

# Certification Report

**BSI-CC-PP-0082-V2-2014**

for

**Card Operating System Generation 2 (PP COS G2)  
Version 1.9**

from

**Bundesamt für Sicherheit in der  
Informationstechnik**

sponsored by

**gematik GmbH**

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Bundesamt  
für Sicherheit in der  
Informationstechnik

# Deutsches IT-Sicherheitszertifikat

erteilt vom



Bundesamt für Sicherheit in der Informationstechnik

**BSI-CC-PP-0082-V2-2014**

**Common Criteria Protection Profile**

**Card Operating System Generation 2 (PP COS G2)**

Version 1.9

developed by Bundesamt für Sicherheit in der Informationstechnik

sponsored by gematik GmbH

Assurance Package claimed in the Protection Profile:

Common Criteria Part 3 conformant

EAL 4 augmented by

ALC\_DVS.2, ATE\_DPT.2 and AVA\_VAN.5



Common Criteria  
Recognition  
Arrangement



The Protection Profile identified in this certificate has been evaluated at an approved evaluation facility using the Common Methodology for IT Security Evaluation (CEM), Version 3.1 for conformance to the Common Criteria for IT Security Evaluation (CC), Version 3.1.

This certificate applies only to the specific version and release of the Protection Profile and in conjunction with the complete Certification Report.

The evaluation has been conducted in accordance with the provisions of the certification scheme of the German Federal Office for Information Security (BSI) and the conclusions of the evaluation facility in the evaluation technical report are consistent with the evidence adduced.

This certificate is not an endorsement of the Protection Profile by the Federal Office for Information Security or any other organisation that recognises or gives effect to this certificate, and no warranty of the Protection Profile by the Federal Office for Information Security or any other organisation that recognises or gives effect to this certificate, is either expressed or implied.

Bonn, 21 November 2014

For the Federal Office for Information Security

Bernd Kowalski  
Head of Department

L.S.



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## Preliminary Remarks

Under the BSIG<sup>1</sup> Act, the Federal Office for Information Security (BSI) has the task of issuing certificates for information technology products as well as for Protection Profiles (PP).

A PP defines an implementation-independent set of IT security requirements for a category of products which are intended to meet common consumer needs for IT security. The development and certification of a PP or the reference to an existent one gives consumers the possibility to express their IT security needs without referring to a special product. Product or system certifications can be based on Protection Profiles. For products which have been certified based on a Protection Profile an individual certificate will be issued.

Certification of the Protection Profile is carried out on the instigation of the BSI or a sponsor.

A part of the procedure is the technical examination (evaluation) of the Protection Profile according to Common Criteria [1].

The evaluation is normally carried out by an evaluation facility recognised by the BSI or by BSI itself.

The result of the certification procedure is the present Certification Report. This report contains among others the certificate (summarised assessment) and the detailed Certification Results.

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<sup>1</sup> Act on the Federal Office for Information Security (BSI-Gesetz - BSIG) of 14 August 2009, Bundesgesetzblatt I p. 2821

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## A Certification

### 1 Specifications of the Certification Procedure

The certification body conducts the procedure according to the criteria laid down in the following:

- BSIG<sup>2</sup>
- BSI Certification Ordinance<sup>3</sup>
- BSI Schedule of Costs<sup>4</sup>
- Special decrees issued by the Bundesministerium des Innern (Federal Ministry of the Interior)
- DIN EN 45011 standard
- BSI certification: Procedural Description (BSI 7125) [3]
- Common Criteria for IT Security Evaluation (CC), Version 3.1<sup>5</sup> [1]
- Common Methodology for IT Security Evaluation, Version 3.1 [2]
- BSI certification: Application Notes and Interpretation of the Scheme (AIS) [7]
- Procedure for the Issuance of a PP certificate by the BSI

### 2 Recognition Agreements

In order to avoid multiple certification of the same Protection Profile in different countries a mutual recognition of IT security certificates - as far as such certificates are based on CC - under certain conditions was agreed.

#### 2.1 European Recognition of ITSEC/CC – Certificates (SOGIS-MRA)

The SOGIS-Mutual Recognition Agreement (SOGIS-MRA) Version 3 became effective in April 2010. It defines the recognition of certificates for IT-Products at a basic recognition level and in addition at higher recognition levels for IT-Products related to certain technical domains only.

The basic recognition level includes Common Criteria (CC) Evaluation Assurance Levels EAL 1 to EAL 4 and ITSEC Evaluation Assurance Levels E1 to E3 (basic). For higher recognition levels the technical domain Smart card and similar Devices has been defined. It includes assurance levels beyond EAL 4 resp. E3 (basic). In addition, certificates issued for Protection Profiles based on Common Criteria are part of the recognition agreement.

