Minutes of the 22nd meeting of WG8 Task Force 2

held at: BSI
389 Chiswick High Road
London, W4 4AL, United Kingdom
on: 15th and 16th June 2004

Participants:

Pascal ROUX	Convener	
Tom OVNERUD	Australia	
Peter REEVES	Australia	
Franz HUBER	Austria	
Reinhard MEINDL	Austria	
Albert DOROFEEV	Belgium	
Jean-Paul CARUANA	France	
Elisabeth CROCHON	France	(Observer)
Frédéric HANAUER	France	
Jean-Pierre LAFON	France	
Klaus FINKENZELLER	Germany	
Michael HEGENBARTH	Germany	
Horst NIEDEREHE	Germany	
Mickey COHEN	Israel	
Hemy ITAY	Israel	
Hiroshi KARIBE	Japan	
Shigehisa MARUYAMA	Japan	(Observer)
Mikio MUKAI	Japan	
Junichi OKAMOTO	Japan	(Observer)
Yoshihisa TAKAYAMA	Japan	
Karl BROOKES	UK	
Alan McHALE	UK	
Chris STANFORD	UK	
Walt BONNEAU	USA	
Francis CHRISTIAN	USA	
Mike EMERY	USA	(Observer)
Marty FRARY	USA	(Observer)
Richard GRASSO	USA	(Observer)
Roger LARSON	USA	(Observer)
Robert BALDERSTON	SC17/WG3	
Joe RAVENIS	SC17/WG3	

OPENING OF THE MEETING

1. The convener opened the twenty-second meeting of WG8 Task Force 2 by welcoming all the participants. He expressed special thanks to Chris Stanford and BSI for the organisation of this meeting.

ROLL CALL

2. During the roll call, the convener asked all the participants to introduce themselves and to indicate their affiliations.

REVIEW OF THE MEMBERSHIP LIST

3. An attendance register was circulated during the meeting. The TF2 membership is mentioned in the document WG8 SD2. The regular delegates are requested to register as TF2 members (through their national bodies) to get access to the TF2 documents on the WG8 website.

ADOPTION OF THE AGENDA

4. The agenda (document TF2 N416) was agreed with the following addition:

- TF2 response to SC17/WG3 request for clarification (documents TF2 N420 and TF2 N428).

APPROVAL OF THE LAST MEETING MINUTES

5. The minutes of the twenty-first meeting in Munich (document TF2 N413) were approved.

The test of bit error rate (§12) was discussed again with no consensus. TF2 decided to add this topic in standing document 4 for further consideration.

REVIEW OF AVAILABLE DOCUMENTS

6. Documents submitted before this meeting were as follows:

TF2 N414	WG8/TF2 feedback on assumptions made in document "A compatibility test standards development for MRTD" from WG3	(convener TF2)
TF2 N415	"Class 1" definition	(convener TF2)
TF2 N416	Agenda of the 22nd meeting of WG8/TF2 London, United Kingdom – 15th and 16th June 2004	(convener TF2)
TF2 N417	Organisational details of the 22nd meeting of WG8/TF2 London, United Kingdom – 15th and 16th June 2004	(convener TF2)
TF2 N418	Axalto proposal for "Class 1" definition	(Axalto)
TF2 N419	Technical contribution for standing document SD4 proposal 11 about the improvement of the PCD load modulation reception in ISO/IEC 10373-6	(LETI/CEA)
TF2 N420	Request for clarification to ISO/IEC 14443-1	(SC17/WG3)

