





Certification Report

EAL 4+ (ALC_DVS.2) Evaluation of

TÜBİTAK BİLGEM UEKAE

AKiS GEZGiN_N v1.0.1.0 BAC Configuration with Active Authentication

issued by

Turkish Standards Institution

Common Criteria Certification Scheme

Certificate Number: 21.0.03/TSE-CCCS-71



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Document Information

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Evaluation Facility	TÜBİTAK BİLGEM TDBY OKTEM
ТОЕ	AKiS GEZGiN_N v1.0.1.0 BAC Configuration with Active
	Authentication
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This report has been prepared by the Certification Expert and reviewed by the Technical Responsible of which signatures are above.

Document Change Log

Release	Date	Pages Affected	Remarks/Change Reference
1.0	19.02.2021	All	First Release

DISCLAIMER

This certification report and the IT product defined in the associated Common Criteria document has been evaluated at an accredited and licensed evaluation facility conformant to Common Criteria for IT Security Evaluation, *version 3.1, revision 5*, using Common Methodology for IT Products Evaluation, *version 3.1, revision 5*. This certification report and the associated Common Criteria document apply only to the identified version and release of the product in its evaluated configuration. Evaluation has been conducted

in accordance with the provisions of the CCCS, and the conclusions of the evaluation facility in the evaluation report are consistent with the evidence adduced.

FOREWORD

The Certification Report is drawn up to submit the Certification Commission the results and evaluation information upon the completion of a Common Criteria evaluation service performed under the Common Criteria Certification Scheme. Certification Report covers all non-confidential security and technical information related with a Common Criteria evaluation which is made under the ITCD Common Criteria Certification Scheme. This report is issued publicly to and made available to all relevant parties for reference and use.

The Common Criteria Certification Scheme (CCCS) provides an evaluation and certification service to ensure the reliability of Information Security products. Evaluation and tests are conducted by a public or commercial Common Criteria Evaluation Facility (CCTL = Common Criteria Testing Laboratory) under CCCS' supervision.

CCTL is a facility, licensed as a result of inspections carried out by CCCS for performing tests and evaluations which will be the basis for Common Criteria certification. As a prerequisite for such certification, the CCTL has to fulfill the requirements of the standard ISO/IEC 17025 and should be accredited by accreditation bodies. The evaluation and tests related with the concerned product have been performed by *TÜBİTAK BİLGEM TDBY OKTEM*, which is a public/commercial CCTL.

A Common Criteria Certificate given to a product means that such product meets the security requirements defined in its security target document that has been approved by the CCCS. The Security Target document is where requirements defining the scope of evaluation and test activities are set forth. Along with this certification report, the user of the IT product should also review the security target document in order to understand any assumptions made in the course of evaluations, the environment where the IT product will run, security requirements of the IT product and the level of assurance provided by the product.

This certification report is associated with the Common Criteria Certificate issued by the CCCS for *AKiS GEZGiN_N v1.0.1.0 BAC Configuration with Active Authentication* whose evaluation was completed on *10.02.2021* and with the Security Target document with version no *10* of the relevant product.



The certification report, certificate of product evaluation and security target document are posted on the ITCD Certified Products List at bilisim.tse.org.tr portal and the Common Criteria Portal (the official web site of the Common Criteria Project).

RECOGNITION OF THE CERTIFICATE

The Common Criteria Recognition Arrangement logo is printed on the certificate to indicate that this certificate is issued in accordance with the provisions of the CCRA.

The CCRA has been signed by the Turkey in 2003 and provides mutual recognition of certificates based on the CC evaluation assurance levels up to and including EAL2. The current list of signatory nations and approved certification schemes can be found on:

http://www.commoncriteriaportal.org



1. EXECUTIVE SUMMARY

This report constitutes the certification results by the certification body on the evaluation results applied with requirements of the Common Criteria for Information Security Evaluation.

Evaluated IT product name: AKiS GEZGiN_N BAC Configuration with Active Authentication

IT Product version: *v1.0.1.0*

Developer's Name: TÜBİTAK BİLGEM UEKAE

Name of CCTL: TÜBİTAK BİLGEM TDBY OKTEM

Assurance Package: EAL 4+ (ALC_DVS.2)

Completion date of evaluation: 10.02.2021

1.1. Brief Description

The TOE is the composition of the contactless smartcard chips P71D320P of NXP SmartMX3 platform with embedded software including electronic Machine Readable Travel Document (eMRTD) Application

1.2. Major Security Features

The TOE provides the following security services;

- Protection against modification, probing, environmental stress and emanation attacks,
- Passive Authentication (PA),
- Active Authentication (AA),
- Basic Access Control (BAC),
- SHA-1, SHA-2/224, SHA-2/256, SHA-2/384, SHA-2/512 Operations,
- True Random Number Generation,
- DES3 Encryption and Decryption,
- Retail MAC (DES3),
- Signature generation with ISO 9796-2 Scheme 1,
- Signature generation with ECDSA



1.3. Threats

The threats are categorized into Hardware related threats and Terminal, Communication and Application related threats.

