



TETRA SwMI Interoperability Certificate

28 August 2002

Frequentis/Damm (Motorola Compact TETRA)

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

TETRA Interoperability Profile – (TIP) Ver 2.1.1, March 2000

for the following features:

Features	Tested (Yes/No/NA)
• Registration / de-registration	Yes
• Individual call	Yes
• Group management	Yes
• Group call	Yes
• Emergency call	NA
• Cell re-selection	NA
• Short data service	Yes
• PSTN interconnect	Yes

NA: means not applicable (not supported)

The tests have been performed on Frequentis/Damm infrastructure (Motorola Compact TETRA) during the period 15th-18th April 2002 with hardware release CTS200/CTS100 and software release 1.1.

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

Authorised IOP test engineer

Telelaboratoriet, TDC Mobil A/S

Preben Raae Hansen

Sven Lundbech

Telelaboratoriet (TDC Mobil A/S) has made every effort to ensure that tests have been made correctly, and in accordance with TIP V2. Telelaboratoriet (TDC Mobil A/S) has no liability for the test results, or towards the manufacturers.

Telelaboratoriet
TDC Mobil
Telegade 2
DK 2630 Taastrup

Tlf. +45 43 34 55 01
Fax +45 43 71 59 02

E-mail: info@telelaboratoriet.dk

Web-site: <http://www.telelaboratoriet.dk>



Information about the equipment used for testing

Testing on the 15th-18th April 2002:

The tests performed during 15th-18th of April 2002 were performed using the following terminals:

Manufacturer	Terminal Type	Software/Hardware Release No.
Nokia	THR 850	SW: 322 30-0 HW: THR-3
Motorola	MTP700	SW: R76.02.01 HW: H47QCM6TZ5AN
Clartone	CM9000P	SW: TMP 36G4A HW: 1.5
Teltronic	MDT-400	SW: 02.02b18 HW: 00.03.00.01

The testing was performed at the premises of Frequentis.

Additional information about the tests performed

The tests for the Nokia THR850, Motorola MTP700, Cleartone CM9000P and Teltronic MDT-400 terminals were performed in the 380-400 MHz band. The SwMI was operating with the following configuration:

MCC	232
MNC	8
Colour code	47
LA11 carrier frequency (BS Tx)	391.2625 MHz
PSTN gateway	16777184
Subscriber classes	FFFF ₁₆

The test for the Teltronic MDT-400 terminal was performed in the 410-430 MHz band. The SwMI was operating with the following configuration:

MCC	232
MNC	8
Colour code	47
LA21 carrier frequency (BS Tx)	422.5000 MHz
PSTN gateway	16777184
Subscriber classes	FFFF ₁₆

All tests were performed on single site systems, therefore no hand over tests were performed.

Test Results

Table 1 Test results from 15th-18th April 2002:

The table indicates whether or not tests addressing a specific requirement of the TIP specification have been performed, whether or 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 table 1. The verdicts reflect the fact that at the time of the IOP testing it was or it was not possible to demonstrate a behaviour that was in accordance with the related requirement.

Table 1: Tests performed during the period 15th-18th April 2002

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

Frequentis/Damm SwMI	Nokia THR 850	Clartone CM9000P	Motorola MTP700	Teltronic ¹ MDT-400	Teltronic ² MDT-400
6 Registration					
6.1 ITSI attach	P	N/A	N/A	P	P
6.2 ITSI attach including group attachment	N/A	P	P	N/A	N/A
6.3 Roaming location updating	N/A	N/A	N/A	N/A	N/A
6.4 De-registration	P	P	P	P	P
7 Individual call					
7.1 Call setup	P	P	P	P	P
7.1 Call setup (Queuing)	P	P	P	P	P
7.1.1 Hook signalling (simplex)	N/A	P	P	-	-
7.1.1 Hook signalling (Duplex)	P	P	P	P	P
7.1.2 Direct through-connect (Simplex)	N/A ³	N/A	N/A	N/A ³	N/A ³
7.1.2 Direct through-connect (Duplex)	-	-	-	-	-
7.1.3 Call setup Modifications					
7.1.3 (Duplex to Semi duplex)	N/A	N/A	N/A	N/A	N/A
7.1.3.2 Setup modification by called party					
7.1.3.2.1 Direct to hook	-	-	-	-	-
7.2 Transmission control					
7.2.1 End of transmission	P	P	P	P	P
7.2.2 Request to transmit	P	P	P	P	P
7.2.3 Request for speech item	N/A	P	P	P	P
7.3 Call maintenance	NTA	NTA	NTA	NTA	NTA
7.4 Call disconnection	P ⁴	P ⁴	P ⁴	P ⁴	P ⁴
7.5 Emergency individual call					
7.5.1 Emergency speech item request	N/A	N/A	N/A	N/A	N/A
7.5.2 Emergency individual call modification	N/A	N/A	N/A	N/A	N/A
8 Group management					
8.4 MS Attachment of the selected group	P	P	P	P	P
8.4 MS Attachment of the selected group (Rejection)	P	P	P	P	P
8.4 MS Attachment of the Null group	P	P	P	P	P
8.4 MS Change of the selected group	P	P	P	P	P
8.5 Multiple group attachment	N/A	N/A	N/A	N/A	N/A
8.5 Multiple group attachment (Rejection)	N/A	N/A	N/A	N/A	N/A
8.6 MS initiated detachment	P	N/A	N/A	N/A	N/A
8.7 SwMI initiated group attachment and detachment					
8.7.1 SwMI initiated detachment	N/A	N/A	N/A	N/A	N/A
8.7.2 SwMI initiated attachment	N/A	N/A	N/A	N/A	N/A
8.7.3 SwMI initiated group reporting	N/A	N/A	N/A	N/A	N/A
8.7.4 SwMI initiated registration with group report request	N/A	N/A	N/A	N/A	N/A

