3G-324M Video Telephony Activity Group

Test Cases - Interoperability

Version 3.11

May 14, 2008

History

Version	*Date*	*Name*	*Reason*
3.0	03-22-2005	Sebastian Purreiter	Improved explanation of test cases, which shall overcome the limitations of the previous Excel Sheet Versions. For change history before 3.0, these are listed on the IMTC 3G-324M AG Test Cases Excel sheet version 2.4.
3.1	04-06-2005	Albert Wong	Appended Test Cases 2.4 Excel sheet with review. Reassigned Test Case number 29-1. Removed redundant Test Case 58a. Editorial review. Approved on 04-06-2005.
3.2	05-15-2005	Sebastian Purreiter	Definition of Section "Interoperability Tests" which is based on Testcase 7.
3.2.1	05-15-2005	Albert Wong	Reviewed technical, test case numbering and formatting for "Interoperability Tests". Appended TC 502 for "Call being rejected", TC 512 for "Call accept automatically", TC 524-526 for "Audio and/or Video being muted/unmated". Defined TC 530 "Video Quality". Appended corresponding Test Cases Summary.
3.2.2	05-15-2005	Albert Wong	Minor editorial updates to TC 513 and TC 530 after conf call review.
3.2.4	05-18-2005	Sebastian Purreiter	New test cases TC 517, 518,519; 5.2 TCs are now aligned with 5.3 TCs. 4.1.2 now with 10s max delay; Test cases with 10min duration are shortened to 5min.
3.2.5	05-20-2005	Sebastian Purreiter	TC 524, 525, 526 Note clarifies possible situations for muting audio/ blocking video.
3.2.6	05-23-2005	Albert Wong	Removed TC 509, 519. Updated TC 521-526 to include 2nd audio mute/video block attempt. Synchronized Test Cases Summary.
3.3	05-23-2005	Albert Wong	Reviewed comments for TC529, 530. Added signal strength definition in 5.1.3. Renumbered TC 502 to 503. Approved at conf call.
3.4	06-06-2005	Sebastian Purreiter	New Testcases for WNSRP and CCSRL; Status on ITU-T standardization progress added.
3.4.1	07-20-2005	Albert Wong	Spun off compliance oriented test cases 63. 64, 65 and 70 into separate document "Test Cases – Compliance".
3.5	07-20-2005	Albert Wong	Approved at conf call with editorial formatting.
3.6	09-20-2005	Tsahi Levent-Levi	WNSRP Testcases status modification. Removal of CCSRL test cases.
3.7	10-05-2005	Albert Wong	Revised test case formatting and expand Introduction section on how to utilize the test case document. Updated Reference section. Updated TestCase 26 according to contribution from Peter Ghesquiere. Updated Test Case Summary.
3.7.1	11-18-2005	Albert Wong	Updated test cases and formats in consideration with GCF test cases requirement. Tsahi Levent-Levi updated TCs 26~29-1, 501, 503, 504, 511~514 and Default Endpoint Settings section. Vipul Bahety updated TCs 52, 55, 58, 70, 505~508, 515~518. Albert Wong updated TCs 40~48, 522~530, reviewed references of all test cases and added feature mapping table.

Version	*Date*	*Name*	*Reason*
3.7.2	12-2-2005	Albert Wong	Some editorial review. Reviewed default endpoint settings. Updated TC 26, 41, 48, 52, 55, 58 according to external comments.
3.7.3	12-05-2005	Albert Wong	Updated Default Endpoint Settings from internal review.
3.7.4	01-03-2006	Antti Pitkämäki	Modifications to Default Endpoint Settings, and values used for TSTO in case 40. Also few editorial corrections.
3.7.5	01-07-2006	Albert Wong	Reviewed changes. Further updated document according to comments collected from voting conditions for 3.7.3, Nokia's further comments conf call #60 discussion and feedback from GCF on 12-20-2005. Updates included restructuring of Default Endpoint Settings section, review of Introduction section, update of objective in TC26, overall test cases document editorial review, creation of Pass Criteria per test case, re-numbering and step order indication of expected behaviour for all test cases, reformat TCS in Terminal Setup for all test cases, update of Feature Mapping Table section.
3.7.6	01-19-2006	Albert Wong	Reviewed document according to further feedback from GCF on 01-16-2006. Appended objective to TC26 as suggested. Appended Abbreviation section. Expanded Add-On Features with unsupported feature postfix in TestCase Number section. Revised Feature Mapping Table with new Feature Supported column and splitting of non-mandatory baseline TCs from mandatory baseline TCs. Revised Expected Behaviour logic for GCF selected TC 40, 41, 42, 44, 45, 46, 47, 48, also other TC 24, 54, 55, 56, 59, 82, 84, 512.
3.7.7	02-05-2006	Albert Wong	Updated TC 27, 28, 29, 29-1, 42 according to conditions from conditional approval votes. Minor editorial corrections.
3.7.8	02-12-2006	Albert Wong	Reviewed document according to further feedback from Nokia. Depreciated the need of sequence number in Terminal Setup table for test cases not requiring this criterion. Also reviewed Terminal Setup table for depreciating non-mandatory features. Updated Feature Mapping Table for Test Terminal for H.263 Annexes related features. Appended all genericVideoCapability and genericAudioCapability with their corresponding codec names. Appended also receiveAndTransmit capability as an option for UEUT settings for all test cases concerned. Removed MPEG4 capability for terminal A for TC 42. Other editorial corrections.
3.7.9	02-14-2006	Albert Wong	Further reviewed document with Nokia, Motorola and Ericsson to take Nokia's comment on improving Terminal Settings Table by indicating default settings to UEUT to TC 26, 27, 28, 29, 29-1, 40, 41, 42, 43, 44, 45, 46, 47, 48, 52, 54, 55, 57, 58 plus TC 7 with necessary content updates.
3.7.10	02-15-2006	Albert Wong	Consolidated further comments from Mikko Bertin on TC 40, 54, 55, 57. Updated Feature Mapping Table accordingly.
3.8	02-22-2006	Albert Wong	Approved by voting.
3.8.1	10-18-2006	Albert Wong	Updated TC 54, 55, 58 according to received comments from Ixia and GCF. Updated document test cases presentation format and style. Adopted new TC 54-1 proposed by Arianna Benigno. Added test cases postfixes for MPEG4-Video and MONA. Corrected Expected Behaviour for TC 52.

Version	*Date*	*Name*	*Reason*
3.9	12-08-2006	Albert Wong	Approved by AG voting with voting comments on general editorial updates and TC 58 editorial update on Objective. Performed further spell checking.
3.9.1	05-29-2007	Albert Wong	Updated Introduction on terminal A being test reference tool. Changed TC postfix for MONA. Made some formatting updates. Update Test Cases Summary and Feature Mapping Table accordingly. Collected AG feedback and proposals with update including: Update to TC57 on swapping terminal A and B. Update to TC26~TC29-1 to force terminal A to be Master. Added TC51-1 from Arianna Benigno. Created basic AMR-WB test case from Ixia. Created basic H.264 test case from Dilithium. Added 6 MONA MOS-SPC test cases from Dilithium, 10 MPC test cases from PacketVideo with format adaptation, 2 ACP test cases from Radvision, a General test case from Marvell with update.
3.9.2	08-13-2007	Albert Wong	Updated clauses 1.6 and 1.1.2 for clarification of handling AL-SDU CRC errors and “error free” test condition. Filled in all TBA by Ixia to TC 1~25, 30~39, 101, 151, 49~50, 81~84, 51, 53, 56 and 59~62. Updated proposed TC51-1 joint by Arianna Benigno and Albert Wong. Added TC304 from Qualcomm.
3.9.3	09-04-2007	Oren Libis	“Mobile Level” Term was replaced with “Multiplex Level” term.
3.10	09-12-2007	Albert Wong	Approved by AG voting with voting comments on general editorial updates.
3.10.1	01-18-2008	Albert Wong	Added 8 H.264 related test cases proposed by Nokia and 2 H.264 related test cases proposed by NMS. Added H.264 as optional codec in TC 7, 8, 9, 10, 11, 12, 13, 14, 43, 24, 25, 39, 101, 46, 49, 50, 81, 82, 83, 84, 301, 302, 303, 304, 311, 315, 53, 56, 58 and 59 as proposed by Nokia.
3.10.2	04-15-2008	Albert Wong	Added 3 new MONA test cases as TC 316, 317 and 350 from Dilithium. Updated 3 MONA test cases TC 301, 311 & 314 from Dilithium. Included Mux levels 0 & 1 test case guideline to Clause 1.7 from Oren Libis. Updated test case summary and feature mapping table. Minor editorial format update.
3.10.3	04-16-2008	Albert Wong	Updated TC 2~6 and 316 accordingly to AG review feedback. Moved TC 2~6 from clause 2.1 to clause 3.1 with updates to test case summary and feature mapping table. Split TC 312 into TC312-1 from Dilithium. Further updated TC 301, 311, 312, 313, 314, 315, 317 according to AG feedback. Corrected typo in TC 303.
3.11	05-14-2008	Albert Wong	Approved by AG voting with voting comments on general editorial updates to TC 312-1 and 350.

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1 Introduction

This document describes the Test cases for 3G-324M Videotelephony interoperability tests for terminal interoperability validation. This includes common scenarios for compliance testing. The optional tests section might be enhanced by additional tests of the testing parties as only the most probable test cases are described here.

For further terminal compliance test cases, please refer to the document “Test Cases – Compliance”.

1.1 How to Read the TestCases

Test Number: Identifies each of the Test Cases by its unique number. a/b in the test case description means that the test has to be repeated with changed terminal settings. "a" refers to Terminal A; "b" refers to Terminal B. Therefore, for example when party A is to test case 2a it sets the settings according to Terminal A, and party B is to set test case 2b with settings of Terminal B. In case that party A tests 2b then it sets the settings of Terminal B. Of course party B will set 2a with settings of Terminal A.

Priority: Indicates if the test case is mandatory or optional if not indicated by a document section.

Objective: Provides background information description about the test case.

Reference: Indicates corresponding section of recommendation or specification for the test case.

Terminal A/B Setup: Specifies the settings for the named test case. Parameters highlighted in *blue* indicate either derivation from default settings and/or settings required to conduct the test case.

Terminal A: Settings for Terminal A (both testing parties should agree on role before the tests start); If standard settings are named the testing party should select the preferred settings for use; Furthermore both testing parties can agree on a selected set of settings for test. For simplicity, *parameters not specified can take the default settings of Default Endpoint Settings* or Terminal A itself. If settings are not configurable, the terminal adopts the default values.

Terminal B: Settings for Terminal B (both testing parties should agree on role before the tests start)

Terminal A & B: Settings for Terminal B is the same as Terminal A.

Note that Terminal A shall be referred to as a Test Reference Tool where applicable.

Scenario: (optional) Provides diagram to illustrate the testing scenario such as logical channel conflict handling scenario.

Precondition: Specifies preliminary settings and environment required before conducting the test case.

Procedure: Describes how to conduct the test case.

Expected Behavior: Defines the Pass Criteria including the different steps to perform a "pass" test case. Sub results to be performed successfully are listed. Verification of the correct behaviour may be visual, together with the aid of logging facilities available from the testing terminals. If the subject of terminal origin is not mentioned in any step, it is implied as Terminal A. Step numbers in Expected Behaviour are grouped and matched with the step numbers in Procedure.

At the end, Order is specified to indicate the order of steps in sequence, some of which can be in random order. For example, “Order: 1, 2-5, 6” indicates that from steps 2 to 5, they can occur in any order. However, step 1, group of steps 2 to 5, step 6 shall be in order.

Pass Criteria: Highlights the Pass Criteria of the test case.

Test Reference Tool: (optional) Specifies the conditions for using a test reference tool to perform the test case to verify a UEUT. This field is applicable to non-interoperability test cases only. The conditions include indication of which terminal settings refer to a test reference tool and which terminal settings refer to a UEUT. The conditions also choose all of the terminal setting options and the test case options.

Note that Terminal A shall be referred to as a Test Reference Tool.

Note: (optional) Provides additional information about the test case such as relevance to other test cases.

Comments: (optional) Provides editorial comments about the test case. This field may be highlighted in red.

1.1.1 Defining Test Cases

When defining a test case, all of the above fields shall be included except those that indicate "optional". When there is no information to be provided to a non-optional field, the field shall be filled with "None".

By the time the Test Case document is updated, some fields may not have been updated and are marked with TBA. These fields are expected to be filled in in later versions of this test case document.

1.1.2 Additional Testing Conditions

All test cases are expected to be conducted in error free or near error free environment. The BER shall be below 10^-6.

Optionally all test cases marked with a [BER] setting shall also be performed under erroneous conditions, either applying equally distributed bit errors at different bit error rates (10^-5 <= BER <= 10^-3) or using WCDMA bit error patterns.

[] These brackets mark optional settings.

{} Curly brackets mark a set of possible settings separated by | signs. One of the settings has to be selected.

|| means a logical "OR" connection.

Special settings (e.g. under Procedure, Test Reference Tool) or steps (e.g. under Expected Behavior) to fulfill a "pass" test case are marked in blue. To illustrate with Expected Behavior, the criteria marked in blue are mandatory to fulfill a 'pass' test case while other criteria in normal font style and color are not mandatory to fulfill a 'pass' test case.

1.2 Abbreviations and Definitions

BOLC	Bidirectional Open Logical Channels (Open+Ack required channels)
CFO	ControlFieldOctets (for AL3)
CLC	Close Logical Channels (Close+Ack all open channels)
DCI	Decoder Configuration Information (for MPEG4-Video codec)
IOP	InterOPerability
IOT	InterOperability Test
LC	Logical Channel
LS	H.223 Level Setup
MES	Multiplex Entry Send
MO	Mobile Originated equipment
MSD	Master/Slave Determination (Request+Ack)
MT	Mobile Terminated equipment
MuxEntry	Exchange+Ack of all Multiplex Entries
OLC	Open Logical Channels (Open+Ack required channels)

P2P	Peer to peer
RC	Repeat Count
SN	Sequence Number
SVP	Simple Visual Profile (for MPEG4-Video)
TC	TestCase
TCS	Terminal Capability Set (Request+Ack)
UCF	Until Closing Flag
UE	User Equipment (including all 3G-324M compliant terminals)
UEUT	User Equipment Under Test
VT	Video Telephony
VTSTO	Video Temporal/ Spatial Trade Off

1.3 Default Endpoint Settings

Two types of default endpoint settings are defined, which are Default Test Terminal Settings and Default Test Tool Settings. Default Test Terminal Settings are for UEUTs, which are not expected to change configurations. Default Test Tool Settings are for test reference tools, which are capable of varying a wide range of terminal configurations.

1.3.1 Default Test Terminal Settings

The default test terminal (UEUT) settings are defined as below:

- Muxlevel 2 (H.223 Annex B)
- Audio OLC: AMR, AdaptationLayerType.al2WithoutSequenceNumbers, default terminal encoding rate
- Video OLC: H.263, AdaptationLayerType.al2WithSequenceNumbers, default terminal encoding rate

Since such terminals can be closed system, a number of the settings above may not be changeable. In this situation, the manufacturer's configuration for those unchangeable settings of the terminal is adopted.

1.3.2 Default Test Tool Settings

The default endpoint settings are defined as below:

- Muxlevel: 2 (H.223 Annex B)
- Audio OLC: AMR, AdaptationLayerType.al2WithoutSequenceNumbers, default terminal encoding rate 4.75kbps
- Video OLC: H.263, AdaptationLayerType.al2WithSequenceNumbers, default terminal encoding rate 56kbps
- Initial SRP command frame sequence number: 0
- Number of available H.245 messages per SRP command frame: maximum possible
- Number of CCSRL segmentation: minimum possible
- Initial T401 timeout: 1600ms
- Maximum MUX-PDU size: maximum limit of the multiplex level used

1.3.2.1 Default Terminal Capability Set

A default set of capabilities needs to be used.

Below is the minimal set of capabilities that needs to be used in a Terminal Capability Set message:

```
protocolIdentifier = itu-t recommendation h 245 0 6
multiplexCapability
    h223Capability
        transportWithI-frames = 0
        videoWithAL1 = 0
        videoWithAL2 = 1
        videoWithAL3 = 1
        audioWithAL1 = 0
        audioWithAL2 = 1
        audioWithAL3 = 0
        dataWithAL1 = 0
        dataWithAL2 = 0
        dataWithAL3 = 0
        maximumAl2SDUSize = 1024
        maximumAl3SDUSize = 1024
        maximumDelayJitter = 10
        h223MultiplexTableCapability
            basic
        maxMUXPDUSizeCapability = 1
        nsrpSupport = 1
        mobileOperationTransmitCapability
            modeChangeCapability = 0
            h223AnnexA = 1
            h223AnnexADoubleFlag = 1
            h223AnnexB = 1
            h223AnnexBwithHeader = 1
capabilityTable
    *
        capabilityTableEntryNumber = n1
        capability
            receiveAudioCapability
                genericAudioCapability
                    capabilityIdentifier
                        standard = itu-t recommendation h 245 1 1 1
                    maxBitRate = 122
                    collapsing
                        *
                            parameterIdentifier
                                standard = 0
                            parameterValue
                                unsignedMin = 1
    *
        capabilityTableEntryNumber = n2
        capability
            receiveVideoCapability
                h263VideoCapability
                    sqcifMPI = 2
                    qcifMPI = 2
                    maxBitRate = 560
                    unrestrictedVector = 0
                    arithmeticCoding = 0
                    advancedPrediction = 0
```

pbFrames = 0
temporalSpatialTradeOffCapability = 0
capabilityDescriptors
*
capabilityDescriptorNumber = 0
simultaneousCapabilities
*
* = n1
*
* = n2

where 1 <= n1, n2 <= 65535.

1.3.2.2 Default Multiplex Entry Table

Entry 1: { LCN ch1, RC UCF }

Entry 2: { LCN ch2, RC UCF }

Entry 3: { LCN ch1, RC 13 }, { LC ch2, RC UCF }

where 1 <= ch1, ch2 <= 65535.

Note: The specification of Entry 3 for audio entry size is based on the specification of audio channel to use AL2 without sequence number.

1.4 Test Terminals Setup Capabilities

A test terminal shall be capable of modifying its behavior through different settings and codec preferences in the Terminal Capability Set (TCS) if supported and Muxlevel setups. The different settings are explained in the following for the two groups of tests.

1.4.1 Mandatory Tests

- {Muxlevel 0 | Muxlevel 1 (H.223 Annex A) | Muxlevel 2 (H.223 Annex B)}
- Audio OLC: AdaptationLayerType.{al2WithoutSequenceNumbers | al2WithSequenceNumbers}
- Video OLC: bidir OLC, AdaptationLayerType.al3.controlFieldOctets={0 | 1 | 2}

1.4.2 Optional Tests

- {Muxlevel 0 | Muxlevel 1 (H.223 Annex A) | Muxlevel 2 (H.223 Annex B) | Muxlevel 3a (H.223 Annex C) | Muxlevel 3b (H.223 Annex D)}.
- {SRP | NSRP | WNSRP}.
- TCS: videoWithAL3={true | false}.
- TCS: AudioCapability=genericAudioCapability (AMR) and g7231.
- TCS: VideoCapability=h263VideoCapability and genericVideoCapability (MPEG4 SVP@L0).
- TCS: different order in preference of Video Codecs within alternativeCapabilitySet.
- Audio OLC: selection of different audio codecs (TestCase 26 - 39)
- Video OLC: preference of opening Video OLC as bidir or unidir channel.
- Video OLC/ Encoding + Sending: selection of different flavors of video codecs (TestCase 26 - 39)

1.4.3 Additional Information

- Although it is common that terminals commonly use AL2 for video, according to [26.911], AL2 for video is only recommended and AL3 remains mandatory as in [H.324].

1.5 TestCase Number Representation

Test case number representation shall be used for test score sheet reporting purpose.

1.5.1 TestCase Number

Each Test Case is represented by a unique number.

If a new test case needs to be added for feature grouping purpose in between two existing test cases with consecutive test case numbers, a hyphen with a number is added to the test case number, e.g. TestCase 29-1 is inserted in between TestCase 29 and TestCase 30.

Cancelled Test Case number will not be reused for tests different from the original context. Cancelled test cases numbers are 19, 20, 21, 22, 23, 85 and 86. These numbers shall not be reused for defining new test cases.

If the terminal settings are identical for both Terminal A and Terminal B, the unique number itself is sufficient to represent the Test Case, e.g. TestCase 1.

When the terminal settings are different, the test case number should be added with a postfix letter ‘a’ or ‘b’ according to the terminal settings used, e.g. TestCase 2a and TestCase 2b.

1.5.2 Add-On Features

When additional features are added to the test case, further postfix alphabetic letter representing the features are added. For example, test cases with simulated error condition added are represented as TestCase 7e, TestCase 2ae, TestCase 2be.

The following lists some postfix alphabetical letters for terminal settings representation that may be used for the test case:

‘a’ Terminal A settings

‘b’ Terminal B settings

‘d’ Local or peer terminal uses default terminal settings.

‘u’ Expected Behaviour shall follow the path for testing feature not supported by local or peer terminal. If this postfix is not specified, Expected Behaviour shall follow the default path for testing feature supported by both local and peer terminals. If ‘a’ or ‘b’ is not indicated with ‘u’, this refers to UEUT not supporting the testing feature.

The following lists other postfix alphabetical letters for optional add-on features and conditions that may be used for both testing terminals for the test case. Features should be added in the order listed below:

‘w’ WNSRP applied

‘m’ Using MPEG4-Video

‘k’ MONA enabled

‘e’ Simulated error condition (random noise) applied

If only one terminal uses the optional add-on feature, letter ‘a’ or ‘b’ should be appended after the feature letter, e.g. TestCase 2bwa and TestCase 2wb indicate only the peer terminal enables WNSRP.

If one of the testing terminals cannot configure its terminal settings, a letter ‘d’ is used to represent this. If peer terminal cannot modify its terminal settings, the letter ‘d’ is appended immediately after the test case number, or ‘a’ or ‘b’ if used, e.g. TestCase 1d, TestCase 2ad, TestCase 2bd. If local

terminal cannot modify its terminal settings, letter ‘d’ is inserted twice immediately after the test case number, or once before ‘a’ or ‘b’ if used, e.g. TestCase 1dd, TestCase 2da, TestCase 2db.

If a feature defined in a test case cannot be enabled, a letter ‘n’ is inserted before the feature letter, e.g. TestCase 81nwb indicates the peer terminal does not enable WNSRP.

As a general rule, existing test cases should be used instead of appending feature letters, e.g. TestCase 82a should be used instead of TestCase 81nwb.

1.6 How to Use Test Cases

This test case document can be used according to the need of a company. It forms the basis for all kinds of 3G-324M interoperability test events hosted by IMTC and IMTC 3G-324M AG. It may be adopted by external parties according to their needs.

It is recommended all mandatory test cases should be conducted for every test event. All optional test cases are tested by priority as agreed by the two testing parties.

Test cases are regarded as successful when both testing terminals follow the testing procedure and the expected behaviour is observed.

When a CRC error or a partiy check error is detected in a MUX-PDU, the MUX-PDU is discarded. The outcome of the test case is not affected unless otherwise specified.

All test results are recorded into test score sheet.

1.7 Guidelines

Some of the test cases in this document require additional guidelines.

These guidelines are needed in case confusion or a misunderstanding of a recommendation exists regarding the execution of a test case.

1.7.1 Using Multiplex Levels 0 and 1

According to the ITU-T H.324M recommendation and the 3GPP TS 26.111 specification, Multiplex Level 0 (H.223) and Multiplex Level 1 (H.223 Annex A) shall be supported by all terminals.

However, in reality, both Multiplex Levels have not been observed in deployed devices and are hardly used. As according to the 3GPP TS 26.111 recommendation for using Multiplex Level 2, the likelihood of a 3G terminal using a Multiplex Level other than Multiplex Level 2 (H.223 Annex B) or higher currently is low. Therefore, IMTC 3G-324M AG recommends test cases that use Multiplex Level 0 and 1 as optional. This recommendation is in view of the demand of exercising the test cases and does not override the specifications as defined in the relevant standards concerned.

2 Mandatory Tests

2.1 Initial Level Tests

Purpose:

Test of initial level detection and agreement on H.223 mux level; exchange of H.245 TCS messages and TCSAck.

TestCase 1 – Initial Level Setup 2-2

Priority:

Mandatory TC.

Objective:

The intention of this test case is to ensure the Multiplex Level detection is successfully negotiated.

Reference:

[H.324] C.6.2

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 1-3.*
4. Terminate call session.

Expected Behavior:

1. Selection of H.223 Annex B at both terminals
2. NSRP + CCSRL is used

3. RespMsg_terminalCapabilitySetAck received

Order: 1, 2, 3

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 1 and 3 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

2.2 H.245/H.223 Settings Test

Purpose:

Test of mandatory session setup H.223/H.245 settings.

TestCase 7 – Session Setup - Default Configuration

Note:

Default config means that other mux (video using AL2) and codec capabilities (MPEG4, G723.1, …) can be signaled in addition to the mandatory capabilities from the standard such as AMR using AL2 and H.263 using AL3.

Priority:

Mandatory TC.

Objective:

The intention of this test case is to ensure the mandatory legacy signaling is performed though to successful call establishment.

Reference:

[26.911] 5, [H.324] C.5

Terminal A Setup:

Entity	Settings
H.223	Terminal default
TCS	Terminal default
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	Terminal default
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel { 3 [with H.223 Annex B optional header] | 2 [with H.223 Annex B optional header] | 1 | 0 } (The lower level of Terminal A and Terminal B selected)
2. RespMsg_terminalCapabilitySetAck received
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of Video/Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 8 – OLC Audio al2WithoutSequenceNumbers

Priority:

Mandatory TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call while using Audio over AL2 without sequence numbering.

Reference:

[H.324] 6.7.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	-
OLC Audio	AMR || [g7231] *adaptationLayerType=al2WithoutSequenceNumbers*
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }]
MasterSlave	-
OLC Audio	AMR || [g7231] *adaptationLayerType=al2WithoutSequenceNumbers*
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of Video/Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the

other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 9 – OLC Audio al2WithoutSequenceNumbers/ al2WithSequenceNumbers – a/b

Priority:

Mandatory TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call while using Audio over AL2 with sequence numbering, even when Terminal A is using Audio over AL2 without sequence numbering.

Reference:

[H.324] 6.7.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	-
OLC Audio	AMR || [g7231] *adaptationLayerType=al2WithoutSequenceNumbers*
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }]
MasterSlave	-
OLC Audio	AMR || [g7231] *adaptationLayerType=al2WithSequenceNumbers*
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of Video/Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the

other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 10 – OLC Audio al2WithSequenceNumbers

Priority:

Mandatory TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call while using Audio over AL2 with sequence numbering.

Reference:

[H.324] 6.7.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	-
OLC Audio	AMR || [g7231] *adaptationLayerType=al2WithSequenceNumbers*
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }]
MasterSlave	-
OLC Audio	AMR || [g7231] *adaptationLayerType=al2WithSequenceNumbers*
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of Video/Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the

other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 11 – OLC Video al3 controlFieldOctets 0-0

Priority:

Mandatory TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call while using Video over AL3 without sequence numbers.

Reference:

[H.324] 6.6.1

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*bidir* h263VideoCapability || [MPEG4] || [H.264] *adaptationLayerType.al3.controlFieldOctets=0*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*bidir* h263VideoCapability || [MPEG4] || [H.264] *AdaptationLayerType.al3.controlFieldOctets=0*
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master) ||IndMsg_openLogicalChannelConfirm (Slave) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of Video/Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the

other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 12 – OLC Video al3 controlFieldOctets 1-1

Priority:

Mandatory TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call while using Video over AL3 with 7 bit sequence numbers.

Reference:

[H.324] 6.6.1

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*bidir* h263VideoCapability || [MPEG4] || [H.264] *AdaptationLayerType.al3.controlFieldOctets=1*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*bidir* h263VideoCapability || [MPEG4] || [H.264] *AdaptationLayerType.al3.controlFieldOctets=1*
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master) ||IndMsg_openLogicalChannelConfirm (Slave) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of Video/Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the

other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 13 – OLC Video al3 controlFieldOctets 2-2

Priority:

Mandatory TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call while using Video over AL3 with 15 bit sequence numbers.

Reference:

[H.324] 6.6.1

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*bidir* h263VideoCapability || [MPEG4] || [H.264] *AdaptationLayerType.al3.controlFieldOctets=2*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*bidir* h263VideoCapability || [MPEG4] || [H.264] *AdaptationLayerType.al3.controlFieldOctets=2*
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master) ||IndMsg_openLogicalChannelConfirm (Slave) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of Video/Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the

other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 14 – OLC Video al3 controlFieldOctets 2-1 – a/b

Priority:

Mandatory TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call while using Video over AL3 with 7 bit sequence numbers, even when Terminal A is using 15 bit sequence numbers.

Reference:

[H.324] 6.6.1

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*bidir* h263VideoCapability || [MPEG4] || [H.264] *AdaptationLayerType.al3.controlFieldOctets=2*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*bidir* h263VideoCapability || [MPEG4] || [H.264] *AdaptationLayerType.al3.controlFieldOctets=1*
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master) ||IndMsg_openLogicalChannelConfirm (Slave) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of Video/Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the

other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

2.3 H.245 Special Commands Tests

Purpose:

Test of mandatory H.245 signaling during session.

TestCase 43 – User Input Indication

Priority:

Mandatory TC.

Objective:

This test case ensures that a UEUT continues to behave as expected without freezing incoming video when receiving user input indication, no matter whether the UEUT supports it.

Reference:

[H.324] 6.5, [H.245] B.2.2.10, B.14.6

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }] Other capabilities: *[UserInputCapability { receive | transmit | receiveAndTransmit }]*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default Audio capabilities: Terminal default Video capabilities: Terminal default Other capabilities: Terminal default with inclusion of *[UserInputCapability { receive | transmit | receiveAndTransmit }]*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports sending user input indication.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *After video is displayed at Terminal A, Terminal A sends user input indication.*
4. *Validate expected behaviour checkpoints 3b.*
5. *Validate received video at Terminal B does not freeze.*
6. Terminate call session.

Expected Behavior:

2.
    a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected)
    b. RespMsg_terminalCapabilitySetAck received.
    c. RespMsg_masterSlaveDeterminationAck received
    d. RespMsg_openLogicalChannelAck for Audio received
    e. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
    f. RespMsg_multiplexEntrySendAck for all mux table entries
3.
    a. Encoding + Sending/Reception + Decoding of Video / Audio
    b. *Send IndMsg_UserInputIndication.alphanumeric with user input characters 0-9, '*', and '#' in sequence (See H.324 6.5)*

6. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-3a, 3b, 6

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 3a ~ 3b to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to true.
- Open logical channel for video at Terminal A shall initially attempt to use AL2 if Terminal B supports it.
- *Terminal A shall set receiveUserInputCapability.*
- All other optional settings within [] bracket shall be ignored.

2.4 Logical Channel Handling and Conflict Tests

See 4.1 for mandatory test cases.

3 Optional Tests

3.1 Initial Level Tests

Purpose:

Test of initial level detection and agreement on H.223 mux level; exchange of H.245 TCS messages and TCSAck.

TestCase 2 – Initial Level Setup 1-2 – a/b

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure Multiplex Level detection is successfully negotiated.

Reference:

[H.324] C.6.2

Terminal A Setup:

Entity	Settings
H.223	*Muxlevel 1 (H.223 Annex A)*
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	*Muxlevel 2 (H.223 Annex B)*
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 1-3.*
4. Terminate call session.

Expected Behavior:

1. Terminal B changes to Muxlevel 1; Selection of H.223 Annex A at both terminals
2. NSRP + CCSRL is used

3. RespMsg_terminalCapabilitySetAck received

Order: 1, 2, 3

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 1 and 3 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Note:

This test case priority is optional according to description in clause 1.7.1.

TestCase 3 – Initial Level Setup 0-2 – a/b

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure Multiplex Level detection is successfully negotiated.

Reference:

[H.324] C.6.2

Terminal A Setup:

Entity	Settings
H.223	*Muxlevel 0 (H.223)*
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	*Muxlevel 2 (H.223 Annex B)*
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 1-3.*
4. Terminate call session.

Expected Behavior:

1. Terminal B changes to Muxlevel 0; Selection of H.223 at both terminals
2. NSRP is used

3. RespMsg_terminalCapabilitySetAck received

Order: 1, 2, 3

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 1 and 3 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Note:

This test case priority is optional according to description in clause 1.7.1.

TestCase 4 – Initial Level Setup 1-1

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure Multiplex Level detection is successfully negotiated.

Reference:

[H.324] C.6.2

Terminal A Setup:

Entity	Settings
H.223	*Muxlevel 1 (H.223 Annex A)*
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	*Muxlevel 1 (H.223 Annex A)*
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 1-3.*
4. Terminate call session.

Expected Behavior:

1. Selection of H.223 Annex A at both terminals
2. NSRP + CCSRL is used

3. RespMsg_terminalCapabilitySetAck received

Order: 1, 2, 3

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 1 and 3 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Note:

This test case priority is optional according to description in clause 1.7.1.

TestCase 5 – Initial Level Setup 0-1 – a/b

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure Multiplex Level detection is successfully negotiated.

Reference:

[H.324] C.6.2

Terminal A Setup:

Entity	Settings
H.223	*Muxlevel 0 (H.223)*
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	*Muxlevel 1 (H.223 Annex A)*
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 1-3.*
4. Terminate call session.

Expected Behavior:

1. Terminal B changes from Muxlevel 1 to Muxlevel 0; Selection of H.223 at both terminals
2. NSRP is used

3. RespMsg_terminalCapabilitySetAck received

Order: 1, 2, 3

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 1 and 3 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Note:

This test case priority is optional according to description in clause 1.7.1.

TestCase 6 – Initial Level Setup 0-0

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure Multiplex Level detection is successfully negotiated.

Reference:

[H.324] C.6.2

Terminal A Setup:

Entity	Settings
H.223	*Muxlevel 0*
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	*Muxlevel 0*
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 1-3.*
4. Terminate call session.

Expected Behavior:

1. Selection of H.223 at both terminals
2. NSRP is used

3. RespMsg_terminalCapabilitySetAck received

Order: 1, 2, 3

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 1 and 3 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Note:

This test case priority is optional according to description in clause 1.7.1.

TestCase 15 – Initial Level Setup 3a-3a

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure Multiplex Level detection is successfully negotiated.

Reference:

[H.324] C.6.2

Terminal A Setup:

Entity	Settings
H.223	*Muxlevel 3a (H.223 Annex C)*
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	*Muxlevel 3a (H.223 Annex C)*
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 1-3.*
4. Terminate call session.

Expected Behavior:

1. *Selection of H.223 Annex C at both terminals*
2. NSRP + CCSRL is used

3. RespMsg_terminalCapabilitySetAck received

Order: 1, 2, 3

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 1 ~ 3 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 16 – Initial Level Setup 3a-2 – a/b

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure Multiplex Level detection is successfully negotiated.

Reference:

[H.324] C.6.2

Terminal A Setup:

Entity	Settings
H.223	*Muxlevel 3a (H.223 Annex C)*
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	*Muxlevel 2 (H.223 Annex B)*
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 1-3.*
4. Terminate call session.

Expected Behavior:

1. *Terminal A changes to Muxlevel 2; Selection of H.223 Annex B at both terminals*
2. NSRP + CCSRL is used

3. RespMsg_terminalCapabilitySetAck received

Order: 1, 2, 3

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 1 ~ 3 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 17 – Initial Level Setup 3a-1 – a/b

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure Multiplex Level detection is successfully negotiated.

Reference:

[H.324] C.6.2

Terminal A Setup:

Entity	Settings
H.223	*Muxlevel 3a (H.223 Annex C)*
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	*Muxlevel 1 (H.223 Annex A)*
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 1-3.*
4. Terminate call session.

Expected Behavior:

1. *Terminal A changes to Muxlevel 1; Selection of H.223 Annex A at both terminals*
2. NSRP + CCSRL is used

3. RespMsg_terminalCapabilitySetAck received

Order: 1, 2, 3

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 1 ~ 3 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 18 – Initial Level Setup 3a-0 – a/b

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure Multiplex Level detection is successfully negotiated.

Reference:

[H.324] C.6.2

Terminal A Setup:

Entity	Settings
H.223	*Muxlevel 3a (H.223 Annex C)*
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	*Muxlevel 0 (H.223)*
TCS	H.223 capabilities: videoWithAL3=true audiowithAL2=true
MasterSlave	-
OLC Audio	AMR
OLC Video	bidir H.263 baseline
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 1-3.*
4. Terminate call session.

Expected Behavior:

1. *Terminal A changes to Muxlevel 0; Selection of H.223 at both terminals*
2. NSRP is used

3. RespMsg_terminalCapabilitySetAck received

Order: 1, 2, 3

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 1 ~ 3 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

3.2 H.245/H.223 Settings Test

Purpose:

Test of optional session setup H.223/H.245 settings.

TestCase 24 – SRP (LAPM/V.42 mode) without NSRP support

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call while using Simple Response Protocol without sequence numbering.

