PREMIER MINISTRE

General Secretariat for Defence and National Security

French Network and Information Security Agency

Certification Report ANSSI-CC-2010/35

CC IDeal Citiz SmartCard (on SB23YR48B), version 1.4.5 ICAO BAC application

Paris, 9th June 2010

Courtesy Translation

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 product 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:

Secrétariat Général de la Défense et de la Sécurité Nationale
Agence nationale de la sécurité des systèmes d'information
Centre de certification
51, boulevard de la Tour Maubourg
75700 PARIS cedex 07 SP
France

certification.anssi@ssi.gouv.fr

Certification report reference

ANSSI-CC-2010/35

Product name

CC IDeal Citiz SmartCard (on SB23YR48B)

Product reference, version

IDEAL/ST23YR48/1.4.5, Version 1.4.5

Protection profile conformity

[PP BAC]
Machine Readable Travel Document with "ICAO Application", Basic Access Control, version 1.10

Evaluation criteria and version

Common Criteria version 3.1

Evaluation level

EAL 4 augmented

ADV_FSP.5, ADV_INT.2, ADV_TDS.4, ALC_CMS.5, ALC_DVS.2, ALC_TAT.2, ATE_DPT.3

Developers

SAGEM Sécurité
Etablissement d'Osny, 18 Chaussée Jules César, 95520 Osny, France

ST Microelectronics
29 Boulevard Romain Rolland, 75669 Paris cedex 14, France

Sponsor

SAGEM Sécurité
Etablissement d'Osny, 18 Chaussée Jules César, 95520 Osny, France

Evaluation facility

CEA - LETI
17 rue des martyrs, 38054 Grenoble Cedex 9, France
Phone: +33 (0)4 38 78 40 87, email : cesti.leti@cea.fr

Recognition arrangements

CCRA

SOG-IS

The product is recognised at EAL4 level.

Introduction

The Certification

Security certification for information technology products and systems is governed by decree number 2002-535 dated April, 18th 2002, and published in the "Journal Officiel de la République Française". 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.

Content

1. The product

1.1. Presentation of the product

The evaluated product is the « CC IDeal Citiz smartcard (on SB23YR48B), IDEAL/ST23YR48/1.4.5, Version 1.4.5 » developed by SAGEM Sécurité and ST Microelectronics.

The evaluated product is a dual smartcard (contact and contactless). It is composed of:

- three applications :
  - the AIP application which performs the pre-personalization and the personalization operations of the smartcard. This application is not accessible once in Operational Use phase,
  - the ICAO application which implements the machine readable travel document features and which may be instantiated several times on the product,
  - the IAS (Identity Authentication Signature) application which allows to generate, destroy and load keys to generate digital signature.
- and an opened JacaCard System which allows to load applets on the product during its Operational Use phase.

1.2. Evaluated product description

The security target [ST] defines the evaluated product, its evaluated security functionalities and its operational environment.
The security target is strictly conformant to the [PP BAC] protection profile. Thus this evaluation has only considered the ICAO BAC application.

1.2.1. Product identification

The configuration list [CONF] identifies the product's constituent elements.

The certified version of the product can be identified by the following elements:

- product's name and version : CC Ideal Citiz, version 1.4.5;
- microcontroller's name and version: SB23YR48B;
- commercial reference (SAGEM) : IDEAL/ST23YR48/1.4.5;
- whole embedded software reference (SAGEM ORGA) OFFICIEL_IDEAL_ST23YR80_1_4_50;
- ST Microelectronics reference: SB23YR48 QPX (masked chip).

The certified version of the product can be verified:

- in contact mode:
  - by the following T3 to T11 bytes of the 15 historical bytes of the ATR[1] :
    « 49 44 65 61 6C 5F 31 2E 34 » in hexadecimal => « IDeal 1.5 »;
  - or by 8th and 9th bytes of the CPLC[2] (obtained after opening the BAC, in secure messaging mode, with the GET DATA command with the tag « 9F7F »):
    « 14 50 » =>« 1.4.5 » ;
- in contactless mode:
  - by the following 3rd et 4th bytes of the ATQB[3] :
    « 14 50 » => « 1.4.5 » ;
  - or by 8th and 9th bytes of the CPLC (this reading is conditioned to a card's parameter)
    « 14 50 » =>« 1.4.5 ».

