

# TETRA Interoperability Certificate

## Airbus D&S, Tetra System Rel 6.0, SwMI – Motorola Solutions, TPG2200, Terminal

Berlin, July 2017

Latest Certified SwMI SW Release:	Rel 6.0	Latest Certified Terminal SW Release:	MR16.4
Latest Certified SwMI HW Release:	M98F (DXTip)	Latest Certified Terminal HW Release:	PTPA512NE

ISCTI (Istituto Superiore delle Comunicazioni e delle Tecnologie dell'Informazione) certifies, that the Airbus D&S, Tetra System Rel 6.0, SwMI and the Motorola Solutions, TPG2200, 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 single test session between Airbus D&S and Motorola Solutions on July 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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**Date of issue**  
**25 July 2017**

**v 1**

## Certified features

Tetra Association TTR001-01:Core	
Registration	Certified
Group Management	Certified
Group call	-
Individual call	-
Status messages	Certified
Pre-emptive Priority Call	-
Emergency Call	-
Cell Re-selection	Certified
PSTN interconnect	-
MS-ISDN Numbering	-
In Call Signalling	-
Subscriber Class Procedures	Certified
Common Secondary Control Channels	Certified
BS Fallback Operation	Certified
Energy Economy Mode	Certified
Transmit Inhibit	Certified
Mixed band operation	-
Tetra Association TTR001-02:SDS	
SDS Type 1, 2 or 3	Certified
SDS-TL	Certified
Store and Forward	Certified
Multipart SDS	-
Tetra Association TTR001-04:Auth	
SwMI Initiated (non-mutual) Authentication	Certified
SwMI Initiated Authentication made Mutual by MS	Certified

<b>TEI Query</b>	Certified
<b>Tetra Association TTR001-11:AIE</b>	
<b>Security Class 2 Air Interface Encryption</b>	Certified
<b>Security Class 3 Air Interface Encryption</b>	Certified
<b>Security Class 3G Air Interface Encryption</b>	-
<b>Management of CMG and GSKO</b>	-
<b>Key Status demand</b>	-
<b>Change of Security Class for Fallback operation</b>	Certified
<b>Change of Security Class (other than for Fallback operation)</b>	-
<b>Key Management for Secure Direct Mode Operation</b>	-
<b>Tetra Association TTR001-13:ED</b>	
<b>Enable and temporary disable of an MS</b>	Certified
<b>Permanent disable of an MS</b>	Certified
<b>Tetra Association TTR001-21:Callout</b>	
<b>Full Callout</b>	-
<b>Simple Callout</b>	Certified
<b>Interaction with other services and events</b>	Certified
<b>Callout Test and Callout Availability</b>	Certified
<b>Callout Text and Callout Pre-Coded Status</b>	Certified
<b>Storage of Callout Information</b>	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
<b>Certified</b>	All required tests have been performed and passed
<b>Partial</b>	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
<b>Passed</b>	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
<b>Incomplete</b>	Not all Mandated tests (as per TIC-RT indication) have been executed
<b>Failed</b>	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
<b>Complete</b>	All mandated tests associated to the feature or sub-feature have been executed
<b>Spot</b>	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
<b>Regression</b>	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
<b>Regression on spot</b>	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.
<b>Witnessed</b>	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
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<b>Not supported</b>	The SwMI and/or MS do not support the minimum features required to verify these items
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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](https://tandcca.com/interoperability/interoperability-certificates-and-test-reports/) 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	<b>Airbus D&amp;S, Berlin, July 2017</b>			
SwMI Type	Airbus TETRA System Rel6.0 + Test Callout application			
SwMI HW Release	M98F (DXTip)			
SwMI SW Release	Rel 6.0			
Terminal Type	TPG2200			
Terminal HW Release	PTPA512NE			
Terminal SW Release	MR16.4			
TIP Specs and TIP Compliance Test Plans				