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<sup>2</sup> Act on the Federal Office for Information Security (BSI-Gesetz - BSIG) of 14 August 2009, Bundesgesetzblatt I p. 2821

<sup>3</sup> Ordinance on the Procedure for Issuance of a Certificate by the Federal Office for Information Security (BSI-Zertifizierungsverordnung, BSIZertV) of 07 July 1992, Bundesgesetzblatt I p. 1230

<sup>4</sup> Schedule of Cost for Official Procedures of the Bundesamt für Sicherheit in der Informationstechnik (BSI-Kostenverordnung, BSI-KostV) of 03 March 2005, Bundesgesetzblatt I p. 519

<sup>5</sup> Proclamation of the Bundesministerium des Innern of 12 February 2007 in the Bundesanzeiger dated 23 February 2007

As of September 2011 the new agreement has been signed by the national bodies of Austria, Finland, France, Germany, Italy, The Netherlands, Norway, Spain, Sweden and the United Kingdom. Details on recognition and the history of the agreement can be found at <https://www.bsi.bund.de/zertifizierung>.

The SOGIS-MRA logo printed on the certificate indicates that it is recognised under the terms of this agreement by the nations listed above.

This certificate is recognized under SOGIS-MRA for all assurance components selected.

## 2.2 International Recognition of CC – Certificates (CCRA)

The international arrangement on the mutual recognition of certificates based on the CC (Common Criteria Recognition Arrangement, CCRA-2014) has been ratified on 08 September 2014. It covers CC certificates based on collaborative Protection Profiles (cPP) (exact use), certificates based on assurance components up to and including EAL 2 or the assurance family Flaw Remediation (ALC\_FLR) and certificates for Protection Profiles and for collaborative Protection Profiles (cPP).

The CCRA-2014 replaces the old CCRA signed in May 2000 (CCRA-2000). Certificates based on CCRA-2000, issued before 08 September 2014 are still under recognition according to the rules of CCRA-2000. For on 08 September 2014 ongoing certification procedures and for Assurance Continuity (maintenance and re-certification) of old certificates a transition period on the recognition of certificates according to the rules of CCRA-2000 (i.e. assurance components up to and including EAL 4 or the assurance family Flaw Remediation (ALC\_FLR)) is defined until 08 September 2017.

As of September 2014 the signatories of the new CCRA are government representatives from the following nations: Australia, Austria, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, India, Israel, Italy, Japan, Malaysia, The Netherlands, New Zealand, Norway, Pakistan, Republic of Korea, Singapore, Spain, Sweden, Turkey, United Kingdom, and the United States.

The current list of signatory nations and approved certification schemes can be seen on the website: <http://www.commoncriteriaportal.org>.

The Common Criteria Recognition Arrangement logo printed on the certificate indicates that this certification is recognised under the terms of this agreement by the nations listed above.

As this certificate is a re-certification of a certificate issued according to CCRA-2000 this certificate is recognized according to the rules of CCRA-2000, i.e. up to and including CC part 3 EAL 4 components. The evaluation contained the components ALC\_DVS.2, ATE\_DPT.2 and AVA\_VAN.5 that are not mutually recognised in accordance with the provisions of the CCRA-2000, for mutual recognition the EAL 4 components of these assurance families are relevant.

## 3 Performance of Evaluation and Certification

The certification body monitors each individual evaluation to ensure a uniform procedure, a uniform interpretation of the criteria and uniform ratings.

The PP Card Operating System Generation 2 (PP COS G2), Version 1.9 has undergone the certification procedure at BSI. This is a re-certification based on BSI-CC-PP-0082-2013. Specific results from the evaluation process based on BSI-CC-PP-0082-2013 were re-used.



The evaluation of the PP Card Operating System Generation 2 (PP COS G2), Version 1.9 was conducted by the ITSEF SRC Security Research & Consulting GmbH. The evaluation was completed on 19 November 2014.. The ITSEF SRC Security Research & Consulting GmbH is an evaluation facility (ITSEF)<sup>6</sup> recognised by the certification body of BSI.

For this certification procedure the applicant is: Bundesamt für Sicherheit in der Informationstechnik, Germany.

The sponsor is: gematik Gesellschaft für Telematikanwendungen der Gesundheitskarte GmbH.

The PP was developed by: Bundesamt für Sicherheit in der Informationstechnik, Germany.

The certification is concluded with the comparability check and the production of this Certification Report. This work was completed by the BSI.

## 4 Validity of the certification result

This Certification Report only applies to the version of the Protection Profile as indicated.

