



TETRA SwMI Interoperability Certificate

28 September 2001

R&S BICK Mobilfunk GmbH

Telelaboratoriet (Tele Danmark) has witnessed that the R&S BICK Mobilfunk GmbH 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)
• PSTN interconnect	Yes
• Individual duplex call	Yes
• Individual simplex call (direct setup)	Yes
• Status messages	Yes
• Unannounced cell re-selection	NA
• Announced type 3 cell re-selection	NA
• Emergency call	Yes

NA: means not applicable (not supported)

The tests have been performed on R&S BICK Mobilfunk GmbH ACCESSNET-T infrastructure during the period 05 - 09 February 2001 with hardware V.1.00.01 (DMX-500 + 4*DTX-500) and software package V.1.00.21

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

Authorised IOP test engineer

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

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Information about the equipment used for testing

Testing 5th - 9th February 2001:

The tests performed on 5th-9th of February 2001 were performed using the following terminals:

Manufacturer	Terminal Type	Software/Hardware Release No.
Motorola	MTM300	SW: R35.03.29 HW: M12QCN6TZ5BN
Nokia	THR600	SW: HZ12.03-2 HW: HRU 600-04
Marconi / OTE	Puma-T1	HW: 02.01 SW: 2.1.A
Simoco	SRM1000	SW: 4313 327 84994 HW:MD1TZ001T20C01000
Cleartone	CM9000P	SW: TMD 0.33 HW:1-00

The testing were performed at the premises of R&S BICK Mobilfunk GmbH.

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Issued to: R&S BICK Mobilfunk GmbH

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Additional information about the test performed

The tests for the Cleartone and Marconi terminals were performed in the 380-400 MHz band. The SwMI were operating with the following configuration:

MCC	238
MNC	6
Colour code	45
LA3 carrier frequency (BS Tx)	391.6125 MHz
LA4 carrier frequency (BS Tx)	392.6125 MHz
PSTN gateway	Hicom PABX, 82xxx
Subscriber classes	FFFF ₁₆

The tests for the Nokia, Motorola and Simoco terminals were performed in the 410-430 MHz band. The SwMI were operating with the following configuration:

MCC	238
MNC	6
Colour code	45
LA1 carrier frequency (BS Tx)	423.3750 MHz
LA2 carrier frequency (BS Tx)	422.4750 MHz
PSTN gateway	Hicom PABX, 82xxx
Subscriber classes	FFFF ₁₆

Test Results

Table 1 Test results from 5th -9th February 2001

Table one 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 five values, -: No test performed, N/A: Not applicable, P: Pass , F: Fail, or I: Inconclusive. No test performed is also assigned in case of no test case being available. 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 one. 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.

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R&S BICK SwMI	Marconi-OTE Puma-T1	Motorola MTM300	Nokia THR600	Simoco SRM1000	Clearstone CM9000P
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	-	-	-	-	-
9.2.1 End of transmission	P	P	P	P	P
9.2.2 Request to transmit	P	P	P	P	P
9.2.3 Request for speech item	N/A	P	I ⁶	N/A	P
9.3 Call disconnection	P	P	P	P	P
9.4 Late entry	P	P	P	P	P
9.5 Emergency group call .	P	P	I ^{2,9}	N/A	P
9.5 Emergency group call(Setup to busy group)	P	P	I ^{2,9}	N/A	P
9.5.1 Emergency speech item request	P	P	I ⁹	N/A	P
9.5.2 Emergency group call modification	F ^{3,10}	F ^{3,10}	F ^{2,3,10}	N/A	F ^{3,10}
10 Cell re-selection					
10.1 Undeclared cell re-selection	P	P	P	P	P
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)	I ¹¹	P	P	P	P
11.1 Status messages (Text messaging)	P	-	P	P	P
12 Telephone call					
12.1 Gateway Addresses	-	-	-	-	-
12.2 Call Set-up	I ¹²	I ¹²	I ¹²	I ¹²	I ¹²
12.2.1 MS Originated, Late Through-Connect	-	-	-	-	-
12.2.2 MS Originated, Early Through-Connect	-	-	-	-	-
12.2.3 MS Originated, Call Queued	P ¹²	P ¹²	P ¹²	P ¹²	P ¹²
12.2.4 MS Terminated	P	P	P	P	P
12.3 Call Maintenance	-	-	-	-	-
12.4 DTMF Over-dial	N/A	N/A	N/A	N/A	N/A
12.5 Disconnect Causes	-	-	-	-	-
12.6 Emergency telephone call	-	-	-	-	-

