# TETRA Interoperability Certificate

## Hytera Mobilfunk GmbH, ACCESSNET-T IP, SwMI — Cassidian, TMR880i, Terminal

**Bad Münder, January 2013**

| | | | |
|---|---|---|---|
| **Latest Certified SwMI SW Release:** | PV 08.04.00 | **Latest Certified Terminal SW Release:** | 6.70-a |
| **Latest Certified SwMI HW Release:** | PV 08.04.00 | **Latest Certified Terminal HW Release:** | RC-9 |

ISCTI (Istituto Superiore delle Comunicazioni e delle Tecnologie dell'Informazione) certifies, that the Hytera Mobilfunk GmbH, ACCESSNET-T IP, SwMI and the Cassidian, TMR880i, terminal have been subject to interoperability testing for the "certified" features listed on second page of this certificate, in accordance with the TETRA Interoperability Profiles, TIP compliance Test Plan and related TETRA interoperability requirement tables.

The table lists all the available TETRA interoperability profiles, and summarizes the main functionalities of every profile according to the TETRA interoperability requirement tables.
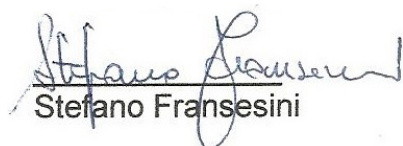
A feature is "Certified" when it has been successfully tested during the last test session with one of the testing method described in the TETRA process document part 1 (TPD001-01).

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

This certificate has been issued following a multiple test session between Hytera Mobilfunk GmbH and Cassidian on January 2013. Detailed test results are listed in the Test Report associated to this Certificate. Details and explanation about the procedure used to provide verdicts are in the TIC process TPD001-01.

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### Radio Office Manager

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**Date of issue**

**24 May 2013**

**v 2**

# Certified features

| Tetra Association TTR001-01:Core | |
|---|---|
| Registration | - |
| Group Management | - |
| Group call | - |
| Individual call | Certified |
| Status messages | Partial |
| Pre-emptive Priority Call | Partial |
| Emergency Call | Partial |
| Cell Re-selection | Partial |
| PSTN interconnect | Partial |
| MS-ISDN Numbering | Partial |
| In Call Signalling | Partial |
| Subscriber Class Procedures | Partial |
| Common Secondary Control Channels | Partial |
| BS Fallback Operation | Partial |
| Energy Economy Mode | - |
| Transmit Inhibit | Partial |
| Mixed band operation | - |
| Tetra Association TTR001-02:SDS | |
| SDS Type 1, 2 or 3 | - |
| SDS-TL | Partial |
| Store and Forward | - |

Test Session: Hytera Mobilfunk GmbH, Bad Münder, January 2013

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Hytera Mobilfunk GmbH, ACCESSNET-T IP, SwMI - Cassidian, TMR880i, Terminal

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| Tetra Association TTR001-03:DGNA | |
|---|---|
| Support for individually addressed DGNA | Partial |
| Support for group addressed DGNA | - |
| Tolerance of unsupported DGNA functions | - |
| **Tetra Association TTR001-04:Auth** | |
| SwMI Initiated (non-mutual) Authentication | Partial |
| SwMI Initiated Authentication made Mutual by MS | Certified |
| TEI Query | - |
| **Tetra Association TTR001-05:PD** | |
| Context Management | Partial |
| Single Slot Packet Data | Partial |
| Multi Slot Packet Data | - |
| TEDS | - |
| Mixed band operation | - |
| **Tetra Association TTR001-09:AL** | |
| Ambience Listening | Partial |
| Interaction with Transmit Inhibit | - |
| **Tetra Association TTR001-10:E2EE** | |
| E2EE Voice Call | Partial |
| **Tetra Association TTR001-12:SI** | |
| MS initiated Service Interaction | Partial |
| SwMI initiated Service Interaction | Partial |
| Call Waiting | - |
| **Tetra Association TTR001-19:LIP** | |
| Location Information Protocol | Partial |

| Tetra Association TTR001-20:CF | |
|---|---|
| **Call Forwarding Unconditional** | Partial |
| **Call Forwarding Conditional** | Partial |
| **Call Forwarding Information Displayed** | - |

# 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 outcomes 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 light blue background.