In case of changes to the certified version of the Protection Profile, the validity can be extended to new versions and releases, provided the sponsor applies for assurance continuity (i.e. re-certification or maintenance) of the modified Protection Profile, in accordance with the procedural requirements, and the evaluation does not reveal any security deficiencies.

For the meaning of the assurance levels please refer to the excerpts from the criteria at the end of the Certification Report.

## 5 Publication

The PP Card Operating System Generation 2 (PP COS G2), Version 1.9 has been included in the BSI list of the certified Protection Profiles, which is published regularly (see also Internet: <https://www.bsi.bund.de> and [4]). Further information can be obtained from BSI-Infoline +49 228 9582-111.

Further copies of this Certification Report can be requested from the BSI<sup>7</sup> for the Protection Profile. The Certification Report may also be obtained in electronic form at the internet address stated above.

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<sup>6</sup> Information Technology Security Evaluation Facility

<sup>7</sup> Bundesamt für Sicherheit in der Informationstechnik  
Godesberger Allee 185-189  
53175 Bonn

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## **B Certification Results**

The following results represent a summary of

- the certified Protection Profile,
- the relevant evaluation results from the evaluation facility, and
- complementary notes and stipulations of the certification body.

# 1 Protection Profile Overview

The Protection Profile Card Operating System Generation 2 (PP COS G2), Version 1.9 [6] is established by the Bundesamt für Sicherheit in der Informationstechnik (Germany) as a basis for the development of Security Targets in order to perform a certification of an IT-product, the Target of Evaluation (TOE).

The Target of Evaluation (TOE) defined in the PP is a smart card platform implementing the Card Operating System (COS) according to the specification [8] for the German health care system without any object system. The TOE is intended to be used within the German health care system as a platform for smart card products of the Card Generation 2, as for example an electronic Health Card (eHC), a Health Professional Card (HPC) or a Security Module Card of Type B (SMC-B), K (gSMC-K) or KT (gSMC-KT).

The TOE comprises at least

- the Security platform IC, i. e. the circuitry of the chip including the configuration data and initialisation data related to the security functionality of the chip and - if delivered - IC Dedicated Software with the configuration data and initialisation data related to the IC Dedicated Software,
- the Smart Card Embedded Software (Card Operating System, COS),
- the wrapper for interpretation of exported TSF data, and
- the associated guidance documentation.

The TOE takes different optional functionalities as contained and modelled in the package 'Crypto Box', the package 'Contactless', the package 'PACE for Proximity Coupling Device' and the package 'Logical Channel' into account, refer to the Protection Profile [6], chapters 7, 8, 9 and 10.

The TSF of the TOE defined in a Security Target (ST) claiming conformance to this PP comprises all security functionality available after delivery of the TOE including vendor specific commands for initialisation, personalisation and operational usage allowed but not described in the specification of the COS [8].

The TOE does not include any object system, i. e. the application specific structures like the Master File (MF), the Applications, the Application Dedicated Files (ADF), the Dedicated Files (DF), the Elementary Files (EF) and internal security objects (containing passwords, private keys etc.) including TSF data. The TOE and the intended application specific object system together build an initialised smart card product as for example an electronic Health Card (eHC), a Health Professional Card (HPC) or a Security Module Card of Type B (SMC-B), K (gSMC-K) or KT (gSMC-KT).

The typical life cycle phases for the present TOE type are IC and Smart Card Embedded software development, manufacturing, smart card product finishing, smart card personalisation and, finally, smart card end-usage.

The assets to be protected by a TOE claiming conformance to this PP are defined in the Protection Profile [6], chapter 3.1 and in addition for the TOE's optional packages in the chapters 7.2.1, 8.2.1, 9.2.1 and 10.2.1 of [6]. Based on these assets the security problem definition is defined in terms of assumptions, threats and organisational security policies. This is outlined in the Protection Profile [6], chapters 3.2, 3.3 and 3.4 and in addition for the TOE's optional packages in the chapters 7.2.2, 7.2.3, 7.2.4, 8.2.2, 8.2.3, 8.2.4, 9.2.2, 9.2.3, 9.2.4, 10.2.2, 10.2.3 and 10.2.4 of [6].

These assumptions, threats and organisational security policies are split into security objectives to be fulfilled by a TOE claiming conformance to this PP and security objectives to be fulfilled by the operational environment of a TOE claiming conformance to this PP. These objectives are outlined in the PP [6], chapters 4.1 and 4.2 and in addition for the TOE's optional packages in the chapters 7.3, 8.3, 9.3 and 10.3 of [6].

The Protection Profile [6] requires a Security Target based on this PP or another PP claiming this PP, to fulfil the CC requirements for strict conformance.

