

# DMO TETRA Interoperability Certificate

## Motorola Solutions, MTP850FuG, Repeater

Krakow, October 2014

Latest Certified Repeater SW Release:	MR5.14.11
Latest Certified Repeater HW Release:	PT912BG

ISCTI (Istituto Superiore delle Comunicazioni e delle Tecnologie dell'Informazione) certifies that the Motorola MTP850FuG 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 Airbus DS TH1n, and Motorola MTM800FuG and MTP850FuG 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.

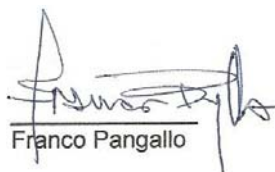
A feature is "Certified" when it has been successfully tested during the last test session with one of the testing method described in the TETRA process document part 1 (TPD001-01).

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 October 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.

NOTE: the MTP850FuG Repeater was tested as Repeater Type 1A only.

**IOP test engineer**



Franco Pangallo

**Radio Office Manager**

Giuseppe Pierri



## Certified features

<b>DMO Test Session Krakow, October 2014 Motorola MTP850FuG</b>	<b>Motorola MTM800FuG</b>	<b>Motorola MTP850FuG</b>	<b>Airbus DS TH1n</b>
<b>Features</b>			
<b>TTR002-03 DMO Repeater</b>			
<b>Presence Signal</b>	Certified	Certified	Partial
<b>DM-MS authorization</b>	Certified	Certified	Certified
<b>Group Call</b>	Certified	Certified	Partial
<b>Individual Call</b>	Certified	Certified	Partial
<b>Call Maintenance</b>	Certified	Certified	Partial
<b>Status messages</b>	Certified	Certified	Partial
<b>SDS TL</b>	Certified	Certified	Partial
<b>TTR002-05 DMO AIE - Rep</b>			
<b>DMO AIE Encryption - via Repeater Type 1A</b>	Certified	Certified	Partial
<b>DMO AIE Encryption - via Repeater Type 1B</b>			

<b>DMO Test Session Krakow, October 2014 Motorola MTP850FuG</b>	<b>Motorola MTM800FuG</b>	<b>Motorola MTP850FuG</b>	<b>Airbus DS TH1n</b>
<b>Features</b>			
<b>TTR002-03 DMO Repeater</b>			
<b>Presence Signal</b>	Certified	Certified	Partial
<b>DM-MS authorization</b>	Certified	Certified	Certified
<b>Group Call</b>	Certified	Certified	Partial
<b>Individual Call</b>	Certified	Certified	Partial
<b>Call Maintenance</b>	Certified	Certified	Partial
<b>Status messages</b>	Certified	Certified	Partial
<b>SDS TL</b>	Certified	Certified	Partial
<b>TTR002-05 DMO AIE - Rep</b>			
<b>DMO AIE Encryption - via Repeater Type 1A</b>	Certified	Certified	Partial
<b>DMO AIE Encryption - via Repeater Type 1B</b>			

<b>DMO Test Session Krakow, October 2014 Motorola MTP850FuG</b>	<b>Motorola MTM800FuG</b>	<b>Motorola MTP850FuG</b>	<b>Airbus DS TH1n</b>
<b>Features</b>			
<b>TTR002-03 DMO Repeater</b>			
<b>Presence Signal</b>	Partial	Partial	Certified
<b>DM-MS authorization</b>	Certified	Certified	Certified
<b>Group Call</b>	Partial	Partial	Certified
<b>Individual Call</b>	-	-	-
<b>Call Maintenance</b>	Partial	Partial	Certified
<b>Status messages</b>	Partial	Partial	Partial
<b>SDS TL</b>	Partial	Partial	Certified
<b>TTR002-05 DMO AIE - Rep</b>			
<b>DMO AIE Encryption - via Repeater Type 1A</b>	Partial	Partial	Certified
<b>DMO AIE Encryption - via Repeater Type 1B</b>			

## 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
<b>Certified</b>	All required tests have been performed and passed.
<b>Partial</b>	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.

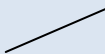
The outcome is derived from the verdict assigned to a sub-feature is the result of the analysis of the test case results listed in the Test Report. The verdict assigned to each sub-feature is derived from one or several test case results or test steps result, the TETRA Interoperability requirement tables (TIC-RTs) indicate the link between sub-features and test cases for the certified set of equipment capabilities (see Test Report).