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

| Outcome | 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 outcome is derived from the verdict assigned to a sub feature which 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).

| Verdict | Definition |
|---------|------------|
| Passed | 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. |
| Incomplete | Not all Mandated tests (as per TIC-RT indication) have been executed |
| Failed | At least one of mandated test or steps of tests linked to this functionality failed to match the TIP specification relevant to this feature. |

The verdict associated to the feature gives also indication about the method used to test that feature. The allowed testing Methods are listed in the table below, a complete description of the procedures and constraints associated to each of them can be found in the "TPD001-01 TETRA Interoperability Certification Process Description" document.

| 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 the associated Test Report |
| **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 the associated Test Report |
| **Regression on spot** | The regression method has been applied on the verdicts based on the spot testing method |
| **Witnessed** | The TIP heading lines in the Feature Compliance Report indicate whether each TIP is partially or fully witnessed by the Certification Body. Additionally, for a partially-witnessed TIP, the number of witnessed test cases that passed is shown for each the feature and sub-feature. There may have been some un-witnessed passed tests and they will have been found to be successful based on the log file evaluation. |

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 |
|---|---|
| **Not supported** | The SwMI and/or MS do not support the minimum features required to verify these items |

ISCTI has made every effort to ensure that every result has been correctly evaluated in accordance

with the relevant TIPs, Test Plans and TIC-RTs. ISCTI 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 + Critical Communications Association web site (http://www.tandcca.com/interop/page/12476).

The feature results are shown in the tables below.

## Information on equipment under test and document references

| Test Session Date/Place | Hytera Mobilfunk GmbH, Bad Münder, January 2013 | | | |
|---|---|---|---|---|
| SwMI Type | ACCESSNET-T IP | | | |
| SwMI HW Release | PV 08.04.00 | | | |
| SwMI SW Release | PV 08.04.00 | | | |
| Terminal Type | TMR880i | | | |
| Terminal HW Release | RC-9 | | | |
| Terminal SW Release | 6.70-a | | | |
| TIP Specs and TIP Compliance Test Plans | | | | |
| Core | TTR001-01        v6.0.0<br>IOP001-01        v3.0.0<br>TIC-RT001-01     v2.5.4 | | | |

| | | | | |
|---|---|---|---|---|
| SDS | TTR001-02      v2.1.1<br>IOP001-02      v2.0.0<br>TIC-RT001-02    v2.1.2 | | | |
| DGNA | TTR001-03      v2.0.0<br>IOP001-03      v2.0.1<br>TIC-RT001-03    v2.2.1 | | | |
| Auth | TTR001-04      v3.0.0<br>IOP001-04      v2.0.0<br>TIC-RT001-04    v2.2.3 | | | |
| PD | TTR001-05      v3.0.0<br>IOP001-05      v3.0.5<br>TIC-RT001-05    v3.0.3 | | | |
| AL | TTR001-09      v2.0.0<br>IOP001-09      v1.1.0<br>TIC-RT001-09    v1.2.2 | | | |
| E2EE | TTR001-10      v2.0.0<br>IOP001-10      v1.1.4<br>TIC-RT001-10    v1.2.2 | | | |
| SI | TTR001-12      v1.0.0<br>IOP001-12      v1.0.0<br>TIC-RT001-12    v1.2.7 | | | |
| LIP | TTR001-19      v1.0.0<br>IOP001-19      v1.0.0<br>TIC-RT001-19    v1.0.5 | | | |
| CF | TTR001-20      v1.0.1<br>IOP001-20      v1.0.0<br>TIC-RT001-20    v1.0.7 | | | |

# Feature compliance report

| Test Session | Hytera Mobilfunk GmbH Bad Münder January 2013 | | | |
|---|---|---|---|---|
| **Core** | | | | |
| Registration | Incomplete 0_pass_of_4 | | | |
| ITSI attach | Incomplete 0_pass_of_1 | | | |
| SwMI initiated location updating | Incomplete 0_pass_of_2 | | | |
| LA timer based Periodic location updating | Not Supported | | | |
| De-registration | Incomplete 0_pass_of_1 | | | |
| Group Management | Incomplete 0_pass_of_13 | | | |
| Single group attachment | Incomplete 0_pass_of_6 | | | |
| Multiple group attachment | Incomplete 0_pass_of_5 | | | |
| MS initiated group detachment | Incomplete 0_pass_of_2 | | | |
| SwMI initiated group management | Incomplete 0_pass_of_1 | | | |
| Group call | Incomplete 0_pass_of_9 | | | |
| Normal group call | Incomplete 0_pass_of_4 | | | |
| Late entry | Incomplete 0_pass_of_1 | | | |
| Priority Group scanning | Incomplete 0_pass_of_3 | | | |
| Call setup modifications | Incomplete 0_pass_of_1 | | | |
| Resource Queuing based on Call Priority | Not Supported | | | |
| Broadcast Call | Not Supported | | | |