Telelaboratoriet (TDC Mobil A/S) has made every effort to ensure that tests have been made correctly, and in accordance with TIP V2. Telelaboratoriet (TDC Mobil A/S) has no liability for the test results, or towards the manufacturers.

Frequentis/Damm SwMI	Nokia THR 850	Clearstone CM9000P	Motorola MTP700	Teltronic ¹ MDT-400	Teltronic ² MDT-400
9 Group call					
9.1 Call setup	P	P	P	P	P
9.1 Call setup (Queuing)	P	P	P	P	P
9.1.1 Call setup modifications	NTA	NTA	NTA	NTA	NTA
9.2.1 End of transmission	P	P	P	P	P
9.2.2 Request to transmit	P	P	-	P	P
9.2.3 Request for speech item	P	P	P	P	P
9.3 Call disconnection	P	P	P	P	P
9.4 Late entry	P	P	P	P	P
9.5 Emergency group call	N/A	N/A	N/A	N/A	N/A
9.5 Emergency group call (Setup to busy group)	N/A	N/A	N/A	N/A	N/A
9.5.1 Emergency speech item request	N/A	N/A	N/A	N/A	N/A
9.5.2 Emergency group call modification	N/A	N/A	N/A	N/A	N/A
10 Cell re-selection					
10.1 Undeclared cell re-selection	N/A	N/A	N/A	N/A	N/A
10.2.1 Unannounced cell re-selection with call restoration					
10.2.1 (Group call)	N/A	N/A	N/A	N/A	N/A
10.2.1 (Queuing, group call)	N/A	N/A	N/A	N/A	N/A
10.2.1 (individual call)	N/A	N/A	N/A	N/A	N/A
10.2.1 (Queuing, individual call)	N/A	N/A	N/A	N/A	N/A
10.2.2 Announced cell re-selection without Preferred Neighbour Selected with call restoration					
10.2.2 (Group call)	N/A	N/A	N/A	N/A	N/A
10.2.2 (Queuing, group call)	N/A	N/A	N/A	N/A	N/A
10.2.2 (Pre-emption, group call)	N/A	N/A	N/A	N/A	N/A
10.2.2 (individual call, traffic)	N/A	N/A	N/A	N/A	N/A
10.2.2 (individual call, inactivity)	N/A	N/A	N/A	N/A	N/A
10.2.2 (Queuing, individual call, traffic)	N/A	N/A	N/A	N/A	N/A
10.2.2 (Queuing, individual call, inactivity)	N/A	N/A	N/A	N/A	N/A
11 Short data service					
11.1 Status messages (to dispatcher)	P	P	P	P	P
11.1.2 Text messaging	P	P	P	P ⁵	P
12 Telephone call					
12.1 Gateway Addresses	NTA	NTA	NTA	NTA	NTA
12.2 Call Set-up	P	P	P	P	P
12.2.1 MS Originated, Late Through-Connect	P	P	P	P	P
12.2.2 MS Originated, Early Through-Connect	N/A	N/A	N/A	N/A	N/A
12.2.3 MS Originated, Call Queued	P	P	P	P	P
12.2.4 MS Terminated	P ⁶	P ⁶	P ⁵	P ⁶	P ⁶
12.3 Call Maintenance	NTA	NTA	NTA	NTA	NTA
12.4 DTMF Over-dial	N/A ⁷	N/A ⁷	N/A ⁷	N/A ⁷	N/A ⁷
12.5 Disconnect Causes	NTA	NTA	NTA	NTA	NTA
12.6 Emergency telephone call	NTA	NTA	NTA	NTA	NTA

Telelaboratoriet (TDC Mobil A/S) has made every effort to ensure that tests have been made correctly, and in accordance with TIP V2. Telelaboratoriet (TDC Mobil A/S) has no liability for the test results, or towards the manufacturers.



Comments:

- 1) The terminal is tested in lower frequency band (380-400 MHz).
- 2) The terminal is tested in high frequency band (410-430 MHz).
- 3) The SwMI modifies the call setup correctly to hook setup.
- 4) Among several call disconnection causes, only 'User requested disconnect' is tested.
- 5) Both delivery report and consumed report are exchanged between the Teltronic MS and the destination MS.
- 6) Incorrect value in the Transmission grant element in D-SETUP.
- 7) The SwMI does not support DTMF over-dial, however the SwMI shall respond D-INFO 'DTMF not supported' when a terminal sends DTMF digits.

Test setup description

All tests are carried out on a single site system with one carrier using standard antenna configurations.

