IVT Detailed Test Plan for
IP-DECT SIP Handset

Test Result:	**PASS**
Test Date:	
Product Name:	**IP DECT**
Product Version: (must be generally available)	**R5 (v 5.0.11)**
CallManager Version:	**8.6**
Platform / OS Version:	**IP-DECT**
Cisco Security Agent Version:	
Product Type:	**IP-DECT SIP Handset**
API/Protocol(s) Used:	SIP
Developer Services Contract:	
Partner IVT Contact Name:	**Henrik Sandberg**
Partner IVT Contact Phone:	**+46 31 55 94 03**
Partner IVT Contact Email:	**Henrik.Sandberg@ascom.se**
IVT Lab Location (EMEA or US):	US
Partner Main Support Number:	**support@ascom.se**

Reviewers

Revision	Author	Date	Comment
0.1	Gerry Pearson	8/15/2006	Initial draft
0.2	Abelardo Guajardo	9/7/2006	DTMF modifications
0.3	Srikanth Palla	04.24/2008	Updated with test results
0.4	Abelardo Guajardo	01/19/2012	Added three test cases concerning consultative transfer and TLS/SRTP

Table of Contents

1 Introduction

This document is the detailed Interoperability Verification Test Plan and Report for **Cisco Unified Communications Manager 8.5** and **IP-DECT Base Station, Ascom R5 DECT.** SIP Verification Testing for 3rd party endpoints and Cisco's Unified Communications Manager is performed on-site at tekVizion Labs. SIP Verification Testing tests a single Cisco's Unified Communications Manager version to another single endpoint vendor's specific product version. Verification testing uses tekVizion Labs' SIP Verification Test Plan.

When two products have successfully passed tekVizion's SIP Verification testing with no outstanding issues, the particular versions of the products are verified as interoperable. The Verification only applies to the product versions used in the test, and are only verified as interoperable in a configuration matching that under which the test took place, and for the features and functions tested as part of the test plan. If the testing was successful, a SIP Verification Logo will be provided.
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1.1 Objective(s)

The principle objective of the Interoperability Verification Testing (IVT) is to provide Cisco CDN program partners with an approved, consistent and comprehensive verification methodology for acceptance of their application product into the Cisco CDN Partner Program. Testing is focused on functionality and compliance with the open standards followed by the Cisco Call Manager and design within context of a Cisco internetworking infrastructure.

1.2 Scope

The IVT test activities between third party devices and the Cisco IVT test bed determines whether the implementation of third party devices provides basic functionality without compromising the Cisco network. This document provides the test strategy and test case procedures to validate the mandatory standard requirements and a variety of optional requirements for the device. The device under test must satisfy all the mandatory requirements, and selected optional requirements in order to pass the test. This test determines whether the product performs as required and inter-operates on a pass/fail basis. The test suite therefore emphasizes error detection, not error diagnosis or correction; however, if there is a failure, data will be captured for further analysis, and, if possible, will be traced to the specification of the standard to determine the cause of the problem. Any problems found will be reported to Cisco and to the vendor for correction.

Please note additional tests may be included in the testing session that is not listed in this test plan. The purpose of such additional testing is for investigative purposes to ensure the solution is reliable. The results of the additional tests will be included in any subsequent review. It is expected that the partner will have already carried out their own testing above and beyond the requirements of the test plan to ensure a quality solution.

1.3 Code Used During IVT

The IVT operates a closed code program. Any modification of the Application will be deemed an IVT failure. If your application fails IVT on three occasions you will be barred from the program as such a failure indicates poor product quality. Cisco will perform due diligence to ensure the failure reason is not due to a Cisco Call Manager issues. You will be presented with the appropriate Call Manager Logs for the time of the failure. It is then your responsibility to isolate the failing reason and present this information to Developer Support (DS) for verification, via a DS case. The program team will then decide if the failure reason can be wavered.

1.4 Pass/Fail Criteria

On completion of the verification tests, if there are any issues deemed as severity 1, any issues deemed as severity 2, or 3 issues deemed as severity 3, the product will be considered to have failed IVT. Note: The approval process can increase/decrease the severity after the test cycle if considered necessary.

2 Product Overview

Ascom IP-DECT combines the proven DECT standard with VoIP, allowing you to take advantage of both packet data and high-quality voice connections – on the same network. You can look forward to superb quality of service and excellent messaging capabilities in a secure radio environment. And because there's seamless handover, you won't have to worry about interruptions and 'lost' information, which inevitably result in confusion, misunderstanding and irritation.

IP-DECT offers interference free, dedicated and protected frequency, making it exceedingly difficult to hack into. Which means you can look forward to minding your own business – safe in the knowledge that mission sensitive information stays where it belongs.

The Ascom IP-DECT System provides you with a wide range of voice, messaging and personal alarm handsets purpose built and ideal for office, healthcare and industry segments.

2.1 3rd Party Application Components/Services

3rd Party Services running on the Server	Version
Ascom IP-DECT Base Station	v 5.0.11
Ascom DECT Handset	

2.2 CallManager Device Table

CallManager Device Summary Template:

CallManager Device/Interface Type	Description	Configuration Comments	Min/Max Configurable	Suggested Provisioning
MCS7835			Publisher and 2 Subscriber nodes	
Cisco SIP Phones	7960			Standard configuration
Cisco SCCP Phones	7960			Standard configuration
Ascom IP-DECT template	Template developed by Ascom			Template needs to be loaded to CM

				Standard configuration
Unity Voice Mail	Voice Mail Server			

2.3 What Will Be Tested

Features Tested for Interoperability to the Cisco Unified Communications Manager

Unified Communications Manager Feature	RFC Reference	To Be Tested?
Call Hold and Resume	3261, 3264, 2327, 1889	Yes
Transfer Unattended	3261, 3264, 2327, 1889, 3515, 3420, 3265, 3892	Yes
Transfer Attended	3261, 3264, 2327, 1889, 3515, 3420, 3265, 3892, 3891	Yes
Call Forwarding All	3261, 3264, 2327, 1889	Yes
Call Forwarding No Answer	3261, 3264, 2327, 1889	Yes
Call Forwarding Busy	3261, 3264, 2327, 1889	Yes
Multiple Calls per Line	3261, 3264, 2327, 1889	Yes
Incoming Call Screening	3261, 3264, 2327, 1889, 3725	Yes
Outgoing Call Screening	3261, 3264, 2327, 1889, 3725	Yes
Calling and Connected Line ID	3261, 3264, 2327, 1889, RemotePartyID	Yes
Calling and Connected Name ID	3261, 3264, 2327, 1889, RemotePartyID	Yes
Message Waiting Indication	3261, 3264, 2327, 1889, 3842	Yes
Three-Way Conference Calling	3261, 3264, 2327, 1889	Yes
Call Forking	3261, 3264, 2327, 1889	Yes
Speed Dialing	3261, 3264, 2327, 1889	Yes
Multiple Lines per Phone	3261, 3264, 2327, 1889	Yes

2.4 What Will Not Be Tested

Features that are specific to the internals of the 3rd party product or any features not listed will not be tested.

