



IST doc.10

TETRA Terminal Interoperability Certificate

January 2003

NOKIA

Manufacturer	Terminal type	Software/Hardware Release No.	Dates of testing
Nokia	THR 850	HW: THR-3 SW: 1.02-0	20 - 31 January 2003

ISCTI (Istituto Superiore delle Comunicazioni e delle Tecnologie dell'Informazione) has witnessed that the NOKIA Terminal is operating in accordance with:

TETRA Interoperability Profile:

TIP PART 1 CORE: TTR 001-01 VER 3.0.13, JUNE 2001

TIP PART 2 SDS: TTR 001-02 VER 1.0.1, AUGUST 2001

TIP PART 7: FSSN TTR 001-07 VER 1.0.0, JANUARY 2002

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

Authorised IOP test engineer
(Ivano Luciani)
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Radio Office Manager
(Ing. A. La Padula)

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Information about the equipment used for testing

Testing during the January 2003 IOP Test Session:

The tests were performed using the following Infrastructure:

Manufacturer	Infrastructure	Software/Hardware Release No.
Nokia	NTS 3.0	HW: DXT256 (exchange) SW: w3 6.7-1 HW: TBS400 (base station) SW: TBC 6.47-0, TBBM 3.43-0

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Additional information about the test performed

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

MCC	346
MNC	5
Colour code	35 - 40
LA1 carrier frequency (BS Tx)	395.1875 MHz
LA2 carrier frequency (BS Tx)	395.4125 MHz
PSTN gateway	16777184 (FFFFE0)
Subscriber classes	FFFF ₁₆

Test Results

The test results are shown in the tables below.

Test results and the certificates from previous IOP test session are available on TETRA MoU web site (<http://www.tetramou.com/interoperability>).

Tables indicate whether or not tests addressing a specific requirement of the TIP specification have been performed, whether or not the requirement is applicable for the SwMI, and the result of the test if executed. Each entry of the table may take one of seven values:

- : No test performed.
- N/A: Not applicable for the SwMI
- NTPA: No Test Plan/case Available
- No : Not supported by Terminal
- P : Pass
- F : Fail
- I : Inconclusive

No test performed (-) is assigned in case of no test case performed during the IOP session.

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 following tables. 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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NOKIA SwMI		Nokia THR 850
Table 1. CORE TTR 001-01		
6	Registration	
6.1	ITSI attach - ITSI attach (without group attachment) 1.1	P
6.2	ITSI attach including group attachment –1.2	No
6.2	ITSI attach including group attachment Ms initiated Multiple group attachment during MS registration – 2.2.1	P
6.3	Roaming&perioding location updating Cell re-selection without communication activity – 7.1.1	P
6.4	SwMI initiated location updating SwMI initiated location updating without group reporting – 1.3.1	–
6.4	SwMI initiated location updating– SwMI initiated location updating with group reporting - 1.3.2	N/A
6.5	De-registration –1.4	P
7	Individual call	
7.1	Call set-up	
7.1.1	Hook signalling Individual hook call set-up – 4.1.1	–
7.1.1	Hook signalling Individual call set-up, resource queuing – 4.1.3	–
7.1.1	Hook signalling Duplex call set-up – 4.2.1	P
7.1.1	Hook signalling Duplex call set-up, resource queuing – 4.2.2	P
7.1.1	Hook signalling. MS-ISDN Individual call – 9.1	–
7.1.2	Direct through-connect MS-ISDN Individual call – 9.1	–
7.1.2	Direct through-connect Individual direct call set-up – 4.1.2	P
7.1.2	Direct through-connect Individual call set-up resource queuing– 4.1.3	P
7.1.3	Call set-up Modifications	
7.1.3.1.4	Point to point' to 'point to multipoint' Emergency call set-up, P2P to P2MP call modification – 6.2.2	P
7.1.3.2.3	Duplex to simplex Call set-up modifications by called party, duplex to semiduplex – 4.3.2	P
7.1.3.2.1	Direct to hook Call set-up Modification by called party, direct to hook – 4.3.1	P
7.2	Transmission control	
7.2.1	End of transmission Individual hook call set-up – 4.1.1	–
7.2.1	End of transmission Individual direct call set-up – 4.1.2	P
7.2.2	Request to transmit Individual hook call set-up – 4.1.1	–
7.2.2	Request to transmit MS-ISDN Individual call – 9.1	–
7.2.2	Request to transmit Individual direct call set-up – 4.1.2	P
7.2.3	Request to transmit (in the presence of an active talker) pre-emptive speech item request, non pre emptive transmission request queuing – 4.1.4	N/A
7.2.3	Request to transmit (in the presence of an active talker) pre-emptive speech item request, non pre emptive transmission request rejection – 4.1.5	N/A
7.3	Call Maintenance Queuing during Individual call restoration, Transmitting – 7.3.4.1	–