Hardware Related Threats are;

- **T.Phys-Tamper:** An attacker may perform physical probing of the MRTD's chip in order to;
 - o disclose TSF Data or
 - o disclose/reconstruct the MRTD's chip Embedded Software.

An attacker may physically modify the MRTD's chip in order to;

- o modify security features or functions of the MRTD's chip,
- o modify security functions of the MRTD's chip Embedded Software,
- modify User Data
- modify TSF data
- **T.Information_Leakage:** An attacker may exploit information which is leaked from the TOE during its usage in order to disclose confidential TSF data. The information leakage may be inherent in the normal operation or caused by the attacker
- **T.Malfunction:** An attacker may cause a malfunction of TSF or of the MRTD's chip Embedded Software by applying environmental stress in order to;
 - \circ $\,$ deactivate or modify security features or functions of the TOE or $\,$
 - circumvent, deactivate or modify security functions of the MRTD's chip Embedded Software



- **T.Abuse-Func:** An attacker may use functions of the TOE which shall not be used in the phase "Operational Use" in order to
 - o manipulate User Data,
 - manipulate (explore, bypass, deactivate or change) security features or functions of the TOE
 - disclose or to manipulate TSF Data
- **T.Counterfeit:** An attacker produces an unauthorized copy or reproduction of a genuine MRTD's chip to be used as the chip of a counterfeit MRTD. The attacker may either
 - o generate a new data set from scratch
 - extract completely or partially the data from a genuine MRTD's chip and then copy them on another chip to imitate the genuine MRTD's chip

Terminal, Communication and Application related threats are;

- **T.Chip_ID:** An attacker trying to trace the movement of the MRTD by identifying remotely the MRTD's chip by establishing or listening to communications through the contactless communication interface
- **T.Skimming:** An attacker imitates an inspection system trying to establish a communication to read the logical MRTD or parts of it via the contactless communication channel of the TOE
- **T.Eavesdropping:** An attacker is listening to an existing communication between the MRTD's chip and an inspection system to gain the logical MRTD or parts of it. The inspection system uses the MRZ data printed on the MRTD data page but the attacker does not know these data in advance
- **T.Forgery:** An attacker alters fraudulently the complete stored logical MRTD or any part of it including its security related data in order to deceive on an inspection system by means of the changed MRTD holder's identity or biometric reference data.



2. CERTIFICATION RESULTS

2.1. Identification of Target of Evaluation

Certificate Number	21.0.03/TSE-CCCS-71	
TOE Name and Version	AKiS GEZGiN_N v1.0.1.0 BAC Configuration with ActiveAuthentication	
Security Target Title	Security Target of AKIS GEZGIN_N v1.0.1.0 BAC	
	Configuration with Active Authentication	
Security Target Version	10	
Security Target Date	18.01.2021	
Assurance Level	$EAL 4 + (ALC_DVS.2)$	
Criteria	 Common Criteria for Information Technology Security Evaluation, Part 1: Introduction and General Model; CCMB-2017-04-001, Version 3.1, Revision 5, April 2017 Common Criteria for Information Technology Security Evaluation, Part 2: Security Functional Components; CCMB-2017-04-002, Version 3.1, Revision 5, April 2017 Common Criteria for Information Technology Security Evaluation, Part 3: Security Assurance Components; CCMB-2017-04-003, Version 3.1, Revision 5, April 2017 	
Methodology	Common Criteria for Information Technology Security Evaluation, Evaluation Methodology; CCMB-2017-04-004, Version 3.1, Revision 5, April 2017	