1.2.2. Security services

The TOE provides mainly the following evaluated security services:

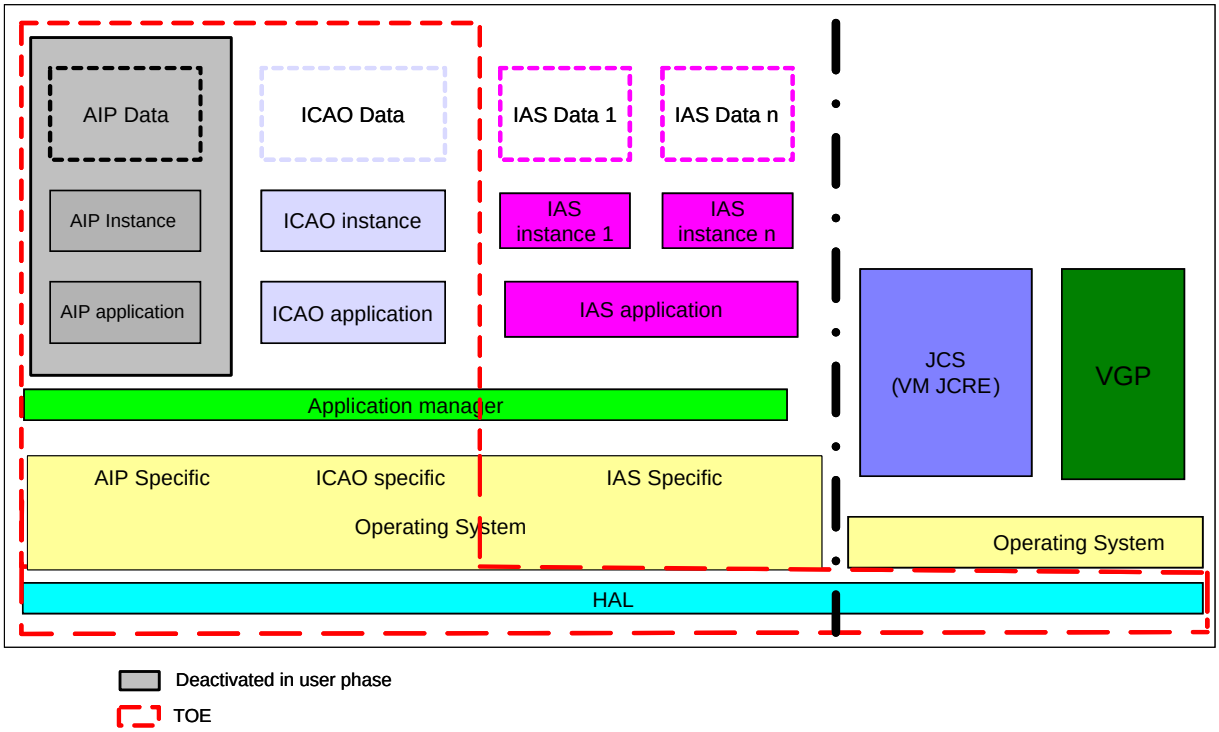
- protection of integrity of the holder's stored data: issuing state or organization, travel document number, expiration date, holder's name, nationality, birth date, sex, holder's face portrait, other optional data, additional biometric data and several other pieces of data for managing the security of the document,
- authentication between the travel document holder and the inspection system prior to any border control by the Basic Access Control mechanism,
- protection of integrity and confidentiality of data read by secure messaging.

1.2.3. Architecture

The product consists of

- the SB23YR48B microcontroller, developed and produced by ST Microelectronics ;
- software parts, developed by SAGEM Sécurité, which CVS reference is OFFICIEL_IDEAL_ST23YR80_1_4_00, masked in the microcontroller's ROM, composed of:
  - the OPUCE operating system;
  - the HAL hardware abstract layer;
  - the JacaCard System;
  - the AIP card initialization and personalization application;
  - and the IAS and ICAO applications ;
- the IAS application patch, version 5.0, developed by SAGEM Sécurité, loaded into the microcontroller's EEPROM.

