

TETRA Interoperability Certificate

Airbus DS, Tetra System Rel6.0, SwMI – Airbus DS, TH1n, Terminal

Helsinki, September 2014

Latest Certified SwMI SW Release:	Rel6.0 SCD2.0	Latest Certified Terminal SW Release:	7.03-8
Latest Certified SwMI HW Release:	M98F (DXTip)	Latest Certified Terminal HW Release:	RC-47

ISCTI (Istituto Superiore delle Comunicazioni e delle Tecnologie dell'Informazione) certifies, that the Airbus DS, Tetra System Rel6.0, SwMI and the Airbus DS, TH1n, 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 DS and Airbus DS on September 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.

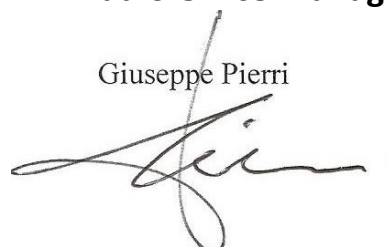
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v 1

Certified features

Tetra Association TTR001-01:Core	
Registration	Partial
Group Management	Partial
Group call	Partial
Individual call	Partial
Status messages	Partial
Pre-emptive Priority Call	Partial
Emergency Call	Partial
Cell Re-selection	Partial
PSTN interconnect	Partial
MS-ISDN Numbering	Partial
In Call Signalling	Partial
Subscriber Class Procedures	Partial
Common Secondary Control Channels	Certified
BS Fallback Operation	Partial
Energy Economy Mode	Partial
Transmit Inhibit	Certified
Mixed band operation	Partial

Tetra Association TTR001-06:AIM	
Registration	Certified
Group Management	Certified
Group Call	-
Individual Call	Partial
Status SDS Message	Partial
Tetra Association TTR001-11:AIE	
Security Class 2 Air Interface Encryption	Certified
Security Class 3 Air Interface Encryption	Partial
Security Class 3G Air Interface Encryption	-
Change 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 TTR001-19:LIP	
Location Information Protocol	Partial

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	Airbus DS Helsinki September 2014	Cassidian Helsinki June 2013		
SwMI Type	TETRA System Rel 6.0	Tetra System Rel 6.0		
SwMI HW Release	M98F (DXTip)	M98F (DXTip)		
SwMI SW Release	Rel6.0 SCD2.0	Rel6.0 SCD2.0		
Terminal Type	TH1n	TH1n		
Terminal HW Release	RC-47	RC-36		
Terminal SW Release	7.03-8	7.03-3		
TIP Specs and TIP Compliance Test Plans				
Core	TTR001-01 v6.0.0 IOP001-01 v3.0.0 TIC-RT001-01 v261	TTR001-01 v6.0.0 IOP001-01 v3.0.0 TIC-RT001-01 v2.5.9		
AIM	TTR001-01 v2.0.1 IOP001-01 v1.0.0 TIC-RT001-01 v117	-		

AIE	TTR001-11 v3.0.3 IOP001-11 v3.0.2 TIC-RT001-11 v325	TTR001-11 v3.0.3 IOP001-11 v3.0.2 TIC-RT001-11 v3.2.3		
LIP	TTR001-19 v1.0.0 IOP001-19 v1.0.0 TIC-RT001-19 v105	-		

Feature compliance report

Test Session	Airbus DS Helsinki September 2014	Cassidian Helsinki June 2013		
Core				
Registration	Incomplete 0_pass_of_5	PASSED Complete 5_pass_of_5		
ITSI attach	Incomplete 0_pass_of_1	PASSED Complete 1_pass_of_1		
SwMI initiated location updating	Incomplete 0_pass_of_1	PASSED Complete 1_pass_of_1		
LA timer based Periodic location updating	Incomplete 0_pass_of_2	PASSED Complete 2_pass_of_2		
De-registration	Incomplete 0_pass_of_1	PASSED Complete 1_pass_of_1		
Group Management	Incomplete 0_pass_of_15	PASSED Complete 15_pass_of_15		
Single group attachment	Incomplete 0_pass_of_7	PASSED Complete 7_pass_of_7		
Multiple group attachment	Incomplete 0_pass_of_6	PASSED Complete 6_pass_of_6		
MS initiated group detachment	Incomplete 0_pass_of_2	PASSED Complete 2_pass_of_2		
SwMI initiated group management	Incomplete 0_pass_of_2	PASSED Complete 2_pass_of_2		
Group call	Incomplete 0_pass_of_14	PASSED Complete 13_pass_of_13		
Normal group call	Incomplete 0_pass_of_6	PASSED Complete 6_pass_of_6		
Late entry	Incomplete 0_pass_of_1	PASSED Complete 1_pass_of_1		
Priority Group scanning	Incomplete 0_pass_of_3	PASSED Complete 3_pass_of_3		
Call setup modifications	Not Supported	Not Supported		
Resource Queuing based on Call Priority	Incomplete 0_pass_of_1	PASSED Complete 1_pass_of_1		
Broadcast Call	Incomplete 0_pass_of_2	PASSED Complete 1_pass_of_1		