<b>Core</b>	TTR001-01 v6.2.2 IOP001-01 v3.2.1 TIC-RT001-01 v2.7.1			
<b>SDS</b>	TTR001-02 v2.1.3 IOP001-02 v2.1.0 TIC-RT001-02 v2.2.1			
<b>Auth</b>	TTR001-04 v3.0.0 IOP001-04 v2.0.0 TIC-RT001-04 v2.3.0			
<b>AIE</b>	TTR001-11 v3.0.3 IOP001-11 v3.1.0 TIC-RT001-11 v3.3.1			
<b>ED</b>	TTR001-13 v2.1.0 IOP001-13 v1.0.0 TIC-RT001-13 v1.5.1			
<b>COPA</b>	TTR001-21 v2.1.1 IOP001-21 v2.1.0 TIC-RT001-21 v1.1.4			
<b>SwMI Paladine Callout Application Sw Release</b>	Callout Tool v1.1.0 Rev 10			
<b>SwMI Test bench Callout Application SW Release</b>	Motorola VAT tool v2.0.1.6			

## Feature compliance report

Test Session	Airbus D&S Berlin July 2017			
<b>Core - Fully Witnessed Testing</b>				
Registration	PASSED Complete 5_pass_of_5			
Initial registration	PASSED Complete 2_pass_of_2			
SwMI initiated location updating	PASSED Complete 1_pass_of_1			
LA timer based Periodic location updating	PASSED Complete 1_pass_of_1			
De-registration	PASSED Complete 1_pass_of_1			
Group Management	PASSED Complete 4_pass_of_4			
Single group attachment	PASSED Complete 2_pass_of_2			
Multiple group attachment	Not Supported			
MS initiated group detachment	PASSED Complete 1_pass_of_1			
SwMI initiated group management	PASSED Complete 1_pass_of_1			
Group call				
Normal group call	Not Supported			
Late entry	Not Supported			
Priority Group scanning	Not Supported			
Call setup modifications	Not Supported			
Resource Queuing based on Call Priority	Not Supported			
Broadcast Call	Not Supported			



Limited coverage notification	Not Supported			
Individual call				
Simplex individual call	Not Supported			
Duplex individual call	Not Supported			
Call setup modifications	Not Supported			
Resource Queuing based on Call Priority	Not Supported			
Indication of imminent call disconnection	Not Supported			
Status messages	PASSED Complete 1_pass_of_1			
Individual addressed Status transfer	PASSED Complete 1_pass_of_1			
Group addressed Status transfer	Not Supported			
Pre-emptive Priority Call				
Pre-emption of Resources	Not Supported			
Pre-emption of Busy Users	Not Supported			
Emergency Call				
Pre-emption of Resources	Not Supported			
Pre-emption of Busy Users	Not Supported			
Call setup modifications	Not Supported			
Call disconnection by non-call owner	Not Supported			
Cell Re-selection	PASSED Complete 1_pass_of_1			
Undeclared	PASSED Complete 1_pass_of_1			
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			
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	PASSED Complete 5_pass_of_5			
Cell Selection based on Subscriber Class	PASSED Complete 1_pass_of_1			
Subscriber Class Delivery during Location Update	PASSED Complete 1_pass_of_1			
Use of Subscriber Class Preference Levels	PASSED Complete 3_pass_of_3			
Common Secondary Control Channels	PASSED Complete 7_pass_of_7			
One C-SCCH per cell	PASSED Complete 5_pass_of_5			
Two C-SCCH per cell	PASSED Complete 2_pass_of_2			
Three C-SCCH per cell	PASSED Complete 2_pass_of_2			
BS Fallback Operation	PASSED Complete 6_pass_of_6			
Switch to/from BS Fallback Operation	PASSED Complete 2_pass_of_2			
Roaming to avoid a cell in BS Fallback Operation	PASSED Complete 2_pass_of_2			
Services with BS Fallback Operation	PASSED Complete 1_pass_of_1			
Ignore a cell in Fallback Operation	PASSED Complete 1_pass_of_1			
User selectable Fallback behaviour	Not Supported			
Energy Economy Mode	PASSED Complete 4_pass_of_4			
Energy Economy Mode Operation	PASSED Complete 4_pass_of_4			
Transmit Inhibit	PASSED Complete 7_pass_of_7			
TXI Activation & De-Activation	PASSED Complete 3_pass_of_3			
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			
<b>SDS - Fully Witnessed Testing</b>				
SDS Type 1, 2 or 3	PASSED Complete 3_pass_of_3			
SDS Type 1	PASSED Complete 1_pass_of_1			
SDS Type 2	PASSED Complete 1_pass_of_1			
SDS Type 3	PASSED Complete 1_pass_of_1			
SDS-TL	PASSED Complete 3_pass_of_3			
Individually Addressed	Not Supported			
Group Addressed	Not Supported			
Using MS-ISDN dialling	Not Supported			
SDS Reception	PASSED Complete 2_pass_of_2			
Using UCS2 coding scheme	PASSED Complete 1_pass_of_1			
Using 7-bit coding scheme	PASSED Complete 1_pass_of_1			
Using 8-bit Latin 1 coding scheme	PASSED Complete 1_pass_of_1			
Using 8-bit Latin 5 coding scheme	Not Supported			
Using 8-bit Latin 9 coding scheme	Complete			
Store and Forward	PASSED Complete 1_pass_of_1			
Individually Addressed	PASSED Complete 1_pass_of_1			
Group Addressed	Not Supported			
Multipart SDS				
Multipart SDS	Not Supported			
<b>Auth - Fully Witnessed Testing</b>				
SwMI Initiated (non-mutual) Authentication	PASSED Complete 3_pass_of_3			
Attach with authentication	PASSED Complete			