| | | | | |
|---|---|---|---|---|
| Limited coverage notification | Not Supported | | | |
| Individual call | PASSED Spot 3_pass_of_9 | | | |
| Simplex individual call | PASSED Spot 1_pass_of_4 | | | |
| Duplex individual call | PASSED Spot 1_pass_of_2 | | | |
| Call setup modifications | PASSED Spot 1_pass_of_3 | | | |
| Resource Queuing based on Call Priority | Not Supported | | | |
| Indication of imminent call disconnection | Not Supported | | | |
| Status messages | Incomplete 1_pass_of_4 | | | |
| Individual addressed Status transfer | Incomplete 0_pass_of_1 | | | |
| Group addressed Status transfer | Incomplete 1_pass_of_3 | | | |
| Pre-emptive Priority Call | Incomplete 1_pass_of_5 | | | |
| Pre-emption of Resources | Not Supported | | | |
| Pre-emption of Busy Users | Incomplete 1_pass_of_5 | | | |
| Emergency Call | Incomplete 2_pass_of_4 | | | |
| Pre-emption of Resources | PASSED Complete 2_pass_of_2 | | | |
| Pre-emption of Busy Users | Incomplete 0_pass_of_1 | | | |
| Call setup modifications | Incomplete 0_pass_of_1 | | | |
| Call disconnection by non-call owner | Not Supported | | | |
| Cell Re-selection | Incomplete 6_pass_of_16 | | | |
| Undeclared | Incomplete 0_pass_of_1 | | | |
| Unannounced | Incomplete 1_pass_of_3 | | | |
| Announced - with Call Restoration | Incomplete 5_pass_of_12 | | | |
| Announced - without Call Restoration | Not Supported | | | |
| Expedited | Not Supported | | | |

| | | | | |
|---|---|---|---|---|
| PSTN interconnect | Incomplete 1_pass_of_6 | | | |
| TETRA Originated Call | Incomplete 1_pass_of_2 | | | |
| PSTN Originated Call | Incomplete 0_pass_of_1 | | | |
| DTMF over-dial | Incomplete 0_pass_of_1 | | | |
| Emergency Telephone Calls | Incomplete 0_pass_of_2 | | | |
| MS-ISDN Numbering | Incomplete 1_pass_of_4 | | | |
| MS ISDN - Voice Call | Incomplete 0_pass_of_2 | | | |
| MS-ISDN   Status | Incomplete 1_pass_of_2 | | | |
| In Call Signalling | Incomplete 2_pass_of_6 | | | |
| Slow Signalling on Traffic Channel (SACCH) | PASSED Complete 2_pass_of_2 | | | |
| Fast Signalling on Traffic Channel (FACCH) | Incomplete 0_pass_of_4 | | | |
| Subscriber Class Procedures | Incomplete 4_pass_of_9 | | | |
| Cell Selection based on Subscriber Class | Incomplete 2_pass_of_3 | | | |
| Subscriber Class Delivery during Location Update | Incomplete 1_pass_of_3 | | | |
| Use of Preferred Subscriber Classes | Incomplete 1_pass_of_3 | | | |
| Common Secondary Control Channels | Incomplete 2_pass_of_6 | | | |
| One C-SCCH per cell | Incomplete 2_pass_of_3 | | | |
| Two C-SCCH per cell | Incomplete 1_pass_of_3 | | | |
| Three C-SCCH per cell | Incomplete 0_pass_of_2 | | | |
| BS Fallback Operation | Incomplete 3_pass_of_11 | | | |
| Switch to/from BS Fallback Operation | Incomplete 0_pass_of_2 | | | |
| Roaming with BS Fallback Operation | Incomplete 1_pass_of_2 | | | |
| Services with BS Fallback Operation | Incomplete 2_pass_of_7 | | | |
| Energy Economy Mode | | | | |

