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PREMIER MINISTRE

Secrétariat général de la défense et de la sécurité nationale

Agence nationale de la sécurité des systèmes d'information

Certification Report ANSSI-CC-2012/30

ID-ONE Cosmo V7.0.1-n Smartcard with patch 077121 on NXP P5CD081 V1A (Standard Dual), P5CC081 V1A (Standard) and P5CD041 V1A (Basic Dual) components

Paris,

Courtesy Translation

SÉCURITÉ CERTIFICATION

Warning

This report is designed to provide sponsors with a document enabling them to assess the security level of a product under the conditions of use and operation defined in this report for the evaluated version. It is also designed to provide the potential purchaser of the product with the conditions under which he may operate or use the product so as to meet the conditions of use for which the product has been evaluated and certified; that is why this certification report must be read alongside the evaluated user and administration guidance, as well as with the product security target, which presents threats, environmental assumptions and the supposed conditions of use so that the user can judge for himself whether the product meets his needs in terms of security objectives.
Certification does not, however, constitute a recommendation from ANSSI (French Network and Information Security Agency), and does not guarantee that the certified product is totally free of all exploitable vulnerabilities.

Any correspondence about this report has to be addressed to:

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Agence nationale de la sécurité des systèmes d'information
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Certification report reference

ANSSI-CC-2012/30

Product name

ID-ONE Cosmo V7.0.1-n Smartcard with patch 077121 on NXP P5CD081 V1A (Standard Dual), P5CC081 V1A (Standard) and P5CD041 V1A (Basic Dual) components

Product reference

Java Card platform Version : 7.0.1-n with patch 077121

Protection profile conformity

[PP/0304], version 1.0b

PP SUN Java Card™ System Protection Profile Collection, August 2003

Evaluation criteria and version

Common Criteria version 3.1

Evaluation level

EAL 5 augmented

ALC_DVS.2, AVA_VAN.5

Developers

Oberthur Technologies
50 quai Michelet
92300 Levallois-Perret, France

NXP Semiconductors GmbH
Stresemannallee 101
D-22502 Hamburg, Germany

Sponsor

Oberthur Technologies
50 quai Michelet
92300 Levallois-Perret, France

Evaluation facility

THALES - CEACI (T3S – CNES)
18 avenue Edouard Belin, BPI1414, 31401 Toulouse Cedex 9, France
Tél : +33 (0)5 62 88 28 01, mail : nathalie.feyt@thalesgroup.com

Recognition arrangements

CCRA

The product is recognised at EAL4 level.

SOG-IS

Introduction

The Certification

Security certification for information technology products and systems is governed by decree number 2002-535 dated April, 18th 2002, modified. This decree stipulates that:

- The French Network and Information Security Agency draws up **certification reports**. These reports indicate the features of the proposed security targets. They may include any warnings that the authors feel the need to mention for security reasons. They may or may not be transmitted to third parties or made public, as the sponsors desire (article 7).
- The **certificates** issued by the Prime Minister certify that the copies of the products or systems submitted for evaluation fulfil the specified security features. They also certify that the evaluations have been carried out in compliance with applicable rules and standards, with the required degrees of skill and impartiality (article 8).

The procedures are available on the Internet site www.ssi.gouv.fr.

Contents

1. The product

1.1. Presentation of the product

The evaluated product is the ID-ONE Cosmo V7.0.1-n Smartcard with patch 077121 on NXP P5CD081 V1A (Standard Dual), P5CC081 V1A (Standard) and P5CD041 V1A (Basic Dual) components, developed by Oberthur Technologies :

- compatible with the Java Card 2.2.2 and VISA GlobalPlatform 2.1.1 specifications ;
- masked on some variations (in terms of memory size or interfaces) of a family of NXP components.

These different product configurations are listed in the following table :

Name of the product	Java Card platform version	Patch code version	Reference of the component receiving the application	Mask reference identifying the component.
Standard Dual	7.0.1-n	077121	P5CD081 V1A	18 01 1F
Standard	7.0.1-n	077121	P5CC081 V1A	18 01 1A
Basic Dual	7.0.1-n	077121	P5CD041 V1A	18 01 1B

1.2. Evaluated product description

The security target [ST] defines the evaluated product, the evaluated security features and the security objectives for the environment.
This security target conforms to the [PP/034] protection profile.