Verdict	Definition
<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.
<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.

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
<b>Complete</b>	All mandated tests associated to the feature have been executed.
<b>Spot</b>	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.
<b>Regression</b>	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
<b>Regression on spot</b>	The regression method has been applied on the verdicts based on the spot testing method.
<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. 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
<b>Not supported</b>	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

<b>Test Session Place/Date</b>	<b>Motorola, Krakow October 2014</b>
<b>Repeater Type</b>	Motorola MTP850FuG
<b>Repeater HW release</b>	PT912BG
<b>Repeater SW release</b>	MR5.14.11
<b>DM Terminal 1 Type</b>	Motorola MTM800FuG
<b>DM Terminal 1 HW release</b>	MT953CG
<b>DM Terminal 1 SW release</b>	MR10.6.11
<b>DM Terminal 2 Type</b>	Motorola MTP850FuG
<b>DM Terminal 2 HW release</b>	PT912BG
<b>DM Terminal 2 SW release</b>	MR5.14.11
<b>DM Terminal 3 Type</b>	Airbus DS TH1n
<b>DM Terminal 3 HW release</b>	RC-47
<b>DM Terminal 3 SW release</b>	7.03-8



TIP Specs and TIP Compliance Test Plans	
<b>Repeater</b>	TTR002-03 v110 IOP002-03 v100 TIC-RT002-03 v112
<b>DAIE -Rep</b>	TTR002-05 v100 IOP002-05 v100 TIC-RT002-05-3_DAIE-Rep1 v106

## Feature compliance report

DMO Test Session Krakow, October 2014 Motorola MTP850FuG	Motorola MTM800FuG	Motorola MTP850FuG	Airbus DS TH1n
<b>TTR002-03 Repeater</b>			
<b>Presence Signal</b>	<b>PASSED Regression 1_pass_of_5</b>	<b>PASSED Regression 1_pass_of_5</b>	<b>Incomplete 3_pass_of_5</b>
Presence Signal on free channel	PASSED Complete 1_pass_of_1	PASSED Complete 1_pass_of_1	PASSED Complete 1_pass_of_1
Presence Signal on occupied channel	Regression 0_pass_of_4	Regression 0_pass_of_4	Incomplete 2_pass_of_4
<b>DM-MS authorization</b>	<b>PASSED Regression 1_pass_of_7</b>	<b>PASSED Regression 1_pass_of_7</b>	<b>PASSED Regression 1_pass_of_7</b>
Usage Restriction Type	PASSED Regression 1_pass_of_7	PASSED Regression 1_pass_of_7	PASSED Regression 1_pass_of_7
Validity Time	Not_Supported	Not_Supported	Not_Supported
<b>Group call</b>	<b>PASSED Regression 2_pass_of_4</b>	<b>PASSED Regression 2_pass_of_4</b>	<b>Incomplete 3_pass_of_4</b>
Intra-MNI Group Calls	Regression 0_pass_of_2	Regression 0_pass_of_2	Incomplete 1_pass_of_2
Inter-MNI Group Calls	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2

<b>Individual Call</b>	<b>PASSED Regression 5_pass_of_7</b>	<b>PASSED Complete 7_pass_of_7</b>	<b>Incomplete 4_pass_of_6</b>
Individual Call with Presence Check	PASSED Complete 5_pass_of_5	PASSED Complete 5_pass_of_5	PASSED Complete 4_pass_of_4
Individual call without Presence Check	Regression 0_pass_of_2	PASSED Complete 2_pass_of_2	Incomplete 0_pass_of_2
<b>Call Maintenance</b>	<b>PASSED Regression 7_pass_of_19</b>	<b>PASSED Regression 15_pass_of_19</b>	<b>Regression Incomplete 8_pass_of_19</b>
Changeover	Regression 0_pass_of_2	PASSED Complete 2_pass_of_2	Incomplete 0_pass_of_2
Pre-emption	Regression 0_pass_of_6	PASSED Complete 6_pass_of_6	Incomplete 0_pass_of_6
Procedures in Occupation	PASSED Regression 4_pass_of_6	PASSED Regression 4_pass_of_6	PASSED Regression 4_pass_of_6
Procedures in Reservation	PASSED Regression 3_pass_of_7	PASSED Regression 3_pass_of_7	Regression Incomplete 4_pass_of_7
<b>Status Messages</b>	<b>PASSED Regression 6_pass_of_14</b>	<b>PASSED Regression 12_pass_of_14</b>	<b>Incomplete 1_pass_of_14</b>
Intra-MNI Status Calls	PASSED Regression 6_pass_of_14	PASSED Regression 12_pass_of_14	Incomplete 1_pass_of_14
Individual Status Calls	Regression 0_pass_of_2	PASSED Complete 2_pass_of_2	Incomplete 0_pass_of_2