TÜRK STANDARDLARI ENSTITÜSÜ

BİLİŞİM TEKNOLOJİLERİ TEST VE BELGELENDİRME DAİRESİ BAŞKANLIĞI CCCS CERTIFICATION REPORT

Protection Profile Conformance	Common Criteria Protection Profile, Machine Readable	
	Travel Document with "ICAO Application", Basic Access	
	Control, BSI-CC-PP-0055, version 1.10, March 25th 2009	
Platform	SmartMX3 P71D320P, NXP Technologies	
Secrurity Target Title of the	NXP Secure Smart Card Controller N7021 VA Security	
Platform Hardware	Target Lite	
Securirty Target Version and	<i>Rev. 2.3, June 4th 2019</i>	
Date of the Platform Hardware		
Crypto Library	Crypto Library Cobalt on N7021 VA Security Target Lite,	
	<i>Rev. 2.3, June 5th 2019</i>	
Protection Profile Conformance	Security IC Platform Protection Profile with Augmentation	
of the Platform Hardware	Packages, Version 1.0, Registered and Certified by	
	Bundesamt für Sicherheit in der Informationstechnik (BSI)	
	under the reference BSI-CC-PP-0084-2014	
Sponsor and Developer	TÜBİTAK BİLGEM UEKAE	
Evaluation Facility	TÜBİTAK BİLGEM TDBY OKTEM	
Certification Scheme	TSE CCCS	

2.2. Security Policy

Organizational Security Policies are;

• P.Manufact (Manufacturing of the MRTD's chip)

The Initialization Data are written by the IC Manufacturer to identify the IC uniquely. The MRTD Manufacturer writes the Pre-personalization Data which contains at least the Personalization Agent Key.

• **P.Personalization (Personalization of the MRTD by issuing State or Organization only)** The issuing State or Organization guarantees the correctness of the biographical data, the printed portrait and the digitized portrait, the biometric reference data and other data of the logical MRTD with respect to the MRTD holder. The personalization of the MRTD for the holder is performed by an agent authorized by the issuing State or Organization only.

• P.Personal_Data (Personal Data protection policy)

The biographical data and their summary printed in the MRZ and stored on MRTD's chip, the printed portrait and the digitized portrait, the biometric reference data of finger(s), the biometric reference data of iris image(s) and data according to LDS stored on the MRTD's chip are personal data of the MRTD holder.

2.3. Assumptions and Clarification of Scope

Assumptions for the operational environment of the TOE are;

• A.MRTD_Manufact (MRTD manufacturing on steps 4 to 6)

It is assumed that appropriate functionality testing of the MRTD is used. It is assumed that security procedures are used during all manufacturing and test operations to maintain confidentiality and integrity of the MRTD and of the manufacturing and test data (to prevent any possible copy, modification, retention, theft or unauthorized use).

• A.MRTD_Delivery (Delivery of the MRTD during steps 4 to 6)

Procedures shall guarantee the control of the TOE delivery and storage process and conformance to its objectives:

- Procedures shall ensure protection of TOE material/information under delivery and storage.
- Procedures shall ensure that corrective actions are taken in case of improper operation in the delivery process and storage.
- Procedures shall ensure that people dealing with the procedure for delivery have got the required skill.

• A.Pers_Agent (Personalization of the MRTD's chip)

The Personalization Agent ensures the correctness of;

- the logical MRTD with respect to the MRTD holder,
- o the Document Basic Access Keys,
- o the Chip Authentication Public Key (EF.DG14) if stored on the MRTD's chip, and
- the Document Signer Public Key Certificate (if stored on the MRTD's chip).

The Personalization Agent signs the Document Security Object.

• A.Insp_Sys (Inspection Systems for global interoperability)

The Inspection System is used by the border control officer of the receiving State for eMRTD examining an MRTD presented by the user and verifying its authenticity and verifying the traveler as MRTD holder. The Basic Inspection System for global interoperability includes the Country Signing Public Key and the Document Signer Public Key of each issuing State or Organization, and implements the terminal part of the Basic Access Control. The Basic Inspection System reads the logical MRTD under BAC and performs the Passive Authentication to verify the logical MRTD.

• A.BAC-Keys (Cryptographic quality of BAC Keys)

The Document BAC Keys being generated and imported by the issuing State or Organization have to provide sufficient cryptographic strength. As a consequence of the "ICAO Doc 9303", the Document BAC Keys are derived from a defined subset of the individual printed MRZ data. It has to be ensured that these data provide sufficient entropy to withstand any attack based on the decision that the inspection system has to derive Document Access Keys from the printed MRZ data with enhanced basic attack potential.

- A.Pers_Agent_AA (Personalization of the MRTD's chip including Active Authentication The Personalization Agent ensures the correctness of the Active Authentication Public Key (EF.DG15) if stored on the MRTD's chip. The Personalization Agent bears the Personalization Agent Authentication to authenticate himself to the TOE by mechanisms mentioned in A.Pers_Agent.
- A.Insp_Sys_AA (Inspection Systems for global interoperability with Active Authentication) The Inspection System may also implement the terminal part of the Active Authentication Protocol if it wants to ensure the TOE is not cloned.