1.2.1. Product identification

The constitutive elements of the product are identified in the configuration list [CONF].
The certified version of the product can be identified by the following:

- Reading the « Device Coding Byte » DC2 value (in bold in the following answer) using the answer to the “GET DATA” command with tag DF 50 (see [GUIDES]) as indicated in the table bellow.

```
⇨ 80 CA DF 50 17
<= DF 50 14 00 00 26 66 01 95 48 73 00 1A 38 10 40 41 11 07 43 31 34 31 90 00
```

DC2 value	Component reference
44	P5CD081V1A
43	P5CC081V1A
42	P5CD041V1A

- Reading the Tag01 and the Tag03 values (in bold in the following answer) using the answer to the "GET DATA" command with tag DF 52 which returns the operating system identification:

```
⇨ 80 CA DF 52 00
<= DF 52 4A 01 01 1A 02 02 04 50 03 02 18 01 04 06 07 71 21 01 82 0A 05 01 00 06
17 83 00 00 3F 3F 00 F9 04 00 00 00 01 00 00 00 00 00 FF FF FF 00 00 00 07 01 0F
08 0B 00 31 C0 64 1A 18 01 00 00 90 00 09 09 41 E8 01 F7 C0 03 CA E9 F2 90 00
```

Tag01 and Tag03 values	Operating system reference
18 01 1F	ID-One Cosmo V7.0.1-n Standard Dual
18 01 1A	ID-One Cosmo V7.0.1-n Standard
18 01 1B	ID-One Cosmo V7.0.1-n Basic Dual

- The 3 first bytes following the tag 04 and its length (**06**) identify the version of the operational code. Here, the version is **07 71 21**.

1.2.2. Security services

The product provides the main following security services:

- The card pre-personalization services;
- The personalization of applets with loading, installation and deletion under the GP Card Manager and associated security domain controller and DAP mechanism (Data Authentication Pattern);
- The interfaces API service dedicated to applets and access to these API;
- The management of GP and signature keys;
- The firewall for segregation of objects or applets;
- The standard GP services such as logical channel and the secure channel protocol (SCP01, SCP02) as well as the proprietary secure channel protocol (SCP03).

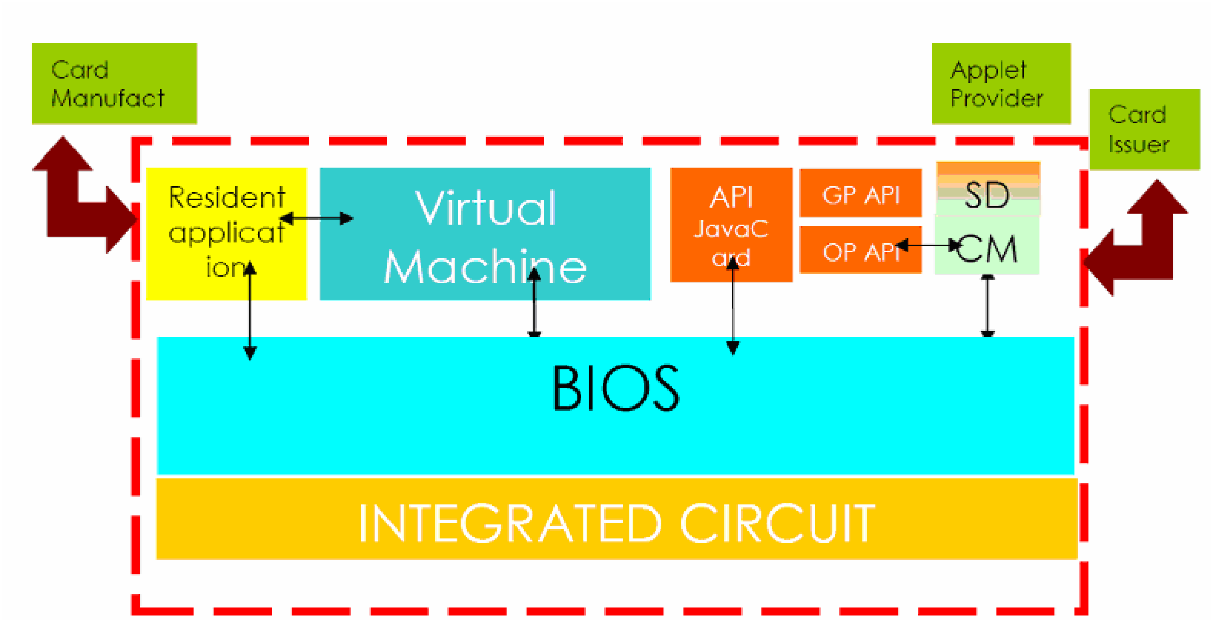
A detailed list of security services is available in [ST].

