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**CONFIRMATION PURSUANT TO § 18 PARA. 5 SIGG**

**Secure Signature Creation Device**  
**PkBox, Version 3.0.3**

Applicant:  
Intesi Group SpA  
Via Torino 48  
I-20123 Milano, Italy

**Confirmation issued on: 2015-02-03**  
**Reference number: A-SIT-1.111**

## Preliminary Remarks

Zentrum für sichere Informationstechnologie - Austria (A-SIT) is declared by the Federal Chancellor's Ordinance BGBl II 31/2000 as a confirmation body pursuant to § 19 of the Austrian Signature Act (Signaturgesetz - SigG), BGBl I 190/1999 as amended by BGBl I 75/2010.

A-SIT is notified as a designated body under the European Signature Directive (1999/93/EC) article 3 para. 4.

A-SIT is thus made responsible for confirming the compliance of secure signature creation devices with the security requirements laid down in the Austrian Signature Act as transposition of the Annex III requirements of Directive 1999/93/EC into Austrian legislation.

## 1. Product Description

PkBox is a product for electronic signatures intended to be used as a Secure Signature Creation Device (SSCD) in a secure operational environment. It implements a Trustworthy System Supporting Server Signing (TW4S) in accordance with CEN/TS 419241:2014. When used in combination with qualified certificates PkBox generates qualified electronic signatures as defined in Directive 1999/93/EC with the legal effects of article 5 para. 1.

### Subcomponents:

An HSM device (Thales nShield Solo or nShield Connect<sup>1</sup>) is used as a cryptographic module for the generation and protection of the signature creation data (SCD). The HSM is operated according to its FIPS 140-2 level 3 certification<sup>2</sup>.

The HSM device is accessed only through PkBox COD ("Credential On Database") which uses a secure mechanism provided by the HSM for storing private keys outside the HSM in a database. The PkBox COD module is also responsible for the validation of the one-time-password (OTP) to ensure that the SCD can be reliably protected by the legitimate signatory against the use of others.

The Signature Creation Application (SCA) sends the entire document to be signed either directly to PkBox COD or uses a PkBox Remote module that is installed in the same IT infrastructure with the SCA. PkBox Remote is then responsible for the hash computation and

<sup>1</sup> Firmware Version: 2.38.7-3; Manufacturer: Thales – nCipher, 92 Montvale Ave, Suite 4500, Stoneham, MA 02180, USA

<sup>2</sup> <http://csrc.nist.gov/groups/STM/cmvp/documents/140-1/140sp/140sp1197.pdf>

sends the document hash to PkBox COD. Both PkBox modules guarantee the document integrity during the signature process, verifying the signed hash against the calculated hash value.

The SCA and the PkBox Remote module are not part of the SSCD and thus outside the scope of this confirmation.

#### Signature Creation Data:

The SCD/SVD key pair is generated within the HSM and the SCD is stored in encrypted form in a database outside the HSM. During the enrolment process the signatory has to define a secret PIN. To provide strong authentication a one-time-password (OTP) mechanism is used in addition to this PIN. PkBox can be configured to address different OTP providers:

- Vasco Vacman controller engine
- Vasco IdentiKey Server
- RSA SecureID Authentication
- RSA SecureID ACE Server
- Radius server together with: Vasco, RSA, SafeNet or McAfee validation server
- Time4ID SMS and Mobile Token OTP Engine

The OTP provider and the OTP identifier are stored together with the encrypted SCD in the database.

All cryptographic operations of generation, encryption and decryption of SCD are implemented within the HSM. The application of the SCD within the HSM is only possible after a successful OTP validation and authentication with the signatory's secret PIN.

After SCD generation a certificate request (PKCS#10) is generated and transmitted to a certificate authority. The process of issuing qualified certificates is outside the scope of this confirmation.

#### Signature Generation:

PkBox's signature process is structured as follows:

- The signature credential specified by the signatory is received from the credential database.
- The associated SCD is imported into the HSM.
- The PIN provided by the signatory is verified inside the HSM.
- The selected credential access policies are verified.
- The validity of the OTP is checked using the vendor defined within the credential access policies.
- In case of a failure in the verification of PIN or OTP values, the signing process is aborted.

In case of a successful verification of all the authentication parameters, the signature is generated within the HSM.