2.4. Architectural Information

TOE will be in form of a paper book or plastic card with an embedded chip and possibly an antenna. It presents visual readable data including (but not limited to) personal data of the MRTD holder:

- The biographical data on the biographical data page of the passport book/card,
- The printed data in the Machine-Readable Zone (MRZ) that identifies the MRTD and
- The printed portrait.



For further information see Security Target.

2.5. Documentation

Documents below are provided to the customer by the developer alongside the TOE;

Name of Document	Version Number	Date
Security Target of AKIS GEZGIN_N v1.0.1.0 BAC Configuration with Active Authentication	V10	18.01.2021
AKIS GEZGIN_N v1.0.1.0 BAC Configuration with Active Authentication Admin and User Guide	V8	20.01.2021
AKIS GEZGIN_N v1.0.1.0 BAC Configuration with Active Authentication SAC & EAC Configuration Admin and User Guide	V5	20.01.2021

2.6. IT Product Testing

During the evaluation, all evaluation evidences of TOE were delivered and transferred completely to CCTL by the developers. All the delivered evaluation evidences which include software, documents, etc. are mapped to the assurance families Common Criteria and Common Methodology; so the connections between the assurance families and the evaluation evidences has been established. The evaluation results are available in the final Evaluation Technical Report (ETR) of AKIS GEZGIN_N v1.0.1.0 BAC Configuration with Active Authentication.

It is concluded that the TOE supports EAL 4+ (ALC_DVS.2). There are 29 assurance families which are all evaluated with the methods detailed in the ETR.

IT Product Testing is mainly described in two parts:



2.6.1. Developer Testing

Developer has prepared TOE Test Document according to the TOE Functional Specification documentation, TOE Design documentation which includes TSF subsystems and its interactions. All SFR-Enforcing TSFIs have been tested by developer. Developer has conducted 262 functional tests in total.

2.6.2. Evaluator Testing

- Independent Testing: Evaluator has chosen 26 developer tests to conduct by itself. Additionally, evaluator has prepared 23 independent tests. TOE has passed all 49 functional tests to demonstrate that its security functions work as it is defined in the ST.
- Penetration Testing: TOE has been tested against common threats and other threats surfaced by vulnerability analysis. As a result, 24 penetration tests have been conducted.

2.7. Evaluated Configuration

The evaluated TOE configuration is composed of;

- the IC Embedded Software including operating system and eMRTD application (AKIS GEZGIN_N v1.0.1.0 BAC Configuration with Active Authentication),
- Secure IC (NXP Technologies, SmartMX3 P71D320P),
- the IC Dedicated Software with the parts IC Dedicated Test Software and IC Dedicated Support Software,
- Guidance documents

2.8. Results of the Evaluation

The table below provides a complete listing of the Security Assurance Requirements for the TOE. These requirements consists of the Evaluation Assurance Level 4 (EAL 4) components as specified in Part 3 of the Common Criteria, augmented with ALC_DVS.2.

Assurance Class	Component	Component Title
Development	ADV_ARC.1	Security Architecture Description
	ADV_FSP.4	Complete functional specification
	ADV_IMP.1	Implementation representation of the TSF
	ADV_TDS.3	Basic Modular Design
	ADV_COMP.1	Design compliance with the platform certification report, guidance and ETR_COMP
Guidance Documents	AGD_OPE.1	Operational User Guidance
	AGD_PRE.1	Preparative Procedures
	AGD_COMP.1	
Life-Cycle Support	ALC_CMC.4	Production Support, Acceptance Procedures and automation
	ALC_CMS.4	Problem tracking CM coverage
	ALC_DEL.1	Delivery Procedures
	ALC_DVS.2	Sufficiency of security measures



	ALC_LCD.1	Developer defined life-cycle model
	ALC_TAT.1	Well-defined development tools
	ALC_COMP.1	Integration of the application into the underlying platform and Consistency check for delivery and acceptance procedures
Security Target Evaluation	ASE_CCL.1	Conformance Claims
	ASE_ECD.1	Extended Components Definition
	ASE_INT.1	ST Introduction
	ASE_OBJ.2	Security Objectives
	ASE_REQ.2	Derived Security Requirements
	ASE_SPD.1	Security Problem Definition
	ASE_TSS.1	TOE Summary Specification
	ASE_COMP.1	Consistency of Security Target
Tests	ATE_COV.2	Analysis of Coverage
	ATE_DPT.1	Testing: Basic Design
	ATE_FUN.1	Functional Testing
	ATE_IND.2	Independent Testing - Sample
	ATE_COMP.1	Composite product functional testing



Vulnerability Analysis	AVA_VAN.3	Focused Vulnerability Analysis
	AVA_COMP.1	Composite product vulnerability assessment

The Evaluation Team assigned a Pass, Fail, or Inconclusive verdict to each work unit of each EAL 4+ (ALC_DVS.2) assurance component. For Fail or Inconclusive work unit verdicts, the Evaluation Team advised the developer about the issues requiring resolution or clarification within the evaluation evidence. In this way, the Evaluation Team assigned an overall Pass verdict to the assurance component only when all of the work units for that component had been assigned a Pass verdict. So for TOE "AKIS GEZGIN_N v1.0.1.0 BAC Configuration with Active Authentication", the results of the assessment of all evaluation tasks are "Pass".

