TETRA Interoperability Certificate

Motorola Solutions, Dimetra IP R8.2, SwMI – Sepura, STP9000, Terminal

Krakow, April 2014

Latest Certified SwMI SW Release:	8.2	**Latest Certified Terminal SW Release:**	1711 013 02937
Latest Certified SwMI HW Release:	Dimetra IP R8.2	**Latest Certified Terminal HW Release:**	PSYTW201T30WN10

ISCTI (Istituto Superiore delle Comunicazioni e delle Tecnologie dell'Informazione) certifies, that the Motorola Solutions, Dimetra IP R8.2, SwMI and the Sepura, STP9000, terminal 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 multi test session between Motorola Solutions and Sepura on April 2014. 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.

This v3 Certificate has been re-issued, because it has been recognized that the change of declarations for group addressed Full Callout was in contradiction with the TIC process. The result of the Callout tests 3.1.1 and 3.1.2 are not valid because the Callout host application simulator which was used to support the testing was not TIP compliant. To reflect this fact the test result "Not Applicable" (N/A) was applied to these two tests.

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Date of issue
24 March 2016
v3

Certified features

Tetra Association TTR001-01:Core	
Registration	Partial
Group Management	Certified
Group call	Certified
Individual call	Certified
Status messages	Certified
Pre-emptive Priority Call	Certified
Emergency Call	Certified
Cell Re-selection	Certified
PSTN interconnect	Certified
MS-ISDN Numbering	-
In Call Signalling	Certified
Subscriber Class Procedures	Certified
Common Secondary Control Channels	Certified
BS Fallback Operation	Certified
Energy Economy Mode	-
Transmit Inhibit	Certified
Mixed band operation	Certified
Tetra Association TTR001-02:SDS	
SDS Type 1, 2 or 3	-
SDS-TL	Certified
Store and Forward	Certified
Tetra Association TTR001-03:DGNA	
Support for individually addressed DGNA	Certified
Support for group addressed DGNA	Certified
Tolerance of unsupported DGNA functions	-

Tetra Association TTR001-05:PD	
Context Management	Certified
Single Slot Packet Data	Certified
Multi Slot Packet Data	Certified
TEDS	-
Mixed band operation	-
Tetra Association TTR001-09:AL	
Ambience Listening	Certified
Interaction with Transmit Inhibit	Certified
Tetra Association TTR001-11:AIE	
Security Class 2 Air Interface Encryption	Partial
Security Class 3 Air Interface Encryption	Certified
Security Class 3G Air Interface Encryption	-
Change of CMG and GSKO	Certified
Key Status demand	Certified
Change of Security Class for Fallback operation	Certified
Change of Security Class (other than for Fallback operation)	Certified
Key Management for Secure Direct Mode Operation	Certified
Tetra Association TTR001-19:LIP	
Location Information Protocol	Certified
Tetra Association TTR001-21:Callout	
Full Callout	Certified
Simple Callout	-
Interaction with other services and events	Certified
Callout Test and Callout Availability	-
Callout Text and Callout Pre-Coded Status	Partial
Storage of Callout Information	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 result depend on a set of sub-feature, the outcomes 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 grey background and the associated sub-features (or second level features) have light blue background.

The outcome assigned to a sub-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.
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.

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 "TPD001-01 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 the associated Test Report
Regression	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 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 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 table on the following page lists HW and SW releases of SwMI and Terminal 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 TETRA + Critical Communications Association web site (http://www.tandcca.com/interop/page/12476).

The feature results are shown in the tables below.