[1] Answer To Reset
[2] Card Production Life Cycle
[3] Answer to reQuest type B

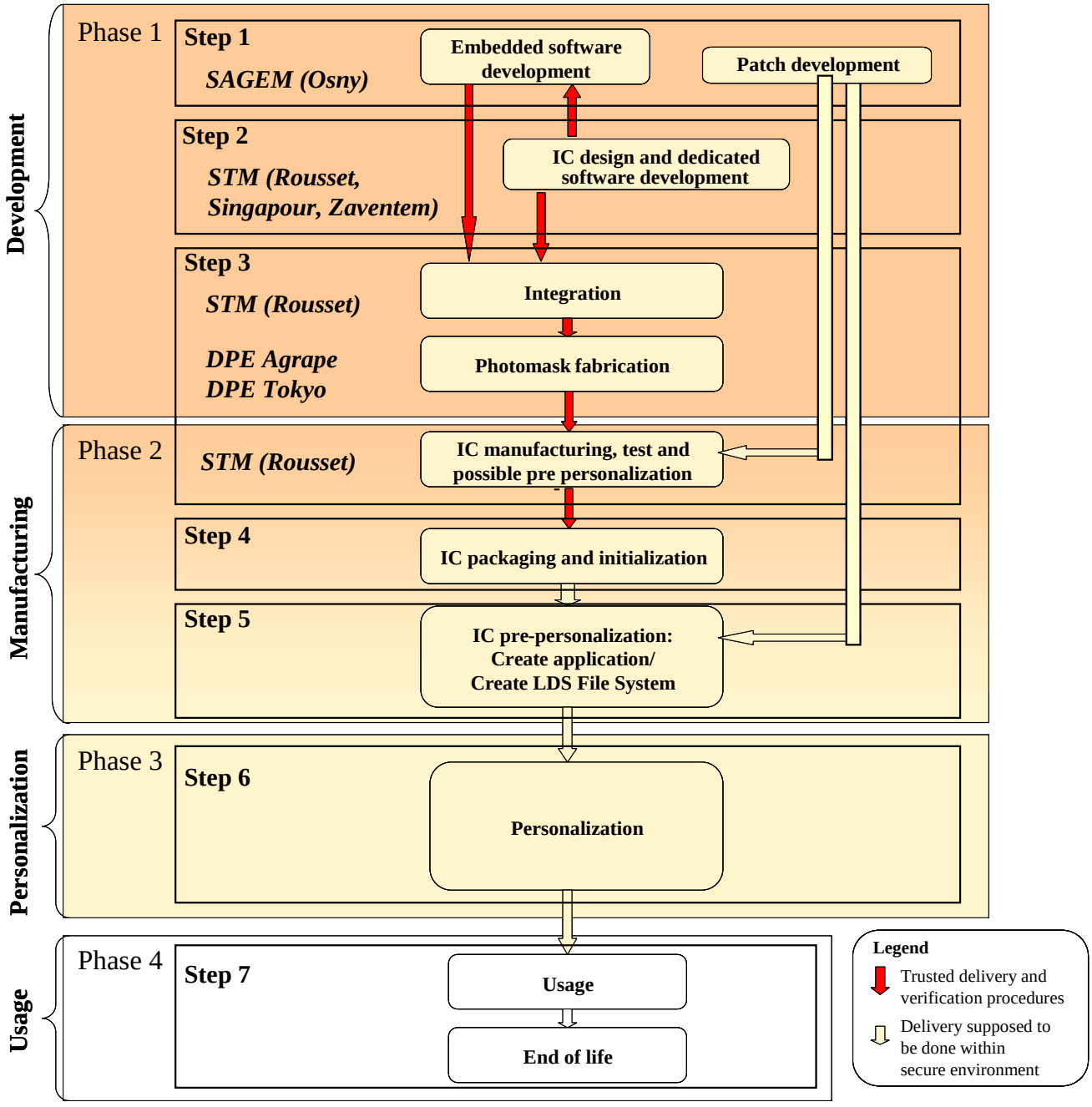


The TOE is the ICAO Application, together with the functions/services provided by the operating system and the microcontroller IC required to support the applet functionalities.

The evaluation facility verified the isolation between the various applications, notably between those in the TOE with those not included in the TOE. The evaluation facility verified that a Java applet could only access to its own data and not to those belonging to another applet.

1.2.4. Life cycle

The product's life cycle is organised as follow:



Patch loading is protected by the AIP application.

The embedded software has been developed on the following site:

SAGEM Sécurité - Etablissement d'Osny

18 Chaussée Jules César
95520 Osny
France

The microcontroller development sites are identified in the [2010/02] certification report.

1.2.5. Evaluated configuration

The certificate applies to the opened configuration of this product (applets can be loaded on the product in operational phase, phase 7).
The product tested by the evaluation facility is typical to the final product.

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], and with the following interpretation:

- the ATE_DPT.2 assurance component has been replaced by the ATE_DPT.1 assurance component at the EAL4 level in the third revision of the Common Criteria version 3.1 (published after the beginning of this evaluation).

In order to meet the specificities of smart cards, the [CC AP] and [COMP] 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 already certified.
Therefore, the results of the evaluation of the microcontroller "SB23YR80B with Neslib version 3.0" at EAL6 level augmented with ALC_FLR.1, compliant with the [PP0035] protection profile, have been used. This microcontroller has been certified the 10 February 2010 under the reference ANSSI-CC-2010/02 ([2010/02]).. The maintenance report ANSSI-2010/02-M01 ([2010/02-M01]) has also been issued the 19th March 2010 for this product.