- Call Forking
- Multi-line phone
- Authentication with no password
- Authentication on origination
- Remote reset / restart
- SRST support

2.5 Administration and Debugging tools

List 3rd party administration and debugging tools	Version
N/A	

3 Executive Summary

The device performed as expected. No critical failures were noted, and ***SIP Verification is therefore achieved*** as a result of this testing activity.

Features not supported

- Music on Hold (MOH):

    This feature is not supported by the device. For Ascom-to-Ascom calls, the held party hears a slow-cadence dial tone. For Ascom-to-Cisco calls, the non-Ascom held party hears silence. For Ascom-to-Cisco calls, if the hold is initiated by the Cisco phone, the held (Ascom) party hears music.

- Multiple Lines per Phone

    This feature is not supported by the device.

- Call Forking (Bridged Line Appearance)

    Communications Manager does not support this feature for 3rd-party devices.

- Authentication on registration – no password

    The device does not support authentication without a password.

- Authentication on origination

    The device does not support authentication on origination.

3.1 Summary of test results

This is an example of summary test results from IVT/SDL testing. The results of the summary are taken from the Test Cases section. The purpose of this is for AVVID Partner Program Team to review without the need of going into the full detail of the report.

✓ = pass

x = fail

✓* = See Defect Tracking Information/Problem Reporting and Severity Levels section.

N/A = If any section is not applicable to your product please state N/A.

N/S = Not supported

N/T = Not tested

3.1.1 Product Test Results

Product Test Results	S1	S2	S3	S4	S5	UC
Phase 1 Basic Call Scenarios	0	0	0	0	0	0
Phase 2 Standard SIP Feature Support	0	0	0	0	0	0
Phase 3 System Control and Verification	0	0	0	0	0	0
Phase 4 SIP Endpoint Functionality Verification	0	0	0	0	0	0
Phase 5 Support for SIP-based RFCs and Drafts	0	0	0	0	0	0
Phase 6 Reliability and Stability	0	0	0	0	0	0
Final Problem Counts:	**0**	**0**	**0**	**0**	**0**	**0**

3.1.2 Problem Report
The following table highlights all problems discovered and their date resolved, if any.

Related Testcase	Problem Description Date Found	Resolution Description Date Resolved	Severity/ Priority	Origin of Issue?

4 Test Setups

The IVT test beds represented below include the following diagrams to support transit voice calls and subscriber support services. The IVT test architecture attempts to mirror the CCM design guides functional requirements where possible.

Figure 4.1 Test Setup Environment
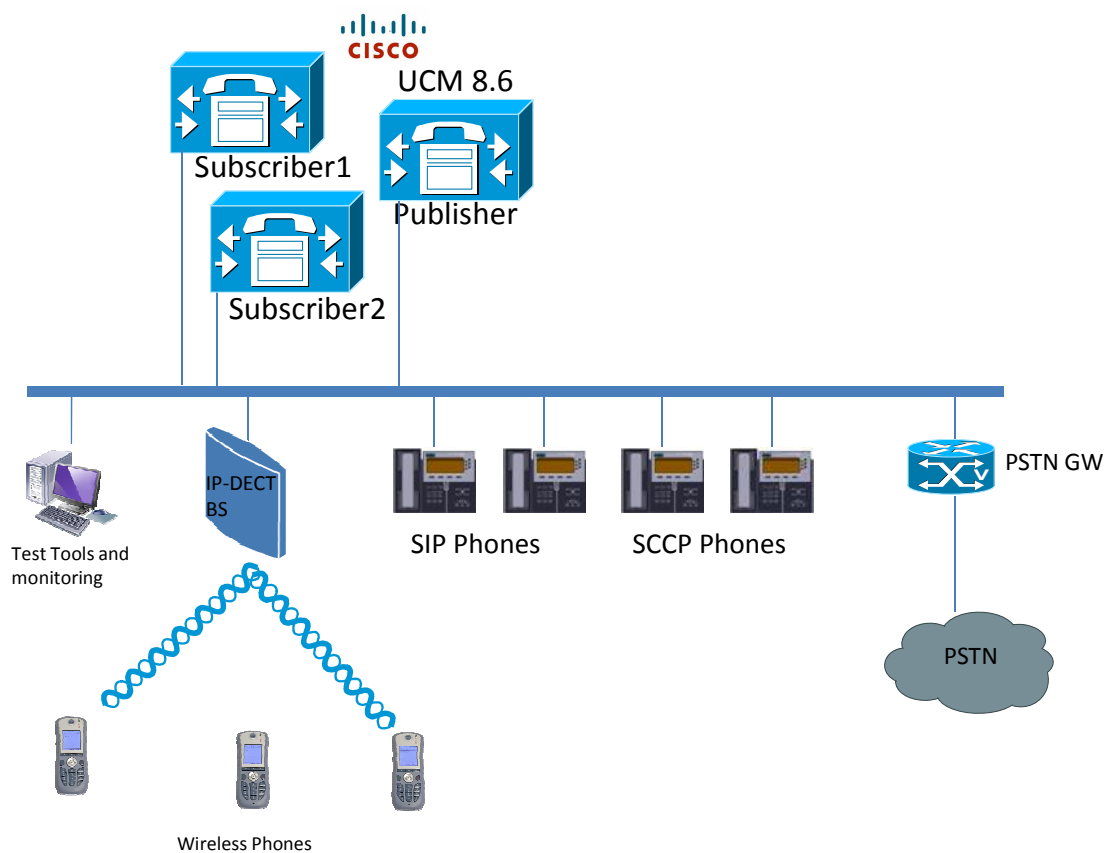
4.1 Hardware

Component	Qty	Hardware	Notes
Ascom IP-DECT Base Station	1	Base Station	
Ascom DECT Handset	3	Wireless hanset	

4.2 Software/ Firmware

Component	Qty	Software Version	Firmware Version
N/A			

4.3 Test Equipment

Equipment	Qty	Purpose
Personal Computer	1	Packet captures, Communications

4.4 Test Tools (software)

Equipment	Qty	Purpose
Wireshark	1	IP Packet Capture

4.5 Supported Signaling Protocols and Interfaces

Protocol	Version	Function
SIP	2.0	

5 Test Resources

In this section please state all logistics in relation to performing and carrying out the IVT testing.