Information on equipment under test and document references

Test Session Date/Place	Motorola Solutions Krakow April 2014			
SwMI Type	Dimetra IP R8.2			
SwMI HW Release	Dimetra IP R8.2			
SwMI SW Release	8,2			
Terminal Type	STP9000			
Terminal HW Release	PSYTW201T30WN10			
Terminal SW Release	1711 013 02937			
SwMI Callout Application simulator SW realese	1.1			
TIP Specs and TIP Compliance Test Plans				
Core	TTR001-01 v6.0.0 IOP001-01 v3.0.0 TIC-RT001-01 v260			

SDS	TTR001-02 v2.1.1 IOP001-02 v2.0.0 TIC-RT001-02 v213			
DGNA	TTR001-03 v2.0.0 IOP001-03 v2.0.1 TIC-RT001-03 v222			
PD	TTR001-05 v3.0.0 IOP001-05 v3.0.5 TIC-RT001-05 v305			
AL	TTR001-09 v2.0.0 IOP001-09 v1.1.0 TIC-RT001-09 v122			
AIE	TTR001-11 v3.0.3 IOP001-11 v3.0.2 TIC-RT001-11 v325			
LIP	TTR001-19 v1.0.0 IOP001-19 v1.0.0 TIC-RT001-19 v105			
Callout	TTR001-21 v1.0.0 IOP001-21 v1.0.0 TIC-RT001-21 v103			

Feature compliance report

Test Session	Motorola Solutions Krakow April 2014			
Core				
Registration	Spot Incomplete 0_pass_of_4			
ITSI attach	Spot 0_pass_of_1			
SwMI initiated location updating	Spot Incomplete 0_pass_of_2			
LA timer based Periodic location updating	Not Supported			
De-registration	Spot 0_pass_of_1			
Group Management	Spot 0_pass_of_11			
Single group attachment	Spot 0_pass_of_5			
Multiple group attachment	Spot 0_pass_of_4			
MS initiated group detachment	Spot 0_pass_of_2			
SwMI initiated group management	Not Supported			
Group call	PASSED Spot 2_pass_of_9			
Normal group call	Spot 0_pass_of_3			
Late entry	Spot 0_pass_of_1			
Priority Group scanning	Spot 0_pass_of_3			
Call setup modifications	PASSED Complete 1_pass_of_1			
Resource Queuing based on Call Priority	PASSED Complete 1_pass_of_1			
Broadcast Call	Not Supported			
Limited coverage notification	Not Supported			

Individual call	PASSED Spot 1_pass_of_7			
Simplex individual call	Spot 0_pass_of_3			
Duplex individual call	Spot 0_pass_of_2			
Call setup modifications	Not Supported			
Resource Queuing based on Call Priority	PASSED Spot 1_pass_of_2			
Indication of imminent call disconnection	Not Supported			
Status messages	Spot 0_pass_of_1			
Individual addressed Status transfer	Not Supported			
Group addressed Status transfer	Spot 0_pass_of_1			
Pre-emptive Priority Call	Spot 0_pass_of_1			
Pre-emption of Resources	Spot 0_pass_of_1			
Pre-emption of Busy Users	Not Supported			
Emergency Call	PASSED Spot 1_pass_of_2			
Pre-emption of Resources	Spot 0_pass_of_1			
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	PASSED Spot 7_pass_of_16			
Undeclared	Spot 0_pass_of_1			
Unannounced	PASSED Spot 1_pass_of_3			
Announced - with Call Restoration	PASSED Spot 6_pass_of_12			
Announced - without Call Restoration	Not Supported			
Expedited	Not Supported			
PSTN interconnect	PASSED Spot 1_pass_of_4			

TETRA Originated Call	PASSED Spot 1_pass_of_2			
PSTN Originated Call	Spot 0_pass_of_1			
DTMF over-dial	Spot 0_pass_of_1			
Emergency Telephone Calls	Not Supported			
MS-ISDN Numbering				
MS ISDN - Voice Call	Not Supported			
MS-ISDN Status	Not Supported			
In Call Signalling	Spot 0_pass_of_5			
Slow Signalling on Traffic Channel (SACCH)	Spot 0_pass_of_4			
Fast Signalling on Traffic Channel (FACCH)	Spot 0_pass_of_1			
Subscriber Class Procedures	PASSED Spot 3_pass_of_6			
Cell Selection based on Subscriber Class	PASSED Spot 2_pass_of_3			
Subscriber Class Delivery during Location Update	Not Supported			
Use of Preferred Subscriber Classes	PASSED Spot 1_pass_of_3			
Common Secondary Control Channels	PASSED Spot 1_pass_of_7			
One C-SCCH per cell	PASSED Spot 1_pass_of_4			
Two C-SCCH per cell	Spot 0_pass_of_3			
Three C-SCCH per cell	Spot 0_pass_of_2			
BS Fallback Operation	PASSED Spot 2_pass_of_9			
Switch to/from BS Fallback Operation	Spot 0_pass_of_2			
Roaming with BS Fallback Operation	PASSED Spot 1_pass_of_2			
Services with BS Fallback Operation	PASSED Spot 1_pass_of_5			
Energy Economy Mode				
Energy Economy Mode Operation	Not Supported			