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7.3	Call Maintenance Queuing during individual call restoration, receiving. (Announced Type 3) – 7.3.4.2	–
7.3	Call Maintenance Queuing during individual call restoration. Receiving (Unannounced) – 7.3.4.3	No
7.3	Call Maintenance Queuing during individual call restoration. Communication inactivity. (Announced Type 3) – 7.3.5.1	–
7.3	Call Maintenance Queuing during Individual call restoration, Communication inactivity (Unannounced) - 7.3.5.2	No
7.3	Call Maintenance Queuing during Duplex call restoration (Announced type 3) - 7.4.2	–
7.4	Call disconnection Individual hook call set-up – 4.1.1	–
7.4	Call disconnection Individual direct call set-up – 4.1.2	P
7.4	Call disconnection Duplex call set-up – 4.2.1	P
7.5	Emergency individual call. Emergency individual call. Resource pre-emption – 6.2.1	P
7.5.1	Emergency speech item request Emergency individual call. Resource pre-emption – 6.2.1	P
7.5.2	Emergency individual call modification Emergency call set-up, P2P to P2MP call modification – 6.2.2	P
8	Group management	
8.2.5	Class of usage values 101₂, 011₂, 010₂, High, normal, low priority scanned. Status to scanned group – 5.1.2.3	P
8.2.7	Selected group and SwMI initiated attachment/detachments Roaming outside and back inside of group area of the selected group – 2.4.2	P
8.2.7	Selected group and SwMI initiated attachment/detachments Roaming outside and back inside of group area of an attached non-selected group – 2.4.3	P
8.4	Attachment of the selected group MS initiated single group attachment of the selected group, accepted – 2.1.1 (by an MS, which can have no selected group)	P
8.4	Attachment of the selected group MS initiated single group attachment of the selected group, rejection – 2.1.3 (by an MS, which can have no selected group)	P
8.4	Attachment of the selected group Null group attachment as the selected group – 2.1.5	P
8.4	Attachment of the selected group Change of selected group – 2.1.6	P
8.5	Multiple group attachment MS initiated single group attachment of other than selected group, accepted – 2.1.2	P
8.5	Multiple group attachment MS initiated single attachment of other than selected group, rejection – 2.1.4	P
8.5	Multiple group attachment MS initiated Multiple group attachment, rejection of some of the attached groups – 2.2.5	No
8.5	Multiple group attachment MS initiated Multiple group attachment with attachment to selected group – 2.2.2	No
8.5	Multiple group attachment MS initiated Multiple group attachment during MS registration – 2.2.1	P
8.5	Multiple group attachment Ms initiated Multiple group attachment with no selected group – 2.2.3	No
8.5	Multiple group attachment MS initiated Multiple group attachment, only the attachment of the selected group is accepted – 2.2.4	N/A

