

CALYPSO PRODUCT LIST

Jul 2015 Cards, Tickets and SAM Calypso Rev 3 & 2

This note contains the list of *Calypso cards* and *Calypso SAMs* validated for compatibility with the Calypso specifications.

It also contains a list of some contactless tickets often used as complement in Calypso systems.

The main characteristics of the products are also given.

Introduction

Calypso cards ensure a high level of security and functionalities for contactless transactions, making them particularly suitable for private monetary transactions, such as network transit ticketing, loyalties and services applications.

However, very low cost contactless tickets are sometimes needed as a complement. These tickets offer a low level of security and their use should be evaluated carefully for security risks.

Note: Any request for inclusion in the present product list may be sent to Innovatron (calypso@innovatron.eu).

Calypso Cards and Applets

Calypso Cards are microprocessor cards validated as compliant with the *Calypso Specification for Portable Object Specification (010209-MU-CalypsoCardSpec or 060708-CalypsoAppli)* and with the Calypso Technical Notes.

Since October 2014, Calypso Networks Association has defined a product certification.

The following cards and applets are validated for compatibility with the *Calypso Specifications*:

Name	Calypso Revision	Company	Date	CNA Certified
CD21 R32 User Manual UM CD21 Rev32 App Rev 2	3.2 3.1 2	STMicroelectronics	2014-04-04	2014-11-25
Calypso G1 User Manual v1.4	3.2 3.1 2	Gemalto	2014-10-27	2014-03-25
TimeCOS Calypso Rev 3 v1.0	3.1	Watchdata	2015-07-09	2015-07-10
Tango MultiApp v3 STE110004 v1.4	3.1 2	ASK	2015-03-24	2014-04-14
SCA - Java Applet 071003-UM v1.3	3.1	Spirtech	2014-05-31	-
CNA Calypso rev 3.1 Applet v1.0	3.1	Trusted Labs	2013-10-29	-
TL Java Applet v2.2.4	3.1	Trusted Labs	2012-12-12	-
Calypso Plus on Prisma CP DDA UM_CALYPSO_CP_DDA Rev1	3.1	STMicroelectronics	2012-09-24	-
SCA - Java Applet 071003-UM v1.2	3.1	Spirtech	2012-03-21	-
Calypso Applet v2 Cosmo Fly 4.0 - 9000104 issue 2	3.1 2	Oberthur Technologies	2012-02-24	-
Calypso Applet v2 Cosmo Fly 4.0 - 9000104 issue 1	3.1 2	Oberthur Technologies	2012-02-16	-
Tango For EMV STE100004 v1.2	3.1 2	ASK	2011-03-30	-
CityGo Calypso 9000049 v4	3.1 2	Oberthur Technologies	2011-02-16	-
CityGo BMS 9000065 v2	3.1 2	Oberthur Technologies	2011-02-16	-

CD21 R3 Um_Cd21Rev3_Org, v1 UM_Cd21Rev3_App, v1 UmCd21_2kPls8KOrg, v4	3.1 2	STMicroelectronics	2010-12-13	-
CDS3 071001-UM v1.4	3.1 2	Innovatron	2009-03-27	-
SCA - Java Applet 071003-UM v1.0	3.1	Spirtech	2009-06-20	-
TL Java Applet v1.1.0	3.1	Trusted Logic	2009-05-28	-
TimeCOS Calypso v1.5.6	2	Watchdata	2013-02-11	n.a.
Tango For EMV STE100004 v1.1	2	ASK	2011-02-22	n.a.
Morpho SC 0000079583-04 v4	2	Morpho	2011-01-18	n.a.
Celego Citi 4K 051207 v1	2	Axalto	2007-06-05	n.a.
TimeCOS CD v1.1	2	Watchdata	2007-01-08	n.a.
Calypso DS SK48077-02 v1.2	2	Sagem	2006-11-20	n.a.
CD21 UmCd21_2kPls8KOrg v4	2	STMicroelectronics	2005-01-17	n.a.
Tango For Calypso STE020006 v1.5	2	ASK	2005-03-20	n.a.
CD97-BX 030312-MU v1.1	2	Innovatron	2003-10-20	n.a.
CD Light 020906-MU v1.4	2	Innovatron	2002-09-15	n.a.
GTML2	2	ASK	2002-07-30	n.a.
BMS-2	2	2004-03-15	2004-03-15	n.a.

n.a.: Not Applicable.

