

DMO TETRA Interoperability Certificate

Hytera, MT680 Plus, Repeater

Bad Mnder , September 2015

Latest Certified Repeater SW Release:	V3.07.12.095
Latest Certified Repeater HW Release:	126800

ISCTI (Istituto Superiore delle Comunicazioni e delle Tecnologie dell'Informazione) certifies that the Hytera MT680 Plus DM Repeater has been subject to interoperability testing for the features listed in the "Certified features" tables of this certificate with the following DM Terminals Hytera, MT680 Plus and Hytera Z1p, PT580H Plus in accordance with the TETRA Interoperability Profiles, TIP compliance Test Plan and related TETRA interoperability requirement tables.

The certificate features of each DM Terminal acting as master during testing is highlighted in light blue.

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).

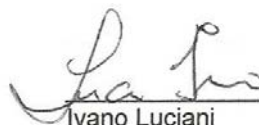
A breakdown into the feature details is given in the Feature Compliance Overview section of this certificate.

This certificate has been issued following a fully witnessed test session on September 2015. 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:
19 November 2015

V1

Certified features

DMO Test Session Bad Mnder, September 2015 Hytera MT680 Plus	Hytera MT680 Plus	Hytera Z1p	Hytera PT580H Plus
Features			
TTR002-03 DMO Repeater			
Presence Signal	Certified	Certified	Certified
DM-MS authorization	Certified	Certified	Certified
Group Call	Certified	Certified	Certified
Individual Call	Certified	Certified	Certified
Call Maintenance	Certified	Certified	Certified
Status messages	-	-	-
SDS TL	-	-	-

DMO Test Session Bad Mnder, September 2015 Hytera MT680 Plus	Hytera MT680 Plus	Hytera Z1p	Hytera PT580H Plus
Features			
TTR002-03 DMO Repeater			
Presence Signal	Certified	Certified	Certified
DM-MS authorization	Certified	Certified	Certified
Group Call	Certified	Certified	Certified
Individual Call	Certified	Certified	Certified
Call Maintenance	Certified	Certified	Certified
Status messages	-	-	-
SDS TL	-	-	-

DMO Test Session Bad Mnder, September 2015 Hytera MT680 Plus	Hytera MT680 Plus	Hytera Z1p	Hytera PT580H Plus
Features			
TTR002-03 DMO Repeater			
Presence Signal	Certified	Certified	Certified
DM-MS authorization	Certified	Certified	Certified
Group Call	Certified	Certified	Certified
Individual Call	Certified	Certified	Certified
Call Maintenance	Certified	Certified	Certified
Status messages	-	-	-
SDS TL	-	-	-

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 certified DM Terminal acting as master during testing is highlighted in light blue. The main features are indicated with grey background and the associated sub-features (or second level features) have white 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 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 outcome is derived from 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.

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 annex B.

Regression	Only a selection of the mandatory the test cases associated to the feature is 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. Un-witnessed passed tests 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 Repeater and/or MS do not support the minimum features required to verify these items
	The Result is not relevant (or needed) to verify the Repeater and/or MS features

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 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 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 Place/Date	Hytera Bad Mnder September 2015
Repeater Type	Hytera MT680 Plus
Repeater HW release	126800
Repeater SW release	V3.07.12.095
DM Terminal 1 Type	Hytera MT680 Plus
DM Terminal 1 HW release	126800
DM Terminal 1 SW release	V3.07.12.095
DM Terminal 2 Type	Hytera Z1p
DM Terminal 2 HW release	130000
DM Terminal 2 SW release	V3.07.12.095
DM Terminal 3 Type	Hytera PT580H Plus
DM Terminal 3 HW release	115801
DM Terminal 3 SW release	V3.07.12.095



TIP Specs and TIP Compliance Test Plans	
Repeater	TTR002-03 v110 IOP002-03 v100 TIC-RT002-03 v112

