TETRA ASSOCIATION

ISCTI

# DMO TETRA Interoperability Certificate

## Cleartone, CM5000, DM Terminal

**Brussels, April 2010**

| | |
|---|---|
| **Latest Certified DM Terminal SW Release:** | MR01.XXX.036 |
| **Latest Certified DM Terminal HW Release:** | 1.0 |

ISCTI (Istituto Superiore delle Comunicazioni e delle Tecnologie dell'Informazione) certifies that the Cleartone CM5000 DM Terminal has been subject to interoperability testing for the features listed in the "Certified features" tables of of this certificate with the following DM Terminals Cleartone CM5000, Sepura STP8000, Sepura SRG3900, EADS THR9, Motorola MTP850s, Motorola MTP850, Motorola TCR1000, Teltronic MDT400, Teltronic, HTT500, in accordance with the TETRA Interoperability Profiles, TIP compliance Test Plan and related TETRA interoperability requirement tables.

The certificate features associated to each DM terminal are shown in the "Certificate features" 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).

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 this Certificate.

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**Date of issue:**

**18 November 2010**

# Certified feature

| DMO Core Test Session<br>Brussels, April 2010<br>Cleartone CM5000 | Cleartone CM5000 | Sepura STP8000 | Sepura SRG3900 | EADS THR9 | Motorola MTP850s | Motorola MTP850 | Motorola TCR1000 | Teltronic MDT400 | Teltronic HTT500 |
|---|---|---|---|---|---|---|---|---|---|
| **Features** | | | | | | | | | |
| **TTR002-01 DMO Core** | | | | | | | | | |
| **Registration** | Certified | Certified | Certified | Certified | Certified | Certified | Certified | Certified | Certified |
| **Group Call** | Certified | Certified | Certified | Certified | Partial | Partial | Partial | Certified | Partial |
| **Individual Call** | Partial | Partial | Partial | Partial | Partial | Partial | Certified | Partial | Partial |
| **Status Call** | Partial | Partial | Partial | Partial | Partial | Partial | - | - | Partial |
| **SDS TL** | Certified | Certified | Certified | - | Certified | Certified | - | - | Certified |
| **TTR002-05 DMO AIE-Core** | | | | | | | | | |
| **DMO AIE Encryption** | Partial | Partial | Partial | Partial | Partial | Partial | Partial | - | - |

# Feature Compliance Overview

The "Certified features" tables 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 results 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 certified DM Terminal is highlighted in light blue. 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 showed in the "Certified features" tables is derived by the Feature compliance report tables.

| Verdict | Definition |
|---|---|
| **Certified** | All required tests have been performed and passed. |
| **Partial** | Not all the required test cases 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 the 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. |
| **Time_limited** | Not all Mandated tests (as per TIC-RT indication) have been executed (ran out of time) |
| **Failed** | At least one of the required test cases has failed. |
| **No_Equipment** | At least one of the required test cases has not been executed due to unavailability of a needed equipment. |

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 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 annex B. |
| **Regression** | Only a selection of the mandatory the test cases associated to the feature is 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 complete tested in a previous test session against the same functionality, see manufacturer declaration in annex B. |
| **Regression on spot** | The regression method has been applied on the verdicts based on the spot testing method. |

| | |
|---|---|
| **X_pass_of_Y** | Y test cases were required and X were passed. |

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

| Indication | Definition |
|---|---|
| **Not supported** | At least one MS do not support the minimum features required to verify these items |

