

TETRA Interoperability Certificate

Trunked Mode Operation

**KAITEC GmbH, pira-tetra swmi – Single-Site SwMI
Motorola Solutions, MXP600 – Terminal**

Test Session #183, hosted by Kaitec GmbH in Hosbach Germany, May 2022

Latest Certified SwMI SW Release:	v2	Latest Certified MS SW Release:	MR2021.3
Latest Certified SwMI HW Release:	v2.0.4	Latest Certified MS HW Release:	PTW952HEB

ISCTI (Istituto Superiore delle Comunicazioni e delle Tecnologie dell'Informazione) certifies, that the KAITEC GmbH pira-tetra swmi Single-Site SwMI and the Motorola Solutions MXP600 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 (TPD001-01).

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 KAITEC GmbH and Motorola Solutions in May 2022. 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.

IOP Test engineer



Head of the Procedure

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v 1

Certified features

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

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' results 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 a white background.

The outcome assigned to a feature as shown on page 2, is derived by the Feature Compliance Report tables.

Outcome	Definition
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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 at this session 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 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 tables on the following page list HW and SW releases of SwMI and Terminal under test 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

SwMI Manufacturer	KAITEC GmbH
SwMI Model	pira-tetra swmi
SwMI HW Release	v2.0.4
SwMI SW Release	v2
MS Manufacturer	Motorola Solutions
MS Model	MXP600
MS HW Release	PTW952HEB
MS SW Release	MR2021.3

Document references

Core	TTR001-01 v6.4.0 IOP001-01 v3.4.0 TIC-RT001-01 v279
SDS	TTR001-02 v2.1.3 IOP001-02 v2.2.0 TIC-RT001-02 v225

Feature compliance report

Core - Fully Witnessed Testing	
Registration	PASSED Complete 4_pass_of_4

Initial registration	PASSED Complete 3_pass_of_3
SwMI initiated location updating	Not Supported
LA timer based Periodic location updating	Not Supported
De-registration	PASSED Complete 1_pass_of_1
Group Management	PASSED Complete 11_pass_of_11
Single group attachment	PASSED Complete 5_pass_of_5
Multiple group attachment	PASSED Complete 4_pass_of_4
MS initiated group detachment	PASSED Complete 2_pass_of_2
SwMI initiated group detachment	Not Supported
SwMI initiated group attachment	Not Supported
Group call	PASSED Complete 7_pass_of_7
Normal group call	PASSED Complete 4_pass_of_4
Late entry	PASSED Complete 1_pass_of_1
Priority Group scanning	PASSED Complete 1_pass_of_1
Call setup modifications	Not Supported
Resource Queuing based on Call Priority	PASSED Complete 1_pass_of_1
Broadcast Call	Not Supported
Limited coverage notification	Not Supported
Individual call	PASSED Complete 8_pass_of_8
Simplex individual call	PASSED Complete 4_pass_of_4
Duplex individual call	PASSED Complete 2_pass_of_2
Call setup modifications	Not Supported
Resource Queuing based on Call Priority	PASSED Complete 2_pass_of_2
Indication of imminent call disconnection	Not Supported
Status messages	PASSED Complete 2_pass_of_2

Individual addressed Status transfer	Not Supported
Group addressed Status transfer	PASSED Complete 2_pass_of_2
Pre-emptive Priority Call	PASSED Complete 4_pass_of_4
Pre-emption of Resources	PASSED Complete 2_pass_of_2
Pre-emption of Busy Users	PASSED Complete 2_pass_of_2
Emergency Call	PASSED Complete 3_pass_of_3
Pre-emption of Resources	PASSED Complete 2_pass_of_2
Pre-emption of Busy Users	PASSED Complete 1_pass_of_1
Call setup modifications	Not Supported
Call disconnection by non-call owner	Not Supported
Cell Re-selection	
Undeclared	Not Supported
Unannounced	Not Supported
Announced - with Call Restoration	Not Supported
Announced - without Call Restoration	Not Supported
Expedited	Not Supported
Graceful Service Degradation Mode (GSDM)	Not Supported
Single-site operation	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	
Cell Selection based on Subscriber Class	Not Supported
Subscriber Class Delivery during Location Update	Not Supported
Use of Subscriber Class Preference Levels	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 to avoid a cell in BS Fallback Operation	Not Supported
Roaming to and from a cell in BS Fallback operation offering some services	Not Supported
Services with BS Fallback Operation	Not Supported
Ignore a cell in Fallback Operation	Not Supported
User selectable Fallback behaviour	Not Supported
Energy Economy Mode	
Energy Economy Mode Operation	Not Supported
Transmit Inhibit	PASSED Complete 8_pass_of_8
TXI Activation & De-Activation	PASSED Complete 4_pass_of_4
TXI Activation & De-Activation with TxI Status available to the Dispatcher	PASSED Complete 3_pass_of_3
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
SDS - Fully Witnessed Testing	
SDS Type 1, 2 or 3	PASSED Complete 3_pass_of_3
Multipart SDS	PASSED Complete 2_pass_of_2
Multipart SDS	PASSED Complete 2_pass_of_2