1.2.3. Architecture

The product consists of:

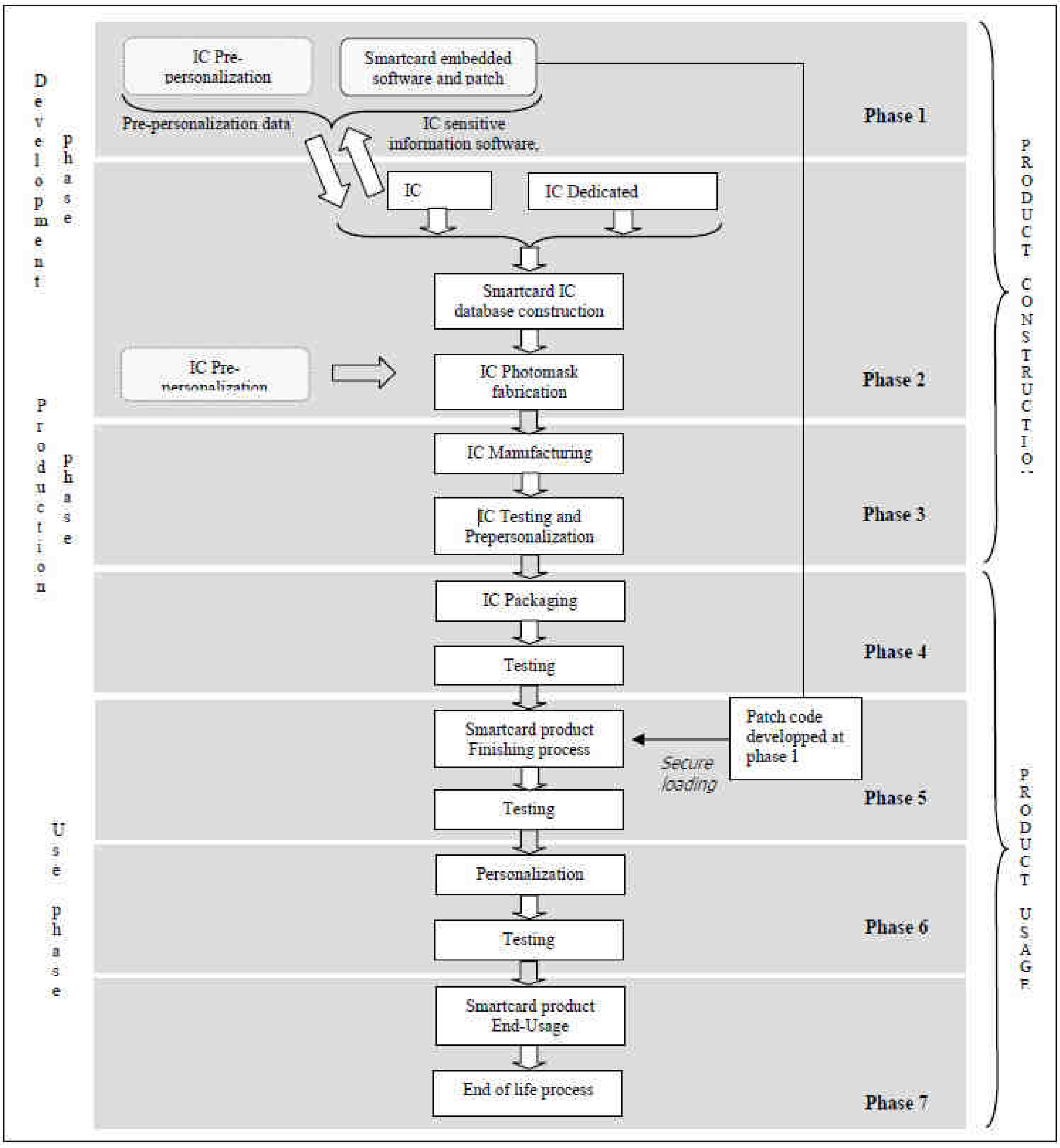
- a microcontroller, providing hardware features, and its cryptographic library ToolBox;
- a BIOS providing the interface between native applications, such as the virtual machine, and the hardware;
- a virtual machine which interprets the byte code of Java Card applets;
- APIs which offer interfaces to the applets such as key generation, key agreement, signature, message ciphering and other proprietary interfaces (OCS API);
- Open Platform with the Card Manager, OPSystem and GPSystems APIs; it is developed in native code and in Java (its byte code is in ROM);
- a resident application, in native code, with a basic main dispatcher, to receive the card commands.