Group Status call	PASSED Regression 6_pass_of_12	PASSED Regression 10_pass_of_12	Incomplete 1_pass_of_12
<b>SDS TL</b>	<b>PASSED Regression 2_pass_of_4</b>	<b>PASSED Complete 4_pass_of_4</b>	<b>Incomplete 2_pass_of_4</b>
SDS-TL messages	PASSED Regression 2_pass_of_4	PASSED Complete 4_pass_of_4	Incomplete 2_pass_of_4
<b>TTR002-05 Repeater AIE</b>			
<b>DMO AIE Encryption - via Repeater Type 1A</b>	<b>PASSED Regression 3_pass_of_12</b>	<b>PASSED Regression 9_pass_of_12</b>	<b>Regression Incomplete 4_pass_of_12</b>
Encrypted Group Calls	Regression 0_pass_of_4	PASSED Regression 2_pass_of_4	Incomplete 1_pass_of_4
Encrypted Individual Calls	Regression 0_pass_of_4	PASSED Complete 4_pass_of_4	Incomplete 0_pass_of_4
Encrypted Status messages	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2
Pre-emption of encrypted activity	Regression 0_pass_of_2	PASSED Complete 2_pass_of_2	Incomplete 0_pass_of_2
Handling mismatched keys	PASSED Regression 1_pass_of_2	PASSED Regression 1_pass_of_2	PASSED Regression 1_pass_of_2
<b>DMO AIE Encryption - via Repeater Type 1B</b>			
Encrypted Group Calls			
Encrypted Individual Calls			
Encrypted Status messages			
Pre-emption of encrypted activity			

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

<b>DMO Test Session Krakow, October 2014 Motorola MTP850FuG</b>	<b>Motorola MTM800FuG</b>	<b>Motorola MTP850FuG</b>	<b>Airbus DS TH1n</b>
<b>TTR002-03 Repeater</b>			
<b>Presence Signal</b>	<b>PASSED Regression 1_pass_of_5</b>	<b>PASSED Regression 1_pass_of_5</b>	<b>Incomplete 3_pass_of_5</b>
Presence Signal on free channel	PASSED Complete 1_pass_of_1	PASSED Complete 1_pass_of_1	PASSED Complete 1_pass_of_1
Presence Signal on occupied channel	Regression 0_pass_of_4	Regression 0_pass_of_4	Incomplete 2_pass_of_4
<b>DM-MS authorization</b>	<b>PASSED Regression 1_pass_of_7</b>	<b>PASSED Regression 1_pass_of_7</b>	<b>PASSED Regression 1_pass_of_7</b>
Usage Restriction Type	PASSED Regression 1_pass_of_7	PASSED Regression 1_pass_of_7	PASSED Regression 1_pass_of_7
Validity Time	Not_Supported	Not_Supported	Not_Supported
<b>Group call</b>	<b>PASSED Regression 2_pass_of_4</b>	<b>PASSED Regression 2_pass_of_4</b>	<b>Incomplete 3_pass_of_4</b>
Intra-MNI Group Calls	Regression 0_pass_of_2	Regression 0_pass_of_2	Incomplete 1_pass_of_2

