

TETRA Interoperability Certificate

Inter-System Interface [IP-based]

**Teltronic, Nebula, SwMI A –
Teltronic, Nebula, SwMI B**

Zaragoza, April 2019

Latest Certified SwMI A SW Release:	19.30.80	Latest Certified SwMI B SW Release:	19.30.80
Latest Certified SwMI A HW Release:	1.19.30.28.33	Latest Certified SwMI B HW Release:	1.19.30.28.33

ISCTI (Istituto Superiore delle Comunicazioni e delle Tecnologie dell'Informazione) certifies, that the Teltronic, Nebula, SwMI and the Teltronic, Nebula, SwMI 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.

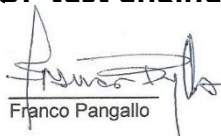
The table lists all the available TETRA interoperability profiles, and summarizes the main functionalities of every profile according to the TETRA interoperability requirement tables.

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 fully witnessed single test session between Teltronic and Teltronic on April 2019. 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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Certified features

TTR003-01: IMM	
ISI Migration Service	Certified
Linked Group Attachment/Detachment Service	-
TTR003-02: IIC	
ISI Individual Call	Certified
Resource Allocation Policy	Certified
Routing Methods (for 3 SwMI configurations)	-
MS-ISDN	Certified
TTR003-03: ISD	
Individually addressed ISI Short Data Service	Certified
Group addressed ISI Short Data Service	Certified
Transmit Inhibit Status' status messages	-
TTR003-06: IGC	
Normal ISI Group Call	Certified
Transmission Control	Certified
Emergency Group Call	Certified
Abnormal Cases	Certified
Use of Linked Group Attachment	-

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 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 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 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 (see the previous item) has been applied on the verdicts from the referenced (previous) session where the spot testing method (see above) had been applied.
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 A and/or SwMI B 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 A and SwMI B 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 TCCA 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 Date/Place	Teltronic, Teltronic Zaragoza, April 2019			
SwMIA Type	Nebula			
SwMIA HW Release	1.19.30.28.33			
SwMIA SW Release	19.30.80			
SwMIB Type	Nebula			
SwMIB HW Release	1.19.30.28.33			
SwMIB SW Release	19.30.80			
TIP Specs and TIP Compliance Test Plans				
IMM	TTR003-01 v300 IOP003-01 v200 TIC-RT003-01 v113			
IIC	TTR003-02 v310 IOP003-02 v200 TIC-RT003-02 v117			

ISD	TTR003-03 v310 IOP003-03 v200 TIC-RT003-03 v120			
IGC2	TTR003-06 v300 IOP003-06 v200 TIC-RT003-06-02 v105			

Feature compliance report

Test Session	Teltronic Teltronic Zaragoza April 2019			
TTR003-01 Mobility Management-fully witnessed testing				
ISI Migration Service	PASSED Complete 8 pass of 8			
ISI Migration Service without Authentication	PASSED Complete 4 pass of 4			
ISI Migration Service with Authentication	Not Supported			
ISI Re-Authentication of Migrated MS	Not Supported			
ISI Migration Service between two Foreign SwMIs	Not Supported			
ISI De-registration and return to home SwMI	PASSED Complete 4 pass of 4			
Linked Group Attachment/Detachment Service				
Linked Group Attachment/Detachment Service	Not Supported			
TTR003-02 ISI Individual Call-fully witnessed testing				
ISI Individual Call	PASSED complete 14 pass of 14			
ISI Individual Simplex Call	PASSED Complete 4 pass of 4			
ISI Individual Duplex Hook Call	PASSED Complete 8 pass of 8			
Handling of Call Establishment Failures	PASSED Complete 2 pass of 2			
Resource Allocation Policy	PASSED Complete 6 pass of 6			
Permanent Resource Allocation	PASSED Complete 6 pass of 6			
Temporary Resource Allocation	Not Supported			

Mixed Resource Allocation	Not Supported			
Routing Methods (for 3 SwMI configurations)				
ISI Individual Call using forward switching based on Called SwMI decision	Not Supported			
ISI Individual Call using forward switching based on Calling SwMI decision	Not Supported			
ISI Individual Call using re-routing	Not Supported			
MS-ISDN	PASSED Complete 2 pass of 2			
MSISDN as CPI in PSTN originated calls over ISI	PASSED Complete 2 pass of 2			
TTR003-03 ISI SDS fully witnessed testing				
Individually addressed ISI Short Data Service	PASSED Complete 32 pass of 32			
Individual Status message over ISI	PASSED Complete 16 pass of 16			
Individual SDS-TL message over ISI	PASSED Complete 16 pass of 16			
Individual Status message over ISI, forwarding to a third SwMI	Not Supported			
Individual SDS-TL message over ISI, forwarding to a third SwMI	Not Supported			
Individual SDS-TL message over ISI using MS-ISDN as CPI	Not Supported			
Group addressed ISI Short Data Service	PASSED Complete 16 pass of 16			
Group addressed Status message over ISI	PASSED Complete 8 pass of 8			
Group addressed SDS message over ISI	PASSED Complete 8 pass of 8			
Group addressed SDS message over ISI, CSwMI using forward address and PSwMI accepting forward address	Not Supported			
Transmit Inhibit Status' status messages				

Transmit Inhibit Status' status messages	Not Supported			
TTR003-06 ISI Group Call fully witnessed testing				
Normal ISI Group Call	PASSED Complete 8 pass of 8			
Normal ISI Group Call	PASSED Complete 4 pass of 4			
Delayed ISI Group Call setup	Not Supported			
Late Entry triggered by a timer	PASSED Complete 4 pass of 4			
Late Entry triggered by PTT	Not Supported			
Transmission control	PASSED Complete 2 pass of 2			
Transmission queuing management	Not Supported			
Transmission pre-emption management	PASSED Complete 2 pass of 2			
Emergency Group Call	PASSED Complete 4 pass of 4			
Emergency Group Call	PASSED Complete 4 pass of 4			
Abnormal Cases	PASSED Complete 6 pass of 6			
Abnormal Cases	PASSED Complete 6 pass of 6			
Use of Linked Group Attachment				
Use of Linked Group Attachment	Not Supported			