



TETRA SwMI Interoperability Certificate

9 July 2002

Marconi

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

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

for the following features:

Features	Tested(Yes/No)
• PSTN interconnect	Yes
• Individual duplex call	Yes
• Individual simplex call (direct setup)	Yes
• Status messages	Yes
• Unannounced cell re-selection	Yes
• Announced type 3 cell re-selection	Yes
• Emergency call	Yes

The tests have been performed on Marconi/OTE infrastructure on following dates:
On the 25th January 2000 with hardware/software release (SCN: 5.3.1, BS:1.1.3).
During the period 12th-13th September 2000 with hardware MPU 130-3432/01-05, Software 7.5.8.IOP.
During the period 23th and 26th-28th March 2001 on Marconi/OTE infrastructure System Version 2.1.0 with hardware: SCN-T774-0117/01, Software: TETRA_SCN_7_6_15.
Finally, during the period 1th-5th October 2001 on Marconi/OTE infrastructure System Version Tetra 2.1.10 with hardware: SCN_T 774-0117/01 Rel.02, Software: TETRA_SCN_7_7_10.

The test results for the tested features can be found in table 1, 2, 3 and 4 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 A/S
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 25th January 2000:

The tests performed on 25th January 2000 were performed using the following terminals:

Manufacturer	Terminal Type	Software/Hardware Release No.
Motorola	MTM300	R30.11.07
Nokia	TMR400	Hr01.0380
Marconi / OTE ¹	Puma-T1	0.17
Simoco Digital Systems	SRP1000	4313 327 85911

They were used on Marconi/Ote infrastructure with hardware/software release (SCN: 5.3.1, BS:1.1.3).

Testing on the 12th-13th September 2000:

The tests performed on 12th-13th of September 2000 were performed using the following terminals:

Manufacturer	Terminal Type	Software/Hardware Release No.
Motorola	MTM300	SW: APP-R30-0261, CP-2.61 HW: 36
Nokia	THR420	SW: HY11.0390 HW: HRU 420-02
Marconi / OTE ¹	Puma-T1	0.17
Simoco Digital Systems	SRM1000	SW: 4313 327 84844 HW:M81TT001T20C00000
Cleartone	CM9000P	SW: .32 HW:1
Teltronic	MDT-400	SW: 1 HW:1.0.

They were used on Marconi/OTE infrastructure with hardware: MPU 130-3432/01-05, Software: 7.5.8.IOP

¹ Terminals in their native system have not been targeted by IOP tests.

Testing on the 23th and the 26th-28th of March 2001:

The tests performed during the period 23th and 26th-28th of March 2001 were performed using the following terminals:

Manufacturer	Terminal Type	Software/Hardware Release No.
Marconi/OTE ¹	PUMA T1	SW: 2.1.M HW: 02.01
Motorola	MTM300	SW: R.30.03.32 HW: M12PCN6TZ5AN
Nokia	THR420E	SW: HY11.03-9 HW: HRU 420-02
Simoco Digital Systems	SRM1000	SW: 4313-327-84999 HW: MS1TT001T20C00000
Simoco Digital Systems	SRP1000	SW: 4313-327-72097 HW: PS3TT001T30000B
Teltronic	MDT-400	SW: 01.02.01 HW: 01.03.

They were used on Marconi/OTE infrastructure System Version 2.1.0 with hardware: SCN-T774-0117/01, Software: TETRA_SCN_7_6_15.

Testing on the 1th-5th of October 2001:

The tests performed during the period 1th-5th of March 2001 were performed using the following terminals:

Manufacturer	Terminal Type	Software/Hardware Release No.
Marconi/OTE ¹	PUMA T2	SW: TB23814F HW: 774-0162/01.01
Motorola	MTM 300	SW: R35.40.12 HW: M12PCN6TZBN
Nokia	THR 850	SW: 2.16-0 HW: JL1-11
Simoco Digital Systems	SRM1000	SW: 4313-327-73043 HW: MS1TT00T20C0000
Simoco Digital Systems	SRP1000	SW: 4313-327-72142 HW: PS3TT001T30000B

They were used on Marconi/OTE infrastructure System Version Tetra 2.1.10 with hardware: SCN_T 774-0117/01 Rel.02, Software: TETRA_SCN_7_7_10.

¹ Terminals in their native system have not been targeted by IOP tests.