Limited coverage notification	Incomplete 0_pass_of_1	PASSED Complete 1_pass_of_1		
Individual call	Incomplete 0_pass_of_13	PASSED Complete 12_pass_of_12		
Simplex individual call	Incomplete 0_pass_of_4	PASSED Complete 4_pass_of_4		
Duplex individual call	Incomplete 0_pass_of_2	PASSED Complete 2_pass_of_2		
Call setup modifications	Incomplete 0_pass_of_4	PASSED Complete 3_pass_of_3		
Resource Queuing based on Call Priority	Incomplete 0_pass_of_2	PASSED Complete 2_pass_of_2		
Indication of imminent call disconnection	Incomplete 0_pass_of_1	PASSED Complete 1_pass_of_1		
Status messages	Incomplete 0_pass_of_4	PASSED Complete 4_pass_of_4		
Individual addressed Status transfer	Incomplete 0_pass_of_1	PASSED Complete 1_pass_of_1		
Group addressed Status transfer	Incomplete 0_pass_of_3	PASSED Complete 3_pass_of_3		
Pre-emptive Priority Call	Incomplete 0_pass_of_4	PASSED Complete 3_pass_of_3		
Pre-emption of Resources	Not Supported	Not Supported		
Pre-emption of Busy Users	Incomplete 0_pass_of_4	PASSED Complete 3_pass_of_3		
Emergency Call	Incomplete 1_pass_of_6	PASSED Complete 6_pass_of_6		
Pre-emption of Resources	Incomplete 0_pass_of_2	PASSED Complete 2_pass_of_2		
Pre-emption of Busy Users	Incomplete 0_pass_of_1	PASSED Complete 1_pass_of_1		
Call setup modifications	Incomplete 0_pass_of_2	PASSED Complete 2_pass_of_2		
Call disconnection by non-call owner	PASSED Complete 1_pass_of_1	PASSED Complete 1_pass_of_1		
Cell Re-selection	Incomplete 0_pass_of_21	PASSED Complete 21_pass_of_21		
Undeclared	Incomplete 0_pass_of_1	PASSED Complete 1_pass_of_1		
Unannounced	Incomplete 0_pass_of_3	PASSED Complete 3_pass_of_3		
Announced - with Call Restoration	Incomplete 0_pass_of_11	PASSED Complete 11_pass_of_11		
Announced - without Call Restoration	Incomplete 0_pass_of_4	PASSED Complete 4_pass_of_4		
Expedited	Incomplete 0_pass_of_2	PASSED Complete 2_pass_of_2		