TF2 N421	Comments on WG8 N 969, in particular related to the actual version of the NMDA spec.	(SC17/WG3)
TF2 N422	Appreciation from Terry Hartmann, Chairman of the ICAO NTWG ePassport Task Force, and proposal for a joint TF2/ePassport Task Force meeting in London	(SC17/WG3)
TF2 N423	US Proposal on a Working Draft for amendment to ISO/IEC 14443-1:2000 - Contactless integrated circuits(s) card-Proximity Limited Use cards	(USA)
TF2 N424	Biometrics Deployment of Machine Readable Travel Documents, ICAO TAG MRTD/NTWG, Technical Report, Version 2.0 (draft 2) - Development and Specification of Globally Interoperable Biometric Standards for Machine Assisted Identity Confirmation using Machine Readable Travel Documents	(SC17/WG3)
TF2 N425	Invitation to a special joint meeting of SC17/WG8/TF2 and ICAO/NTWG E-passports Task Force	(SC17/WG3)
TF2 N426	Contribution on antenna matching circuit adaptation for data rates fc/64, fc/32 and fc/16	(Philips)
TF2 N427	Proposed text of ISO/IEC 10373-6/PDAM3.2 - Identification cards - Test methods - Proximity cards - Amendment 3: Protocol test methods for proximity coupling devices	(project editor)
TF2 N428	Liaison Contribution from WG3 Member Robert Balderston on clarification to ISO/IEC 14443	(SC17/WG3)
TF2 N429	Agenda Order & Discussion Items of the Special ICAO/NTWG ePassports & WG8 Meeting Concerning ePassports Interoperability, London 17 June 2004 - Version 3 (Final version) of this document	(convener WG8)
TF2 N430	Complementary contribution to WG8 N968 / TF2 N418 Why Class 1 PICC are not suitable for ICAO / NTWG E-passport New proposal for a Class 1 PCD	(Axalto)
TF2 N431	Comments on Discussion Items in WG8 N 982 = TF2 N 429 concerning ePassports Interoperability	(Gemplus)

7. Four additional documents were submitted during this meeting or immediately after:

TF2 N432	Proposed text of ISO/IEC 10373-6/PDAM1.3 - Identification cards - Test methods - Proximity cards - Amendment 1: Protocol test methods for proximity cards	(project editor)
TF2 N433	Contribution and demonstration: Very High Data Rate Contactless Interface by an ISO/IEC 14443 Type B extension	(LETI/ST)
TF2 N434	Bring up the need to VHBR	(Japan)
TF2 N435	Reaction to Axalto contribution WG8 N 984 / TF2 N 430	(Arsenal Research)

PREPARATION OF WD ISO/IEC 10373-6/AM4 "ADDITIONAL TEST METHODS FOR PCD RF INTERFACE AND PICC ALTERNATING FIELD EXPOSURE"

8. Standing document 4, proposal 4 (Modulation index and waveform test with load)

The tool was again discussed with the following conclusions:

- there are three elements: the PCD, the load and the pickup coil;
- non linearities are low so the modulation index does not depend on the position of the pickup coil;
- the Q factor of the tool will be low and will have negligible effect on rise/fall times so the calibration coil may also be used to measure them;
- C3 (1 nF) shall not be removed during the measurements;
- an additional RC low pass filter (10 kOhms + 1 nF) will be added between C3 and the voltmeter;
- the voltmeter wires shall be twisted. The layout is important (contributions proposing a layout are welcome);
- for simplicity a load giving 3 V (dc) at H_{max} was proposed (i.e. a resistor of 78 Ohms); after discussion a load giving 6 V (dc) at H_{max} was agreed (the corresponding R2 value has to be found).

9. Standing document 4, proposal 11 (Improvement of the PCD load modulation reception test)

The document TF2 N419 was presented by Pascal Roux. Its main conclusion (it is not possible to restrict the PICC modulation angle) was accepted. Therefore a tool is still needed to verify that a PCD detects the PICC modulation whatever the modulation angle.

As the precise definition and test of this tool is not obvious and will take time, TF2 agreed not to include this proposal in WD ISO/IEC 10373-6 AMD4 to be prepared before next TF2 meeting. If a real tool and some test results are available at next TF2 meeting then the proposal 11 may be added in WD ISO/IEC 10373-6 AMD4, else it will be added in the next revision of ISO/IEC 10373-6 to be started in 2005.