Transmit Inhibit	PASSED Spot 4_pass_of_9			
TXI Activation & De-Activation	PASSED Spot 2_pass_of_4			
TXI Activation & De-Activation with TxI Status available to the Dispatcher	PASSED Spot 2_pass_of_4			
Receipt of group addressed service during TXI	Spot 0_pass_of_1			
Mixed band operation	PASSED Spot 1_pass_of_4			
Mixed band operation, inter-cell	PASSED Spot 1_pass_of_4			
Mixed band operation, intra-cell	PASSED Spot 1_pass_of_3			
Mixed band operation, Full	PASSED Spot 1_pass_of_3			
Short Data Service (SDS)				
SDS Type 1, 2 or 3				
SDS Type 1	Not Supported			
SDS Type 2	Not Supported			
SDS Type 3	Not Supported			
SDS-TL	PASSED Spot 2_pass_of_9			
Individually Addressed	PASSED Spot 1_pass_of_2			
Group Addressed	Spot 0_pass_of_2			
Using MS-ISDN dialling	Not Supported			
Using UCS2 coding scheme	Spot 0_pass_of_3			
Using 7-bit coding scheme	Spot 0_pass_of_1			
Using 8-bit Latin 1 coding scheme	PASSED Spot 1_pass_of_2			
Using 8-bit Latin 5 coding scheme	Complete			
Using 8-bit Latin 9 coding scheme	Complete			
Store and Forward	PASSED Spot 1_pass_of_3			
Individually Addressed	PASSED Spot 1_pass_of_3			

Group Addressed	Not Supported			
Dynamic Group Number Assignment (DGNA)				
Support for individually addressed DGNA	PASSED Spot 1_pass_of_11			
Support for individually addressed DGNA assignment without attachment	Spot 0_pass_of_4			
Support for individually addressed DGNA assignment with attachment as selected group	Spot 0_pass_of_2			
Support for individually addressed DGNA assignment with attachment as scanned group	Spot 0_pass_of_3			
Support for individually addressed DGNA assignment with rejected attachment	Not Supported			
Support for individually addressed assigment for pre-programmed group	PASSED Spot 1_pass_of_5			
Support for group addressed DGNA	PASSED Spot 3_pass_of_5			
Support for group addressed DGNA assignment	Spot 0_pass_of_2			
Management of 'group assignment lifetime'	PASSED Complete 2_pass_of_2			
Support for group addressed DGNA deassignment	PASSED Complete 1_pass_of_1			
Tolerance of unsupported DGNA functions				
MS tolerance of unsupported individual addressed DGNA signalling	Not Supported			

MS tolerance of unsupported group addressed DGNA signalling	Not Supported			
Packet Data				
Context Management	Spot_0_pass_of_11			
Context Activation	Spot_0_pass_of_7			
User authentication	Spot_0_pass_of_4			
Single Slot Packet Data	PASSED Spot 4_pass_of_9			
Data Transfer	PASSED Spot 2_pass_of_6			
Cell re-selection	PASSED Spot 2_pass_of_3			
Multi Slot Packet Data	PASSED Spot 1_pass_of_4			
Data Transfer	PASSED Spot 1_pass_of_4			
TEDS				
TEDS with Context Activation	Not Supported			
TEDS Data Transmission, using LLC Optimisation	Not Supported			
TEDS Data Transmission, not using LLC Optimisation	Not Supported			
TEDS Cell Reselection, using LLC Optimisation	Not Supported			
TEDS Cell Reselection, not using LLC Optimisation	Not Supported			
Mixed band operation	Complete			
Mixed band operation, inter-cell	Complete			
Mixed band operation, intra-cell	Complete			
Mixed band operation, Full	Complete			
TETRA Ambience Listening (SS-AL)				
Ambience Listening	PASSED Spot 1_pass_of_5			