Additional information about the tests performed

The tests were performed in the 380-400 MHz band. The SwMI was operating with the following configuration:

MCC	238
MNC	5
Colour code	44
LA1 (Høje Tåstrup) carrier frequency (BS Tx)	393.5875 MHz
LA2 (Høje Tåstrup) carrier frequency (BS Tx)	393.6875 MHz
PSTN gateway	43552609
Subscriber classes	FFFF ₁₆

Test Results

The test results are shown in four tables. Table 1 is the test result as given in the TIPv2 certificate dated 06 June 2000. The information from the TIPv2 certificate dated 06 June 2000 is repeated here for informative purposes only.

Table 1 Test results from 25th January 2000:

Table 1 indicates the number of tests for each feature and the corresponding number of tests completed for each terminal.

For call setup, the two tests cover MS initiated setup and reception of a setup initiated from another station.

DTMF over-dial tests the transfer of DTMF digits from the terminal and the corresponding tone generation.

Setup queuing refers to the situation where the call is made on a busy site and the call is placed in a resource queue thus prolonging the setup phase. The call is subsequently completed when resources become available.

Status message testing includes transmission of uplink status and downlink acknowledgement status indicating success/failure of delivery.

The cell re-selection tests cover cell re-selection as well as call restoration for group call and simplex individual call.

Table 2 Test results from 12th-13th September 2000 and table 3 Test results from 23th and 26th-28th March 2001 and table 4 Test results from 1th-5th October 2001:

The table 2, 3 and 4 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 the tables 2, 3 and 4. The verdicts reflect the fact that at the time of the IOP testing it was/was not possible to demonstrate a behaviour that was in accordance with the related requirement.

Table 1: Tests performed on the 25th January 2000

Marconi SwMI	# of tests ¹	Marconi-OTE Puma-T1	Motorola MTM300	Nokia TMR400	Simoco Digital Systems SRP1000
PSTN interconnect					
Setup	2	2	2	2	2
Clearing	1	1	1	1	1
DTMF over-dial	1	1	0	0	1
setup queuing	1	1	1	1	1
Status messages	1	1	1	1	1
Individual call (duplex)					
setup (on/off hook) (in coming/out going)	2	2	0	0	2
Modification to simplex	1	0	0	1	0
Clearing	1	1	0	0	1
Individual call (simplex)					
setup (direct)	2	2	0	2	2
setup queuing	1	1	0	1	1
Emergency group call					
Setup	2	2	2	2	0
Clearing	1	1	1	1	0
speech item request	1	1	1	1	0
Emergency Individual call					
Setup	2	2	0	2	2
Clearing	1	1	0	1	1
speech item request	1	1	0	1	0
Cell re-selection					
Unannounced	4	2	4	2	1
announced type 3	9	7	3	7	7

¹ This column indicates the total number of different test that has been executed for the SwMI. Each of the subsequent columns indicates the number of different tests, which have been executed using a specific combination of MS and SwMI. The number tests in each column may be less than the total number of available test cases due to some test cases not being relevant for a given combination of MS and SwMI.

Table 2: Tests performed on the 12th-13th September 2000

Abbreviations:

-: Not performed.

F: Fail

N/A: Not applicable

I: Inconclusive

P: Pass

NTA: No test case available

Marconi SwMI	Marconi-OTE Puma-T1	Motorola MTM300	Nokia THR420	Simoco Digital Systems SRM1000	Cleartone CM9000P	Teltronic MDT-400
6 Registration						
6.1 ITSI attach	-	N/A	P	P	N/A	P
6.2 ITSI attach including group attachment	-	P	N/A	N/A	P	N/A
6.3 Roaming location updating	-	-	P	P	P	P
6.4 De-registration	-	-	-	-	P	P
7 Individual call						
7.1 Call setup	-	P	P	P	P	-
7.1 Call setup(Queuing)	-	P	-	-	P	-
7.1.1 Hook signalling (simplex)	-	P	P	P	-	-
7.1.1 Hook signalling (Duplex)	-	-	-	-	P	-
7.1.2 Direct through-connect (Simplex)	-	N/A	P	P	P	-
7.1.2 Direct through-connect (Duplex)	-	-	-	-	-	-
7.1.3 Call setup Modifications						
7.1.3 (Duplex to Semi duplex)	-	-	-	-	F ¹	-
7.1.3.2 Setup modification by called party						
7.1.3.2.1 Direct to hook	-	-	-	-	P	-
7.2 Transmission control						
7.2.1 End of transmission	-	P	P	P	P	-
7.2.2 Request to transmit	-	P	P	P	P	-
7.2.3 Request for speech item	-	-	P	-	P	-
7.3 Call maintenance	NTA	NTA	NTA	NTA	NTA	NTA
7.4 Call disconnection	-	-	-	-	-	-
7.5 Emergency individual call						
7.5.1 Emergency speech item request	-	-	-	-	-	-
7.5.2 Emergency individual call modification	-	-	-	-	-	-
8 Group management						
8.4 MS Attachment of the selected group	-	-	-	-	P	-
8.4 MS Attachment of the selected group (Rejection)	-	-	-	-	P	-
8.4 MS Attachment of the Null group	-	-	-	-	P	-
8.4 MS Change of the selected group	-	-	-	-	P	-
8.5 Multiple group attachment	-	-	-	-	N/A	-
8.6 MS initiated detachment	-	-	-	-	-	-
8.7 SwMI initiated group attachment and detachment						
8.7.1 SwMI initiated detachment	N/A	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	N/A
8.7.3 SwMI initiated group reporting	N/A	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	N/A