PREPARATION OF WD ISO/IEC 10373-6/AM5 "BIT RATES OF FC/64, FC/32 AND FC/16"

10. Contribution on impedance matching network

The document TF2 N426 was presented by Reinhard Meindl. To test PICC reception correctly the worst case(s) for each bit rate must be tested. To produce these worst cases there are two solutions:

- use as many matching networks as worst cases (pause duration, amplitude modulation, rise/fall times…);
- use a single matching network and a programmed ASK signal.

The second proposal was proposed by Reinhard Meindl and agreed by TF2. Walt Bonneau added that a quality factor of 16 is appropriate for the test circuit.

11. Project editing

Although not volunteer, Reinhard Meindl was appointed to be the project editor for the amendment 5 of ISO/IEC 10373-6.

AMENDMENTS TO 14443-2, 14443-3, 14443-4 AND 10373-6 FOR BIT RATES OF FC/8 AND HIGHER

12. The document TF2 N433 and a successful demonstration using video transfer at fc/8 was presented by Elisabeth Crochon. 1 kbit frames were sent without any resynchronisation pattern (the only synchronisation is in the SOF). A demonstration at fc/4 is scheduled for 2005.

13. The document TF2 N434 was presented by Yoshihisa Takayama. This documents justifies the need for bit rates of fc/8 and higher. Michael Hegenbarth reminded the group of the scope of SC17 which is now "Personal identification and cards". The TF2 convener also reminded of the present situation of the "very high bit rate" topic, as agreed during last meetings: bit rates of fc/8 and higher are interesting but not "very urgent" and they will progress depending on the received contributions.

INTEROPERABILITY ISSUES

14. The documents TF2 N418 and TF2 N430 were presented by Jean-Pierre Lafon. The summary of the presentation is:

- constraints must be both on PCD and on PICC;
- Axalto proposed to put more constraints on the PCD and less constraints on the PICC;
- tests on final products are preferable to implementation restrictions;
- the coupling factor between PICC and PCD must be limited; very high coupling factor is the main reason of the problems described in SD4, proposal 14;
- the coupling factor depends only on antennas geometry;
- the value of the critical coupling factor depends on the quality factors Q_{PCD} and Q_{PICC};
- a good solution to avoid overcoupling is to have a large PCD antenna, bigger than ID1 format;
- the PCD and the PICC must not have the same antenna size.

Note: Franz Huber corrected a wrong statement in documentTF2 N430 with the following clarifications:

- Arsenal Research does not provide a "Class 1 certification" but a "Mifare certification";
- Readers mentioned in the document were not certified by Arsenal Research.

To conclude, Jean-Pierre Lafon proposed that the forbidden central zone of Class 1 PICC antenna definition be suppressed and that the PICC antenna size be larger than 15 cm^2. This would be a sufficient requirement if the PCD antenna is larger than ID1 format.

Hemy Itay pointed out that close distance operation is required and that some small readers cannot have a large antenna.

In a discussion about the interest of an independent PCD standard no consensus was found as some delegates pointed out that ISO/IEC 14443 is the standard of the interface which must include all necessary requirements on both sides. Michael Hegenbarth reminded the group of

the WG8 resolution 32.03 (see document WG8 N938) which calls for national positions on that subject.

The conclusions of the discussions on "Class1" definition were:

- the zone allowed for the antenna will be extended by 1,5 mm and will have rounded corners;
- other classes may be created (e.g. for PICCs with embossing);
- each class shall have a corresponding reference PICC to guarantee PCD compliance.