5.1   Test Engineers and Technology Contacts

The engineers responsible for the IVT test efforts are listed in this section with their roles and responsibilities. A second table includes the internal/external email aliases used during testing to relay status information or for technical consultation. In addition, in this table, lists of internal/external web pages are identified as IVT resources.

Table 5-1 – IVT Test Engineers

IVT/SDL Test Engineer	Role
Eder Moncada	Test Lead

Table 5-2 – Vendor Contacts

Name	Telephone	Email	Role
Karl-Magnus Olsson	1 919 234 2451	Karl-Magnus.Olsson@ascom.se	In site support

Table 5-3 – IVT related email aliases and web pages.

IVT related email aliases	Purpose of alias
IVT related web page (internal and/or external)	**Purpose of web page**

5.2 Issues from previous IVT testing

None

Detailed Test Cases

This section details the tests that will be performed during the testing period.

5.3 Basic Call Scenarios

The intention of this section is to verify that basic calls can be properly handled between the SIP Phone under test and Cisco Unified Communications Manager. This test includes the validation of the different call stages from setup, alerting, connecting, and tear down, as well as different call scenarios between end points, IP server local or remote extensions and calls to and from PSTN, Cisco SIP and SCCP phones.

5.3.1 Station to Station Calls

Test Case	Description	Expected Result	Pass/ Fail	Comments
5.3.1.1	IP-DECT to IP-DECT, originator releases call	Two-way voice path, call released properly	Pass	
5.3.1.1b	IP-DECT to IP-DECT, originator releases call (KPML)	Two-way voice path, call released properly	Pass	
5.3.1.1c	IP-DECT to IP-DECT, originator releases call (TLS/SRTP)	Two-way voice path, call released properly	Pass	
5.3.1.2	IP-DECT to IP-DECT, originator abandons call	Terminator stops ringing, originator released properly	Pass	
5.3.1.3	IP-DECT to IP-DECT, terminator releases	Two-way voice path, call released properly	Pass	
5.3.1.4	IP-DECT to IP-DECT, terminator busy	Busy tone heard at originator	Pass	
5.3.1.5	IP-DECT to IP-DECT, unanswered call	Ringing at terminator, ringback at originator, originator released properly	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
5.3.1.6	IP-DECT, call to unknown number	Treatment heard at originator, originator released properly	Pass	
5.3.1.7	IP-DECT to CSP, originator releases call	Two-way voice path, call released properly	Pass	
5.3.1.8	IP-DECT to CSP, terminator releases call	Two-way voice path, call released properly	Pass	
5.3.1.8b	IP-DECT to CSP, terminator releases call (TLS/SRTP)	Two-way voice path, call released properly	Pass	
5.3.1.9	CSP to IP-DECT, originator abandons call	Terminator stops ringing, originator released properly	Pass	
5.3.1.10	CSP to IP-DECT, terminator releases	Two-way voice path, call released properly	Pass	
71.10b	CSP to IP-DECT, terminator releases (TLS/SRTP)	Two-way voice path, call released properly	Pass	
5.3.1.11	IP-DECT to CSP, terminator busy	Busy tone heard at originator	Pass	
5.3.1.12	IP-DECT to CSP, unanswered call	Ringing at terminator, ringback at originator, originator released properly	Pass	
5.3.1.13	IP-DECT to CSIPP, originator releases call	Two-way voice path, call released properly	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
5.3.1.14	IP-DECT to CSIPP, terminator releases call	Two-way voice path, call released properly	Pass	
5.3.1.14 b	IP-DECT to CSIPP, terminator releases call (TLS/SRTP)	Two-way voice path, call released properly	Pass	
5.3.1.15	CSIPP to IP-DECT, originator abandons call	Terminator stops ringing, originator released properly	Pass	
5.3.1.16	CSIPP to IP-DECT, terminator releases	Two-way voice path, call released properly	Pass	
5.3.1.16 b	CSIPP to IP-DECT, terminator releases (TLS/SRTP)	Two-way voice path, call released properly	Pass	
5.3.1.17	IP-DECT to CSIPP, terminator busy	Busy tone heard at originator	Pass	
5.3.1.18	IP-DECT to CSIPP, unanswered call	Ringing at terminator, ringback at originator, originator released properly	Pass	
5.3.1.19	IP-DECT to PSTN, originator releases call	Two-way voice path, call released properly	Pass	
5.3.1.19 b	IP-DECT to PSTN, originator releases call (TLS/SRTP)	Two-way voice path, call released properly	Pass	
5.3.1.20	IP-DECT to PSTN, originator abandons call	Terminator stops ringing, originator released properly	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
5.3.1.21	IP-DECT to PSTN, terminator releases	Two-way voice path, call released properly	Pass	
5.3.1.21 b	IP-DECT to PSTN, terminator releases (TLS/SRTP)	Two-way voice path, call released properly	Pass	
5.3.1.22	IP-DECT to PSTN, terminator busy	Busy tone heard at originator	Pass	
5.3.1.23	IP-DECT to PSTN, unanswered call	Ringing at terminator, ringback at originator, originator released properly	Pass	
5.3.1.24	IP-DECT to PSTN, call to unknown number	Treatment heard at originator, originator released properly	Pass	
5.3.1.25	PSTN to IP-DECT, PSTN abandons call	Terminator stops ringing, originator released properly	Pass	
5.3.1.26	PSTN to IP-DECT, terminator releases call	Two-way voice path, call released properly	Pass	
5.3.1.27	PSTN to IP-DECT, terminator busy	Busy tone heard at originator	Pass	
5.3.1.28	PSTN to IP-DECT, unanswered call	Ringing at terminator, ring back at originator, originator released properly	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
DTMF Using RFC 2833 (out of band)				
5.3.1.29	IP-DECT retrieves a voicemail, IP-DECT releases call after sending DTMF tones	Voicemail retrieve successfully	Pass	
5.3.1.30	IP-DECT retrieves a voicemail, voicemail releases call after receiving DTMF tones	Voicemail retrieve successfully	Pass	
DTMF Using KPML (out of band)				
5.3.1.31	IP-DECT retrieves a voicemail, IP-DECT releases call after sending DTMF tones	Voicemail retrieve successfully	Pass	
5.3.1.32	IP-DECT retrieves a voicemail, voicemail releases call after receiving DTMF tones	Voicemail retrieve successfully	Pass	