## 2 Security Functional Requirements

Based on the security objectives to be fulfilled by a TOE claiming conformance to this PP the security policy is expressed by the set of security functional requirements (SFR) to be implemented by a TOE. It covers the following issues:

- authentication of human users and external devices,
- storage of and access control on user data,
- key management and cryptographic functions,
- management of TSF data including life cycle support, and
- export of non-confidential TSF data of the object systems if implemented on the platform.

These TOE security functional requirements are outlined in the PP [6], chapter 6.1 and in addition for the TOE's optional packages in the chapters 7.4, 8.4, 9.4 and 10.4 of [6]. They are selected from Common Criteria Part 2 and some of them are newly defined. Thus the SFR claim is called:

Common Criteria Part 2 extended

## 3 Assurance Requirements

The TOE security assurance package claimed in the Protection Profile is based entirely on the assurance components defined in part 3 of the Common Criteria. Thus, this assurance package is called:

Common Criteria Part 3 conformant  
EAL 4 augmented by  
ALC\_DVS.2, ATE\_DPT.2 and AVA\_VAN.5

(for the definition and scope of assurance packages according to CC see part C or [1], part 3 for details).

## 4 Results of the PP-Evaluation

The Evaluation Technical Report (ETR) [5] was provided by the ITSEF according to the Common Criteria [1], the Methodology [2], the requirements of the Scheme [3] and all Application Notes and Interpretations of the Scheme (AIS) [7] as relevant for the TOE.

As a result of the evaluation the verdict PASS is confirmed for the assurance components of the class APE.

The following assurance components were used:

APE\_INT.1 PP introduction  
APE\_CCL.1 Conformance claims  
APE\_SPD.1 Security problem definition  
APE\_OBJ.2 Security objectives  
APE\_ECD.1 Extended components definition  
APE\_REQ.2 Derived security requirements

As the evaluation work performed for this certification procedure was carried out as a re-evaluation based on the certificate BSI-CC-PP-0082-2013, re-use of specific evaluation tasks was possible. The focus of this re-evaluation was on the alignment of the Protection Profile to the current version of the G2 COS specification [8]. In particular, on the specification basis [8] adaptation of some SFRs and integration of the new optional package 'PACE for Proximity Coupling Device' were performed.

The results of the evaluation are only applicable to the Protection Profile as defined in chapter 1.

## 5 Obligations and notes for the usage

The following aspects need to be fulfilled when using the Protection Profile:  
none

## 6 Protection Profile Document

The Protection Profile Card Operating System Generation 2 (PP COS G2), Version 1.9 [6] is being provided within a separate document as Annex A of this report.

## 7 Definitions

### 7.1 Acronyms

<b>ADF</b>	Application Dedicated File
<b>AIS</b>	Application Notes and Interpretations of the Scheme
<b>BSI</b>	Bundesamt für Sicherheit in der Informationstechnik / Federal Office for Information Security, Bonn, Germany
<b>BSIG</b>	BSI-Gesetz / Act on the Federal Office for Information Security
<b>CCRA</b>	Common Criteria Recognition Arrangement
<b>CC</b>	Common Criteria for IT Security Evaluation
<b>CEM</b>	Common Methodology for Information Technology Security Evaluation
<b>COS</b>	Card Operating System
<b>DF</b>	Dedicated File
<b>EAL</b>	Evaluation Assurance Level
<b>EF</b>	Elementary File
<b>eHC</b>	electronic Health Card
<b>ETR</b>	Evaluation Technical Report
<b>gSMC-K</b>	gerätespezifische Security Module Card Typ K

<b>gSMC-KT</b>	gerätespezifische Security Module Card Typ KT
<b>HPC</b>	Health Professional Card
<b>IT</b>	Information Technology
<b>ITSEC</b>	Information Technology Security Evaluation Criteria
<b>ITSEF</b>	Information Technology Security Evaluation Facility
<b>MF</b>	Master File
<b>PACE</b>	Password Authenticated Connection Establishment
<b>PP</b>	Protection Profile
<b>SAR</b>	Security Assurance Requirement
<b>SF</b>	Security Function
<b>SFP</b>	Security Function Policy
<b>SFR</b>	Security Functional Requirement
<b>SMC-B</b>	Security Module Card Typ B
<b>ST</b>	Security Target
<b>TOE</b>	Target of Evaluation
<b>TSF</b>	TOE Security Functionality

## 7.2 Glossary

**Augmentation** - The addition of one or more requirement(s) to a package.

**Extension** - The addition to an ST or PP of functional requirements not contained in part 2 and/or assurance requirements not contained in part 3 of the CC.