ISCTI has made every effort to ensure that every result have 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 DM Terminals under test in the test session 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 Place/Date | Brussels, April 2010 |
|---|---|
| DM Terminal Type | Cleartone CM5000 |
| DM Terminal HW release | 1.0 |
| DM Terminal SW release | MR01.XXX.036 |
| DM Terminal 1 Type | Sepura STP8000 |
| DM Terminal 1 HW release | PSNTW201T300P0001 |
| DM Terminal 1 SW release | 1667 008 02937 |
| DM Terminal 2 Type | Sepura SRG3900 |
| DM Terminal 2 HW release | MSUTW201T2C0G00 |
| DM Terminal 2 SW release | 166700803577 |
| DM Terminal 3 Type | EADS THR9 |
| DM Terminal 3 HW release | RC-20 |
| DM Terminal 3 SW release | 6.53-4 |
| DM Terminal 4 Type | Motorola MTP850s |
| DM Terminal 4 HW release | PT912BS |
| DM Terminal 4 SW release | MR5.11 |
| DM Terminal 5 Type | Motorola MTP850 |
| DM Terminal 5 HW release | PT911B |
| DM Terminal 5 SW release | MR5.11.1 |
| DM Terminal 6 Type | Motorola TCR1000 |
| DM Terminal 6 HW release | PT919S |
| DM Terminal 6 SW release | MR9.6.3 |
| DM Terminal 7 Type | Teltronic MDT400 |
| DM Terminal 7 HW release | CCP 00.09 |
| DM Terminal 7 SW release | V20 |
| DM Terminal 8 Type | Teltronic HTT500 |
| DM Terminal 8 HW release | CCP 00.03 |
| DM Terminal 8 SW release | V07 |
| TIP Specs and TIP Compliance Test Plans | |
| DCore | TTR002-01 v2.1.1<br>IOP002-01 v1.0.1<br>TIC-RT002-01 v1.2.1 |
| DAIE-Core | TTR002-05 v1.0.0<br>IOP002-05 v1.0.0<br>TIC-RT002-05_DMO-AIE-Core v1.0.3 |

# Feature compliance report

| DMO Test Session Brussels, April 2010 Cleartone CM5000 | Cleartone CM5000 | Sepura STP8000 | Sepura SRG3900 | EADS THR9 | Motorola MTP850s | Motorola MTP850 | Motorola TCR1000 | Teltronic MDT400 | Teltronic HTT500 |
|---|---|---|---|---|---|---|---|---|---|
| **TTR002-01 Core** | | | | | | | | | |
| **Registration** | **PASSED Complete 2_pass_of_2** | **PASSED Complete 2_pass_of_2** | **PASSED Complete 2_pass_of_2** | **PASSED Complete 2_pass_of_2** | **PASSED Complete 2_pass_of_2** | **PASSED Complete 2_pass_of_2** | **PASSED Complete 2_pass_of_2** | **PASSED Complete 2_pass_of_2** | **PASSED Complete 2_pass_of_2** |
| Activation/Deactivation | PASSED Complete 1_pass_of_1 | PASSED Complete 1_pass_of_1 | PASSED Complete 1_pass_of_1 | PASSED Complete 1_pass_of_1 | PASSED Complete 1_pass_of_1 | PASSED Complete 1_pass_of_1 | PASSED Complete 1_pass_of_1 | PASSED Complete 1_pass_of_1 | PASSED Complete 1_pass_of_1 |
| RF Carrier Selection | PASSED Complete 1_pass_of_1 | PASSED Complete 1_pass_of_1 | PASSED Complete 1_pass_of_1 | PASSED Complete 1_pass_of_1 | PASSED Complete 1_pass_of_1 | PASSED Complete 1_pass_of_1 | PASSED Complete 1_pass_of_1 | PASSED Complete 1_pass_of_1 | PASSED Complete 1_pass_of_1 |
| **Group Call** | **PASSED 43_pass_of_44** | **PASSED 42_pass_of_43** | **PASSED 42_pass_of_43** | **PASSED 43_pass_of_44** | **Time_Limited 41_pass_of_44** | **Time_Limited 41_pass_of_44** | **Time_Limited 40_pass_of_43** | **PASSED 44_pass_of_45** | **Time_Limited 38_pass_of_40** |
| Intra-MNI Group Calls | PASSED Complete 6_pass_of_6 | PASSED Complete 6_pass_of_6 | PASSED Complete 6_pass_of_6 | PASSED Complete 6_pass_of_6 | PASSED Complete 6_pass_of_6 | PASSED Complete 6_pass_of_6 | PASSED Complete 6_pass_of_6 | PASSED Complete 8_pass_of_8 | PASSED Complete 6_pass_of_6 |

