

DMO TETRA Interoperability Certificate

Direct Mode Operation Gateway

Airbus, CM5000, Gateway

Jyväskylä , June 2019

Latest Certified CM5000 SW Release:	ER01.012.050
Latest Certified CM5000 HW Release:	R0112007

ISCTI (Istituto Superiore delle Comunicazioni e delle Tecnologie dell'Informazione) certifies that the Airbus CM5000000 has been subject to interoperability testing for the "certified" features listed on second page of this certificate with the following DM Terminals Airbus Defence & Space TH1n, Airbus Defence & Space TH9, Airbus Defence & Space Tactilon Dabat, and the Airbus Defence & Space Tetra System Rel6.0 SwMI 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 Defence & Space and Airbus on June 2019. 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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02/08/2019

v2

Certified features

CM5000 Test Session Jyväskylä , June 2019 Airbus CM5000	Airbus Defence & Space Tetra System Rel6.0	Airbus Defence & Space TH1n	Airbus Defence & Space TH9	Airbus Defence & Space Tactilon Dabat
Hardware	DXTip	RC-47	RC-46	TD-1
Software	W6 9.6-0	8.23-4	8.23-4	TD_1_2_3_tm1_ 8_23_5
Feature TTR002-02 Gateway				
Registration	Partial	Partial	Partial	Partial
Presence Signal	Certified	Certified	Certified	Certified
Usage Restriction Types	Partial	Partial	Partial	Partial
Individual Call	-	-	-	-
Group Call	Certified	Certified	Certified	Certified
Status	Partial	Partial	Partial	Partial
SDS-TL	Partial	Partial	Partial	Partial
Pre-emption	Partial	Partial	Partial	Partial
Feature TTR002-05 AIE Gateway				
DMO AIE Encryption	Partial	Partial	Partial	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' results depend on a set of sub-feature, 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 white background.

The verdict assigned to a sub-feature as showed on Page 2, is derived by the Feature compliance report tables.

Verdict	Definition
Certified	All required tests have been performed and passed.
Partial	Not all the required test cases 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 verdict assigned to a sub-feature is the result of the 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 or sub-feature
	The Result is not relevant (or needed) to verify the SwMI and/or Gateway features

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 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-feature cannot be tested. The following table describes meaning of the used abbreviation:

Indication	Definition
Not supported	The SwMI and/or DMO Terminal and/or Gateway do not support the minimum features required to verify these items

ISCTI has made every effort to ensure that every result have 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 the SwMI, the CM5000 and the

DM Terminals under test in the test session and the used TIP specifications, Test Plans, and TIC-RTs.

This Certificate and Certificates from previous test sessions are available on the TCCA website (<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 Place/Date	Host, Jyväskylä , June 2019
SwMI Type	Tetra System Rel6.0
SwMI HW Release	DXTip
SwMI SW Release	W6 9.6-0
DM Gateway Type	Airbus CM5000
DM Gateway HW release	R0112007
DM Gateway SW release	ER01.012.050
DM Terminal 1 Type	Airbus Defence & Space TH1n
DM Terminal 1 HW release	RC-47
DM Terminal 1 SW release	8.23-4
DM Terminal 2 Type	Airbus Defence & Space TH9
DM Terminal 2 HW release	RC-46
DM Terminal 2 SW release	8.23-4
DM Terminal 3 Type	Airbus Defence & Space Tactilon Dabat
DM Terminal 3 HW release	TD-1
DM Terminal 3 SW release	TD_1_2_3_tm1_8_23_5
TIP Specs and TIP Compliance Test Plans	

Gateway	TTR002-02 v120 IOP002-02 v120 TIC-RT002-02 v120
AIE Gateway	TTR005-02 v100 IOP002-05 v110 TIC-RT002-05-2 v109

Feature compliance report

CM5000 Test Session Host, June 2019 Airbus CM5000	Airbus Defence & SpaceTetra System Rel6.0	Airbus Defence & Space TH1n	Airbus Defence & Space TH9	Airbus Defence & Space Tactilon Dabat
Feature TTR002-02 Gateway – fully witnessed testing				
Registration	Incomplete 0 pass of 2	Incomplete 0 pass of 2	Incomplete 0 pass of 2	Incomplete 0 pass of 2
Registration	Incomplete 0 pass of 2	Incomplete 0 pass of 2	Incomplete 0 pass of 2	Incomplete 0 pass of 2
Presence Signal	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1
Presence Signal	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1
Usage Restriction Types	Incomplete 3 pass of 5	Incomplete 3 pass of 5	Incomplete 3 pass of 5	Incomplete 3 pass of 5
Single Address	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1
Two Addresses	Incomplete 0 pass of 1	Incomplete 0 pass of 1	Incomplete 0 pass of 1	Incomplete 0 pass of 1
Three addresses	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1
Single MNI	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1
Complying with URT Validity Time	Incomplete 0 pass of 1	Incomplete 0 pass of 1	Incomplete 0 pass of 1	Incomplete 0 pass of 1
Individual Call	Not supported	Not supported	Not supported	Not supported
DMO to TMO individual call	Not supported	Not supported	Not supported	Not supported
TMO to DMO individual call	Not supported	Not supported	Not supported	Not supported

