# TETRA ASSOCIATION

ISCTI

## TETRA Interoperability Certificate

**Rohill, TetraNode, SwMI**
**Unimo, MU-1000MD, Terminal**

**Hoogeveen, May 2010**

| | | | |
|---|---|---|---|
| **Latest Certified SwMI SW Release:** | R 3.0 | **Latest Certified Terminal SW Release:** | Stack Version 8.7.2 MMI Version: V4.0.0 |
| **Latest Certified SwMI HW Release:** | R 2.2 | **Latest Certified Terminal HW Release:** | Osiris H014 |

ISCOM (Istituto Superiore della Comunicazioni e delle Tecnologie dell'Informazione) certifies, that the the Rohill, TetraNode, SwMI and the Unimo, MU-1000MD, Terminal have been subject to interoperability testing for the "certified" features listed on the second page of this certificate. In accordance with the TETRA Interoperability Profiles, TIP compliance Test Plan and the related TETRA interoperability requirement tables.

The table lists all the available TETRA interoperability profiles, and summarises the main functionalities of every profile according to the TETRA interoperability requirement tables.

A feature is "**Certified**" when it has been successfully tested during the last test session with one of the testing method described in the TETRA process document part 1 (TPD001).

A breakdown into the feature details is given in the Feature Compliance Overview section of this certificate.

Detailed test results and explanation about the procedure used to provide verdicts are listed in the Test Report associated to the Certificate.

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# Certified features

| Tetra Association TTR001-01:Core | |
|---|---|
| Registration | Certified |
| Group Management | - |
| Group call | - |
| Individual call | - |
| Status messages | Certified |
| Pre-emptive Priority Call | - |
| Emergency Call | - |
| Cell Re-selection | Certified |
| PSTN interconnect | - |
| MS-ISDN Numbering | - |
| In Call Signalling | - |
| Subscriber Class Procedures | Certified |
| Common Secondary Control Channels | - |
| BS Fallback Operation | - |
| Energy Economy Mode | - |
| Transmit Inhibit | - |
| **Tetra Association TTR001-02:SDS** | |
| SDS Type 1, 2 or 3 | Certified |
| SDS-TL | Certified |
| Store and Forward | - |
| **Tetra Association TTR001-04:Auth** | |
| SwMI Initiated (non-mutual) Authentication | Certified |
| SwMI Initiated Authentication made Mutual by MS | Certified |
| TEI Query | - |

| Tetra Association TTR001-05:PD | |
|---|---|
| **Context Management** | Certified |
| **Single Slot Packet Data** | Certified |
| **Multi Slot Packet Data** | - |
| **Tetra Association TTR001-11:AIE** | |
| **Security Class 2 Air Interface Encryption** | Certified |
| **Security Class 3 Air Interface Encryption** | Partial |
| **Security Class 3G Air Interface Encryption** | - |
| **Change of CMG and GSKO** | - |
| **Key Status demand** | - |
| **Change of Security Class for Fallback operation** | - |
| **Change of Security Class (other than for Fallback operation)** | - |
| **Key Management for Secure Direct Mode Operation** | - |

## Feature Compliance Overview

The first pages of this certificate provide an indication about the main interoperable TETRA features for each TIP specification (as described in the TIC-RT). The main interoperable TETRA features result depend on a set of sub-feature, the verdicts associated to each sub-feature are directly derived from the analysis of the performed test cases. The results associated to each feature and sub-feature are shown in the "Feature compliance report" table below. The main features are indicated with grey background and the associated sub-features (or second level features) have white background.

The verdict assigned to a sub-feature as shown on page 2, is derived by the Feature compliance report tables.

| Verdict | Definition |
|---|---|
| **Certified** | All required tests have been performed and passed |
| **Partial** | Not all the required tests have been performed but none have failed |
| – | Feature cannot be certified e.g. it is not supported by at least one product, no tests were performed, or some tests were performed but at least one failed |

The verdict assigned to a sub feature is the result of an analysis of the test case results listed in the Test Report. The verdict assigned to each sub-feature is derived from one or several test case results or test steps result, the TETRA Interoperability requirement tables (TIC-RTs) indicate the link between sub-features and test cases for the certified set of equipment capabilities (see Test Report)