This architecture is summarized in the following figure:



1.2.4. Life cycle

The product life cycle is compliant to the 7 steps life cycle of a smart card product and is summarized in the following figure:



Product life cycle

The evaluation has covered the conception and the development of the platform which are done in step 1. Steps 2 and 3, until delivery, have been covered by the components evaluations. The end of step 3 and steps 4, 5 and 6 are covered by guides.

The patch code is developed during phase 1 and loaded during phase 5. This loading is secured by technical measures that have been evaluated by the ITSEF.

The loading of applications during phase 7 shall be done in accordance to [GUIDES].

The product has been developed by Oberthur Technologies on the following sites:

Oberthur Technologies - Levallois

50 quai Michelet
92300 Levallois-Perret
France

Oberthur Technologies - Nanterre

71-73, rue des Hautes Pâtures
92726 Nanterre
France

Oberthur Technologies - Bordeaux

Parc Scientifique UNITEC 1
4 allée du Doyen Georges Brus - Porte 2
33 600 Pessac
France

The microcontroller has been developed and manufactured by NXP Semiconductors on its sites (cf. BSI-DSZ-CC-0555-2009), whereof main site is:

NXP Semiconductors GmbH1

Stresemannallee 101
D-22502 Hamburg
Allemagne

1.2.5. Evaluated configuration

The certificate applies to the Java Card platform only, as described above in chapter 1.2.3 Architecture, and configured according to personalization guide (cf. [GUIDES]).

The tests have been performed on a ID-ONE Cosmo V7.0.1-n Standard, on a P5CC081 component.

The applications loaded on the plateform but out of the evaluation scope are listed in the document “Applications on ID-One Cosmo V7.0.1” [GUIDES].

2. The evaluation

2.1. Evaluation referential

The evaluation has been performed in compliance with **Common Criteria version 3.1** [CC], with the Common Evaluation Methodology [CEM].

For assurance components which are not covered by [CEM] manual, the evaluation facility own evaluation methods, validated by ANSSI, have been used.

In order to meet the specificities of smart cards, the [CC IC] and [CC AP] guides have been applied.

2.2. Evaluation work

The evaluation has been performed according to the composition scheme as defined in the guide [COMP] in order to assess that no weakness comes from the integration of the software in the microcontroller. The microcontroller has already been certified.

This evaluation has then taken into account the evaluation results for the following microcontrollers P5CD081V1A, P5CC081V1A and P5CD041V1A (cf. [BSI-DSZ-CC-0555-2009]) at EAL5 level augmented with ALC_DVS.2 and AVA_VAN.5, compliant to the protection profile [PP0035]. This certificate has been maintained on December 30, 2010 under the reference « BSI-DSZ-CC-0555-2009-MA-01 » and a vulnerability reassessment based on [AIS36] was performed on November 3, 2011.

This evaluation has taken into account the evaluation results of a previous version of the product certified under the reference “ANSSI-CC-2010/40”, and the results of a similar product evaluation (cf. [ANSSI-CC-2011/64]) during which the patch code and its loading have been evaluated.

The loading of applications during the usage phase has been evaluated in accordance to [NOTE10]. The measures described in [GUIDES] should be put in place in order to protect the integrity and the authenticity of the applications that will be loaded.

The evaluation technical report [ETR], delivered to ANSSI on September 18, 2012, provides details on the work performed by the evaluation facility and assesses that all evaluation tasks are “**pass**”.

2.3. Cryptographic mechanisms robustness analysis

The robustness of cryptographic mechanisms has been analysed by ANSSI according to the [REF-CRY], [REF-KEY] et [REF-AUT] technical referentials.

