

# TETRA Interoperability Certificate

## Trunked Mode Operation

**Airbus Defence & Space, Airbus TETRA System Rel7.0 – SwMI  
Motorola Solutions, TPG2200 – Terminal**

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

<b>Latest Certified SwMI SW Release:</b>	Rel 7.0	<b>Latest Certified MS SW Release:</b>	MR2021.3
<b>Latest Certified SwMI HW Release:</b>	M98F (DXTip)	<b>Latest Certified MS HW Release:</b>	PTPA512NE

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 TPG2200 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.

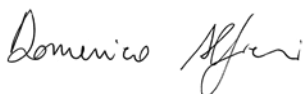
A feature is "Certified" when it has been successfully tested during the last test session with one of the testing method described in the TETRA process document part 1 (TPD001-01).

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.

**IOP Test engineer**



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## 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
<b>-</b>	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
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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
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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
<b>Not Supported</b>	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

<b>SwMI Manufacturer</b>	Airbus Defence & Space
<b>SwMI Model</b>	Airbus TETRA System Rel7.0
<b>SwMI HW Release</b>	M98F (DXTip)
<b>SwMI SW Release</b>	Rel 7.0
<b>MS Manufacturer</b>	Motorola Solutions
<b>MS Model</b>	TPG2200
<b>MS HW Release</b>	PTPA512NE
<b>MS SW Release</b>	MR2021.3

## Document references

<b>Core</b>	TTR001-01 v6.4.0 IOP001-01 v3.4.0 TIC-RT001-01 v279
<b>SDS</b>	TTR001-02 v2.1.3 IOP001-02 v2.2.0 TIC-RT001-02 v225
<b>AUTH</b>	TTR001-04 v3.2.0 IOP001-04 v2.1.0 TIC-RT001-04 v234
<b>AIE</b>	TTR001-09 v3.1.0 IOP001-09 v3.2.0 TIC-RT001-09 v337
<b>ED</b>	TTR001-13 v2.1.0 IOP001-13 v1.0.0 TIC-RT001-13 v153
<b>Callout</b>	TTR001-21 v2.1.1 IOP001-21 v2.4.0 TIC-RT001-21 v119

## Certified features

Tetra Association TTR001-01: Core	
<b>Registration</b>	Certified
<b>Group Management</b>	Certified
<b>Group call</b>	-
<b>Individual call</b>	-
<b>Status messages</b>	Certified
<b>Pre-emptive Priority Call</b>	-
<b>Emergency Call</b>	-
<b>Cell Re-selection</b>	Certified
<b>PSTN interconnect</b>	-
<b>MS-ISDN Numbering</b>	-
<b>In Call Signalling</b>	-
<b>Subscriber Class Procedures</b>	Certified
<b>Common Secondary Control Channels</b>	Certified
<b>BS Fallback Operation</b>	Certified
<b>Energy Economy Mode</b>	Certified
<b>Transmit Inhibit</b>	Certified
<b>Mixed band operation</b>	-
Tetra Association TTR001-02: SDS	
<b>SDS Type 1, 2 or 3</b>	Certified
<b>SDS-TL</b>	Certified
<b>Store and Forward</b>	-
<b>Multipart SDS</b>	Certified
Tetra Association TTR001-04: AUTH	
<b>SwMI Initiated (non-mutual) Authentication</b>	Certified
<b>SwMI Initiated Authentication made Mutual by MS</b>	Certified
<b>TEI Query using "Authentication downlink"</b>	Certified
<b>HW, SW version, TEI and/or Model number</b>	-
Tetra Association TTR001-11: AIE	
<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</b>	Certified

<b>operation</b>	
<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
<b>Graceful Service Degradation Mode (GSDM)</b>	Certified

## Feature compliance report

Core - Fully Witnessed Testing	
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
<b>Group Management</b>	<b>PASSED Complete 4_pass_of_4</b>
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 detachment	PASSED Complete 1_pass_of_1
SwMI initiated group attachment	PASSED Complete 1_pass_of_1
<b>Group call</b>	
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
<b>Individual call</b>	
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 4_pass_of_4
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)	PASSED Complete 3_pass_of_3
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	PASSED Complete 6_pass_of_6
Cell Selection based on Subscriber Class	PASSED Complete 2_pass_of_2
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
Roaming to and from a cell in BS Fallback operation offering some services	Not Supported
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 12_pass_of_12
Individually Addressed	PASSED Complete 3_pass_of_3
Group Addressed	PASSED Complete 1_pass_of_1
Using MS-ISDN dialling	Not Supported
SDS Reception	PASSED Complete 6_pass_of_6
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	PASSED Complete 2_pass_of_2
Store and Forward	
Individually Addressed	Not Supported
Group Addressed	Not Supported
Multipart SDS	PASSED Complete 1_pass_of_1
Multipart SDS	PASSED Complete 1_pass_of_1

<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 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
<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
<b>Security Class 3G Air Interface Encryption</b>	
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
<b>Management of CMG and GSKO</b>	
OTAR and change of CMG and GSKO	Not Supported
<b>Key Status demand</b>	
SCK Key Status demand	Not Supported
GCK Key Status demand	Not Supported
GSKO Key Status demand	Not Supported
<b>Change of Security Class for Fallback operation</b>	<b>PASSED Complete 3_pass_of_3</b>
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

Callout - Fully Witnessed Testing	
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 10_pass_of_10
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	PASSED Complete 1_pass_of_1
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
Graceful Service Degradation Mode (GSDM)	PASSED Complete 2_pass_of_2
Graceful Service Degradation Mode (GSDM)	PASSED Complete 2_pass_of_2