



TECHNICAL ADVISORY GROUP ON MACHINE READABLE TRAVEL DOCUMENTS

Sixteenth Meeting

(Montreal, 26 to 28 September 2005)

Agenda Item 2: Implementation of e-passports
Agenda Item 2.1: Progress and issues

REPORT ON TEST METHODOLOGIES BEING DEVELOPED FOR MRTDs AND e-MRTDs

(Presented by the New Technologies Working Group)

1. INTRODUCTION

1.1 This document describes the work being undertaken within WG3 to develop test methodologies for electronic machine-readable travel documents (e-MRTDs). The history of the work to date and the work programme moving forward are described.

2. BACKGROUND

2.1 During the ISO WG3 meeting in Singapore, September 2003, it was agreed that a task force should be created to look at test methodologies, specifically related to the e-Passport. This new group felt that work should begin on a test specification, and that the most urgently required tests were related to durability. Work was begun on bending and impact as these were felt to be the most important items.

2.2 At the second meeting of the test methodology task force (TF4), a first draft of a test specification was reviewed. The document was not suitable for a wider audience, however it did lead to agreement on the specific test items that should be included in a durability test specification.

2.3 The third meeting of TF4 was held at the end of the WG3 meeting in Kyoto in September 2004. This meeting saw the list of test items expand to include RF, protocol, and system-related sections, although it was felt that these should be addressed only after the durability test specification was dealt with.

2.4 The most recent meeting of TF4 was held in Ottawa in May of 2005. At this meeting we reaffirmed our desire to develop a test specification for e-Passports that will eventually cover:

- 1) Durability (ageing)
- 2) Protocol (ISO7816, LDS, PKI)
- 3) RF electrical interface (ISO 14443)
- 4) Data content
- 5) Performance

2.5 A new draft test specification framework has been developed which will provide a systematic approach to testing, and will provide ICAO with a tool for setting minimum quality levels for e-MRTDs.

2.6 Details of the work programme are given in Annex A of this Working Paper.

2.7 The Table-of-Contents of the test specification technical report is provided as Annex B.

3. **ACTION BY THE TAG/MRTD**

3.1 The TAG/MRTD is invited to:

- a) note the work done to date on test methodologies; and
- b) endorse the continuing work plan on this topic.

APPENDIX

Annex A: TF4 WORK PROGRAMME

A.1 Introduction

This annex describes the work programme that has been set for the test methodology task force (TF4) of ISO/IEC/JTC1/SC17/WG3.

A.2 Development of test cases for a durability specification

TF4 has discussed and agreed that the following list of test areas will be included in the ageing section of the testing technical report.

Test	Description
Testably functional	Does the electronic chip function as specified?
Colour fastness	Is the passport recognizable as genuine?
Warpage	After being stressed, the document should not warp more than a certain amount.
Data retention	Will the data in the chip survive after 5 or 10 years?
Climate	Expose the document to various climates encountered around the world.
UV light	Will the document survive exposure to UV light?
Social chemicals	Expose the document to various chemicals encountered in daily use (e.g. water, alcohol).
Page bending	Bend an individual page to verify that it does not detach from the book.
Torsion	Twist the book or document.
X-ray	Expose the document to x-ray levels that might be encountered during border control screening.
Perspiration	Expose the document to artificial perspiration.
Static electricity	Subject the document to normal ESD levels.
Impact	Simulate the action of stamping an entry or exit visa.
Book bending	The “back pocket” test.
Page attachment	Similar to “Page bending”, but is a lateral “pull” test instead of bending.
Roller pressure	This test case was originally envisaged as a simulation of a MRTD being rolled over by a wheeled chair.
Point pressure	Impact by a sharp object.

Test	Description
Atmospheric pressure	Will the e-document survive transport in an un-pressurized airplane?
Rolling pen	The document (and chip) must survive being written on.
Abrasion	Rubbing.

Members of TF4 have been assigned test cases to develop that can be merged into the test framework document.

Only durability (ageing) tests are being formally investigated at this time, although work is continuing in the background on the other test areas.

A.3 **Draft Test Specification Technical Report**

TF4 has agreed that it can have a completed draft of a durability (ageing) test specification prepared for review, by the next WG3 meeting in October, 2005.

Once reviewed by WG3 and NTWG, this document will take the form of an NTWG Technical Report.

A.4 **Future Areas of Study**

TF4 envisages a multi-parted test specification that covers the following topics:

- Durability (ageing)
- Protocol (ISO7816, LDS, PKI)
- RF electrical interface (ISO 14443)
- Data content
- Performance

As noted, TF4 is currently concerned with durability, and will address other topics as time allows. The next topics to address will be Protocol and RF testing, although no schedule has been agreed within TF4. A German contribution is forthcoming that may form the basis for a protocol test suite.

Annex B: DRAFT Table of Contents – TEST SPECIFICATION FOR MRTDs

- 1) Scope
- 2) Introduction
- 3) Terms and Definitions
- 4) Methodology
- 5) Stress Methods
 - 5.1 Climate Stress Method
 - 5.2 Impact Stress Method
 - 5.3 Bending Stress Method
 - 5.4 Torsion Stress Method
 - 5.5 Roller Pressure Stress Method
 - 5.6 Point Pressure Stress Method
 - 5.7 Pen Stress Method
 - 5.8 Status Electricity Stress Method
 - 5.9 Atmospheric Pressure Stress Method
 - 5.10 Resistance to Chemicals Stress Method
 - 5.11 Abrasion Stress Method
 - 5.12 Page Tearing Stress Method
 - 5.13 Data Retention Stress Method
 - 5.14 UV Light Stress Method
 - 5.15 X-Ray Stress Method
- 6) Evaluation Methods
 - 6.1 Functional Chip Evaluation Method
 - 6.2 Physical Damage Evaluation Method
 - 6.3 Electrical Function Evaluation Method
 - 6.4 Colour Fastness Evaluation Method
- 7) Test Sequences
 - 7.1 Test Plans

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