**Formal** - Expressed in a restricted syntax language with defined semantics based on well-established mathematical concepts.

**Informal** - Expressed in natural language.

**Object** - A passive entity in the TOE, that contains or receives information, and upon which subjects perform operations.

**Protection Profile** - An implementation-independent statement of security needs for a TOE type.

**Security Target** - An implementation-dependent statement of security needs for a specific identified TOE.

**Semiformal** - Expressed in a restricted syntax language with defined semantics.

**Subject** - An active entity in the TOE that performs operations on objects.

**Target of Evaluation** - A set of software, firmware and/or hardware possibly accompanied by guidance.

**TOE Security Functionality** - Combined functionality of all hardware, software, and firmware of a TOE that must be relied upon for the correct enforcement of the SFRs.

## 8 Bibliography

- [1] Common Criteria for Information Technology Security Evaluation, Version 3.1, Part 1: Introduction and general model, Revision 4, September 2012  
Part 2: Security functional components, Revision 4, September 2012  
Part 3: Security assurance components, Revision 4, September 2012
- [2] Common Methodology for Information Technology Security Evaluation (CEM), Evaluation Methodology, Version 3.1, Revision 4, September 2012
- [3] BSI certification: Procedural Description (BSI 7125)
- [4] German IT Security Certificates (BSI 7148), periodically updated list published also on the BSI Website
- [5] Evaluation Technical Report, Version 2.2, 18 November 2014, Common Criteria Protection Profile 'Card Operating System Generation 2 (PP COS G2)', SRC Security Research & Consulting GmbH (confidential document)
- [6] Common Criteria Protection Profile 'Card Operating System Generation 2 (PP COS G2)', Version 1.9, 18 November 2014, Bundesamt für Sicherheit in der Informationstechnik, Germany
- [7] Application Notes and Interpretations of the Scheme (AIS) as relevant for the TOE<sup>8</sup>
- [8] Einführung der Gesundheitskarte, Spezifikation des Card Operating System (COS), Elektrische Schnittstelle, Version 3.7.0 vom 26.08.2014, gematik Gesellschaft für Telematikanwendungen der Gesundheitskarte GmbH einschließlich der Errata zu Release 1.4.0 Online-Rollout (Stufe 1) Erprobung und Produktivbetrieb führt zu Release 1.4.1 vom 02.10.2014 und 2. Errata zu Release 1.4.0 Online-Rollout (Stufe 1) Erprobung und Produktivbetrieb führt zu Release 1.4.2 vom 06.10.2014

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<sup>8</sup> specially

- AIS 32, Version 7, CC-Interpretationen im deutschen Zertifizierungsschema
- AIS 41, Version 2, Guidelines for PPs and STs



## C Excerpts from the Criteria

CC Part1:

### Conformance Claim (chapter 10.4)

“The conformance claim indicates the source of the collection of requirements that is met by a PP or ST that passes its evaluation. This conformance claim contains a CC conformance claim that:

- describes the version of the CC to which the PP or ST claims conformance.
- describes the conformance to CC Part 2 (security functional requirements) as either:
  - **CC Part 2 conformant** - A PP or ST is CC Part 2 conformant if all SFRs in that PP or ST are based only upon functional components in CC Part 2, or
  - **CC Part 2 extended** - A PP or ST is CC Part 2 extended if at least one SFR in that PP or ST is not based upon functional components in CC Part 2.
- describes the conformance to CC Part 3 (security assurance requirements) as either:
  - **CC Part 3 conformant** - A PP or ST is CC Part 3 conformant if all SARs in that PP or ST are based only upon assurance components in CC Part 3, or
  - **CC Part 3 extended** - A PP or ST is CC Part 3 extended if at least one SAR in that PP or ST is not based upon assurance components in CC Part 3.

Additionally, the conformance claim may include a statement made with respect to packages, in which case it consists of one of the following:

- Package name Conformant - A PP or ST is conformant to a pre-defined package (e.g. EAL) if:
  - the SFRs of that PP or ST are identical to the SFRs in the package, or
  - the SARs of that PP or ST are identical to the SARs in the package.
- Package name Augmented - A PP or ST is an augmentation of a predefined package if:
  - the SFRs of that PP or ST contain all SFRs in the package, but have at least one additional SFR or one SFR that is hierarchically higher than an SFR in the package.
  - the SARs of that PP or ST contain all SARs in the package, but have at least one additional SAR or one SAR that is hierarchically higher than an SAR in the package.

Note that when a TOE is successfully evaluated to a given ST, any conformance claims of the ST also hold for the TOE. A TOE can therefore also be e.g. CC Part 2 conformant.