LIMITED USE CONTACTLESS SMART CARD STANDARDS DEFINITION

15. The document TF2 N423 was presented by Walt Bonneau. A technical discussion followed and is summarised here below:

- the Edmonson size (30 mm x 66 mm) is not proposed because hardly compliant with ISO/IEC 14443-2;
- the irradiation test at 56 kGy could be removed or optional if expensive;
- the limited use PICC thickness should not exceed the maximum thickness of TFC1 tickets to avoid jamming in devices dealing both with contactless and magnetic tickets;
- chip size should be small for better reliability (the proposed 1 K byte limit which will be replaced with a size limitation in mm^2);
- the chip should not be put on the PICC diagonal;
- if the ticket thickness is 0,40 mm, no bump should be allowed;
- if the ticket thickness is 0,27 mm, a bump should be allowed.

Then another discussion took place about which standard should deals with the limited use PICCs requirements. The two proposals were ISO/IEC 15457 (proposed by France) and ISO/IEC 14443 (proposed by USA).

The main arguments presented for ISO/IEC 15457 were:

- WG8 is not the expert of physical characteristics or manufacturing;
- WG1 should lead this standardisation process;
- WG1 wants to progress on this subject and will not block WG8;
- a part 4 of ISO/IEC 15457 could be created if the integration in the other parts is not a good solution.

The main arguments presented for ISO/IEC 14443 were:

- ISO/IEC 15457 cannot be applied as it is;
- if ISO/IEC 15457 is used then ISO/IEC 14443-1 is useless and should be abandoned;
- ISO/IEC 15457 is difficult to read, clauses applicable to limited use PICCs will not be obvious;
- WG1 is not expert in some domains (e.g. thermal printing);
- WG8 is responsible of PICC standardisation;
- we already lost too much time.

Michael Hegenbarth proposed to wait for the ballot result of French proposal and see if there is a conflict with WG1.

USA will integrate the comments received during the meeting in the working draft amendment to ISO/IEC 14443-1.

This new document will be distributed in TF2, then WG1 for comments, then TF2 again, then to WG8 for CD ballot decision.

This process may change due to existing balloting.

REVISION OF ISO/IEC 14443-1:2000

16. The revision of ISO/IEC 14443-1:2000 is postponed until the standardisation process of limited use cards is agreed.

CD ISO/IEC 10373-6/AM1 AND AM3: CHECK AND RELEASE OF THE DOCUMENTS

17. Mickey Cohen presented the resolution of comments of these two amendments. The new ISO template (STD2.1C) was used (it is much better than the previous one for amendments containing annexes). Delegates may comment these texts until 2004-06-30.

STANDING DOCUMENT 4, PROPOSALS 15 TO 20

18. Standing document 4, proposal 15 (Error handling in ACTIVE state for PICC type A)

TF2 agreed that clause 5.6.1.2 of ISO/IEC 14443-4 must be modified by adding "and go to idle state as specified in ISO/IEC 14443-3" after "shall remain in receive mode".

This change will be included in ISO/IEC 14443-4:2001/PDAM1.

19. Standing document 4, proposal 16 (Examples of load modulation amplitude limit)

TF2 agreed with the proposed note and suggested that some countries should comment the current ballot of ISO/IEC 14443-2:2001/FPDAM2 to propose the inclusion of this clarification.

20. Standing document 4, proposal 17 (Extra guard time at high bit rates)

This proposal concerns both communication directions.

It was pointed out that, for PICC frames, EGT shall already be an integer number for fc/16 and an integer or half number for fc/32 because of the synchronisation with the subcarrier as specified in ISO/IEC 14443-2:2001, 9.2.4.

Countries should comment current ballot of ISO/IEC 14443-3:2001/FPDAM1 then WG8 will resolve the comments during its next meeting.

21. Standing document 4, proposal 18 (SFGT for PICC type B)

TF2 agreed that PICCs of type B also need time before being ready for the protocol and made the following two proposals:

<u>Proposal 1:</u>

In Answer to ATTRIB, CID definition is modified:

- if the PICC does not support CID then (0, SFGI)b is returned

- else the 4 bits returned are : (1, SFGI)b

SFGI is from 0 to 6

SFGT = (256 x 16/*fc*) $2^{(SFGI+1)x2}$

SFGT applies only once after Answer to ATTRIB (like in type A, only after ATS)

Proposal 2:

In Answer to ATTRIB, CID =15 (RFU) means few more bytes coming, TLV structure, containing at least CID support and SFGI from 0 to 14.