5.4 Cisco Unified Communications Manager Standard SIP Feature Support

The goal of this section is to verify protocol interactions between the device under test and the Cisco Unified Communications Manager standards implementation. Focus is on feature call functionality, call control and other call information support interworking capabilities of the endpoint under test and the Cisco Unified Communications Manager version under test.

5.4.1 Call Forward

Test Case	Description	Expected Result	Pass/ Fail	Comments
Call Forward All (CFA)				
5.4.1	IP-DECT to IP-DECT2, Call forwarded to IP-DECT3, Endpoint releases call	Two-way audio, call released properly	Pass	
5.4.2	IP-DECT to IP-DECT2, Call forwarded to IP-DECT3, IP-DECT3 releases call	Two-way audio, call released properly	Pass	
5.4.3	IP-DECT to IP-DECT2, Call forwarded to IP-DECT3, IP-DECT abandons call	Terminator stops ringing, call released properly	Pass	
5.4.4	IP-DECT to IP-DECT2, Call forwarded to IP-DECT3, IP-DECT3 is busy	Originator hears busy tone, call released properly	Pass	IP-DECT gets "hang up" CUCM sends back 480 Temporary not Available. Call Manager receives a 486 message and sends

Test Case	Description	Expected Result	Pass/ Fail	Comments
				back a 480 message
5.4.5	PSTN to IP-DECT, Call forwarded to IP-DECT2, PSTN releases call	Two-way audio, call released properly	Pass	
5.4.6	PSTN to IP-DECT, Call forwarded to IP-DECT2, IP-DECT2 releases call	Two-way audio, call released properly	Pass	
5.4.7	PSTN to IP-DECT, Call forwarded to IP-DECT2, PSTN abandons call	Terminator stops ringing, call released properly	Pass	
5.4.8	PSTN to IP-DECT, Call forwarded to IP-DECT2, IP-DECT2 is busy	Originator hears busy tone, call released properly	Pass	
5.4.9	IP-DECT to CSP, Call forwarded to IP-DECT2, IP-DECT releases call	Two-way audio, call released properly	Pass	
5.4.10	IP-DECT to CSIPP, Call forwarded to IP-DECT2, IP-DECT releases call	Two-way audio, call released properly	Pass	
5.4.11	IP-DECT to CSP, Call forwarded to IP-DECT2, IP-DECT2 releases call	Two-way audio, call released properly	Pass	
5.4.12	IP-DECT to CSIPP, Call forwarded to IP-DECT2, IP-DECT	Terminator stops ringing, call released properly	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
	abandons call			
5.4.13	IP-DECT to CSP, Call forwarded to IP-DECT2, IP-DECT2 is busy	Originator hears busy tone, call released properly	Pass	
5.4.14	IP-DECT to CSIPP, Call forwarded to IP-DECT2, IP-DECT2 is busy	Originator hears busy tone, call released properly	Pass	IP-DECT gets "hang up" CUCM sends back 480 Temporary not Available. Call Manager receives a 486 message and sends back a 480 message
5.4.15	PSTN to IP-DECT, Call forwarded to CSIPP, PSTN releases call	Two-way audio, call released properly	Pass	
5.4.16	PSTN to IP-DECT, Call forwarded to CSP, CSP releases call	Two-way audio, call released properly	Pass	
5.4.17	PSTN to IP-DECT, Call forwarded to CSIPP, PSTN abandons call	Terminator stops ringing, call released properly	Pass	
5.4.18	PSTN to IP-DECT, Call forwarded to CSP, CSP is busy	Originator hears busy tone, call released properly	Pass	
Call Forward on Busy (CFb)				
5.4.19	IP-DECT to IP-DECT2, Call forwarded to IP-DECT3, Endpoint	Two-way audio, call released properly	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
	releases call			
5.4.20	IP-DECT to IP-DECT2, Call forwarded to IP-DECT3, IP-DECT3 releases call	Two-way audio, call released properly	Pass	
5.4.21	IP-DECT to IP-DECT2, Call forwarded to IP-DECT3, IP-DECT abandons call	Terminator stops ringing, call released properly	Pass	
5.4.22	IP-DECT to IP-DECT2, Call forwarded to IP-DECT3, IP-DECT3 is busy	Originator hears busy tone, call released properly	Pass	IP-DECT gets "hang up" CUCM sends back 480 Temporary not Available. Call Manager receives a 486 message and sends back a 480 message
5.4.23	PSTN to IP-DECT, Call forwarded to IP-DECT2, PSTN releases call	Two-way audio, call released properly	Pass	
5.4.24	PSTN to IP-DECT, Call forwarded to IP-DECT2, IP-DECT2 releases call	Two-way audio, call released properly	Pass	
5.4.25	PSTN to IP-DECT, Call forwarded to IP-DECT2, PSTN abandons call	Terminator stops ringing, call released properly	Pass	
5.4.26	PSTN to IP-DECT, Call forwarded to IP-DECT2, IP-DECT2 is busy	Originator hears busy tone, call released properly	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
5.4.27	IP-DECT to CSP, Call forwarded to IP-DECT2, IP-DECT releases call	Two-way audio, call released properly	Pass	
5.4.28	IP-DECT to CSIPP, Call forwarded to IP-DECT2, IP-DECT releases call	Two-way audio, call released properly	Pass	
5.4.29	IP-DECT to CSP, Call forwarded to IP-DECT2, IP-DECT2 releases call	Two-way audio, call released properly	Pass	
5.4.30	IP-DECT to CSIPP, Call forwarded to IP-DECT2, IP-DECT abandons call	Terminator stops ringing, call released properly	Pass	
5.4.31	IP-DECT to CSP, Call forwarded to IP-DECT2, IP-DECT2 is busy	Originator hears busy tone, call released properly	Pass	
5.4.32	IP-DECT to CSIPP, Call forwarded to IP-DECT2, IP-DECT2 is busy	Originator hears busy tone, call released properly	Pass	
5.4.33	PSTN to IP-DECT, Call forwarded to CSIPP, PSTN releases call	Two-way audio, call released properly	Pass	
5.4.34	PSTN to IP-DECT, Call forwarded to CSP, CSP releases call	Two-way audio, call released properly	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
5.4.35	PSTN to IP-DECT, Call forwarded to CSIPP, PSTN abandons call	Terminator stops ringing, call released properly	Pass	
5.4.36	PSTN to IP-DECT, Call forwarded to CSP, CSP is busy	Originator hears busy tone, call released properly	Pass	
Call Forward if No Answer (CFNA)				
5.4.37	IP-DECT to IP-DECT2, Call forwarded to IP-DECT3, Endpoint releases call	Two-way audio, call released properly	Pass	
5.4.38	IP-DECT to IP-DECT2, Call forwarded to IP-DECT3, IP-DECT3 releases call	Two-way audio, call released properly	Pass	
5.4.39	IP-DECT to IP-DECT2, Call forwarded to IP-DECT3, IP-DECT abandons call	Terminator stops ringing, call released properly	Pass	
5.4.40	IP-DECT to IP-DECT2, Call forwarded to IP-DECT3, IP-DECT3 is busy	Originator hears busy tone, call released properly	Pass	IP-DECT gets "hang up" CUCM sends back 480 Temporary not Avalilable. Call Manager receives a 486 message and sends back a 480 message
5.4.41	PSTN to IP-DECT, Call forwarded to IP-DECT2, PSTN	Two-way audio, call released properly	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
	releases call			
5.4.42	PSTN to IP-DECT, Call forwarded to IP-DECT2, IP-DECT2 releases call	Two-way audio, call released properly	Pass	
5.4.43	PSTN to IP-DECT, Call forwarded to IP-DECT2, PSTN abandons call	Terminator stops ringing, call released properly	Pass	
5.4.44	PSTN to IP-DECT, Call forwarded to IP-DECT2, IP-DECT2 is busy	Originator hears busy tone, call released properly	Pass	
5.4.45	IP-DECT to CSP, Call forwarded to IP-DECT2, IP-DECT releases call	Two-way audio, call released properly	Pass	
5.4.46	IP-DECT to CSIPP, Call forwarded to IP-DECT2, IP-DECT releases call	Two-way audio, call released properly	Pass	
5.4.47	IP-DECT to CSP, Call forwarded to IP-DECT2, IP-DECT2 releases call	Two-way audio, call released properly	Pass	
5.4.48	IP-DECT to CSIPP, Call forwarded to IP-DECT2, IP-DECT abandons call	Terminator stops ringing, call released properly	Pass	
5.4.49	IP-DECT to CSP, Call forwarded to IP-DECT2, IP-DECT2 is	Originator hears busy tone, call released properly	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
	busy			
5.4.50	IP-DECT to CSIPP, Call forwarded to IP-DECT2, IP-DECT2 is busy	Originator hears busy tone, call released properly	Pass	
5.4.51	PSTN to IP-DECT, Call forwarded to CSIPP, PSTN releases call	Two-way audio, call released properly	Pass	
5.4.52	PSTN to IP-DECT, Call forwarded to CSP, CSP releases call	Two-way audio, call released properly	Pass	
5.4.53	PSTN to IP-DECT, Call forwarded to CSIPP, PSTN abandons call	Terminator stops ringing, call released properly	Pass	
5.4.54	PSTN to IP-DECT, Call forwarded to CSP, CSP is busy	Originator hears busy tone, call released properly	Pass	

