



TETRA SwMI Interoperability Certificate

3 June 2002

Nokia Telecommunications

Telelaboratoriet (TDC Mobil A/S) has witnessed that the Nokia infrastructure is operating in accordance with

TTR 001-5 v1.0.0 (Nov 2000), TETRA Interoperability Profile (TIP)
version 3 Part 5: Packet Data

for the following features:

Features	Tested(Yes/No)
• Single PDP context	Yes
• Context activation and context deactivation	Yes
• Datagram relay from TE to SwMI and from SwMI to TE	No
• IP static and dynamic addressing	Yes
• IP user authentication	No
• Header compression	No

The tests have been performed on Nokia NTS 2.1 infrastructure on the 14th and the 16th of March 2001 with hardware release DXT64 and software release (DXT64: W2 2.17-0 CD2, TBS400: TBCPGM 5.23-0) and during the period 2th-5th October 2001 on the Nokia NTS 2.1 infrastructure with hardware release DXT64 and software release (DXT64: W2 2.17-0 CD12, TBS400: TBCPGM 5.23-0).

The test results for the tested features can be found in table 1 and 2 of this certificate.

Authorised IOP test engineer

Telelaboratoriet, TDC Mobil A/S

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Telelaboratoriet (TDC Mobil A/S) has made every effort to ensure that tests have been made correctly, and in accordance with TIP V3 Packet Data. Telelaboratoriet (TDC Mobil A/S) has no liability for the test results, or towards the manufacturers.

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Information about the equipment used for testing

The tests performed on 14th and the 16th of March 2001 were performed using the following terminals:

Manufacturer	Terminal Type	Software/Hardware Release No.
Motorola	MTM300	SW: R30.03.32 HW: M12PCN6TZ5AN
Nokia	THR420E	SW: HYT1.1003 HW: HRU420

The tests performed during the period 2th-5th of October 2001 were performed using the following terminal:

Manufacturer	Terminal Type	Software/Hardware Release No.
Motorola	MTH300	SW: R50.40.12 HW: H14QCH6TZ5AN

Additional information about the test performed

The tests performed during the period 14th and 16th of March 2001 were performed in the 380-400 MHz band. The SwMI was operating with the following configuration:

MCC	238
MNC	2
Colour code	42
LA1 (Høje Tåstrup) carrier frequency (BS Tx)	393.6625 MHz
LA2 (Høje Tåstrup) carrier frequency (BS Tx)	393.5125 MHz
PSTN gateway	16777184
Subscriber classes	FFFF ₁₆

The tests performed during the period 2th-5th of October 2001 were performed in the 410-430 MHz band. The SwMI was operating with the following configuration:

MCC	238
MNC	2
Colour code	42
LA11 (Høje Tåstrup) carrier frequency (BS Tx)	421.025 MHz
LA12 (Høje Tåstrup) carrier frequency (BS Tx)	421.125 MHz
PSTN gateway	16777184
Subscriber classes	FFFF ₁₆



Test Results

The tables indicates whether or not tests addressing a specific requirement of the TIP specification have been performed, whether or the not the requirement is applicable for the combination of the SwMI and the terminal, and the result of the test if executed. Each entry of the table may take one of six values: -: No test performed, N/A: Not applicable, P: Pass, F: Fail, I: Inconclusive or NTA: No test case being available. NTA will only be allocated if both SwMI and terminal has indicated that they support (comply with) the corresponding feature (requirement); if either has indicated the feature (requirement) as not being supported then the entry will be N/A. In case of all entries of a row being N/A it should be assumed that this feature is not supported by the SwMI.

The test results have been derived from examining the behaviour of a live system. The verdicts indicated are based on the log evaluation of the information exchange between the SwMI and the terminals indicated in the tables. The verdicts reflect the fact that at the time of the IOP testing is was/was not possible to demonstrate a behaviour that was in accordance with the related requirement.