| | | | | |
|---|---|---|---|---|
| Energy Economy Mode Operation | Not Supported | | | |
| Transmit Inhibit | Incomplete 2_pass_of_9 | | | |
| TXI Activation & De-Activation without Status message | Incomplete 0_pass_of_4 | | | |
| TXI Activation & De-Activation with Status message | Incomplete 1_pass_of_4 | | | |
| Receipt of group addressed service during TXI | PASSED Complete 1_pass_of_1 | | | |
| Mixed band operation | | | | |
| Mixed band operation, inter-cell | Not Supported | | | |
| Mixed band operation, intra-cell | Not Supported | | | |
| Mixed band operation, Full | Not Supported | | | |
| **Short Data Service (SDS)** | | | | |
| SDS Type 1, 2 or 3 | | | | |
| SDS Type 1 | Not Supported | | | |
| SDS Type 2 | Not Supported | | | |
| SDS Type 3 | Not Supported | | | |
| SDS-TL | Incomplete 2_pass_of_5 | | | |
| Individually Addressed | Incomplete 0_pass_of_1 | | | |
| Group Addressed | Incomplete 0_pass_of_2 | | | |
| Using MS-ISDN dialling | PASSED Complete 2_pass_of_2 | | | |
| Using UCS2 coding scheme | Not Supported | | | |
| Using 7-bit coding scheme | PASSED Complete 1_pass_of_1 | | | |
| Store and Forward | | | | |
| Individually Addressed | Not Supported | | | |
| Group Addressed | Not Supported | | | |

| Dynamic Group Number Assignment (DGNA) | | | | |
|---|---|---|---|---|
| Support for individually addressed DGNA | Incomplete 4_pass_of_12 | | | |
| Support for individually addressed DGNA assignment without attachment | Incomplete 0_pass_of_3 | | | |
| Support for individually addressed DGNA assignment with attachment as selected group | Incomplete 2_pass_of_3 | | | |
| Support for individually addressed DGNA assignment with attachment as scanned group | Incomplete 0_pass_of_3 | | | |
| Support for individually addressed DGNA assignment with rejected attachment | Incomplete 0_pass_of_1 | | | |
| Support for individually addressed assigment for pre-programmed group | Incomplete 2_pass_of_5 | | | |
| Support for group addressed DGNA | | | | |
| Support for group addressed DGNA assignment | Not Supported | | | |
| Management of 'group assignment lifetime' | Not Supported | | | |
| Support for group addressed DGNA deassignment | Not Supported | | | |
| Tolerance of unsupported DGNA functions | | | | |
| MS tolerance of unsupported individual addressed DGNA signalling | Not Supported | | | |
| MS tolerance of unsupported group addressed DGNA signalling | Not Supported | | | |

| Authentication | | | | |
|---|---|---|---|---|
| SwMI Initiated (non-mutual) Authentication | Incomplete 0_pass_of_3 | | | |
| Attach with authentication | Incomplete 0_pass_of_1 | | | |
| Roaming with authentication | Incomplete 0_pass_of_1 | | | |
| SwMI rejects MS during authentication | Incomplete 0_pass_of_1 | | | |
| MS rejects SwMI during authentication | Not Supported | | | |
| SwMI Initiated Authentication made Mutual by MS | PASSED Complete 2_pass_of_2 | | | |
| Attach with authentication | PASSED Complete 1_pass_of_1 | | | |
| Roaming with authentication | PASSED Complete 1_pass_of_1 | | | |
| TEI Query | | | | |
| TEI Query Operation | Not Supported | | | |
| TETRA Packet Data | | | | |
| Context Management | Incomplete 4_pass_of_13 | | | |
| Context Activation | Incomplete 3_pass_of_9 | | | |
| User authentication | Incomplete 1_pass_of_4 | | | |
| Single Slot Packet Data | Incomplete 3_pass_of_9 | | | |
| Data Transfer | Incomplete 2_pass_of_6 | | | |
| Cell re-selection | Incomplete 1_pass_of_3 | | | |
| Multi Slot Packet Data | | | | |
| Data Transfer | Not Supported | | | |