Feature compliance report

DMO Test Session Bad Mnder, September 2015 Hytera MT680 Plus	Hytera MT680 Plus	Hytera Z1p	Hytera PT580H Plus
TTR002-03 Repeater			
Presence Signal	Spot 0_pass_of_5	Spot 0_pass_of_5	Spot 0_pass_of_5
Presence Signal on free channel	Spot 0_pass_of_1	Spot 0_pass_of_1	Spot 0_pass_of_1
Presence Signal on occupied channel	Spot 0_pass_of_4	Spot 0_pass_of_4	Spot 0_pass_of_4
DM-MS authorization	PASSED Spot 2_pass_of_6	PASSED Spot 2_pass_of_6	PASSED Spot 2_pass_of_6
Usage Restriction Type	PASSED Spot 2_pass_of_6	PASSED Spot 2_pass_of_6	PASSED Spot 2_pass_of_6
Validity Time	Not Supported	Not Supported	Not Supported
Group call	Spot 0_pass_of_4	Spot 0_pass_of_4	Spot 0_pass_of_4
Intra-MNI Group Calls	Spot 0_pass_of_2	Spot 0_pass_of_2	Spot 0_pass_of_2
Inter-MNI Group Calls	Spot 0_pass_of_2	Spot 0_pass_of_2	Spot 0_pass_of_2
Individual Call	PASSED Spot 2_pass_of_7	PASSED Spot 2_pass_of_7	PASSED Spot 2_pass_of_7
Individual Call with Presence Check	Spot 0_pass_of_5	Spot 0_pass_of_5	Spot 0_pass_of_5
Individual call without Presence Check	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2
Call Maintenance	PASSED Spot 3_pass_of_19	PASSED Spot 3_pass_of_19	PASSED Spot 3_pass_of_19
Changeover	Spot	Spot	Spot

DMO Test Session Bad Mnder, September 2015 Hytera MT680 Plus	Hytera MT680 Plus	Hytera Z1p	Hytera PT580H Plus
	0_pass_of_2	0_pass_of_2	0_pass_of_2
Pre-emption	PASSED Spot 2_pass_of_6	PASSED Spot 2_pass_of_6	PASSED Spot 2_pass_of_6
Procedures in Occupation	Spot 0_pass_of_6	Spot 0_pass_of_6	Spot 0_pass_of_6
Procedures in Reservation	PASSED Spot 1_pass_of_7	PASSED Spot 1_pass_of_7	PASSED Spot 1_pass_of_7
Status Messages			
Intra-MNI Status Calls	Not_Supported	Not_Supported	Not_Supported
Individual Status Calls	Not_Supported	Not_Supported	Not_Supported
Group Status call	Not_Supported	Not_Supported	Not_Supported
SDS TL	FAILED Complete 2_pass_of_4	FAILED Complete 2_pass_of_4	FAILED Complete 2_pass_of_4
SDS-TL messages	FAILED Complete 2_pass_of_4	FAILED Complete 2_pass_of_4	FAILED Complete 2_pass_of_4

Note: The DM-MSA under test is highlighted in light blue background.

DMO Test Session Bad Mnder, September 2015 Hytera MT680 Plus	Hytera MT680 Plus	Hytera Z1p	Hytera PT580H Plus
TTR002-03 Repeater			
Presence Signal	Spot 0_pass_of_5	Spot 0_pass_of_5	Spot 0_pass_of_5
Presence Signal on free channel	Spot 0_pass_of_1	Spot 0_pass_of_1	Spot 0_pass_of_1
Presence Signal on occupied channel	Spot 0_pass_of_4	Spot 0_pass_of_4	Spot 0_pass_of_4
DM-MS authorization	PASSED Spot 2_pass_of_6	PASSED Spot 2_pass_of_6	PASSED Spot 2_pass_of_6
Usage Restriction Type	PASSED Spot 2_pass_of_6	PASSED Spot 2_pass_of_6	PASSED Spot 2_pass_of_6
Validity Time	Not_Supported	Not_Supported	Not_Supported
Group call	Spot 0_pass_of_4	Spot 0_pass_of_4	Spot 0_pass_of_4
Intra-MNI Group Calls	Spot 0_pass_of_2	Spot 0_pass_of_2	Spot 0_pass_of_2
Inter-MNI Group Calls	Spot 0_pass_of_2	Spot 0_pass_of_2	Spot 0_pass_of_2
Individual Call	PASSED Spot 2_pass_of_7	PASSED Spot 2_pass_of_7	PASSED Spot 2_pass_of_7
Individual Call with Presence Check	Spot 0_pass_of_5	Spot 0_pass_of_5	Spot 0_pass_of_5
Individual call without Presence Check	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2
Call Maintenance	PASSED Spot 3_pass_of_19	PASSED Spot 3_pass_of_19	PASSED Spot 3_pass_of_19
Changeover	Spot 0_pass_of_2	Spot 0_pass_of_2	Spot 0_pass_of_2
Pre-emption	PASSED Spot	PASSED Spot	PASSED Spot