Reference:

[H.324] A.2, A.2.1, A.2.2, A.2.3, A.2.4

Terminal A Setup:

Entity	Settings
H.223	*Muxlevel 0 (H.223) no NSRP support*
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	*Muxlevel 0 (H.223) no NSRP support*
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 0 (H.223 no NSRP support)
2. RespMsg_terminalCapabilitySetAck received
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of Video/Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 25 – CCSRL (LAPM/V.42 mode)

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call, even when CCSRL participates in the mandatory signaling.

Reference:

[H.324] C.8

Terminal A Setup:

Entity	Settings
H.223	*Muxlevel 2 (H.223 Annex B)*
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	*Muxlevel 2 (H.223 Annex B)*
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 2, 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received.
   At least one H.245 message is spread across multiple CCSRL-PDUs.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master, Slave unidir)
   ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of Video/Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2 and 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

3.3 Codec Tests

Purpose:

Test of optional codec settings in session setup.

TestCase 26 – MPEG4 Base Session

Priority:

Optional TC.

Objective:

This test case ensures that a UEUT supporting MPEG4 is able to encode and decode MPEG4 properly. The fundamental goal is to ensure the UEUT functions correctly when receiving an OLC for MPEG4 with DCI containing all (as many as possible) parameters.

The original purpose of the test is to check a very common cause of VT IOT issues with respect to optional / unsupported DCI (Decoder Configuration Information) parameters (ISO/IEC FDIS 14496-2: from 6.2.2 to 6.2.10.11). However, this test case is only focused on vol_control_parameters, therefore it is very strongly recommended that UE vendors confirm that the UEUT disregards all parameters (or as many as possible) of the DCI parameters that are specified as optional (ISO/IEC FDIS 14496-2: from 6.2.2 to 6.2.10.11) and unsupported by UEUT, to ensure, in so far as it is possible, that VT connectivity is unaffected in these circumstances.

Reference:

[H.324] G.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (MPEG4) { receiveAndTransmit }*
MasterSlave	Master
OLC Audio	AMR || [g7231]
OLC Video	*decoderconfiginfo=MPEG4 SVP L0 and with parameters Visual Object Sequence, Visual Object and Video Object Layer set. (ISO/IEC FDIS 14496-2: 6.2.2, 6.2.3) [with all parameters in vol_control_parameters]*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default Audio capabilities: Terminal default Video capabilities: Terminal default with inclusion of *genericVideoCapability (MPEG4) { receive | receiveAndTransmit }*
MasterSlave	Slave
OLC Audio	AMR || [g7231]
OLC Video	*decoderconfiginfo=MPEG4 SVP L0 and with parameters Visual Object Sequence, Visual Object and Video Object Layer set. (ISO/IEC FDIS 14496-2: 6.2.2, 6.2.3)*
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports MPEG4-Video.
2. Terminal B supports MPEG4-Video.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behavior checkpoint 2e.*
4. *Wait until video is displayed in both terminals.*
5. *Validate expected behaviour checkpoints 4.*
6. Terminate call session.

Expected Behavior:

2.
    a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected)
    b. RespMsg_terminalCapabilitySetAck received.
    c. RespMsg_masterSlaveDeterminationAck received
    d. RespMsg_openLogicalChannelAck for Audio received
    e. *ReqMsg_openLogicalChannel from Terminal A, contains Object parameter with identifier value equal to 1, and DCI (Decoder Configuration Information) parameter with identifier value equal to 2. Note: the parameters Visual Object Sequence, Visual Object and Video Object Layer should be set in DCI (ISO/IEC FDIS 14496-2: 6.2.2, 6.2.3).*
    f. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
    g. RespMsg_multiplexEntrySendAck for all mux table entries

4. Encoding + Sending/Reception + Decoding of MPEG4 Baseline SVP L0 Video which includes VOS + VO + VOL / Audio

6. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-4, 6

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2e and 4 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to true.
- Open logical channel for video at Terminal A shall initially attempt to use AL2 if Terminal B supports it.
- *Terminal A shall set all parameters in vol_control_parameters in OpenLogicalChannel for MPEG4 in Terminal Setup.*
- All other optional settings within [] bracket shall be ignored.

Note:

To comply with MPEG4 SVP L0, additionally TestCase 27 to TestCase 29-1 shall be performed.

TestCase 27 – MPEG4 SVH (Short Video Header) Session

Priority:

Optional TC.

Objective:

This test case ensures that a UEUT supporting MPEG4 is able to decode MPEG4 properly when using short video headers.

Reference:

[26.111] 6.6, [H.324] G.3, [14496-2] 6.3.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (MPEG4) { receiveAndTransmit }*
MasterSlave	Master
OLC Audio	AMR || [g7231]
OLC Video	*decoderconfiginfo=MPEG4 SVP L0 – SVH*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default Audio capabilities: Terminal default Video capabilities: Terminal default with inclusion of *genericVideoCapability (MPEG4) { receive | receiveAndTransmit }*
MasterSlave	Slave
OLC Audio	AMR || [g7231]
OLC Video	*decoderconfiginfo=MPEG4 SVP L0 – [SVH]*
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports MPEG4-Video with short video header encoding.
2. Terminal B supports MPEG4-Video.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behavior checkpoint 3.*
4. Terminate call session.

Expected Behavior:

2.
    a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected)
    b. RespMsg_terminalCapabilitySetAck received.
    c. RespMsg_masterSlaveDeterminationAck received
    d. RespMsg_openLogicalChannelAck for Audio received
    e. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
    f. RespMsg_multiplexEntrySendAck for all mux table entries
3. Encoding + Sending/Reception + Decoding of *MPEG4 Baseline SVP L0 – SVH Video* / Audio
4. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-3, 4

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 3 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to true.
- Open logical channel for video at Terminal A shall initially attempt to use AL2 if Terminal B supports it.
- All other optional settings within [] bracket shall be ignored.

Note:

If TestCase 26 is supported, this test case is mandatory.

TestCase 28 – MPEG4 HEC (Header extension Code) Session

Priority:

Optional TC.

Objective:

This test case ensures that a UEUT supporting MPEG4 is able to decode MPEG4 properly when using header extension code.

Reference:

[H.324] G.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (MPEG4) { receiveAndTransmit }*
MasterSlave	Master
OLC Audio	AMR || [g7231]
OLC Video	*decoderconfiginfo=MPEG4 SVP L0 – HEC*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default Audio capabilities: Terminal default Video capabilities: Terminal default with inclusion of *genericVideoCapability (MPEG4) { receive | receiveAndTransmit }*
MasterSlave	Slave
OLC Audio	AMR || [g7231]
OLC Video	*decoderconfiginfo=MPEG4 SVP L0 – [HEC]*
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports MPEG4-Video with HEC encoding.
2. Terminal B supports MPEG4-Video.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behavior checkpoint 3.*
4. Terminate call session.

Expected Behavior:

2.
    a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected)
    b. RespMsg_terminalCapabilitySetAck received.
    c. RespMsg_masterSlaveDeterminationAck received
    d. RespMsg_openLogicalChannelAck for Audio received
    e. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
    f. RespMsg_multiplexEntrySendAck for all mux table entries
3. Encoding + Sending/Reception + Decoding of *MPEG4 Baseline SVP L0 – HEC Video* / Audio
4. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-3, 4

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 3 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to true.
- Open logical channel for video at Terminal A shall initially attempt to use AL2 if Terminal B supports it.
- All other optional settings within [] bracket shall be ignored.

Note:

If TestCase 26 is supported, this test case is mandatory.

TestCase 29 – MPEG4 DP (DataPartitioning) Session

Priority:

Optional TC.

Objective:

This test case ensures that a UEUT supporting MPEG4 is able to decode MPEG4 properly when using data partitioning.

Reference:

[H.324] G.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (MPEG4) { receiveAndTransmit }*
MasterSlave	Master
OLC Audio	AMR || [g7231]
OLC Video	*decoderconfiginfo=MPEG4 SVP L0 – DP*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default Audio capabilities: Terminal default Video capabilities: Terminal default with inclusion of *genericVideoCapability (MPEG4) { receive | receiveAndTransmit }*
MasterSlave	Slave
OLC Audio	AMR || [g7231]
OLC Video	*decoderconfiginfo=MPEG4 SVP L0 – [DP]*
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports MPEG4-Video with data partitioning encoding.
2. Terminal B supports MPEG4-Video.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behavior checkpoint 3.*
4. Terminate call session.

Expected Behavior:

2.
    a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected)
    b. RespMsg_terminalCapabilitySetAck received.
    c. RespMsg_masterSlaveDeterminationAck received
    d. RespMsg_openLogicalChannelAck for Audio received
    e. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
    f. RespMsg_multiplexEntrySendAck for all mux table entries
3. Encoding + Sending/Reception + Decoding of *MPEG4 Baseline SVP L0 – DP Video* / Audio
4. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-3, 4

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 3 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to true.
- Open logical channel for video at Terminal A shall initially attempt to use AL2 if Terminal B supports it.
- All other optional settings within [] bracket shall be ignored.

Note:

If TestCase 26 is supported, this test case is mandatory.

TestCase 29-1 – MPEG4 DP + RVLC (DataPartitioning + ReverseVariableLengthCodes) Session

Priority:

Optional TC.

Objective:

This test case ensures that a UEUT supporting MPEG4 is able to decode MPEG4 properly when using data partitioning and reverse variable length codes.

Reference:

[H.324] G.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (MPEG4) { receiveAndTransmit }*
MasterSlave	Master
OLC Audio	AMR || [g7231]
OLC Video	*decoderconfiginfo=MPEG4 SVP L0 – DP+RVLC*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default Audio capabilities: Terminal default Video capabilities: Terminal default with inclusion of *genericVideoCapability (MPEG4) { receive | receiveAndTransmit }*
MasterSlave	Slave
OLC Audio	AMR || [g7231]
OLC Video	*decoderconfiginfo=MPEG4 SVP L0 – [DP+RVLC]*
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports MPEG4-Video with data partitioning and RVLC encoding.
2. Terminal B supports MPEG4-Video.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behavior checkpoint 3.*
4. Terminate call session.

Expected Behavior:

2.
    a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected)
    b. RespMsg_terminalCapabilitySetAck received.
    c. RespMsg_masterSlaveDeterminationAck received
    d. RespMsg_openLogicalChannelAck for Audio received
    e. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
    f. RespMsg_multiplexEntrySendAck for all mux table entries
3. Encoding + Sending/Reception + Decoding of *MPEG4 Baseline SVP L0 – DP+RVLC Video* / Audio
4. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-3, 4

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 3 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to true.
- Open logical channel for video at Terminal A shall initially attempt to use AL2 if Terminal B supports it.
- All other optional settings within [] bracket shall be ignored.

Note:

If TestCase 26 is supported, this test case is mandatory.

TestCase 30 – H.263 Annex D (Unrestricted Motion Vector)

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can successfully decode incoming H.263 video when Annex D/ Unrestricted Motion Vector is used.

Reference:

[26.111] 6.1, [26.110] A.2.2, [H.324] 6.6

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }* *unrestrictedVector=true*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*h263VideoCapability*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *h263VideoCapability { receive | receiveAndTransmit }* *[unrestrictedVector=true]*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*h263VideoCapability*
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master, Slave unidir)
   ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of *H.263 Annex D Video* / Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 31 – H.263 Annex E (Arithmetic Coding)

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can successfully decode incoming H.263 video when Annex E/Arithmetic Coding is used.

Reference:

[26.111] 6.1, [26.110] A.2.2, [H.324] 6.6

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }* *arithmeticCoding=true*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*h263VideoCapability*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *h263VideoCapability { receive | receiveAndTransmit }* *[arithmeticCoding=true]*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*h263VideoCapability*
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master, Slave unidir)
   ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of *H.263 Annex E Video* / Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 32 – H.263 Annex F (Advanced Prediction)

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can successfully decode incoming H.263 video when Annex F/ Advanced Prediction is used.

Reference:

[26.111] 6.1, [26.110] A.2.2, [H.324] 6.6

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }* *advancedPrediction=true*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*h263VideoCapability*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *h263VideoCapability { receive | receiveAndTransmit }* *[advancedPrediction=true]*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*h263VideoCapability*
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master, Slave unidir)
   ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of *H.263 Annex F Video* / Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 33 – H.263 Annex G (PB Frame)

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can successfully decode incoming H.263 video when Annex G/ PB Frame is used.

Reference:

[26.111] 6.1, [26.110] A.2.2, [H.324] 6.6

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }* *pbFrames=true*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*h263VideoCapability*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *h263VideoCapability { receive | receiveAndTransmit }* *[pbFrames=true]*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*h263VideoCapability*
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master, Slave unidir)
   ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of *H.263 Annex G Video* / Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 34 – H.263 Annex I (Advanced Intra Coding)

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can successfully decode incoming H.263 video when Annex I/Advanced Intra Coding is used.

Reference:

[26.111] 6.1, [26.911] 7.2, [H.324] 6.6

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }* *h263Options=isPresent* *advancedIntraCodingMode=true*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*h263VideoCapability*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *h263VideoCapability { receive | receiveAndTransmit }* *[h263Options=isPresent* *advancedIntraCodingMode=true]*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*h263VideoCapability*
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of *H.263 Annex I Video* / Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 35 – H.263 Annex J (Loop Filter)

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can successfully decode incoming H.263 video when Annex J/Loop Filter is used.

Reference:

[26.111] 6.1, [26.911] 7.2, [H.324] 6.6

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }* *h263Options=isPresent* *deblockingFilterMode=true*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*h263VideoCapability*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *h263VideoCapability { receive | receiveAndTransmit }* *[h263Options=isPresent* *deblockingFilterMode=true]*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*h263VideoCapability*
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of *H.263 Annex J Video* / Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 36 – H.263 Annex K (Slice Structure Mode, without RS submode)

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can successfully decode incoming H.263 video when Annex K/Slice Structure Mode is used.

Reference:

[26.111] 6.1, [26.911] 7.2, [H.324] 6.6

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }* *h263Options=isPresent* *[slicesInOrder-NonRect=true]* *[slicesInOrder-Rect=true]* *[slicesNoOrder-NonRect=true]* *[slicesNoOrder-Rect=true]* *At least one of the slices... options shall be true*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*h263VideoCapability*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *h263VideoCapability { receive | receiveAndTransmit }* *[h263Options=isPresent* *[slicesInOrder-NonRect=true]* *[slicesInOrder-Rect=true]* *[slicesNoOrder-NonRect=true]* *[slicesNoOrder-Rect=true]* *At least one of the slices... options shall be true]*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*h263VideoCapability*
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of *H.263 Annex K Video* / Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 37 – H.263 Annex T (Modified Quantizer)

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can successfully decode incoming H.263 video when Annex T/Modified Quantizer is used.

Reference:

[26.111] 6.1, [26.911] 7.2, [H.324] 6.6

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }* *h263Options=isPresent* *modifiedQuantizationMode=true*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*h263VideoCapability*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *h263VideoCapability { receive | receiveAndTransmit }* *[h263Options=isPresent* *modifiedQuantizationMode=true]*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*h263VideoCapability*
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of *H.263 Annex T Video* / Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 38 – H.261 Session

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can successfully encode and decode H.261 video.

Reference:

[26.111] 6.1, 6.6, [H.324] 6.6

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h261VideoCapability { receive }* h263VideoCapability { receive }
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*h261VideoCapability*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *h261VideoCapability { receive | receiveAndTransmit }* h263VideoCapability { receive | receiveAndTransmit }
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*h261VideoCapability*
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master, Slave unidir)
   ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of *H.261* / Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 39 – G.723.1 Session

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can successfully encode and decode G.723.1 audio.

Reference:

[26.111] 6.1, 6.7, [H.324] 6.1, 6.7, C.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: *g7231 { receive }* genericAudioCapability (AMR) { receive } Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	-
OLC Audio	*g7231*
OLC Video	h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: *g7231 { receive | receiveAndTransmit }* genericAudioCapability (AMR) { receive | receiveAndTransmit } Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }]
MasterSlave	-
OLC Audio	*g7231*
OLC Video	h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of Video / *G.723.1 Audio*
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 101 – G.722.2 Base Session

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can successfully encode and decode G.722.2 audio.

Reference:

[26.111] 6.7, [H.324] 6.7.4, D.4.4, [G.722.2].

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: *g7222 { receive }* genericAudioCapability { receive } Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	-
OLC Audio	*g7222*
OLC Video	h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: *g7222 { receive }* genericAudioCapability { receive } Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	-
OLC Audio	*g7222*
OLC Video	h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of Video / *G.722.2 Audio*
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 151 – H.264 Base Session

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can successfully encode and decode H.264 Baseline video.

Reference:

[H.264]

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (H.264) { receive }* h263VideoCapability { receive }
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*genericVideoCapability (H.264)*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *genericVideoCapability (H.264) { receive | receiveAndTransmit }* h263VideoCapability { receive | receiveAndTransmit }
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*genericVideoCapability (H.264)*
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
6. RespMsg_multiplexEntrySendAck for all mux table entries
7. Encoding + Sending/Reception + Decoding of *H.264* / Audio
8. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in step 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 152 – OLC for H.264 with DCI

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate successfully call when DCI is included to the Open Logical Channel message for H.264 video channel.

Reference:

[H.264], [26.111] 6.6

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true videoWithAL2=true audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (H.264) { receive }* [genericVideoCapability (MPEG4) { receive }] h263VideoCapability { receive }
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*Unidir genericVideoCapability (H.264) with DCI*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default with inclusion of videoWithAL2=true Audio capabilities: Terminal default Video capabilities: Terminal default with inclusion of *genericVideoCapability (H.264) { receive | receiveAndTransmit }*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*Unidir genericVideoCapability (H.264)*
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports sending OLC for H.264 with DCI.
2. Terminal B supports starting unidirectional OLC with H.264 over AL2.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 5-6 and 8.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. *Unidir ReqMsg_OpenLogicalChannel for Video received at Terminal B contains DCI.*
6. *RespMsg_openLogicalChannelAck (Master, Slave unidir) for Video received.*
7. RespMsg_multiplexEntrySendAck for all mux table entries
8. Encoding + Sending/Reception + Decoding of *H.264* / Audio
9. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-8, 9

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 5-6 and 8 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 153 – OLC for H.264 without DCI and changing video parameters within the channel

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate successfully call when DCI is not included to the Open Logical Channel message for H.264 video channel. Video parameters are changed during the call within the current video stream. Sequence Parameter Set and Picture Parameter Set can be changed in the video stream still considering possible limitations in the originally indicated peer TCS.

Reference:

[H.264], [26.111] 6.6

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true videoWithAL2=true audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (H.264) { receive }* [genericVideoCapability (MPEG4) { receive }] h263VideoCapability { receive }
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*Unidir genericVideoCapability (H.264) without DCI*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default with inclusion of videoWithAL2=true Audio capabilities: Terminal default Video capabilities: Terminal default with inclusion of *genericVideoCapability (H.264) { receive | receiveAndTransmit }*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*Unidir genericVideoCapability (H.264)*
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports sending OLC for H.264 without DCI.
2. Terminal A supports changing video parameters within the video stream.
3. Terminal B supports starting unidirectional OLC with H.264 over AL2.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 5 – 6 and 8-10.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. *Unidir ReqMsg_OpenLogicalChannel for Video received at Terminal B does not contain DCI.*
6. *RespMsg_openLogicalChannelAck (Master, Slave unidir) for Video received.*
7. RespMsg_multiplexEntrySendAck for all mux table entries
8. *Encoding + Sending/Reception + Decoding of H.264 / Audio*
9. *Terminal A changes H.264 Sequence Parameter Set and Picture Parameter Set within the stream still considering possible limitations in the originally indicated peer TCS..*
10. Encoding + Sending/Reception + Decoding of *H.264* / Audio
11. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-8, 9-10, 11

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 5-6 and 8-9 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 154 – OLC for H.264 video over AL3 with DCI

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate successfully call when DCI is included to the bidirectional Open Logical Channel message for H.264 video channel.

Reference:

[H.264], [26.111] 6.6, [H.324] 6.5.2, [H.245] B.3.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true videoWithAL2=false audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (H.264) { receive }* [genericVideoCapability (MPEG4) { receive }] h263VideoCapability { receive }
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*bidir genericVideoCapability (H.264) with DCI*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default with inclusion of videoWithAL3=true Audio capabilities: Terminal default Video capabilities: Terminal default with inclusion of *genericVideoCapability (H.264) { receive | receiveAndTransmit }*
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*bidir genericVideoCapability (H.264)*
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports sending bidirectional OLC for H.264 with DCI.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 2e-2g and 4 for ReqMsg_OpenLogicalChannel accepted by Terminal B, or steps 2e-2h and 4 for ReqMsg_OpenLogicalChannel rejected by Terminal B.*
4. Terminate call session.

Expected Behavior:

For ReqMsg_OpenLogicalChannel accepted by terminal B.

2.
    a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
    b. RespMsg_terminalCapabilitySetAck received.
    c. RespMsg_masterSlaveDeterminationAck received
    d. RespMsg_openLogicalChannelAck for Audio received
    e. *Bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict.*
    f. *Bidir ReqMsg_OpenLogicalChannel for Video received at Terminal B contains DCI and is accepted.*
    g. *RespMsg_openLogicalChannelAck (Master) for Video is received at Terminal A.*
    h. IndMsg_openLogicalChannelConfirm (slave) for Video is received at Terminal B.
    i. RespMsg_multiplexEntrySendAck for all mux table entries
    j. Encoding + Sending/Reception + Decoding of *H.264* / Audio
4. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-2i, 2j, 4

For ReqMsg_OpenLogicalChannel rejected by Terminal B and subsequently Terminal B reproposes with OLC reverse parameter same as Terminal A while keeping Terminal B's OLC forward parameter unchanged.

2.

a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).

b. RespMsg_terminalCapabilitySetAck received.

c. RespMsg_masterSlaveDeterminationAck received.

d. RespMsg_openLogicalChannel for Audio received.

e. Bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict.

f. Bidir ReqMsg_OpenLogicalChannel for Video received at Terminal B is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=unsuitableReverseParameter.

g. Bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is accepted

h. RespMsg_openLogicalChannelAck (Slave) for Video is received at Terminal B.

i. IndMsg_openLogicalChannelConfirm (Master) for Video is received at Terminal A.

j. RespMsg_multiplexEntrySendAck for all mux table entries.

k. Enconding + Sending/Reception + Decoding of Video / Audio.

4. CmdMsg_endSessionCommand sent.

Order: 2a, 2b-2c, 2d-2j, 2k, 4

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined steps 2e-2g and 4 for ReqMsg_OpenLogicalChannel accepted by Terminal B, or steps 2e-2h and 4 for ReqMsg_OpenLogicalChannel rejected by Terminal B to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 155 – OLC for H.264 video over AL3 without DCI

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate successfully call when DCI is not included to the bidirectional Open Logical Channel message for H.264 video channel.

Reference:

[H.264], [26.111] 6.6, [H.324] 6.5.2, [H.245] B.3.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true videoWithAL2=false audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (H.264) { receive }* [genericVideoCapability (MPEG4) { receive }] h263VideoCapability { receive }
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*bidir genericVideoCapability (H.264) without DCI*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default with inclusion of videoWithAL3=true Audio capabilities: Terminal default Video capabilities: Terminal default with inclusion of *genericVideoCapability (H.264) { receive | receiveAndTransmit }*
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*bidir genericVideoCapability (H.264)*
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports sending bidirectional OLC for H.264 without DCI.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 2e-2g and 4 for ReqMsg_OpenLogicalChannel accepted by Terminal B, or steps 2e-2h and 4 for ReqMsg_OpenLogicalChannel rejected by Terminal B.*
4. Terminate call session.

Expected Behavior:

For ReqMsg_OpenLogicalChannel accepted by terminal B.

2.
    a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
    b. RespMsg_terminalCapabilitySetAck received.
    c. RespMsg_masterSlaveDeterminationAck received
    d. RespMsg_openLogicalChannelAck for Audio received
    e. *Bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict.*
    f. *Bidir ReqMsg_OpenLogicalChannel for Video received at Terminal B does not contain DCI and is accepted.*
    g. *RespMsg_openLogicalChannelAck (Master) for Video is received at Terminal A.*
    h. IndMsg_openLogicalChannelConfirm (slave) for Video is received at Terminal B.
    i. RespMsg_multiplexEntrySendAck for all mux table entries
    j. Encoding + Sending/Reception + Decoding of *H.264* / Audio

4. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-2i, 2j, 4

For ReqMsg_OpenLogicalChannel rejected by Terminal B and subsequently Terminal B reproposes with OLC reverse parameter same as Terminal A while keeping Terminal B's OLC forward parameter unchanged.

2.

   a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
   b. RespMsg_terminalCapabilitySetAck received.
   c. RespMsg_masterSlaveDeterminationAck received.
   d. RespMsg_openLogicalChannel for Audio received.
   e. *Bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict.*
   f. *Bidir ReqMsg_OpenLogicalChannel for Video received at Terminal B is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=unsuitableReverseParameter.*
   g. *Bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is accepted*
   h. *RespMsg_openLogicalChannelAck (Slave) for Video is received at Terminal B.*
   i. IndMsg_openLogicalChannelConfirm (Master) for Video is received at Terminal A.
   j. RespMsg_multiplexEntrySendAck for all mux table entries.
   k. Enconding + Sending/Reception + Decoding of Video /Audio.

4. CmdMsg_endSessionCommand sent.

Order: 2a, 2b-2c, 2d-2j, 2k, 4

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2e-2g and 4 for ReqMsg_OpenLogicalChannel accepted by Terminal B, or steps 2e-2h and 4 for ReqMsg_OpenLogicalChannel rejected by Terminal B to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 156 – OLC for H.264 video over AL3/AL2 with DCI

Priority:

Optional TC.

Objective:

To verify that when Terminal A as a master sends bidir OLC for H.264 video with DCI while Terminal B sends unidir OLC for H.264 video, Terminal B accepts bidirectional OLC while Terminal A rejects unidirectional OLC.

Reference:

[H.264], [26.111] 6.6, [H.324] 6.5.2, [H.245] B.3.3, C.4.1.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true videoWithAL2=true audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (H.264) { receive }* [genericVideoCapability (MPEG4) { receive }] h263VideoCapability { receive }
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*bidir genericVideoCapability (H.264) with DCI*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default with inclusion of videoWithAL3=true Audio capabilities: Terminal default Video capabilities: Terminal default with inclusion of *genericVideoCapability (H.264) { receive | receiveAndTransmit }*
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*unidir genericVideoCapability (H.264)*
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports sending bidirectional OLC for H.264 with DCI.
2. Terminal B supports starting unidirectional OLC with H.264over AL2.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected checkpoints 2e-2g and 4 for ReqMsg_OpenLogicalChannel accepted by Terminal B, or steps 2e-2h and 4 for ReqMsg_OpenLogicalChannel rejected by Terminal B.*
4. Terminate call session.

Expected Behavior:

For ReqMsg_OpenLogicalChannel accepted by Terminal B.

2.

   a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).

   b. RespMsg_terminalCapabilitySetAck received.

   c. RespMsg_masterSlaveDeterminationAck received

   d. RespMsg_openLogicalChannelAck for Audio received

   e. *Unidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict.*

   f. *Bidir ReqMsg_OpenLogicalChannel for Video received at Terminal B contains DCI and is accepted.*

   g. *RespMsg_openLogicalChannelAck (Master) or IndMsg_openLogicalChannelConfirm (Slave) for Video received.*

   h. RespMsg_multiplexEntrySendAck for all mux table entries

   i. Encoding + Sending/Reception + Decoding of H.264 / Audio

4. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2e-2h, 2i, 4

For ReqMsg_OpenLogicalChannel rejected by Terminal B and subsequently Terminal B reproposes with OLC reverse parameter same as Terminal A while keeping Terminal B's OLC forward parameter unchanged.

2.

   a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
   b. RespMsg_terminalCapabilitySetAck received.
   c. RespMsg_masterSlaveDeterminationAck received.
   d. RespMsg_openLogicalChannelAck for Audio received.
   e. *Unidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict.*
   f. *Bidir ReqMsg_OpenLogicalChannel for Video received at Terminal B is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=unsuitableReverseParameter.*
   g. *Bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is accepted.*
   h. *IndMsg_openLogicalChannelConfirm (Master) for Video received at Terminal A.*
   i. RespMsg_multiplexEntrySendAck for all mux table entries.
   j. Encoding + Sending/Reception + Decoding of Video / Audio.

4. CmdMsg_endSessionCommand sent.

Order: 2a, 2b-2c, 2d-2j, 4

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2e-2g and 4 for ReqMsg_OpenLogicalChannel accepted by Terminal B, or steps 2e-2h and 4 for ReqMsg_OpenLogicalChannel rejected by Terminal B to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 157 – OLC for H.264 video over AL3/AL2 without DCI

Priority:

Optional TC.

Objective:

To verify that when Terminal A as a master sends bidir OLC for H.264 video without DCI while Terminal B sends unidir OLC for H.264 video, Terminal B accepts bidirectional OLC while Terminal A rejects unidirectional OLC.

Reference:

[H.264], [26.111] 6.6, [H.324] 6.5.2, [H.245] B.3.3, C.4.1.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true videoWithAL2=true audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (H.264) { receive }* [genericVideoCapability (MPEG4) { receive }] h263VideoCapability { receive }
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*bidir genericVideoCapability (H.264) without DCI*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default with inclusion of videoWithAL3=true Audio capabilities: Terminal default Video capabilities: Terminal default with inclusion of *genericVideoCapability (H.264) { receive | receiveAndTransmit }*
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*unidir genericVideoCapability (H.264)*
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports sending bidirectional OLC for H.264 without DCI.
2. Terminal B supports starting unidirectional OLC with H.264over AL2.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 2e-2g and 4 for ReqMsg_OpenLogicalChannel accepted by Terminal B, or steps 2e-2i and 4 for ReqMsg_OpenLogicalChannel rejected by Terminal B.*
4. Terminate call session.

Expected Behavior:

For ReqMsg_OpenLogicalChannel accepted by Terminal B.

2.

   a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
   b. RespMsg_terminalCapabilitySetAck received.
   c. RespMsg_masterSlaveDeterminationAck received
   d. RespMsg_openLogicalChannelAck for Audio received
   e. *Unidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict.*
   f. *Bidir ReqMsg_OpenLogicalChannel for Video received at Terminal B do not contain DCI and is accepted.*
   g. *RespMsg_openLogicalChannelAck (Master) or IndMsg_openLogicalChannelConfirm (Slave) for Video received.*
   h. RespMsg_multiplexEntrySendAck for all mux table entries
   i. Encoding + Sending/Reception + Decoding of H.264 / Audio

4. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2e-2h, 2i, 4

For ReqMsg_OpenLogicalChannel rejected by Terminal B and subsequently Terminal B reproposes with OLC reverse parameter same as Terminal A while keeping Terminal B's OLC forward parameter unchanged.

2.

   a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
   b. RespMsg_terminalCapabilitySetAck received.
   c. RespMsg_masterSlaveDeterminationAck received.
   d. RespMsg_openLogicalChannelAck for Audio received.
   e. *Unidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict.*
   f. *Bidir ReqMsg_OpenLogicalChannel for Video received at Terminal B is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=unsuitableReverseParameter.*
   g. *Bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is accepted*
   h. *IndMsg_openLogicalChannelConfirm (Master) for Video received at Terminal A.*
   i. RespMsg_multiplexEntrySendAck for all mux table entries.
   j. Encoding + Sending/Reception + Decoding of Video / Audio.

4. CmdMsg_endSessionCommand sent.

Order: 2a, 2b-2c, 2d-2j, 4

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2e-2g and 4 for ReqMsg_OpenLogicalChannel accepted by Terminal B, or steps 2e-2h and 4 for ReqMsg_OpenLogicalChannel rejected by Terminal B to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 158 – OLC for symmetric codec H.264

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call, even when Terminal A only supports symmetrical H.264 capability.

Reference:

[H.245] B.2.2.2, C.4.1.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true videoWithAL2=true audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (H.264) { receiveAndTransmit }* *[genericVideoCapability (MPEG4) { receiveAndTransmit }]* *h263VideoCapability { receiveAndTransmit }* Capability descriptors: *Number 0 (1st):* *1 – genericAudio, [g7231]* *2 – genericVideoCapability (H.264), [genericVideoCapability (MPEG4)], h263VideoCapability*
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*unidir genericVideoCapability(H.264)*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true videoWithAL2=true audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *genericVideoCapability (H.264) { receive | receiveAndTransmit }* *[genericVideoCapability (MPEG4) { receive | receiveAndTransmit }]* *h263VideoCapability { receive | receiveAndTransmit}* Capability descriptors: *Number 0 (1st):* *1 – genericAudio, [g7231]* *2 – genericVideoCapability (H.264), [genericVideoCapability (MPEG4)], h263VideoCapability*
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*unidir genericVideoCapability (H.264)*
[BER]	optional: bit error injection

Precondition:

1. Terminal B supports starting unidirectional OLC for H.264 video over AL2.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 5-7, and 9.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2.
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received.
4. RespMsg_openLogicalChannelAck for Audio received.
5. *Unidir ReqMsg_OpenLogicalChannel for H.264 Video received at Terminal A is accepted with RespMsg_openLogicalChannelAck.*
6. *Unidir ReqMsg_OpenLogicalChannel for H.264 Video received at Terminal B is accepted with RespMsg_openLogicalChannelAck.*
7. *RespMsg_openLogicalChannelAck (Master, Slave) for Video received.*
8. RespMsg_multiplexEntrySendAck for all mux table entries.
9. Encoding + Sending/Reception + Decoding of Video / Audio

10. CmdMsg_endSessionCommand sent.

Order: 1, 2-3, 4-9, 10

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 5-7 and 9 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 159 – Master slave OLC conflict for symmetric codec H.264

Priority:

Optional TC.

Objective:

To verify Terminal B continues to operate normally when it encounters a master slave OLC conflict for symmetric codecs. The intention of this test case is to make sure even if a terminal requests open logical channel in an unpopular way, the call session establishment does not fail. Note that Terminal A in this test case is behaving badly i.e. it selects a video codec against its own preferences. That kind of behavior should be avoided in actual implementations.

Reference:

[H.324] 6.5.2, [H.245] B.2.2.3, B.3.3, C.4.1.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true videoWithAL2=true audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (H.264) { receiveAndTransmit }* *[genericVideoCapability (MPEG4) { receiveAndTransmit }* *h263VideoCapability { receiveAndTransmit }* Capability descriptors: *Number 0 (1st):* *1 – genericAudio, [g7231]* *2 – genericVideoCapability (H.264), [genericVideoCapability (MPEG4)], h263VideoCapability*
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*unidir 2nd alternativeCapabilitySet Video of Terminal A and AdaptationLayerType.al2*WithSequenceNumbers
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default with inclusion of videoWithAL2=true Audio capabilities: Terminal default Video capabilities: Terminal default with inclusion of *genericVideoCapability (H.264) { receive | receiveAndTransmit }*
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*unidir 1st alternativeCapabilitySet Video of Terminal A and* *AdaptationLayerType.al2 with default terminal settings for sequence numbers*
[BER]	optional: bit error injection

Precondition:

1. Terminal B supports starting unidirectional OLC for H.264 video over AL2.
2. Terminal A supports starting video same as its 2nd preferred alternativeCapabilitySet Video.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 5-9 and 11.*
4. Terminate the call.

Expected Behavior:

1. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received.
4. RespMsg_openLogicalChannelAck for Audio received.
5. *Unidir ReqMsg_OpenLogicalChannel for Video (with Terminal A's 1st alternativeCapabilitySet for video) received at Terminal A is rejected with reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict as Terminal A has already started opening video channel with a different codec and cannot handle different codecs in different directions simultaneously.*
6. *Unidir ReqMsg_OpenLogicalChannel for Video received at Terminal B is accepted with RespMsg_openLogicalChannelAck.*
7. *Optionally, ReqMsg_CloseLogicalChannel received at Terminal A. If received, Terminal A sends RespMsg_CloseLogicalChannelAck.*

8. *On reception of RespMsg_OpenLogicalChannelReject, Terminal B re-proposes a unidir ReqMsg_OpenLogicalChannel for Video (with Terminal A's 2nd alternativeCapabilitySet for video)*
9. *RespMsg_openLogicalChannelAck (Master, Slave) for Video received.*
10. RespMsg_multiplexEntrySendAck for all mux table entries.
11. Encoding + Sending/Reception + Decoding of Video / Audio.
12. CmdMsg_endSessionCommand sent.

Order: 1, 2-3, 4-11, 12

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 5 - 9 and 11 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to true.
- Terminal A will initially attempt to transmit video over AL2 when supported by Terminal B.
- All other optional settings within [] bracket shall be ignored.

TestCase 160 – Out-Of-Band H264 DCI Change for AL2 unidirectional Logical Channel

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure that after negotiating successfully a call with H264 DCI being included in the unidirectional Open Logical, the UEUT can change DCI during the call by closing and opening a new H264 unidirectional Video Channel which signals the new DCI.