SFGT = (256 x 16/*fc*) 2^{SFGI}

SFGT applies only once after Answer to ATTRIB (like in type A, only after ATS)

Other solutions are possible so experts may propose better solutions. The proposal with best consensus among active experts will be integrated in ISO/IEC 14443-3:2001/PDAM3 to be balloted in a few weeks.

22. Standing document 4, proposal 19 (EOF/SOF optional suppression)

TF2 agreed that this option should be removed from the standard. This change will be integrated in ISO/IEC 14443-3:2001/PDAM3 to be balloted in a few weeks with a special warning because the standard is modified so that a previously compliant product may become non compliant.

23. Standing document 4, proposal 20 (Bit rate re-negotiation after the initial negotiation)

TF2 agreed that this possibility could be useful. Technical contributions on this subject are requested.

TEST METHODS FOR HANDLING OF RESERVED FIELDS AND VALUES

24. These test methods will be prepared as soon as the amendments of the base standards about "Handling of reserved fields and values" (ISO/IEC 14443-3:2001/AM3 and ISO/IEC 14443-4:2001/AM1) reach the FDIS stage.

TF2 RESPONSE TO SC17/WG3 REQUEST FOR CLARIFICATION

25. TF2 answered to the documents TF2N420 and TF2 N428 using the minutes of 19th and 20th TF2 meetings and some additional discussions.

26. Alternating magnetic field

The basic requirements given in clause 4.3.5 of ISO/IEC 14443-1:2000 will be kept but the alternating magnetic field will be tested only at the PICC resonance frequency and at 13,56 MHz. No test will be required at other frequencies.

In these two tests, the orientation of the PICC will be parallel to the coil(s) producing the field.

Alternating magnetic field test at the PICC resonance frequency

- the non-modulated magnetic field strength will be 33 times the value given in table 1 of ISO/IEC 14443-1:2000;
- the duration of the test will be 10,9 seconds (6 minutes divided by 33).

Alternating magnetic field test at 13,56 MHz

- the 13,56 MHz magnetic field will be ASK 100% modulated with the following duty cycle:
  - 25 seconds at 12 A/m rms;
  - 5 seconds at 0 A/m rms;
- the duration of the test will be 5 minutes (10 cycles as defined above).

27. Alternating electric field

The basic requirements given in clause 4.3.6 of ISO/IEC 14443-1:2000 will be kept but no test of the alternating electric field will be required.

28. Static magnetic field

Michael Hegenbarth reported from WG1 that static magnetic field requirement (clause 4.3.8 of ISO/IEC 14443-1:2000) should be removed because useless.

29. Maximum Frame Waiting Time

TF2 acknowledged that the maximum possible FWT is quite long. Some delegates reported using FWTs between 5 and 20 ms and pointed out that the S(WTX) mechanism may be used for special operations. As the choice of FWT is an application decision, TF2 decided not to modify ISO/IEC 14443.

30. Keep alive message

Any APDU like "Read 1 byte" may be used to check the presence of a PICC in PROTOCOL state.

An R(NAK) block may also be sent. If its block number is not equal to the PICC's current block number, the PICC will answer with a R(ACK) block (see rule 12 in ISO/IEC 14443-4:2001, 7.5.4.3).

NEXT TF2 MEETINGS

31. The twenty-third meeting will be held in Sydney, Australia in October 2004 on Friday 8th and Monday 11th.

32. The twenty-fourth meeting will be held in Madrid, Spain in April 2005 (to be confirmed).

Distribution: WG8 and TF2 members

Pascal ROUX