Finally, the conformance claim may also include two statements with respect to Protection Profiles:

- PP Conformant - A PP or TOE meets specific PP(s), which are listed as part of the conformance result.
- Conformance Statement (Only for PPs) - This statement describes the manner in which PPs or STs must conform to this PP: strict or demonstrable. For more information on this Conformance Statement, see Annex D.”

CC Part 3:

**Class APE: Protection Profile evaluation** (chapter 10)

“Evaluating a PP is required to demonstrate that the PP is sound and internally consistent, and, if the PP is based on one or more other PPs or on packages, that the PP is a correct instantiation of these PPs and packages. These properties are necessary for the PP to be suitable for use as the basis for writing an ST or another PP.”

Assurance Class	Assurance Components
Class APE: Protection Profile evaluation	APE_INT.1 PP introduction
	APE_CCL.1 Conformance claims
	APE_SPD.1 Security problem definition
	APE_OBJ.1 Security objectives for the operational environment APE_OBJ.2 Security objectives
	APE_ECD.1 Extended components definition
	APE_REQ.1 Stated security requirements APE_REQ.2 Derived security requirements

APE: Protection Profile evaluation class decomposition

**Class ASE: Security Target evaluation** (chapter 11)

“Evaluating an ST is required to demonstrate that the ST is sound and internally consistent, and, if the ST is based on one or more PPs or packages, that the ST is a correct instantiation of these PPs and packages. These properties are necessary for the ST to be suitable for use as the basis for a TOE evaluation.”

Assurance Class	Assurance Components
Class ASE: Security Target evaluation	ASE_INT.1 ST introduction
	ASE_CCL.1 Conformance claims
	ASE_SPD.1 Security problem definition
	ASE_OBJ.1 Security objectives for the operational environment ASE_OBJ.2 Security objectives
	ASE_ECD.1 Extended components definition
	ASE_REQ.1 Stated security requirements ASE_REQ.2 Derived security requirements
	ASE_TSS.1 TOE summary specification ASE_TSS.2 TOE summary specification with architectural design summary

ASE: Security Target evaluation class decomposition

## Security assurance components (chapter 7)

“The following Sections describe the constructs used in representing the assurance classes, families, and components.”

“Each assurance class contains at least one assurance family.”

“Each assurance family contains one or more assurance components.”

The following table shows the assurance class decomposition.

Assurance Class	Assurance Components
ADV: Development	ADV_ARC.1 Security architecture description
	ADV_FSP.1 Basic functional specification ADV_FSP.2 Security-enforcing functional specification ADV_FSP.3 Functional specification with complete summary ADV_FSP.4 Complete functional specification ADV_FSP.5 Complete semi-formal functional specification with additional error information ADV_FSP.6 Complete semi-formal functional specification with additional formal specification
	ADV_IMP.1 Implementation representation of the TSF ADV_IMP.2 Implementation of the TSF
	ADV_INT.1 Well-structured subset of TSF internals ADV_INT.2 Well-structured internals ADV_INT.3 Minimally complex internals
	ADV_SPM.1 Formal TOE security policy model
	ADV_TDS.1 Basic design ADV_TDS.2 Architectural design ADV_TDS.3 Basic modular design ADV_TDS.4 Semiformal modular design ADV_TDS.5 Complete semiformal modular design ADV_TDS.6 Complete semiformal modular design with formal high-level design presentation
	AGD: Guidance documents
ALC: Life cycle support	ALC_CMC.1 Labelling of the TOE ALC_CMC.2 Use of a CM system ALC_CMC.3 Authorisation controls ALC_CMC.4 Production support, acceptance procedures and automation ALC_CMC.5 Advanced support
	ALC_CMS.1 TOE CM coverage ALC_CMS.2 Parts of the TOE CM coverage ALC_CMS.3 Implementation representation CM coverage ALC_CMS.4 Problem tracking CM coverage ALC_CMS.5 Development tools CM coverage
	ALC_DEL.1 Delivery procedures
	ALC_DVS.1 Identification of security measures ALC_DVS.2 Sufficiency of security measures