PSTN interconnect	Incomplete 0_pass_of_6	PASSED Complete 6_pass_of_6		
TETRA Originated Call	Incomplete 0_pass_of_2	PASSED Complete 2_pass_of_2		
PSTN Originated Call	Incomplete 0_pass_of_1	PASSED Complete 1_pass_of_1		
DTMF over-dial	Incomplete 0_pass_of_1	PASSED Complete 1_pass_of_1		
Emergency Telephone Calls	Incomplete 0_pass_of_2	PASSED Complete 2_pass_of_2		
MS-ISDN Numbering	Incomplete 0_pass_of_4	PASSED Complete 4_pass_of_4		
MS ISDN - Voice Call	Incomplete 0_pass_of_2	PASSED Complete 2_pass_of_2		
MS-ISDN Status	Incomplete 0_pass_of_2	PASSED Complete 2_pass_of_2		
In Call Signalling	Incomplete 0_pass_of_8	PASSED Complete 8_pass_of_8		
Slow Signalling on Traffic Channel (SACCH)	Incomplete 0_pass_of_4	PASSED Complete 4_pass_of_4		
Fast Signalling on Traffic Channel (FACCH)	Incomplete 0_pass_of_4	PASSED Complete 4_pass_of_4		
Subscriber Class Procedures	Incomplete 0_pass_of_10	PASSED Complete 9_pass_of_9		
Cell Selection based on Subscriber Class	Incomplete 0_pass_of_4	PASSED Complete 3_pass_of_3		
Subscriber Class Delivery during Location Update	Incomplete 0_pass_of_3	PASSED Complete 3_pass_of_3		
Use of Preferred Subscriber Classes	Incomplete 0_pass_of_3	PASSED Complete 3_pass_of_3		
Common Secondary Control Channels	PASSED Complete 7_pass_of_7	Incomplete 0_pass_of_7		
One C-SCCH per cell	PASSED Complete 4_pass_of_4	Incomplete 0_pass_of_4		
Two C-SCCH per cell	PASSED Complete 3_pass_of_3	Incomplete 0_pass_of_3		
Three C-SCCH per cell	PASSED Complete 2_pass_of_2	Incomplete 0_pass_of_2		
BS Fallback Operation	Incomplete 2_pass_of_11	Incomplete 8_pass_of_14		
Switch to/from BS Fallback Operation	Incomplete 0_pass_of_2	PASSED Complete 2_pass_of_2		
Roaming to avoid a cell in BS Fallback Operation	PASSED Complete 2_pass_of_2	Incomplete 0_pass_of_6		
Services with BS Fallback Operation	Incomplete 0_pass_of_7	PASSED Complete 6_pass_of_6		
Ignore a cell in Fallback Operation	Not Supported	Incomplete 0_pass_of_7		

User selectable Fallback behaviour	Not Supported	Incomplete 0_pass_of_7		
Energy Economy Mode	Incomplete 0_pass_of_7	Incomplete 0_pass_of_10		
Energy Economy Mode Operation	Incomplete 0_pass_of_7	Incomplete 0_pass_of_10		
Transmit Inhibit	PASSED Complete 9_pass_of_9	Incomplete 0_pass_of_4		
TXI Activation & De-Activation	PASSED Complete 4_pass_of_4	Incomplete 0_pass_of_4		
TXI Activation & De-Activation with TxI Status available to the Dispatcher	PASSED Complete 4_pass_of_4	Incomplete 0_pass_of_2		
Receipt of group addressed service during TXI	PASSED Complete 1_pass_of_1	PASSED Complete 4_pass_of_4		
Mixed band operation	Incomplete 0_pass_of_4	Incomplete 0_pass_of_10		
Mixed band operation, inter-cell	Incomplete 0_pass_of_4	Incomplete 0_pass_of_4		
Mixed band operation, intra-cell	Not Supported	Incomplete 0_pass_of_4		
Mixed band operation, Full	Not Supported	Incomplete 0_pass_of_2		
Air Interface Migration				
Registration	PASSED Complete 3_pass_of_3	-		
Migrating	PASSED Complete 3_pass_of_3	-		
Group management	PASSED Complete 1_pass_of_1	-		
Local group attachment on Foreign SwMI	PASSED Complete 1_pass_of_1	-		
Foreign group attachment	Not Supported	-		

Group call		-		
Group call to local group on foreign SwMI	PASSED Complete 1_pass_of_1	-		
Group call to foreign group	Not Supported	-		
Individual call	Incomplete 1_pass_of_4	-		
SSI/TSI addressed	Incomplete 0_pass_of_1	-		
FSSN addressed	Incomplete 0_pass_of_1	-		
MS-ISDN addressed	Incomplete 1_pass_of_2	-		
Status/SDS message	Incomplete 0_pass_of_4	-		
Individually addressed SDS	Incomplete 0_pass_of_1	-		
Group addressed SDS	Incomplete 0_pass_of_1	-		
Individually addressed Status	Incomplete 0_pass_of_1	-		
Group addressed Status	Incomplete 0_pass_of_1	-		
Air Interface Encryption				
Security Class 2 Air Interface Encryption	PASSED Complete 2_pass_of_2	Incomplete 0_pass_of_2		
Location Updating and AI Signalling Protection	PASSED Complete 1_pass_of_1	Incomplete 0_pass_of_1		
TM-SCK provisioning during location updating	Not Supported	Not Supported		
Communications between parties using encryption	PASSED Complete 1_pass_of_1	Incomplete 0_pass_of_1		
Communications between clear and encrypted parties	Not Supported	Not Supported		
Communications between encrypted parties on a channel	Not Supported	Not Supported		

