

DMO TETRA Interoperability Certificate

Sepura, SRG3900, DMO Terminal

Cambridge, February 2017

| | |
|---|-----------------|
| Latest Certified DM Terminal SW Release: | 1738 001 03577 |
| Latest Certified DM Terminal HW Release: | MSUTW201T2C0G00 |

ISCTI (Istituto Superiore delle Comunicazioni e delle Tecnologie dell'Informazione) certifies that the Sepura SRG3900, DM Terminal has been subject to interoperability testing for the features DMO Core and DMO Air Interface Encryption listed in the "Certified features" tables of this certificate with the following DM Terminals Sepura , SRG3900, Sepura STP9000 and Sepura SC2020 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 (TPD001-01).

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

This certificate has been issued following a fully witnessed single test session on February 2017. 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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v 1

Certified feature

| DMO Core Test Session Cambridge, February 2017 Sepura SRG3900 | Sepura SRG3900 | Sepura STP9000 | Sepura SC2020 |
|--|---------------------------|---------------------------|--------------------------|
| Registration | - | - | - |
| Group Call | Partial | Partial | Partial |
| Individual Call | - | - | - |
| Status Call | - | - | - |
| SDS TL | - | Partial | - |
| DMO AIE Encryption | - | Partial | - |

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-features, 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 blue background and the associated sub-features (or second level features) have white background.

The outcome assigned to a 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 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 outcome is derived from 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 or sub-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 or sub-feature. |

The verdict associated to the feature or sub-feature gives also indication about the method used to test that feature or sub-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 or sub-feature have been executed. |
| Spot | Only a selection of the mandatory test cases associated to the feature or sub-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 the test cases associated to the feature or sub-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-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 + Critical Communications Association web site (<https://tandcca.com/interoperability/interoperability-certificates-and-test-reports/>).The feature results are shown in the tables below.

Information on equipment under test and document references

| Test Session Place/Date | Cambridge, February 2017 |
|--------------------------|--------------------------|
| DM Terminal Type | Sepura SRG3900 |
| DM Terminal HW release | MSUTW201T2C0G00 |
| DM Terminal SW release | 1738 001 03577 |
| DM Terminal 1 Type | Sepura SRG3900 |
| DM Terminal 1 HW release | MSUTW201T2C0G00 |
| DM Terminal 1 SW release | 1738 001 03577 |
| DM Terminal 2 Type | Sepura STP9000 |
| DM Terminal 2 HW release | PSYTW201T30WN00 |
| DM Terminal 2 SW release | 1738 001 02937 |
| DM Terminal 3 Type | Sepura SC2020 |
| DM Terminal 3 HW release | TP01STW |
| DM Terminal 3 SW release | 1738 001 08522 |

| TIP Specs and TIP Compliance Test Plans | |
|--|---|
| DCore | TTR 002-01 v211 IOP 002-01 v103 TIC-RT002-01 v128 |
| DAIE-Core | TTR 002-05 v100 IOP 002-05 v100 TIC-RT002-05-1 v108 |

Feature compliance report

| DMO Test Session Cambridge, February 2017 Sepura SRG3900 | Sepura SRG3900 | Sepura STP9000 | Sepura SC2020 |
|--|------------------------------------|-------------------------------------|------------------------------------|
| TTR002-01 Core – fully witnessed testing | | | |
| Registration | Incomplete 0_pass_of_2 | Incomplete 0_pass_of_2 | Incomplete 0_pass_of_2 |
| Activation/Deactivation | Incomplete 0_pass_of_1 | Incomplete 0_pass_of_1 | Incomplete 0_pass_of_1 |
| RF Carrier Selection | Incomplete 0_pass_of_1 | Incomplete 0_pass_of_1 | Incomplete 0_pass_of_1 |
| Group Call | Incomplete 2_pass_of_43 | Incomplete 14_pass_of_43 | Incomplete 2_pass_of_43 |
| Intra-MNI Group Calls | Incomplete 0_pass_of_6 | PASSED Complete 6_pass_of_6 | Incomplete 0_pass_of_6 |
| Inter-MNI Group Calls | Incomplete 0_pass_of_4 | Incomplete 0_pass_of_4 | Incomplete 0_pass_of_4 |
| Emergency Group Calls | Incomplete 0_pass_of_6 | Incomplete 4_pass_of_6 | Incomplete 0_pass_of_6 |
| Pre-emptive priority Calls | Incomplete 0_pass_of_4 | Incomplete 0_pass_of_4 | Incomplete 0_pass_of_4 |
| Group Call Maintenance | Incomplete 2_pass_of_19 | Incomplete 6_pass_of_19 | Incomplete 2_pass_of_19 |
| Late Entry Group Calls | Incomplete 0_pass_of_4 | Incomplete 2_pass_of_4 | Incomplete 0_pass_of_4 |
| Open Group Calls | Incomplete 0_pass_of_6 | Incomplete 0_pass_of_6 | Incomplete 0_pass_of_6 |
| Individual Call | Incomplete 0_pass_of_20 | Incomplete 0_pass_of_20 | Incomplete 0_pass_of_20 |
| Intra-MNI Individual Calls | Incomplete 0_pass_of_4 | Incomplete 0_pass_of_4 | Incomplete 0_pass_of_4 |
| Inter-MNI Individual Calls | Incomplete 0_pass_of_6 | Incomplete 0_pass_of_6 | Incomplete 0_pass_of_6 |
| Pre-emptive priority Calls | Incomplete 0_pass_of_6 | Incomplete 0_pass_of_6 | Incomplete 0_pass_of_6 |