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Marconi SwMI	Marconi-OTE Puma-T1	Motorola MTM300	Nokia THR420	Simoco Digital Systems SRM1000	Cleartone CM9000P	Teltronic MDT-400
9 Group call						
9.1 Call setup	-	-	P	P	P	P
9.1 Call setup (Queuing)	-	-	-	-	P	-
9.1.1 Call setup modifications	NTA	NTA	NTA	NTA	NTA	NTA
9.2.1 End of transmission	-	-	P	P	P	P
9.2.2 Request to transmit	-	-	P	P	P	P
9.2.3 Request for speech item	-	-	P	-	P	-
9.3 Call disconnection	-	-	P	P	P	P
9.4 Late entry	-	-	-	-	P	P
9.5 Emergency group call	-	-	-	N/A	-	-
9.5 Emergency group call (Setup to busy group)	-	-	-	N/A	-	-
9.5.1 Emergency speech item request	-	-	-	N/A	-	-
9.5.2 Emergency group call modification	-	-	-	N/A	-	-
10 Cell re-selection						
10.1 Undeclared cell re-selection	-	-	-	P	P	-
10.2.1 Unannounced cell re-selection with call restoration						
10.2.1 (Group call)	-	-	-	P	-	-
10.2.1 (Queuing, group call)	-	-	-	-	-	-
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)	-	-	-	P	-	-
10.2.2 (Queuing, group call)	-	-	F ²	N/A	F ³	-
10.2.2 (Pre-emption, group call)	-	-	-	-	-	-
10.2.2 (individual call, traffic)	-	-	-	-	-	-
10.2.2 (individual call, inactivity)	-	-	-	-	-	-
10.2.2 (Queuing, individual call, traffic)	-	-	F ⁴	P	-	-
10.2.2 (Queuing, individual call, inactivity)	-	-	-	-	-	-
11 Short data service						
11.1 Status messages (to dispatcher)	-	-	-	-	P	-
11.1 Status messages (Text messaging)	-	-	-	-	-	-
12 Telephone call						
12.1 Gateway Addresses	NTA	NTA	NTA	NTA	NTA	NTA
12.2 Call Set-up	-	-	-	-	-	-
12.2.1 MS Originated, Late Through-Connect	-	-	-	-	-	-
12.2.2 MS Originated, Early Through-Connect	-	-	-	-	-	-
12.2.3 MS Originated, Call Queued	-	-	-	-	-	-
12.2.4 MS Terminated	-	-	-	-	-	-
12.3 Call Maintenance	NTA	NTA	NTA	NTA	NTA	NTA
12.4 DTMF Over-dial	-	-	-	-	-	-
12.5 Disconnect Causes	NTA	NTA	NTA	NTA	NTA	NTA
12.6 Emergency telephone call	NTA	NTA	NTA	NTA	NTA	NTA



Comments:

- 1) Logs from SwMI and MS are missing. No U-plane established during IOP test session.
- 2) Problems with evaluating the signalling due to log file from SwMI being incomplete, reestablishment of audio following registration on new cell requires pressing PTT again.
- 3) In case of simplex operation the MS does not support utilising the direction of the traffic channel not used for traffic for signalling e.g. if uplink is used for traffic, downlink may be used for signalling (FACCH).
- 4) Signalling is OK; however, reestablishment of audio following registration on new cell requires pressing PTT again.