Assurance Class	Assurance Components
	ALC_FLR.1 Basic flaw remediation ALC_FLR.2 Flaw reporting procedures ALC_FLR.3 Systematic flaw remediation
	ALC_LCD.1 Developer defined life-cycle model ALC_LCD.2 Measurable life-cycle model
	ALC_TAT.1 Well-defined development tools ALC_TAT.2 Compliance with implementation standards ALC_TAT.3 Compliance with implementation standards - all parts
ATE: Tests	ATE_COV.1 Evidence of coverage ATE_COV.2 Analysis of coverage ATE_COV.3 Rigorous analysis of coverage
	ATE_DPT.1 Testing: basic design ATE_DPT.2 Testing: security enforcing modules ATE_DPT.3 Testing: modular design ATE_DPT.4 Testing: implementation representation
	ATE_FUN.1 Functional testing ATE_FUN.2 Ordered functional testing
	ATE_IND.1 Independent testing – conformance ATE_IND.2 Independent testing – sample ATE_IND.3 Independent testing – complete
AVA: Vulnerability assessment	AVA_VAN.1 Vulnerability survey AVA_VAN.2 Vulnerability analysis AVA_VAN.3 Focused vulnerability analysis AVA_VAN.4 Methodical vulnerability analysis AVA_VAN.5 Advanced methodical vulnerability analysis

Assurance class decomposition

## **Evaluation assurance levels (chapter 8)**

“The Evaluation Assurance Levels (EALs) provide an increasing scale that balances the level of assurance obtained with the cost and feasibility of acquiring that degree of assurance. The CC approach identifies the separate concepts of assurance in a TOE at the end of the evaluation, and of maintenance of that assurance during the operational use of the TOE.

It is important to note that not all families and components from CC Part 3 are included in the EALs. This is not to say that these do not provide meaningful and desirable assurances. Instead, it is expected that these families and components will be considered for augmentation of an EAL in those PPs and STs for which they provide utility.”

### **Evaluation assurance level (EAL) overview (chapter 8.1)**

“Table 1 represents a summary of the EALs. The columns represent a hierarchically ordered set of EALs, while the rows represent assurance families. Each number in the resulting matrix identifies a specific assurance component where applicable.

As outlined in the next Section, seven hierarchically ordered evaluation assurance levels are defined in the CC for the rating of a TOE's assurance. They are hierarchically ordered inasmuch as each EAL represents more assurance than all lower EALs. The increase in assurance from EAL to EAL is accomplished by substitution of a hierarchically higher assurance component from the same assurance family (i.e. increasing rigour, scope, and/or depth) and from the addition of assurance components from other assurance families (i.e. adding new requirements).

These EALs consist of an appropriate combination of assurance components as described in chapter 7 of this CC Part 3. More precisely, each EAL includes no more than one component of each assurance family and all assurance dependencies of every component are addressed.

While the EALs are defined in the CC, it is possible to represent other combinations of assurance. Specifically, the notion of “augmentation” allows the addition of assurance components (from assurance families not already included in the EAL) or the substitution of assurance components (with another hierarchically higher assurance component in the same assurance family) to an EAL. Of the assurance constructs defined in the CC, only EALs may be augmented. The notion of an “EAL minus a constituent assurance component” is not recognised by the standard as a valid claim. Augmentation carries with it the obligation on the part of the claimant to justify the utility and added value of the added assurance component to the EAL. An EAL may also be augmented with extended assurance requirements.”

Assurance Class	Assurance Family	Assurance Components by Evaluation Assurance Level						
		EAL1	EAL2	EAL3	EAL4	EAL5	EAL6	EAL7
Development	ADV_ARC		1	1	1	1	1	1
	ADV_FSP	1	2	3	4	5	5	6
	ADV_IMP				1	1	2	2
	ADV_INT					2	3	3
	ADV_SPM						1	1
	ADV_TDS		1	2	3	4	5	6
Guidance Documents	AGD_OPE	1	1	1	1	1	1	1
	AGD_PRE	1	1	1	1	1	1	1
Life cycle Support	ALC_CMC	1	2	3	4	4	5	5
	ALC_CMS	1	2	3	4	5	5	5
	ALC_DEL		1	1	1	1	1	1
	ALC_DVS			1	1	1	2	2
	ALC_FLR							
	ALC_LCD			1	1	1	1	2
	ALC_TAT				1	2	3	3
Security Target Evaluation	ASE_CCL	1	1	1	1	1	1	1
	ASE_ECD	1	1	1	1	1	1	1
	ASE_INT	1	1	1	1	1	1	1
	ASE_OBJ	1	2	2	2	2	2	2
	ASR_REQ	1	2	2	2	2	2	2
	ASE_SPD		1	1	1	1	1	1
	ASE_TSS	1	1	1	1	1	1	1
Tests	ATE_COV		1	2	2	2	3	3
	ATE_DPT			1	1	3	3	4
	ATE_FUN		1	1	1	1	2	2
	ATE_IND	1	2	2	2	2	2	3
Vulnerability assessment	AVA_VAN	1	2	2	3	4	5	5

Table 1: Evaluation assurance level summary”

**Evaluation assurance level 1 (EAL1) - functionally tested** (chapter 8.3)

## “Objectives

EAL1 is applicable where some confidence in correct operation is required, but the threats to security are not viewed as serious. It will be of value where independent assurance is required to support the contention that due care has been exercised with respect to the protection of personal or similar information.