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8.6	MS initiated detachment MS initiated detachment of the selected group – 2.3.1	-
8.6	MS initiated detachment MS initiated group detachment of the selected group and an attached group – 2.3.2	I5
8.7	SwMI initiated group attachment and detachment	
8.7.1	SwMI initiated detachment SwMI initiated group detachment with another value than Temporary 1 detachment and attachment – 2.4.1	N/A
8.7.1	SwMI initiated detachment Roaming outside and back inside of group area of the selected group – 2.4.2	P
8.7.1	SwMI initiated detachment Roaming outside and back inside of group area of an attached non/selected group – 2.4.3	P
8.7.2	SwMI initiated attachment SwMI initiated group detachment with another value than Temporary 1 detachment and attachment – 2.4.1	N/A
8.7.2	SwMI initiated attachment Roaming outside and back inside of group area of an attached non/selected group – 2.4.3	P
8.7.2	SwMI initiated attachment Roaming outside and back inside of group area of the selected group – 2.4.2	P
8.7.4	SwMI initiated location updating with group report request SwMI initiated location updating with group reporting – 1.3.2	N/A
8.7.5	SwMI initiated registration without group report request SwMI initiated location updating without group reporting – 1.3.1	-
9	Group call	
9.1	Call set-up Normal Group call – 3.1	P
9.1	Call set-up Group Call set-up, resource queuing – 3.3	P
9.1	Call set-up MS-ISDN group call – 9.2	-
9.1	Call set-up Group scanning – 3.8	P
9.1.2	Call set-up modifications Group call-SwMI changes requested call priority – 3.7	N/A
9.1.2	End of transmission Normal Group call – 3.1	P
9.2.1	End of transmission Group scanning – 3.8	P
9.2.2	Request to transmit Normal Group call – 3.1	P
9.2.2	Request to transmit MS-ISDN group call – 9.2	-
9.2.2	Request to transmit Pre-emptive speech item request, non pre-emptive transmission request queuing – 3.4	N/A
9.2.2	Request to transmit Group scanning –3.8	P
9.2.2	Request to transmit Pre-emptive speech item request, non pre-emptive transmission request rejection –3.5	N/A
9.3	Call disconnection Normal Group call – 3.1	P
9.3	Call disconnection Group call disconnection by call owner MS – 3.6	N/A
9.4	Late entry – 3.2	P
9.6	Emergency group call	
9.6	Emergency group call Emergency call set-up to busy group, speech item interruption – 6.1.1	P
9.6	Emergency group call Pre-emption during group call restoration. Transmitting (Announced Type 3) – 7.2.5	N/A
9.6	Emergency group call Emergency group call resource pre-emption – 6.1.2	P
9.6.1	Emergency speech item request Emergency call set-up to busy group speech item interruption – 6.1.1	P

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9.6.2	Emergency group call modification Emergency call set-up, P2MP to P2P call modification – 6.1.3	P
10	Cell re-selection	
10.1	Undeclared cell re-selection Cell re-selection without communication activity – 7.1.1	P
10.2	Unannounced cell re-selection with call restoration	
10.2.1	Unannounced cell re-selection Group call restoration, Receiving (Unannounced) – 7.2.2	–
10.2.1	Unannounced cell re-selection Queuing during group call restoration,. Receiving (Unannounced) – 7.2.4	–
10.2.1	Unannounced cell re-selection Queuing during individual call restoration. Receiving (Unannounced) – 7.3.4.3	No
10.2.1	Unannounced cell re-selection Queuing during individual call restoration, Communication inactivity (Unannounced) – 7.3.5.2	No
10.2.1	Unannounced cell re-selection individual call restoration, Receiving (Unannounced) – 7.3.2.2	No
10.2.1	Unannounced cell re-selection individual call restoration, Communication inactivity (Unannounced) - 7.3.3.2	No
10.2.2	Announced cell re-selection Type without Preferred Neighbour Selected Group call restoration, Transmitting. (Announced Type 3) – 7.2.1	–
10.2.2	Announced cell re-selection without Preferred Neighbour Selected Queuing, during group call restoration, Transmitting (Announced Type 3) – 7.2.3	–
10.2.2	Announced cell re-selection Type without Preferred Neighbour Selected Pre-emption during group call restoration. Transmitting. (Announced Type 3) – 7.2.5	N/A
10.2.2	Announced cell re-selection Type without Preferred Neighbour Selected Individual call restoration. Transmitting party – 7.3.1	–
10.2.2	Announced cell re-selection Type without Preferred Neighbour Selected Individual call restoration. Receiving (Announced Type 3) – 7.3.2.1	–
10.2.2	Announced cell re-selection Type without Preferred Neighbour Selected Queuing during individual call restoration. Communication inactivity. (Announced Type 3) – 7.3.5.1	–
10.2.2	Announced cell re-selection Type without Preferred Neighbour Selected Queuing during individual call restoration. Transmitting. – 7.3.4.1	–
10.2.2	Announced cell re-selection Type without Preferred Neighbour Selected Queuing during individual call restoration. Receiving (Announced Type 3) – 7.3.4.2	–
10.2.2	Announced cell re-selection Type without Preferred Neighbour Selected individual call restoration. Communication inactivity (Announced Type 3) – 7.3.3.1	–
10.2.2	Announced cell re-selection Queuing during Duplex call restoration (Announced Type 3) – 7.4.2	–
10.2.2	Announced cell re-selection Duplex call restoration (Announced Type 3) – 7.4.1	–
10.2.3	Announced cell re-selection Type with Preferred Neighbour Selected Group call announced cell-reselection with preferred neighbour selected and with call restoration, Transmitting – 7.2.7	No