Table 1: Tests performed on the 14th and the 16th March 2001

Abbreviations: -: Not performed.
 N/A: Not applicable
 P: Pass
 F: Fail
 I: Inconclusive
 NTA: No test case available

Nokia SwMI	Motorola MTM300	Nokia THR420E
7.1 Context Activation (Test case Number index)		
7.1.1 TE IPCP Initiated, Static Address (TE supplied) (5.1)	P	P
7.1.2 TE IPCP Initiated, Dynamic Address (5.2)	P	P
7.1.3 User Authentication using PAP	NTA	NTA
7.1.4 User Authentication using CHAP	NTA	NTA
7.1.5 Failed User Authentication	NTA	NTA
7.1.6 Provision Reject (5.3)	P	P
7.2 Context Deactivation		
7.2.1 MS initiated deactivation (5.5)	P	P
7.2.2 SwMI initiated deactivation (5.4)	P	P
7.3 PHCH Access		
7.3.1 MS Initiated Access on the MCCH (5.6)	P	P
7.3.1 MS Initiated Access on the MCCH (Roaming without Data transmission, STANDBY state) (5.13)	(P) ¹	P
7.3.2 SwMI Initiated Access on the MCCH (5.8)	P	P
7.3.3 MS Initiated Access Reject (5.10)	P	P
7.4 SN Data transfer (5.7 and 5.9)		
	P	P
7.5 End of Data		
7.5.1 Normal (5.6-5.9 and 5.13)	P	P
7.5.2 MS timer Expired	NTA	NTA
7.5.3 Channel change	NTA	NTA
7.6 Advanced Link Set-up		
7.6.1 MS initiated AL Set-up (5.6 and 5.8)	P ²	P
7.6.2 MS initiated AL Reset	NTA	NTA
7.6.3 SwMI initiated AL Reset	NTA	NTA
7.7 Advanced Link Data Transfer		
7.7.1 Normal Downlink (5.8 and 5.9)	P	P
7.7.2 Downlink, Lost Segment	NTA	NTA
7.7.3 Downlink, Lost Segment and AR	NTA	NTA
7.7.4 Normal Uplink (5.6 and 5.7)	P	P
7.8 Advanced Link Disconnection		
7.8.1 MS initiated context deactivation (5.5)	I ³	I ⁴
7.8.2 SwMI initiated context deactivation (5.4)	I ³	I ³

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Nokia SwMI	Motorola MTM300	Nokia THR420E
7.9 Resource Management (Test case Number index)		
7.9.1 Granting delay on the PDCH	NTA	NTA
7.9.2 MS Reservation Request	NTA	NTA
7.9.3 Resource allocation - Uplink	NTA	NTA
7.9.4 Resource allocation - Uplink acknowledgement	NTA	NTA
7.9.5 MS Reservation Request Update	NTA	NTA
7.9.6 MS Reservation Request – Missing FINAL_AR	NTA	NTA
7.10 Link Reconnect		
7.10.1 BS Data	NTA	NTA
7.10.2 MS Data (Roaming during Data transmission, READY state) (5.11)	P ⁵	P ⁵
7.10.2 MS Data (Roaming without Data transmission, READY state) (5.12)	P	P

Comments:

- 1) Just after roaming to the new cell, without Data transmission in STANDBY state, the first Data transmission (first ping) send from TE/MS fails. The subsequent pings are transferred correctly.
- 2) Due to Microsoft Windows execution, Advanced Link is established automatically just after Packet Data Context Activation signalling.
- 3) Advanced Link Disconnection signalling is not shown in the logs.
- 4) The acknowledgement to AL-DISC PDU is not shown in the logs.
- 5) Advanced Link Roaming is N/A for the MS. The MS initiate the Advanced Link Setup procedure just after roaming.