Test Session: Hytera Mobilfunk GmbH, Bad Münder, January 2013 **v 2**

Hytera Mobilfunk GmbH, ACCESSNET-T IP, SwMI - Cassidian, TMR880i, Terminal          ISCTI - tetra_ctc.iscom@mise.gov.it

| TEDS | | | | |
|---|---|---|---|---|
| TEDS with Context Activation | Not Supported | | | |
| TEDS Data Transmission | Not Supported | | | |
| TEDS Cell Reselection | Not Supported | | | |
| Mixed band operation | | | | |
| Mixed band operation, inter-cell | Not Supported | | | |
| Mixed band operation, intra-cell | Not Supported | | | |
| Mixed band operation, Full | Not Supported | | | |
| **TETRA Ambience Listening (SS-AL)** | | | | |
| Ambience Listening | Incomplete 1_pass_of_5 | | | |
| SS-AL Call Setup | Incomplete 1_pass_of_2 | | | |
| MS initiated SS-AL disconnection | Incomplete 0_pass_of_3 | | | |
| No Indication to affected user | Incomplete 1_pass_of_5 | | | |
| Interaction with Transmit Inhibit | | | | |
| AL can override TxI | Not Supported | | | |
| AL cannot override TxI | Not Supported | | | |
| **End to End Encryption** | | | | |
| E2EE Voice Call | Incomplete 2_pass_of_6 | | | |
| Individual (P2P) call | Incomplete 2_pass_of_4 | | | |
| Group (P2MP) call | Incomplete 0_pass_of_2 | | | |
| Clear Voice Override (CVO): Acceptance | Not Supported | | | |
| Clear Voice Override (CVO): User Initiated | Not Supported | | | |
| Clear Voice Override (CVO): Automatic | Not Supported | | | |

| Service Interaction | | | | |
|---|---|---|---|---|
| MS initiated Service Interaction | Incomplete 0_pass_of_5 | | | |
| MS initiated Circuit Mode Call during another Circuit Mode Call | Incomplete 0_pass_of_3 | | | |
| MS initiated Circuit Mode Call during Packet Mode Transfer | Incomplete 0_pass_of_2 | | | |
| MS initiated Packet Mode Transfer during Circuit Mode Call | Not Supported | | | |
| SwMI initiated Service Interaction | Incomplete 2_pass_of_6 | | | |
| SwMI initiated Circuit Mode Call during another Circuit Mode Call | Incomplete 0_pass_of_4 | | | |
| SwMI initiated Circuit Mode Call during Packet Mode Transfer | PASSED Complete 2_pass_of_2 | | | |
| SwMI initiated Packet Mode Transfer during Circuit Mode Call | Not Supported | | | |
| Call Waiting | | | | |
| Call Waiting in Individual Call | Not Supported | | | |
| Call Waiting in Group Call | Not Supported | | | |
| LIP | | | | |
| Location Information Protocol | Incomplete 4_pass_of_10 | | | |
| LIP over SDS | Incomplete 2_pass_of_6 | | | |
| LIP over Packet Data | Not Supported | | | |
| Time based reporting | Incomplete 1_pass_of_3 | | | |
| Distance based reporting - NOT TESTABLE | Not Supported | | | |
| Reporting using Long reports | Incomplete 0_pass_of_1 | | | |
| Reporting Enable & Disable | Incomplete 0_pass_of_1 | | | |

| | | | | |
|---|---|---|---|---|
| Temporary reporting control | Not Supported | | | |
| Trigger modification | Not Supported | | | |
| Immediate Location Reporting | PASSED Complete 1_pass_of_1 | | | |
| Reporting Lifetimes | Not Supported | | | |
| Error Reporting | PASSED Complete 1_pass_of_1 | | | |
| **Call Forwarding** | | | | |
| Call Forwarding Unconditional | Incomplete 1_pass_of_3 | | | |
| Call Forwarding Unconditional Individual Call | Incomplete 0_pass_of_1 | | | |
| Call Forwarding Unconditional SDS | PASSED Complete 1_pass_of_1 | | | |
| Call Forwarding Unconditional Status | Incomplete 0_pass_of_1 | | | |
| Call Forwarding Conditional | Incomplete 1_pass_of_3 | | | |
| Call Forwarding Conditional Individual Call | Incomplete 1_pass_of_3 | | | |
| Call Forwarding Information Displayed | | | | |
| Call Forwarding Information Displayed | Not Supported | | | |
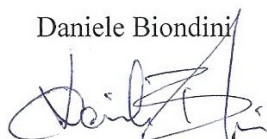
# Annex A

| List of Revisions of the Certificate | | |
|---|---|---|
| Date | Ver. | Modification |
| 23 May 2013 | 1 | First published version |
| 24 May 2013 | 2 | updating:<br>-  corrected the number of Test Cases results of "Status messages" and "pre-emptive priority call" sub-features in Core feature. |

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