

TETRA Interoperability Certificate

Trunked Mode Operation

**Motorola Solutions, DIMETRA X Core – SwMI
Hytera, PTC760 – Terminal**

Test Session #192, hosted by Motorola Solutions in Krakow, May 2023

Latest Certified SwMI SW Release:	R9.2.0	Latest Certified MS SW Release:	V4.2
Latest Certified SwMI HW Release:	DIMETRA X Core R9.2.0	Latest Certified MS HW Release:	70P60

ISCTI (Istituto Superiore delle Comunicazioni e delle Tecnologie dell'Informazione) certifies, that the Motorola Solutions DIMETRA X Core SwMI and the Hytera PTC760 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 multiple test session between Motorola Solutions and Hytera in May 2023. 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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v1

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Motorola Solutions, DIMETRA X Core R9.2.0 – SwMI
Hytera, PTC760 – Terminal

v 1
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Certified features

Tetra Association TTR001-10: E2EE	
E2EE Voice Call	-
E2EE Short Data	-
Tetra Association TTR001-11: AIE	
Security Class 2 Air Interface Encryption	-
Security Class 3 Air Interface Encryption	Certified
Security Class 3G Air Interface Encryption	-
Management of CMG and GSKO	-
Key Status demand	-
Change of Security Class for Fallback operation	-
Change of Security Class (other than for Fallback operation)	-
Key Management for Secure Direct Mode operation	-

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
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	Motorola Solutions
SwMI Model	DIMETRA X Core
SwMI HW Release	DIMETRA X Core R9.2.0
SwMI SW Release	R9.2.0
MS Manufacturer	Hytera
MS Model	PTC760
MS HW Release	70P60
MS SW Release	V4.2

Document references

E2EE	TTR001-10	v2.1.0
	IOP001-10	v1.3.0
	TIC-RT001-10-1	v133
AIE	TTR001-11	v3.2.0
	IOP001-11	v3.2.0
	TIC-RT001-11	v337

Feature compliance report

E2EE - Fully Witnessed Testing	
E2EE Voice Call	FAILED Complete 6_pass_of_7
Individual (P2P) call	PASSED Complete 4_pass_of_4
Group (P2MP) call	PASSED Complete 2_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
OTAK key delivery	FAILED Complete 0_pass_of_1
E2EE Short Data	FAILED Complete 9_pass_of_11
Short Data	FAILED Complete 9_pass_of_11
Multipart Short Data	Not Supported
Short Data Reception	FAILED Complete 5_pass_of_7
Multipart Short Data Reception	Not Supported
AIE - Fully Witnessed Testing	
Security Class 2 Air Interface Encryption	FAILED Incomplete 15_pass_of_20
Location Updating and AI Signalling Protection	FAILED Incomplete 4_pass_of_7

TM-SCK provisioning during location updating	FAILED Incomplete 0_pass_of_2
Communications between parties using encryption	PASSED Complete 2_pass_of_2
Communications between clear and encrypted parties	PASSED Complete 3_pass_of_3
Communications between encrypted parties on a channel designated to operate in clear	PASSED Complete 2_pass_of_2
OTAR of TM-SCK	Incomplete 0_pass_of_2
Change of TM-SCK	Incomplete 2_pass_of_4
Packet Data with Class 2 Air Interface Encryption	PASSED Complete 2_pass_of_2
Tolerance of SwMI not supporting SCK-OTAR	Not Supported
Security Class 3 Air Interface Encryption	PASSED Complete 20_pass_of_20
Clear Location Updating and AI Signalling Protection	PASSED Complete 3_pass_of_3
Encrypted Location Updating and AI Signalling Protection	PASSED Complete 4_pass_of_4
DCK Forwarding at MS request	Not Supported
DCK Forwarding by SwMI (without MS request)	Not Supported
DCK Retrieval	PASSED Complete 4_pass_of_4
CCK provisioning during location updating	PASSED Complete 3_pass_of_3
Communications between parties using encryption	PASSED Complete 2_pass_of_2
Communications between clear and encrypted parties	PASSED Complete 3_pass_of_3
Communications between encrypted parties on a channel designated to operate in clear	PASSED Complete 2_pass_of_2
OTAR of CCK	PASSED Complete 2_pass_of_2

Change of CCK	PASSED Complete 4_pass_of_4
Packet Data with Class 3 Air Interface Encryption	PASSED Complete 2_pass_of_2
Security Class 3G Air Interface Encryption	Incomplete 0_pass_of_8
GCK Key Association setting	Incomplete 0_pass_of_3
Communications between parties using encryption	Incomplete 0_pass_of_2
Communications between clear and encrypted parties	Not Supported
OTAR of GCK	Incomplete 0_pass_of_2
Change of GCK	Incomplete 0_pass_of_3
Management of CMG and GSKO	FAILED Incomplete 0_pass_of_5
OTAR and change of CMG and GSKO	FAILED Incomplete 0_pass_of_5
Key Status demand	Incomplete 0_pass_of_3
SCK Key Status demand	Incomplete 0_pass_of_1
GCK Key Status demand	Incomplete 0_pass_of_1
GSKO Key Status demand	Incomplete 0_pass_of_1
Change of Security Class for Fallback operation	Incomplete 0_pass_of_2
Seamless change to Security Class 2 for BS Fallback operation	Not Supported
Non-seamless change to Security Class 2 for BS Fallback operation	Not Supported
Provisioning of TM-SCK for fallback to Security Class 2 operation	Incomplete 0_pass_of_2
Change to Security Class 1 for BS Fallback operation	Not Supported
Change of Security Class (other than for Fallback operation)	Incomplete 0_pass_of_2

Change between Security Class 3 and Security Class 3G	Incomplete 0_pass_of_2
Change between Security Class 2 and Security Class 3	Not Supported
Change from Security Class 3G to Security Class 2	Not Supported
Key Management for Secure Direct Mode Operation	
OTAR of DM-SCK	Not Supported
Change of DM-SCK	Not Supported