designated to operate in clear				
OTAR of TM-SCK	Not Supported	Not Supported		
Change of TM-SCK	Not Supported	Not Supported		
Packet Data with Class 2 Air Interface Encryption	Not Supported	Not Supported		
Security Class 3 Air Interface Encryption	Incomplete 0_pass_of_18	Incomplete 16_pass_of_18		
Clear Location Updating and AI Signalling Protection	Incomplete 0_pass_of_3	Incomplete 9_pass_of_10		
Encrypted Location Updating and AI Signalling Protection	Incomplete 0_pass_of_6	PASSED Complete 3_pass_of_3		
DCK Forwarding at MS request	Incomplete 0_pass_of_3	PASSED Complete 1_pass_of_1		
DCK Forwarding by SwMI (without MS request)	Incomplete 0_pass_of_1	PASSED Complete 1_pass_of_1		
DCK Retrieval	Incomplete 0_pass_of_1	Incomplete 4_pass_of_5		
CCK provisioning during location updating	Incomplete 0_pass_of_4	PASSED Complete 2_pass_of_2		
Communications between parties using encryption	Incomplete 0_pass_of_2	PASSED Complete 3_pass_of_3		
Communications between clear and encrypted parties	Incomplete 0_pass_of_3	PASSED Complete 2_pass_of_2		
Communications between encrypted parties on a channel designated to operate in clear	Incomplete 0_pass_of_2	PASSED Complete 2_pass_of_2		
OTAR of CCK	Incomplete 0_pass_of_2	PASSED Complete 3_pass_of_3		
Change of CCK	Incomplete 0_pass_of_3	Incomplete 0_pass_of_1		
Packet Data with Class 3 Air Interface Encryption	Incomplete 0_pass_of_1	Incomplete 16_pass_of_18		
Security Class 3G Air Interface				

Encryption				
GCK Key Association setting	Not Supported	Not Supported		
Communications between parties using encryption	Not Supported	Not Supported		
Communications between clear and encrypted parties	Not Supported	Not Supported		
OTAR of GCK	Not Supported	Not Supported		
Change of GCK	Not Supported	Not Supported		
Management of CMG and GSKO				
OTAR and change of CMG and GSKO	Not Supported	Not Supported		
Key Status demand				
SCK Key Status demand	Not Supported	Not Supported		
GCK Key Status demand	Not Supported	Not Supported		
GSKO Key Status demand	Not Supported	Not Supported		
Change of Security Class for Fallback operation	PASSED Complete 4_pass_of_4	Incomplete 0_pass_of_4		
Seamless change to Security Class 2 for BS Fallback operation	Not Supported	Not Supported		
Non-seamless change to Security Class 2 for BS Fallback operation	PASSED Complete 3_pass_of_3	Incomplete 0_pass_of_3		
Provisioning of TM-SCK for fallback to Security Class 2 operation	Not Supported	Not Supported		
Change to Security Class 1 for BS Fallback operation	PASSED Complete 1_pass_of_1	Incomplete 0_pass_of_1		

Change of Security Class (other than for Fallback operation)				
Change between Security Class 3 and Security Class 3G	Not Supported	Not Supported		
Change between Security Class 2 and Security Class 3	Not Supported	Not Supported		
Change from Security Class 3G to Security Class 2	Not Supported	Not Supported		
Key Management for Secure Direct Mode Operation				
OTAR of DM-SCK	Not Supported	Not Supported		
Change of DM-SCK	Not Supported	Not Supported		
LIP				
Location Information Protocol	Incomplete 8_pass_of_17	-		
LIP over SDS	Incomplete 4_pass_of_10	-		
LIP over Packet Data	Not Supported	-		
Time based reporting	Incomplete 1_pass_of_5	-		
Distance based reporting - NOT TESTABLE	Not Supported	-		
Reporting using Long reports	Incomplete 0_pass_of_1	-		
Reporting Enable & Disable	PASSED Complete 2_pass_of_2	-		
Temporary reporting control	PASSED Complete 1_pass_of_1	-		
Trigger modification	Incomplete 0_pass_of_1	-		
Immediate Location Reporting	PASSED Complete 1_pass_of_1	-		

Reporting Lifetimes	Not Supported	-		
Error Reporting	Incomplete 0_pass_of_1	-		