Federal Office
for Information Security

Certification Report

BSI-CC-PP-0119-V2-2025

for

CCC Digital Key Applet Protection Profile, V 2.0

developed by

Car Connectivity Consortium LLC

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Bundesamt
für Sicherheit in der
Informationstechnik

Deutsches IT-Sicherheitszertifikat

erteilt vom Bundesamt für Sicherheit in der Informationstechnik

BSI-CC-PP-0119-V2-2025

Common Criteria Protection Profile

CCC Digital Key Applet Protection Profile, V 2.0

developed by Car Connectivity Consortium LLC

Assurance Package claimed in the Protection Profile:
Common Criteria Part 3 conformant
EAL 4 augmented by
ALC_DVS.2, ALC_FLR.2 and AVA_VAN.5

valid until 21 May 2035

SOGIS Recognition Agreement

Common Criteria

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 CC:2022 for conformance to the Common Criteria for IT Security Evaluation (CC), Version CC:2022. CC and CEM are also published as ISO/IEC 15408 and ISO/IEC 18045.

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.

Common Criteria Recognition Arrangement

Bonn, 22 May 2025
For the Federal Office for Information Security

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Head of Section

DAkkS Deutsche Akkreditierungsstelle D-ZE-19615-01-00

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A Certification

1 Preliminary Remarks

Under the Act on the Federal Office for Information Security (BSIG), 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. A PP claimed by a user, consumer or stakeholder for IT gives them the possibility to express their IT security needs without referring to a specific product. Product certifications can be based on Protection Profiles. For products which have been certified based on a Protection Profile an individual certificate will be issued but the results from a PP certification can be re-used for the Security Target evaluation within a product evaluation when conformance to the PP has been claimed.

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 usually 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.

2 Specifications of the Certification Procedure

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

- Act on the Federal Office for Information Security (BSIG)[1]
- BSI Certification and Approval Ordinance[2]
- BMI Regulations on Ex-parte Costs[3]
- Special decrees issued by the Bundesministerium des Innern (Federal Ministry of the Interior)
- DIN EN ISO/IEC 17065 standard
- BSI certification: Scheme documentation describing the certification process (CC-Produkte) [3], including PP Certification
- BSI certification: Scheme documentation on requirements for the Evaluation Facility, its approval and licencing process (CC-Stellen) [3]

1 Act on the Federal Office for Information Security (BSI-Gesetz - BSIG) of 14 August 2009, Bundesgesetzblatt I p. 2821
Current version see website: http://www.gesetze-im-internet.de/bsig_2009/index.html

2 Ordinance on the Procedure for Issuance of Security Certificates and approval by the Federal Office for Information Security (BSI-Zertifizierungs- und -Anerkennungsverordnung - BSIZertV) of 17 December 2014, Bundesgesetzblatt 2014, part I, no. 61, p. 2231
Current version see website: http://www.gesetze-im-internet.de/bsizertv_2014/index.html

3 BMI Regulations on Ex-parte Costs - Besondere Gebührenverordnung des BMI für individuell zurechenbare öffentliche Leistungen in dessen Zuständigkeitsbereich (BMIBGebV), Abschnitt 7 (BSI-Gesetz) - dated 2 September 2019, Bundesgesetzblatt I p. 1365
Current version see website: https://www.bsi.bund.de/Gebuehrenverordnung

- Common Criteria for IT Security Evaluation (CC)[4] [1] also published as ISO/IEC 15408
- Common Methodology for IT Security Evaluation [2] also published as ISO/IEC 18045
- BSI certification: Application Notes and Interpretation of the Scheme (AIS) [4]
- Internal procedure for the issuance of a PP certificate

3 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. Therefore, the results of this evaluation and certification procedure can be re-used by the product certificate issuing scheme in the evaluation of a Security Target within a subsequent product evaluation and certification procedure.

3.1 European Recognition of 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 up to and including Common Criteria (CC) Evaluation Assurance Levels EAL 4, and in addition at higher recognition levels for IT-Products related to certain technical domains only. In addition, certificates issued for Protection Profiles based on Common Criteria are part of the recognition agreement.

The SOGIS-MRA logo printed on the certificate indicates that it is recognised under the terms of this agreement by the related bodies of the signatory nations. A disclaimer beneath the logo indicates the specific scope of recognition.