5.4.2 Call Hold

Test Case	Description	Expected Result	Pass/ Fail	Comments
Call Hold				
5.4.2.1	IP-DECT to IP-DECT2. Originator Holds and resumes call	IP-DECT2 hears MOH, 2-way audio resumes	Pass	No MOH, Tone heard on both HS. MOH is not supported by IP-DECT

Test Case	Description	Expected Result	Pass/ Fail	Comments
5.4.2.2	IP-DECT to IP-DECT2. Terminator Holds and resumes call	IP-DECT hears MOH, 2-way audio resumes	Pass	No MOH, Tone heard on both HS
5.4.2.3	IP-DECT to IP-DECT2. Originator Holds call to answer an incoming call	IP-DECT2 hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	No MOH, Tone heard on both HS
5.4.2.4	IP-DECT to IP-DECT2. Terminator Holds call to answer an incoming call	IP-DECT hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	No MOH, Tone heard on both HS
5.4.2.5	IP-DECT to IP-DECT2. Originator Holds to originate a second call	IP-DECT2 hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	No MOH, Tone heard on both HS
5.4.2.6	IP-DECT to IP-DECT2. Terminator Holds to originate a second call	IP-DECT hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	No MOH, Tone heard on IP-DECT2
5.4.2.7	IP-DECT to IP-DECT2. Originator Holds call, Terminator releases before retrieve	IP-DECT2 hears MOH, IP-DECT2 leg properly released, IP-DECT unable to retrieve, IP-DECT properly released	Pass	No MOH, Tone heard on called HS
5.4.2.8	IP-DECT to IP-DECT2. Terminator Holds call, Originator releases before	IP-DECT hears MOH, IP-DECT leg properly released, IP-DECT2 unable to retrieve, IP-	Pass	No MOH, Tone heard on called HS