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10.2.3	Announced cell re-selection Type with Preferred Neighbour Individual call, Announced cell re-selection with preferred neighbour selected and with call restoration Transmitting – 7.3.6	No
10.3.1	Announced Type with Preferred Neighbour Selected and without Forward Registration Group call Announced cell re-selection without call restoration, (seamless hand-over) without forward registration transmitting – 7.2.6	No
10.3.1	Announced Type with Preferred Neighbour Selected and without Forward Registration Duplex call, Announced cell-re-selection without call restoration without forward registration – 7.4.3	–
10.3.2	Announced Type with Preferred Neighbour Selected and with Forward Registration Individual call. Announced cell re-selection without call restoration with forward registration . Transmitting – 7.3.7	No
10.3.2	Preferred Neighbour Selected and without Forward Registration Forward Registration Group call. Announced cell re-selection without call restoration with forward registration . Transmitting – 7.2.8	No
11	Short data service	
11.1.1	Service Overview MS-ISDN addressed individual status message – 9.3	–
11.1.1	Service Overview MS-ISDN addressed group status message – 9.4	–
11.1.3.1	MS to Wireline Dispatcher with Status Acknowledge Status transfer to dispatcher - 5.1.2.2	P
11.1.3.2	MS to MS/Group with General Status Acknowledge Status transfer to group – 5.1.2.1	P
11.1.3.2	MS to MS/Group with General Status Acknowledge Individual addressed status transfer (Dispatcher) – 5.1.1	P
11.1.3.2	MS to MS/Group with General Status Acknowledge Status to scanned group - 5.1.2.3	P
11.1.3.2	MS to MS/Group with General Status Acknowledge MS-ISDN addressed group status message – 9.4	–
11.1.3.2	MS to MS/Group with General Status Acknowledge MS-ISDN addressed individual status message – 9.3	–
12	Telephone call	
12.2	Call Set-up	
12.1	Gateway addresses TETRA-originated call set-up – 8.1	–
12.2.1	MS Originated, Late Through-Connect TETRA-originated call set-up – 8-1	–
12.2.1	MS Originated, early Through-Connect TETRA-originated call set-up – 8-1	–
12.2.3	MS Originated, Call Queued TETRA-originated call set-up queuing – 8.2	–
12.2.4	MS terminated PSTN originated call – 8.3	–
12.4	DTMF Over dial TETRA-originated successful DTMF over-dial – 8.4	–
12.4	DTMF Over dial TETRA-originated unsuccessful DTMF over-dial – 8.5	N/A
12.5	Disconnect Causes TETRA-originated call set-up – 8.1	–
12.5	Disconnect Causes TETRA-originated call set-up queuing – 8.2	–
12.5	Disconnect Cause PSTN originated call – 8.3	–
12.6	Emergency telephone call Emergency call to emergency number – 6.3.1	P