Reference:

[H.264], [26.111] 6.6

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true videoWithAL2=true audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *genericVideoCapability (H.264) { receive | receiveAndTransmit }* [genericVideoCapability (MPEG4) { receive | receiveAndTransmit}] h263VideoCapability { receive | receiveAndTransmit }
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*Unidir genericVideoCapability (H.264) with DCI*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default with inclusion of videoWithAL2=true Audio capabilities: Terminal default Video capabilities: Terminal default with inclusion of *genericVideoCapability (H.264) { receive | receiveAndTransmit }*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*Unidir genericVideoCapability (H.264)*
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports sending OLC for H.264 with DCI.
2. Terminal B supports starting unidirectional OLC with H.264 over AL2.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 5-6 and 8-13.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. *Unidir ReqMsg_OpenLogicalChannel for Video received at Terminal B contains DCI.*
6. *RespMsg_openLogicalChannelAck (Master, Slave unidir) for Video received.*
7. RespMsg_multiplexEntrySendAck for all mux table entries
8. *Encoding + Sending/Reception + Decoding of H.264 / Audio*
9. *ReqMsg_CloseLogicalChannel for Video send from Terminal A.*
10. *On reception of ReqMsg_CloseLogicalChannel at Terminal B it sends RespMsg_CloseLogicalChannelAck.*
11. *Terminal A stops sending Video on RespMsg_CloseLogicalChannelAck*
12. *unidir ReqMsg_OpenLogicalChannel with new DCI received at Terminal B is accepted with RespMsg_openLogicalChannelAck.*
13. Encoding + Sending/Reception + Decoding of H.264 / Audio
14. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-8, 9 -13, 14

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 5-6 and 8-13 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 161 – Out-Of-Band H264 DCI Change for AL3 bidirectional Logical Channel

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure that after negotiating successfully a call with H264 DCI being included in the bidirectional Open Logical, the UEUT can change DCI during the call by closing and opening a new H264 bidirectional Video Channel which signals the new DCI.

Reference:

[H.264], [26.111] 6.6, [H.324] 6.5.2, [H.245] B.3.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true videoWithAL2=false audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *genericVideoCapability (H.264) { receive }* [genericVideoCapability (MPEG4) { receive }] h263VideoCapability { receive | receiveAndTransmit }
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*bidir genericVideoCapability (H.264) with DCI*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default with inclusion of videoWithAL3=true Audio capabilities: Terminal default Video capabilities: Terminal default with inclusion of *genericVideoCapability (H.264) { receive | receiveAndTransmit }*
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*bidir genericVideoCapability (H.264)*
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports sending bidirectional OLC for H.264 with DCI.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 5-7 and 9-16.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. *Bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict.*
6. *Bidir ReqMsg_OpenLogicalChannel for Video received at Terminal B contains DCI and is accepted.*
7. *RespMsg_openLogicalChannelAck (Master) for Video is received at Terminal A.*
8. IndMsg_openLogicalChannelConfirm (slave) for Video is received at Terminal B.
9. *RespMsg_multiplexEntrySendAck for all mux table entries*
10. *Encoding + Sending/Reception + Decoding of H.264 / Audio*
11. *ReqMsg_CloseLogicalChannel for Video send from Terminal A.*
12. *On reception of ReqMsg_CloseLogicalChannel at Terminal B it sends RespMsg_CloseLogicalChannelAck.*
13. *Terminal A stops sending Video on RespMsg_CloseLogicalChannelAck*
14. *Bidir ReqMsg_OpenLogicalChannel with new DCI in the forward parameters received at Terminal B is accepted with RespMsg_openLogicalChannelAck.*

15. *IndMsg_openLogicalChannelConfirm (slave) for Video is received at Terminal B.*
16. Encoding + Sending/Reception + Decoding of H.264 / Audio
17. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-10, 11-16, 17

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 5-7 and 9-16 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

3.4 H.245 Special Commands Tests

Purpose:

Test of optional H.245 signaling during session.

TestCase 40 – Spatial/Temporal Trade Off

Priority:

Optional TC.

Objective:

This test case ensures that a UEUT continues to behave as expected without freezing incoming video when receiving video temporal spatial tradeoff command, no matter whether the UEUT supports it. On supporting spatial/temporal tradeoff command, the UEUT should adjust the quality of the transmitting video accordingly.

Reference:

[H.245] B.13.5, [H245] B.14.2

Terminal A Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Terminal B Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Precondition:

1. Terminal A supports sending video temporal spatial tradeoff command.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *After video is displayed at Terminal A, Terminal A sends video temporal spatial tradeoff command with value "Low".*
4. *Validate expected behaviour checkpoints 3b~3c.*
5. *If Terminal B supports video temporal spatial tradeoff command, received video at Terminal A should be adjusted to high quality and/or low frame rate accordingly.*
6. *Validate received video at Terminal B does not freeze.*
7. *Terminal A sends video temporal spatial tradeoff command with value "High".*
8. *Validate expected behaviour checkpoints 7a~7b.*
9. *If Terminal B supports video temporal spatial tradeoff command, received video at Terminal A should be adjusted to low quality and/or high frame rate accordingly.*
10. *Validate received video at Terminal B does not freeze.*
11. *Terminal A sends video temporal spatial tradeoff command with value "Medium".*
12. *Validate expected behaviour checkpoints 11a~11b.*
13. *If Terminal B supports video temporal spatial tradeoff command, received video at Terminal A should be adjusted to average quality and/or average frame rate accordingly.*
14. *Validate received video at Terminal B does not freeze.*
15. Terminate call session.

Expected Behavior:

2.

a. Level setup on Muxlevel { 3 [with H.223 Annex B optional header] | 2 [with H.223 Annex B optional header] | 1 | 0 } (The lower level of Terminal A and Terminal B selected)

b. RespMsg_terminalCapabilitySetAck received.

c. RespMsg_masterSlaveDeterminationAck received

d. RespMsg_openLogicalChannelAck for Audio received

e. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received

f. RespMsg_multiplexEntrySendAck for all mux table entries

For feature supported by Terminal B:

3.

a. Encoding + Sending/Reception + Decoding of Video / Audio

b. Send MiscComMsg_videoTemporalSpatialTradeOff with value "Low".

c. MiscComMsg_videoTemporalSpatialTradeOff received at Terminal B

7.

a. Send MiscComMsg_videoTemporalSpatialTradeOff with value "High".

b. MiscComMsg_videoTemporalSpatialTradeOff received at Terminal B

c. [MiscIndMsg_videoTemporalSpatialTradeOff received at Terminal A]

11.

a. Send MiscComMsg_videoTemporalSpatialTradeOff with value "Medium".

b. MiscComMsg_videoTemporalSpatialTradeOff received at Terminal B

c. [MiscIndMsg_videoTemporalSpatialTradeOff received at Terminal A]

15. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-3a, 3b, 3c, 7a, 7b, 7c, 11a, 11b, 11c, 15

For feature not supported by Terminal B (u):

3.

a. Encoding + Sending/Reception + Decoding of Video / Audio

b. Send MiscComMsg_videoTemporalSpatialTradeOff with value "Low".

c. MiscComMsg_videoTemporalSpatialTradeOff received at Terminal B. IndMsg_FunctionNotSupported is returned from Terminal B

7.

a. Send MiscComMsg_videoTemporalSpatialTradeOff with value "High".

b. MiscComMsg_videoTemporalSpatialTradeOff received at Terminal B. IndMsg_FunctionNotSupported is returned from Terminal B.

11.

a. Send MiscComMsg_videoTemporalSpatialTradeOff with value "Medium".

b. MiscComMsg_videoTemporalSpatialTradeOff received at Terminal B. IndMsg_FunctionNotSupported is returned from Terminal B

15. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-3a, 3b, 3c, 7a, 7b, 11a, 11b, 15

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 3a ~ 3c, 7a ~ 7b and 11a ~ 11b to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to true.
- Open logical channel for video at Terminal A shall initially attempt to use AL2 if Terminal B supports it.
- All other optional settings within [] bracket shall be ignored.

Note:

The corresponding interoperability test case is TC 527.

Explanation for the values in Expected Behavior:

Low = [0,n-1]

Med = [n,m]

High = [m+1,31]

where 0 < n <= m < 31.

TestCase 41 – Video Fast Update

Priority:

Optional TC.

Objective:

This test case ensures that a UEUT continues to behave as expected without freezing incoming video when receiving video fast update picture command, no matter whether the UEUT supports it. On supporting video fast update command, the UEUT should generate an I-frame of the transmitting video accordingly.

Reference:

[H.245] B.13.5

Terminal A Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Terminal B Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Precondition:

1. Terminal A supports sending video fast update picture command.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *After video is displayed at Terminal A, Terminal A sends video fast update picture command.*
4. *Validate expected behaviour checkpoints 3b and 5a~5b*
5. *If Terminal B supports video fast update picture command, received video at Terminal A should be refreshed.*
6. *Validate received video at Terminal B does not freeze.*
7. Terminate call session.

Expected Behavior:

2.
    a. Level setup on Muxlevel { 3 [with H.223 Annex B optional header] | 2 [with H.223 Annex B optional header] | 1 | 0 } (The lower level of Terminal A and Terminal B selected)
    b. RespMsg_terminalCapabilitySetAck received.
    c. RespMsg_masterSlaveDeterminationAck received
    d. RespMsg_openLogicalChannelAck for Audio received
    e. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
    f. RespMsg_multiplexEntrySendAck for all mux table entries

For feature supported by Terminal B:

3.
    a. Encoding + Sending/Reception + Decoding of Video / Audio

   b. *Send MiscComMsg_videoFastUpdatePicture [, MiscComMsg_videoFastUpdateGOB, MiscComMsg_videoFastUpdateMB]*

5.

   a. *At least one video I-frame is received within a few seconds*

   b. *[One or all of MiscComMsg_videoFastUpdatePicture [, MiscComMsg_videoFastUpdateGOB, MiscComMsg_videoFastUpdateMB] is received]*

7. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-3a, 3b, 5a, 5b, 7

For feature not supported by Terminal B (u):

3.

   a. Encoding + Sending/Reception + Decoding of Video / Audio

   b. *Send MiscComMsg_videoFastUpdatePicture [, MiscComMsg_videoFastUpdateGOB, MiscComMsg_videoFastUpdateMB]*
   IndMsg_FunctionNotSupported is returned from Terminal B

7. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-3a, 3b, 7

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 3a ~ 3b and 5a ~ 5b to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to true.
- Open logical channel for video at Terminal A shall initially attempt to use AL2 if Terminal B supports it.
- All other optional settings within [] bracket shall be ignored.

TestCase 42 – H.263 Switching Video Size using Request Mode

Priority: Optional TC.

Objective:

This test case ensures that a UEUT continues to behave as expected without freezing incoming video when receiving request mode message, no matter whether the UEUT supports it. On supporting video request mode for switching video size, the UEUT shall switch the video size of the transmitting video accordingly.

Reference:

[H.324] 6.5.3, [H.245] 5.6, B.3.1, B.6.1.1, B.6.2, B.6.3, B.6.4, C.4.1, C.5.1, C.9

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { transmit | receiveAndTransmit | receive }* *sqcifMPI_isPresent=true* *qcifMPI_isPresent=true*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*bidir || [unidir] h263VideoCapability*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default Audio capabilities: Terminal default Video capabilities: Terminal default with inclusion of *h263VideoCapability { transmit | receiveAndTransmit | receive }* *sqcifMPI_isPresent=true* *qcifMPI_isPresent=true*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*bidir || [unidir] h263VideoCapability*
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports sending request mode.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *After video is displayed at Terminal A, Terminal A sends request mode message.*
4. *Validate expected behaviour checkpoints 3b~3j*
5. *If Terminal B supports request mode for switching video size, received video size at Terminal A should be switched accordingly.*
6. *Validate received video at Terminal B does not freeze.*
7. Terminate call session.

Expected Behavior:

2.
    a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected)
    b. RespMsg_terminalCapabilitySetAck received
    c. RespMsg_masterSlaveDeterminationAck received
    d. RespMsg_openLogicalChannelAck for Audio received
    e. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
    f. RespMsg_multiplexEntrySendAck for all mux table entries

For feature supported by Terminal B (with indication of transmitVideoCapability for H.263):

3.
    a. Encoding + Sending/Reception + Decoding of Video / Audio

b. *Send ReqMsg_RequestMode at Terminal A with the following parameters:*
ModeElement.type=H263VideoMode
H263VideoMode.resolution.sqcif=true
Terminal awaits RespMsg_RequestModeAck or RespMsg_RequestModeReject according to H.245 C.9

c. *ReqMsg_RequestMode is received at Terminal B*
Send a RespMsg_RequestModeAck, at Terminal B according to H.245 C.9

d. *RespMsg_closeLogicalChannelAck for Video received at Terminal B*

e. *RespMsg_openLogicalChannelAck (Master, Slave unidir) ||*
IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received at Terminal B

f. *Encoding + Sending/Reception + Decoding of Video / Audio. Received video at Terminal A switched to SQCIF if Terminal A and Terminal B support it.*

g. *Send ReqMsg_RequestMode at Terminal A with the following parameters:*
ModeElement.type=H263VideoMode
H263VideoMode.resolution.qcif=true
Terminal awaits RespMsg_RequestModeAck or RespMsg_RequestModeReject according to H.245 C.9

h. *ReqMsg_RequestMode is received at Terminal B*
Send a RespMsg_RequestModeAck at Terminal B according to H.245 C.9

i. *RespMsg_closeLogicalChannelAck for Video received at Terminal B*

j. *RespMsg_openLogicalChannelAck (Master, Slave unidir) ||*
IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received at Terminal B

5. *Encoding + Sending/Reception + Decoding of Video / Audio. Received video at Terminal A switched to QCIF*

7. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-3a, 3b, 3c, 3d, 3e, 3f, 3g, 3h, 3i, 3j, 5, 7

For feature not supported by Terminal B (u) (without indication of transmitVideoCapability for H.263)::

3.

a. Encoding + Sending/Reception + Decoding of Video / Audio

b. *Send ReqMsg_RequestMode at Terminal A with the following parameters:*
ModeElement.type=H263VideoMode
H263VideoMode.resolution.sqcif=true
Terminal awaits RespMsg_RequestModeAck or RespMsg_RequestModeReject according to H.245 C.9

c. *ReqMsg_RequestMode is received at Terminal B*
Send a RespMsg_RequestModeReject at Terminal B according to H.245 C.9

g. *Send ReqMsg_RequestMode at Terminal A with the following parameters:*
ModeElement.type=H263VideoMode
H263VideoMode.resolution.qcif=true
Terminal awaits RespMsg_RequestModeAck or RespMsg_RequestModeReject according to H.245 C.9

h. *ReqMsg_RequestMode is received at Terminal B*
Send a RespMsg_RequestModeReject at Terminal B according to H.245 C.9

5. *Encoding + Sending/Reception + Decoding of Video / Audio*

7. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-3a, 3b, 3c, 3g, 3h, 5, 7

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 3a ~ 3j and 5 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to true.
- Open logical channel for video at Terminal A shall initially attempt to use AL2 *with unidir h263VideoCapability* if Terminal B supports it.
- *Terminal A shall set receiveAndTransmitVideoCapability = h263VideoCapability.*
- All other optional settings within [] bracket shall be ignored.

TestCase 44 – Round Trip Delay

Priority:

Optional TC.

Objective:

This test case ensures that a UEUT continues to behave as expected without freezing incoming video when receiving round trip delay request. The UEUT should also respond with round trip delay response.

Reference:

[H.245] 5.7, B.7, C.10

Terminal A Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Terminal B Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Precondition:

1. Terminal A supports sending round trip delay request.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Terminal A sends round trip delay request as soon as TerminalCapabilitySet exchange is completed.*
4. *Validate expected behaviour checkpoints 2c~2d.*
5. *Validate received video at Terminal B does not freeze.*
6. Terminate call session.

Expected Behavior:

For feature supported by Terminal B (u):

2.

   a. Level setup on Muxlevel { 3 [with H.223 Annex B optional header] | 2 [with H.223 Annex B optional header] | 1 | 0 } (The lower level of Terminal A and Terminal B selected)

   b. RespMsg_terminalCapabilitySetAck received.

   c. *Send ReqMsg_roundTripDelayRequest.*
   Await RespMsg_roundTripDelayResponse or IndMsg_FunctionNotSupported from Terminal B.

   d. *ReqMsg_roundTripDelayRequest is received.*
   RespMsg_roundTripDelayResponse shall be returned from Terminal B

   e. RespMsg_masterSlaveDeterminationAck received

   f. RespMsg_openLogicalChannelAck for Audio received

   g. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received

   h. RespMsg_multiplexEntrySendAck for all mux table entries

5. Encoding + Sending/Reception + Decoding of Video / Audio
6. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-5, 6

For feature not supported by Terminal B (u):

2.

   a. Level setup on Muxlevel { 3 [with H.223 Annex B optional header] | 2 [with H.223 Annex B optional header] | 1 | 0 } (The lower level of Terminal A and Terminal B selected)
   b. RespMsg_terminalCapabilitySetAck received.
   c. *Send ReqMsg_roundTripDelayRequest if supported. Await RespMsg_roundTripDelayResponse or IndMsg_FunctionNotSupported from Terminal B.*
   d. *ReqMsg_roundTripDelayRequest is received. IndMsg_FunctionNotSupported is returned from Terminal B*
   e. RespMsg_masterSlaveDeterminationAck received
   f. RespMsg_openLogicalChannelAck for Audio received
   g. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
   h. RespMsg_multiplexEntrySendAck for all mux table entries

5. Encoding + Sending/Reception + Decoding of Video / Audio
6. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-5, 6

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2c ~ 2d and 5 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to true.
- Open logical channel for video at Terminal A shall initially attempt to use AL2 if Terminal B supports it.
- All other optional settings within [] bracket shall be ignored.

TestCase 45 – Mux Entry Request

Priority:

Optional TC.

Objective:

This test case ensures that a UEUT continues to behave as expected without freezing incoming video when receiving mux entry request, no matter whether the UEUT supports it. On supporting mux entry request, the UEUT shall send mux entry send request accordingly.

Reference:

[H.245] B.5, C.7.1, C.8

Terminal A Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Terminal B Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Precondition:

1. Terminal A shall support mux entry request procedure.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *After video is displayed at Terminal A, Terminal A sends multiplex entry request message.*
4. *Validate expected behaviour checkpoints 3a~3b.*
5. *Validate received video at Terminal B does not freeze.*
6. Terminate call session.

Expected Behavior:

For feature supported by Terminal B:

2.
    a. Level setup on Muxlevel { 3 [with H.223 Annex B optional header] | 2 [with H.223 Annex B optional header] | 1 | 0 } (The lower level of Terminal A and Terminal B selected)
    b. RespMsg_terminalCapabilitySetAck received.
    c. RespMsg_masterSlaveDeterminationAck received
    d. RespMsg_openLogicalChannelAck for Audio received
    e. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
    f. RespMsg_multiplexEntrySendAck for all mux table entries

3.
    a. Send ReqMsg_RequestMultiplexEntry
    Await RespMsg_RequestMultiplexEntryAck or RespMsg_RequestMultiplexEntryReject from Terminal B. In case that T107 expires ReqMsg_RequestMultiplexEntryRelease is sent.

b. RespMsg_RequestMultiplexEntryAck is receive., then ReqMsg_MultiplexEntrySend is received.
Respond with RespMsg_MultiplexEntrySendAck

5. Encoding + Sending/Reception + Decoding of Video / Audio
6. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-5, 6

For feature not supported by Terminal B (u):

2.

a. Level setup on Muxlevel { 3 [with H.223 Annex B optional header] | 2 [with H.223 Annex B optional header] | 1 | 0 } (The lower level of Terminal A and Terminal B selected)

b. RespMsg_terminalCapabilitySetAck received.

c. RespMsg_masterSlaveDeterminationAck received

d. RespMsg_openLogicalChannelAck for Audio received

e. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received

f. RespMsg_multiplexEntrySendAck for all mux table entries

3.

a. Send ReqMsg_RequestMultiplexEntry.
Await RespMsg_RequestMultiplexEntryAck or RespMsg_RequestMultiplexEntryReject from Terminal B. In case that T107 expires ReqMsg_RequestMultiplexEntryRelease is sent.

b. RespMsg_RequestMultiplexEntryReject is received from Terminal B

5. Encoding + Sending/Reception + Decoding of Video / Audio
6. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-5, 6

Test Reference Tool:

- Terminal A refers to Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to true.
- Open logical channel for video at Terminal A shall initially attempt to use AL2 if Terminal B supports it.
- All other optional settings within [] bracket shall be ignored.

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2g ~ 2h and 5 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 46 – Mux Level Change

Priority:

Optional TC.

Objective:

This test case ensures that a UEUT continues to behave as expected without freezing incoming video when receiving H.223 mode change command, no matter whether the UEUT supports it. On supporting H.223 mode change command, the UEUT shall change multiplex level accordingly.

Reference:

[H.324] C.7

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: *H223Capability.mobileOperationTransmitCapability.modeChangeCapability=true* videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default with inclusion of *[H223Capability.mobileOperationTransmitCapability.modeChangeCapability=true]* Audio capabilities: Terminal default Video capabilities: Terminal default
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

1. Terminal A shall support mux level change procedure.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *After video is displayed at Terminal A, Terminal A sends H.223 mode change command.*
4. *Validate expected behaviour checkpoints 3a~3b.*
5. *Validate received video at Terminal B does not freeze.*
6. Terminate call session.

Expected Behavior:

For feature supported by Terminal B:

2.
    a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected)
    b. RespMsg_terminalCapabilitySetAck received.
    c. RespMsg_masterSlaveDeterminationAck received
    d. RespMsg_openLogicalChannelAck for Audio received
    e. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
    f. RespMsg_multiplexEntrySendAck for all mux table entries

3.
    a. *Send CmdMsg_H223MultiplexReconfiguration.h223ModeChange*
    Await consecutive new synchronization flags of requested MuxLevel { toLevel0 \| toLevel1 \| toLevel2 \| toLevel2withOptionalHeader } as described in H.324 C.7.
    b. *CmdMsg_H223MultiplexReconfiguration.h223ModeChange is received at Terminal B.*

If requested MuxLevel is different from current, MuxLevel of Terminal B is changed to requested MuxLevel by following procedures as described in H.324 C.7.

5. Encoding + Sending/Reception + Decoding of Video / Audio
6. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-5, 6

For feature not supported by Terminal B (u):

2.
   a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected)
   b. RespMsg_terminalCapabilitySetAck received.
   c. RespMsg_masterSlaveDeterminationAck received
   d. RespMsg_openLogicalChannelAck for Audio received
   e. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
   f. RespMsg_multiplexEntrySendAck for all mux table entries
3.
   a. Send CmdMsg_H223MultiplexReconfiguration.h223ModeChange
   Await consecutive new synchronization flags of requested MuxLevel { toLevel0 | toLevel1 | toLevel2 | toLevel2withOptionalHeader } as described in H.324 C.7.
   IndMsg_FunctionNotSupported might be received from Terminal B.
5. Encoding + Sending/Reception + Decoding of Video / Audio
6. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-5, 6

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2g ~ 2h and 5 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to true.
- Open logical channel for video at Terminal A shall initially attempt to use AL2 if Terminal B supports it.
- *Terminal A shall set H.223 mode change capability.*
- *Terminal A chooses any value of requested MuxLevel for sending CmdMsg_H223MultiplexReconfiguration.h223ModeChange .*
- All other optional settings within [] bracket shall be ignored.

TestCase 47 – Flow Control

Priority:

Optional TC.

Objective:

This test case ensures that a UEUT continues to behave as expected without freezing incoming video when receiving flow control command. The UEUT may adjust the transmission rate of corresponding logical channel or whole multiplexer accordingly.

Reference:

[H.324] 6.4.3, [H.245] B.13.3

Terminal A Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Terminal B Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Precondition:

1. Terminal A shall support sending flow control command.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *After video is displayed at Terminal A, Terminal A sends flow control command.*
4. *Validate expected behaviour checkpoints 3a~3b.*
5. *Validate received video at Terminal B does not freeze.*
6. Terminate call session.

Expected Behavior:

For feature supported by Terminal B:

2.
    a. Level setup on Muxlevel { 3 [with H.223 Annex B optional header] | 2 [with H.223 Annex B optional header] | 1 | 0 } (The lower level of Terminal A and Terminal B selected)
    b. RespMsg_terminalCapabilitySetAck received.
    c. RespMsg_masterSlaveDeterminationAck received
    d. RespMsg_openLogicalChannelAck for Audio received
    e. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
    f. RespMsg_multiplexEntrySendAck for all mux table entries
3.
    a. Send CmdMsg_FlowControlCommand (See H.245 B.14.12) Await IndMsg_FlowControlIndication or IndMsg_functionNotSupported from Terminal B.

b. *CmdMsg_FlowControlCommand is received at Terminal B.*
[Terminal B responds with IndMsg_FlowControlIndication]

5. Encoding + Sending/Reception + Decoding of Video / Audio
6. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-5, 6

For feature not supported by Terminal B (u):

2.

a. Level setup on Muxlevel { 3 [with H.223 Annex B optional header] | 2 [with H.223 Annex B optional header] | 1 | 0 } (The lower level of Terminal A and Terminal B selected)
b. RespMsg_terminalCapabilitySetAck received.
c. RespMsg_masterSlaveDeterminationAck received
d. RespMsg_openLogicalChannelAck for Audio received
e. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
f. RespMsg_multiplexEntrySendAck for all mux table entries

3.

a. *Send CmdMsg_FlowControlCommand (See H.245 B.14.12)*
Await IndMsg_FlowControlIndication or IndMsg_functionNotSupported from Terminal B.
b. *CmdMsg_FlowControlCommand is received at Terminal B*
Terminal B responds with IndMsg_FunctionNotSupported

5. Encoding + Sending/Reception + Decoding of Video / Audio
6. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-5, 6

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2g ~ 2h and 5 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to true.
- Open logical channel for video at Terminal A shall initially attempt to use AL2 if Terminal B supports it.
- All other optional settings within [] bracket shall be ignored.

TestCase 48 – Vendor Identification Indication

Priority:

Optional TC.

Objective:

This test case ensures that a UEUT continues to behave as expected without freezing incoming video when receiving vendor identification indication.

Reference:

[H.245] B.14.10

Terminal A Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Terminal B Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Precondition:

1. Terminal A shall support sending vendor identification indication.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoint 2b.*
4. *Validate received video at Terminal B does not freeze.*
5. Terminate call session.

Expected Behavior:

2.
    a. Level setup on Muxlevel { 3 [with H.223 Annex B optional header] | 2 [with H.223 Annex B optional header] | 1 | 0 } (The lower level of Terminal A and Terminal B selected)
    b. *Send IndMsg_VendorIdentification if supported. (See H.245 B.14.10) after sending ReqMsg_TerminalCapabilitySet*
    c. RespMsg_terminalCapabilitySetAck received.
    d. RespMsg_masterSlaveDeterminationAck received
    e. RespMsg_openLogicalChannelAck for Audio received
    f. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
    g. RespMsg_multiplexEntrySendAck for all mux table entries
4. Encoding + Sending/Reception + Decoding of Video / Audio
5. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2c, 2d-4, 5

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2b and 4 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to true.
- Open logical channel for video at Terminal A shall initially attempt to use AL2 if Terminal B supports it.
- All other optional settings within [] bracket shall be ignored.

3.5 OLC Data Tests

Purpose:

Test of logical channel signaling for data.

TestCase 49 – Data conferencing – T.120

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can successfully encode and decode T.120 data.

Reference:

[H.324] 6.1, 6.8

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }] Data application capabilities: *t120*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
OLC Data	*t120*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }] Data application capabilities: *t120*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
OLC Data	*t120*
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 5, 8, and 9.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. *RespMsg_openLogicalChannelAck for Data received*
6. RespMsg_openLogicalChannelAck (Master, Slave unidir)
   ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
7. RespMsg_multiplexEntrySendAck for all mux table entries
8. Encoding + Sending/Reception + Decoding of Video / Audio
9. *Exchange of Data*
10. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-9, 10

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 5, 8 ~ 9 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 50 – Text conversation – T.140

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can successfully encode and decode T.140 text.

Reference:

[H.324] 6.8

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }] Data application capabilities: *t140*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
OLC Data	*t140*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }] Data application capabilities: *t140*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
OLC Data	*t140*
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 5, 8, and 9.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. *RespMsg_openLogicalChannelAck for Data received*
6. RespMsg_openLogicalChannelAck (Master, Slave unidir)
   ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
7. RespMsg_multiplexEntrySendAck for all mux table entries
8. Encoding + Sending/Reception + Decoding of Video / Audio
9. *Exchange of Text*
10. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-9, 10

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 5, 8 ~ 9 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

3.6 Logical Channel Handling and Conflict Tests

See 4.2 for optional test cases.

3.7 WNSRP Tests

Purpose:

Test of WNSRP signaling during H.245 message exchange.

TestCase 81 – WNSRP support both terminals using multiplex level 2

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call, when using WNSRP.

Reference:

[H.324] A.4

Terminal A Setup:

Entity	Settings
H.223	*Muxlevel 2 (H.223 Annex B)* *WNSRP*
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	*Muxlevel 2 (H.223 Annex B)* *WNSRP*
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 1-4, and 10.*
4. Terminate call session.

Expected Behavior:

1. *Level setup on Muxlevel 2*
2. *Terminal A and Terminal B sends WNSRP command frames on LCN 0 using MuxEntry 15 and SRP command frames on LCN 0 using MuxEntry 0 with a sequence number of 0*
3. *Terminal A and Terminal B acknowledge WNSRP mode using WNSRP response frames on LCN 0*
4. *On receipt of first incoming WNSRP command or response frame, Terminal A and Terminal B switch to WNSRP mode by means of sending WNSRP control frames now on LCN 0 using MuxEntry 0*
5. RespMsg_terminalCapabilitySetAck received.
6. RespMsg_masterSlaveDeterminationAck received
7. RespMsg_openLogicalChannelAck for Audio received
8. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
9. RespMsg_multiplexEntrySendAck for all mux table entries

10. Encoding + Sending/Reception + Decoding of Video / Audio
11. CmdMsg_endSessionCommand sent

Order: 1, 2, 3, 4, 5-6, 7-10, 11

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 1 ~ 4 and 10 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 82 – WNSRP Interoperability with NSRP only terminal using multiplex level 2

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call using NSRP, even when Terminal A supports WNSRP.

Reference:

[H.324] A.4

Terminal A Setup:

Entity	Settings
H.223	*Muxlevel 2 (H.223 Annex B)* *WNSRP*
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	*Muxlevel 2 (H.223 Annex B)*
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 1-5, and 11.*
4. Terminate call session.

Expected Behavior:

1. *Level setup on Muxlevel 2*
2. *Terminal A sends WNSRP command frames on LCN 0 using MuxEntry 15 and SRP control frames on LCN 0 using MuxEntry 0*
3. *Terminal B sends SRP command frames on LCN 0 using MuxEntry 0 only (it is recommended to use a sequence number different to 0 for the first SRP command frame)*
4. *Terminal A acknowledges all SRP command frames from Terminal B with valid NSRP response frames and stops sending WNSRP command frames if the first SRP command frame from Terminal B has sequence number other than 0 or if N402 NSRP responses from Terminal B were received*
5. *Terminal A continues sending SRP command frames on LCN 0 using MuxEntry 0*
6. RespMsg_terminalCapabilitySetAck received
7. RespMsg_masterSlaveDeterminationAck received
8. RespMsg_openLogicalChannelAck for Audio received
9. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received

10. RespMsg_multiplexEntrySendAck for all mux table entries
11. Encoding + Sending/Reception + Decoding of Video / Audio
12. CmdMsg_endSessionCommand sent

Order: 1, 2, 3, 4, 5, 6-7, 8-11, 12

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 1 ~ 5 and 11 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 83 – WNSRP support both terminals using multiplex level 1

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call using WNSRP over Multiplex Level 1.

Reference:

[H.324] A.4

Terminal A Setup:

Entity	Settings
H.223	*Muxlevel 1 (H.223 Annex A)* *WNSRP*
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	*Muxlevel 1 (H.223 Annex A)* *WNSRP*
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 1-4, and 10.*
4. Terminate call session.

Expected Behavior:

1. *Level setup on Muxlevel 1*
2. *Terminal A and Terminal B sends WNSRP command frames on LCN 0 using MuxEntry 15 and SRP command frames on LCN 0 using MuxEntry 0 with a sequence number of 0*
3. *Terminal A and Terminal B acknowledges WNSRP mode using WNSRP response frames on LCN 0*
4. *On receipt of first incoming WNSRP command or response frame, Terminal A and Terminal B switch to WNSRP mode by means of sending WNSRP control frames now on LCN 0 using MuxEntry 0*
5. RespMsg_terminalCapabilitySetAck received
6. RespMsg_masterSlaveDeterminationAck received
7. RespMsg_openLogicalChannelAck for Audio received
8. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
9. RespMsg_multiplexEntrySendAck for all mux table entries

10. Encoding + Sending/Reception + Decoding of Video / Audio
11. CmdMsg_endSessionCommand sent

Order: 1, 2, 3, 4, 5-6, 7-10, 11

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 1 ~ 4 and 10 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 84 – WNSRP Interoperability with NSRP only terminal using multiplex level 1

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call using NSRP over Multiplex level 1, even when Terminal A supports WNSRP.

Reference:

[H.324] A.4

Terminal A Setup:

Entity	Settings
H.223	*Muxlevel 1 (H.223 Annex A)* *WNSRP*
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	Optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	*Muxlevel 1 (H.223 Annex A)*
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 1-5, and 11.*
4. Terminate call session.

Expected Behavior:

1. *Level setup on Muxlevel 1*
2. *Terminal A sends WNSRP command frames on LCN 0 using MuxEntry 15 and SRP control frames on LCN 0 using MuxEntry 0*
3. *Terminal B sends SRP command frames on LCN 0 using MuxEntry 0 only (it is recommended to use a sequence number different to 0 for the first SRP command frame)*
4. *Terminal A acknowledges all SRP command frames from Terminal B with valid NSRP response frames and stops sending WNSRP command frames if the first SRP command frame from Terminal B has sequence number other than 0 or if N402 NSRP responses from Terminal B were received*
5. *Terminal A continues sending SRP command frames on LCN 0 using MuxEntry 0*
6. RespMsg_terminalCapabilitySetAck received
7. RespMsg_masterSlaveDeterminationAck received
8. RespMsg_openLogicalChannelAck for Audio received
9. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received

10. RespMsg_multiplexEntrySendAck for all mux table entries
11. Encoding + Sending/Reception + Decoding of Video / Audio
12. CmdMsg_endSessionCommand sent

Order: 1, 2, 3, 4, 5, 6-7, 8-11, 12

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 1 ~ 5 and 11 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

3.8 MONA Tests

Purpose:

Test of optional MONA (H.324 Annex K) signaling for call setup acceleration.

General MONA and legacy fallback test cases start from 301.

MOS-SPC test cases start from 311.

MPC test cases start from 341.

ACP test cases start from 371.

TestCase 301 – MONA MOS-SPC Interoperability with non-MONA supporting terminals

Priority:

Optional TC.

Objective:

This test case ensures that a UEUT continues to behave as expected without freezing incoming video when one terminal supports MONA MOS-SPC and the other does not support MONA.

Reference:

[H.324] K.7.1.2

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }]
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*unidir h263VideoCapability* || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	SPC=1 SPP=Terminal default MPC-RX=Terminal default MPC-TX=Terminal default MONA-ML=Terminal default
MONA MOS	mediaProfile: Follows TCS Audio capabilities list and Video capabilities list mediaSymmetric=false || true
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }] *MONA capabilities:* *No parameter*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

1. Terminal A does not support MONA.
2. Terminal B supports MONA MOS-SPC.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2a~2g.*
4. Validate the call was successfully established, and both terminals receives and decodes incoming audio and video.
5. Terminate the call.

Expected Behavior:

2.
    a. *MONA frames received*
    b. *[MONA Preference Message with a MOS message received]*
    c. RespMsg_terminalCapabilitySetAck received
    d. RespMsg_masterSlaveDeterminationAck received
    e. RespMsg_openLogicalChannelAck for audio channel received
    f. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
    g. RespMsg_multiplexEntrySendAck for all mux table entries
4. Encoding + Sending/Reception + Decoding of Video / Audio
5. CmdMsg_endSessionCommand sent

Order: 2a, 2b, 2c-2d, 2e-2g, 4, 5

Pass Criteria:

The UEUT must demonstrate the above expected behavior as defined in steps 2a (or 2b), 2c ~ 2g and 4 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behavior section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- All other optional settings within [] bracket shall be ignored.

TestCase 302 – Interoperability of MONA supporting and non-MONA supporting terminals

Priority:

Optional TC.

Objective:

This test case ensures that a UEUT continues to behave as expected without freezing incoming video when one terminal supports MONA and the other does not.

Reference:

[H.324] K.7

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL2=true audioWithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }*
MasterSlave	-
OLC Audio	AMR
OLC Video	H.263 baseline || [MPEG4] || [H.264]

Terminal B Setup:

Entity	Settings
H.223	Terminal default
MONA Preferences	*SPC=0,* *SPP=0,* *MPC-RX=00001 (H.263),* *MPC-TX=00001 (H.263),* *MONA-ML=2*
TCS	H.223 capabilities: videoWithAL2=true audiowithAL2=true Audio capabilities: Terminal default Video capabilities: Terminal default *MONA capabilities:* *audioEntry= Any number except 0 and videoEntry* *videoEntry= Any number except 0 and audioEntry*
MasterSlave	-
OLC Audio	AMR
OLC Video	H.263 baseline
[BER]	optional: bit error injection

Precondition:

1. Terminal A does not support MONA MPC nor MONA ACP.
2. Terminal B supports and prefers MONA MPC and MONA ACP.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2e~2h.*
4. Validate the call was successfully established, and both terminals receives and decodes incoming audio and video.
5. Terminate the call.

