNxxx |

First Generation of Calypso Cards

| <i>Documentation</i> | <i>Reference</i> |
|----------------------|--------------------|
| CD Light | 020906-MU-CDLight |
| CD97-BX | 030312-MU-CD97BX |
| CD97 | 000530-SE-SDI-CD97 |

The following specifications are also available from the Calypso technical resource:

CD21 Calypso Cards

| <i>Documentation</i> | <i>Reference</i> |
|----------------------|-----------------------|
| CD21 | UmCd21_2kPlus8KOrgCom |
| CDS3 | 071001-UM-CDS3 |

SAM Specifications

| <i>Documentation</i> | <i>Reference</i> |
|----------------------|---------------------|
| SAM C1 | 101010-SamCalypso |
| SAM S1 E | 041115SDI-SE-SAMS1E |
| SAM S1 D | 000522-SE-SDI-SAMS1 |

These specifications are available from the Calypso technical web site: <http://www.CalypsoStandard.net>

8. Indicative summary of the Applicative patents

| Name | Summary | Application Number | Application Date | Priority claimed | Expiry date |
|--------------|--|--------------------|------------------|------------------|-------------|
| Session | Writing all the new data without erasing the previous data, and validation of all the new data at the end of the session | PCT/FR99/00837 | 9/4/1999 | FR 98 04453 | 13/11/2022 |
| Ratification | Registering in the memory of the portable object a ratification bit according to whether or not the transaction has been completed after debit with the delivery of the counterpart service and, at the next transaction, delivery of the counterpart service with or without debit according to the state of the ratification bit | PCT/FR99/02470 | 13/10/1999 | FR 98 12770 | 13/11/2022 |

Countries:

ARIPO (GH GM KE LS MW SD SZ UG ZW)

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AE AL AU BA BB BG BR CA CN CU CZ EE GE HR HU ID IL IN IS JP KP KR LC LK LR LT LV MG MK MN MX NO
NZ PL RO SG SI SK SL TR TT UA UG US UZ VN YU ZA