TetraNode

| R 2.2 | Definition |
|---|---|
| **R 3.0** | All mandated tests or steps of tests linked to this functionality (as per TIC-RT indication) are compliant with the TIP specification relevant to this feature. A note can be associated to this result, if further clarification on the behaviour of the equipment is needed |
| **MU-1000MD** | Not all Mandated tests (as per TIC-RT indication) have been executed (ran out of time) |

Osiris H014

Stack Version 8.7.2 MMI Version: V4.0.0

| Testing Method | Description |
|---|---|
| **Complete** | All mandated tests associated to the feature have been executed |
| **Spot** | Only a selection of the mandatory test cases associated to the feature has been executed during the test session. These tests are a subset of the tests performed on an equivalent software which has been "completely" tested against the same functionality on a different equipment, see manufacturer declaration in annex A |

| | |
|---|---|
| **Regression** | Only a selection of the mandatory test cases associated to the feature has been executed during the test session. These tests are a subset of the tests performed on a previous version of the same software which has been "completely" tested in a previous test session against the same functionality, see manufacturer definition in annex A |
| **Regression on spot** | The regression method has been applied on the verdicts based on the spot testing method |

Depending on equipment capabilities declared by the manufacturer, some features or sub features cannot be tested. The following table describes meaning of the used abbreviation

| Indication | Definition |
|---|---|
| **SwMI-nr MS-nr** | The SwMI and MS do not support the minimum features required to verify these items. |
| **SwMI-nr** | The SwMI does not support the minimum features required to verify these items. |
| **MS-nr** | The MS does not support the minimum features required to verify these items. |

ISCOM has made every effort to ensure that every result has been correctly evaluated in accordance with the relevant TIPs, Test Plans and TIC-RTs. ISCOM has no liability for the test results, or towards the manufacturers,

The table on the following page lists HW and SW releases of SwMI and Terminal under test in the last four test sessions and the used TIP specifications, Test Plans and TIC-RTs

This Certificate and Certificates from previous test sessions are available on the TETRA Association web site (http://www.tetra-association.com/tetramou.aspx?&id=2636).

The feature results are shown in the tables below

## Information on equipment under test and document references

| | | | | |
|---|---|---|---|---|
| **Test Session Date/Place** | **Rohill, Hoogeveen, May 2010** | | | |
| **SwMI Type** | TetraNode | | | |
| **SwMI HW Release** | R 2.2 | | | |
| **SwMI SW Release** | R 3.0 | | | |
| **Terminal Type** | MU-1000MD | | | |
| **Terminal HW Release** | Osiris H014 | | | |
| **Terminal SW Release** | Stack Version 8.7.2 MMI Version: V4.0.0 | | | |
| **TIP Specs and TIP Compliance Test Plans** | | | | |
| **Core** | TTR001-01 v5.0.0<br>IOP001-01 v2.6.0<br>TIC-RT001-01 v242 | | | |
| **SDS** | TTR001-02 v2.0.1<br>IOP001-02 v2.0.0<br>TIC-RT001-02 v210 | | | |
| **Auth** | TTR001-04 v3.0.0<br>IOP001-04 v2.0.0<br>TIC-RT001-04 v219 | | | |
| **PD** | TTR001-05 v2.0.0<br>IOP001-05 v2.0.0<br>TIC-RT001-05 v225 | | | |

| | | | | | |
|---|---|---|---|---|---|
| **AIE** | TTR001-11 v3.0.0<br>IOP001-11 v3.0.0<br>TIC-RT001-11 v3015 | | | | |

## Feature compliance report

| **Test Session** | **Rohill, Hoogeveen, May 2010** | | | |
|---|---|---|---|---|
| **Core** | | | | |
| Registration | PASSED Complete 3_pass_of_3 | | | |
| ITSI attach | PASSED Complete 2_pass_of_2 | | | |
| SwMI initiated location updating | Not Supported | | | |
| LA timer based Periodic location updating | Not Supported | | | |
| De-registration | PASSED Complete 1_pass_of_1 | | | |
| Group Management | | | | |
| Single group attachment | Not Supported | | | |
| Multiple group attachment | Not Supported | | | |
| MS initiated group detachment | Not Supported | | | |
| SwMI initiated group management | Not Supported | | | |
| Group call | | | | |
| Normal group call | Not Supported | | | |
| Late entry | Not Supported | | | |
| Priority Group scanning | Not Supported | | | |

