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IT Security techniques — Test tool requirements and test tool calibration methods for use in testing non-invasive attack mitigation techniques in cryptographic modules —

Part 1: Test tools and techniques

Techniques de sécurité IT — Exigences de l'outil de test et méthodes d'étalonnage de l'outil de test utilisées pour tester les techniques d'atténuation des attaques non invasives dans les modules cryptographiques —

Partie 1: Outils et techniques de test



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Foreword

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Introduction

Cryptographic modules provide cryptographic services and protect critical security parameters (CSPs). Protection of CSPs can either be logical, physical, or both. However, information such as knowledge of CSPs can leak out of the cryptographic module when manipulated, if the module is not designed to mitigate such leakage. Without mitigation, a malicious attacker can record available side-channel leakage. This leakage is a physical quantity related to the CSPs and can be analysed in a manner to extract knowledge of those parameters. Such analysis is passive, in that it simply collects the side-channel leakage utilizing measurement apparatus which is freely available. Notice that the measurement tool can be adaptively controlled. This kind of extraction and analysis is referred to as non-invasive. Techniques which allow the extraction of CSPs out of this non-invasive leakage is termed an "attack" on the module.

This document focuses on the measurement and analysis of side-channel information. Side-channel non-invasive test tools can be automated to collect such leakage. To characterize the quality of the test tools, metrics are needed, such as signal-to-noise ratio (S/N) (described in ISO/IEC 20085-2). ISO/IEC 20085 (all parts) addresses the measurement and analysis techniques. Those are automated in a test tool. The functionality and the operation of a test tool are described in ISO/IEC 20085 (all parts).