Table 3: Tests performed during the period 23th and 26th-28th March 2001

Abbreviations:

-: Not performed.

F: Fail

N/A: Not applicable

I: Inconclusive

P: Pass

NTA: No test case available

Marconi SwMI	Marconi-OTE Puma-T1	Motorola MTM300	Nokia THR420	Simoco Digital Systems SRM1000	Simoco Digital Systems SRP1000	Cleartone CM9000P	Teltronic MDT-400
6 Registration							
6.1 ITSI attach	-	N/A	-	-	-	-	-
6.2 ITSI attach including group attachment	-	-	N/A	N/A	N/A	-	N/A
6.3 Roaming location updating	-	P	-	-	-	-	-
6.4 De-registration	-	-	-	-	-	-	-
7 Individual call							
7.1 Call setup	-	P	-	-	-	-	P
7.1 Call setup(Queuing)	-	-	-	-	-	-	P
7.1.1 Hook signalling (simplex)	-	P	-	-	-	-	P
7.1.1 Hook signalling (Duplex)	-	-	-	-	-	-	P ¹
7.1.2 Direct through-connect (Simplex)	-	N/A	-	-	-	-	P
7.1.2 Direct through-connect (Duplex)	-	-	-	-	-	-	N/A
7.1.3 Call setup Modifications							
7.1.3 (Duplex to Semi duplex)	-	-	-	-	-	-	-
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
7.2.2 Request to transmit	-	-	-	-	-	-	P
7.2.3 Request for speech item	-	P	-	-	-	-	P
7.3 Call maintenance	NTA	NTA	NTA	NTA	NTA	NTA	NTA
7.4 Call disconnection	-	-	-	-	-	-	-
7.5 Emergency individual call	-	N/A	-	-	-	-	-
7.5.1 Emergency speech item request	-	N/A	-	-	-	-	-
7.5.2 Emergency individual call modification	-	N/A	-	-	-	-	-
8 Group management							
8.4 MS Attachment of the selected group	-	-	-	-	-	-	P
8.4 MS Attachment of the selected group (Rejection)	-	-	-	-	-	-	-
8.4 MS Attachment of the Null group	-	-	-	-	-	-	P
8.4 MS Change of the selected group	-	-	-	-	-	-	P
8.5 Multiple group attachment	-	N/A	P	P	P	-	P
8.5 Multiple group attachment (Rejection)	-	N/A	P	P	P	-	P
8.6 MS initiated detachment	-	-	-	-	-	-	N/A
8.7.1 SwMI initiated detachment	N/A	N/A	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	N/A	N/A
8.7.3 SwMI initiated group reporting	N/A	N/A	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	N/A	N/A

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Marconi SwMI	Marconi-OTE Puma-T1	Motorola MTM300	Nokia THR420	Simoco Digital Systems SRM1000	Simoco Digital Systems SRP1000	Clearstone CM9000P	Teltronic MDT-400
9 Group call							
9.1 Call setup	-	-	-	-	-	-	-
9.1 Call setup (Queuing)	-	-	-	-	-	-	P
9.1.1 Call setup modifications	NTA	NTA	NTA	NTA	NTA	NTA	NTA
9.2.1 End of transmission	-	P	-	-	-	-	P
9.2.2 Request to transmit	-	-	-	-	-	-	-
9.2.3 Request for speech item	-	P	-	-	-	-	P
9.3 Call disconnection	-	-	-	-	-	-	-
9.4 Late entry	-	-	-	-	-	-	-
9.5 Emergency group call	-	-	-	N/A	N/A	-	-
9.5 Emergency group call(Setup to busy group)	-	P	-	N/A	N/A	-	-
9.5.1 Emergency speech item request	-	P	-	N/A	N/A	-	-
9.5.2 Emergency group call modification	-	-	-	N/A	N/A	-	-
10 Cell re-selection							
10.1 Undeclared cell re-selection	-	-	-	-	-	-	-
10.2.1 Unannounced cell re-selection with call restoration							
10.2.1 (Group call)	-	-	-	-	-	-	-
10.2.1 (Queuing, group call)	-	-	-	-	-	-	-
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)	-	-	-	-	-	-	-
10.2.2 (Queuing, group call)	-	F ²	-	N/A	N/A	-	-
10.2.2 (Pre-emption, group call)	-	-	-	-	-	-	-
10.2.2 (individual call, traffic)	-	-	-	-	-	-	-
10.2.2 (individual call, inactivity)	-	-	-	-	-	-	-
10.2.2 (Queuing, individual call, traffic)	-	-	-	-	-	-	-
10.2.2 (Queuing, individual call, inactivity)	-	-	-	-	-	-	-
11 Short data service							
11.1 Status messages (to dispatcher)	-	-	-	-	-	-	P
11.1 Status messages (Text messaging)	-	-	-	-	-	-	-
12 Telephone call							
12.1 Gateway Addresses	NTA	NTA	NTA	NTA	NTA	NTA	NTA
12.2 Call Set-up	-	P	-	-	-	-	-
12.2.1 MS Originated, Late Through-Connect	-	P	-	-	-	-	-
12.2.2 MS Originated, Early Through-Connect	-	-	-	-	-	-	-
12.2.3 MS Originated, Call Queued	-	-	-	-	-	-	-
12.2.4 MS Terminated	-	-	-	-	-	-	-
12.3 Call Maintenance	NTA	NTA	NTA	NTA	NTA	NTA	NTA
12.4 DTMF Over-dial	-	P	-	-	-	-	-
12.5 Disconnect Causes	NTA	NTA	NTA	NTA	NTA	NTA	NTA
12.6 Emergency telephone call	NTA	NTA	NTA	NTA	NTA	NTA	NTA