| DMO Test Session Brussels, April 2010 Cleartone CM5000 | Cleartone CM5000 | Sepura STP8000 | Sepura SRG3900 | EADS THR9 | Motorola MTP850s | Motorola MTP850 | Motorola TCR1000 | Teltronic MDT400 | Teltronic HTT500 |
|---|---|---|---|---|---|---|---|---|---|
| Inter-MNI Group Calls | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 5_pass_of_5 | Time_Limited 1_pass_of_2 |
| Emergency Group Calls | PASSED Complete 6_pass_of_6 | PASSED Complete 5_pass_of_5 | PASSED Complete 5_pass_of_5 | PASSED Complete 6_pass_of_6 | PASSED Complete 6_pass_of_6 | PASSED Complete 6_pass_of_6 | PASSED Complete 5_pass_of_5 | PASSED Complete 6_pass_of_6 | PASSED Complete 6_pass_of_6 |
| Pre-emptive priority Calls | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | Time_Limited 2_pass_of_4 | Time_Limited 2_pass_of_4 | Time_Limited 2_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 |
| Group Call Maintenance | PASSED 19_pass_of_20 | PASSED 19_pass_of_20 | PASSED 19_pass_of_20 | PASSED 19_pass_of_20 | PASSED 19_pass_of_20 | PASSED 19_pass_of_20 | PASSED 19_pass_of_20 | PASSED 19_pass_of_20 | PASSED No_Equipment 19_pass_of_20 |
| Late Entry Group Calls | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 6_pass_of_6 | Time_Limited 2_pass_of_3 |
| Open Group Calls | PASSED Complete 6_pass_of_6 | PASSED Complete 6_pass_of_6 | PASSED Complete 6_pass_of_6 | PASSED Complete 6_pass_of_6 | PASSED Complete 6_pass_of_6 | PASSED Complete 6_pass_of_6 | PASSED Complete 6_pass_of_6 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 |

| DMO Test Session Brussels, April 2010 Cleartone CM5000 | Cleartone CM5000 | Sepura STP8000 | Sepura SRG3900 | EADS THR9 | Motorola MTP850s | Motorola MTP850 | Motorola TCR1000 | Teltronic MDT400 | Teltronic HTT500 |
|---|---|---|---|---|---|---|---|---|---|
| **Individual Call** | **Time_Limited 18_pass_of_20** | **Time_Limited 19_pass_of_20** | **Time_Limited 19_pass_of_20** | **Time_Limited 14_pass_of_20** | **Time_Limited 12_pass_of_20** | **Time_Limited 12_pass_of_20** | **PASSED Complete 2_pass_of_2** | **Time_Limited 23_pass_of_24** | **Time_Limited 13_pass_of_14** |
| Intra-MNI Individual Calls | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | **Not_Supported** | PASSED Complete 7_pass_of_7 | PASSED Complete 4_pass_of_4 |
| Inter-MNI Individual Calls | PASSED Complete 6_pass_of_6 | PASSED Complete 6_pass_of_6 | PASSED Complete 6_pass_of_6 | Time_Limited 4_pass_of_6 | Time_Limited 4_pass_of_6 | Time_Limited 4_pass_of_6 | **Not_Supported** | PASSED Complete 8_pass_of_8 | **Not_Supported** |
| Pre-emptive priority Calls | Time_Limited 4_pass_of_6 | Time_Limited 5_pass_of_6 | Time_Limited 5_pass_of_6 | Time_Limited 3_pass_of_6 | Time_Limited 0_pass_of_6 | Time_Limited 0_pass_of_6 | **Not_Supported** | Time_Limited 5_pass_of_6 | Time_Limited 5_pass_of_6 |
| Individual Call maintenance | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | Time_Limited 3_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 2_pass_of_2 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 |
| Individual Call with Presence Check | PASSED Complete 8_pass_of_8 | PASSED Complete 8_pass_of_8 | PASSED Complete 8_pass_of_8 | Time_Limited 7_pass_of_8 | Time_Limited 2_pass_of_8 | Time_Limited 2_pass_of_8 | PASSED Complete 2_pass_of_2 | PASSED Complete 10_pass_of_10 | PASSED Complete 6_pass_of_6 |
| Individual call without | Time_Limited | Time_Limited | Time_Limited | Time_Limited | Time_Limited | Time_Limited | **Not_Supported** | Time_Limited | Time_Limited |

| DMO Test Session Brussels, April 2010 Cleartone CM5000 | Cleartone CM5000 | Sepura STP8000 | Sepura SRG3900 | EADS THR9 | Motorola MTP850s | Motorola MTP850 | Motorola TCR1000 | Teltronic MDT400 | Teltronic HTT500 |
|---|---|---|---|---|---|---|---|---|---|
| Presence Check | 6_pass_of_8 | 7_pass_of_8 | 7_pass_of_8 | 4_pass_of_8 | 6_pass_of_8 | 6_pass_of_8 | | 8_pass_of_9 | 5_pass_of_6 |
| Individual Late Entry | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | Time_Limited 3_pass_of_4 | PASSED Complete 4_pass_of_4 | PASSED Complete 4_pass_of_4 | **Not_Supported** | PASSED Complete 5_pass_of_5 | PASSED Complete 2_pass_of_2 |