| | | | | |
|---|---|---|---|---|
| Call setup modifications | Not Supported | | | |
| Resource Queuing based on Call Priority | Not Supported | | | |
| Broadcast Call | Not Supported | | | |
| Limited coverage notification | Not Supported | | | |
| Individual call | | | | |
| Simplex individual call | Not Supported | | | |
| Duplex individual call | Not Supported | | | |
| Call setup modifications | Not Supported | | | |
| Resource Queuing based on Call Priority | Not Supported | | | |
| Indication of imminent call disconnection | Not Supported | | | |
| Status messages | PASSED Complete 1_pass_of_1 | | | |
| Individual addressed Status transfer | PASSED Complete 1_pass_of_1 | | | |
| Group addressed Status transfer | Not Supported | | | |
| Pre-emptive Priority Call | | | | |
| Pre-emption of Resources | Not Supported | | | |
| Pre-emption of Busy Users | Not Supported | | | |
| Emergency Call | | | | |
| Pre-emption of Resources | Not Supported | | | |
| Pre-emption of Busy Users | Not Supported | | | |
| Call setup modifications | Not Supported | | | |

| | | | | |
|---|---|---|---|---|
| Cell Re-selection | PASSED Complete 1_pass_of_1 | | | |
| Undeclared | PASSED Complete 1_pass_of_1 | | | |
| Unannounced | Not Supported | | | |
| Announced - with Call Restoration | Not Supported | | | |
| Announced - without Call Restoration | Not Supported | | | |
| PSTN interconnect | | | | |
| TETRA Originated Call | Not Supported | | | |
| PSTN Originated Call | Not Supported | | | |
| DTMF over-dial | Not Supported | | | |
| Emergency Telephone Calls | Not Supported | | | |
| MS-ISDN Numbering | | | | |
| MS ISDN - Voice Call | Not Supported | | | |
| MS-ISDN Status | Not Supported | | | |
| In Call Signalling | | | | |
| Slow Signalling on Traffic Channel (SACCH) | Not Supported | | | |
| Fast Signalling on Traffic Channel (FACCH) | Not Supported | | | |
| Subscriber Class Procedures | PASSED Complete 2_pass_of_2 | | | |
| Cell Selection based on Subscriber Class | PASSED Complete 1_pass_of_1 | | | |

| | | | | |
|---|---|---|---|---|
| Subscriber Class Delivery during Location Update | PASSED<br>Complete<br>1_pass_of_1 | | | |
| Use of Preferred Subscriber Classes | Not Supported | | | |
| Common Secondary Control Channels | | | | |
| One C-SCCH per cell | Not Supported | | | |
| Two C-SCCH per cell | Not Supported | | | |
| Three C-SCCH per cell | Not Supported | | | |
| BS Fallback Operation | | | | |
| Switch to/from BS Fallback Operation | Not Supported | | | |
| Roaming with BS Fallback Operation | Not Supported | | | |
| Services with BS Fallback Operation | Not Supported | | | |
| Energy Economy Mode | | | | |
| Energy Economy Mode Operation | Not Supported | | | |
| Transmit Inhibit | | | | |
| TXI Activation & De-Activation without Status message | Not Supported | | | |
| TXI Activation & De-Activation with Status message | Not Supported | | | |
| Receipt of group addressed service during TXI | Not Supported | | | |
| **Short Data Service (SDS)** | | | | |
| SDS Type 1, 2 or 3 | PASSED<br>Complete<br>3_pass_of_3 | | | |
| SDS Type 1 | PASSED<br>Complete<br>1_pass_of_1 | | | |

| | | | | |
|---|---|---|---|---|
| SDS Type 2 | PASSED<br>Complete<br>1_pass_of_1 | | | |
| SDS Type 3 | PASSED<br>Complete<br>1_pass_of_1 | | | |
| SDS-TL | PASSED<br>Complete<br>5_pass_of_5 | | | |
| Individually Addressed | PASSED<br>Complete<br>1_pass_of_1 | | | |
| Group Addressed | PASSED<br>Complete<br>2_pass_of_2 | | | |
| Using MS-ISDN dialling | Not Supported | | | |
| Using UCS2 coding scheme | PASSED<br>Complete<br>2_pass_of_2 | | | |
| Using 7-bit coding scheme | Not Supported | | | |
| Store and Forward | | | | |
| Individually Addressed | Not Supported | | | |
| Group Addressed | Not Supported | | | |
| **Authentication** | | | | |
| SwMI Initiated (non-mutual) Authentication | PASSED<br>Complete<br>3_pass_of_3 | | | |
| Attach with authentication | PASSED<br>Complete<br>1_pass_of_1 | | | |