Comments:

- 1) The Transmission request permission element in D-CONNECT has a wrong value.
- 2) The log file from the SwMI is missing. During the test session it was observed that the SwMI sends D-NEW-CELL, but the PDU is not received by the MS.

Table 4: Tests performed during the period 1th-5th October 2001

Abbreviations:

-: Not performed.

F: Fail

N/A: Not applicable

I: Inconclusive

P: Pass

NTA: No test case available

Marconi SwMI	Marconi-OTE Puma-T2	Motorola MTM300	Nokia THR 850	Simoco Digital Systems SRM1000	Simoco Digital Systems SRP1000	Cleartone CM9000P	Teltronic MDT-400
6 Registration							
6.1 ITSI attach	-	N/A	P	-	-	-	-
6.2 ITSI attach including group attachment	-	-	N/A	N/A	N/A	-	-
6.3 Roaming location updating	-	-	P	P	P	-	-
6.4 De-registration	-	-	P	-	-	-	-
7 Individual call							
7.1 Call setup	-	-	P	-	-	-	-
7.1 Call setup(Queuing)	-	-	P	-	-	-	-
7.1.1 Hook signalling (simplex)	-	-	N/A	-	-	-	-
7.1.1 Hook signalling (Duplex)	-	-	P	-	-	-	-
7.1.2 Direct through-connect (Simplex)	-	-	P	-	-	-	-
7.1.2 Direct through-connect (Duplex)	-	N/A	-	-	-	-	-
7.1.3 Call setup Modifications							
7.1.3 (Duplex to Semi duplex)	-	-	-	-	-	-	-
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	-	-	-	-
7.2.2 Request to transmit	-	-	P	-	-	-	-
7.2.3 Request for speech item	-	-	P	-	-	-	-
7.3 Call maintenance	NTA	NTA	NTA	NTA	NTA	NTA	NTA
7.4 Call disconnection	-	-	P ¹	-	P ¹	-	-
7.5 Emergency individual call	-	N/A	P	-	-	-	-
7.5.1 Emergency speech item request	-	N/A	-	-	-	-	-
7.5.2 Emergency individual call modification	-	N/A	P	N/A	N/A	-	-
8 Group management							
8.4 MS Attachment of the selected group	-	-	P	-	-	-	-
8.4 MS Attachment of the selected group (Rejection)	-	-	P	-	-	-	-
8.4 MS Attachment of the Null group	-	-	P	-	-	-	-
8.4 MS Change of the selected group	-	-	P	-	-	-	-
8.5 Multiple group attachment	-	N/A	P	-	-	-	-
8.5 Multiple group attachment (Rejection)	-	N/A	-	-	-	-	-
8.6 MS initiated detachment	-	N/A	-	-	-	-	-
8.7.1 SwMI initiated detachment	N/A	N/A	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	N/A	N/A
8.7.3 SwMI initiated group reporting	N/A	N/A	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	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.