Expected Behavior:

2.
    a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
    b. ReqMsg_terminalCapabilitySet received
    c. RespMsg_masterSlaveDeterminationAck received
    d. RespMsg_terminalCapabilitySetAck received
    e. ReqMsg openLogicalChannel for audio channel received
    f. ReqMsg openLogicalChannel for video channel received

g. RespMsg_openLogicalChannelAck for audio channel received

h. RespMsg openLogicalChannelAck for video channel received

i. RespMsg_multiplexEntrySendAck for all mux table entries.

4. Encoding + Sending/Reception + Decoding of Video / Audio

5. CmdMsg_endSessionCommand sent

Order: 2a, 2b-2d, 2e-2i, 4, 5

Pass Criteria:

The UEUT must demonstrate the above expected behavior as defined in steps 2e ~ 2h and 4 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behavior section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- All other optional settings within [] bracket shall be ignored.

TestCase 303 – One terminal supports MONA, supports MPC, and transmits early MPC media. The other terminal is a non-MONA (legacy) terminal.

Priority:

Optional TC.

Objective:

This test case verifies interoperability between a MONA MPC terminal which sends early MPC media, and a second non-MONA (legacy) terminal. The specific capabilities announced by each terminal are left to the terminal implementation, and are recommended to be the default capabilities which would most likely be advertised in a deployed terminal. The MONA MPC terminal should detect that the remote terminal is not MONA-capable, and should fall back to legacy behavior as described in K.7.1.2/H.324. The legacy terminal should ignore the MONA-specific signaling and media data sent by the MONA MPC terminal, and should synchronize on the normal H.223 stuffing which the MONA MPC terminal sends before and/or after the fallback to legacy behavior. The result should be a successful session based on legacy signaling.

Reference:

[H.324] K.7, K.9

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=0* *SPP=0* *MPC-RX=Terminal Default* *MPC-TX=Terminal Default* *(at least one codec must be advertised under MPC-TX in order to satisfy the "MPC Transmission Preferences" requirement.)*
MPC Transmission Preferences	*Early MPC media shall be sent for at least one audio or video codec. The specific codec or codecs are left to the discretion of the terminal implementer.*
TCS	Terminal default **NOTE:** As the TCS is sent after fallback to legacy behavior, it is not required to contain the MONA capability information.
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL2=true audioWithAL2=true Audio capabilities: Terminal default Video capabilities: Terminal default
MasterSlave	-
OLC Audio	AMR
OLC Video	H.263 baseline || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

See table above

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour (see below).*
4. Validate the call was successfully established, and both terminals receive and decode incoming audio and video.
5. Terminate the call.

Expected Behavior:

1. *Terminal A transmits outgoing MONA preference messages, early MPC media data (for at least one audio or video codec), and optionally sends standard stuffing.*
2. *Terminal B attempts to negotiate initial multiplex level using legacy procedures. Terminal B may sync on standard stuffing present in the transmission from Terminal A, or it may not depending on terminal implementations and overall session timing.*
3. *Terminal A determines that Terminal B is a non-MONA legacy terminal. Terminal A thus falls back to legacy signaling as described in K.7.1.2/H.324.*
4. Both terminals complete the standard H.245 TCS, MSD, and MES procedures. Terminals proceed to establish audio and visual channels using the standard H.245 OLC exchange. Exact channel establishment pattern and resulting codec decisions are not restricted by the test case, and are recommended to follow the default configuration and behavior that would be used in a deployed terminal.
5. The full audiovisual session shall be successfully established

Order: 1-2, 3, 4, 5

Pass Criteria:

All steps from the "Expected Behavior" definition (above) must be satisfied in order to record a PASS for the current test case.

If applicable, the test case should be repeated with the terminals switching A/B positions.

Test Reference Tool:

This test case is designed to test interoperability between two independent terminal implementations.

It may alternately be used with a Test Reference Tool. In this case, it would be divided into test cases 'A' and 'B' depending on the position of the Test Reference Tool.

TestCase 303a

- Terminal A (MONA terminal) is the Test Reference Tool.
- Terminal B (Legacy terminal) is the UEUT.
- Optional codec advertisements listed in the "Terminal A Setup" table are not advertised by the Test Reference Tool.
- This version of the test case is used to provide a simple check that an existing Legacy terminal implementation will not break upon connection to a reasonable and reliable MONA terminal (the Test Reference Tool). However it should be noted that MONA implementations vary by vendor, and so a successful test against a particular Test Reference Tool does not guarantee proper operation between the Legacy terminal and other MONA implementations. This test case is not a substitute for multi-vendor interoperability testing.

TestCase 303b

- Terminal A is the UEUT.
- Terminal B is the Test Reference Tool.
- Optional codec advertisements listed in the "Terminal B Setup" table are not advertised by the Test Reference Tool.

Note:

This version of the test case is used to exercise the Legacy Fallback behavior of a particular vendor's MONA terminal implementation (Terminal A). The Test Reference Tool (Terminal B) thus acts as a reasonable and reliable Legacy Terminal implementation.

TestCase 304 – Mona Fallback to Legacy Call

Priority:

Optional TC.

Objective:

This test case ensures that the UEUT continues to fallback to legacy call when it does not receive 20 consecutive multiplex synchronization flags. Terminal B is Mona enabled using ML2 with optional header or ML3 with or without optional header. Terminal A has no Mona support and uses ML2 with no optional header. When terminal B does not receive 20 consecutive flags it should detect multiplex level 2 and fallback to the same and establish a legacy call.

Reference:

[H.324] K.7

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B) *with no Optional header. Less then 20 consecutive multiplex synchronization flags are sent during multiplex level detection.*
TCS	H.223 capabilities: videoWithAL3= true||false] [videoWithAL2=true audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	Master | Slave
OLC Audio	AMR || [g7231]
OLC Video	*unidir h263VideoCapability* || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 3 || 2 (H.223 Annex B) *with Optional header*
MONA Preferences	*Mona Capable* *SPC=1 || 0* *SPP=Terminal default* *MPC-RX=Terminal default* *MPC-TX=Terminal default* *MONA-ML=Terminal default*
[MONA MOS]	*mediaProfile:* *Follows TCS Audio capabilities list and Video capabilities list* *mediaSymmetric={false | true}*
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive }] *MONA capabilities:* *Terminal default*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports H.223 Annex B with no optional header.
2. Terminal B supports MONA using multiplex level 2 with optional header, or ML3 with or without optional header and looking for 20 consecutive flags

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. During multiplex level detection, Terminal A does not send 20 consecutive multiplex synchronization flags. As an example: <ML seq><ML seq><ML seq><ML seq><ML seq><corrupted ML seq>… where <ML seq> is <E1 4D 00 00 00>.
4. *Even though terminal B doesn't receive the 20 consecutive flags it should fall back and establish the legacy call.*

5. Validate the call was successfully established, and both terminals receives and decodes incoming audio and video.
6. Terminate the call.

Expected Behavior:

2.
    a. *MONA frames received*
    b. *[MONA Preference Message with a MOS message received]*
    c. *Level setup on Muxlevel { 3 | 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected)*
    d. RespMsg_terminalCapabilitySetAck received
    e. RespMsg_masterSlaveDeterminationAck received
    f. RespMsg_openLogicalChannelAck for audio channel received
    g. RespMsg_openLogicalChannelAck (Master, Slave unidir) ||IndMsg_openLogicalChannelConfirm (Slave bidir) for Video received
    h. RespMsg_multiplexEntrySendAck for all mux table entries
4. Encoding + Sending/Reception + Decoding of Video / Audio
5. CmdMsg_endSessionCommand sent

Order: 2a-2c, 2d-2e, 2f-2h, 4, 5

Pass Criteria:

The UEUT must demonstrate the above expected behavior as defined in steps 2a~2c and 4 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behavior section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- Terminal A should begin with using H.223 mux level 2 with no optional header.
- All other optional settings within [] bracket shall be ignored.

TestCase 311 – MONA MOS-SPC supported by both terminals

Priority:

Optional TC.

Objective:

This test case verifies MONA MOS-SPC is used when both terminals support MONA MOS-SPC and at least one of terminals prefers MOS-SPC.

Reference:

[H.324] K.7, K.8

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	SPC=1 SPP=1 MPC-RX=0 0000 0000 0000 MPC-TX=0 0000 0000 0000 MONA-ML=2
MONA MOS	mediaProfile: Follows TCS Audio capabilities list and Video capabilities list [mediaSymmetric=false]
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }] *MONA capabilities:* *Terminal default*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
MONA Preferences	SPC=1 SPP=Terminal default MPC-RX=Terminal default MPC-TX=Terminal default MONA-ML=Terminal default
MONA MOS	mediaProfile: Follows TCS Audio capabilities list and Video capabilities list mediaSymmetric=false || true
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }] *MONA capabilities:* *Terminal default*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports and prefers MONA MOS-SPC.
2. Terminal B supports MONA MOS-SPC.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2a~2b.*
4. Validate the call was successfully established, and both terminals receives and decodes incoming audio and video.
5. Terminate the call.

Expected Behavior:

2.

   a. *[MONA Preference Message received]*

   b. *MONA Preference Message with a MOS message received*

4.

   a. Encoding + Sending/Reception + Decoding of Video / Audio

   b. *[RespMsg_terminalCapabilitySetAck received]*

5. CmdMsg_endSessionCommand sent

Order: 2a, 2b, 4a-4b, 5

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2b and 4a to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to *true.*
- All other optional settings within [] bracket shall be ignored.

TestCase 312 – MONA MOS-SPC supported both terminals using preferred codec

Priority:

Optional TC.

Objective:

This test case verifies correct selection of a preferred codec in MONA MOS-SPC mode.

Reference:

[H.324] K.8

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	SPC=1 SPP=1 MPC-RX=0 0000 0000 0000 MPC-TX=0 0000 0000 0000 MONA-ML=2
MONA MOS	mediaProfile: Follows TCS Audio capabilities list and Video capabilities list [mediaSymmetric=false]
TCS	H.223 capabilities: videoWithAL3=true *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (MPEG4) { receive }* *h263VideoCapability { receive }* *MONA capabilities:* *Terminal default*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*unidir h263VideoCapability*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
MONA Preferences	SPC=1 SPP=Terminal default MPC-RX=Terminal default MPC-TX=Terminal default MONA-ML=Terminal default
MONA MOS	mediaProfile: Follows TCS Audio capabilities list and Video capabilities list [mediaSymmetric=false]
TCS	H.223 capabilities: videoWithAL3=true *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }* *genericVideoCapability (MPEG4) { receive }* *MONA capabilities:* *Terminal default*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*unidir MPEG4*
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports and prefers MONA MOS-SPC.
2. Terminal B supports MONA MOS-SPC.
3. Terminal A supports and prefers MPEG4-Video.
4. Terminal B supports MPEG4-Video and prefers H.263.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2a~2c.*
4. Validate the call was successfully established, and both terminals receives and decodes incoming audio and video
5. Terminate the call.

Expected Behavior:

2.

   a. *[MONA Preference Message received]*

   b. *MONA Preference Message received at Terminal A with a MOS message having an h263VideoCapability listed first.*

   c. *MONA Preference Message received at Terminal B with a MOS message having a genericVideoCapability (MPEG4) listed first.*

4.

   a. Encoding + Sending/Reception + Decoding of Video / Audio

   b. *[RespMsg_terminalCapabilitySetAck received]*

5. CmdMsg_endSessionCommand sent

Order: 2a-2c, 4a-4b, 5

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2b ~ 2c and 4a to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- All other optional settings within [] bracket shall be ignored.

TestCase 312-1 – MONA MOS-SPC supported both terminals using preferred codec and one terminal is with symmetric media restriction

Priority:

Optional TC.

Objective:

This test case verifies correct selection of a preferred codec with UEUT having symmetric media restriction in MONA MOS-SPC mode.

Reference:

[H.324] K.8

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	SPC=1 SPP=1 MPC-RX=0 0000 0000 0000 MPC-TX=0 0000 0000 0000 MONA-ML=2
MONA MOS	mediaProfile: Follows TCS Audio capabilities list and Video capabilities list [mediaSymmetric=false]
TCS	H.223 capabilities: videoWithAL3=true *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (MPEG4) { receive }* *h263VideoCapability { receive }* *MONA capabilities:* *Terminal default*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*unidir MPEG4 when Master || unidir h263VideoCapability when Slave*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
MONA Preferences	SPC=1 SPP=Terminal default MPC-RX=Terminal default MPC-TX=Terminal default MONA-ML=Terminal default
MONA MOS	mediaProfile: Follows TCS Audio capabilities list and Video capabilities list *mediaSymmetric=true*
TCS	H.223 capabilities: videoWithAL3=true *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) *{ receiveAndTransmit }* [g7231 *{ receiveAndTransmit }*] Video capabilities: *h263VideoCapability { receiveAndTransmit }* *genericVideoCapability (MPEG4) { receiveAndTransmit }* *MONA capabilities:* *Terminal default*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*unidir MPEG4 when Slave || unidir h263VideoCapability when Master*
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports and prefers MONA MOS-SPC.
2. Terminal B supports MONA MOS-SPC.
3. Terminal A supports and prefers MPEG4-Video.
4. Terminal B supports MPEG4-Video and prefers H.263 with symmetric media restriction.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2a~2c.*
4. Validate the call was successfully established, and both terminals receives and decodes incoming audio and video
5. Terminate the call.

Expected Behavior:

2.

   a. *[MONA Preference Message received]*

   b. *MONA Preference Message received at Terminal A with a MOS message having an h263VideoCapability listed first and mediaSymmetric being set to true.*

   c. *MONA Preference Message received at Terminal B with a MOS message having a genericVideoCapability (MPEG4) listed first and mediaSymmetric being set to false.*

4.

   a. Encoding + Sending/Reception + Decoding of Video / Audio

   b. *[RespMsg_terminalCapabilitySetAck received]*

5. CmdMsg_endSessionCommand sent

Order: 2a-2c, 4a-4b, 5

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2b ~ 2c and 4a to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.

All other optional settings within [] bracket shall be ignored.

TestCase 313 –

MONA MOS-SPC supported both terminals for symmetric video codec H.263 (mediaSymmetric is signaled in MONA MOS by Terminal A)

Priority:

Optional TC.

Objective:

This test case verifies correct selection of preferred symmetric codecs in MONA MOS-SPC mode.

Reference:

[H.324] K.8

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	SPC=1 SPP=1 MPC-RX=0 0000 0000 0000 MPC-TX=0 0000 0000 0000 MONA-ML=2
MONA MOS	mediaProfile: Follows TCS Audio capabilities list and Video capabilities list *mediaSymmetric=true*
TCS	H.223 capabilities: videoWithAL3=true *videoWithAL2=true* audiowithAL2=true Audio capabilities: *genericAudioCapability (AMR) { receiveAndTransmit }* *[g7231 { receiveAndTransmit }]* Video capabilities: *h263VideoCapability { receiveAndTransmit }* *genericVideoCapability (MPEG4) { receiveAndTransmit }* *MONA capabilities:* *Terminal default*
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*unidir h263VideoCapability*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
MONA Preferences	SPC=1 SPP=Terminal default MPC-RX=Terminal default MPC-TX=Terminal default MONA-ML=Terminal default
MONA MOS	mediaProfile: Follows TCS Audio capabilities list and Video capabilities list mediaSymmetric=false || true
TCS	H.223 capabilities: videoWithAL3=true *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *genericVideoCapability (MPEG4) { receive | receiveAndTransmit }* *h263VideoCapability { receive | receiveAndTransmit }* *MONA capabilities:* *Terminal default*
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*unidir h263VideoCapability*
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports and prefers MONA MOS-SPC.
2. Terminal B supports MONA MOS-SPC.
3. Terminal A supports MPEG4-Video and prefers symmetric H.263.
4. Terminal B supports and prefers MPEG4-Video.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2a~2c.*
4. Validate the call was successfully established, and both terminals receives and decodes incoming audio and video
5. Terminate the call.

Expected Behavior:

2.

   a. *[MONA Preference Message received]*

   b. *MONA Preference Message received at Terminal A with a MOS message having a genericVideoCapability (MPEG4) listed first.*

   c. *MONA Preference Message received at Terminal B with a MOS message having a receiveAndTransmit h263VideoCapability listed first.*

4.

   a. Encoding + Sending/Reception + Decoding of Video / Audio

   b. *[RespMsg_terminalCapabilitySetAck received]*

5. CmdMsg_endSessionCommand sent

Order: 2a-2c, 4a-4b, 5

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2b ~ 2c and 4a to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- All other optional settings within [] bracket shall be ignored.

TestCase 314 – MONA MOS-SPC supported with OLC for video over AL3

Priority:

Optional TC.

Objective:

To verify correct establishment of a bi-directional video channel over AL3 in MONA MOS-SPC mode.

Reference:

[H.324] K.8

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	SPC=1 SPP=1 MPC-RX=0 0000 0000 0000 MPC-TX=0 0000 0000 0000 MONA-ML=2
MONA MOS	mediaProfile: Follows TCS Audio capabilities list and Video capabilities list [mediaSymmetric=false]
TCS	H.223 capabilities: videoWithAL3=true *videoWithAL2=false* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }* *genericVideoCapability (MPEG4) { receive }* *MONA capabilities:* *Terminal default*
MasterSlave	Master
OLC Audio	AMR || [g7231]
OLC Video	*bidir h263VideoCapability* *AdaptationLayerType.al3*.controlFieldOctets=1
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
MONA Preferences	SPC=1 SPP=Terminal default MPC-RX=Terminal default MPC-TX=Terminal default MONA-ML=Terminal default
MONA MOS	mediaProfile: Follows TCS Audio capabilities list and Video capabilities list mediaSymmetric=false || true
TCS	H.223 capabilities: videoWithAL3=true *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } genericVideoCapability (MPEG4) { receive | receiveAndTransmit } *MONA capabilities:* *Terminal default*
MasterSlave	Slave
OLC Audio	AMR || [g7231]
OLC Video	*unidir h263VideoCapability*
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports and prefers MONA MOS-SPC.
2. Terminal B supports MONA MOS-SPC.
3. Terminal A supports starting bidirectional OLC with H.263 over AL3.
4. Terminal B supports starting unidirectional OLC with H.263 over AL2.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2a~2c.*
4. Validate the call was successfully established, and both terminals receives and decodes incoming audio and video
5. Terminate the call.

Expected Behavior:

2.

   a. *[MONA Preference Message received]*

   b. *MONA Preference Message received at Terminal A with a MOS message having a uni-directional h263VideoCapability listed first.*

   c. *MONA Preference Message received at Terminal B with a MOS message having a bi-directional H.263VideoCapability listed first.*

4.

   a. Encoding + Sending/Reception + Decoding of Video / Audio

   b. *[RespMsg_terminalCapabilitySetAck received]*

5. CmdMsg_endSessionCommand sent

Order: 2a-2c, 4a-4b, 5

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2b and 4a to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- All other optional settings within [] bracket shall be ignored.

TestCase 315 – MONA MOS-SPC fallback to ACP

Priority:

Optional TC.

Objective:

This test case verifies that a UEUT falls back to ACP on MOS-SPC not being able to be selected.

Reference:

[H.324] K.7

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	SPC=0 SPP=0 MPC-RX=Terminal default MPC-TX=Terminal default MONA-ML=Terminal default
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }] *MONA capabilities:* *Terminal default*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	*unidir h263VideoCapability* || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	SPC=1 SPP=1 MPC-RX= 0 0000 0000 0000 MPC-TX= 0 0000 0000 0000 MONA-ML=Terminal default
MONA MOS	mediaProfile: Follows TCS Audio capabilities list and Video capabilities list mediaSymmetric=false || true
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: h263VideoCapability { receive | receiveAndTransmit } [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }] *MONA capabilities:* *Terminal default*
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports MONA MPC.
2. Terminal B supports MONA MOS-SPC.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2a~2g.*
4. Validate the call was successfully established, and both terminals receives and decodes incoming audio and video.
5. Terminate the call.

Expected Behavior:

2.
    a. *MONA frames received*
    b. *[MONA Preference Message with a MOS message received]*
    c. ReqMsg_terminalCapabilitySet received
    d. ReqMsg_masterSlaveDetermination received
    e. *ReqMsg_openLogicalChannel for audio channel received*
    f. *ReqMsg_openLogicalChannel (Master, Slave unidir) for Video received*
4.
    a. Encoding + Sending/Reception + Decoding of Video / Audio
    b. *RespMsg_terminalCapabilitySetAck received*
    c. *RespMsg_masterSlaveDeterminationAck received*
    d. *RespMsg_openLogicalChannelAck for audio channel received*
    e. *RespMsg_openLogicalChannelAck (Master, Slave unidir) for Video received*
    f. *[RespMsg_multiplexEntrySendAck for all mux table entries]*
5. CmdMsg_endSessionCommand sent

Order: 2a, 2b, 2c-2d, 2e-4f, 5

Pass Criteria:

The UEUT must demonstrate the above expected behavior as defined in steps 2a (or 2b), and 2e ~ 4e to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behavior section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- All other optional settings within [] bracket shall be ignored.

TestCase 316 – MONA MOS-SPC preferred terminal

Priority:

Optional TC.

Objective:

This test case verifies MONA MOS-SPC is selected when both terminals support MOS-SPC and MPC and one terminal prefers MONA MOS-SPC with another terminal prefers MPC.

Reference:

[H.324] K.7.2

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=1* *SPP=1* *MPC-RX=0 0000 0001 xxx1* *MPC-TX=0 0000 0001 xxx1* *MONA-ML=2*
MONA MOS	*mediaProfile:* *Follows TCS Audio capabilities list and Video capabilities list* *[mediaSymmetric=false]*
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }] MONA capabilities: Terminal default
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
MONA Preferences	*SPC=1* *SPP=0* *MPC-RX=0 0000 0001 xxx1* *MPC-TX=Terminal default* *MONA-ML=Terminal default*
MONA MOS	*mediaProfile:* *Follows TCS Audio capabilities list and Video capabilities list* *mediaSymmetric=Terminal default*
TCS	H.223 capabilities: Terminal default Audio capabilities: Terminal default Video capabilities: Terminal default MONA capabilities: Terminal default
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports MONA MOS-SPC and MPC and prefers MOS-SPC.
2. Terminal B supports MONA MOS-SPC and MPC and prefers MPC.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2a~2b.*
4. Validate the call was successfully established, and both terminals receives and decodes incoming audio and video.
5. Terminate the call.

Expected Behavior:

2.
    a. *[MONA Preference Message received]*
    b. *MONA Preference Message with SPP set to 0 and with a MOS message received*
4.
    a. Encoding + Sending/Reception + Decoding of Video / Audio over channels set up by SPC

   b. *[RespMsg_terminalCapabilitySetAck received]*

5. CmdMsg_endSessionCommand sent

Order: 2a, 2b, 4a-4b, 5

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2b and 4a to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to *true.*
- All other optional settings within [] bracket shall be ignored.

TestCase 317 – MONA MOS-SPC forced fallback

Priority:

Optional TC.

Objective:

This test case verifies MONA MOS-SPC is forced fallback to ACP when both terminal supports MOS-SPC and one terminal triggers MOS-SPC fallback.

Reference:

[H.324] K.7.2

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=1* *SPP=1* *MPC-RX=0 0000 0001 xxx1* *MPC-TX=0 0000 0001 xxx1* *MONA-ML=2*
MONA MOS	*mediaProfile:* *Follows TCS Audio capabilities list and Video capabilities list* *[mediaSymmetric=false]*
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }] MONA capabilities: Terminal default
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
MONA Preferences	*SPC=1* *SPP=1* *MPC-RX=Terminal default except 0 0000 0000 0000* *MPC-TX=Terminal default* *MONA-ML=Terminal default*
MONA MOS	*mediaProfile:* *Follows TCS Audio capabilities list and Video capabilities list* *mediaSymmetric=Terminal default*
TCS	H.223 capabilities: Terminal default Audio capabilities: Terminal default Video capabilities: Terminal default MONA capabilities: Terminal default
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports and prefers MONA MOS-SPC.
2. Terminal B supports MONA MOS-SPC.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2a~2k.*
4. Validate the call was successfully established, and both terminals receives and decodes incoming audio and video.
5. Terminate the call.

Expected Behavior:

2.

   a. *[MONA Preference Message received]*

   b. *MONA Preference Message with SPP set to 1 and with a MOS message received*

   c. *TerminalCapabilitySet with addition of empty GenericControlCapability containing MOS OID sent.*

   d. *ReqMsg_terminalCapabilitySet received*

   e. *ReqMsg_masterSlaveDetermination received*
   f. *RespMsg_terminalCapabilitySetAck received*
   g. *RespMsg_masterSlaveDeterminationAck received*
   h. *ReqMsg openLogicalChannel for audio channel received*
   i. *ReqMsg openLogicalChannel for video channel received*
   j. *RespMsg_openLogicalChannelAck for audio channel received*
   k. *RespMsg openLogicalChannelAck for video channel received*

4. Encoding + Sending/Reception + Decoding of Video / Audio
5. CmdMsg_endSessionCommand sent

Order: 2a, 2b, 2c-2g, 2h-4, 5

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2b~2k and 4 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to *false.*
- All other optional settings within [] bracket shall be ignored.

TestCase 341 – MPC supported by both terminals using terminal default settings

Priority:

Optional TC.

Objective:

This test case verifies basic MPC interoperability between two terminals which advertise MPC. For simplicity SPC support is not available or is switched off. This is an initial test case with minimal restrictions on terminal configuration – each terminal should advertise all MPC TX and RX capabilities which are expected to be advertised in the deployed terminals.

Reference:

[H.324] K.7, K.9

Terminal A & B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=0* *SPP=0* *MPC-RX=Terminal default* *MPC-TX=Terminal default* *MONA-ML=2*
TCS	Terminal default
[BER]	optional: bit error injection

Precondition:

See table above

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour (see below).*
4. Validate the call was successfully established, and both terminals receive and decode incoming audio and video.
5. Terminate the call.

Expected Behavior:

1. *Terminals exchange MONA preference messages*
2. *Interleaved stuffing if present must conform to [K.7.1.1/H.324]*
3. *Encapsulated media data may or may not be present, depending on terminal implementations and overall timing of the protocol exchange. If encapsulated media data is present, it must conform to [K.9.3/H.324]*

4. *Terminals shall follow the MONA negotiation algorithm as specified in [K.7/H.324]. Each audio and video channel (in each direction) may be established via MPC or via fallback to ACP, depending on the combination of MPC-RX and TX capabilities announced by each terminal.*
    a. *If all channels are established using MPC, then H.245 exchange is not strictly required in order to establish the channels. A minimal exchange of H.245 messages (at least TCS and MSD) is still expected after the MPC channels are established. In any case, a terminal shall not send any H.245 message (including acknowledgements to incoming H.245 messages) before sending the outgoing TCS and MSD messages.*
    b. *If any channels are established using ACP, then the normal sequence of TCS, MSD, OLC and MES messages must occur in order to establish such channels, as described in [K.10/H.324].*
5. The full audiovisual session shall be successfully established.

Order: 1-5

Pass Criteria:

All steps from the "Expected Behavior" definition (above) must be satisfied in order to record a PASS for the current test case.

Test Reference Tool:

This test case is designed to test interoperability between two independent terminal implementations, according to the vendor-specific terminal preferences and defaults.

It is not recommended to be used with a Test Reference Tool (e.g. for conformance testing).

Note:

To comply with MONA (H.324 Annex K) specification, additionally TestCase 371 to TestCase 372 shall be performed.

TestCase 342 – MPC supported by both terminals, MPC TX/RX restricted such that all channels are established via MPC

Priority:

Optional TC.

Objective:

This test case verifies basic MPC interoperability between two terminals which advertise MPC. For simplicity SPC support is not available or is switched off. Each terminal advertises a common set of required codecs in MPC TX/RX such that all audio and visual channels are established using MPC negotiation.

Reference:

[H.324] K.7, K.9

Terminal A & B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=0* *SPP=0* *MPC-RX=0 0000 0001 x001* *(at least AMR and H.263 are advertised; MPEG-4 may be advertised)* *MPC-TX=0 0000 0001 x001* *(at least AMR and H.263 are advertised; MPEG-4 may be advertised)*
TCS	H.223 capabilities: Terminal default Audio capabilities: AMR (receive) [AMR-WB (receive)] Video capabilities: H.263 (receive) [MPEG-4 (receive)] [H.264 (receive)] *MONA capabilities:* *Terminal default*
[BER]	optional: bit error injection

Precondition:

See table above

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour (see below).*

4. Validate the call was successfully established, and both terminals receive and decode incoming audio and video.
5. Terminate the call.

Expected Behavior:

1. *Terminals exchange MONA preference messages*
2. *Interleaved stuffing if present must conform to [K.7.1.1/H.324]*
3. *Encapsulated media data may or may not be present, depending on terminal implementations and overall timing of the protocol exchange. If encapsulated media data is present, it must conform to [K.9.3/H.324]*
4. *Terminals shall follow the MONA negotiation algorithm as specified in [K.7/H.324]. Each audio and video channel (in each direction) shall be established via MPC. AMR speech is established in both directions. One of H.263 or MPEG-4 visual are established in each direction, depending on the combination of MPC-RX and TX advertised by each terminal.*

   NOTE: *Because all channels are established using MPC, the exchange of H.245 messages is not strictly required in order to establish the channels. A minimal exchange of H.245 messages (at least TCS and MSD) is still expected after the MPC channels are established. In any case, a terminal shall not send any H.245 message (including acknowledgements to incoming H.245 messages) before sending the outgoing TCS and MSD messages.*
5. The full audiovisual session shall be successfully established.

Order: 1-5

Pass Criteria:

All steps from the "Expected Behavior" definition (above) must be satisfied in order to record a PASS for the current test case.

Test Reference Tool:

This test case is designed to test interoperability between two independent terminal implementations.

It may alternately be used with a Test Reference Tool, as follows:

- Terminal A is the Test Reference Tool.
- Terminal B is the UEUT.
- Optional codec advertisements listed in the "Terminal A&B Setup" table are not advertised by the Test Reference Tool.

TestCase 343 – MPC supported by both terminals, all channels established via MPC, MPC-TX and RX restricted to establish MPEG-4 visual in both directions

Priority:

Optional TC.

Objective:

This test case verifies basic MPC interoperability between two terminals which advertise MPC. For simplicity SPC support is not available or is switched off. Each terminal advertises a common set of required codecs in MPC TX/RX such that all audio and visual channels are established using MPC, and such that the resulting visual channels are MPEG-4 visual in both directions.

Reference:

[H.324] K.7, K.9

Terminal A & B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=0* *SPP=0* *MPC-RX=0 0000 000x 1x01* *(at least AMR and MPEG-4 are advertised; other visual codecs may be advertised)* *MPC-TX=0 0000 0000 1001* *(AMR and MPEG-4 are the only advertised codecs)*
TCS	H.223 capabilities: Terminal default Audio capabilities: AMR (receive) [AMR-WB (receive)] Video capabilities: *MPEG-4 (receive)* [H.263 (receive)] [H.264 (receive)] *MONA capabilities:* *Terminal default*
[BER]	optional: bit error injection

Precondition:

See table above

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour (see below).*

4. Validate the call was successfully established, and both terminals receive and decode incoming audio and video.
5. Terminate the call.

Expected Behavior:

1. *Terminals exchange MONA preference messages*
2. *Interleaved stuffing if present must conform to [K.7.1.1/H.324]*
3. *Encapsulated media data may or may not be present, depending on terminal implementations and overall timing of the protocol exchange. If encapsulated media data is present, it must conform to [K.9.3/H.324]*
4. *Terminals shall follow the MONA negotiation algorithm as specified in [K.7/H.324]. Each audio and video channel (in each direction) shall be established via MPC. AMR speech is established in both directions. MPEG-4 visual is established in both directions.*

   NOTE: *Because all channels are established using MPC, the exchange of H.245 messages is not strictly required in order to establish the channels. A minimal exchange of H.245 messages (at least TCS and MSD) is still expected after the MPC channels are established. In any case, a terminal shall not send any H.245 message (including acknowledgements to incoming H.245 messages) before sending the outgoing TCS and MSD messages.*
5. The full audiovisual session shall be successfully established.

Order: 1-5

Pass Criteria:

All steps from the "Expected Behavior" definition (above) must be satisfied in order to record a PASS for the current test case.

Test Reference Tool:

This test case is designed to test interoperability between two independent terminal implementations.

It may alternately be used with a Test Reference Tool, as follows:

- Terminal A is the Test Reference Tool.
- Terminal B is the UEUT.
- Optional codec advertisements listed in the "Terminal A&B Setup" table are not advertised by the Test Reference Tool.

TestCase 344 – MPC supported by both terminals, all channels established via MPC, MPC-TX and RX restricted to establish H.264 visual in both directions

Priority:

Optional TC.

Objective:

This test case verifies basic MPC interoperability between two terminals which advertise MPC. For simplicity SPC support is not available or is switched off. Each terminal advertises a common set of required codecs in MPC TX/RX such that all audio and visual channels are established using MPC, and such that the resulting visual channels are H.264 visual in both directions.

Reference:

[H.324] K.7, K.9

Terminal A & B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=0* *SPP=0* *MPC-RX=0 0000 000x x101* *(at least AMR and H.264 are advertised; other visual codecs may be advertised)* *MPC-TX=0 0000 0000 0101* *(AMR and H.264 are the only advertised codecs)*
TCS	H.223 capabilities: Terminal default Audio capabilities: AMR (receive) [AMR-WB (receive)] Video capabilities: *H.264 (receive)* [MPEG-4 (receive)] [H.263 (receive)] *MONA capabilities:* *Terminal default*
[BER]	optional: bit error injection

Precondition:

See table above

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour (see below).*

4. Validate the call was successfully established, and both terminals receive and decode incoming audio and video.
5. Terminate the call.

Expected Behavior:

1. *Terminals exchange MONA preference messages*
2. *Interleaved stuffing if present must conform to [K.7.1.1/H.324]*
3. *Encapsulated media data may or may not be present, depending on terminal implementations and overall timing of the protocol exchange. If encapsulated media data is present, it must conform to [K.9.3/H.324]*
4. *Terminals shall follow the MONA negotiation algorithm as specified in [K.7/H.324]. Each audio and video channel (in each direction) shall be established via MPC. AMR speech is established in both directions. H.264 visual is established in both directions.*

   NOTE: *Because all channels are established using MPC, the exchange of H.245 messages is not strictly required in order to establish the channels. A minimal exchange of H.245 messages (at least TCS and MSD) is still expected after the MPC channels are established. In any case, a terminal shall not send any H.245 message (including acknowledgements to incoming H.245 messages) before sending the outgoing TCS and MSD messages.*
5. The full audiovisual session shall be successfully established.

Order: 1-5

Pass Criteria:

All steps from the "Expected Behavior" definition (above) must be satisfied in order to record a PASS for the current test case.

Test Reference Tool:

This test case is designed to test interoperability between two independent terminal implementations.

It may alternately be used with a Test Reference Tool, as follows:

- Terminal A is the Test Reference Tool.
- Terminal B is the UEUT.
- Optional codec advertisements listed in the "Terminal A&B Setup" table are not advertised by the Test Reference Tool.

TestCase 345 – MPC supported by both terminals, all channels established via MPC, MPC-TX and RX restricted to establish AMR-WB speech in both directions

Priority:

Optional TC.

Objective:

This test case verifies basic MPC interoperability between two terminals which advertise MPC. For simplicity SPC support is not available or is switched off. Each terminal advertises a common set of required codecs in MPC TX/RX such that all audio and visual channels are established using MPC, and such that the resulting audio channels are AMR-WB speech in both directions.

Reference:

[H.324] K.7, K.9

Terminal A & B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=0* *SPP=0* *MPC-RX=0 0000 0001 xx1x* *(at least AMR-WB and H.263 are advertised; other codecs may be advertised)* *MPC-TX=0 0000 0001 xx10* *(AMR-WB is the only advertised audio codec; at least H.263 visual codec is advertised, other visual codecs may be advertised).*
TCS	H.223 capabilities: Terminal default Audio capabilities: *AMR-WB (receive)* [AMR (receive)] Video capabilities: *H.264 (receive)* [MPEG-4 (receive)] [H.263 (receive)] *MONA capabilities:* *Terminal default*
[BER]	optional: bit error injection

Precondition:

See table above

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour (see below).*

4. Validate the call was successfully established, and both terminals receive and decode incoming audio and video.
5. Terminate the call.

Expected Behavior:

1. *Terminals exchange MONA preference messages*
2. *Interleaved stuffing if present must conform to [K.7.1.1/H.324]*
3. *Encapsulated media data may or may not be present, depending on terminal implementations and overall timing of the protocol exchange. If encapsulated media data is present, it must conform to [K.9.3/H.324]*
4. *Terminals shall follow the MONA negotiation algorithm as specified in [K.7/H.324]. Each audio and video channel (in each direction) shall be established via MPC. AMR-WB speech is established in both directions. Visual channels are established in both directions. The specific visual codecs used will depend on the combination of MPC-RX and TX advertised by the two terminals.*

   NOTE: *Because all channels are established using MPC, the exchange of H.245 messages is not strictly required in order to establish the channels. A minimal exchange of H.245 messages (at least TCS and MSD) is still expected after the MPC channels are established. In any case, a terminal shall not send any H.245 message (including acknowledgements to incoming H.245 messages) before sending the outgoing TCS and MSD messages.*
5. The full audiovisual session shall be successfully established.