| | | | | |
|---|---|---|---|---|
| Roaming with authentication | PASSED<br>Complete<br>1_pass_of_1 | | | |
| SwMI rejects MS during authentication | PASSED<br>Complete<br>1_pass_of_1 | | | |
| MS rejects SwMI during authentication | Not Supported | | | |
| SwMI Initiated Authentication made Mutual by MS | PASSED<br>Complete<br>2_pass_of_2 | | | |
| Attach with authentication | PASSED<br>Complete<br>1_pass_of_1 | | | |
| Roaming with authentication | PASSED<br>Complete<br>1_pass_of_1 | | | |
| TEI Query | | | | |
| TEI Query Operation | Not Supported | | | |
| **TETRA Packet Data** | | | | |
| Context Management | PASSED<br>Complete<br>11_pass_of_11 | | | |
| Context Activation | PASSED<br>Complete<br>7_pass_of_7 | | | |
| User authentication | PASSED<br>Complete<br>4_pass_of_4 | | | |
| Single Slot Packet Data | PASSED<br>Complete<br>9_pass_of_9 | | | |

| | | | | |
|---|---|---|---|---|
| Data Transfer | PASSED Complete 6_pass_of_6 | | | |
| Cell re-selection | PASSED Complete 3_pass_of_3 | | | |
| Multi Slot Packet Data | | | | |
| Data Transfer | Not Supported | | | |
| **Air Interface Encryption** | | | | |
| Security Class 2 Air Interface Encryption | PASSED Complete 2_pass_of_2 | | | |
| Location Updating and AI Signalling Protection | PASSED Complete 2_pass_of_2 | | | |
| TM-SCK provisioning during location updating | Not Supported | | | |
| Communications between parties using encryption | Not Supported | | | |
| Communications between clear and encrypted parties | Not Supported | | | |
| Communications between encrypted parties on a channel designated to operate in clear | Not Supported | | | |
| OTAR and Change of TM-SCK | Not Supported | | | |
| Security Class 3 Air Interface Encryption | Time_Limited 4_pass_of_5 | | | |
| Location Updating and AI Signalling Protection | PASSED Complete 4_pass_of_4 | | | |
| DCK Forwarding at MS request | Not Supported | | | |
| DCK Forwarding by SwMI (without MS request) | Not Supported | | | |

| | | | | |
|---|---|---|---|---|
| DCK Retrieval | PASSED Complete 2_pass_of_2 | | | |
| CCK provisioning during location updating | PASSED Complete 2_pass_of_2 | | | |
| Communications between parties using encryption | Not Supported | | | |
| Communications between clear and encrypted parties | Not Supported | | | |
| Communications between encrypted parties on a channel designated to operate in clear | Not Supported | | | |
| OTAR and Change of CCK | Time_Limited 0_pass_of_1 | | | |
| Security Class 3G Air Interface Encryption | | | | |
| GCK Key Association setting | Not Supported | | | |
| Communications between parties using encryption | Not Supported | | | |
| Communications between clear and encrypted parties | Not Supported | | | |
| OTAR and Change of GCK | Not Supported | | | |
| Change of CMG and GSKO | | | | |
| OTAR and change of CMG and GSKO | Not Supported | | | |
| Key Status demand | | | | |
| SCK Key Status demand | Not Supported | | | |
| GCK Key Status demand | Not Supported | | | |
| GSKO Key Status demand | Not Supported | | | |
| Change of Security Class for Fallback operation | | | | |

| | | | | |
|---|---|---|---|---|
| Seamless change to Security Class 2 for BS Fallback operation | Not Supported | | | |
| Non-seamless change to Security Class 2 for BS Fallback operation | Not Supported | | | |
| Provisioning of TM-SCK for fallback to Security Class 2 operation | Not Supported | | | |
| Change to Security Class 1 for BS Fallback operation | Not Supported | | | |
| Change of Security Class (other than for Fallback operation) | | | | |
| Change between Security Class 3 and Security Class 3G | Not Supported | | | |
| Change between Security Class 2 and Security Class 3 | Not Supported | | | |
| Change from Security Class 3G to Security Class 2 | Not Supported | | | |
| Key Management for Secure Direct Mode Operation | | | | |
| OTAR and change of DM-SCK | Not Supported | | | |