Marconi SwMI	Marconi-OTE Puma-T2	Motorola MTM300	Nokia THR 850	Simoco Digital Systems SRM1000	Simoco Digital Systems SRP1000	Clearstone CM9000P	Teltronic MDT-400
9 Group call							
9.1 Call setup	-	-	P	-	-	-	-
9.1 Call setup (Queuing)	-	-	P	-	-	-	-
9.1.1 Call setup modifications	NTA	NTA	NTA	NTA	NTA	NTA	NTA
9.2.1 End of transmission	-	-	P	-	-	-	-
9.2.2 Request to transmit	-	-	P	-	-	-	-
9.2.3 Request for speech item	-	-	P	-	-	-	-
9.3 Call disconnection	-	-	P	-	-	-	-
9.4 Late entry	-	-	P	-	-	-	-
9.5 Emergency group call	-	-	N/A	P	P	-	-
9.5 Emergency group call(Setup to busy group)	-	-	N/A	P	P	-	-
9.5.1 Emergency speech item request	-	-	N/A	P	P	-	-
9.5.2 Emergency group call modification	-	N/A	N/A	N/A	N/A	-	-
10 Cell re-selection							
10.1 Undeclared cell re-selection	-	-	P	-	-	-	-
10.2.1 Unannounced cell re-selection with call restoration							
10.2.1 (Group call)	-	-	P	-	-	-	-
10.2.1 (Queuing, group call)	-	-	P	P	P	-	-
10.2.1 (individual call)	N/A	-	N/A	N/A	N/A	-	-
10.2.1 (Queuing, individual call)	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)	-	-	P	-	-	-	-
10.2.2 (Queuing, group call)	-	I ²	P	-	P	-	-
10.2.2 (Pre-emption, group call)	-	-	N/A	P	P	-	-
10.2.2 (individual call, traffic)	-	-	P	-	-	-	-
10.2.2 (individual call, inactivity)	-	N/A	P	-	-	-	-
10.2.2 (Queuing, individual call, traffic)	-	-	P	-	P	-	-
10.2.2 (Queuing, individual call, inactivity)	-	N/A	P	-	P	-	-
11 Short data service							
11.1 Status messages (to dispatcher)	-	-	P	-	-	-	-
11.1 Status messages (Text messaging)	-	-	P	-	-	-	-
12 Telephone call							
12.1 Gateway Addresses	NTA	NTA	NTA	NTA	NTA	NTA	NTA
12.2 Call Set-up	-	P	P	-	-	-	-
12.2.1 MS Originated, Late Through-Connect	-	P	P	-	-	-	-
12.2.2 MS Originated, Early Through-Connect	-	-	-	-	-	-	-
12.2.3 MS Originated, Call Queued	-	-	P	-	-	-	-
12.2.4 MS Terminated	-	-	P	-	-	-	-
12.3 Call Maintenance	NTA	NTA	NTA	NTA	NTA	NTA	NTA
12.4 DTMF Over-dial	-	F ³	P	-	-	-	-
12.5 Disconnect Causes	NTA	NTA	NTA	NTA	NTA	NTA	NTA
12.6 Emergency telephone call	NTA	NTA	NTA	NTA	NTA	NTA	NTA

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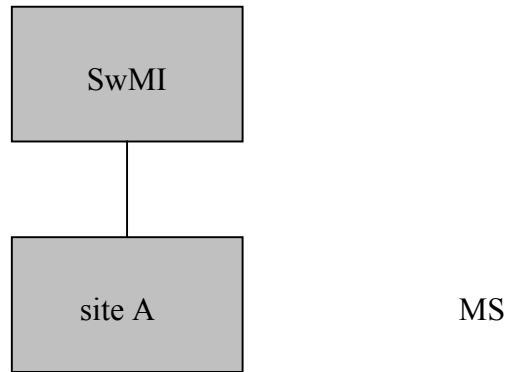
**Comments:**

- 1) Among several call disconnection causes, only 'User requested disconnect' is tested.
- 2) The log file indicates that the MS sends U-PREPARE 5 times without receiving the layer 2 acknowledgement send from SwMI. The D-NEW-CELL PDU is not shown in MS log file either. This signalling may be caused by improper execution of the test. However, the call is re-established on the new cell.
- 3) The MS sends incorrect value in the Poll response element in the U-INFO PDU.

In a number of individual call tests an incorrect Transmission request permission value were observed in downlink messages (D-SETUP, D-CONNECT and D-CONNECT-ACK). E.g. in a test of MS terminated telephone call, the Transmission request permission value of D-CONNECT-ACK was set to "Not allowed to request for transmission" where the expected value was "Allowed to request for transmission".

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.