Test Case	Description	Expected Result	Pass/ Fail	Comments
	retrieve	DECT2 properly released		
5.4.2.9	PSTN to IP-DECT, Terminator Holds and resumes call	PSTN hears MOH, 2-way audio resumes	Pass	No MOH on PSTN
5.4.2.10	PSTN to IP-DECT, PSTN Holds and resumes call	IP-DECT hears MOH, 2-way audio resumes	Pass	MOH on IP-DECT
5.4.2.11	PSTN to IP-DECT, terminator Holds call to answer an incoming call	PSTN hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	PSTN does not hear MOH,
5.4.2.12	PSTN to IP-DECT, PSTN Holds call to answer an incoming call	IP-DECT hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	No MOH on IP-DECT
5.4.2.13	PSTN to IP-DECT, terminator Holds to originate a second call	PSTN hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	No MOH on PSTN
5.4.2.14	PSTN to IP-DECT, PSTN Holds to originate a second call	IP-DECT hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	No MOH on IP-DECT
5.4.2.15	PSTN to IP-DECT, terminator Holds call, PSTN releases before retrieve	PSTN hears MOH, PSTN leg properly released, IP-DECT unable to retrieve, IP-DECT properly	Pass	No MOH on PSTN

Test Case	Description	Expected Result	Pass/ Fail	Comments
		released		
5.4.2.16	PSTN to IP-DECT, PSTN Holds call, End Point release before retrieve	IP-DECT hears MOH, IP-DECT leg properly released, PSTN unable to retrieve, PSTN properly released	Pass	No MOH on IP-DECT
5.4.2.17	IP-DECT to PSTN, terminator Holds and resumes call	IP-DECT hears MOH, 2-way audio resumes	Pass	
5.4.2.18	IP-DECT to PSTN, PSTN Holds and resumes call	IP-DECT hears MOH, 2-way audio resumes	Pass	
5.4.2.19	IP-DECT to PSTN, terminator Holds call to answer an incoming call	IP-DECT hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	
5.4.2.20	IP-DECT to PSTN, PSTN Holds call to answer an incoming call	IP-DECT hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	
5.4.2.21	IP-DECT to PSTN, terminator Holds to originate a second call	IP-DECT hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	
5.4.2.22	IP-DECT to PSTN, PSTN Holds to originate a second call	IP-DECT hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
5.4.2.23	IP-DECT to PSTN, IP-DECT Holds call, PSTN releases before retrieve	PSTN hears MOH, PSTN leg properly released, IP-DECT unable to retrieve, IP-DECT properly released	Pass	
5.4.2.24	IP-DECT to PSTN, PSTN Holds call, End Point release before retrieve	IP-DECT hears MOH, IP-DECT leg properly released, PSTN unable to retrieve, PSTN properly released	Pass	
5.4.2.25	IP-DECT to CSP. Originator Holds and resumes call	CSP hears MOH, 2-way audio resumes	Pass	CSP hears no MOH
5.4.2.26	IP-DECT to CSP. Terminator Holds and resumes call	IP-DECT hears MOH, 2-way audio resumes	Pass	
5.4.2.27	IP-DECT to CSP. Originator Holds call to answer an incoming call	CSP hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	CSP hears no MOH
5.4.2.28	IP-DECT to CSP. Terminator Holds call to answer an incoming call	IP-DECT hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	
5.4.2.29	IP-DECT to CSP. Originator Holds to originate a second call	CSP hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	CSP hears no MOH

Test Case	Description	Expected Result	Pass/Fail	Comments
5.4.2.30	IP-DECT to CSP. Terminator Holds to originate a second call	IP-DECT hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	
5.4.2.31	IP-DECT to CSP. Originator Holds call, Terminator releases before retrieve	CSP hears MOH, CSP leg properly released, IP-DECT unable to retrieve, IP-DECT properly released	Pass	CSP hears no MOH
5.4.2.32	IP-DECT to CSP. Terminator Holds call, Originator releases before retrieve	IP-DECT hears MOH, IP-DECT leg properly released, CSP properly released	Pass	
5.4.2.33	IP-DECT to CSIPP. Originator Holds and resumes call	CSIPP hears MOH, 2-way audio resumes	Pass	CSIPP no hears MOH
5.4.2.34	IP-DECT to CSIPP. Terminator Holds and resumes call	IP-DECT hears MOH, 2-way audio resumes	Pass	
5.4.2.35	IP-DECT to CSIPP. Originator Holds call to answer an incoming call	CSIPP hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	
5.4.2.36	IP-DECT to CSIPP. Terminator Holds call to answer an incoming call	IP-DECT hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
5.4.2.37	IP-DECT to CSIPP. Originator Holds to originate a second call	CSIPP hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	
5.4.2.38	IP-DECT to CSIPP. Terminator Holds to originate a second call	IP-DECT hears MOH, 2-way audio on 2nd call, 2nd call properly released, 2-way audio resumes	Pass	
5.4.2.39	IP-DECT to CSIPP. Originator Holds call, Terminator releases before retrieve	CSIPP hears MOH, CSIPP leg properly released, IP-DECT unable to retrieve, IP-DECT properly released	Pass	
5.4.2.40	IP-DECT to CSIPP. Terminator Holds call, Originator releases before retrieve	IP-DECT hears MOH, IP-DECT leg properly released, CSIPP unable to retrieve, CSIPP properly released	Pass	Release ends the call

5.4.3 Call Waiting

Test Case	Description	Expected Result	Pass/ Fail	Comments
Call Waiting				
5.4.3.1	IP-DECT to IP-DECT2, Call waiting on Originator.	IP-DECT indicates incoming call	Pass	

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Test Case	Description	Expected Result	Pass/ Fail	Comments
5.4.3.2	IP-DECT to IP-DECT2, Call waiting on Terminator.	IP-DECT2 indicates incoming call	Pass	
5.4.3.3	IP-DECT to PSTN, Call Waiting on Originator.	IP-DECT indicates incoming call	Pass	
5.4.3.4	PSTN to IP-DECT, Call Waiting on Terminator.	IP-DECT indicates incoming call	Pass	
5.4.3.5	IP-DECT to CSP, Call waiting on Originator.	IP-DECT indicates incoming call	Pass	
5.4.3.6	CSP to IP-DECT, Call waiting on Terminator.	IP-DECT indicates incoming call	Pass	
5.4.3.7	IP-DECT to CSIPP, Call waiting on Originator.	IP-DECT indicates incoming call	Pass	
5.4.3.8	CSIPP to IP-DECT, Call waiting on Terminator.	IP-DECT indicates incoming call	Pass	

5.4.4 Call Transfer

Test Case	Description	Expected Result	Pass/ Fail	Comments
Blind Call Transfer				
5.4.4.1	IP-DECT to IP-DECT2, Originator transfer to a second	IP-DECT properly released, 2-way audio between IP-DECT2 and	Pass	