The results are given in an analysis report [ANA-CRY] and conduct to the following conclusion:

- the analyzed mechanisms can be used to provide complaint applications to the ANSSI cryptographic referential ([REF-CRY]);
- the Global Platform specifications of the security target, to which the developer has to conform, lead to cryptographic weaknesses . These weaknesses are related to the 1024 bit RSA key size and the SHA-1 hash algorithm.

Anyway, these results have been taken in account in the evaluator vulnerability analysis and have not pointed any vulnerability the considered AVA_VAN level.

2.4. Random number generator analysis

The random generator has been analysed by the evaluator along with ANSSI, in conformance with the French standard for cryptography (cf. [ANA-CRY]).

The product is based on the P5CD081V1A, P5CC081V1A and P5CD041V1A components. Their random generators have been evaluated according to the [AIS31] methodology, as indicated in the BSI-DSZ-CC-0555-2009 certificate. The hardware generator reaches the class “P2 – *SOF-high*”. This doesn’t allow concluding that data are fully random but states that this random generator is free of major design flaw.
As required in [REF-CRY], the hardware random generator output is fended in a cryptographic post-treatment. The results are given in an analysis report [ANA-CRY] and conduct to the following conclusion:

- the key generation (RSA or elliptic curve) must be conduct under user control.

Anyway, these results have been taken in account in the evaluator vulnerability analysis and have not pointed any vulnerability the considered AVA_VAN level.

3. Certification

3.1. Conclusion

The evaluation was carried out according to the current rules and standards, with the required competency and impartiality of a licensed evaluation facility. All the work performed permits the release of a certificate in conformance with the decree 2002-535.

This certificate attests that the product “ID-ONE Cosmo V7.0.1-n Smartcard with patch 077121 on NXP P5CD081 V1A (Standard Dual), P5CC081 V1A (Standard) and P5CD041 V1A (Basic Dual) components submitted for evaluation fulfils the security features specified in its security target [ST] for the evaluation level EAL 5 augmented with the ALC_DVS.2 and AVA_VAN.5 components.

The evaluation was carried out according to the current rules and standards, with the required competency and impartiality of a licensed evaluation facility. All the work performed permits the release of a certificate in conformance with the decree 2002-535.

3.2. Restrictions

This certificate only applies on the product specified in chapter 1.2 of this certification report.

The user of the certified product shall respect the security objectives for the operational environment, as specified in the security target [ST], and shall respect the recommendations in the guidance [GUIDES].

3.3. Recognition of the certificate

3.3.1. *European recognition (SOG-IS)*

This certificate is released in accordance with the provisions of the SOG-IS agreement [SOG-IS].

The European Recognition Agreement made by SOG-IS in 2010 allows recognition from Signatory States of the agreement[1], of ITSEC and Common Criteria certificates. The European recognition is applicable, for smart cards and similar devices, up to ITSEC E6 High and CC EAL7 levels. The certificates that are recognized in the agreement scope are released with the following marking:

3.3.2. *International common criteria recognition (CCRA)*

This certificate is released in accordance with the provisions of the CCRA [CC RA].

The Common Criteria Recognition Arrangement allows the recognition, by signatory countries[2], of the Common Criteria certificates. The mutual recognition is applicable up to the assurance components of CC EAL4 level and also to ALC_FLR family. The certificates that are recognized in the agreement scope are released with the following marking:

[1] The signatory countries of the SOG-IS agreement are: Austria, Finland, France, Germany, Italy, The Netherlands, Norway, Spain, Sweden and United Kingdom.

[1] The signatory countries of the CCRA arrangement are: Australia, Austria, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, India, Israel, Italy, Japan, the Republic of Korea, Malaysia, Netherlands, New-Zealand, Norway, Pakistan, Singapore, Spain, Sweden, Turkey, the United Kingdom and the United States of America.