Order: 1-5

Pass Criteria:

All steps from the "Expected Behavior" definition (above) must be satisfied in order to record a PASS for the current test case.

Test Reference Tool:

This test case is designed to test interoperability between two independent terminal implementations.

It may alternately be used with a Test Reference Tool, as follows:

- Terminal A is the Test Reference Tool.
- Terminal B is the UEUT.
- Optional codec advertisements listed in the "Terminal A&B Setup" table are not advertised by the Test Reference Tool.

TestCase 346 –

MPC supported by both terminals, at least one channel is established via MPC. Media encapsulation is used (transmitted and successfully received) for at least one channel in at least one direction.

Priority:

Optional TC.

Objective:

This test case verifies MPC interoperability between two terminals, and specifically tests the sending and receiving of MPC media encapsulated using MONA preference messages (per K.9.3/H.324). The transmission of encapsulated media in a particular direction is not guaranteed since it depends on the session timing. The current test case cannot force such media to be sent, so instead it specifies conditions under which the transmission of encapsulated media is likely. If the participating companies can verify that encapsulated media (in the A-to-B direction) was sent and received during the session, then a PASS or FAIL can be recorded for the current test point. If the companies are unable to verify that encapsulated media was sent and received during the various session attempts, then those companies should not record any result under the current test point.

Reference:

[H.324] K.7, K.9

Terminal A & B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=0* *SPP=0* *MPC-RX=0 0000 0001 xxx1* *(at least AMR and H.263 are advertised; other codecs may be advertised)* *MPC-TX=0 0000 0001 xxx1* *(at least AMR and H.263 are advertised; other codecs may be advertised)*
MPC Transmission Preferences	• *Each terminal is recommended to transmit MPC media as early as possible after the establishment of the bearer. Encapsulation of the outgoing media shall be governed by [K.9.3/H.324].* • *Such early MPC media is sent for both audio and video channels.* • *Base Test Case: Initial outgoing MPC audio data is AMR speech. Initial outgoing MPC video data is H.263 visual. These two are destined to succeed, given the MPC-RX requirements under "MONA Preferences" above.* • *Variations: After completing the "Base Test Case," vendors may at their option repeat the test case with the initial outgoing audio and/or visual data set to alternate codecs which the remote terminal is known (via offline communication between companies) to advertise in its MPC-RX. In this way the MPC encapsulation of media types other than H.263 and AMR may be tested and validated.*
TCS	H.223 capabilities: Terminal default Audio capabilities: AMR (receive) [AMR-WB (receive)] Video capabilities: H.263 (receive) [MPEG-4 (receive)] [H.264 (receive)] MONA capabilities: Terminal default
[BER]	optional: bit error injection

Precondition:

See table above

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour (see below).*
4. Validate the call was successfully established, and both terminals receive and decode incoming audio and video.
5. Terminate the call.

Expected Behavior:

1. *Terminals exchange MONA preference messages*
2. *Terminals send early MPC media as soon as possible after establishment of the bearer. Such media may be encapsulated within MONA preference messages depending on the session timing, as described in [K.9.3/H.324].*
3. *The early MPC media transmissions will result in successful channel establishments, assuming the "MPC Transmission Preferences" above are followed. At least one channel based on early MPC transmissions shall be successfully established in order to pass the current test case. Channels which are not successfully established via early MPC transmissions may be established using MPC or ACP techniques, according to the abilities and preferences of the two terminals.*
    a. *If all channels are established using MPC, then H.245 exchange is not strictly required in order to establish the channels. A minimal exchange of H.245 messages (at least TCS and MSD) is still expected after the MPC channels are established. In any case, a terminal shall not send any H.245 message (including acknowledgements to incoming H.245 messages) before sending the outgoing TCS and MSD messages.*
    b. *If any channels are established using ACP, then the normal sequence of TCS, MSD, OLC and MES messages must occur in order to establish such channels, as described in [K.10/H.324].*
4. The full audiovisual session shall be successfully established.
5. *Each terminal shall examine received data and logs in order to determine whether encapsulated MPC media data was received, and whether such data could be successfully parsed, decoded and rendered.*

Order: 1-5

Pass Criteria:

See "Expected Behavior" (above).

If participating companies determine that encapsulated MPC media data was sent and received (in the A-to-B direction) then companies would enter a PASS or FAIL result under the current test point. If all four points under "Expected Behavior" are judged successful, then a PASS is recorded. If one or more of the "Expected Behavior" points is not met, and particularly if the encapsulated MPC media data could not be successfully parsed, decoded and rendered, then a FAIL is recorded. In any case, when recording the result, an IOTZilla comment should be entered to specify for which codecs and in which directions the encapsulated media was tested.

If participating companies cannot verify that encapsulated MPC media data was sent and received, then the current test point is not relevant, and no result should be entered.

The test should be repeated with vendors switching positions (A, B) in order to test the opposite directionality.

Test Reference Tool:

This test case is designed to test interoperability between two independent terminal implementations.

It may alternately be used with a Test Reference Tool. In this case, it would be divided into test cases 'A' and 'B' depending on the position of the Test Reference Tool.

TestCase 346a

- Terminal A is the Test Reference Tool.
- Terminal B is the UEUT.

- Optional codec advertisements listed in the “Terminal A&B Setup” table are not advertised by the Test Reference Tool. Encapsulated media sent by the Test Reference Tool follows the “Base Test Case” defined in the table.
- According to the “Pass Criteria” section above, a ‘PASS’ is recorded if encapsulated MPC media data sent by the Test Reference Tool can be successfully received and parsed by the UEUT, resulting in a successful channel establishment in the A-to-B direction.

TestCase 346b

- Terminal A is the UEUT.
- Terminal B is the Test Reference Tool.
- Optional codec advertisements listed in the “Terminal A&B Setup” table are not advertised by the Test Reference Tool.
- According to the “Pass Criteria” section above, a ‘PASS’ is recorded if encapsulated MPC media data sent by the UEUT can be successfully received and parsed by the Test Reference Tool, resulting in a successful channel establishment in the A-to-B direction.

TestCase 347 –

MPC supported by both terminals, at least one channel is established via MPC. One terminal supports Multiplex Level 2, while the other supports Multiplex Level 1. MPC transmit and receive capabilities are left to the defaults used by each terminal implementation.

Priority:

Optional TC.

Objective:

This test case verifies interoperability in the case where two MPC capable terminals advertise different initial Multiplex Levels. One terminal signals MONA_ML = 2, while the other signals MONA_ML = 1. The terminals thus negotiate normal operation using Multiplex Level 1. To record a result for this test case, vendors must verify that at least one channel (in one direction) is established using MPC procedures. The overall session may be established using all MPC, or by a combination of MPC and ACP.

Reference:

[H.324] K.7, K.9

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=0* *SPP=0* *MPC-RX=0 0000 0001 xxx1* *{at least AMR and H.263 are advertised; other codecs may be advertised}* *MPC-TX=0 0000 0001 xxx1* *{at least AMR and H.263 are advertised; other codecs may be advertised}* *MONA_ML = 2*
TCS	H.223 capabilities: Terminal default Audio capabilities: AMR (receive) [AMR-WB (receive)] Video capabilities: H.263 (receive) [MPEG-4 (receive)] [H.264 (receive)] *MONA capabilities:* *Terminal default*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 1 (H.223 Annex A)
MONA Preferences	*SPC=0* *SPP=0* *MPC-RX=0 0000 0001 xxx1* *{at least AMR and H.263 are advertised; other codecs may be advertised}* *MPC-TX=0 0000 0001 xxx1* *{at least AMR and H.263 are advertised; other codecs may be advertised}* *MONA_ML = 1*
TCS	H.223 capabilities: Terminal default Audio capabilities: AMR (receive) [AMR-WB (receive)] Video capabilities: H.263 (receive) [MPEG-4 (receive)] [H.264 (receive)] *MONA capabilities:* *Terminal default*
[BER]	optional: bit error injection

Precondition:

See table above

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour (see below).*
4. Validate the call was successfully established, and both terminals receive and decode incoming audio and video.
5. Terminate the call.

Expected Behavior:

1. *Terminals exchange MONA preference messages*
2. *MPC media sent before the receipt of the first incoming MONA preference message shall be encapsulated within MONA preference messages, per K.9.3/H.324.*
3. *MPC media sent after the receipt of the first incoming MONA preference message shall use H.223 framing using the MONA-ML negotiated multiplex level (Level 1). This is again per K.9.3/H.324.*

4. *Individual audio and video channels are established either via MPC or ACP procedures, depending on the result of the MONA codec negotiation algorithm. To register a result for the current test point, at least one channel (in one direction) must be established using MPC procedures.*
    a. *If all channels are established using MPC, then H.245 exchange is not strictly required in order to establish the channels. A minimal exchange of H.245 messages (at least TCS and MSD) is still expected after the MPC channels are established. In any case, a terminal shall not send any H.245 message (including acknowledgements to incoming H.245 messages) before sending the outgoing TCS and MSD messages.*
    b. *If any channels are established using ACP, then the normal sequence of TCS, MSD, OLC and MES messages must occur in order to establish such channels, as described in [K.10/H.324].*
5. The full audiovisual session shall be successfully established

Order: 1-5

Pass Criteria:

All steps from the "Expected Behavior" definition (above) must be satisfied in order to record a PASS for the current test case.

If applicable, the test case should be repeated with the terminals switching A/B positions.

Test Reference Tool:

This test case is designed to test interoperability between two independent terminal implementations.

It may alternately be used with a Test Reference Tool. In this case, it would be divided into test cases 'A' and 'B' depending on the position of the Test Reference Tool.

TestCase 347a

- Terminal A is the Test Reference Tool.
- Terminal B is the UEUT.
- Optional codec advertisements listed in the "Terminal A Setup" table are not advertised by the Test Reference Tool.

TestCase 347b

- Terminal A is the UEUT.
- Terminal B is the Test Reference Tool.
- Optional codec advertisements listed in the "Terminal B Setup" table are not advertised by the Test Reference Tool.

TestCase 348 – MONA MPC terminals establish a session using MPC fallback

Priority:

Optional TC.

Objective:

This test case verifies interoperability between two MONA MPC terminals, and exercises use of the MPC fallback procedure. For simplicity, SPC capability is not present or is disabled. The MPC-TX, MPC-RX, and early MPC transmission preferences are set up such that one of the video channels will (with high probability) be established using MPC fallback procedures.

This test case is only relevant if Terminal A:

- is capable of sending early MPC media for video, AND
- is capable of using MPC fallback for video

Reference:

[H.324] K.7, K.9

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=0* *SPP=0* *MPC-RX=0 0000 0001 xxx1* *(at least AMR and H.263 are advertised; other codecs may be advertised)* *MPC-TX=0 0000 0001 1xx1* *(at least AMR, H.263, and MPEG-4 are advertised; other codecs may be advertised)*
MPC Transmission Preferences	*The terminal shall send early MPC media for video, specifically using the MPEG-4 codec. The terminal may send early MPC media for audio, if desired.* *Upon learning that the remote terminal does not announce MPEG-4 visual in the MPC-RX field of its outgoing MONA preference messages, the local terminal shall switch to H.263 visual using MPC fallback procedures.*
TCS	H.223 capabilities: Terminal default Audio capabilities: AMR (receive) [AMR-WB (receive)] Video capabilities: H.263 (receive) [MPEG-4 (receive)] [H.264 (receive)] *MONA capabilities:* *Terminal default*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=0* *SPP=0* *MPC-RX=0 0000 0001 00x1* *(at least AMR and H.263 are advertised; support for MPEG-4 and H.264 visual are not advertised; AMR-WB support may be advertised.)* *MPC-TX=0 0000 0001 xxx1* *(at least AMR and H.263 are advertised; other codecs may be advertised)*
MPC Transmission Preferences	*The current test case focuses on transmission in the A-to-B direction. MPC Transmission preferences of Terminal B are thus left to the discretion of the terminal implementer.*
TCS	H.223 capabilities: Terminal default Audio capabilities: AMR (receive) [AMR-WB (receive)] Video capabilities: H.263 (receive) *MONA capabilities:* *Terminal default*
[BER]	optional: bit error injection

Precondition:

See table above

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour (see below).*
4. Validate the call was successfully established, and both terminals receive and decode incoming audio and video.
5. Terminate the call.

Expected Behavior:

1. *Terminals send outgoing MONA preference messages*
2. *Terminal A sends early MPC media for the MPEG-4 visual codec. Terminal A may (at its option) send early MPC media for its preferred audio codec.*
3. *Terminal A receives the incoming MONA preference message from Terminal B, and so learns that the ongoing early MPC transmission of MPEG-4 visual is not acceptable to Terminal B. Terminal A thus discontinues transmission of MPEG-4 data and switches to MPC transmission of H.263 data. This follows the MPC Fallback procedure described in K.9.3/H.324. The H.263 visual channel in the A-to-B direction is thus successfully established.*

4. *Other audio and visual channels are negotiated using the standard MONA negotiation based on exchanged capabilities and transmission preferences. Individual channels may be established using MPC or ACP procedures, depending on the implementation.*
    a. *If all channels are established using MPC, then H.245 exchange is not strictly required in order to establish the channels. A minimal exchange of H.245 messages (at least TCS and MSD) is still expected after the MPC channels are established. In any case, a terminal shall not send any H.245 message (including acknowledgements to incoming H.245 messages) before sending the outgoing TCS and MSD messages.*
    b. *If any channels are established using ACP, then the normal sequence of TCS, MSD, OLC and MES messages must occur in order to establish such channels, as described in [K.10/H.324].*
5. The full audiovisual session shall be successfully established

Order: 1-5

Pass Criteria:

All steps from the "Expected Behavior" definition (above) must be satisfied in order to record a PASS for the current test case.

If applicable, the test case should be repeated with the terminals switching A/B positions.

Test Reference Tool:

This test case is designed to test interoperability between two independent terminal implementations.

It may alternately be used with a Test Reference Tool. In this case, it would be divided into test cases 'A' and 'B' depending on the position of the Test Reference Tool.

TestCase 348a

- Terminal A is the Test Reference Tool.
- Terminal B is the UEUT.
- Optional codec advertisements listed in the "Terminal A Setup" table are not advertised by the Test Reference Tool.

TestCase 348b

- Terminal A is the UEUT.
- Terminal B is the Test Reference Tool.
- Optional codec advertisements listed in the "Terminal B Setup" table are not advertised by the Test Reference Tool.

TestCase 349 – MONA MPC terminals establish a session with asymmetric visual codecs.

Priority:

Optional TC.

Objective:

This test case verifies interoperability between two MONA MPC terminals, and specifically results in an asymmetric video session. H.263 visual is used in the A-to-B direction, and MPEG-4 visual is used in the B-to-A direction. For simplicity, SPC capability is not present or is disabled.

Reference:

[H.324] K.7, K.9

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=0* *SPP=0* *MPC-RX=0 0000 0001 xxx1* *(at least AMR and H.263 are advertised; other codecs may be advertised)* *MPC-TX=0 0000 000x 1xx1* *(at least AMR and MPEG-4 are advertised; other codecs may be advertised})*
MPC Transmission Preferences	*The terminal shall prefer to send MPEG-4 visual. The terminal may send early MPC data, or it may wait to receive the incoming MONA preference message before transmitting media data, depending on the implementation preference.*
TCS	H.223 capabilities: Terminal default Audio capabilities: AMR (receive) [AMR-WB (receive)] Video capabilities: H.263 (receive) [MPEG-4 (receive)] [H.264 (receive)] *MONA capabilities:* *Terminal default*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=0* *SPP=0* *MPC-RX=0 0000 000x 1xx1* *(at least AMR and MPEG-4 are advertised; other codecs may be advertised)* *MPC-TX=0 0000 0001 xxx1* *(at least AMR and H.263 are advertised; other codecs may be advertised)*
MPC Transmission Preferences	*The terminal shall prefer to send H.263 visual. The terminal may send early MPC data, or it may wait to receive the incoming MONA preference message before transmitting media data, depending on the implementation preference.*
TCS	H.223 capabilities: Terminal default Audio capabilities: AMR (receive) [AMR-WB (receive)] Video capabilities: *MPEG-4 (receive)* [H.263 (receive)] [H.264 (receive)] *MONA capabilities:* *Terminal default*
[BER]	optional: bit error injection

Precondition:

See table above

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour (see below).*
4. Validate the call was successfully established, and both terminals receive and decode incoming audio and video.
5. Terminate the call.

Expected Behavior:

1. *Terminals send outgoing MONA preference messages*
2. *Terminal A is capable of receiving AMR, H.263, and possibly other codecs. Terminal A prefers to send MPEG-4 visual. Terminal A may send MPEG-4 visual as early MPC media, or it may wait to receive an incoming MONA preference message. In either case the initial video transmission in the A-to-B direction will be MPEG-4 visual.*

3. *Terminal B is capable of receiving AMR, MPEG-4, and possibly other codecs. Terminal B prefers to send H.263 visual. Terminal B may send H.263 visual as early MPC media, or it may wait to receive an incoming MONA preference message. In either case the initial video transmission in the B-to-A direction will be H.263 visual.*
4. *Asymmetric video channels are successfully established between the terminals (with MPEG-4 visual in the A-to-B direction, and H.263 visual in the B-to-A direction).*
5. *Audio channels are negotiated using the standard MONA negotiation based on exchanged capabilities and transmission preferences. Individual audio channels may be established using MPC or ACP procedures, depending on the implementation.*
    a. *If all channels are established using MPC, then H.245 exchange is not strictly required in order to establish the channels. A minimal exchange of H.245 messages (at least TCS and MSD) is still expected after the MPC channels are established. In any case, a terminal shall not send any H.245 message (including acknowledgements to incoming H.245 messages) before sending the outgoing TCS and MSD messages.*
    b. *If any channels are established using ACP, then the normal sequence of TCS, MSD, OLC and MES messages must occur in order to establish such channels, as described in [K.10/H.324].*
6. The full audiovisual session shall be successfully established.

Order: 1-6

Pass Criteria:

All steps from the "Expected Behavior" definition (above) must be satisfied in order to record a PASS for the current test case.

Test Reference Tool:

This test case is designed to test interoperability between two independent terminal implementations.

It may alternately be used with a Test Reference Tool. In this case, it would be divided into test cases 'A' and 'B' depending on the position of the Test Reference Tool.

TestCase 349a

- Terminal A is the Test Reference Tool.
- Terminal B is the UEUT.
- Optional codec advertisements listed in the "Terminal A Setup" table are not advertised by the Test Reference Tool.

TestCase 349b

- Terminal A is the UEUT.
- Terminal B is the Test Reference Tool.
- Optional codec advertisements listed in the "Terminal B Setup" table are not advertised by the Test Reference Tool.

TestCase 350 – MONA MOS-SPC preferred terminal connecting with MPC terminal

Priority:

Optional TC.

Objective:

This test case verifies MONA MOS-SPC falling back to MPC when one terminal supports MOS-SPC and MPC and prefers MOS-SPC while another terminal supports MPC only.

Reference:

[H.324] K.7.2

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=0* *SPP=0* *MPC-RX=0 0000 0001 xxx1* *MPC-TX=0 0000 0001 xxx1* *MONA-ML=2*
TCS	H.223 capabilities: videoWithAL3=true [videoWithAL2=true||false] audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: h263VideoCapability { receive } [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }] MONA capabilities: Terminal default
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
MONA Preferences	*SPC=1* *SPP=1* *MPC-RX=Terminal default except 0 0000 0000 0000* *MPC-TX=Terminal default* *MONA-ML=Terminal default*
MONA MOS	*mediaProfile:* *Follows TCS Audio capabilities list and Video capabilities list* *mediaSymmetric=Terminal default*
TCS	H.223 capabilities: Terminal default Audio capabilities: Terminal default Video capabilities: Terminal default MONA capabilities: Terminal default
MasterSlave	-
OLC Audio	AMR || [g7231]
OLC Video	bidir || [unidir] h263VideoCapability || [MPEG4] || [H.264]
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports and prefers MONA MPC.
2. Terminal B supports MONA MOS-SPC and MPC.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2a~2b.*
4. Validate the call was successfully established, and both terminals receives and decodes incoming audio and video.
5. Terminate the call.

Expected Behavior:

2.
    a. *MONA Preference Message received*
    b. *[MONA Preference Message with SPP set to 1 and with a MOS message received*

4.
    a. Encoding + Sending/Reception + Decoding of Video / Audio over channels set up by MPC

   b. *[RespMsg_terminalCapabilitySetAck received]*

5. CmdMsg_endSessionCommand sent

Order: 2a, 2b, 4a-4b, 5

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2a and 4a to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to *true.*
- All other optional settings within [] bracket shall be ignored.

TestCase 371 –

MPC fallback of audio and video channels to ACP (Local MPC-RX doesn't match remote MPC-TX in both terminals)

Priority:

Optional TC. (See Note)

Objective:

Validates the fallback from MPC to ACP on both media types.

Reference:

[H.324] K.7, K.10

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=0* *SPP=0* *MPC-RX=0 0000 0000 0001 (AMR)* *MPC-TX=0 0000 0000 0001 (AMR)* *MONA-ML=2*
TCS	H.223 capabilities: videoWithAL2=true audiowithAL2=true *MONA capabilities:* *audioEntry=Any number except 0 and videoEntry* *videoEntry=Any number except 0 and audioEntry*
MasterSlave	-
OLC Audio	AMR
OLC Video	H.263 baseline
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=0* *SPP=0* *MPC-RX=0 0000 0001 0000 (H.263)* *MPC-TX=0 0000 0001 0000 (H.263)* *MONA-ML=2*
TCS	H.223 capabilities: videoWithAL2=true audiowithAL2=true *MONA capabilities:* *audioEntry= Any number except 0 and videoEntry* *videoEntry= Any number except 0 and audioEntry*
MasterSlave	-
OLC Audio	AMR
OLC Video	H.263 baseline
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports and prefers MONA MPC and MONA ACP.
2. Terminal B supports MONA MPC and MONA ACP.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2a~2k.*
4. Validate the call was successfully established, and both terminals receives and decodes incoming audio and video.
5. Terminate the call.

Expected Behavior:

2.

   a. *MONA Preference Message received – no matching MPC channels found*
   b. *Selection of H.324 Annex K at both terminals*
   c. *ReqMsg_terminalCapabilitySet received*
   d. *ReqMsg_masterSlaveDetermination received*
   e. *Media receiving on audio and video channels is enabled.*
   f. *ReqMsg openLogicalChannel for audio channel received*
   g. *ReqMsg openLogicalChannel for video channel received*
   h. RespMsg_*terminalCapabilitySetAck received*
   i. RespMsg_*masterSlaveDeterminationAck received*
   j. RespMsg_*openLogicalChannelAck for audio channel received*

k. RespMsg *openLogicalChannelAck for video channel received*

4. Encoding + Sending/Reception + Decoding of Video / Audio
5. CmdMsg_endSessionCommand sent

Order: 2a-2k, 4, 5

Pass Criteria:

The UEUT must demonstrate the above expected behavior as defined in steps 2a ~ 2k and 4 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behavior section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- All other optional settings within [] bracket shall be ignored.

Note:

If TestCase 341 is supported, this test case is mandatory.

TestCase 372 –

MPC fallback of video channel to ACP

(Local receiving MPC audio capability match remote transmitting MPC audio capability and video capabilities don't match in both terminals)

Priority:

Optional TC. (See Note)

Objective:

Validates partial fallback to ACP on one media type.

Reference:

[H.324] K.7, K.10

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=0* *SPP=0* *MPC-RX=0 0000 0000 1001 (AMR+MPEG4)* *MPC-TX=0 0000 0000 1001 (AMR+MPEG4)* *MONA-ML=2*
TCS	H.223 capabilities: videoWithAL2=true audiowithAL2=true *MONA capabilities:* *audioEntry= Any number except 0,1 and videoEntry* *videoEntry= Any number except 0,1 and audioEntry*
MasterSlave	-
OLC Audio	AMR
OLC Video	H.263 baseline
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
MONA Preferences	*SPC=0* *SPP=0* *MPC-RX=0 0000 0001 0001 (AMR+H.263)* *MPC-TX=0 0000 0001 0001 (AMR+H.263)* *MONA-ML=2*
TCS	H.223 capabilities: videoWithAL2=true audiowithAL2=true *MONA capabilities:* *audioEntry= Any number except 0,1 and videoEntry* *videoEntry= Any number except 0,1 and audioEntry*
MasterSlave	-
OLC Audio	AMR
OLC Video	H.263 baseline
[BER]	optional: bit error injection

Precondition:

1. Terminal A supports and prefers MONA MPC and MONA ACP.
2. Terminal B supports MONA MPC and MONA ACP.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2a~2j.*
4. Validate the call was successfully established, and both terminals receives and decodes incoming audio and video.
5. Terminate the call.

Expected Behavior:

2.

   a. *MONA Preference Message received – audio MPC match*
   b. *Selection of H.324 Annex K at both terminals*
   c. *Audio MPC channel (AMR) successfully established*
   d. *ReqMsg_terminalCapabilitySet received*
   e. *ReqMsg_masterSlaveDetermination received*
   f. *Media receiving video channel is enabled*
   g. *ReqMsg_openLogicalChannel for video channel received*
   h. *RespMsg_terminalCapabilitySetAck received*
   i. *RespMsg_masterSlaveDeterminationAck received*
   j. *RespMsg openLogicalChannelAck for video channel received*

4. Encoding + Sending/Reception + Decoding of Video / Audio
5. CmdMsg_endSessionCommand sent

Order: 2a-2j, 4, 5

Pass Criteria:

The UEUT must demonstrate the above expected behavior as defined in steps 2a ~2j and 4 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behavior section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- All other optional settings within [] bracket shall be ignored.

Note:

If TestCase 341 is supported, this test case is mandatory.

4 Logical Channel Handling and Conflict Tests

4.1 Mandatory Tests

Purpose:

Test of mandatory H.245 logical channel signaling conflict scenarios.

TestCase 51 – Master slave OLC conflict for video over AL3

Priority:

Mandatory TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call, even when Terminal A has rejected its BOLC with *cause=masterSlaveConflict*.

Reference:

[H.324] 6.5.2, [H.245] B.3.3, C.4.1.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: *videoWithAL3=true* videoWithAL2=false audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }*
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*bidir h263VideoCapability* *AdaptationLayerType.al3.*controlFieldOctets=1
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: *videoWithAL3=true* videoWithAL2=false audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *h263VideoCapability { receive | receiveAndTransmit }*
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*bidir h263VideoCapability* *AdaptationLayerType.al3*.controlFieldOctets=1
[BER]	optional: bit error injection

Scenario:

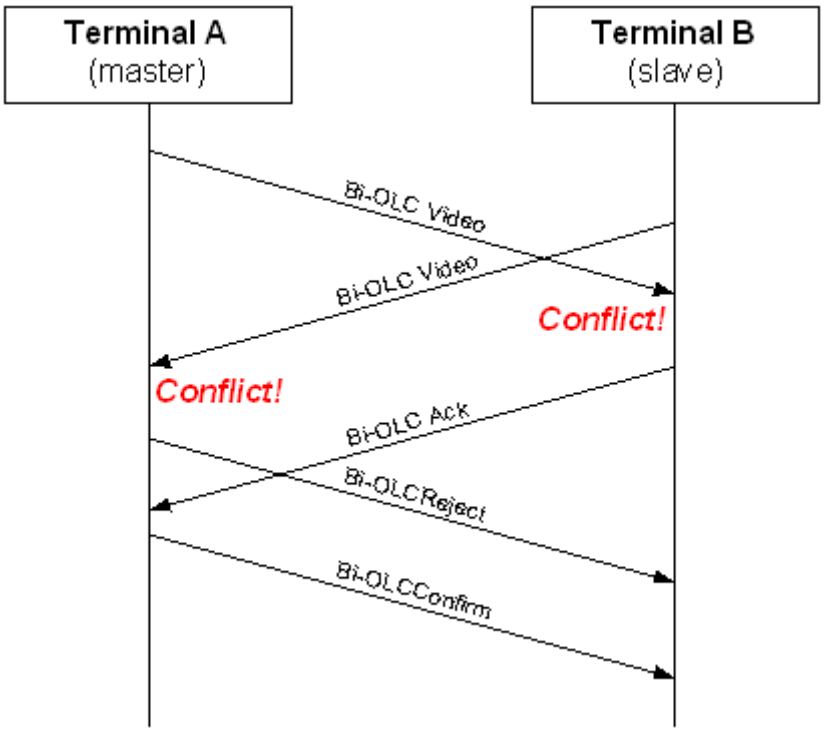

Figure: TestCase 51 – Conflict Scenario

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.

3. *Validate expected behaviour checkpoints 5-7, and 9.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received
5. *bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict*
6. *bidir ReqMsg_OpenLogicalChannel for Video received at Terminal B is accepted with RespMsg_openLogicalChannelAck*
7. *RespMsg_openLogicalChannelAck (at Terminal A – Master) ||IndMsg_openLogicalChannelConfirm (at Terminal B – Slave) for Video received*
8. RespMsg_multiplexEntrySendAck for all mux table entries
9. Encoding + Sending/Reception + Decoding of Video / Audio
10. CmdMsg_endSessionCommand sent

Order: 1, 2-3, 4-9, 10

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 5 ~ 7 and 9 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

4.2 Optional Tests

Purpose:

Test of various optional H.245 logical channel signaling conflict scenarios.

TestCase 51-1 – Master Slave OLC Conflict for Video over asymmetric bidirectional AL3

Priority:

Optional TC

Objective:

To verify that when Terminal A as master sends BOLC asymmetric for Video (where the forward parameter is the slave most preferred codec) while Terminal B sends a symmetric BOLC for Video (where the forward parameter is the slave most preferred codec), Terminal A rejects Terminal B's BOLC. However, also Terminal B might reject the asymmetric BOLC if the reverse parameter is not acceptable. In that case, Terminal B should open an asymmetricBOLC with reverse parameter the same as the forward parameter of Terminal A's BOLC and, being Terminal B slave, the forward parameter will be the master most preferred codec.

Reference:

[H324] 6.5.2, [H.245] B.3.3., C.4.1.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: *videoWithAL3=true* *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability(AMR) {receive} [g7231 {receive}] Video capabilities: *genericVideoCapability (MPEG4)* {receive} *h263VideoCapability {receive}*
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*bidir* *AdaptationLayerType.al3*.controlFieldOctets=1 *with forward parameter = h263VideoCapabliity and reverse parameter = genericVideoCapability.(MPEG4)*
[BER]	Optional: bit error injection

Terminal B Setup:

Entity	Settings
H223	Terminal default
TCS	H.223 capabilities: Terminal default with inclusion of *videowithAl3=true* *videoWithAl2=true* Audio capabilities: Terminal default VideoCapabilities: *H263 {receive}* *genericVideoCapability {receive}*
Masterslave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*bidir h263VideoCapability* *AdaptationLayerType.al3.*controlFieldOctets=1
[BER]	Optional: bit error injection.

Scenario:

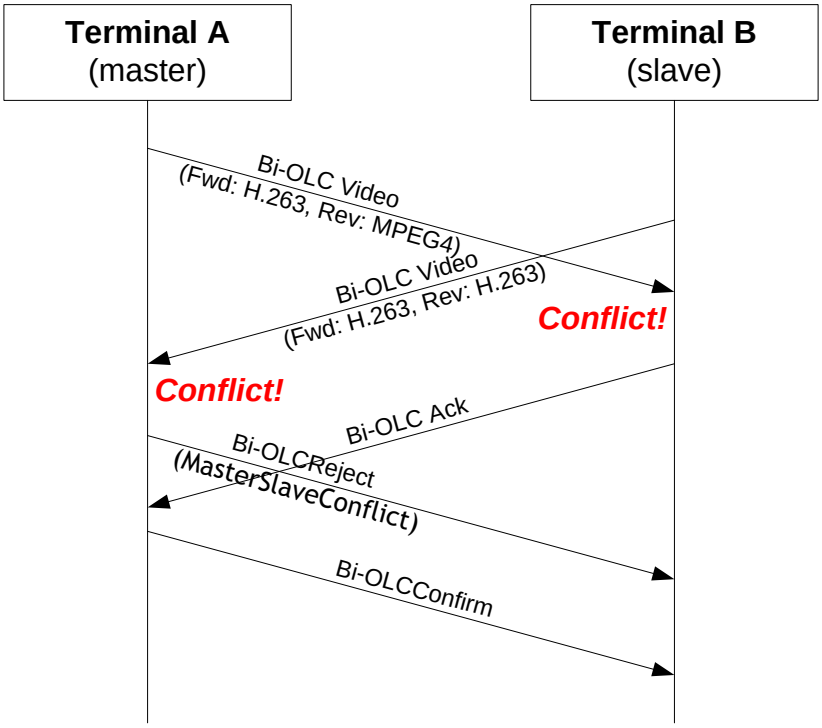

Figure: TestCase 51-1 – Conflict Scenario (i)

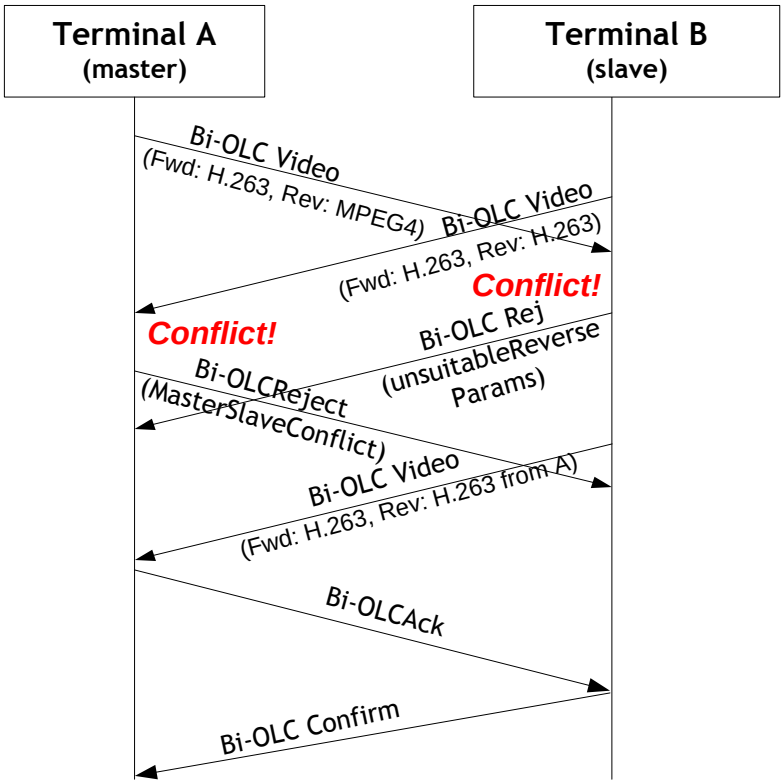

Figure: TestCase 51-1 – Conflict Scenario (ii)

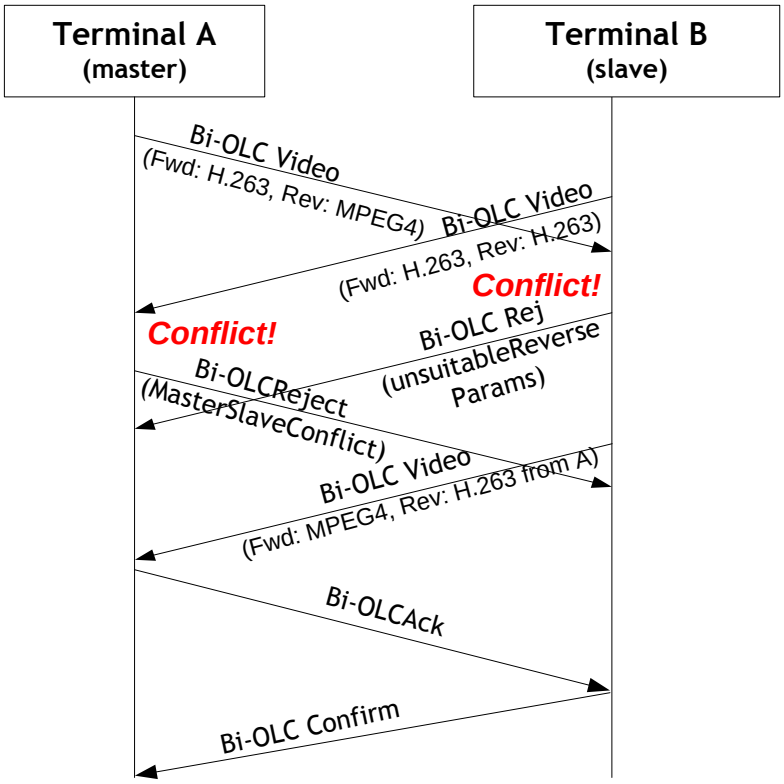

Figure: TestCase 51-1 – Conflict Scenario (iii)

Precondition:

1. Terminal A supports starting bidirectional OLC over AL3, with forward parameter as H263 and reverse parameter Mpeg4 (the most preferred codec).

2. Terminal B supports starting bidirectional OLC over AL3 with H263.
3. Both Terminals have asymmetric video capabilities.