SS-AL Call Setup	Spot 0_pass_of_2			
MS initiated SS-AL disconnection	PASSED Spot 1_pass_of_3			
No Indication to affected user	PASSED Spot 1_pass_of_5			
Interaction with Transmit Inhibit	PASSED Spot 1_pass_of_2			
AL can override TxI	PASSED Complete 1_pass_of_1			
AL cannot override TxI	Spot 0_pass_of_1			
Air Interface Encryption				
Security Class 2 Air Interface Encryption	Spot Incomplete 2_pass_of_20			
Location Updating and AI Signalling Protection	Spot 0_pass_of_7			
TM-SCK provisioning during location updating	Spot 0_pass_of_2			
Communications between parties using encryption	Spot 0_pass_of_2			
Communications between clear and encrypted parties	PASSED Spot 1_pass_of_3			
Communications between encrypted parties on a channel designated to operate in clear	Spot 0_pass_of_2			
OTAR of TM-SCK	Spot 0_pass_of_2			
Change of TM-SCK	PASSED Spot 1_pass_of_4			
Packet Data with Class 2 Air Interface Encryption	Spot Incomplete 0_pass_of_2			
Security Class 3 Air Interface Encryption	PASSED Spot 10_pass_of_25			
Clear Location Updating and AI Signalling Protection	Spot 0_pass_of_4			
Encrypted Location Updating	PASSED Spot			

and AI Signalling Protection	6_pass_of_8			
DCK Forwarding at MS request	Not Supported			
DCK Forwarding by SwMI (without MS request)	PASSED Complete 1_pass_of_1			
DCK Retrieval	PASSED Spot 5_pass_of_7			
CCK provisioning during location updating	PASSED Spot 1_pass_of_7			
Communications between parties using encryption	Spot 0_pass_of_2			
Communications between clear and encrypted parties	PASSED Spot 2_pass_of_3			
Communications between encrypted parties on a channel designated to operate in clear	Spot 0_pass_of_2			
OTAR of CCK	Spot 0_pass_of_2			
Change of CCK	PASSED Spot 1_pass_of_4			
Packet Data with Class 3 Air Interface Encryption	PASSED Spot 1_pass_of_2			
Security Class 3G Air Interface Encryption	FAILED Spot 0_pass_of_8			
GCK Key Association setting	Spot 0_pass_of_2			
Communications between parties using encryption	Spot 0_pass_of_2			
Communications between clear and encrypted parties	Spot 0_pass_of_1			
OTAR of GCK	FAILED Spot 0_pass_of_2			
Change of GCK	FAILED Spot 0_pass_of_3			
Management of CMG and GSKO	PASSED Spot 1_pass_of_5			

OTAR and change of CMG and GSKO	PASSED Spot 1_pass_of_5			
Key Status demand	PASSED Spot 1_pass_of_4			
SCK Key Status demand	Spot 0_pass_of_2			
GCK Key Status demand	Spot 0_pass_of_1			
GSKO Key Status demand	PASSED Complete 1_pass_of_1			
Change of Security Class for Fallback operation	PASSED Spot 2_pass_of_12			
Seamless change to Security Class 2 for BS Fallback operation	PASSED Spot 2_pass_of_10			
Non-seamless change to Security Class 2 for BS Fallback operation	Not Supported			
Provisioning of TM-SCK for fallback to Security Class 2 operation	Spot 0_pass_of_2			
Change to Security Class 1 for BS Fallback operation	Not Supported			
Change of Security Class (other than for Fallback operation)	Spot 0_pass_of_5			
Change between Security Class 3 and Security Class 3G	Spot 0_pass_of_2			
Change between Security Class 2 and Security Class 3	Spot 0_pass_of_2			
Change from Security Class 3G to Security Class 2	Spot 0_pass_of_1			
Key Management for Secure Direct Mode Operation	PASSED Spot 1_pass_of_3			
OTAR of DM-SCK	PASSED Spot 1_pass_of_3			
Change of DM-SCK	PASSED Spot			