2.9. Comments / Recommendations

It is recommended that all guidance outlined in the Guidance Documents be followed and all assumptions are fulfilled in order to the secure usage of the TOE.



3. SECURITY TARGET

The Security Target associated with this Certification Report is identified by the following terminology:

Title: Security Target of AKIS GEZGIN_N v1.0.1.0 BAC Configuration with Active Authentication

Version: 10

Date of Document: 18.01.2021

A public version has been created and verified according to ST-Santizing:

Title: Security Target Lite of AKIS GEZGIN_N v1.0.1.0 BAC Configuration with Active Authentication

Version: 02

Date of Document: 18.01.2021



4. GLOSSARY

- AA : Active Authentication
- ADV : Assurance of Development
- AES : Advanced Encryption Standard
- AGD : Assurance of Guidance Documents
- AKIS : Akıllı Kart İşletim Sistemi
- ALC : Assurance of Life Cycle
- ASE : Assurance of Security Target Evaluation
- ATE : Assurance of Tests Evaluation
- AVA : Assurance of Vulnerability Analysis
- BAC : Basic Access Control
- BİLGEM : Bilişim ve Bilgi Güvenliği İleri Teknolojiler Araştırma Merkezi
- CC : Common Criteria (Ortak Kriterler)
- CCCS : Common Criteria Certification Scheme (TSE)
- CCRA : Common Criteria Recognition Arrangement
- CCTL : Common Criteria Test Laboratory
- CEM :Common Evaluation Methodology
- CMC : Configuration Management Capability
- CMS : Configuration Management Scope



- **DEL** : Delivery
- DES : Data Encryption Standard
- DF : Dedicated File
- **DVS** : Development Security
- EAC : Extended Access Control
- EAL : Evaluation Assurance Level
- EF : Elementary File
- ICAO : International Civil Aviation Organization
- MAC : Message Authentication Code
- MRTD: Machine Readable Travel Document
- OKTEM : Ortak Kriterler Test Merkezi
- **OPE** : Opretaional User Guidance
- OSP : Organisational Security PolicyPP : Protection Profile
- **PRE** : Preperative Procedures
- **PP** : Protection Profile
- SAC : Supplemental Access Control
- SAR : Security Assurance Requirements
- SFR : Security Functional Requirements
- ST : Security Target
- TOE : Target of Evaluation

Doküman Kodu: BTBD-03-01-FR-01 Yayın Tarihi: 04.08.2015 Revizyon Tarih/No: 06.03.2019/6

Bu dokümanın güncelliği, elektronik ortamda TSE Doküman Yönetim Sisteminden takip edilmelidir.



TSF : TOE Security Functionality

TSFI : TSF Interface

TUBİTAK : Türkiye Bilimsel ve Teknolojik Araştırma Kurumu

UEKAE : Ulusal Elektronik ve Kriptoloji Araştırma Enstitüsü

5. BIBLIOGRAPHY

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[5] DTR 74 TR 01 AKiS GEZGiN_N v1.0.1.0 BAC Configuration with Active Authentication EAL4+ (ALC_DVS.2) Evaluation Technical Report Rev1.0

[6] 0977-v2_ETR-COMP_170630_v2 Evaluation Technical Report for Composite Evaluation (ETR COMP), v7, June 30th 2017

[7] 1019-v2_ETR-COMP_171020_v2 Evaluation Technical Report for Composite Evaluation (ETR COMP), v7, October 20th 2017

[8] Common Criteria Protection Profile Machine Readable Travel Document with ICAO Application, Basic Access control, BSI-PP-0055, version 1.10, March 25th 2009

[9] Security IC Protection Profile, BSI-PP-0035, version 1.0, June 15th 2007

[10] ICAO Doc 9303, Machine Readable Travel Documents, Part 1 – Machine Readable Travel Passports, Sixth Edition, 2006, ICAO



[11] Technical Guideline TR-03110-3 Advanced Security Mechanisms for Machine Readable Travel Documents, Part 3: Common Specifications, Version 2.10, March 10th 2012

6. ANNEXES

There is no additional information which is inappropriate for reference in other sections