Annex 1. Evaluation level of the product

Class	Family	Components by assurance level							Assurance level of the product	
		EAL 1	EAL 2	EAL 3	EAL 4	EAL 5	EAL 6	EAL 7	EAL 5+	Name of the component
ADV **Development**	ADV_ARC		**1**	1	1	1	1	1	1	Security architecture description
	ADV_FSP	**1**	**2**	**3**	**4**	**5**	5	**6**	**5**	Complete semiformal functional specification with additional error information
	ADV_IMP				**1**	1	**2**	2	**1**	Implementation representation of the TSF
	ADV_INT					**2**	**3**	3	**2**	TSF internal description
	ADV_TDS		**1**	**2**	**3**	**4**	**5**	**6**	**4**	Semiformal modular design
AGD **User guides**	AGD_OPE	**1**	1	1	1	1	1	1	1	Operational user guidance
	AGD_PRE	**1**	1	1	1	1	1	1	1	Preparative procedures
ALC **Life Cycle Support**	ALC_CMC	**1**	**2**	**3**	**4**	4	**5**	5	4	Production support, acceptance procedures and automation
	ALC_CMS	**1**	**2**	**3**	**4**	**5**	5	5	**5**	Development tools CM coverage
	ALC_DEL		**1**	1	1	1	1	1	1	Delivery procedures
	ALC_DVS			**1**	1	1	**2**	2	2	Sufficiency of security measures
	ALC_FLR									
	ALC_LCD			**1**	1	1	1	**2**	1	Developer defined life-cycle model
	ALC_TAT				**1**	**2**	**3**	3	**2**	Compliance with implementation standards
ASE **Security Target Evaluation**	ASE_CCL	**1**	1	1	1	1	1	1	1	Conformance claims
	ASE_ECD	**1**	1	1	1	1	1	1	1	Extended components definition
	ASE_INT	**1**	1	1	1	1	1	1	1	ST introduction
	ASE_OBJ	**1**	**2**	2	2	2	2	2	2	Security objectives
	ASE_REQ	**1**	**2**	2	2	2	2	2	2	Derived security requirements
	ASE_SPD		**1**	1	1	1	1	1	1	Security problem definition
	ASE_TSS	**1**	1	1	1	1	1	1	1	TOE summary specification
ATE **Tests**	ATE_COV		**1**	**2**	2	2	**3**	3	2	Analysis of coverage
	ATE_DPT			**1**	**2**	**3**	3	**4**	**3**	Testing : modular design
	ATE_FUN		**1**	1	1	1	**2**	2	1	Functional testing
	ATE_IND	**1**	**2**	2	2	2	2	**3**	2	Independent testing : sample
AVA **Vulnerability Assessment**	AVA_VAN	**1**	**2**	2	**3**	**4**	**5**	5	**5**	Advanced methodical vulnerability analysis

Annex 2. Evaluated product references

[ST]	Reference security target for the evaluation: • TERPSICHORE Security Target for P5CD041VA, P5CC081V1A and P5CD081V1A. reference : FQR : 110 4933, version : 5 dated 16/02/2012, by Oberthur Technologies For the needs of publication, the following security target has been provided and validated in the evaluation: - TERPSICHORE Security Target Lite For NXP reference FQR 110 5145 version 4 dated 16/02/2012 by Oberthur Technologies
[ETR]	Evaluation technical report : TERN2_ETR version v2.0 dated 18/09/2012 by THALES-CEACI For the needs of composite evaluation with this microcontroller a technical report for composition has been validated: - TERN2_ETR Lite_v1_0 dated 16/02/2012 by THALES-CEACI
[IAR]	Impact analysis reports : - TERN2_IAR version 2 dated 27/01/2012 by Oberthur Technologies. - TERN_IAR_NOTE10 version 4 dated 11/09/2012 by Oberthur Technologies.
[CONF]	TERPSICHORE CONFIGURATION LIST NXP Reference FQR 110 4964 Ed11 dated 12/09/2012 by Oberthur Technologies
[GUIDES]	Installation guidance: - ID-One Cosmo V7.0.1- n Platform – PRODUCT GENERATION DESCRIPTION – PGD reference 072361 00 PGD / 1 – AA dated 19/02/2010. Administration guidance: - ID-One Cosmo V7.0.1- Pre-Perso Guide reference FQR 110 4910 / Issue : 7 dated 16/02/2012 - ID-One Cosmo V7.0.1 – Security recommendations reference FQR 110 4912 / Issue : 4 dated 02/08/2012. User guidance: - ID-One Cosmo V7.0.1 – Reference Guide reference FQR 110 4911 / Issue : 4 dated 04/11/2010. Application loading guidance : - ID-One Cosmo V7.0.1 – Guidance for compatibility Application Note 10 reference FQR 110 6249 / Issue: 2 dated 05/09/2012. - ID-One Cosmo V7.0.1 – Security guidance for compatibility Application Note 10