## **2. Compliance with the Requirements of SigG<sup>3</sup> and SigV<sup>4</sup>**

The Signature Creation Device meets the following requirements, provided that the conditions in section 4 are fulfilled:

- requirements laid down in § 18 para. 1 and para. 2 SigG, therefore fulfilling the requirements laid down in Annex III of Directive 1999/93/EC
- requirements laid down in § 3 para. 1 and para. 2 SigV<sup>5</sup>
- requirements laid down in § 6 para. 3 SigV<sup>6</sup>

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<sup>3</sup> Austrian Signature Law: „Bundesgesetz über elektronische Signaturen (Signaturgesetz – SigG“, BGBl. I Nr. 190/1999 as amended by BGBl. I Nr. 75/2010

<sup>4</sup> Austrian Signature Ordinance: „Verordnung des Bundeskanzlers über elektronische Signaturen (Signaturverordnung 2008 – SigV 2008“, BGBl. II Nr. 3/2008 as amended by BGBl. II Nr. 401/2010

<sup>5</sup> Requirements regarding the examination of technical components and procedures for qualified signatures (see section 6 of this confirmation) and regarding suitable algorithms and parameters (see section 5 of this confirmation)

The compliance of the Signature Creation Device is thus confirmed within the following categories:

- components and methods for generating the signature creation data
- components and methods for storing the signature creation data
- components and methods for applying the signature creation data

### 3. Validity Period of the Confirmation

This confirmation is valid for a period of two years from the date of issue.

### 4. Operating Conditions

The validity of this confirmation is subject to the conditions stated below. The measures taken shall be

- ascertained by the CSP's security and certification policy in accordance with § 12 SigV<sup>7</sup>,
  - integrated into the guidance of the signatory and
  - their effect shall be ensured by means of supervision.
- (1) The unambiguous assignment and the safe completion of the user session, the confidentiality and integrity of the authorization codes as well as the integrity of the data to be signed during transmission from the signatory to the SSCD are part of the SSCD's system environment (§ 4 SigV<sup>8</sup>) and thus outside the scope of this confirmation. It must be ensured that the signatories are informed that components used for the initiation of the signature process (OTP device, web browser) must be suitable protected. The signatories shall keep control of their assigned OTP devices and shall promptly report any circumstance where the credential is compromised according to the defined revocation or suspension procedures.
- (2) The SSCD must be operated in a secure operational environment; this environment must provide sufficient measures to protect the SSCD against physical tampering and unauthorized physical or network access. In particular the following procedures<sup>9</sup> shall be adhered to:
- The SSCD shall be installed in a secured and controlled access area of the IT department of the organization. No one but the appliance administrator shall be able to physically access the appliance or its surroundings.
  - The appliance administrator must periodically check the appliance's case for any evidence of physical tampering. The check must be performed at least daily.
  - The appliance administrator must periodically check that the secure environment of the SSCD is not compromised with any hardware or software that can violate the security of the SSCD. This includes network sniffers and devices that may be used for timing attacks. This check must be performed at least daily.
  - The HSM must be initialised in FIPS 140 level 3 mode.
  - During HSM initialisation a quorum of at least two has to be defined for the HSM's Administrator Card Set (ACS) and the generated smart cards have to be controlled by different persons to ensure the principle of dual control.

Compliance of the measures taken by the operator of the SSCD shall be subject to a periodic review.

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<sup>6</sup> The Secure Signature Creation Device must be operated in a secure operational environment (see section 4 para. 2 of this confirmation)

<sup>7</sup> § 12 SigV defines the minimum content of the CSP's security- and certification policy

<sup>8</sup> in accordance with recital (15) of Directive 1999/93/EC: '*Annex III covers requirements for secure signature-creation devices to ensure the functionality of advanced electronic signatures; it does not cover the entire system environment in which such devices operate;*'

<sup>9</sup> Defined in PkBox Security Target version 1.4, Security Objectives for the Operational Environment resp. PkBox Operational User Guidance version 1.4

## 5. Algorithms and Corresponding Parameters

For the creation of qualified electronic signatures the SSCD uses the following algorithm:

- RSA (corresponds to SigV Annex, table 4, index number 1.01) with padding EMSA-PKCS1-v1\_5 (corresponds to SigV Annex, table 3, index number 3.01)

RSA is used with modulus lengths of 2048 or 4096 bits.

For the calculation of hash values the following algorithms are supported<sup>10</sup>:

- SHA-256, SHA-384 and SHA-512 (corresponds to SigV Annex, table 2, index numbers 2.04, 2.05 and 2.06)

Thus the requirements of § 3 para. 2 SigV are met.

## 6. Assurance Level and Strength of Mechanism

For the used HSM (Thales - nCipher nShield Solo or nShield Connect, firmware version 2.38.7-3) the FIPS Validation Certificate No. 1197 applies, issued on 2009-10-06 by the US (National Institute of Standards and Technology) and the Canadian (Communications Security Establishment) FIPS 140-2 certification body. The certificate confirms that the HSM was successfully evaluated against FIPS 140-2 level 3.

Since there is no certification against a suitable protection profile published as reference number for generally recognised standards in the Official Journal of the European Communities in accordance with article 3, paragraph 5 of Directive 1999/93/EC A-SIT verified the fulfilment of organizational and technical security requirements according to § 6 para. 3 SigV.

The results of the performed assessment which is the basis for this confirmation are documented in the confirmation report under the reference A-SIT-1.111.

### Authorized Signatures:

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<sup>10</sup> In the case of PKBox Remote configuration the hash value calculation is performed outside of the SSCD