Inter-MNI Group Calls	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2
<b>Individual Call</b>	<b>PASSED Complete 7_pass_of_7</b>	<b>PASSED Regression 5_pass_of_7</b>	<b>Incomplete 4_pass_of_6</b>
Individual Call with Presence Check	PASSED Complete 5_pass_of_5	PASSED Complete 5_pass_of_5	PASSED Complete 4_pass_of_4
Individual call without Presence Check	PASSED Complete 2_pass_of_2	Regression 0_pass_of_2	Incomplete 0_pass_of_2
<b>Call Maintenance</b>	<b>PASSED Regression 15_pass_of_19</b>	<b>PASSED Regression 7_pass_of_19</b>	<b>Regression Incomplete 8_pass_of_19</b>
Changeover	PASSED Complete 2_pass_of_2	Regression 0_pass_of_2	Incomplete 0_pass_of_2
Pre-emption	PASSED Complete 6_pass_of_6	Regression 0_pass_of_6	Incomplete 0_pass_of_6
Procedures in Occupation	PASSED Regression 4_pass_of_6	PASSED Regression 4_pass_of_6	PASSED Regression 4_pass_of_6
Procedures in Reservation	PASSED Regression 3_pass_of_7	PASSED Regression 3_pass_of_7	Regression Incomplete 4_pass_of_7
<b>Status Messages</b>	<b>PASSED Regression 12_pass_of_14</b>	<b>PASSED Regression 6_pass_of_14</b>	<b>Incomplete 1_pass_of_14</b>
Intra-MNI Status Calls	PASSED Regression 12_pass_of_14	PASSED Regression 6_pass_of_14	Incomplete 1_pass_of_14

Individual Status Calls	PASSED Complete 2_pass_of_2	Regression 0_pass_of_2	Incomplete 0_pass_of_2
Group Status call	PASSED Regression 10_pass_of_12	PASSED Regression 6_pass_of_12	Incomplete 1_pass_of_12
<b>SDS TL</b>	<b>PASSED Complete 4_pass_of_4</b>	<b>PASSED Regression 2_pass_of_4</b>	<b>Incomplete 2_pass_of_4</b>
SDS-TL messages	PASSED Complete 4_pass_of_4	PASSED Regression 2_pass_of_4	Incomplete 2_pass_of_4
<b>TTR002-05 Repeater AIE</b>			
<b>DMO AIE Encryption - via Repeater Type 1A</b>	<b>PASSED Regression 9_pass_of_12</b>	<b>PASSED Regression 3_pass_of_12</b>	<b>Regression Incomplete 4_pass_of_12</b>
Encrypted Group Calls	PASSED Regression 2_pass_of_4	Regression 0_pass_of_4	Incomplete 1_pass_of_4
Encrypted Individual Calls	PASSED Complete 4_pass_of_4	Regression 0_pass_of_4	Incomplete 0_pass_of_4
Encrypted Status messages	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2
Pre-emption of encrypted activity	PASSED Complete 2_pass_of_2	Regression 0_pass_of_2	Incomplete 0_pass_of_2
Handling mismatched keys	PASSED Regression 1_pass_of_2	PASSED Regression 1_pass_of_2	PASSED Regression 1_pass_of_2
<b>DMO AIE Encryption - via Repeater Type 1B</b>			
Encrypted Group Calls			
Encrypted Individual Calls			

Encrypted Status messages			
Pre-emption of encrypted activity			
Handling mismatched keys			

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

<b>DMO Test Session Krakow, October 2014 Motorola MTP850FuG</b>	<b>Motorola MTM800FuG</b>	<b>Motorola MTP850FuG</b>	<b>Airbus DS TH1n</b>
<b>TTR002-03 Repeater</b>			
<b>Presence Signal</b>	<b>Incomplete 3_pass_of_5</b>	<b>Incomplete 3_pass_of_5</b>	<b>PASSED Complete 5_pass_of_5</b>
Presence Signal on free channel	PASSED Complete 1_pass_of_1	PASSED Complete 1_pass_of_1	PASSED Complete 1_pass_of_1
Presence Signal on occupied channel	Incomplete 2_pass_of_4	Incomplete 2_pass_of_4	PASSED Complete 4_pass_of_4
<b>DM-MS authorization</b>	<b>PASSED Complete 7_pass_of_7</b>	<b>PASSED Complete 7_pass_of_7</b>	<b>PASSED Complete 7_pass_of_7</b>
Usage Restriction Type	PASSED Complete 7_pass_of_7	PASSED Complete 7_pass_of_7	PASSED Complete 7_pass_of_7
Validity Time	Not_Supported	Not_Supported	Not_Supported
<b>Group call</b>	<b>Incomplete 3_pass_of_4</b>	<b>Incomplete 3_pass_of_4</b>	<b>PASSED Complete 4_pass_of_4</b>
Intra-MNI Group Calls	Incomplete	Incomplete	PASSED