EAL1 requires only a limited security target. It is sufficient to simply state the SFRs that the TOE must meet, rather than deriving them from threats, OSPs and assumptions through security objectives.

EAL1 provides an evaluation of the TOE as made available to the customer, including independent testing against a specification, and an examination of the guidance documentation provided. It is intended that an EAL1 evaluation could be successfully conducted without assistance from the developer of the TOE, and for minimal outlay.

An evaluation at this level should provide evidence that the TOE functions in a manner consistent with its documentation.”

**Evaluation assurance level 2 (EAL2) - structurally tested** (chapter 8.4)

## “Objectives

EAL2 requires the co-operation of the developer in terms of the delivery of design information and test results, but should not demand more effort on the part of the developer than is consistent with good commercial practise. As such it should not require a substantially increased investment of cost or time.

EAL2 is therefore applicable in those circumstances where developers or users require a low to moderate level of independently assured security in the absence of ready availability of the complete development record. Such a situation may arise when securing legacy systems, or where access to the developer may be limited.”

**Evaluation assurance level 3 (EAL3) - methodically tested and checked** (chapter 8.5)

## “Objectives

EAL3 permits a conscientious developer to gain maximum assurance from positive security engineering at the design stage without substantial alteration of existing sound development practises.

EAL3 is applicable in those circumstances where developers or users require a moderate level of independently assured security, and require a thorough investigation of the TOE and its development without substantial re-engineering.”

**Evaluation assurance level 4 (EAL4) - methodically designed, tested, and reviewed**  
(chapter 8.6)**“Objectives**

EAL4 permits a developer to gain maximum assurance from positive security engineering based on good commercial development practises which, though rigorous, do not require substantial specialist knowledge, skills, and other resources. EAL4 is the highest level at which it is likely to be economically feasible to retrofit to an existing product line.

EAL4 is therefore applicable in those circumstances where developers or users require a moderate to high level of independently assured security in conventional commodity TOEs and are prepared to incur additional security-specific engineering costs.”

**Evaluation assurance level 5 (EAL5) - semiformally designed and tested** (chapter 8.7)**“Objectives**

EAL5 permits a developer to gain maximum assurance from security engineering based upon rigorous commercial development practises supported by moderate application of specialist security engineering techniques. Such a TOE will probably be designed and developed with the intent of achieving EAL5 assurance. It is likely that the additional costs attributable to the EAL5 requirements, relative to rigorous development without the application of specialised techniques, will not be large.

EAL5 is therefore applicable in those circumstances where developers or users require a high level of independently assured security in a planned development and require a rigorous development approach without incurring unreasonable costs attributable to specialist security engineering techniques.”

**Evaluation assurance level 6 (EAL6) - semiformally verified design and tested**  
(chapter 8.8)**“Objectives**

EAL6 permits developers to gain high assurance from application of security engineering techniques to a rigorous development environment in order to produce a premium TOE for protecting high value assets against significant risks.

EAL6 is therefore applicable to the development of security TOEs for application in high risk situations where the value of the protected assets justifies the additional costs.”

**Evaluation assurance level 7 (EAL7) - formally verified design and tested** (chapter 8.9)**“Objectives**

EAL7 is applicable to the development of security TOEs for application in extremely high risk situations and/or where the high value of the assets justifies the higher costs. Practical application of EAL7 is currently limited to TOEs with tightly focused security functionality that is amenable to extensive formal analysis.”

**Class AVA: Vulnerability assessment** (chapter 16)

“The AVA: Vulnerability assessment class addresses the possibility of exploitable vulnerabilities introduced in the development or the operation of the TOE.”



**Vulnerability analysis (AVA\_VAN)** (chapter 16.1)

## "Objectives

Vulnerability analysis is an assessment to determine whether potential vulnerabilities identified, during the evaluation of the development and anticipated operation of the TOE or by other methods (e.g. by flaw hypotheses or quantitative or statistical analysis of the security behaviour of the underlying security mechanisms), could allow attackers to violate the SFRs.

Vulnerability analysis deals with the threats that an attacker will be able to discover flaws that will allow unauthorised access to data and functionality, allow the ability to interfere with or alter the TSF, or interfere with the authorised capabilities of other users."

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## **D Annexes**

### **List of annexes of this certification report**

Annex A: Protection Profile Card Operating System Generation 2 (PP COS G2),  
Version 1.9 [6] provided within a separate document.

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