

TETRA Interoperability Certificate

Trunked Mode Operation

**Airbus Defence & Space, Airbus TETRA System Rel7.0 – SwMI
Motorola Solutions, ST7500 – Terminal**

Test Session #187a, hosted by Motorola Solutions in Berlin, May 2022

Latest Certified SwMI SW Release:	Rel 7.0	Latest Certified MS SW Release:	MR2021.3
Latest Certified SwMI HW Release:	M98F (DXTip)	Latest Certified MS HW Release:	PTM412DER

ISCTI (Istituto Superiore delle Comunicazioni e delle Tecnologie dell'Informazione) certifies, that the Airbus Defence & Space Airbus TETRA System Rel7.0 SwMI and the Motorola Solutions ST7500 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.

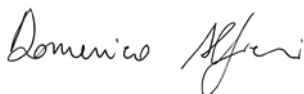
A feature is "Certified" when it has been successfully tested during the last test session with one of the testing method described in the TETRA process document part 1 (TPD001-01).

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 Airbus Defence & Space 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.

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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	Certified
PSTN interconnect	Certified
MS-ISDN Numbering	Certified
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	Certified
Tetra Association TTR001-02: SDS	
SDS Type 1, 2 or 3	Certified
SDS-TL	Certified
Store and Forward	-
Multipart SDS	Certified
Tetra Association TTR001-04: AUTH	
SwMI Initiated (non-mutual) Authentication	Certified
SwMI Initiated Authentication made Mutual by MS	Certified
TEI Query using "Authentication downlink"	Certified
HW, SW version, TEI and/or Model number	-
Tetra Association TTR001-11: AIE	
Security Class 2 Air Interface Encryption	Certified
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	Certified
Change of Security Class (other than for Fallback operation)	-
Key Management for Secure Direct Mode Operation	-
Tetra Association TTR001-13: ED	
Enable and temporary disable of an MS	Certified
Permanent disable of an MS	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
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	Airbus Defence & Space
SwMI Model	Airbus TETRA System Rel7.0
SwMI HW Release	M98F (DXTip)
SwMI SW Release	Rel 7.0
MS Manufacturer	Motorola Solutions
MS Model	ST7500
MS HW Release	PTM412DER
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
AUTH	TTR001-04 v3.2.0 IOP001-04 v2.1.0 TIC-RT001-04 v234
AIE	TTR001-09 v3.1.0 IOP001-09 v3.2.0 TIC-RT001-09 v337
ED	TTR001-13 v2.1.0 IOP001-13 v1.0.0 TIC-RT001-13 v153

Feature compliance report

Core - Fully Witnessed Testing	
Registration	PASSED Complete 6_pass_of_6
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 2_pass_of_2
De-registration	PASSED Complete 1_pass_of_1
Group Management	PASSED Complete 15_pass_of_15
Single group attachment	PASSED Complete 7_pass_of_7
Multiple group attachment	PASSED Complete 6_pass_of_6
MS initiated group detachment	PASSED Complete 2_pass_of_2
SwMI initiated group detachment	PASSED Complete 2_pass_of_2
SwMI initiated group attachment	PASSED Complete 2_pass_of_2
Group call	PASSED Complete 13_pass_of_13
Normal group call	PASSED Complete 6_pass_of_6
Late entry	PASSED Complete 1_pass_of_1
Priority Group scanning	PASSED Complete 3_pass_of_3
Call setup modifications	Not Supported
Resource Queuing based on Call Priority	PASSED Complete 1_pass_of_1

Broadcast Call	PASSED Complete 1_pass_of_1
Limited coverage notification	PASSED Complete 1_pass_of_1
Individual call	PASSED Complete 11_pass_of_11
Simplex individual call	PASSED Complete 4_pass_of_4
Duplex individual call	PASSED Complete 2_pass_of_2
Call setup modifications	PASSED Complete 3_pass_of_3
Resource Queuing based on Call Priority	PASSED Complete 2_pass_of_2
Indication of imminent call disconnection	Not Supported
Status messages	PASSED Complete 3_pass_of_3
Individual addressed Status transfer	Not Supported
Group addressed Status transfer	PASSED Complete 3_pass_of_3
Pre-emptive Priority Call	PASSED Complete 5_pass_of_5
Pre-emption of Resources	PASSED Complete 2_pass_of_2
Pre-emption of Busy Users	PASSED Complete 3_pass_of_3
Emergency Call	PASSED Complete 6_pass_of_6
Pre-emption of Resources	PASSED Complete 3_pass_of_3
Pre-emption of Busy Users	PASSED Complete 1_pass_of_1
Call setup modifications	PASSED Complete 2_pass_of_2
Call disconnection by non-call owner	Not Supported
Cell Re-selection	PASSED Complete 19_pass_of_19
Undeclared	PASSED Complete 1_pass_of_1