	1_pass_of_2			
LIP				
Location Information Protocol	PASSED Spot 4_pass_of_8			
LIP over SDS	PASSED Spot 2_pass_of_5			
LIP over Packet Data	Not Supported			
Time based reporting	PASSED Spot 1_pass_of_3			
Distance based reporting - NOT TESTABLE	Not Supported			
Reporting using Long reports	Spot 0_pass_of_1			
Reporting Enable & Disable	Not Supported			
Temporary reporting control	Not Supported			
Trigger modification	Not Supported			
Immediate Location Reporting	PASSED Complete 1_pass_of_1			
Reporting Lifetimes	Not Supported			
Error Reporting	PASSED Complete 1_pass_of_1			
Callout				
Full Callout	Passed Spot 4_pass_of_13			
Individually Addressed Full Callout with request for Terminal Receipt message and with request for User Receipt message	Spot 0_pass_of_2			
Group Addressed Full Callout without request for Terminal Receipt message and without	N/A			

request for User Receipt message				
Using current selected group during Full Callout	N/A			
Full Callout with immediate change to Callout Group	Spot 0_pass_of_1			
Full Callout with change to Callout Group on non-rejecting user response	Spot 0_pass_of_1			
Full Callout with rejecting User Receipt message	Spot 0_pass_of_1			
Full Callout with timeout for User Receipt message	PASSED Complete 1_pass_of_1			
Callout Incident Information messages	PASSED Spot 1_pass_of_2			
Group Call to Callout Group	PASSED Spot 1_pass_of_4			
End of Full Callout	PASSED Spot 1_pass_of_3			
Simple Callout				
Individually Addressed Callout with request for Terminal Receipt message and with request for User Receipt message	Not Supported			
Individually Addressed Callout with request for Terminal Receipt message and without request for User Receipt message	Not Supported			
Group Addressed Callout without request for Terminal Receipt message and without request for User Receipt message	Not Supported			

Group Addressed Callout without request for Terminal Receipt message and with request for User Receipt message	Not Supported			
Simple Callout with rejecting User Receipt message	Not Supported			
Simple Callout with timeout for User Receipt message	Not Supported			
Interaction with other services and events	PASSED Spot 8_pass_of_27			
Interaction with previous Callout	PASSED Complete 2_pass_of_2			
Interaction with emergency call	PASSED Spot 1_pass_of_3			
Interaction with non-emergency call	PASSED Spot 2_pass_of_11			
Interaction with data and status	PASSED Spot 3_pass_of_11			
Interaction with local services	Not Supported			
Manual exit	Spot_0_pass_of_1			
Callout Test and Callout Availability				
Callout Test	Not Supported			
Callout Availability	Not Supported			
Callout Text and Callout Pre-Coded Status	Spot Incomplete 2_pass_of_10			
Callout Text	PASSED Spot 1_pass_of_4			
Concatenated Callout Text	PASSED Spot 1_pass_of_2			
Callout Pre-Coded Status	Spot Incomplete 0_pass_of_4			
Storage of Callout Information	Spot_0_pass_of_2			
Viewing Callout information	Spot_0_pass_of_1			

from previous Callout(s)				
Deletion of Callout information from previous Callout(s)	Spot 0_pass_of_1			

Annex A

Annex A

List of Revisions of the Certificate

Date	Ver.	Modification
8 October 2014	1	First published version
22 October 2014	2	updating: "A SwMI declaration is changed to reflect the inability to support group addressed Full Callout as per the TIP specification" consequently has changed the verdict on Full Callout from "-" to "Passed" on Certified Features and the number of "Full Callout" tests on "Feature compliance report" Table.
24 March 2016	3	Re-instated the SwMI group addressed Full Callout declaration, to "yes" as the process only allows declaration changes in case of human errors. This case was not a human error, the fault was in the Callout host application simulator. The following updates have been done: "Feature compliance report" table outcomes from "Not Supported" to "N/A" for "Group Addressed Full Callout without request for Terminal Receipt message and without request for User Receipt message" and for "Using current selected group during Full Callout".

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