Procedure:

1. Configure terminal(s) according to Default EndpointSettings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behavior checkpoints 2e-2k.*
4. Validate the call was successfully established, and Terminal B receives and decodes incoming audio and video.
5. Terminate the call.

Expected Behavior:

For ReqMsg_OpenLogicalChannel accepted by Terminal B:

2.
    a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
    b. RespMsg_terminalCapabilitySetAck received.
    c. RespMsg_masterSlaveDeterminationAck received.
    d. RespMsg_openLogicalChannel for Audio received.
    e. *bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict.*
    f. *Asymmetric bidir ReqMsg_OpenLogicalChannel for Video received at Terminal B is accepted.*
    g. *RespMsg_openLogicalChannelAck (Master) for Video is received at Terminal A.*
    h. IndMsg_openLogicalChannelConfirm (slave) for Video is received at Terminal B.
    i. *RespMsg_multiplexEntrySendAck for all mux table entries.*
4. Enconding + Sending/Reception + Decoding of Video/Audio.
5. CmdMsg_endSessionCommand sent.

Order: 2a, 2b~2c, 2d~2i, 4, 5

For ReqMsg_OpenLogicalChannel rejected by Terminal B and subsequently Terminal B reproposes with OLC reverse parameter same as Terminal A while keeping Terminal B's OLC forward parameter unchanged.

2.
    a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
    b. RespMsg_terminalCapabilitySetAck received.
    c. RespMsg_masterSlaveDeterminationAck received.
    d. RespMsg_openLogicalChannel for Audio received.
    e. *bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict.*
    f. *asymmetric bidir ReqMsg_OpenLogicalChannel for Video received at Terminal B is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=unsuitableReverseParameter.*

g. *symmetric bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is accepted*

h. RespMsg_openLogicalChannelAck (Slave) for Video is received at Terminal B.

i. *IndMsg_openLogicalChannelConfirm (Master) for Video is received at Terminal A.*

j. *RespMsg_multiplexEntrySendAck for all mux table entries.*

4. Enconding + Sending/Reception + Decoding of Video/Audio.
5. CmdMsg_endSessionCommand sent.

Order: 2a, 2b~2c, 2d~2j, 4, 5

For ReqMsg_OpenLogicalChannel rejected by Terminal B and subsequently Terminal B reproposes with OLC reverse parameter the same as Terminal A but Terminal B's OLC forward parameter is changed with media type the same as that of Terminal A's OLC reverse parameter.

2.

a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).

b. RespMsg_terminalCapabilitySetAck received.

c. RespMsg_masterSlaveDeterminationAck received.

d. RespMsg_openLogicalChannel for Audio received.

e. *bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict.*

f. *asymmetric bidir ReqMsg_OpenLogicalChannel for Video received at Terminal B is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=unsuitableReverseParameter.*

g. *asymmetric bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is accepted*

h. RespMsg_openLogicalChannelAck (Slave) for Video is received at Terminal B.

i. *IndMsg_openLogicalChannelConfirm (Master) for Video is received at Terminal A.*

k. *RespMsg_multiplexEntrySendAck for all mux table entries.*

4. Enconding + Sending/Reception + Decoding of Video/Audio.
5. CmdMsg_endSessionCommand sent.

Order: 2a, 2b~2c, 2d~2j, 4, 5

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2e ~ 2g, 2i and 4 for ReqMsg_OpenLogicalChannel accepted by Terminal B, or steps 2e ~ 2g, 2i ~ 2j and 4 for ReqMsg_OpenLogicalChannel rejected by Terminal B to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- *Mpeg4 should be the most preferred video codec.*
- *Terminal A shall attempt to open asymmetric bidirectional logical channel for video initially.*
- All other optional settings within [] bracket shall be ignored.

TestCase 52 – Master slave OLC conflict for video over AL3 with unsuitable reverse param

Priority:

Optional TC.

Objective:

To verify that when Terminal A sends BOLC for Video with unmatchable reverse parameter, Terminal B rejects Terminal A with reason unsuitableReverseParameters and reproposes with proper forward and reverse parameters.

Reference:

[H.324] 6.5.2, [H.245] B.3.3, C.4.1.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: *videoWithAL3=true* *videoWithAL2=false* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (MPEG4) { receive)*
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*bidir MPEG4 with unmatchable DecoderConfigurationInfo AdaptationLayerType.al3.*controlFieldOctets=1
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default Audio capabilities: Terminal default Video capabilities: Terminal default with inclusion of *genericVideoCapability (MPEG4) { receive | receiveAndTansmit }*
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*bidir MPEG4* *AdaptationLayerType.al3 with default terminal settings for controlFieldOctets*
[BER]	optional: bit error injection

Scenario:

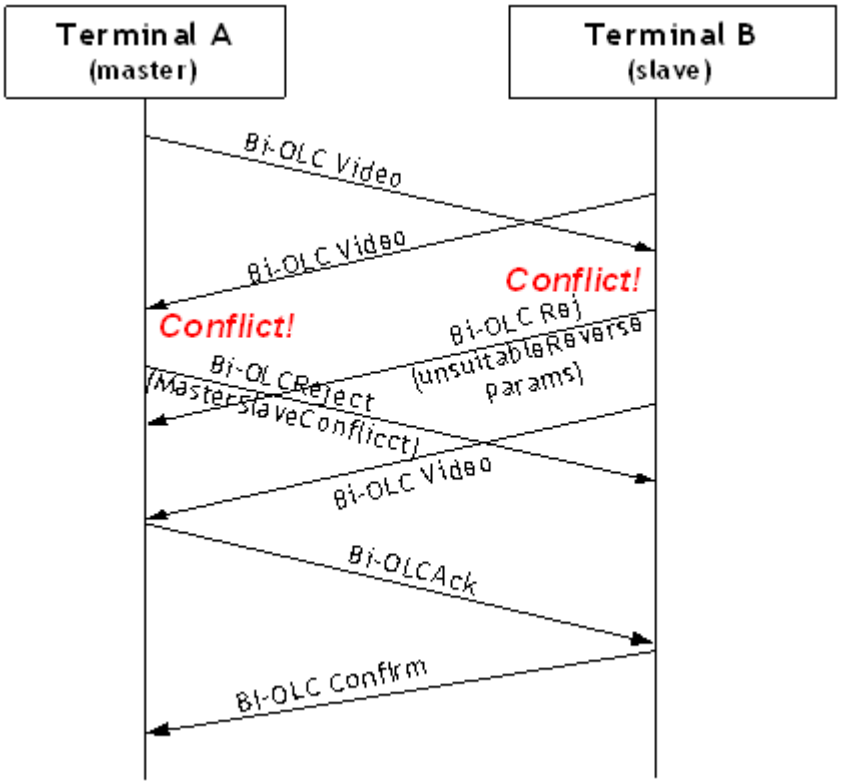

Figure: TestCase 52 – Conflict Scenario

Precondition:

1. Terminal A supports setting videoWithAL2 to false.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2e~2j.*
4. Validate the call was successfully established, and Terminal B receives and decodes incoming audio and video
5. Terminate the call.

Expected Behavior:

2.
    a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
    b. RespMsg_terminalCapabilitySetAck received.
    c. RespMsg_masterSlaveDeterminationAck received.
    d. RespMsg_openLogicalChannelAck for Audio received.
    e. *bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict.*
    f. *bidir ReqMsg_OpenLogicalChannel for Video received at Terminal B is rejected with reason RespMsg_OpenLogicalChannelReject.cause=unsuitableReverseParameters.*
    g. *bidir ReqMsg_OpenLogicalChannel with proper forward and reverse parameters reproposed at Terminal B.*
    h. *bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is accepted with RespMsg_openLogicalChannelAck*
    i. *IndMsg_openLogicalChannelConfirm (Master) for Video received at Terminal A.*
    j. RespMsg_multiplexEntrySendAck for all mux table entries.
4. Encoding + Sending/Reception + Decoding of Video / Audio.
5. CmdMsg_endSessionCommand sent.

Order: 2a, 2b-2c, 2d-4, 5

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2e ~ 2i and 4 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to *false.*
- *Open logical channel for video at Terminal A shall initially attempt to open a bi-directional logical channel with unsuitable reverse parameters.*
- All other optional settings within [] bracket shall be ignored.

TestCase 53 – OLC for video over AL3 with reverse Null media

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call, even when reverse null media is used.

Reference:

[H.324] 6.5.2, [H.245] B.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: *videoWithAL3=true* videoWithAL2=false audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }* [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*bidir H.263* *AdaptationLayerType.al3.*controlFieldOctets=1 *reverseLogicalChannelParameters.dataType=nullData*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: *videoWithAL3=true* videoWithAL2=false audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *h263VideoCapability { receive | receiveAndTransmit }* [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }]
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*bidir H.263* *AdaptationLayerType.al3*.controlFieldOctets=1 *reverseLogicalChannelParameters.dataType=nullData*
[BER]	optional: bit error injection

Scenario:

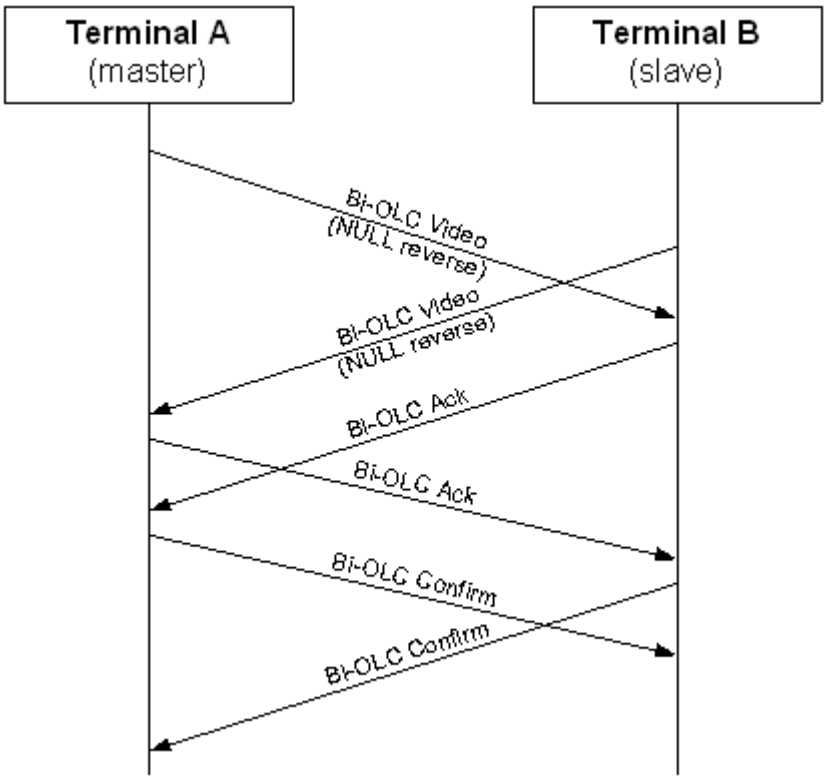

Figure: TestCase 53 – Conflict Scenario

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 5, and 7.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2.
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received
4. RespMsg_openLogicalChannelAck for Audio received.
5. *RespMsg_openLogicalChannelAck (Slave) or IndMsg_openLogicalChannelConfirm (Master) for Video received.*
6. RespMsg_multiplexEntrySendAck for all mux table entries.
7. Encoding + Sending/Reception + Decoding of Video / Audio.
8. CmdMsg_endSessionCommand sent.

Order: 1, 2-3, 4-7, 8

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 5 and 7 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 54 – Master slave OLC conflict for video over AL3/AL2

Priority:

Optional TC.

Objective:

To verify that when Terminal A as a master sends BOLC for Video while Terminal B sends UniOLC for Video, Terminal B accepts BOLC while Terminal A rejects UniOLC.

Reference:

[H.324] 6.5.2, [H.245] B.3.3, C.4.1.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: *videoWithAL3=true* *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }*
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*bidir H.263* *AdaptationLayerType.al3.*controlFieldOctets=1
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default with inclusion of *videoWithAL3=true* *videoWithAL2=true* Audio capabilities: Terminal default Video capabilities: Terminal default
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*unidir H.263* *AdaptationLayerType.al2 with default terminal settings for sequence numbers.*
[BER]	optional: bit error injection

Scenario:

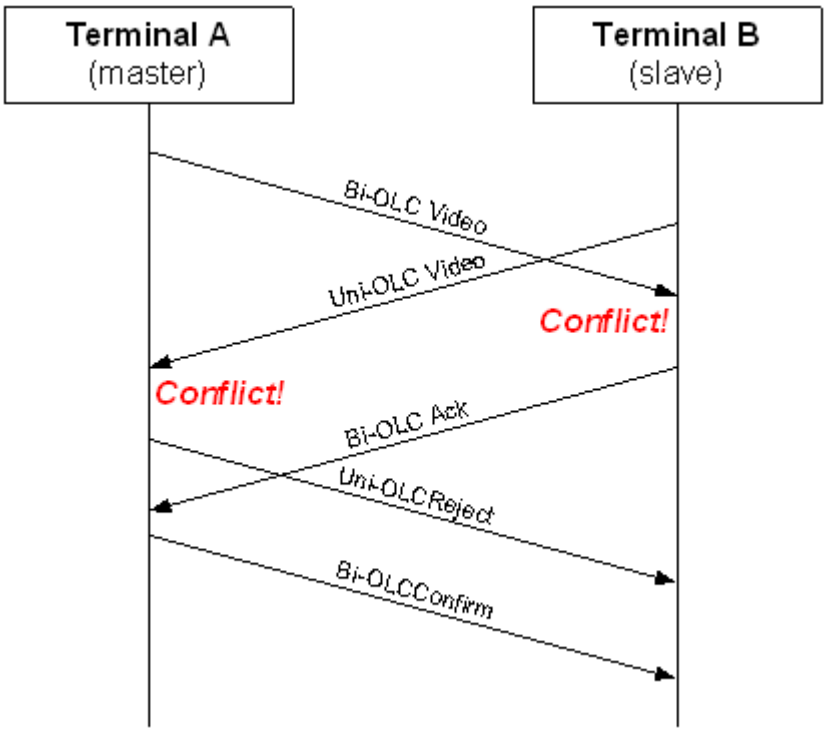

Figure: TestCase 54 – Conflict Scenario

Precondition:

1. Terminal A supports starting bidirectional OLC with H.263 over AL3.
2. Terminal B supports video over AL2.
3. Terminal B supports starting unidirectional OLC with H.263 over AL2.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2e~2g.*
4. Validate the call was successfully established, and Terminal B receives and decodes incoming audio and video
5. Terminate the call.

Expected Behavior:

2.
    a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
    b. RespMsg_terminalCapabilitySetAck received.
    c. RespMsg_masterSlaveDeterminationAck received.
    d. RespMsg_openLogicalChannelAck for Audio received.
    e. *unidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict.*
    f. *bidir ReqMsg_OpenLogicalChannel for Video received at Terminal B is accepted.*
    g. *RespMsg_openLogicalChannelAck (Master) or IndMsg_openLogicalChannelConfirm (Slave) for Video received.*
    h. RespMsg_multiplexEntrySendAck for all mux table entries.
4. Encoding + Sending/Reception + Decoding of Video / Audio.
5. CmdMsg_endSessionCommand sent.

Order: 2a, 2b-2c, 2d-4, 5

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2e and 4 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to true.
- *Terminal A shall attempt to open bidirectional logical channel for video initially.*
- All other optional settings within [] bracket shall be ignored.

TestCase 54-1 – Master slave OLC conflict for MPEG4-Video over AL3/AL2

Priority:

Optional TC.

Objective:

To verify that when Terminal A as a master sends BOLC for MPEG4-Video while Terminal B sends UniOLC for MPEG4-Video, Terminal B accepts BOLC while Terminal A rejects UniOLC. If the reverse parameter suggested in the BOLC by Terminal A is not acceptable by B, then Terminal B must reject BOLC and open a new BOLC, which Terminal A accepts.

Reference:

[H.324] 6.5.2, [H.245] B.3.3, C.4.1.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: *videoWithAL3=true* *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability { receive }*
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*bidir Mpeg4* *AdaptationLayerType.al3.*controlFieldOctets=1
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default with inclusion of *videoWithAL3=true* *videoWithAL2=true* Audio capabilities: Terminal default Video capabilities: Terminal default
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*unidir Mpeg4* *AdaptationLayerType.al2 with default terminal settings for sequence numbers.*
[BER]	optional: bit error injection

Scenario:

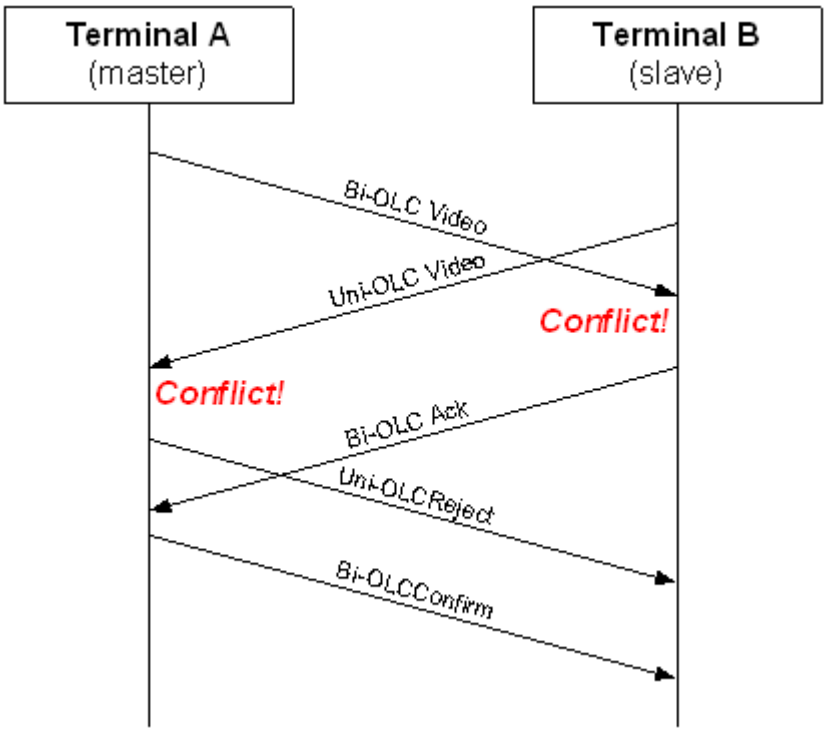

Figure: TestCase 54-1 – Conflict Scenario (i)

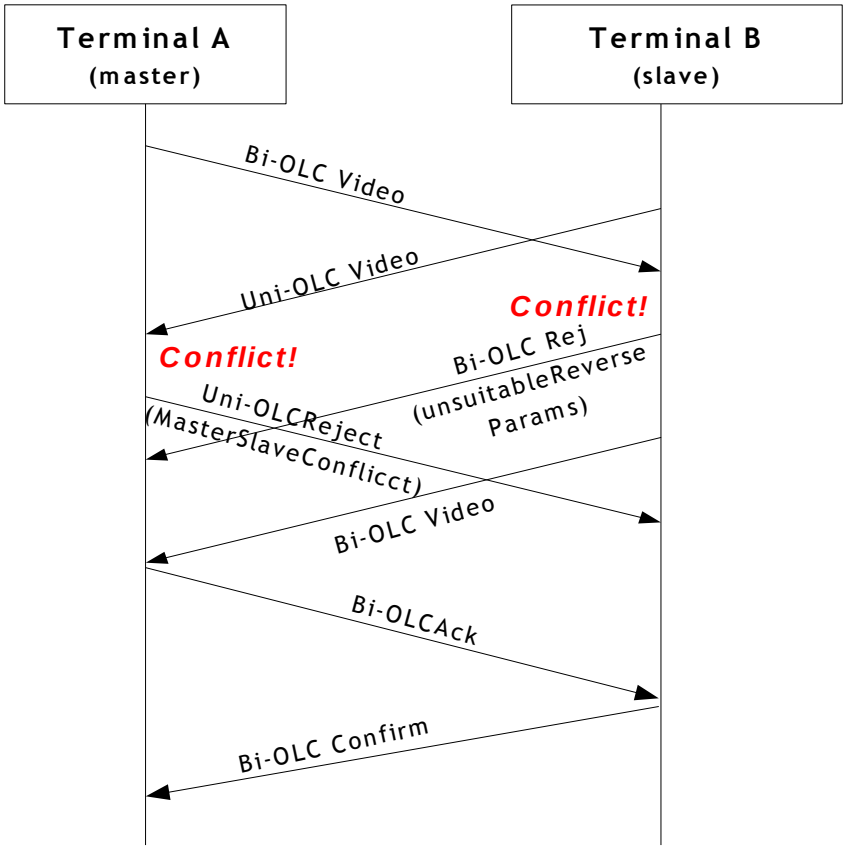

Figure: TestCase 54-1 – Conflict Scenario (ii)

Precondition:

1. Terminal A supports starting bidirectional OLC with Mpeg4 over AL3.
2. Terminal B supports video over AL2.
3. Terminal B supports starting unidirectional OLC with Mpeg4over AL2.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2e~2g.*
4. Validate the call was successfully established, and Terminal B receives and decodes incoming audio and video
5. Terminate the call.

Expected Behavior:

For ReqMsg_OpenLogicalChannel accepted by Terminal B:

2.
    a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
    b. RespMsg_terminalCapabilitySetAck received.
    c. RespMsg_masterSlaveDeterminationAck received.
    d. RespMsg_openLogicalChannelAck for Audio received.

   e. *unidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict.*
   f. *bidir ReqMsg_OpenLogicalChannel for Video received at Terminal B is accepted.*
   g. *RespMsg_openLogicalChannelAck (Master) or IndMsg_openLogicalChannelConfirm (Slave) for Video received.*
   h. RespMsg_multiplexEntrySendAck for all mux table entries.

4. Encoding + Sending/Reception + Decoding of Video / Audio.
5. CmdMsg_endSessionCommand sent.

For ReqMsg_OpenLogicalChannel rejected by Terminal B:

2.
   a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
   b. RespMsg_terminalCapabilitySetAck received.
   c. RespMsg_masterSlaveDeterminationAck received.
   d. RespMsg_openLogicalChannelAck for Audio received.
   e. *unidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict.*
   f. *bidir ReqMsg_OpenLogicalChannel for Video received at Terminal B is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=unsuitableReverseParameter.*
   g. *bidir ReqMsg_OpenLogicalChannel for Video received at Terminal B is rejected with recommended reason RespMsg_OpenLogicalChannelReject.cause=unsuitableReverseParameter.*
   h. *bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is accepted*
   i. *IndMsg_openLogicalChannelConfirm (Master) for Video received at Terminal A.*
   j. RespMsg_multiplexEntrySendAck for all mux table entries.

4. Encoding + Sending/Reception + Decoding of Video / Audio.
5. CmdMsg_endSessionCommand sent.

Order: 2a, 2b-2c, 2d-4, 5

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2e and 4 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to true.
- *Terminal A shall attempt to open bidirectional logical channel for video initially.*
- All other optional settings within [] bracket shall be ignored.

TestCase 55 – Master slave OLC conflict for video over AL2/AL3

Priority:

Optional TC.

Objective:

To verify BOLC for Video from Terminal B rejected by Terminal A with reason MasterSlaveConflict, UniOLC for Video from Terminal A accepted by Terminal B, Terminal B re-requests UniOLC for Video.

Reference:

[H.324] 6.5.2, [H.245] B.3.3, C.4.1.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: *videoWithAL3=true* *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }*
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*unidir H.263* *AdaptationLayerType.al2*WithSequenceNumbers
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default with inclusion of *videoWithAL3=true* *videoWithAL2=true* Audio capabilities: Terminal default Video capabilities: Terminal default
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*bidir H.263* *AdaptationLayerType.al3 with default terminal settings for controlFieldOctets*
[BER]	optional: bit error injection

Scenario:

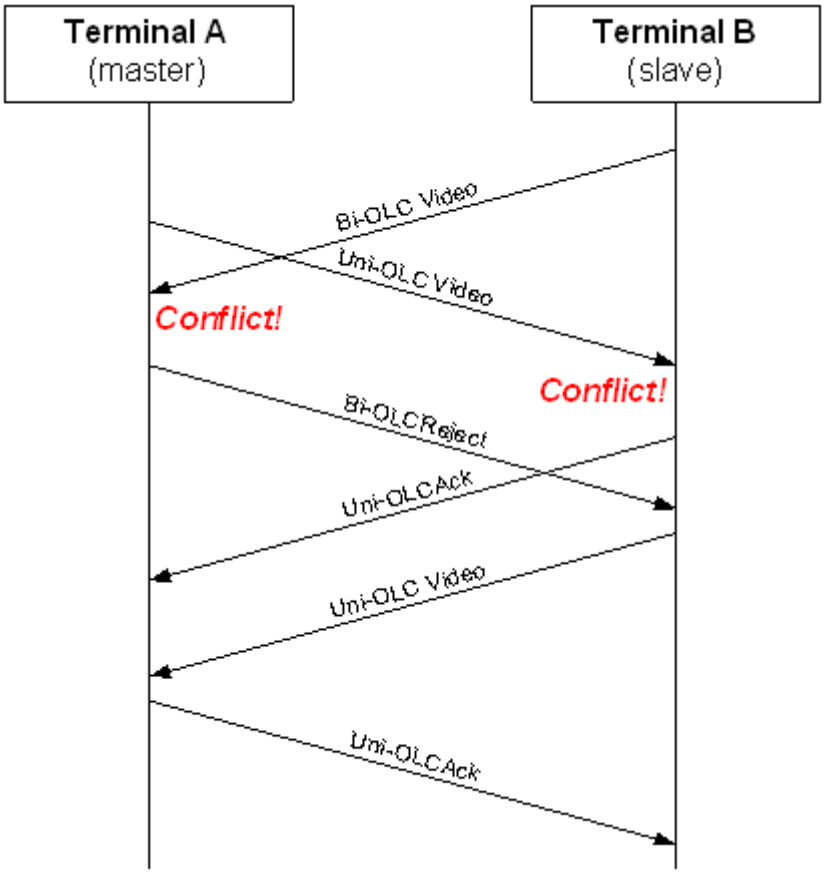

Figure: TestCase 55 – Conflict Scenario

Precondition:

1. Terminal B supports starting bidirectional OLC with H.263 over AL3.
2. Terminal B supports video over AL2.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2e~2g.*
4. Validate the call was successfully established, and Terminal B receives and decodes incoming audio and video
5. Terminate the call.

Expected Behavior:

2.
    a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).
    b. RespMsg_terminalCapabilitySetAck received.
    c. RespMsg_masterSlaveDeterminationAck received.
    d. RespMsg_openLogicalChannelAck for Audio received.
    e. *bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with recommended reject reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict.*
    f. *unidir ReqMsg_OpenLogicalChannel for Video received at Terminal B is accepted. Terminal B re-requests unidir ReqMsg_OpenLogicalChannel for Video with AdaptationLayerType for al2.*
    g. *RespMsg_openLogicalChannelAck (Master, Slave) for Video received.*
    h. RespMsg_multiplexEntrySendAck for all mux table entries.
4. Encoding + Sending/Reception + Decoding of Video / Audio.
5. CmdMsg_endSessionCommand sent.

Order: 2a, 2b-2c, 2d-4, 5

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2e ~ 2j and 4 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to true.
- Terminal A will initially attempt to transmit video over AL2 when supported by Terminal B.
- *Terminal A will reject BOLC request from Terminal B with MasterSlaveConflict*
- All other optional settings within [] bracket shall be ignored.

TestCase 56 – OLC for video over AL3 with reverse Null media/AL2

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call while using video over AL2, even when Terminal A is using video over AL3 with null reverse data.

Reference:

[H.324] 6.5.2, [H.245] B.3.3, C.4.1.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: *videoWithAL3=true* *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }* [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*bidir H.263* *AdaptationLayerType.al3*.controlFieldOctets=1 *reverseLogicalChannelParameters.dataType=nullData*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: *videoWithAL3=true* *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *h263VideoCapability { receive | receiveAndTransmit }* [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }]
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*unidir H.263* *AdaptationLayerType.al2 with default terminal settings for sequence numbers*
[BER]	optional: bit error injection

Scenario:

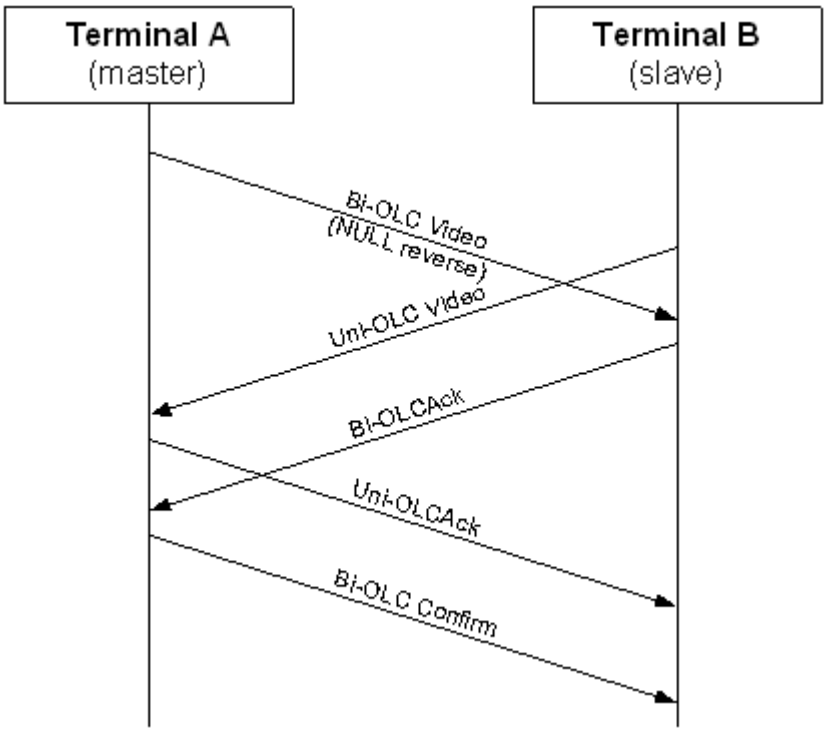

Figure: TestCase 56 – Conflict Scenario

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 5-7, and 9.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2.
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received.
4. RespMsg_openLogicalChannelAck for Audio received.
5. *unidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is accepted with RespMsg_openLogicalChannelAck.*
6. *bidir ReqMsg_OpenLogicalChannel for Video with reverseLogicalChannelParameters.dataType=nullData received at Terminal B is accepted with RespMsg_openLogicalChannelAck.*
7. *RespMsg_openLogicalChannelAck (Master) or IndMsg_openLogicalChannelConfirm (Slave) for Video received.*
8. RespMsg_multiplexEntrySendAck for all mux table entries.
9. Encoding + Sending/Reception + Decoding of Video / Audio.
10. CmdMsg_endSessionCommand sent.

Order: 1, 2-3, 4-9, 10

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 5 ~ 7 and 9 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 57 – Master slave OLC conflict for video over AL3 with reverse Null/AL3 with reverse video

Priority:

Optional TC.

Objective:

To verify that when Terminal B as a master sends BOLC for Video while Terminal A sends BOLC for Video with reverse Null parameter, Terminal A accepts BOLC while Terminal B rejects BOLC with reverse Null parameter.

Reference:

[H.324] 6.5.2, [H.245] B.3.3, C.4.1.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: *videoWithAL3=true* *videoWithAL2=false* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *h263VideoCapability { receive | receiveAndTransmit }*
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*bidir H.263* *AdaptationLayerType.al3.*controlFieldOctets=1 *reverseLogicalChannelParameters.dataType=nullData*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default Audio capabilities: Terminal default Video capabilities: Terminal default
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*bidir H.263* *AdaptationLayerType.al3 with default terminal settings for controlFieldOctets*
[BER]	optional: bit error injection

Scenario:

Similar to **Figure TestCase 51** with Terminal B using AL3 with reverse Null instead of AL3 for video and Terminal A becomes Terminal B while Terminal B becomes Terminal A.

Precondition:

1. Terminal A supports starting bidirectional OLC with H.263 over AL3 with reverse Null parameter.
2. Terminal B supports starting bidirectional OLC with H.263 over AL3.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2e~2g.*
4. Validate the call was successfully established, and Terminal B receives and decodes incoming audio and video
5. Terminate the call.

Expected Behavior:

2.

   a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).

   b. RespMsg_terminalCapabilitySetAck received.

   c. RespMsg_masterSlaveDeterminationAck received.

   d. RespMsg_openLogicalChannelAck for Audio received.

   e. bidir ReqMsg_OpenLogicalChannel for Video with reverseLogicalChannelParameters.dataType=nullData received at Terminal B is rejected with recommended reject reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict.

   f. bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is accepted with RespMsg_openLogicalChannelAck.

   g. *RespMsg_openLogicalChannelAck (Master) or IndMsg_openLogicalChannelConfirm (Slave) for Video received at Terminal B.*

   h. RespMsg_multiplexEntrySendAck for all mux table entries.

4. Encoding + Sending/Reception + Decoding of Video / Audio.

5. CmdMsg_endSessionCommand sent.

Order: 2a, 2b-2c, 2d-4, 5

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2e ~2g and 4 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to *false.*
- *Terminal A shall attempt to open bidirectional logical channel for video with reverse Null parameter initially.*
- All other optional settings within [] bracket shall be ignored.

TestCase 58 – Master slave OLC conflict for video over AL3 with reverse Null/AL3 with reverse video

Priority:

Optional TC.

Objective:

To verify that BOLC for Video from Terminal B rejected by Terminal A with reason MasterSlaveConflict, BOLC for Video with reverse Null from Terminal A accepted by Terminal B, Terminal B re-requests BOLC with reverse Null for Video.

Reference:

[H.324] 6.5.2, [H.245] B.3.1, B.3.3, C.4.1.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: *videoWithAL3=true* *videoWithAL2=false* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }* [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*bidir H.263* *AdaptationLayerType.al3.*controlFieldOctets=1 *reverseLogicalChannelParameters.dataType=nullData*
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Terminal default
TCS	H.223 capabilities: Terminal default Audio capabilities: Terminal default Video capabilities: Terminal default
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*bidir H.263* *AdaptationLayerType.al3 with default terminal settings for controlFieldOctets*
[BER]	optional: bit error injection

Scenario:

Similar to **Figure TestCase 56** with Terminal B using AL3 with reverse Null instead of AL2 for video.

Precondition:

1. Terminal A supports starting bidirectional OLC with H.263 over AL3 with reverse Null media.
2. Terminal B supports starting bidirectional OLC with H.263 over AL3.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish a call session.
3. *Validate expected behaviour checkpoints 2e~2h.*
4. Validate the call was successfully established, and Terminal B receives and decodes incoming audio and video.
5. Terminate the call.

Expected Behavior:

2.

   a. Level setup on Muxlevel { 2 | 1 | 0 } (The lower level of Terminal A and Terminal B selected).

   b. RespMsg_terminalCapabilitySetAck received.

   c. RespMsg_masterSlaveDeterminationAck received.

   d. RespMsg_openLogicalChannelAck for Audio received.

   e. *bidir ReqMsg_OpenLogicalChannel for Video received at Terminal A is rejected with recommended reject reason RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict*

f. *bidir ReqMsg_OpenLogicalChannel for Video with reverseLogicalChannelParameters.dataType=nullData received at Terminal B is accepted with RespMsg_openLogicalChannelAck.*

g. *On reception of RespMsg_OpenLogicalChannelReject.cause=masterSlaveConflict from Terminal A, Terminal B re-requests bidir OLC Video with reverseLogicalChannelParameters.dataType=nullData.*

h. *RespMsg_openLogicalChannelAck (Master, Slave) for Video received.*

i. RespMsg_multiplexEntrySendAck for all mux table entries.

4. Encoding + Sending/Reception + Decoding of Video / Audio.

5. CmdMsg_endSessionCommand sent.

Order: 2a, 2b-2c, 2d-4, 5

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 2e and 4 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

Test Reference Tool:

- Terminal A refers to a Test Reference Tool. Terminal B refers to UEUT.
- videoWithAL2 shall be set to *false*.
- *Open logical channel at Terminal A shall initially attempt to open bidirectional video channel with reverse data set as null.*
- All other optional settings within [] bracket shall be ignored.

TestCase 59 – OLC for video over AL2/AL3 with reverse Null media

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call while using video over AL3 with null reverse data, even when Terminal A is using video over AL2.

Reference:

[H.324] 6.5.2, [H.245] B.3.1, B.3.3, C.4.1.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: *videoWithAL3=true* *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }* [genericVideoCapability (MPEG4) { receive }] [genericVideoCapability (H.264) { receive }]
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*unidir H.263* *AdaptationLayerType.al2*WithSequenceNumbers
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: *videoWithAL3=true* *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *h263VideoCapability { receive | receiveAndTransmit }* [genericVideoCapability (MPEG4) { receive | receiveAndTransmit }] [genericVideoCapability (H.264) { receive | receiveAndTransmit }]
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*bidir H.263* *AdaptationLayerType.al3.*controlFieldOctets=1 *reverseLogicalChannelParameters.dataType=nullData*
[BER]	optional: bit error injection

Scenario:

Similar to **Figure TestCase 56** with Terminal A and Terminal B swapped.