The evaluation relies on the evaluation results of the « CC IDeal Citiz SmartCard (on SB23YR48B), version 1.4.5" product, compliant with the [PP BAC], certified the 9th April 2010 under the reference ANSSI-CC-2010/21 ([2010/21]).

The evaluation technical report [ETR], delivered to ANSSI the 3rd June 2010, 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 [REF-CRY]. The results are stated in the cryptographic analysis report [ANA-CRY]
This analysis report established that the analysed mechanisms are not compliant to the requirements defined in ANSSI cryptographic referential [REF-CRY], due to cryptographic weakness of the ICAO specification which the developer has to comply with.
Those results have been taken into account in the evaluator independent vulnerability analysis and had not leaded to the identification of exploitable vulnerability for the aimed AVA_VAN level.

2.4. Random number generator analysis

The random number generator used by this product is the one provided by the microcontroller (see [2010/02] certification report).

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 testifies that the "CC IDeal Citiz SmartCard (on SB23YR48B), version 1.4.5" submitted for evaluation fulfils the security features specified in its security target [ST] for the evaluation level EAL 4 augmented.

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 specified in the security target [ST] at the 4.2 and 4.3 chapters, 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:

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

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[1], 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 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 4+	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 semi-formal functional specification with additional error information
	ADV_IMP				1	1	2	2	1	Implementation representation of the TSF
	ADV_INT					2	3	3	2	Well-structured internals
	ADV_SPM						1	1		
	ADV_TDS		1	2	3	4	5	6	4	Semiformal modular design
AGD Guidance	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 e
	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	3	Focused vulnerability analysis

Annex 2. Evaluated product references

[ST]	Reference security target for the evaluation: - « Common Criteria Security Target - Machine Readable Travel Document – Basic Access Control – CC IDeal Citiz », reference SSE-0000078636, revision 03, For the needs of publication, the following security target has been provided and validated in the evaluation: - « Common Criteria Security Target Lite - Machine Readable Travel Document – Basic Access Control – CC IDeal Citiz », reference SSE-0000078637, revision 03
[ETR]	Evaluation technical report : - « Réévaluation EOS - Rapport Technique d'Evaluation », reference LETI.CESTI.EOS.RTE.002, edition 3.2.
[ANA-CRY]	« Cotation de mécanismes cryptographiques- Qualification EOS », n° 805/ANSSI/ACE/LCC du 2 avril 2010.
[CONF]	« IDEAL_– Software Release Sheet – V1.4.50», reference SSE-0000075528, revision 19.
[GUIDES]	Installation guidance: - «« IDEAL 1.4 procédure d'installation », reference SSE-0000076822, version 02, Administration guidance: - « ICAO Application Pre-personalization manual - Project : CC Ideal Pass », reference SSE-0000074722, version 02, - « IDEAL IAS ECC Personalization Guidance », reference : SSE-0000064845, version 02, - « ICAO Application Personalization manual - Project : CC Ideal Pass », reference SSE-0000074723, version 04, User guidance: - « ICAO Application User manual - Project : CC Ideal Pass », reference SSE-0000074862, version 01, - « IDEAL IAS ECC Operational User Guidance », reference SSE-0000065958, version 01.
[PP BAC]	Protection Profile - Machine Readable Travel Document with "ICAO Application", Basic Access Control, version 1.10, 25th March 2009. *Certified by BSI (Bundesamt für Sicherheit in der Informationstechnik) under the reference BSI-CC-PP-0055-2009.*
[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.*

[2010/02]	Certification report ANSSI-CC-2010/02, issued the 10th February 2010 for the "SA23YR48/80B and SB23YR48/80B, secured microcontrollers including the cryptographic libray NesLib v2.0 or v3.0 in SA or SB configuration".
[2010/02-M01]	Maintenance report ANSSI-2010/02-M01, issued the 19th March 2010, related to the ANSSI-CC-2010/02 certificate.
[2010/21]	Certification report ANSSI-CC-2010/21, issued the 9th April 2010 for the "CC IDeal Citiz SmartCard (on SB23YR48B), version 1.4.5 – ICAO BAC application".

Annex 3. Certification references

Decree number 2002-535 dated 18th April 2002 related to the security evaluations and certifications for information technology products and systems.	
[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 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.
[SOG-IS]	« Mutual Recognition Agreement of Information Technology Security Evaluation Certificates », version 3.0, 8 Janvier 2010, Management Committee.
[REF-CRY]	Cryptographic mechanisms - Rules and recommendations about the choice and parameters sizes of cryptographic mechanisms with standard robustness level version 1.11, 24th of October 2008, see www.ssi.gouv.fr