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Test Case	Description	Expected Result	Pass/ Fail	Comments
	extension	extension		
5.4.4.2	IP-DECT to IP-DECT2, Originator failed to transfer call to a second extension	IP-DECT properly released, IP-DECT2 receives treatment, IP-DECT2 properly released	Pass	
5.4.4.3	IP-DECT to IP-DECT2, Originator transfer to a second extension, release before answer	All legs properly released	Pass	
5.4.4.4	IP-DECT to IP-DECT2, Terminator transfer to a second extension	IP-DECT2 properly released, 2-way audio between IP-DECT and extension	Pass	
5.4.4.5	IP-DECT to IP-DECT2, Terminator failed to transfer call to a second extension	IP-DECT2 properly released, IP-DECT receives treatment, IP-DECT properly released	Pass	
5.4.4.6	IP-DECT to IP-DECT2, Terminator transfer to a second extension, Originator release before answer	All legs properly released	Pass	
5.4.4.7	IP-DECT to IP-DECT2, Originator transfer to PSTN	IP-DECT properly released, 2-way audio between IP-DECT2 and PSTN	Pass	
5.4.4.8	IP-DECT to IP-DECT2, Originator failed to transfer call	IP-DECT properly released, IP-DECT2 receives treatment, IP-DECT2 properly	Pass	

Test Case	Description	Expected Result	Pass/Fail	Comments
	to PSTN	released		
5.4.4.9	IP-DECT to IP-DECT2, Originator transfer to PSTN, release before answer	All legs properly released	Pass	
5.4.4.10	IP-DECT to IP-DECT2, Terminator transfer to PSTN	IP-DECT2 properly released, 2-way audio between IP-DECT and PSTN	Pass	
5.4.4.11	IP-DECT to IP-DECT2, Terminator failed to transfer call to PSTN	IP-DECT2 properly released, IP-DECT receives treatment, IP-DECT properly released	Pass	
5.4.4.12	IP-DECT to IP-DECT2, Terminator transfer to PSTN, Originator release before answer	All legs properly released	Pass	
5.4.4.13	PSTN to IP-DECT, terminator transfer to second extension	IP-DECT properly released, 2-way audio between PSTN and extension	Pass	
5.4.4.14	PSTN to IP-DECT, terminator failed to transfer call	IP-DECT properly released, PSTN receives treatment, PSTN properly released	Pass	
5.4.4.15	PSTN to IP-DECT, terminator transfer, PSTN releases before call is	All legs properly released	Pass	

Test Case	Description	Expected Result	Pass/Fail	Comments
	answered			
5.4.4.16	IP-DECT to PSTN, originator transfer to second extension	IP-DECT properly released, 2-way audio between PSTN and extension	Pass	
5.4.4.17	IP-DECT to PSTN, originator failed to transfer call	IP-DECT properly released, PSTN receives treatment, PSTN properly released	Pass	
5.4.4.18	IP-DECT to PSTN, originator transfer, PSTN releases before call is answered	All legs properly released	Pass	
5.4.4.19	IP-DECT to CSP, Originator transfer to a second extension	IP-DECT properly released, 2-way audio between CSP and extension	Pass	
5.4.4.20	IP-DECT to CSP, Originator failed to transfer call to a second extension	IP-DECT properly released, CSP receives treatment, CSP properly released	Pass	
5.4.4.21	IP-DECT to CSP, Originator transfer to a second extension, release before answer	All legs properly released	Pass	
5.4.4.22	IP-DECT to CSP, Terminator transfer to a second extension	CSP properly released, 2-way audio between IP-DECT and extension	Pass	

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Test Case	Description	Expected Result	Pass/ Fail	Comments
5.4.4.23	IP-DECT to CSP, Terminator failed to transfer call to a second extension	CSP properly released, IP-DECT receives treatment, IP-DECT properly released	Pass	
5.4.4.24	IP-DECT to CSP, Terminator transfer to a second extension, Originator release before answer	All legs properly released	Pass	
5.4.4.25	IP-DECT to CSP, Originator transfer to PSTN	IP-DECT properly released, 2-way audio between CSP and PSTN	Pass	
5.4.4.26	IP-DECT to CSP, Originator failed to transfer call to PSTN	IP-DECT properly released, CSP receives treatment, CSP properly released	Pass	
5.4.4.27	IP-DECT to CSP, Originator transfer to PSTN, release before answer	All legs properly released	Pass	
5.4.4.28	IP-DECT to CSP, Terminator transfer to PSTN	CSP properly released, 2-way audio between IP-DECT and PSTN	Pass	
5.4.4.29	IP-DECT to CSP, Terminator failed to transfer call to PSTN	CSP properly released, IP-DECT receives treatment, IP-DECT properly released	Pass	
5.4.4.30	IP-DECT to CSP,	All legs properly	Pass	

Test Case	Description	Expected Result	Pass/Fail	Comments
	Terminator transfer to PSTN, Originator release before answer	released		
5.4.4.31	IP-DECT to CSIPP, Originator transfer to a second extension	IP-DECT properly released, 2-way audio between CSIPP and extension	Pass	
5.4.4.32	IP-DECT to CSIPP, Originator failed to transfer call to a second extension	IP-DECT properly released, CSIPP receives treatment, CSIPP properly released	Pass	
5.4.4.33	IP-DECT to CSIPP, Originator transfer to a second extension, release before answer	All legs properly released	Pass	
5.4.4.34	IP-DECT to CSIPP, Terminator transfer to a second extension	CSIPP properly released, 2-way audio between IP-DECT and extension	Pass	
5.4.4.35	IP-DECT to CSIPP, Terminator failed to transfer call to a second extension	CSIPP properly released, IP-DECT receives treatment, IP-DECT properly released	Pass	
5.4.4.36	IP-DECT to CSIPP, Terminator transfer to a second extension, Originator release before answer	All legs properly released	Pass	
5.4.4.37	IP-DECT to CSIPP, Originator transfer to	IP-DECT properly released, 2-way	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
	PSTN	audio between CSIPP and PSTN		
5.4.4.38	IP-DECT to CSIPP, Originator failed to transfer call to PSTN	IP-DECT properly released, CSIPP receives treatment, CSIPP properly released	Pass	
5.4.4.39	IP-DECT to CSIPP, Originator transfer to PSTN, release before answer	All legs properly released	Pass	
5.4.4.40	IP-DECT to CSIPP, Terminator transfer to PSTN	CSIPP properly released, 2-way audio between IP-DECT and PSTN	Pass	
5.4.4.41	IP-DECT to CSIPP, Terminator failed to transfer call to PSTN	CSIPP properly released, IP-DECT receives treatment, IP-DECT properly released	Pass	
5.4.4.42	IP-DECT to CSIPP, Terminator transfer to PSTN, Originator release before answer	All legs properly released	Pass	
Consultative Call Transfer				
5.4.4.43	IP-DECT to IP-DECT2, Originator transfer to a second extension	IP-DECT2 receives MOH, 2-way audio IP-DECT to extension, IP-DECT properly released, 2-way audio IP-DECT2 to extension	Pass	No MOH between IP-DECT HS