	reference FQR 110 6303 / Issue: 1 dated 11/09/2012. List of applications loaded on the platform : - ID-One Cosmo V7.0.1 – Applications on ID-One Cosmo V7.0.1 reference FQR 110 6325 / Issue: 1.
BSI-DSZ-CC-0555-2009	Certified by BSI on 10/11/2009 for *NXP Secure Smart Card Controller P5CD081V1A and its major configurations P5CC081V1A, P5CN081V1A, P5CD041V1A, P5CD021V1A and P5CD016V1A each with specific IC Dedicated Software*
ANSSI-CC-2010/40	Certified by ANSSI on July 6th 2010 for *Carte à puce ID-One Cosmo V7.0.1-n en configuration Standard Dual, Standard et Basic Dual, masquée sur composant NXP*.
ANSSI-CC-2011/64	Certified by ANSSI on December 14th 2011 for *Carte à puce ID-One Cosmo V7.0.1-n, avec correctif 077121, masquée sur composants NXP : P5CD145 V0A (Large Dual), P5CC145 (Large), P5CD128 V0A (Large Duall) et P5CC128 V0A (Large).*
[PP/0304]	Protection Profile, SUN Java Card^{TM} System Protection Profile Collection, August 2003. *Certified by ANSSI on September 30, 2003 under the reference PP/0304.*
[PP0035]	Protection Profile, Security IC Platform Protection Profile Version 1.0 June 2007. *Certified by BSI (Bundesamt für Sicherheit in der Informationstechnik) under the reference BSI-PP-0035-2007.*

Annex 3. Certification references

Decree number 2002-535, 18th April 2002, modified related to the security evaluations and certifications for information technology products and systems.	
[AIS36]	Chapter 6 of the supporting document "Composite evaluation for Smart Cards and similar devices" : Evaluation/Certification reports and platform certificate validity. September 2007, version 1.0, revision 1.
[CER/P/01]	Procedure CER/P/01 - Certification of the security provided by IT products and systems, DCSSI.
[CC]	Common Criteria for Information Technology Security Evaluation : Part 1: Introduction and general model, September 2006, version 3.1, revision 1, ref CCMB-2006-09-001; Part 2: Security functional components, September 2007, version 3.1, revision 2, ref CCMB-2007-09-002; Part 3: Security assurance components, September 2007, version 3.1, revision 2, ref CCMB-2007-09-003.
[CEM]	Common Methodology for Information Technology Security Evaluation : Evaluation Methodology, September 2007, version 3.1, revision 2, ref CCMB-2007-09-004.
[CC IC]	Common Criteria Supporting Document - Mandatory Technical Document - The Application of CC to Integrated Circuits, reference CCDB-2009-03-002 version 3.0, revision 1, March 2009.
[CC AP]	Common Criteria Supporting Document - Mandatory Technical Document - Application of attack potential to smart-cards, reference CCDB-2009-03-001 version 2.7 revision 1, March 2009.
[COMP]	Common Criteria Supporting Document - Mandatory Technical Document - Composite product evaluation for smart cards and similar devices, reference CCDB-2007-09-001 version 1.0, revision 1, September 2007.
[CC RA]	Arrangement on the Recognition of Common Criteria certificates in the field of information Technology Security, May 2000.
[NOTE10]	Certification d'applications sur plateformes ouvertes cloisonnantes. ANSSI-CC-NOTE-10.0 dated 16/12/2010, see www.ssi.gouv.fr.
[SOG-IS]	« Mutual Recognition Agreement of Information Technology Security Evaluation Certificates », version 3.0, 8 Janvier 2010, Management Committee.

[REF-CRY]	Mécanismes cryptographiques – Règles et recommandations concernant le choix et le dimensionnement des mécanismes cryptographiques, version 1.20 dated January 20th 2010, cf. www.ssi.gouv.fr
[REF-KEY]	Gestion des clés cryptographiques – Règles et recommandations concernant la gestion des clés utilisées dans des mécanismes cryptographiques, version 1.10 dated October 18th 2008, cf. www.ssi.gouv.fr