	1_pass_of_1			
Roaming with authentication	PASSED Complete 1_pass_of_1			
SwMI rejects MS during authentication	PASSED Complete 1_pass_of_1			
MS rejects SwMI during authentication	Not Supported			
SwMI Initiated Authentication made Mutual by MS	PASSED Complete 2_pass_of_2			
Attach with authentication	PASSED Complete 1_pass_of_1			
Roaming with authentication	PASSED Complete 1_pass_of_1			
TEI Query	PASSED Complete 1_pass_of_1			
TEI Query Operation	PASSED Complete 1_pass_of_1			
<b>AIE - Fully Witnessed Testing</b>				
Security Class 2 Air Interface Encryption	PASSED Complete 1_pass_of_1			
Location Updating and AI Signalling Protection	PASSED Complete 1_pass_of_1			
TM-SCK provisioning during location updating	Not Supported			
Communications between parties using encryption	Not Supported			
Communications between clear and encrypted parties	Not Supported			
Communications between encrypted parties on a channel designated to operate in clear	Not Supported			
OTAR of TM-SCK	Not Supported			
Change of TM-SCK	Not Supported			
Packet Data with Class 2 Air Interface Encryption	Not Supported			
Tolerance of SwMI not supporting SCK-OTAR	Not Supported			
Security Class 3 Air Interface Encryption	PASSED Complete 5_pass_of_5			
Clear Location Updating and AI Signalling Protection	PASSED Complete 2_pass_of_2			

Encrypted Location Updating and AI Signalling Protection	PASSED Complete 2_pass_of_2			
DCK Forwarding at MS request	PASSED Complete 1_pass_of_1			
DCK Forwarding by SwMI (without MS request)	Not Supported			
DCK Retrieval	PASSED Complete 1_pass_of_1			
CCK provisioning during location updating	PASSED Complete 2_pass_of_2			
Communications between parties using encryption	Not Supported			
Communications between clear and encrypted parties	Not Supported			
Communications between encrypted parties on a channel designated to operate in clear	Not Supported			
OTAR of CCK	Not Supported			
Change of CCK	Not Supported			
Packet Data with Class 3 Air Interface Encryption	PASSED Complete 1_pass_of_1			
Security Class 3G Air Interface Encryption				
GCK Key Association setting	Not Supported			
Communications between parties using encryption	Not Supported			
Communications between clear and encrypted parties	Not Supported			
OTAR of GCK	Not Supported			
Change of GCK	Not Supported			
Management of CMG and GSKO				
OTAR and change of CMG and GSKO	Not Supported			
Key Status demand				
SCK Key Status demand	Not Supported			
GCK Key Status demand	Not Supported			
GSKO Key Status demand	Not Supported			
Change of Security Class for Fallback operation	PASSED Complete 3_pass_of_3			
Seamless change to Security Class 2 for BS Fallback operation	Not Supported			
Non-seamless change to Security Class 2 for BS Fallback operation	PASSED Complete 3_pass_of_3			