Details on recognition, the signatory nations, technical domains and the agreement itself can be found at https://www.sogis.eu.

3.2 International Recognition of CC – Certificates (CCRA)

The international Common Criteria Recognition Arrangement (CCRA) became effective in September 2014 in its current version. It defines the recognition of certificates for IT-products based on collaborative Protection Profiles (cPP) (exact use), CC certificates based on assurance components up to and including EAL 2 or the assurance family Flaw Remediation (ALC_FLR) and CC certificates for Protection Profiles and for collaborative Protection Profiles (cPP).

The Common Criteria Recognition Arrangement logo printed on the certificate indicates that this certification is recognised under the terms of this agreement by the related bodies of the signatory nations. A disclaimer beneath the logo indicates the specific scope of recognition.

Details on recognition, the signatory nations and the agreement itself can be found at https://www.commoncriteriaportal.org.

4 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.

[4] Proclamation of the Federal Office for Information Security of 14 April 2023 on https://www.bsi.bund.de

The PP CCC Digital Key Applet Protection Profile, V 2.0 has undergone the certification procedure at BSI. This is a re-certification based on BSI-CC-PP-0119-2024. Specific results from the evaluation process based on BSI-CC-PP-0119-2024 were re-used.

The evaluation of the PP CCC Digital Key Applet Protection Profile, V 2.0 was conducted by the ITSEF SRC Security Research & Consulting GmbH. The evaluation was completed on 3 April 2025. The ITSEF SRC Security Research & Consulting GmbH is an evaluation facility (ITSEF)[5] recognised by the certification body of BSI.

For this certification procedure the sponsor and applicant is: Car Connectivity Consortium LLC.

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

5 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 CC concepts and terms please refer to CC [1] Part 1 through 5.

The validity of this certificate ends as outlined on the certificate. The applicant and the sponsor of this certificate are recommended to review the technical content of the Protection Profile certified according to the evolvement of the technology and of the intended operational environment of the type of product concerned as well as according to the evolvement of the evaluation criteria. Such review should result in an update and a re-certification of the Protection Profile accordingly. Typically, technical standards are reviewed on a five years basis.

The limitation of validity of this PP certificate does not necessarily impact the validity period of a product certificate referring to this Protection Profile, but the certification body issuing a product certificate based on this Protection Profile should take it into its consideration on validity.

6 Publication

The PP CCC Digital Key Applet Protection Profile, V 2.0 has been included in the BSI list of the certified Protection Profiles, which is published regularly (see also Internet: https://www.bsi.bund.de). Further information can be obtained from BSI-Infoline +49 228 9582-111.

The Certification Report may be obtained in electronic form at the internet address stated above.

[5] Information Technology Security Evaluation Facility

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 CCC Digital Key Applet Protection Profile, V 2.0 [5] is established by the Car Connectivity Consortium LLC as a basis for the development of Security Targets in order to perform a certification of an IT-product (Digital Key Applet).

The PP does not claim conformance to any other Common Criteria Protection Profile.

The Target of Evaluation (TOE) of the Protection Profile is the DK (Digital Key) Applet embedded in a SE Java Card and GlobalPlatform platform intended to be embedded in a mobile device in order to enable an end user to easily and confidently use their mobile devices as a key to their vehicle granting access to the owner, sharing with a friend, starting the engine, etc.

The TOE of the Protection Profile provides the following functions:

- Owner Pairing
- Vehicle Access/Engine Start
- Sharing Digital Keys
- Termination/Suspension of Digital Keys

The assets to be protected by a TOE claiming conformance to this PP are defined in the Protection Profile [5], chapter 3.1. 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 [5], chapter 3.2, 3.3 and 3.4; and for the functional package UWB-based Secure Ranging Support in chapter 6.3.2, 6.3.3 and 6.3.4.

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 [5], chapter 4; and for the functional package UWB-based Secure Ranging Support in chapter 6.4.

The Protection Profile [5] 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.