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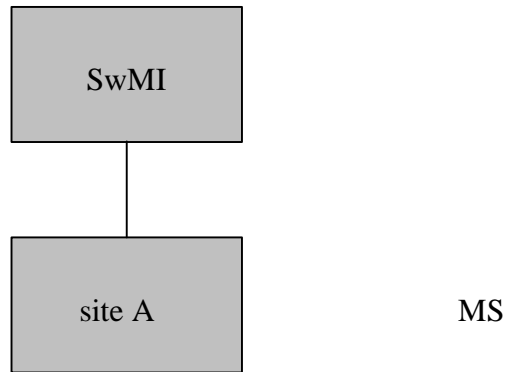
Comments:

- 1) It was observed that the SwMI queues the emergency call while resources are being released.
- 2) It was observed that the request to transmit element were set to "request that other MS may transmit/send data". Therefore the SwMI sets the transmission grant element to "Transmissions not granted" in the D-CONNECT.
- 3) In D-CALL-PROCEEDING communication type element is missing.
- 4) More than the necessary resources are released in order to be able to handle the emergency call.
- 5) The MS log indicates that it is attempting to attach a group, which should be known to the SwMI. This group is rejected by the SwMI. The SwMI log does not contain any information about the MS attempting to attach a group.
- 6) The MS rejects the SwMI initiated group detachment.
- 7) The SwMI attempts to reattach the group with class of usage 4. No response is received from the MS.
- 8) The logs does not contain the necessary information to draw a conclusion.
- 9) The log from the SwMI does not match the log from the MS.
- 10) In D-CALL-PROCEEDING and D-CONNECT the Hook method element is set to "Direct", expected value is "Hook signalling".
- 11) No D-STATUS shown in the log from the SwMI or the terminal.
- 12) The call is established. The Hook selection method element is set to hook signalling all through the setup phase, but no D-ALERT is sent from SwMI. Due to ambiguity in the specification it can not be determined whether this signalling is correct.

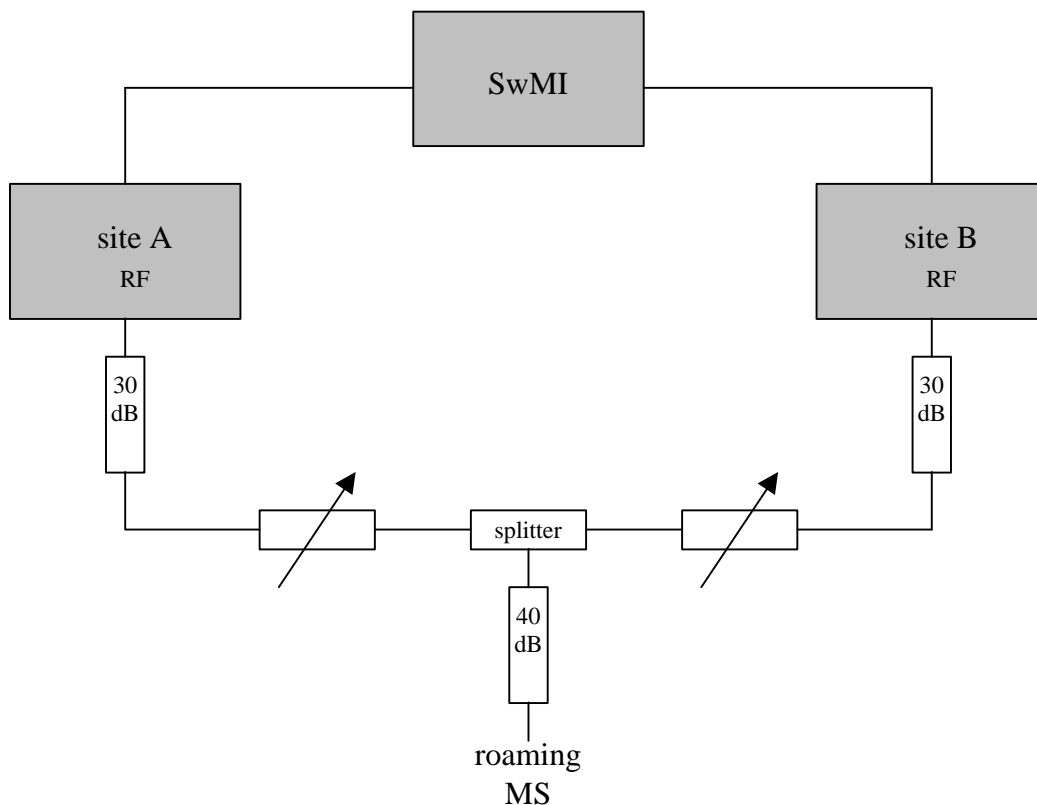
In a number of tests an incorrect transmission grant value were observed in down link messages (D-SETUP, D-CONNECT etc). E. g. in a test of an individual call the transmission grant value of the D-SETUP were set to "Transmission granted" where the expected value is "transmission not granted".

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.



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