| DMO Test Session Cambridge, February 2017 Sepura SRG3900 | Sepura SRG3900 | Sepura STP9000 | Sepura SC2020 |
|---|------------------------------------|------------------------------------|------------------------------------|
| Individual Call maintenance | Incomplete 0_pass_of_4 | Incomplete 0_pass_of_4 | Incomplete 0_pass_of_4 |
| Individual Call with Presence Check | Incomplete 0_pass_of_8 | Incomplete 0_pass_of_7 | Incomplete 0_pass_of_8 |
| Individual call without Presence Check | Incomplete 0_pass_of_8 | Incomplete 0_pass_of_8 | Incomplete 0_pass_of_8 |
| Individual Late Entry | Incomplete 0_pass_of_4 | Incomplete 0_pass_of_4 | Incomplete 0_pass_of_4 |
| Status Call | Incomplete 0_pass_of_16 | Incomplete 0_pass_of_16 | Incomplete 0_pass_of_16 |
| Individual Status Calls | Incomplete 0_pass_of_2 | Incomplete 0_pass_of_2 | Incomplete 0_pass_of_2 |
| Group Status call | Incomplete 0_pass_of_12 | Incomplete 0_pass_of_12 | Incomplete 0_pass_of_12 |
| Status sent in a Voice Call | Incomplete 0_pass_of_6 | Incomplete 0_pass_of_6 | Incomplete 0_pass_of_6 |
| Status sent out of a Call | Incomplete 0_pass_of_8 | Incomplete 0_pass_of_8 | Incomplete 0_pass_of_8 |
| SDS TL | Incomplete 0_pass_of_8 | Incomplete 6_pass_of_8 | Incomplete 0_pass_of_8 |
| Individual intra-MNI SDS-TL, unacknowledged, 8 bit | Incomplete 0_pass_of_2 | PASSED Complete 2_pass_of_2 | Incomplete 0_pass_of_2 |
| Individual inter-MNI SDS-TL, unacknowledged, 8 bit | Incomplete 0_pass_of_2 | PASSED Complete 2_pass_of_2 | Incomplete 0_pass_of_2 |
| Group SDS-TL intra-MNI, unacknowledged, no reports, 8 bit | Incomplete 0_pass_of_2 | Incomplete 0_pass_of_2 | Incomplete 0_pass_of_2 |
| Open TSI addressed SDS-TL, unacknowledged, no reports, 8 bit | Incomplete 0_pass_of_2 | PASSED Complete 2_pass_of_2 | Incomplete 0_pass_of_2 |
| Multipart SDS-TL | Not_Supported | Not_Supported | Not_Supported |

| DMO Test Session Cambridge, February 2017 Sepura SRG3900 | Sepura SRG3900 | Sepura STP9000 | Sepura SC2020 |
|---|----------------------------|--------------------------------|----------------------------|
| DMO AIE Encryption | Incomplete 0_pass_of_20 | Incomplete 10_pass_of_20 | Incomplete 0_pass_of_20 |
| Encrypted Group Calls | Incomplete 0_pass_of_8 | Incomplete 4_pass_of_8 | Incomplete 0_pass_of_8 |
| Encrypted Individual Calls | Incomplete 0_pass_of_4 | Incomplete 2_pass_of_4 | Incomplete 0_pass_of_4 |
| Encrypted Status messages | Incomplete 0_pass_of_2 | Incomplete 0_pass_of_2 | Incomplete 0_pass_of_2 |
| Pre-emption of encrypted activity | Incomplete 0_pass_of_2 | PASSED Complete 2_pass_of_2 | Incomplete 0_pass_of_2 |
| Handling mismatched keys | Incomplete 0_pass_of_4 | Incomplete 2_pass_of_4 | Incomplete 0_pass_of_4 |