DMO Test Session Bad Mnder, September 2015 Hytera MT680 Plus	Hytera MT680 Plus	Hytera Z1p	Hytera PT580H Plus
	2_pass_of_6	2_pass_of_6	2_pass_of_6
Procedures in Occupation	Spot 0_pass_of_6	Spot 0_pass_of_6	Spot 0_pass_of_6
Procedures in Reservation	PASSED Spot 1_pass_of_7	PASSED Spot 1_pass_of_7	PASSED Spot 1_pass_of_7
Status Messages			
Intra-MNI Status Calls	Not_Supported	Not_Supported	Not_Supported
Individual Status Calls	Not_Supported	Not_Supported	Not_Supported
Group Status call	Not_Supported	Not_Supported	Not_Supported
SDS TL	FAILED Complete 2_pass_of_4	FAILED Complete 2_pass_of_4	FAILED Complete 2_pass_of_4
SDS-TL messages	FAILED Complete 2_pass_of_4	FAILED Complete 2_pass_of_4	FAILED Complete 2_pass_of_4

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DMO Test Session Bad Mnder, September 2015 Hytera MT680 Plus	Hytera MT680 Plus	Hytera Z1p	Hytera PT580H Plus
TTR002-03 Repeater			
Presence Signal	Spot 0_pass_of_5	Spot 0_pass_of_5	Spot 0_pass_of_5
Presence Signal on free channel	Spot 0_pass_of_1	Spot 0_pass_of_1	Spot 0_pass_of_1
Presence Signal on occupied channel	Spot 0_pass_of_4	Spot 0_pass_of_4	Spot 0_pass_of_4
DM-MS authorization	PASSED Spot 2_pass_of_6	PASSED Spot 2_pass_of_6	PASSED Spot 2_pass_of_6
Usage Restriction Type	PASSED Spot 2_pass_of_6	PASSED Spot 2_pass_of_6	PASSED Spot 2_pass_of_6
Validity Time	Not_Supported	Not_Supported	Not_Supported
Group call	Spot 0_pass_of_4	Spot 0_pass_of_4	Spot 0_pass_of_4
Intra-MNI Group Calls	Spot 0_pass_of_2	Spot 0_pass_of_2	Spot 0_pass_of_2
Inter-MNI Group Calls	Spot 0_pass_of_2	Spot 0_pass_of_2	Spot 0_pass_of_2
Individual Call	PASSED Spot 2_pass_of_7	PASSED Spot 2_pass_of_7	PASSED Spot 2_pass_of_7
Individual Call with Presence Check	Spot 0_pass_of_5	Spot 0_pass_of_5	Spot 0_pass_of_5
Individual call without Presence Check	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2
Call Maintenance	PASSED Spot 3_pass_of_19	PASSED Spot 3_pass_of_19	PASSED Spot 3_pass_of_19

DMO Test Session Bad Mnder, September 2015 Hytera MT680 Plus	Hytera MT680 Plus	Hytera Z1p	Hytera PT580H Plus
Changeover	Spot 0_pass_of_2	Spot 0_pass_of_2	Spot 0_pass_of_2
Pre-emption	PASSED Spot 2_pass_of_6	PASSED Spot 2_pass_of_6	PASSED Spot 2_pass_of_6
Procedures in Occupation	Spot 0_pass_of_6	Spot 0_pass_of_6	Spot 0_pass_of_6
Procedures in Reservation	PASSED Spot 1_pass_of_7	PASSED Spot 1_pass_of_7	PASSED Spot 1_pass_of_7
Status Messages			
Intra-MNI Status Calls	Not_Supported	Not_Supported	Not_Supported
Individual Status Calls	Not_Supported	Not_Supported	Not_Supported
Group Status call	Not_Supported	Not_Supported	Not_Supported
SDS TL	FAILED Complete 2_pass_of_4	FAILED Complete 2_pass_of_4	FAILED Complete 2_pass_of_4
SDS-TL messages	FAILED Complete 2_pass_of_4	FAILED Complete 2_pass_of_4	FAILED Complete 2_pass_of_4

Note: The DM-MSA under test is highlighted in light blue background.