CM5000 Test Session Host, June 2019 Airbus CM5000	Airbus Defence & SpaceTetra System Rel6.0	Airbus Defence & Space TH1n	Airbus Defence & Space TH9	Airbus Defence & Space Tactilon Dabat
Individual Call Release	Not supported	Not supported	Not supported	Not supported
Individual call release with DM-GATE as DMO slave	Not supported	Not supported	Not supported	Not supported
Individual call release with DM-GATE as DMO master	Not supported	Not supported	Not supported	Not supported
Group Call	PASSED Complete 16 pass of 16	PASSED Complete 16 pass of 16	PASSED Complete 16 pass of 16	PASSED Complete 16 pass of 16
DMO to TMO group call	PASSED Complete 6 pass of 6	PASSED Complete 6 pass of 6	PASSED Complete 6 pass of 6	PASSED Complete 6 pass of 6
TMO to DMO group call	PASSED Complete 3 pass of 3	PASSED Complete 3 pass of 3	PASSED Complete 3 pass of 3	PASSED Complete 3 pass of 3
Call Maintenance (including Changeover)	PASSED Complete 7 pass of 7	PASSED Complete 7 pass of 7	PASSED Complete 7 pass of 7	PASSED Complete 7 pass of 7
Status	Incomplete 3 pass of 9	Incomplete 3 pass of 9	Incomplete 3 pass of 9	Incomplete 3 pass of 9
Group addressed Status	Incomplete 2 pass of 8	Incomplete 2 pass of 8	Incomplete 2 pass of 8	Incomplete 2 pass of 8
Individually addressed Status	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1
SDS-TL	Incomplete 2 pass of 12	Incomplete 2 pass of 12	Incomplete 2 pass of 12	Incomplete 2 pass of 12
Group Addressed intra- MNI SDS-TL, unacknowledged, no reports	Incomplete 1 pass of 7	Incomplete 1 pass of 7	Incomplete 1 pass of 7	Incomplete 1 pass of 7
Open TSI Addressed SDS- TL, unacknowledged, no reports	Incomplete 0 pass of 1	Incomplete 0 pass of 1	Incomplete 0 pass of 1	Incomplete 0 pass of 1
Individually Addressed intra-MNI SDS-TL, unacknowledged	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1

CM5000 Test Session Host, June 2019 Airbus CM5000	Airbus Defence & SpaceTetra System Rel6.0	Airbus Defence & Space TH1n	Airbus Defence & Space TH9	Airbus Defence & Space Tactilon Dabat
Individually Addressed inter-MNI SDS-TL, unacknowledged	Incomplete 0 pass of 1	Incomplete 0 pass of 1	Incomplete 0 pass of 1	Incomplete 0 pass of 1
Multipart SDS-TL	Incomplete 0 pass of 2	Incomplete 0 pass of 2	Incomplete 0 pass of 2	Incomplete 0 pass of 2
Pre-emption	Incomplete 3 pass of 5	Incomplete 3 pass of 5	Incomplete 3 pass of 5	Incomplete 3 pass of 5
Pre-emption of DMO terminal	PASSED Complete 2 pass of 2	PASSED Complete 2 pass of 2	PASSED Complete 2 pass of 2	PASSED Complete 2 pass of 2
Pre-emption of Gateway	Incomplete 1 pass of 3	Incomplete 1 pass of 3	Incomplete 1 pass of 3	Incomplete 1 pass of 3
Feature TTR002-05 AIE Gateway – fully witnessed testing				
DMO AIE Encryption	Incomplete 5 pass of 10	Incomplete 5 pass of 10	Incomplete 5 pass of 10	Incomplete 5 pass of 10
Encrypted Group Calls	PASSED Complete 2 pass of 2	PASSED Complete 2 pass of 2	PASSED Complete 2 pass of 2	PASSED Complete 2 pass of 2
Encrypted Individual Calls	Not Supported	Not Supported	Not Supported	Not Supported
Encrypted Status messages	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1	PASSED Complete 1 pass of 1
Pre-emption of encrypted activity	Incomplete 0 pass of 1	Incomplete 0 pass of 1	Incomplete 0 pass of 1	Incomplete 0 pass of 1
Handling mismatched keys	Incomplete 0 pass of 4	Incomplete 0 pass of 4	Incomplete 0 pass of 4	Incomplete 0 pass of 4
Encrypted SDS-TL messages	PASSED Complete 2 pass of 2	PASSED Complete 2 pass of 2	PASSED Complete 2 pass of 2	PASSED Complete 2 pass of 2

Annex A

List of Revisions of Certificate		
Date	Ver.	Modification
01 August 2019	1	First published version
02 August 2019	2	updating: Due to a misunderstanding has been used a wrong Rep/Gw manufacturer name. In v2 manufacturer name has changed from Cleartone to Airbus