<b>DMO Test Session Krakow, October 2014 Motorola MTP850FuG</b>	<b>Motorola MTM800FuG</b>	<b>Motorola MTP850FuG</b>	<b>Airbus DS TH1n</b>
	1_pass_of_2	1_pass_of_2	Complete 2_pass_of_2
Inter-MNI Group Calls	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2
<b>Individual Call</b>	<b>FAILED Incomplete 3_pass_of_6</b>	<b>FAILED Incomplete 3_pass_of_6</b>	<b>FAILED Complete 4_pass_of_5</b>
Individual Call with Presence Check	FAILED Complete 3_pass_of_4	FAILED Complete 3_pass_of_4	FAILED Complete 2_pass_of_3
Individual call without Presence Check	Incomplete 0_pass_of_2	Incomplete 0_pass_of_2	PASSED Complete 2_pass_of_2
<b>Call Maintenance</b>	<b>Incomplete 10_pass_of_19</b>	<b>Incomplete 10_pass_of_19</b>	<b>PASSED Complete 19_pass_of_19</b>
Changeover	Incomplete 0_pass_of_2	Incomplete 0_pass_of_2	PASSED Complete 2_pass_of_2
Pre-emption	Incomplete 0_pass_of_6	Incomplete 0_pass_of_6	PASSED Complete 6_pass_of_6
Procedures in Occupation	PASSED Complete 6_pass_of_6	PASSED Complete 6_pass_of_6	PASSED Complete 6_pass_of_6
Procedures in Reservation	Incomplete 6_pass_of_7	Incomplete 6_pass_of_7	PASSED Complete 7_pass_of_7

<b>DMO Test Session Krakow, October 2014 Motorola MTP850FuG</b>	<b>Motorola MTM800FuG</b>	<b>Motorola MTP850FuG</b>	<b>Airbus DS TH1n</b>
<b>Status Messages</b>	<b>Incomplete 1_pass_of_14</b>	<b>Incomplete 1_pass_of_14</b>	<b>Incomplete 8_pass_of_14</b>
Intra-MNI Status Calls	Incomplete 1_pass_of_14	Incomplete 1_pass_of_14	Incomplete 8_pass_of_14
Individual Status Calls	Incomplete 0_pass_of_2	Incomplete 0_pass_of_2	PASSED Complete 2_pass_of_2
Group Status call	Incomplete 1_pass_of_12	Incomplete 1_pass_of_12	Incomplete 6_pass_of_12
<b>SDS TL</b>	<b>Incomplete 2_pass_of_4</b>	<b>Incomplete 2_pass_of_4</b>	<b>PASSED Complete 4_pass_of_4</b>
SDS-TL messages	Incomplete 2_pass_of_4	Incomplete 2_pass_of_4	PASSED Complete 4_pass_of_4
<b>TTR002-05 Repeater AIE</b>			
<b>DMO AIE Encryption - via Repeater Type 1A</b>	<b>Incomplete 5_pass_of_12</b>	<b>Incomplete 5_pass_of_12</b>	<b>PASSED Complete 12_pass_of_12</b>
Encrypted Group Calls	Incomplete 1_pass_of_4	Incomplete 1_pass_of_4	PASSED Complete 4_pass_of_4
Encrypted Individual Calls	Incomplete 0_pass_of_4	Incomplete 0_pass_of_4	PASSED Complete 4_pass_of_4
Encrypted Status messages	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2

Pre-emption of encrypted activity	Incomplete 0_pass_of_2	Incomplete 0_pass_of_2	PASSED Complete 2_pass_of_2
Handling mismatched keys	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2	PASSED Complete 2_pass_of_2
<b>DMO AIE Encryption - via Repeater Type 1B</b>			
Encrypted Group Calls			
Encrypted Individual Calls			
Encrypted Status messages			
Pre-emption of encrypted activity			
Handling mismatched keys			

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