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14	Layer 2 operation	
14.1.1.4	Up-link FACCH and down-link TCH. Sending SDS-TL message in FACCH during group call – 10.1	P
14.1.1.2	Traffic channel (TCH). Sending SDS-TL message in SACCH during group call – 10.2	P
14.1.1.2	Traffic channel (TCH). Sending SDS-TL message in SACCH during individual call – 10.4	P
14.1.1.4	Up-link FACCH and down-link TCH. Sending SDS-TL message in FACCH during individual call – 10.3	P
Table 2. SDS TTR 001-02		
MS-ISDN (SDS-TTR 001 - 02 ver.1.0.1)		
6.1	Addressing MS-ISDN addressed individual SDS-TL message – 9.5	–
6.1	Addressing MS-ISDN addressed group SDS-TL message – 9.6	–
7	User defined data Type 1, 2 and 3	
7	User defined data Type 1, 2 and 3 Individual addressed SDS Type 1 transfer –1.1.1	–
7	User defined data Type 1, 2 and 3 Individual addressed SDS Type 2 transfer –1.2.1	No
7	User defined data Type 1, 2 and 3 Individual addressed SDS Type 3 transfer –1.3.1	No
8	User defined data Type 4	
8.1	User defined data Type 4 SDSL-TL message to scanned group – 1..4.3	–
8.1.2	MS to MS, Standard Report Individual addressed text messaging SDS-TL, (with acknowledgement) – 1.4.1	–
8.1.2	MS to MS, Standard Report group addressed text messaging SDS-TL, (without acknowledgement) – 1.4.2	–
8.1.2	MS to MS, Standard report. MS-ISDN addressed individual SDS-TL message – 9.5	–
8.1.2	MS to MS, Standard report. MS-ISDN addressed group SDS-TL message – 9.6	–
8.1.2	MS to MS, Standard report. Sending SDS-TL message in FACCH during group call – 10.1	P
8.1.2	MS to MS, Standard report. Sending SDS-TL message in SACCH during group call – 10.2	P
8.1.2	MS to MS, Standard report. Sending SDS-TL message in SACCH during individual call – 10.4	P
8.1.2	MS to MS, Standard report. Sending SDS-TL message in FACCH during individual call – 10.3	P
8.1.3	MS to MS, Short Report individual addressed text messaging SDS-TL, (with acknowledgement) – 1.4.1	–
8.1.3	MS to MS, Short Report group addressed text messaging SDS-TL, (without acknowledgement) – 1.4.2	–
8.1.3	MS to MS, Short report Sending SDS-TL message in FACCH during individual call – 10.3	P
8.1.3	MS to MS, Short report Sending SDS-TL message in SACCH during individual call – 10.4	P
8.1.3	MS to MS, Short report. MS-ISDN addressed individual SDS-TL message – 9.5	–
8.2	Text messaging	
8.2.1.2	Text Length. MS-ISDN addressed individual SDS-TL message - 9.5	–
8.2.1.2	Text Length. MS-ISDN addressed group SDS-TL message – 9.6	–
8.2.1.3	Data Coding Scheme. MS-ISDN addressed group SDS-TL message – 9.6	–
8.2.1.3	Data Coding Scheme. MS-ISDN addressed individual SDS-TL message – 9.5	–

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8.2.1.4	PDU Contents. Sending SDS-TL message in FACCH during group call –10.1	P
8.2.1.4	PDU Contents. Sending SDS-TL message in SACCH during group call – 10.2	P
8.2.1.4	PDU Contents. MS-ISDN addressed individual SDS-TL message – 9.5	-
8.2.1.4	PDU Contents. MS-ISDN addressed group SDS-TL message – 9.6	-
8.2.1.4	PDU contents Report group addressed text messaging SDS-TL, (without acknowledgement) – 1.4.2	-
8.2.1.4	PDU contents SDS-TL message to scanned group (without acknowledgement) – 1.4.3	-
Table 7. FSSN TTR 001-07		
2.6.1	Individual call using FSSN Individual intra FSSN call within a fleet - 1.1	P
2.6.1	Individual call using FSSN Individual intra FSSN call between two fleet - 1.2	P
2.6.2	Group call within single FSSN domain using FSSN for CPI/TPI Group call within single FSSN domain - 1.3	P
2.6.3	Group call maintenance using FSSN for TPI Group call within single FSSN domain - 1.3	P
2.6.4	Individually and group addressed status messages Individually addressed FSSN status messages - 1.4	-
2.6.4	Individually and group addressed status messages FSSN as a CPI in group addressed status message - 1.5	-
2.6.5	Individually and group addressed SDS text status messages Individually addressed FSSN SDS-TL messages - 1.6	P
2.6.5	Individually and group addressed SDS text status messages Group addressed FSSN SDS-TL messages - 1.7	-
	Comments:	
I5	MS (THR 850) attaches group as not scanned (CoU 2), instead detaching	

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