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Environmental influence testing methodology for operational deployments of European ABC systems

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English Version

Environmental influence testing methodology for operational deployments of European ABC systems

Méthodologie de tests de l'influence environnementale pour les déploiements opérationnels des systèmes européens de contrôle de passages aux frontières automatisés

Testmethodik für Umwelteinflüsse beim operationellen Einsatz von europäischen ABC-Systemen

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European foreword

This document (CEN/TS 16920:2016) has been prepared by Technical Committee CEN/TC 224 “Personal identification and related personal devices with secure element, systems, operations and privacy in a multi sectorial environment”, the secretariat of which is held by AFNOR.

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Introduction

This Technical Specification is focused on the application of the testing methodology defined in ISO/IEC 29197 for analysing the influence of environmental conditions on the biometric performance of European automatic border control (ABC) systems according to the features of these systems, the specificities of these systems for the European context and their intended operational environment, i.e. airports and port halls.

ABC systems are automated systems which can verify the identity of travellers crossing the borders at the border crossing points, without the need for human intervention. These systems are used by many European countries for supporting border control officer activities. Their objective is to improve border crossing processes and achieve consistent security levels throughout Europe. As a consequence, it is required that these systems conform to ISO/IEC standards for interoperability (see CEN/TS 16634:2014, Personal identification — Recommendations for using biometrics in European Automated Border Control, Clause 1). Among these standards, the multipart standard ISO/IEC 19795 "Biometric Performance Testing and Reporting" establishes requirements for planning, executing and reporting biometric performance evaluations. However, due to the fact that this set of standards does not cover the analysis of environmental conditions influence on biometric performance, ISO/IEC JTC1 SC37 WG5 began a new project for establishing a testing methodology to quantify those environmental effects. This project is ISO/IEC 29197 "Information technology — Evaluation methodology for environmental influence in biometric system performance".

However, this methodology is generic and its requirements have been specified to cover the analysis of several environmental parameters (e.g. temperature, humidity, atmospheric pressure, illumination, noise, etc.) considering all possible operational environments. Depending on the particular features of the biometric system under test and the expected operational environment, those requirements should be particularized.

European ABC systems have biometric modules which have common and well-defined features.

Firstly, European ABC systems may use one or a combination of three biometric modalities: facial, fingerprint and iris (as it is specified by CEN/TS 16634:2014, Personal identification — Recommendations for using biometrics in European Automated Border Control, 4.1). Therefore, there are certain environmental conditions that affect such modalities to a greater extent according to ISO/IEC/TR 19795-3.

On the other hand, European ABC systems are localized in specific environments such as airports, railway stations and sea ports (as it is mentioned in CEN/TS 16634:2014, Personal identification — Recommendations for using biometrics in European Automated Border Control, 5.1.1). As a result, it is possible to predict which are going to be the surrounding environmental conditions of the ABC systems and to analyse whether the systems work properly or not for the possible values of such conditions. If the biometric performance of European ABC systems is affected by any environmental condition and this problem is not detected in early stages, it may cause negatively effects in future.

In addition, European ABC systems are subjected to privacy and data protection legislation (e.g. Directive 95/46/EC). Therefore, their analysis should comply with the limitations imposed by EU and data protection regulations (see CEN/TS 16634:2014, Personal identification— Recommendations for using biometrics in European Automated Border Control, 5.1.3.6 and 5.1.4).

Consequently and considering the importance to accurately check the correct behaviour of the biometric recognition functionality of European ABC systems in their expected host environment, it is essential to specify the general testing methodology addressed by ISO/IEC 29197 for the characteristics and needs of European ABC systems.

1 Scope

The purpose of this document is to specify the ISO/IEC 29197 testing methodology for European ABC systems. This specification will cover the following aspects:

— environmental conditions which influence biometric modalities used for European ABC systems, i.e. temperature, humidity, illumination and noise;

— different tests that can be defined regarding European ABC systems and the procedures for defining of the evaluation conditions to analyse per each test;

— particular characteristics of European ABC systems in accordance to best practice recommendations and privacy and data protection regulations for this kind of systems in case of European deployments.

As a consequence, the proposed document will include the following aspects:

— specific requirements for planning and executing environmental testing evaluations for European ABC systems based on ISO/IEC 29197 project and the best practices recommendations provided by CEN/TS 16634 Personal identification — Recommendations for using biometrics in European Automated Border Control document;

— recommendations for the selection of the possible tests according to the specific system that is going to be evaluated;

— specific requirements to establish and measure such evaluation conditions as well as to establish the baseline performance;

— a specification of the biometric performance evaluation including requirements for test population, test protocols, data to record and test results consistent with operational deployments of European ABC systems.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CEN/TS 16634:2014, *Personal identification - Recommendations for using biometrics in European Automated Border Control*

ISO/IEC 29197:2015, *Information technology — Evaluation methodology for environmental influence in biometric system performance*