The security features listed below have been derived from the Technical Specification documentation [7]:

- Secure Owner Pairing
- Secure Standard Transaction
- Secure Fast Transaction
- Secure Check Presence Transaction
- Secure DK (Digital Key) Sharing
- Key Termination & Suspension

- Secure Applet Management
- (Optional) UWB-based Secure Ranging Support

These TOE security functional requirements are outlined in the PP [5], chapter 5; and for the functional package UWB-based Secure Ranging Support in chapter 6.5. They are selected from Common Criteria Part 2. Thus the SFR claim is called:

Common Criteria Part 2 conformant

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, ALC_FLR.2 and AVA_VAN.5

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

4 Results of the PP-Evaluation

The Evaluation Technical Report (ETR) [6] 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) [4] as relevant for the TOE.

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

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

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 evaluators recommend the user to consider the application notes to gain additional information and specific explanations.

Moreover, the comprehensive specification “CCC Digital Key Release 3” [7] defines the standardized interface between the vehicle and the mobile device as a NFC-based wireless interface designed for direct communication between the vehicle and mobile device. In the Protection Profile [5], this underlying specification is explicitly denoted as mandatory for a TOE developed upon this Protection Profile. *It should be noted that the cryptographic protocols and security architecture defined in this specification [7] have not been part of the current evaluation. Therefore, this certificate does not express any*

judgement about the quality or security of the cryptographic methods, protocols and the architecture defined in the specification [7].

6 Protection Profile Document

The Protection Profile CCC Digital Key Applet Protection Profile, V 2.0 [5] is being provided within a separate document as Annex A of this report.

7 Definitions

7.1 Acronyms

AIS Application Notes and Interpretations of the Scheme

BSI Bundesamt für Sicherheit in der Informationstechnik / Federal Office for Information Security, Bonn, Germany

BSIG BSI-Gesetz / Act on the Federal Office for Information Security

CCRA Common Criteria Recognition Arrangement

CC Common Criteria for IT Security Evaluation

CEM Common Methodology for Information Technology Security Evaluation

EAL Evaluation Assurance Level

ETR Evaluation Technical Report

IT Information Technology

ITSEF Information Technology Security Evaluation Facility

PP Protection Profile

SAR Security Assurance Requirement

SF Security Function

SFP Security Function Policy

SFR Security Functional Requirement

ST Security Target

TOE Target of Evaluation

TSF TOE Security Functionality

UWB Ultra Wide Band

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] ISO-Version:
ISO 15408:2022, Common Criteria for Information Technology Security Evaluation
- Part 1: Introduction and general model
- Part 2: Security functional components
- Part 3: Security assurance components
- Part 4: Framework for the specification of evaluation methods and activities
- Part 5: Pre-defined packages of security requirements

https://www.iso.org/standard/72891.html
https://www.iso.org/standard/72892.html
https://www.iso.org/standard/72906.html
https://www.iso.org/standard/72913.html
https://www.iso.org/standard/72917.html

CCRA-Version:
CC:2022 R1, Common Criteria for Information Technology Security Evaluation
- Part 1: Introduction and general model
- Part 2: Security functional components
- Part 3: Security assurance components
- Part 4: Framework for the specification of evaluation methods and activities
- Part 5: Pre-defined packages of security requirements

https://www.commoncriteriaportal.org

[2] ISO-Version:
ISO 18045:2022: Information technology Security techniques Methodology for IT security evaluation
https://www.iso.org/standard/72889.html

CCRA-Version:
CEM:2022 R1, Common Methodology for Information Technology Security Evaluation
https://www.commoncriteriaportal.org

[3] BSI certification: Scheme documentation describing the certification process (CC-Produkte) and Scheme documentation on requirements for the Evaluation Facility, approval and licencing (CC-Stellen), https://www.bsi.bund.de/zertifizierung

[4] Application Notes and Interpretations of the Scheme (AIS) as relevant for the TOE.

[5] Car Connectivity Consortium DigitalKey Protection Profile of DK Applet, Version 2.0, 24.03.2025, Car Connectivity Consortium

[6] Evaluation Technical Report, Version 1.1, 25.03.2025, SRC (confidential document)

[7] Car Connectivity Consortium Digital Key - Technical Specification Version 3.1.3, 06.11.2023, (CCC-TS-101)

C Annexes

List of annexes of this certification report

Annex A: Protection Profile CCC Digital Key Applet Protection Profile, V 2.0 [5] provided within a separate document.

Note: End of report