Unannounced	PASSED Complete 7_pass_of_7
Announced - with Call Restoration	PASSED Complete 7_pass_of_7
Announced - without Call Restoration	PASSED Complete 4_pass_of_4
Expedited	Not Supported
Graceful Service Degradation Mode (GSDM)	Not Supported
Single-site operation	Not Supported
PSTN interconnect	PASSED Complete 5_pass_of_5
TETRA Originated Call	PASSED Complete 2_pass_of_2
PSTN Originated Call	PASSED Complete 1_pass_of_1
DTMF over-dial	Not Supported
Emergency Telephone Calls	PASSED Complete 2_pass_of_2
MS-ISDN Numbering	PASSED Complete 3_pass_of_3
MS ISDN - Voice Call	PASSED Complete 2_pass_of_2
MS-ISDN Status	PASSED Complete 1_pass_of_1
In Call Signalling	
Slow Signalling on Traffic Channel (SACCH)	Not Supported
Fast Signalling on Traffic Channel (FACCH)	Not Supported
Subscriber Class Procedures	PASSED Complete 10_pass_of_10
Cell Selection based on Subscriber Class	PASSED Complete 4_pass_of_4
Subscriber Class Delivery during Location Update	PASSED Complete 3_pass_of_3
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 9_pass_of_9
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
Roaming to and from a cell in BS Fallback operation offering some services	Not Supported
Services with BS Fallback Operation	PASSED Complete 4_pass_of_4
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 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	PASSED Complete 4_pass_of_4
Mixed band operation, inter-cell	PASSED Complete 4_pass_of_4
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
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 17_pass_of_17
Individually Addressed	PASSED Complete 3_pass_of_3
Group Addressed	PASSED Complete 4_pass_of_4
Using MS-ISDN dialling	PASSED Complete 4_pass_of_4
SDS Reception	PASSED Complete 8_pass_of_8
Using UCS2 coding scheme	PASSED Complete 2_pass_of_2
Using 7-bit coding scheme	PASSED Complete 2_pass_of_2
Using 8-bit Latin 1 coding scheme	PASSED Complete 2_pass_of_2
Using 8-bit Latin/Cyrillic coding scheme	Not Supported
Using 8-bit Latin 9 coding scheme	Not Supported
Store and Forward	
Individually Addressed	Not Supported
Group Addressed	Not Supported
Multipart SDS	PASSED Complete 2_pass_of_2
Multipart SDS	PASSED Complete 2_pass_of_2
Auth - Fully Witnessed Testing	
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 using "Authentication downlink"	PASSED Complete 1_pass_of_1
TEI Query using "Authentication downlink" Operation	PASSED Complete 1_pass_of_1
HW, SW version, TEI and/or Model number	
Transfer of HW, SW version, TEI and/or Model number	Not Supported
AIE - Fully Witnessed Testing	
Security Class 2 Air Interface Encryption	PASSED Complete 3_pass_of_3
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	PASSED Complete 2_pass_of_2
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 19_pass_of_19
Clear Location Updating and AI Signalling Protection	PASSED Complete 3_pass_of_3
Encrypted Location Updating and AI Signalling Protection	PASSED Complete 7_pass_of_7
DCK Forwarding at MS request	PASSED Complete 3_pass_of_3
DCK Forwarding by SwMI (without MS request)	PASSED Complete 2_pass_of_2
DCK Retrieval	PASSED Complete 1_pass_of_1

CCK provisioning during location updating	PASSED Complete 4_pass_of_4
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	Not Supported
OTAR of CCK	PASSED Complete 2_pass_of_2
Change of CCK	PASSED Complete 3_pass_of_3
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 4_pass_of_4
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	PASSED Complete 1_pass_of_1
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
ED - Fully Witnessed Testing	
Enable and temporary disable of an MS	PASSED Complete 12_pass_of_12
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 5_pass_of_5
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