Provisioning of TM-SCK for fallback to Security Class 2 operation	Not Supported			
Change to Security Class 1 for BS Fallback operation	Not Supported			
Change of Security Class (other than for Fallback operation)				
Change between Security Class 3 and Security Class 3G	Not Supported			
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			
<b>ED - Fully Witnessed Testing</b>				
Enable and temporary disable of an MS	PASSED Complete 8_pass_of_8			
Enable and temporary disable of an MS without authentication	Not Supported			
Enable and temporary disable of an MS with authentication	PASSED Complete 4_pass_of_4			
Registration of a temporary disabled MS	PASSED Complete 2_pass_of_2			
Rejection of applicable invalid enable/disable requests	PASSED Complete 1_pass_of_1			
Removable SIMs do not affect the subscriber or equipment that has been enabled/disabled	Not Supported			
Disabling of an MS during a call or while on the PDCH	PASSED Complete 1_pass_of_1			
Permanent disable of an MS	PASSED Complete 3_pass_of_3			
Permanent disable of an MS with authentication	PASSED Complete 2_pass_of_2			
Permanently Disabled MS cannot send air interface signalling	PASSED Complete 1_pass_of_1			
<b>Callout - Fully Witnessed Testing</b>				
Full Callout				

Individually Addressed Full Callout with request for Terminal Receipt message and with request for User Receipt message	Not Supported			
Group Addressed Full Callout without request for Terminal Receipt message and without request for User Receipt message	Not Supported			
Using current selected group during Full Callout	Not Supported			
Full Callout with immediate change to Callout Group	Not Supported			
Full Callout with change to Callout Group on non-rejecting user response	Not Supported			
Full Callout with rejecting User Receipt message	Not Supported			
Full Callout with timeout for User Receipt message	Not Supported			
Callout Incident Information messages	Not Supported			
Group Call to Callout Group	Not Supported			
End of Full Callout	Not Supported			
Simple Callout	PASSED Complete 6_pass_of_6			
Individually Addressed Callout with request for Terminal Receipt message and with request for User Receipt message	PASSED Complete 1_pass_of_1			
Individually Addressed Callout with request for Terminal Receipt message and without request for User Receipt message	PASSED Complete 1_pass_of_1			
Group Addressed Callout without request for Terminal Receipt message and without request for User Receipt message	PASSED Complete 1_pass_of_1			
Group Addressed Callout without request for Terminal Receipt message and with request for User Receipt message	PASSED Complete 1_pass_of_1			
Simple Callout with rejecting User Receipt message	PASSED Complete 1_pass_of_1			
Simple Callout with timeout for User Receipt message	PASSED Complete 1_pass_of_1			
Interaction with other services and events	PASSED Complete 10_pass_of_10			

Interaction with previous Callout	PASSED Complete 1_pass_of_1			
Interaction with emergency call	Not Supported			
Interaction with non-emergency call	Not Supported			
Interaction with data and status	PASSED Complete 8_pass_of_8			
Interaction with local services	Not Supported			
Manual exit	PASSED Complete 1_pass_of_1			
Callout Test and Callout Availability	PASSED Complete 4_pass_of_4			
Callout Test	PASSED Complete 2_pass_of_2			
Callout Availability	PASSED Complete 2_pass_of_2			
Callout Availability request	PASSED Complete 1_pass_of_1			
Callout Text and Callout Pre-Coded Status	PASSED Complete 9_pass_of_9			
Callout Text	PASSED Complete 2_pass_of_2			
Concatenated Callout Text using Callout Specific Concatenation	PASSED Complete 1_pass_of_1			
Concatenated Callout Text using mSDS	Not Supported			
Callout Pre-Coded Status	PASSED Complete 6_pass_of_6			
Storage of Callout Information	PASSED Complete 2_pass_of_2			
Viewing Callout information from previous Callout(s)	PASSED Complete 1_pass_of_1			
Deletion of Callout information from previous Callout(s)	PASSED Complete 1_pass_of_1			