Note: Two other obsolete products, the *CD97* and the *GTML*, were certified for compatibility with the Calypso Specification **Rev 1**.

Calypso SAM

The following SAMs are validated for compatibility with the Calypso Specifications:

<i>Name</i>	<i>Validation Date</i>	<i>Calypso Revision</i>	<i>Features (backward compatible)</i>
SAM-C1	2013-11-21	3.2 3.1 2	AES / Triple DES / DESX / DES Ciphred exchanges. Preliminary authentication.
SAM-C1 Rev 3.1	2011-10-25	3.1 2	126 work keys Triple DES / DESX / DES CAAD, blacklist, variable signature size
SAM-S1 E1 / F1	2006-12-25 2008-03-05	3.1 2	
SAM-S1 D4 SAM-S1 D6 SAM-S1 D7	2001-07-23 2002-12-02 2005-01-21	2	62 work keys 4 SAM management keys Keys managed by index and KIF/KVC Digital signature, DES ciphering, Lockable Management of SAM personalization DESX / DES

Contactless Tickets

Very low cost contactless tickets are sometimes needed as a complement to Calypso cards. These tickets offer a low level of security and their use should be evaluated carefully for security risks.

The following table lists some contactless memory products used in Calypso systems (see the products specifications for the detailed characteristics).

<i>Name</i>	<i>Contactless</i>	<i>Memory</i>	<i>Additional features</i>
CTM512B	ISO14443B (1,2)	512 bits	8 bytes serial number Read only lockable zones 0 to 128 OTP bits One way counter with anti-tearing protection 400 to 272 bits of user memory
CTS512B	ISO14443B (1,2)	512 bits	8 bytes serial number Read only lockable zones 0 to 128 OTP bits 432 to 304 bits of user memory
SRI 512 SRT 512	ISO14443B (1,2)	608 bits	8 bytes serial number Read, Write and Write lockable zones 160 OTP bits 288 bits of user memory Two one-way-counters with anti-tearing protection
SRIX 4k	ISO14443B (1,2)	4,192 bits	8 bytes serial number Read, Write and Write lockable zones 160 OTP bits 3,872 bits of user memory Two one-way-counters with anti-tearing protection

Further References

Calypso web site	www.calypsonet-asso.org
Calypso technical web site	www.CalypsoStandard.net
Innovatron web site	www.innovatron.fr
Calypso Revision 3 Specification - Portable Object Application, v3.1 & v3.2 Specifications of the Calypso portable object application, Revision 3.	060708-CalypsoAppli
Calypso Specification for Ticketing, Card Specification, v2.4 External specification of the Calypso Rev.1 and Rev.2 cards.	010209-MU-CalypsoCardSpec
Calypso Specification for Ticketing, SAM Specification, v1.1 External specification of the Calypso SAM.	010210-MU-CalypsoSAMSpecs
CD Light User Manual, v1.2	020906-MU-CDLight
CD97 BX User Manual, v1.0	030312-MU-CD97BX
CD21 User Manual	UmCd21_2kPls8KOrgCom
CDS3 User Manual	071001-UM-CDS3
'CNA Calypso rev 3.1 Applet' User Guide, v1.0	130507-CnaCalypsoApplet_UserGuide
SRI512 Data Sheet	SRIX512-DataSheet-Apr2004
SRIX4K Data Sheet	SRIX4K-DataSheet-Apr2004
Tango/CTS/CTM Information	(contact ASK: armand.cochet@ask.fr)
TimeCOS Information	(contact Watchdata: sert.thierry@watchdata.com.sg)
SAM-C1 information	(contact Spirtech: spirtech@spirtech.com)
SAM-S1 information	(contact Spirtech: spirtech@spirtech.com)

Contact

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