Table 2: Tests performed during the period 2th-5th of October 2001

Abbreviations:

- : Not performed.
- N/A: Not applicable
- P: Pass
- F: Fail
- I: Inconclusive
- NTA: No test case available

Nokia SwMI	Motorola MTH300	Nokia THR420E
7.1 Context Activation (Test case Number index)		
7.1.1 TE IPCP Initiated, Static Address (TE supplied) (5.1)	-	-
7.1.2 TE IPCP Initiated, Dynamic Address (5.2)	P	-
7.1.3 User Authentication using PAP	NTA	NTA
7.1.4 User Authentication using CHAP	NTA	NTA
7.1.5 Failed User Authentication	NTA	NTA
7.1.6 Provision Reject (5.3)	-	-
7.2 Context Deactivation		
7.2.1 MS initiated deactivation (5.5)	P	-
7.2.2 SwMI initiated deactivation (5.4)	I ¹	-
7.3 PHCH Access		
7.3.1 MS Initiated Access on the MCCH (5.6)	P	-
7.3.1 MS Initiated Access on the MCCH (Roaming without Data transmission, STANDBY state) (5.13)	-	-
7.3.2 SwMI Initiated Access on the MCCH (5.8)	P	-
7.3.3 MS Initiated Access Reject (5.10)	P	-
7.4 SN Data transfer (5.7 and 5.9)		
	P	-
7.5 End of Data		
7.5.1 Normal (5.6-5.9 and 5.13)	P	-
7.5.2 MS timer Expired	NTA	NTA
7.5.3 Channel change	NTA	NTA
7.6 Advanced Link Set-up		
7.6.1 MS initiated AL Set-up (5.6 and 5.8)	-	-
7.6.2 MS initiated AL Reset	NTA	NTA
7.6.3 SwMI initiated AL Reset	NTA	NTA
7.7 Advanced Link Data Transfer		
7.7.1 Normal Downlink (5.8 and 5.9)	P	-
7.7.2 Downlink, Lost Segment	NTA	NTA
7.7.3 Downlink, Lost Segment and AR	NTA	NTA
7.7.4 Normal Uplink (5.6 and 5.7)	P	-
7.8 Advanced Link Disconnection		
7.8.1 MS initiated context deactivation (5.5)	I ²	-
7.8.2 SwMI initiated context deactivation (5.4)	I ²	-

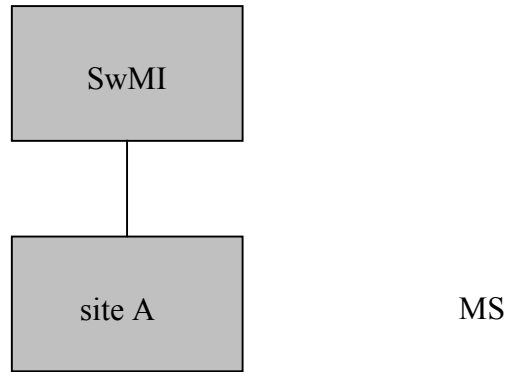
Nokia SwMI	Motorola MTH300	Nokia THR420E
7.9 Resource Management (Test case Number index)		
7.9.1 Granting delay on the PDCH	NTA	NTA
7.9.2 MS Reservation Request	NTA	NTA
7.9.3 Resource allocation - Uplink	NTA	NTA
7.9.4 Resource allocation - Uplink acknowledgement	NTA	NTA
7.9.5 MS Reservation Request Update	NTA	NTA
7.9.6 MS Reservation Request – Missing FINAL_AR	NTA	NTA
7.10 Link Reconnect		
7.10.1 BS Data	NTA	NTA
7.10.2 MS Data (Roaming during Data transmission, READY state) (5.11)	-	-
7.10.2 MS Data (Roaming without Data transmission, READY state) (5.12)	-	-

Comments:

- 1) The SN-DEACTIVATE PDP CONTEXT ACCEPT PDU is not shown in the logs.
- 2) Advanced Link Disconnection signalling is not shown in the logs.

Test setup description

All tests except the cell re-selection test are carried out on a single site system with one carrier using standard antenna configurations.



For the cell re-selection test, an additional site is activated and the roaming MS is connected to the system via RF cables as illustrated below.