| DMO Test Session Brussels, April 2010 Cleartone CM5000 | Cleartone CM5000 | Sepura STP8000 | Sepura SRG3900 | EADS THR9 | Motorola MTP850s | Motorola MTP850 | Motorola TCR1000 | Teltronic MDT400 | Teltronic HTT500 |
|---|---|---|---|---|---|---|---|---|---|
| **Status Call** | **Time_Limited 4_pass_of_18** | **Time_Limited 11_pass_of_18** | **Time_Limited 11_pass_of_18** | **Time_Limited 4_pass_of_18** | **Time_Limited 8_pass_of_18** | **Time_Limited 8_pass_of_18** | | | **Time_Limited 11_pass_of_18** |
| Individual Status Calls | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | **Not_Supported** | **Not_Supported** | PASSED Complete 2_pass_of_2 |
| Group Status call | Time_Limited 2_pass_of_16 | Time_Limited 9_pass_of_16 | Time_Limited 9_pass_of_16 | Time_Limited 2_pass_of_16 | Time_Limited 6_pass_of_16 | Time_Limited 6_pass_of_16 | **Not_Supported** | **Not_Supported** | Time_Limited 9_pass_of_16 |
| **SDS TL** | **PASSED Complete 4_pass_of_4** | **PASSED Complete 4_pass_of_4** | **PASSED Complete 4_pass_of_4** | | **PASSED Complete 4_pass_of_4** | **PASSED Complete 4_pass_of_4** | | | **PASSED Complete 4_pass_of_4** |
| Individual SDS-TL Calls | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | **Not_Supported** | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | **Not_Supported** | **Not_Supported** | PASSED Complete 2_pass_of_2 |
| Group SDS-TL call | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | **Not_Supported** | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | **Not_Supported** | **Not_Supported** | PASSED Complete 2_pass_of_2 |

| DMO Test Session Brussels, April 2010 Cleartone CM5000 | Cleartone CM5000 | Sepura STP8000 | Sepura SRG3900 | EADS THR9 | Motorola MTP850s | Motorola MTP850 | Motorola TCR1000 | Teltronic MDT400 | Teltronic HTT500 |
|---|---|---|---|---|---|---|---|---|---|
| **TTR002-05 DMO AIE-Core** | | | | | | | | | |
| **DMO AIE Encryption** | **Time_Limited No_Equipment 13_pass_of_18** | **Time_Limited No_Equipment 14_pass_of_18** | **Time_Limited No_Equipment 14_pass_of_18** | **Time_Limited No_Equipment 14_pass_of_18** | **Time_Limited No_Equipment 9_pass_of_18** | **Time_Limited No_Equipment 9_pass_of_18** | **Time_Limited No_Equipment 8_pass_of_14** | | |
| Encrypted Group Calls | PASSED No_Equipment 6_pass_of_8 | PASSED No_Equipment 7_pass_of_8 | PASSED No_Equipment 7_pass_of_8 | PASSED No_Equipment 7_pass_of_8 | Time_Limited No_Equipment 4_pass_of_8 | Time_Limited No_Equipment 4_pass_of_8 | Time_Limited No_Equipment 5_pass_of_8 | | |
| Encrypted Individual Calls | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | Time_Limited 0_pass_of_2 | Time_Limited 0_pass_of_2 | **Not_Supported** | | |
| Encrypted Status messages | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | **Not_Supported** | | |
| Pre-emption of encrypted activity | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | PASSED Complete 2_pass_of_2 | | |
| Handling mismatched keys | Time_Limited 1_pass_of_4 | Time_Limited 1_pass_of_4 | Time_Limited 1_pass_of_4 | Time_Limited 1_pass_of_4 | Time_Limited 1_pass_of_4 | Time_Limited 1_pass_of_4 | Time_Limited 1_pass_of_4 | | |

# Annex A

| List of Revisions of the Certificate |
|---|

| Date | Ver. | Modification |
|---|---|---|
| 09.08.2010 | 1 | First published version |
| 18.11.2010 | 2 | updating:<br>the certificate has been changed according to CR 323. In particular, tests 2.1.1 and 3.1.9 have been removed. |

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