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 5-7, and 9.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2.
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received.
4. RespMsg_openLogicalChannelAck for Audio received.
5. *bidir ReqMsg_OpenLogicalChannel for Video with reverseLogicalChannelParameters.dataType=nullData received at Terminal A is accepted with RespMsg_openLogicalChannelAck.*
6. *unidir ReqMsg_OpenLogicalChannel for Video received at Terminal B is accepted with RespMsg_openLogicalChannelAck.*
7. *RespMsg_openLogicalChannelAck (Master, Slave) for Video received.*
8. RespMsg_multiplexEntrySendAck for all mux table entries.

9. Encoding + Sending/Reception + Decoding of Video / Audio.
10. CmdMsg_endSessionCommand sent.

Order: 1, 2-3, 4-9, 10

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 5 ~ 7 and 9 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 60 – OLC using preferred codec

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call while using 1st video codec capability preferences.

Reference:

[H.245] B.2.2.2

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (MPEG4) {receive}* *h263VideoCapability { receive }* Capability descriptors: *Number 0 (1st):* *1 – genericAudio, [g7231]* *2 – genericVideo, h263*
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	*unidir 1. alternativeCapabilitySet Video of Terminal B and* *AdaptationLayerType.al2*WithSequenceNumbers
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receive }* *genericVideoCapability (MPEG4) { receive }* Capability descriptors: *Number 0 (1st):* *1 – genericAudio, [g7231]* *2 – h263, genericVideo*
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*unidir 1. alternativeCapabilitySet Video of Terminal A and* *AdaptationLayerType.al2*WithSequenceNumbers
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 5-7, and 9.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2.
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received.
4. RespMsg_openLogicalChannelAck for Audio received.
5. *unidir ReqMsg_OpenLogicalChannel for Video with genericVideoCapability (MPEG4) received at Terminal A is accepted with RespMsg_openLogicalChannelAck.*
6. *unidir ReqMsg_OpenLogicalChannel for Video with h263VideoCapability received at Terminal B is accepted with RespMsg_openLogicalChannelAck.*
7. *RespMsg_openLogicalChannelAck (Master, Slave) for Video received.*
8. RespMsg_multiplexEntrySendAck for all mux table entries.
9. Encoding + Sending/Reception + Decoding of Video / Audio.

10. CmdMsg_endSessionCommand sent.

Order: 1, 2-3, 4-9, 10

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 5 ~ 7 and 9 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 61 –
OLC for symmetric video codec H.263
(receiveAndTransmitVideoCapability is signaled in TCS by Terminal A)

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call, even when Terminal A only supports symmetrical codec capabilities.

Reference:

[H.245] B.2.2.2, C.4.1.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *h263VideoCapability { receiveAndTransmit }* *genericVideoCapability (MPEG4) { receiveAndTransmit }* Capability descriptors: *Number 0 (1st):* *1 – genericAudio, [g7231]* *2 – h263, genericVideo*
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	***unidir H.263*** *AdaptationLayerType.al2*WithSequenceNumbers
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *genericVideoCapability (MPEG4) { receive| receiveAndTransmit }* *h263VideoCapability { receive| receiveAndTransmit }* Capability descriptors: *Number 0 (1st):* *1 – genericAudio, [g7231]* *2 – genericVideo, h263*
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*unidir H.263* *AdaptationLayerType.al2*WithSequenceNumbers
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 5-7, and 9.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2.
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received.
4. RespMsg_openLogicalChannelAck for Audio received.
5. *unidir ReqMsg_OpenLogicalChannel for H.263 Video received at Terminal A is accepted with RespMsg_openLogicalChannelAck*
6. *unidir ReqMsg_OpenLogicalChannel for H.263 Video received at Terminal B is accepted with RespMsg_openLogicalChannelAck.*
7. *RespMsg_openLogicalChannelAck (Master, Slave) for Video received.*
8. RespMsg_multiplexEntrySendAck for all mux table entries.
9. Encoding + Sending/Reception + Decoding of Video / Audio.

10. CmdMsg_endSessionCommand sent.

Order: 1, 2-3, 4-9, 10

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 5 ~ 7 and 9 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

TestCase 62 –

OLC for symmetric codec MPEG4 (receiveAndTransmitVideoCapability is signaled in TCS by Terminal A)

Priority:

Optional TC.

Objective:

The intention of this test case is to ensure the UEUT can negotiate a successful call, even when Terminal A only supports symmetrical MPEG4 capability.

Reference:

[H.245] B.2.2.2, C.4.1.3, C.5.1.3

Terminal A Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive } [g7231 { receive }] Video capabilities: *genericVideoCapability (MPEG4) { receiveAndTransmit }* *h263VideoCapability { receiveAndTransmit }* Capability descriptors: *Number 0 (1st):* *1 – genericAudio, [g7231]* *2 – genericVideo, h263*
MasterSlave	*Master*
OLC Audio	AMR || [g7231]
OLC Video	***unidir MPEG4 (1st alternativeCapabilitySet Terminal A)*** *AdaptationLayerType.al2*WithSequenceNumbers
[BER]	optional: bit error injection

Terminal B Setup:

Entity	Settings
H.223	Muxlevel 2 (H.223 Annex B)
TCS	H.223 capabilities: videoWithAL3=true *videoWithAL2=true* audiowithAL2=true Audio capabilities: genericAudioCapability (AMR) { receive | receiveAndTransmit } [g7231 { receive | receiveAndTransmit }] Video capabilities: *h263VideoCapability { receive| receiveAndTransmit }* *genericVideoCapability (MPEG4) { receive| receiveAndTransmit }* Capability descriptors: *Number 0 (1st):* *1 – genericAudio, [g7231]* *2 – h263, genericVideo*
MasterSlave	*Slave*
OLC Audio	AMR || [g7231]
OLC Video	*unidir MPEG4 (1st alternativeCapabilitySet Terminal A)* *AdaptationLayerType.al2*WithSequenceNumbers
[BER]	optional: bit error injection

Precondition:

None

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. *Validate expected behaviour checkpoints 5-7, and 9.*
4. Terminate call session.

Expected Behavior:

1. Level setup on Muxlevel 2.
2. RespMsg_terminalCapabilitySetAck received.
3. RespMsg_masterSlaveDeterminationAck received.
4. RespMsg_openLogicalChannelAck for Audio received.
5. *unidir ReqMsg_OpenLogicalChannel for MPEG4 SVP@L0 Video received at Terminal A is accepted with RespMsg_openLogicalChannelAck.*
6. *unidir ReqMsg_OpenLogicalChannel for MPEG4 SVP@L0 Video received at Terminal B is accepted with RespMsg_openLogicalChannelAck.*
7. *RespMsg_openLogicalChannelAck (Master, Slave) for Video received.*
8. RespMsg_multiplexEntrySendAck for all mux table entries.
9. Encoding + Sending/Reception + Decoding of Video / Audio.

10. CmdMsg_endSessionCommand sent.

Order: 1, 2-3, 4-9, 10

Pass Criteria:

The UEUT must demonstrate the above expected behaviour as defined in steps 5 ~ 7 and 9 to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test. All the other steps described in the expected behaviour section are provided to assist with the conduct of the test; the outcomes of which do not need to be declared.

5 Interoperability Tests

This section describes test cases on basis of "TestCase 7 – Session Setup – Default Configuration" which shall allow a test of a device without changing any settings for both testing terminals (UE and UEUT). Furthermore it shall allow testing the overall functionality that a 3G-324M compliant UE shall provide.

UEUT is the local terminal under test which is tested against a far end peer terminal which in the following will be called UE.

5.1 Test Procedures

All tests shall be performed in that way that the device is not reset (removal of battery, shutdown) in between performing the following described tests.

Each test does not necessarily need to be performed always from idle mode, such as allowing a testing terminal to perform the testcase for "Call initiation" together with "Call termination".

5.1.1 Minimum Passing Criteria

In each test case, the following criteria shall be satisfied for passing the test case unless otherwise stated:

1. Audio and video exchange shall be started within 10 seconds in normal network conditions after the call is answered.
2. Audio and video exchange shall be maintained for at least 30 seconds at both test terminals (UEUT and UE). This excludes the time taken for call setup.

5.1.2 Network Error Condition

In each test case, the following criteria shall be satisfied for passing the test case unless otherwise stated:

1. No channel error or best network condition (Ec/No levels of -6 to -7 for Average Normal Conditions).
2. Channel error of 10^{-4} or bad network signal strength (Ec/No levels of -12 to -15 for Bad Conditions).

5.2 Mobile originated call (from UEUT)

Purpose:

Test of UEUT interoperability as a mobile originator.

TestCase 501 – Call initiation

Priority:

Mandatory TC.

Objective:

Validates if UEUT can start a P2P VT call to another UE.

Reference:

[24.008] 5.2.1

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. UEUT and UE are in idle mode.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. Terminate call session.

Expected Behavior:

2.
    a. Initiate 3G-324M video telephony call to the number of the other UE.
    b. Receive indication from network that VT call was accepted at UE.
    c. Negotiation of call setup procedures.
    d. Audible/Visible exchange of media streams (audio/video).

Order: 2a, 2b, 2c, 2d

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

TestCase 503 – Call being rejected

Priority:

Mandatory TC.

Objective:

Validates if UEUT can release a call when the UE rejects the call.

Reference:

[24.008] 5.2.1.7

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. UEUT and UE are in idle mode.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Try to establish call session and fail.

Expected Behavior:

2.
    a. Initiate 3G-324M video telephony call to the number of the other UE.
    b. Receive indication from network that VT call was rejected at UE.
    c. UEUT is in idle mode.

Order: 2a, 2b, 2c

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

TestCase 504 – Normal call

Priority:

Mandatory TC.

Objective:

Validates stability of an established P2P VT call between UEUT and UE.

Reference:

[24.008] 5.2.1

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. Successful negotiation of call setup procedures.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. Terminate call session.

Expected Behavior:

2. Audible/Visible exchange of media streams (audio/video) for a period of at least 5 minutes.

Order: 2

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

TestCase 505 – UEUT call termination

Priority:

Mandatory TC.

Objective:

Validates if UEUT can terminate an established VT call.

Reference:

[24.008] 5.4.3

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. Audible/Visible exchange of media streams (audio/video).

Procedure:

1. UEUT user presses "END CALL" button.

Expected Behavior:

2. VT call termination is acknowledged by UE and UEUT returns into an idle mode.

Order: 2

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

TestCase 506 – UE call termination

Priority:

Mandatory TC.

Objective:

Validates if UEUT can release an established VT call terminated by UE.

Reference:

[24.008] 5.4.4

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. Audible/Visible exchange of media streams (audio/video).

Procedure:

1. UE user presses "END CALL" button.

Expected Behavior:

2. VT call termination is acknowledged by UEUT and UEUT returns into an idle mode.

Order: 2

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

TestCase 507 – UEUT call termination during call setup

Priority:

Mandatory TC.

Objective:

Validates if UEUT can terminate a to-be-established VT call.

Reference:

[24.008] 5.4.3

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. UEUT and UE are negotiating call setup procedures.

Procedure:

1. UEUT user presses "END CALL" button during call setup.

Expected Behavior:

2. VT call termination is acknowledged by UE and UEUT returns into an idle mode.

Order: 2

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

TestCase 508 – UE call termination during call setup

Priority:

Mandatory TC.

Objective:

Validates if UEUT can release a to-be-established VT call terminated by UE.

Reference:

[24.008] 5.4.4

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. UEUT and UE are negotiating call setup procedures.

Procedure:

1. UE user presses "END CALL" button during call setup.

Expected Behavior:

2. VT call termination is acknowledged by UEUT and UEUT returns into an idle mode.

Order: 2

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

5.3 Mobile terminated call (from UEUT)

Purpose:

Test of UEUT interoperability as a mobile terminator.

TestCase 511 – Call accept manually

Priority:

Mandatory TC.

Objective:

Validates if UEUT can manually accept an incoming P2P VT call from another UE.

Reference:

[24.008] 5.2.2.5

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. UEUT is in idle mode.
2. UEUT is set to use manual answer mode.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. Terminate call session.

Expected Behavior:

2.
    a. Indication (Ring/Icon/Text) of the incoming VT call from UE.
    b. Acceptance of the VT call through user interaction at UEUT.
    c. Negotiation of call setup procedures.
    d. Audible/Visible exchange of media streams (audio/video).

Order: 2a, 2b, 2c, 2d

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

TestCase 512 – Call accept automatically

Priority:

Optional TC.

Objective:

Validates if UEUT can accept an incoming P2P VT call from another UE in automatic answer mode.

Reference:

[24.008] 5.2.2.5

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. UEUT supports automatic answer mode.
2. UEUT is in idle mode.
3. UEUT is set to use automatic answer mode.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. Terminate call session.

Expected Behavior:

2.
    a. Indication (Ring/Icon/Text) of the incoming VT call from UE.
    b. Automatic acceptance of the VT call at UEUT.
    c. Negotiation of call setup procedures.
    d. Audible/Visible exchange of media streams (audio/video).

Order: 2a, 2b, 2c, 2d

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

TestCase 513 – Call reject

Priority:

Mandatory TC.

Objective:

Validates if UEUT can reject an incoming P2P VT call from another UE.

Reference:

[24.008] 5.2.2.3.1

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. UEUT is in idle mode.
2. UEUT is set to use manual answer mode.

Procedure:

1. UE User presses “END CALL” button.

Expected Behavior:

1.
    a. Indication (Ring/Icon/Text) of the incoming VT call from UE.
    b. Rejection of the VT call through user interaction at UEUT.
    c. UEUT returns into idle mode.

Order: 1a, 1b, 1c

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

TestCase 514 – Normal call

Priority:

Mandatory TC.

Objective:

Validates stability of an established P2P VT call between UEUT and UE.

Reference:

[24.008] 5.2.2

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. Successful negotiation of call setup procedures.

Procedure:

1. Configure terminal(s) according to Default Endpoint Settings (clause 1.3) and Terminal Setup.
2. Establish call session.
3. Terminate call session.

Expected Behavior:

2. Audible/Visible exchange of media streams (audio/video) for a period of at least 5 minutes.

Order: 2

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

TestCase 515 – UEUT call termination

Priority:

Mandatory TC.

Objective:

Validates if UEUT can terminate an established VT call

Reference:

[24.008] 5.4.3

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. Audible/Visible exchange of media streams (audio/video).

Procedure:

1. UEUT user presses "END CALL" button.

Expected Behavior:

1.
    a. UEUT initiates termination of the VT call.
    b. VT call termination is acknowledged by UE and UEUT returns into an idle mode.

Order: 1a, 1b

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

TestCase 516 – UE call termination

Priority:

Mandatory TC.

Objective:

Validates if UEUT can release an established VT call terminated by UE.

Reference:

[24.008] 5.4.4

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. Audible/Visible exchange of media streams (audio/video).

Procedure:

1. UE user presses "END CALL" button.

Expected Behavior:

1. VT call termination is acknowledged by UEUT and UEUT returns into an idle state.

Order: 1

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

TestCase 517 – UEUT call termination during call setup

Priority:

Mandatory TC.

Objective:

Validates if UEUT can terminate an to be established VT call.

Reference:

[24.008] 5.4.3

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. UEUT and UE are negotiating call setup procedures.

Procedure:

1. UEUT user presses "END CALL" button during call setup.

Expected Behavior:

1. VT call termination is acknowledged by UE and UEUT returns into an idle mode.

Order: 1

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

TestCase 518 – UE call termination during call setup

Priority:

Mandatory TC.

Objective:

Validates if UEUT can release an to be established VT call terminated by UE.

Reference:

[24.008] 5.4.4

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. UEUT and UE are negotiating call setup procedures.

Procedure:

1. UE user presses "END CALL" button during call setup.

Expected Behavior:

1. VT call termination is acknowledged by UEUT and UEUT returns into an idle mode.

Order: 1

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

5.4 In Call

Purpose:

Test of UEUT interoperability during call sessions.

Either test terminal (UEUT or UE) may initiate the call and terminate the call for each test case.

TestCase 521 – Mute/Unmute Audio

Priority:

Optional TC.

Objective:

Validates if a UEUT is capable of muting/unmuting its sending audio stream.

Reference:

[H.324] 6.5.2.1

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. UEUT supports mute/unmute audio.
2. Audible audio stream at UE.

Procedure:

1. The UEUT user mutes/unmutes audio.
2. UEUT mutes audio for at least 10 seconds.
3. UEUT unmutes audio.
4. UEUT mutes audio for at least 40 seconds.

Expected Behavior:

1. UEUT mutes its audio stream: The UE user hears silence, comfort noise, a UEUT prerecorded audio clip, or a UE defined display text.
3. UEUT unmutes its audio stream: The UE user again hears the live captured voice from the UEUT.

Order: 1, 3

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

Note:

This test case may be performed at the same time with TestCase 524.

TestCase 522 – Block/Unblock Video

Priority:

Optional TC.

Objective:

Validates if a UEUT is capable of blocking/unblocking its sending video stream.

Reference:

[H.324] 6.5.2.1

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. UEUT supports block/unblock video.
2. Visible video stream at UE.

Procedure:

1. The UEUT user blocks/unblocks video.
2. UEUT blocks video for at least 10 seconds.
3. UEUT unblocks video.
4. UEUT blocks video for at least 40 seconds.

Expected Behavior:

1. UEUT blocks its video stream: The UE user sees black frames, a UE defined image or video clip for display, or a UEUT prerecorded video clip.
3. UEUT unblocks its video stream: The UE user again sees the live captured video from the UEUT.

Order: 1, 3

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

Note:

This test case may be performed at the same time with TestCase 525.

TestCase 523 – Mute/Unmute Audio and Block/Unblock Video

Priority:

Optional TC.

Objective:

Validates if a UEUT is capable of muting/unmuting its sending audio stream and blocking/unblocking its sending video stream simultaneously.

Reference:

[H.324] 6.5.2.1

Terminal A Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Terminal B Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Precondition:

1. UEUT supports mute/unmute audio and block/unblock video.
2. Audible audio stream and visible video stream at UE.

Procedure:

1. The UEUT user mutes/unmutes audio and blocks/unblocks video simultaneously.
2. UEUT mutes audio and blocks video for at least 10 seconds.
3. UEUT unmutes audio and unblocks video.
4. UEUT mutes audio and blocks video for at least 40 seconds.

Expected Behavior:

1. UEUT mutes its audio stream and blocks its video stream: The UE user hears silence, comfort noise, a UEUT prerecorded audio clip, or a UE defined display text. The UE user also sees black frames, a UE defined image or video clip for display, or a UEUT prerecorded video clip.
3. UEUT unmutes its audio stream and unblocks its video stream: The UE user again hears the live captured voice from the UEUT. The UE user also again sees the live captured video from the UEUT.

Order: 1, 3

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

Note:

This test case may be performed at the same time with TestCase 526.

TestCase 524 – Audio being Muted/Unmuted

Priority:

Mandatory TC.

Objective:

Validates if a UEUT is capable of coping with its receiving audio stream being muted/unmuted by the UE.

Reference:

[H.324] 6.5.2.1

Terminal A Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Terminal B Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Precondition:

1. UE supports mute/unmute audio.
2. Audible audio stream at UEUT.

Procedure:

1. The UE user mutes/unmutes audio.
2. UE mutes audio for at least 10 seconds.
3. UE unmutes audio.
4. UE mutes audio for at least 40 seconds.

Expected Behavior:

1. UE mutes its audio stream: The UEUT user hears silence, comfort noise, a UE prerecorded audio clip, or a UEUT defined display text.
3. UE unmutes its audio stream: The UEUT user again hears the live captured voice from the UE.

Order: 1, 3

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

Note:

This test case may be performed at the same time with TestCase 521.

For muting audio the UEUT has to cope with the following possible situations:

- The logical channel for audio is closed by UE for muting and reopened for unmuting (Decoder at UEUT will be reinitialized).
- The logical channel for audio is set inactive by UE for muting and set active for unmuting
- The audio is muted by the UE at its microphone and the audio encoder still sends silent frames or comfort noise.

TestCase 525 – Video being Blocked/Unblocked

Priority:

Mandatory TC.

Objective:

Validates if a UEUT is capable of coping with its receiving video stream being blocked/unblocked by the UE.

Reference:

[H.324] 6.5.2.1

Terminal A Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Terminal B Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Precondition:

1. UE supports block/unblock video.
2. Visible video stream at UEUT.

Procedure:

1. The UE user blocks/unblocks video.
2. UE blocks video for at least 10 seconds.
3. UE unblocks video.
4. UE blocks video for at least 40 seconds.

Expected Behavior:

1. UE blocks its video stream: The UEUT user sees black frames, a UEUT defined image or video clip for display, or a UE prerecorded video clip.
3. UE unblocks its video stream: The UEUT user again sees the live captured video from the UE.

Order: 1, 3

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

Note:

This test case may be performed at the same time with TestCase 522.

For blocking video the UEUT has to cope with the following possible situations:

- The logical channel for video is closed by UE for blocking and reopened for unblocking (Decoder at UEUT will be reinitialized).
- The logical channel for video is set inactive by UE for blocking video and set active for unblocking.
- The video is blocked by the UE with encoding a different video stream than live captured stream from the camera. Unblocking the video is done at the UE by encoding again the live captured stream from the camera sensor.

TestCase 526 – Audio being Muted/Unmuted and Video being Blocked/Unblocked

Priority:

Mandatory TC.

Objective:

Validates if a UEUT is capable of coping with its receiving audio and video streams being muted/unmated and blocked/unblocked by the UE simultaneously.

Reference:

[H.324] 6.5.2.1

Terminal A Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Terminal B Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Precondition:

1. UE supports mute/unmute audio and block/unblock video.
2. Audible audio stream and visible video stream at UEUT.

Procedure:

1. The UE user mutes/unmutes audio and blocks/unblocks video simultaneously.
2. UE mutes audio and blocks video for at least 10 seconds.
3. UE unmutes audio and unblocks video.
4. UE mutes audio and blocks video for at least 40 seconds.

Expected Behavior:

1. UE mutes its audio stream and blocks its video stream: The UEUT user hears silence, comfort noise, a UE prerecorded audio clip, or a UEUT defined display text. The UEUT user also sees black frames, a UEUT defined image or video clip for display, or a UE prerecorded video clip.
3. UE unmutes its audio stream and unblocks its video stream: The UEUT user again hears the live captured voice from the UE. The UEUT user also again sees the live captured video from the UE.

Order: 1, 3

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

Note:

This test case may be performed at the same time with TestCase 523.

For muting audio and blocking video the UEUT has to cope with the following possible situations:

- For audio see note at TestCase 524.
- For video see note at TestCase 525.

TestCase 527 – Video Temporal/Spatial Trade Off (VTSTO)

Priority:

Optional TC.

Objective:

Validates if the video encoder parameters at a UEUT can be influenced with respect to frame rate and quantization parameters by the video temporal/spatial trade off settings indicated by the UE.

Reference:

[H.245] B.13.5, B.14.2

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. UE supports generating video temporal spatial tradeoff command.
2. UEUT supports video temporal spatial tradeoff command.
3. Visible video stream at UEUT.

Procedure:

1. The UE user changes VTSTO-settings to low.
2. The UE user changes VTSTO-settings to medium.
3. The UE user changes VTSTO-settings to high.

Expected Behavior:

1. UE sets lowest VTSTO-setting: Received video stream from UEUT has low frame rate and/or low quantization while maintaining the approximate video bit rate.
2. UE sets medium VTSTO-setting: Received video stream from UEUT has medium frame rate and/or medium quantization while maintaining the approximate video bit rate.
3. UE sets highest VTSTO-setting: Received video stream from UEUT has high frame rate and/or high quantization while maintaining the approximate video bit rate.

Order: 1, 2, 3

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

Note:

The corresponding conformance test case is TC 40.

TestCase 528 – Lip Synchronization

Priority:

Mandatory TC.

Objective:

Validates if video and audio synchronization is reasonably presented.

Reference:

[H.324] 6.7.1

Terminal A Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Terminal B Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Precondition:

1. The UE has been validated successfully with at least 2 other UEs with different VT engines.
2. Audible/Visible audio/video streams at UEUT.

Procedure:

1. The user at the UEUT estimates the delay between audio and video according to the following ranges:
    a. 0s to 0.5s delay (1 scorepoint)
    b. 0.5s to 1s delay (2 scorepoints)
    c. Delay is greater than 1s (3 scorepoints)
2. The user at the UE shall therefore provide a sound associated with a visual event (e.g. clapping hand, counting with fingers or clock) which is repeated in a reasonable period (e.g. 1-5s).
3. The mean value of scorepoints from 5 consecutive video calls with intervals of at least 2 minutes is calculated.

Expected Behavior:

3. The test case counts as passed if the calculated mean value is less than or equal to 1.5 scorepoints.

Order: 3

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

Comment:

The acceptable mean value of the scorepoints is to be agreed.

TestCase 529 – Audio Quality

Priority:

Mandatory TC.

Objective:

Validates the audio quality received at the UEUT.

Reference:

None

Terminal A Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Terminal B Setup:

Same as “TestCase 7 – Session Setup – Default Configuration”.

Precondition:

1. Audible audio stream at UEUT.

Procedure:

1. Subjective test shall follow MOS-CQS [ITU-T P.800.1, (03/2003), -Mean Opinion Score (MOS) terminology].
2. The decoded audio quality at UEUT is judged by at least two people and classified to one of the following five criteria: Excellent, Good, Fair, Annoying and Poor.
3. 5 successfully established VT calls with duration of at least 1 minute from the same UE are considered as sufficient to calculate the statistical mean value as output of this test case. One sample is evaluated at the beginning of audio and video exchange and one sample is evaluated 5 minutes after the beginning of audio and video exchange

Expected Behavior:

3. The average of the calculated mean value is at least "Fair".

Order: 3

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

Comment:

Placeholder. Work item for future test case enhancement and should not be considered by other organizations for test cases selection purpose.

TestCase 530 – Video Quality

Priority:

Mandatory TC.

Objective:

Validates the video quality received at the UEUT.

Reference:

None

Terminal A Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Terminal B Setup:

Same as "TestCase 7 – Session Setup – Default Configuration".

Precondition:

1. The UE has been validated successfully with at least 2 other UEs with different VT engines.
2. Visible video stream at UEUT.

Procedure:

1. The decoded video quality at the UEUT is judged by at least two people (validators).
2. The video capturing source by the UE is viewable by the validators either physically or via a reliable source such as another pair of approved UEs.
3. UEUT receives unblocked (unmuted) video for at least 5 minutes

Expected Behavior:

2.
    a. Any erroneous video blocks or macroblocks shall be recovered within 3 second.
    b. Any miscolored video regions shall be corrected within 3 second.
    c. Corrupted video frames shall be recovered within 3 second.

Order: 2a-2c

Pass Criteria:

The UEUT must demonstrate all steps of the above expected behaviour to fulfill the objective of this test thereby passing the test; any other outcome shall be considered as failing the test.

Comment:

Placeholder. The 3 second definition for the expected behaviour is for experiment at this stage. Work item for future test case enhancement and should not be considered by other organizations for test cases selection purpose.

6 References

[G.722.2] Wideband coding of speech at around 16 kbit/s using Adaptive Multi-Rate Wideband (AMR-WB)

[H.245] Control protocol for multimedia communication, ITU-T, 01-2005

[H.263] Video coding for low bit rate communication, ITU-T, 01-2005

[H.264] Advanced video coding forgeneric audiovisual services, ITU-T, 03-2005

[H.324] Terminal for low bit-rate multimedia communication, ITU-T, 09-2005

[24.008] Mobile radio interface Layer 3 specification, Core network protocols; Stage 3, 3GPP, Rel 6

[26.110] Codec(s) for circuit switched multimedia telephony service; General description, 3GPP, Rel 6

[26.111] Codec(s) for circuit switched multimedia telephony service; Modifications to H.324, 3GPP, Rel 6

[26.911] Codec(s) for circuit switched multimedia telephony service; Terminal implementor's guide, 3GPP, Rel 6

[14496-2] Information technology – Coding of audio-visual objects – Part 2: Visual Amendment 1: Visual extensions, ISO.

7 Test Cases Summary

Mandatory Tests

	Initial Level Tests	Test of initial level detection and agreement on H.223 mux level; exchange of H.245 TCS messages and TCSAck

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
1	Initial Level Setup 2-2	AMR over AL2 + default config	H.263 over AL3 + default config	H.223 Level 2	H.223 Level 2	selection of H.223 Annex B + NSRP + CCSRL; TCS

	H.245/H.223 Settings Test	Test of mandatory session setup H.245 messages

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
7 E	**Session Setup - Default Configuration -> configuration as device/ implementation will be shipped**	**AMR over AL2 + default config**	**H.263 over AL3 + default config**	**default configuration of the terminal**	**default configuration of the terminal**	**LS; TCS; MSD; OLC for Audio; OLC for Video; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd**
8 E	Session Setup Audio@AL2	AMR over AL2	H.263 over AL3 + default config	audio AL2	audio AL2	LS; TCS; MSD; OLC for Audio; OLC for Video; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd
9 a/b E	Session Setup Audio@AL2+SN diff	ditto	ditto	audio AL2+SN	ditto	ditto
10 E	Session Setup Audio@AL2+SN	ditto	ditto	ditto	audio AL2+SN	ditto
11 E	Session Setup Video@AL3 CFO 0-0	ditto	H.263 over AL3	AL3 CFO 0	AL3 CFO 0	TCS;MSD; BOLC for Video; MuxEntry exchange; Encoding + Send/Receive + Decode Video; Ack of RequestCLC; EndSessionCmd
12 E	Session Setup Video@AL3 CFO 1-1	ditto	ditto	AL3 CFO 1	AL3 CFO 1	ditto
13 E	Session Setup Video@AL3 CFO 2-2	ditto	ditto	AL3 CFO 2 retransmission	AL3 CFO 2 retransmission	ditto
14 a/b E	Session Setup Video@AL3 CFO 2-1	ditto	ditto	ditto	AL3 CFO 1	ditto

	H.245 Special Commands Tests	Test of mandatory H.245 codepoints

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
43 a/b E	User Input Indication	ditto	ditto	--	--	ditto

Optional Tests

	Initial Level Tests	Test of initial level detection and agreement on H.223 mux level; exchange of H.245 TCS messages and TCSAck

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
2 a/b E	Initial Level Setup 1-2	ditto	ditto	H.223 Level 1	ditto	selection of H.223 Annex A + NSRP + CCSRL; TCS
3 a/b E	Initial Level Setup 0-2	ditto	ditto	H.223 Level 0	ditto	selection of H.223; TCS
4	Initial Level Setup 1-1	ditto	ditto	H.223 Level 1	H.223 Level 1	selection of H.223 Annex A + NSRP + CCSRL; TCS
5 a/b E	Initial Level Setup 0-1	ditto	ditto	H.223 Level 0	ditto	selection of H.223; TCS
6	Initial Level Setup 0-0	ditto	ditto	ditto	H.223 Level 0	selection of H.223; TCS
15 E	Initial Level Setup 3a-3a	AMR over AL2	H.263 over AL3 + default config	H.223 Level 3a	H.223 Level 3a	selection of H.223 Annex C + NSRP + CCSRL; TCS
16 a/b E	Initial Level Setup 3a-2	ditto	ditto	ditto	H.223 Level 2	selection of H.223 Annex B + NSRP + CCSRL; TCS
17 a/b E	Initial Level Setup 3a-1	ditto	ditto	ditto	H.223 Level 1	selection of H.223 Annex A + NSRP + CCSRL; TSC
18 a/b E	Initial Level Setup 3a-0	ditto	ditto	ditto	H.223 Level 0	selection of H.223; TCS

	H.245/H.223 Settings Test	Test of optional session setup H.223/H.245 settings

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
24 E	SRP (LAPM/V.42 mode) without NSRP support	AMR over AL2	H.263 over AL3/AL2	H.223 Level 0; no NSRP support	H.223 Level 0; no NSRP support	TCS; MSD; OLC for Audio; (B)OLC for Video; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
25 E	CCSRL (LAPM/V.42 mode)	ditto	ditto	H.223 Level 2; At least one H.245 message is spread across multiple CCSRL-PDUs.	H.223 Level 2; At least one H.245 message is spread across multiple CCSRL-PDUs.	TCS; MSD; OLC for Audio; (B)OLC for Video; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd

Codec Tests Test of optional codec settings in session setup

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
26 E	MPEG4 Base Session	AMR over AL2	MPEG4 SVP@L0 Base over AL3/AL2	H.223 Level 2; Master; AL2+SN & AL3 CFO 1 | AL2;	H.223 Level 2; Slave; AL2+SN & AL3 CFO 1 | AL2;	TCS; MSD; OLC for Audio; (B)OLC for MPEG4 Video with Object Parameter & DCI with VOS + VO + VOL; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd
27 E	MPEG4 SVH (Short Video Header) Session	ditto	MPEG4 SVP@L0 ShortVideoHeader over AL3/AL2	ditto	ditto	ditto
28 E	MPEG4 HEC (Header extension Code) Session	ditto	MPEG4 SVP@L0 HeaderExtensionCode over AL3/AL2	ditto	ditto	ditto
29 E	MPEG4 DP Session	ditto	MPEG4 SVP@L0 DataPartitioning over AL3/AL2	ditto	ditto	ditto
29-1 E	MPEG4 DP + RVLC Session	ditto	MPEG4 SVP@L0 DataPartitioning over AL3/AL2	ditto	ditto	ditto
30 E	H.263 Annex D (Unrestricted Motion Vector)	ditto	H.263 Annex D over AL3/AL2	H.223 Level 2; AL2+SN;	H.223 Level 2; AL2+SN;	TCS; MSD; OLC for Audio; (B)OLC for Video; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd
31 E	H.263 Annex E (Arithmetic Coding)	ditto	H.263 Annex E over AL3/AL2	ditto	ditto	ditto
32 E	H.263 Annex F (Advanced Prediction)	ditto	H.263 Annex F over AL3/AL2	ditto	ditto	ditto
33 E	H.263 Annex G (PB Frame)	ditto	H.263 Annex G over AL3/AL2	ditto	ditto	ditto
34 E	H.263 Annex I (Advanced Intra Coding)	ditto	H.263 Annex I over AL3/AL2	ditto	ditto	ditto

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
35 E	H.263 Annex J (Loop Filter)	ditto	H.263 Annex J over AL3/AL2	ditto	ditto	ditto
36 E	H.263 Annex K (Slice Structure Mode, without RS submode)	ditto	H.263 Annex K over AL3/AL2	ditto	ditto	ditto
37 E	H.263 Annex T (Modified Quantizer)	ditto	H.263 Annex T over AL3/AL2	ditto	ditto	ditto
38 E	H.261 Session	ditto	H.261 over AL3/AL2	ditto	ditto	ditto
39 E	G.723.1 Session	G.723.1 over AL2	H.263 over AL3/AL2	5.3kbps/6.3kbps/silence suppression	--	TCS; MSD; OLC for Audio; (B)OLC for Video; MuxEntry exchange; Encoding+Sending/Reception +Decoding of Video/Audio with switching audio rates
101 E	G.722.2 Base Session	G.722.2 over AL2	H.263 over AL3/AL2	H.223 Level 2; AL2+SN & AL3 CFO 1 | AL2;	H.223 Level 2; AL2+SN & AL3 CFO 1 | AL2;	TCS; MSD; OLC for Audio; (B)OLC for Video; MuxEntry exchange; Encoding+Sending/Reception +Decoding of Video/Audio with or without switching audio rates
151 E	H.264 Base Session	AMR over AL2	H.264 over AL3/AL2	H.223 Level 2; AL2+SN & AL3 CFO 1 | AL2;	H.223 Level 2; AL2+SN & AL3 CFO 1 | AL2;	TCS; MSD; OLC for Audio; (B)OLC for Video; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
152 E	OLC for H.264 with DCI	AMR over AL2	H.264 over AL2	H.223 Level 2; AL2	H.223 Level 2; AL2	TCS; MSD; OLC for Audio; OLC for Video from Terminal B; OLC for Video with DCI from Terminal A; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
153 E	OLC for H.264 without DCI and changing video parameters within the channel	AMR over AL2	H.264 over AL2	H.223 Level 2; AL2	H.223 Level 2; AL2	TCS; MSD; OLC for Audio; OLC for Video from Terminal B; OLC for Video without DCI from Terminal A; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Sequence Parameter Set and Picture Parameter Set in Video changed from Terminal A; EndSessionCmd
154 E	OLC for H.264 video over AL3 with DCI	AMR over AL2	H.264 over AL3	H.223 Level 2; Master; AL3	H.223 Level 2; Slave; AL3	TCS; MSD; OLC for Audio; BOLC for Video with DCI from Terminal A; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
155 E	OLC for H.264 video over AL3 without DCI	AMR over AL2	H.264 over AL3	H.223 Level 2; Master; AL3	H.223 Level 2; Slave; AL3	TCS; MSD; OLC for Audio; BOLC for Video without DCI from Terminal A; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
156 E	OLC for H.264 video over AL3/AL2 with DCI	AMR over AL2	H.264 over AL3/AL2	H.223 Level 2; Master; AL3	H.223 Level 2; Slave; AL2	TCS; MSD; OLC for Audio; BOLC for Video with DCI from Terminal A accepted by Terminal B, UniOLC for Video from Terminal B rejected by Terminal A with reason MasterSlaveConflict (*Note 1); MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
157 E	OLC for H.264 video over AL3/AL2 without DCI	AMR over AL2	H.264 over AL3/AL2	H.223 Level 2; Master; AL3	H.223 Level 2; Slave; AL2	TCS; MSD; OLC for Audio; BOLC for Video without DCI from Terminal A accepted by Terminal B, UniOLC for Video from Terminal B rejected by Terminal A with reason MasterSlaveConflict (*Note 1); MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
158 E	OLC for symmetric codec H.264	AMR over AL2	H.264 over AL3/AL2	H.223 Level 2; Master; Preferred symmetric H.264	H.223 Level 2; Slave	TCS; MSD; OLC for Audio; OLC for H.264 from Terminal A, OLC for H.264 from Terminal B; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
159 E	Master slave OLC conflict for symmetric codec H.264	AMR over AL2	H.264 over AL3/AL2	H.223 Level 2; Master; Preferred symmetric H.264	H.223 Level 2; Slave	TCS; MSD; OLC for Audio; OLC for Terminal B's 1st common video pref from Terminal A accepted by Terminal B, OLC for H.264 from Terminal B rejected by Terminal A; OLC for Terminal B's 1st common video pref from Terminal B accepted by Terminal A; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
160 E	Out-Of-Band H.264 DCI Change for AL2 unidirectional Logical Channel	AMR over AL2	H.264 over AL2	H.223 Level 2; AL2;	H.223 Level 2; AL2;	TCS; MSD; OLC for Audio; OLC for Video; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of CLC from Terminal B; OLC with DCI from Terminal A; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
161 E	Out-Of-Band H.264 DCI Change for AL3 bidirectional Logical Channel	AMR over AL2	H.264 over AL3	H.223 Level 2; AL3;	H.223 Level 2; AL3;	TCS; MSD; OLC for Audio; BOLC for Video; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of CLC from Terminal B; BOLC with DCI from Terminal A; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd

	H.245 Special Commands Tests	Test of optional H.245 codepoints

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
40 a/b E	Spatial/Temporal Trade Off	AMR over AL2	H.263/MPEG4 SVP@L0 over AL3/AL2	--	--	Command was successfully acknowledged or Function not supported was returned.
41 a/b E	Video Fast Update	ditto	ditto	--	--	ditto
42 a/b E	Switching Video Size	ditto	ditto	--	--	ditto
44 a/b E	Round Trip Delay	ditto	ditto	--	--	ditto
45 a/b E	Mux Entry Request	ditto	ditto	--	--	ditto
46 a/b E	Mux Level Change	ditto	ditto	--	--	ditto
47 a/b E	Flow Control	ditto	ditto	--	--	ditto
48 a/b E	Vendor Identification Indication	ditto	ditto	--	--	ditto

	OLC Data Tests	Test of Data OLC

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
49 a/b E	Data conferencing – T.120	AMR over AL2	H.263/MPEG4 SVP@L0 over AL3/AL2	T.120	T.120	TCS; OLC for Data; Exchange of Data; Ack of RequestCLC; EndSessionCmd
50 a/b E	Text conversation – T.140	ditto	ditto	T.140	T.140	TCS; OLC for Text; Exchange of Text; Ack of RequestCLC; EndSessionCmd

	WNSRP Tests	Test of WNSRP

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
81 a/b E	WNSRP support both terminals using multiplex level 2	AMR over AL2	H.263 over AL2	H.223 Level 2; WNSRP.	H.223 Level 2; WNSRP.	WNSRP; TCS; OLC for Audio; OLC for Video; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
82 a/b E	WNSRP interoperability with NSRP only terminal using multiplex level 2	AMR over AL2	H.263 over AL2	H.223 Level 2; WNSRP.	H.223 Level 2.	WNSRP command frames initially sent from Terminal A; TCS; OLC for Audio; OLC for Video; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
83 a/b E	WNSRP support both terminals using multiplex level 1	AMR over AL2	H.263 over AL2	H.223 Level 1; WNSRP.	H.223 Level 1; WNSRP.	WNSRP; TCS; OLC for Audio; OLC for Video; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
84 a/b E	WNSRP interoperability with NSRP only terminal using multiplex level 1	AMR over AL2	H.263 over AL2	H.223 Level 1; WNSRP.	H.223 Level 1.	WNSRP command frames initially sent from Terminal A; TCS; OLC for Audio; OLC for Video; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd

MONA Tests Test of MONA (H.324 Annex K)

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
301 a/b E	MONA MOS-SPC Interoperability with non-MONA supporting terminals	AMR over AL2	H.263 over AL2	H.223 Level 2.	MONA MOS-SPC; H.223 Level 2.	MONA frames with MOS initially sent from Terminal B; TCS; OLC for Audio; OLC for Video; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
302 a/b E	Interoperability of MONA supporting and non-MONA supporting terminals	AMR over AL2	H.263 over AL2	H.223 Level 2.	MONA MPC; H.223 Level 2.	MONA frames initially sent from Terminal B; TCS; OLC for Audio; OLC for Video; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
303 a/b E	One terminal supports MONA, supports MPC, and transmits early MPC media. The other terminal is a non-MONA (legacy) terminal	AMR over AL2	H.263 over AL2	MONA MPC; H.223 Level 2.	H.223 Level 2.	MONA frames with MPC early media initially sent from Terminal A; TCS; OLC for Audio; OLC for Video; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
304 a/b E	MONA Fallback to Legacy Call	AMR over AL2	H.263 over AL2	H.223 Level 2 < 20 consecutive sync flags.	MONA; H.223 Level 2 with optional header.	MONA frames with MOS initially sent from Terminal B; TCS; OLC for Audio; OLC for Video; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
311 a/b E	MONA MOS-SPC supported by both terminals	AMR over AL2	H.263 over AL2	MONA MOS-SPC; H.223 Level 2.	MONA MOS-SPC; H.223 Level 2.	MONA frames with MOS; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
312 a/b E	MONA MOS-SPC supported both terminals using preferred codec	AMR over AL2	H.263/MPEG4-video over AL2	MONA MOS-SPC; H.223 Level 2; Preferred MPEG4-video.	MONA MOS-SPC; H.223 Level 2; Preferred H.263.	MONA frames with MOS; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
312-1 a/b E	MONA MOS-SPC supported both terminals using preferred codec and one terminal is with symmetric media restriction	AMR over AL2	MPEG4-video over AL2 when Terminal A is Master || H.263 over AL2 when Terminal A is Slave	MONA MOS-SPC; H.223 Level 2; Preferred MPEG4-video.	MONA MOS-SPC; H.223 Level 2; Preferred symmetric H.263.	MONA frames with MOS; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
313 a/b E	MONA MOS-SPC supported both terminals for symmetric video codec H.263	AMR over AL2	H.263 over AL2	MONA MOS-SPC; H.223 Level 2; Master; Preferred symmetric H.263.	MONA MOS-SPC; H.223 Level 2; Slave; Preferred MPEG4-video.	MONA frames with MOS; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
314 a/b E	MONA MOS-SPC supported with OLC for video over AL3	AMR over AL2	H.263 over AL3	MONA MOS-SPC; H.223 Level 2; Master; AL3+CFO 1.	MONA MOS-SPC; H.223 Level 2; Slave; AL2.	MONA frames with MOS; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
315 a/b E	MONA MOS-SPC fallback to ACP	AMR over AL2	H.263 over AL2	MONA MPC; H.223 Level 2.	MONA MOS-SPC; H.223 Level 2.	MONA frames; TCS; MSD; OLC for Audio; OLC for Video; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
316 a/b E	MONA MOS-SPC preferred terminal	AMR over AL2	H.263 over AL2	MONA MOS-SPC and MPC; Preferred MOS-SPC; H.223 Level	MONA MOS-SPC and MPC; Preferred MPC; H.223 Level 2	MONA frames with MOS; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
317 a/b E	MONA MOS-SPC forced fallback	AMR over AL2	H.263 over AL2	MONA MOS-SPC and MPC; Preferred MOS-SPC; H.223 Level	MONA MOS-SPC and MPC; Preferred MOS-SPC; H.223 Level 2	MONA frames with MOS; TCS with empty GenericControlCapability from Terminal A; TCS from Terminal B; MSD; OLC for Audio; OLC for Video; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
341 a/b E	MPC supported by both terminals using terminal default settings	AMR over AL2 + default config	H.263 over AL2 + default config	MONA MPC; H.223 Level 2 + default config.	MONA MOS-SPC; H.223 Level 2 + default config.	MONA frames; Encoding + Sending/Reception + Decoding of Video/Audio + TCS + MSD; EndSessionCmd
342 a/b E	MPC supported by both terminals, MPC TX/RX restricted such that all channels are established via MPC	AMR over AL2	H.263 over AL2	MONA MPC; H.223 Level 2; MPC AMR + H.263.	MONA MPC; H.223 Level 2; MPC AMR + H.263.	MONA frames; Encoding + Sending/Reception + Decoding of Video/Audio + TCS + MSD; EndSessionCmd
343 a/b E	MPC supported by both terminals, all channels established via MPC, MPC TX and RX restricted to establish MPEG-4 visual in both directions	AMR over AL2	MPEG4-video over AL2	MONA MPC; H.223 Level 2; MPC AMR + MPEG4-video.	MONA MPC; H.223 Level 2; MPC AMR + MPEG4-video.	MONA frames; Encoding + Sending/Reception + Decoding of Video/Audio + TCS + MSD; EndSessionCmd

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
344 a/b E	MPC supported by both terminals, all channels established via MPC, MPC TX and RX restricted to establish H.264 visual in both directions	AMR over AL2	H.264 over AL2	MONA MPC; H.223 Level 2; MPC AMR + H.264.	MONA MPC; H.223 Level 2; MPC AMR + H.264.	MONA frames; Encoding + Sending/Reception + Decoding of Video/Audio + TCS + MSD; EndSessionCmd
345 a/b E	MPC supported by both terminals, all channels established via MPC, MPC TX and RX restricted to establish AMR-WB speech in both directions	AMR-WB over AL2	H.263 over AL2	MONA MPC; H.223 Level 2; MPC AMR-WB + H.263.	MONA MPC; H.223 Level 2; MPC AMR-WB + H.263.	MONA frames; Encoding + Sending/Reception + Decoding of Video/Audio + TCS + MSD; EndSessionCmd
346 a/b E	MPC supported by both terminals, at least one channel is established via MPC. Media encapsulation is used (transmitted and successfully received) for at least one channel in at least one direction	AMR-WB over AL2	H.263 over AL2	MONA MPC; H.223 Level 2; MPC AMR-WB + H.263 with early media.	MONA MPC; H.223 Level 2; MPC AMR-WB + H.263 with early media.	MONA frames with MPC media; Encoding + Sending/Reception + Decoding of Video/Audio + TCS + MSD; EndSessionCmd
347 a/b E	MPC supported by both terminals, at least one channel is established via MPC. One terminal supports Multiplex Level 2, while the other supports Multiplex Level 1. MPC transmit and receive capabilities and left to defaults used by each terminal implementation	AMR-WB over AL2	H.263 over AL2	MONA MPC; H.223 Level 2; MPC AMR + H.263.	MONA MPC; H.223 Level 1; MPC AMR + H.263.	MONA frames with MPC media; Encoding + Sending/Reception + Decoding of Video/Audio + TCS + MSD; EndSessionCmd
348 a/b E	MONA MPC terminals establish a session using MPC fallback	AMR over AL2	MPEG4-video/H.263 over AL2	MONA MPC; H.223 Level 2; MPC RX AMR + H.263; MPC TX AMR + H.263 + MPEG4-video.	MONA MPC; H.223 Level 2; MPC AMR + H.263.	MONA frames; MPC with MPEG4-video initially sent by Terminal A; MPC with H.263 sent by Terminal A; Encoding + Sending/Reception + Decoding of Video/Audio + TCS + MSD; EndSessionCmd

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
349 a/b E	MONA MPC terminals establish a session with asymmetric visual codecs	AMR over AL2	MPEG4-video/H.263 over AL2	MONA MPC; H.223 Level 2; MPC RX AMR + H.263; MPC Tx AMR + MPEG4-video.	MONA MPC; H.223 Level 2; MPC RX AMR + MPEG4-video; MPC TX AMR + H.263.	MONA frames; Encoding + Sending/Reception + Decoding of Video/Audio + TCS + MSD; EndSessionCmd
350 a/b E	MONA MOS-SPC preferred terminal connecting with MPC terminal	AMR over AL2	H.263 over AL2	MONA MPC; H.223 Level 2	MONA MOS-SPC and MPC; Preferred MOS-SPC; H.223 Level 2	MONA frames with MOS from Terminal B; MONA frames from Terminal A; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
371 a/b E	MPC fallback of audio and video channels to ACP (Local MPC-RX doesn't match remote MPC-TX in both terminals)	AMR over AL2	H.263 over AL2	MONA MPC; H.223 Level 2; MPC AMR only.	MONA MPC; H.223 Level 2; MPC H.263 only.	MONA frames; TCS; MSD; OLC for Audio; OLC for Video; Encoding + Sending/Reception + Decoding of Video/Audio; EndSessionCmd
372 a/b E	MPC fallback of audio and video channels to ACP (Local MPC-RX doesn't match remote MPC-TX in both terminals)	AMR over AL2	H.263 over AL2	MONA MPC; H.223 Level 2; MPC AMR + MPEG4.	MONA MPC; H.223 Level 2; MPC AMR + H.263.	MONA frames; Encoding + Sending/Reception + Decoding of Audio + TCS + MSD; OLC for Video; Encoding + Sending/Reception + Decoding of Video; EndSessionCmd

Logical Channel Handling and Conflict Tests

	Core OLC Conflict Tests (mandatory)	Test of representative OLC conflict scenarios.

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
51 a/b E	Master slave OLC conflict for video over AL3 (See Figure)	AMR over AL2	H.263 over AL3	H.223 Level 2; Master; AL3+CFO 1	H.223 Level 2; Slave; AL3+CFO 1	TCS; MSD; OLC for Audio; BOLC for Video with Terminal A rejects Terminal B with reason MasterSlaveConflict (*Note 1), Terminal B accepts Terminal A; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd

	Core OLC Conflict Tests (optional)	Test of representative OLC conflict scenarios.

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
51-1 a/b E	Master slave OLC conflict for Video over asymmetric bidirectional AL3	AMR over AL2	H.263 over AL3 with reverse MPEG4-Video/AL3 with reverse video	H.223 Level 2; Master; AL3+CFO 1	H.223 Level 2; Slave; AL3+CFO 1	TCS; MSD; OLC for Audio; (i) BOLC for Video from Terminal A accepted by Terminal B, BOLC for Video from Terminal B rejected by Terminal A with reason MasterSlaveConflict (*Note 1); (ii) BOLC for Video from Terminal B rejected by Terminal A with reason MasterSlaveConflict (*Note 1), BOLC for Video from Terminal A rejected by Terminal B with reason unsuitableReverseParameters and Terminal B reproposes BOLC for Video with proper forward and reverse parameters; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd
52 a/b E	Master slave OLC conflict for video over AL3 with unsuitable reverse param (See Figure)	AMR over AL2	MPEG4 over AL3	H.223 Level 2; Master; AL3+CFO 1 with unmatchable reverse DCI	H.223 Level 2; Slave; AL3+CFO 1	TCS; MSD; OLC for Audio; BOLC for Video with unmatchable reverse parameter, Terminal A rejects Terminal B with reason MasterSlaveConflict (*Note 1), Terminal B rejects Terminal A with reason unsuitableReverseParameters and reproposes with proper forward and reverse parameters; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd
53 a/b E	OLC for video over AL3 with reverse Null media (See Figure)	AMR over AL2	H.263 over AL3 with reverse Null media	H.223 Level 2; AL3+CFO 1	H.223 Level 2; AL3+CFO 1	TCS; MSD; OLC for Audio; BOLC for Video with reverse Null media; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd
54 a/b E	Master slave OLC conflict for video over AL3/AL2 (See Figure)	AMR over AL2	H.263 over AL3/AL2	H.223 Level 2; Master; AL3+CFO 1	H.223 Level 2; Slave; AL2+SN	TCS; MSD; OLC for Audio; BOLC for Video from Terminal A accepted by Terminal B, UniOLC for Video from Terminal B rejected by Terminal A with reason MasterSlaveConflict (*Note 1); MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
54-1 a/b E	Master slave OLC conflict for MPEG4-video over AL3/AL2 (See Figure)	AMR over AL2	MPEG4 over AL3/AL2	H.223 Level 2; Master; AL3+CFO 1	H.223 Level 2; Slave; AL2+SN	TCS; MSD; OLC for Audio; (i) BOLC for Video from Terminal A accepted by Terminal B, UniOLC for Video from Terminal B rejected by Terminal A with reason MasterSlaveConflict (*Note 1); (ii) UniOLC for Video from Terminal B rejected by Terminal A with reason MasterSlaveConflict (*Note 1), BOLC for Video from Terminal A rejected by Terminal B with reason unsuitableReverseParameters and Terminal B reproposes BOLC for Video with proper forward and reverse parameters; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd
55 a/b E	Master slave OLC conflict for video over AL2/AL3 (See Figure)	AMR over AL2	H.263 over AL2/AL3	H.223 Level 2; Master; AL2+SN	H.223 Level 2; Slave; AL3+CFO 1	TCS; MSD; OLC for Audio; BOLC for Video from Terminal B rejected by Terminal A with reason MasterSlaveConflict (*Note 1), UniOLC for Video from Terminal B accepted by Terminal A, Terminal B re-requests UniOLC for Video; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd
56 a/b E	OLC for video over AL3 with reverse Null media/AL2 (See Figure)	AMR over AL2	H.263 over AL3 with reverse Null media/AL2	H.223 Level 2; AL3+CFO 1	H.223 Level 2; AL2+SN	TCS; MSD; OLC for Audio; BOLC for Video with reverse Null media from Terminal A, UniOLC for Video from Terminal B; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd
57 a/b E	Master slave OLC conflict for video over AL3 with reverse Null/AL3 with reverse Video	AMR over AL2	H.263 over AL3 with reverse Null/AL3 with reverse video	H.223 Level 2; Slave; AL3 with reverse Null+CFO 1	H.223 Level 2; Mater; AL3 with reverse video+CFO1	TCS; MSD; OLC for Audio; BOLC for Video from Terminal B accepted by Terminal A, BOLC for Video from Terminal A rejected by Terminal B with reason MasterSlaveConflict (*Note 1); MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd

TestNumber	Settings	Audio	Video	Terminal A (Master)	Terminal B (Slave)	Expected Behaviour
58 a/b E	Master slave OLC conflict for video over AL3 with reverse Null/AL3 with reverse video	AMR over AL2	H.263 over AL3 with reverse Null/AL3 with reverse video	H.223 Level 2; Master; AL3 with reverse Null+CFO1	H.223 Level 2; Slave; AL3 with reverse video +CFO 1	TCS; MSD; OLC for Audio; BOLC for Video from Terminal B rejected by Terminal A with reason MasterSlaveConflict (*Note 1), BOLC for Video from Terminal B accepted by Terminal A, Terminal B re-requests UniOLC or BOLC with reverse Null for Video; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd
59 a/b E	OLC for video over AL2/AL3 with reverse Null media	AMR over AL2	H.263 over AL2/AL3 with reverse Null media	H.223 Level 2; AL2+SN	H.223 Level 2; AL3+CFO 1	TCS; MSD; OLC for Audio; UniOLC for Video from Terminal A accepted by Terminal B, BOLC for Video from Terminal B accepted by Terminal A; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd
60 a/b E	OLC using preferred codec	AMR over AL2	H.263/MPEG4 SVP@L0 over AL2	H.223 Level 2; Master; AL2+SN; Preferred MPEG4-video codec	H.223 Level 2; Slave; AL2+SN; Preferred H.263 codec	TCS; MSD; OLC for Audio; OLC for H.263 from Terminal A, OLC for MPEG4 from Terminal B; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd
61 a/b E	OLC for symmetric video codec H.263 (receiveAndTransmitVideoCapability is signaled in TCS by Terminal A)	AMR over AL2	H.263/MPEG4 SVP@L0	H.223 Level 2; Master; Preferred symmetric H.263	H.223 Level 2; Slave; Preferred MPEG4	TCS; MSD; OLC for Audio; OLC for H.263 from Terminal A, OLC for H.263 from Terminal B; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd
62 a/b E	OLC for symmetric codec MPEG4 (receiveAndTransmitVideoCapability is signaled in TCS by Terminal A)	AMR over AL2	H.263/MPEG4 SVP@L0	H.223 Level 2; Master; Preferred symmetric MPEG4	H.223 Level 2; Slave; Preferred H.263	TCS; MSD; OLC for Audio; OLC for MPEG4 from Terminal A, OLC for MPEG4 from Terminal B; MuxEntry exchange; Encoding + Sending/Reception + Decoding of Video/Audio; Ack of RequestCLC; EndSessionCmd

Interoperability Tests

Mobile originated — Interoperability for calls originated from UEUT.

TestNumber	Settings	Audio	Video	Terminal A (UEUT as MO) (Master)	Terminal B (UE) (Slave)	Expected Behaviour
501	Call initiation	Default config	Default config	Default config	Default config	Play back of audio/video at both terminals.

TestNumber	Settings	Audio	Video	Terminal A (UEUT as MO) (Master)	Terminal B (UE) (Slave)	Expected Behaviour
503	Call being rejected	Default config	Default config	Default config	Default config. Press “END CALL’ button when incoming call is indicated.	UEUT gives up call initiation. UEUT releases call successfully.
504	Normal call	Default config	Default config	Default config	Default config	Play back of audio/video at both terminals for at least 10 minutes.
505	UEUT call termination	Default config	Default config	Default config. Press “END CALL’ button at the end of call.	Default config	UEUT releases calls successfully.
506	UE call termination	Default config	Default config	Default config	Default config. Press “END CALL’ button at the end of call.	UEUT releases call successfully.
507	UEUE call termination during call setup	Default config	Default config	Default config. Press “END CALL’ button at the end of call.	Default config	UEUT releases call successfully.
508	UE call termination during call setup	Default config	Default config	Default config	Default config. Press “END CALL’ button at the end of call.	UEUT releases call successfully.

	Mobile terminated	Interoperability for calls terminated from UEUT.

TestNumber	Settings	Audio	Video	Terminal A (UEUT as MT) (Master)	Terminal B (UE) (Slave)	Expected Behaviour
511	Call accept manually	Default config	Default config	Default config	Default config	Play back of audio/video at both terminals.
512 (optional)	Call accept automatically	Default config	Default config	Default config	Default config. Set to automatic answer mode.	Play back of audio/video at both terminals.
513	Call reject	Default config	Default config	Default config. Press “END CALL’ button when incoming call is indicated.	Default config	UE gives up call initiation. UEUT releases call successfully.
514	Normal call	Default config	Default config	Default config	Default config	Play back of audio/video at both terminals for at least 10 minutes.
515	UEUT call termination	Default config	Default config	Default config. Press “END CALL’ button at the end of call.	Default config	UEUT releases calls successfully.

TestNumber	Settings	Audio	Video	Terminal A (UEUT as MT) (Master)	Terminal B (UE) (Slave)	Expected Behaviour
516	UE call termination	Default config	Default config	Default config	Default config. Press "END CALL' button at the end of call.	UEUT releases calls successfully.
517	UEUT call termination during call setup	Default config	Default config	Default config. Press "END CALL' button at the end of call.	Default config	UEUT releases calls successfully.
518	UE call termination during call setup	Default config	Default config	Default config	Default config. Press "END CALL' button at the end of call.	UEUT releases calls successfully.

	In Call	Interoperability during call session with audio and video exchange.

TestNumber	Settings	Audio	Video	Terminal A (UEUT as MT) (Master)	Terminal B (UE) (Slave)	Expected Behaviour
521 (optional)	Mute/Unmute Audio	Default config	Default config	Default config. Mute audio during audio exchange. Unmute audio after 10 minutes.	Default config	Audible audio stream at UE. UE user hears silence, comfort noise, a UEUT prerecorded audio clip, or a UE text when UEUT mutes audio for 10 seconds. UE user hears live captured voice when UEUT unmutes audio. UE user hears silence, comfort noise, a UEUT prerecorded audio clip, or a UE text when UEUT mutes audio for 40 seconds. UE user hears live captured voice when UEUT unmutes audio.
522 (optional)	Block/Unblock Video	Default config	Default config	Default config. Block video during video exchange. Unblock video after 10 minutes.	Default config	Visible video stream at UE. UE user sees black frames, a UE image or video clip, or a UEUT prerecorded video clip when UEUT blocks video for 10 seconds. UE user sees live captured video when UEUT unblock video. UE user sees black frames, a UE image or video clip, or a UEUT prerecorded video clip when UEUT blocks video for 40 seconds. UE user sees live captured video when UEUT unblock video.

TestNumber	Settings	Audio	Video	Terminal A (UEUT as MT) (Master)	Terminal B (UE) (Slave)	Expected Behaviour
523 (optional)	Mute/Unmute Audio and Block/Unblock Video	Default config	Default config	Default config. Mute audio and block video during audio/video exchange. Unmute audio and unblock video after 10 minutes.	Default config	Audible audio stream and visible video stream at UE. UE user hears silence, comfort noise, a UEUT prerecorded audio clip, or a UE text and sees black frames, a UE image or video clip, or a UEUT prerecorded video clip when UEUT mutes audio and blocks video for 10 seconds. UE user hears live captured voice and sees live captured video when UEUT unmutes audio and unblocks video. UE user hears silence, comfort noise, a UEUT prerecorded audio clip, or a UE text and sees black frames, a UE image or video clip, or a UEUT prerecorded video clip when UEUT mutes audio and blocks video for 40 seconds. UE user hears live captured voice and sees live captured video when UEUT unmutes audio and unblocks video.
524	Audio being Muted/Unmuted	Default config	Default config	Default config	Default config. Mute audio during audio exchange. Unmute audio after 10 minutes.	Audible audio stream at UEUT. UEUT user hears silence, comfort noise, a UE prerecorded audio clip, or a UEUT text when UE mutes audio for 10 seconds. UEUT user hears live captured voice when UE unmutes audio. UEUT user hears silence, comfort noise, a UE prerecorded audio clip, or a UEUT text when UE mutes audio for 40 seconds. UEUT user hears live captured voice when UE unmutes audio.
525	Video being Blocked/Unblocked	Default config	Default config	Default config	Default config. Block video during video exchange. Unblock video after 10 minutes.	Visible video stream at UEUT. UEUT user sees black frames, a UEUT image or video clip, or a UE prerecorded video clip when UE blocks video for 10 seconds. UEUT user sees live captured video when UE unblock video. UEUT user sees black frames, a UEUT image or video clip, or a UE prerecorded video clip when UE blocks video for 40 seconds. UEUT user sees live captured video when UE unblock video.

TestNumber	Settings	Audio	Video	Terminal A (UEUT as MT) (Master)	Terminal B (UE) (Slave)	Expected Behaviour
526	Audio being Muted/Unmuted and Video being Blocked/Unblocked	Default config	Default config	Default config	Default config. Mute audio and block video during audio/video exchange. Unmute audio and unblock video after 10 minutes.	Audible audio stream and visible video stream at UEUT. UEUT user hears silence, comfort noise, a UE prerecorded audio clip, or a UEUT text and sees black frames, a UEUT image or video clip, or a UE prerecorded video clip when UE mutes audio and blocks video for 10 seconds. UEUT user hears live captured voice and sees live captured video when UE unmutes audio and unblocks video. UEUT user hears silence, comfort noise, a UE prerecorded audio clip, or a UEUT text and sees black frames, a UEUT image or video clip, or a UE prerecorded video clip when UE mutes audio and blocks video for 40 seconds. UEUT user hears live captured voice and sees live captured video when UE unmutes audio and unblocks video.
527	Video temporal/spatial tradeoff	Default config	Default config	Default config	Default config. During video exchange, change VTSTO to low. Then change VTSTO to medium. Then change VTSTO to high.	UEUT has low frame rate and/or low quantization when UE sets VTSTO to low. UEUT has medium frame rate and/or medium quantization when UE sets VTSTO to medium. UEUT has high frame rate and/or high quantization when UE sets VTSTO to high.
528	Lip synchronization	Default config	Default config	Default config. 5 scorepoints with 1~5 sec duration are collected with intervals of at least 2 minutes.	Default config	Mean audio scorepoint is <= 1.5 after 5 scorepoints are collected.
529	Audio quality	Default config	Default config	Default config. MOS values are judged by 2 people at beginning and 10 min. after audio/video exchange for 5 consecutive calls.	Default config	MOS score is at least “Fair”.
530	Video quality	Default config	Default config	Default config. Video quality is compared with source and judged by 2 people for 10 min. after audio/video exchange.	Default config	Error video blocks, miscolored video regions and corrupted video frame are recovered or corrected within 3 seconds.

* Note 1: MasterSlaveConflict reason is recommended and should be used for the case of mobile. However, Unspecified reason is valid in this case although it is not recommended to use for mobile.

8 Feature Mapping Table

The following feature mapping table corresponds to a terminal under test (UEUT). Features under Feature column are generated by Test Reference Tool. Mandatory test cases as defined in this document are highlighted in **bold**. Other organizations may enforce execution of the optional test cases according to their requirements no matter whether the UEUT supports optional features expected by the test cases.

Feature	**Applicable Test Cases**	**Feature Supported (✓ Yes / ✗ No)**
Baseline	**7, 43**, **51**, **501, 503, 504, 505, 506, 507, 508, 511**, **513, 514, 515, 516, 517, 518, 524, 525, 526, 528, 529, 530**	
Baseline (Initial multiplex level 0 with SRP support only – no NSRP, etc)	24	
Baseline (Video encoder responding to video temporal spatial tradeoff command)	If feature supported: 40 If feature not supported: 40u	
Baseline (Video encoder responding to video fast update command)	If feature supported: 41 If feature not supported: 41u	
Baseline (Fulfilling Request Mode request on switching H.263 video size)	If feature supported: 42 If feature not supported: 42u	
Baseline (Responding to round trip delay request)	If feature supported: 44 If feature not supported: 44u	
Baseline (Fulfilling mux entry request) (Note mux entry send is different from mux entry send)	If feature supported: 45 If feature not supported: 45u	
Baseline (H.223 mux level change command)	If feature supported: 46 If feature not supported: 46u	
Baseline (Responding to flow control command)	If feature supported: 47 If feature not supported: 47u	
Baseline (Vendor Identification Indication)	48	
Baseline (OLC H.263 AL2)	If feature supported: 54, 56 If feature not supported: 51, 58	
Baseline (Multiplex level 2 with WNSRP)	82	
Baseline (Multiplex level 1 with WNSRP)	84	
Baseline (with MONA)	303	
Baseline (Call accept automatically)	If feature supported: 512 If feature not supported: 511	
Block/unblock video	522	
G.722.2	101	
G.723.1	39	

Feature	Applicable Test Cases	Feature Supported (✓ Yes / ✗ No)
H.261	38	
H.263 Annex D decoding	30	
H.263 Annex E decoding	31	
H.263 Annex F decoding	32	
H.263 Annex G decoding	33	
H.263 Annex I decoding	34	
H.263 Annex J decoding	35	
H.263 Annex K decoding	36	
H.263 Annex T decoding	37	
H.263 as preferred media with MPEG4-Video support	51-1, 62	
H.263 as preferred media with MPEG4-Video support as asymmetric video codec capability only	60	
H.264	151, 154, 155, 159, 161	
H.264 as preferred symmetric media	158	
H.264 with video AL2 support	152, 153, 160	
Initial multiplex level 0	6, 18	
Initial multiplex level 1	4, 5, 17	
Initial multiplex level 2	**1**, 2, 3, 16	
Initial multiplex level 3	15	
MONA	304	
MONA MOS-SPC	301, 311, 314, 315, 317	
MONA MOS-SPC as preferred operation with MONA MPC	350	
MONA MOS-SPC with H.263 as preferred media with MPEG4-Video support	312	
MONA MOS-SPC with H.263 as preferred media with MPEG4-Video support as symmetric media codec capability only	312-1	
MONA MOS-SPC with MPEG4-Video as preferred media with H.263 support	313	
MONA MPC	302, 341, 342, 347, 348	
MONA MPC as preferred operation with MONA MOS-SPC	316	
MONA MPC with audio using MPC AMR-WB transmission only	345	
MONA MPC with early media	346	

Feature	Applicable Test Cases	Feature Supported (✓ Yes / ✗ No)
MONA MPC with initial multiplex level 1	347	
MONA MPC with MPC AMR and H.263 only	372	
MONA MPC with MPC video only	371	
MONA MPC with preference over ACP	342	
MONA MPC with video using MPC H.264 transmission only	344	
MONA MPC with video using MPC H.263 transmission and MPEG4-video reception	349	
MONA MPC with video using MPC MPEG4-video transmission only	343	
MPEG4-Video	26, 27, 28, 29, 29-1, 52, 54-1	
MPEG4-Video as preferred media with H.263 support	61	
Mute/unmute audio	521	
Mute/unmute audio and block/unblock video	523	
OLC audio AL2 without sequence number	**8**	
OLC audio AL2 with sequence number	**9, 10**	
OLC H.263 AL3	58	
OLC H.263 AL3 with reverse Null media	53, 57, 59	
OLC H.263 AL3 with video over AL2 support	55	
OLC H.264 AL2	156, 157	
OLC video AL3 CFO 0	**11**	
OLC video AL3 CFO 1	**12, 14**	
OLC video AL3 CFO 2	**13**	
T.120	49	
T.140	50	
Video temporal spatial tradeoff command	527	
WNSRP	81	
WNSRP at multiplex level 1	83	

The following feature mapping table corresponds to Test Reference Tool.

Feature	**Applicable Test Cases**	**Feature Supported (✓ Yes / ✗ No)**
Baseline	**1, 7**	
Baseline (with MONA)	301, 302, 304	
Baseline (OLC H.263 AL2)	If feature supported: 55, 59 If feature not supported: 51, 57	
Dynamic multiplex level change originating	46	
Flow control command	47	
G.722.2	101	
G.723.1	39	
H.261	38	
H.263 Annex D	30	
H.263 Annex E	31	
H.263 Annex F	32	
H.263 Annex G	33	
H.263 Annex I	34	
H.263 Annex J	35	
H.263 Annex K	36	
H.263 Annex T	37	
H.263 as preferred symmetric media with MPEG4-Video symmetric support	61	
H.264	151	
H.264 as preferred symmetric media	158, 159	
H.264 with DCI and videoWithAL2 set to false	154	
H.264 without DCI and videoWithAL2 set to false	155	
Initial multiplex level 0	3, 6, 24	
Initial multiplex level 1	2, 4, 5	
Initial multiplex level 3	15, 16, 17, 18	
MONA MOS-SPC	311, 314	
MONA MOS-SPC as preferred operation with MONA MPC	316	
MONA MOS-SPC with H.263 as preferred media with MPEG4-Video support as symmetric video codec capability only	313	
MONA MOS-SPC with MPEG4-Video as preferred media with H.263 support	312, 312-1	
MONA MOS-SPC with OLC H.263 AL3	314	

Feature	Applicable Test Cases	Feature Supported (✓ Yes / ✗ No)
MONA MOS-SPC with TCS containing empty GenericControlCapability	317	
MONA MPC	315, 341, 347, 350	
MONA MPC as preferred operation with MONA MOS-SPC	TBA	
MONA MPC with audio using MPC AMR-WB transmission only	345	
MONA MPC with early media	303, 346	
MONA MPC with MPC AMR and MPEG4-video only	372	
MONA MPC with MPC audio only	371	
MONA MPC with MPC MPEG4-video early media	348	
MONA MPC with preference over ACP	342	
MONA MPC with video using MPC H.264 transmission only	344	
MONA MPC with video using MPC MPEG4-video transmission and H.263 reception	349	
MONA MPC with video using MPC MPEG4-video transmission only	343	
MPEG4-Video as preferred media with H.263 support	60	
MPEG4-Video as preferred symmetric media with H.263 symmetric support	62	
MPEG4-Video	26, 54-1	
MPEG4-Video with short video header encoding	27	
MPEG4-Video with HEC encoding	28	
MPEG4-Video with data partitioning encoding	29	
MPEG4-Video with data partitioning and RVLC encoding	29-1	
MPEG4-Video with videoWithAL2 set to false	52	
OLC audio AL2 without sequence number	**8, 9**	
OLC audio AL2 with sequence number	**10**	
OLC H.263 AL3	54, 57	
OLC H.263 AL3 with reverse Null media	53, 56, 58	
OLC H.263 AL3 with reverse MPEG4-Video	51-1	
OLC H.264 AL2	160	
OLC H.264 AL2 with DCI	152	

Feature	Applicable Test Cases	Feature Supported (✓ Yes / ✗ No)
OLC H.264 AL2 without DCI and changing Sequence Parameter Set and Picture Parameter Set in bitstream	153	
OLC H.264 AL3	161	
OLC H.264 AL3 with DCI	156	
OLC H.264 AL3 without DCI	157	
OLC video AL3 CFO 0	**11**	
OLC video AL3 CFO 1	**12**	
OLC video AL3 CFO 2	**13, 14**	
Request multiplex entry	45	
Round trip delay request	44	
Switching video size using Request Mode	42	
T.120	49	
T.140	50	
User input indication	**43**	
Vendor identification indication	48	
Video fast update picture command	41	
Video temporal spatial tradeoff command	40	
videoWithAL2 set to false	**51**	
WNSRP	81, 82	
WNSRP at multiplex level 1	83, 84	