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Test Case	Description	Expected Result	Pass/ Fail	Comments
5.4.4.44	IP-DECT to IP-DECT2, Originator failed to transfer call to a second extension, retrieve call	IP-DECT2 receives MOH, IP-DECT receives treatment, call successfully retrieved with 2-way audio, failed leg properly released	Pass	No MOH between IP-DECT HS
5.4.4.45	IP-DECT to IP-DECT2, Originator transfer to a second extension, release before answer	IP-DECT2 receives MOH, 2-way audio IP-DECT to extension, all call legs properly released	Pass	No MOH between IP-DECT HS
5.4.4.46	IP-DECT to IP-DECT2, Terminator transfer to a second extension	IP-DECT receives MOH, 2-way audio IP-DECT2 to extension, IP-DECT2 properly released, 2-way audio IP-DECT to extension	Pass	No MOH between IP-DECT HS
5.4.4.47	IP-DECT to IP-DECT2, Terminator failed to transfer call to a second extension, retrieve call	IP-DECT receives MOH, IP-DECT2 receives treatment, call successfully retrieved with 2-way audio, failed leg properly released	Pass	No MOH between IP-DECT HS
5.4.4.48	IP-DECT to IP-DECT2, Terminator transfer to a second extension, Originator release before answer	IP-DECT receives MOH, 2-way audio IP-DECT2 to extension, all call legs properly released	Pass	No MOH between IP-DECT HS
5.4.4.49	IP-DECT to IP-DECT2, Originator	IP-DECT2 receives MOH, 2-way audio	Pass	No MOH between IP-DECT HS

Test Case	Description	Expected Result	Pass/ Fail	Comments
	transfer to PSTN	IP-DECT to PSTN, IP-DECT properly released, 2-way audio IP-DECT2 to PSTN		
5.4.4.50	IP-DECT to IP-DECT2, Originator failed to transfer call to PSTN, retrieve call	IP-DECT2 receives MOH, IP-DECT receives treatment, call successfully retrieved with 2-way audio, failed leg properly released	Pass	No MOH between IP-DECT HS
5.4.4.51	IP-DECT to IP-DECT2, Originator transfer to PSTN, release before answer	IP-DECT2 receives MOH, 2-way audio IP-DECT to PSTN, all call legs properly released	Pass	No MOH between IP-DECT HS
5.4.4.52	IP-DECT to IP-DECT2, Terminator transfer to PSTN	IP-DECT receives MOH, 2-way audio IP-DECT2 to PSTN, IP-DECT2 properly released, 2-way audio IP-DECT to PSTN	Pass	No MOH between IP-DECT HS
5.4.4.53	IP-DECT to IP-DECT2, Terminator failed to transfer call to PSTN, retrieve call	IP-DECT receives MOH, IP-DECT2 receives treatment, call successfully retrieved with 2-way audio, failed leg properly released	Pass	No MOH between IP-DECT HS
5.4.4.54	IP-DECT to IP-DECT2, Terminator transfer to PSTN, Originator release	IP-DECT receives MOH, 2-way audio IP-DECT2 to PSTN, all call legs properly	Pass	No MOH between IP-DECT HS

Test Case	Description	Expected Result	Pass/ Fail	Comments
	before answer	released		
5.4.4.55	PSTN to IP-DECT, terminator transfer to second extension	PSTN receives MOH, 2-way audio IP-DECT to extension, IP-DECT properly released, 2-way audio PSTN to extension	Pass	PSTN no MOH
5.4.4.56	PSTN to IP-DECT, terminator failed to transfer call	PSTN receives MOH, IP-DECT receives treatment, call successfully retrieved with 2-way audio, failed leg properly released	Pass	PSTN no MOH
5.4.4.57	PSTN to IP-DECT, terminator transfer, PSTN releases before call is answered	PSTN receives MOH, 2-way audio IP-DECT to extension, all call legs properly released	Pass	PSTN no MOH
5.4.4.58	IP-DECT to PSTN, originator transfer to second extension	PSTN receives MOH, 2-way audio IP-DECT to extension, IP-DECT properly released, 2-way audio PSTN to extension	Pass	PSTN no MOH
5.4.4.59	IP-DECT to PSTN, originator failed to transfer call	PSTN receives MOH, IP-DECT receives treatment, call successfully retrieved with 2-way audio, failed leg properly released	Pass	PSTN no MOH

Test Case	Description	Expected Result	Pass/ Fail	Comments
5.4.4.60	IP-DECT to PSTN, originator transfer, PSTN releases before call is answered	PSTN receives MOH, 2-way audio IP-DECT to extension, all call legs properly released	Pass	PSTN no MOH
5.4.4.61	IP-DECT to CSP, Originator transfer to a second extension	CSP receives MOH, 2-way audio IP-DECT to extension, IP-DECT properly released, 2-way audio CSP to extension	Pass	CSP no MOH
5.4.4.62	IP-DECT to CSP, Originator failed to transfer call to a second extension, retrieve call	CSP receives MOH, IP-DECT receives treatment, call successfully retrieved with 2-way audio, failed leg properly released	Pass	CSP no MOH
5.4.4.63	IP-DECT to CSP, Originator transfer to a second extension, release before answer	CSP receives MOH, 2-way audio IP-DECT to extension, all call legs properly released	Pass	CSP no MOH
5.4.4.64	IP-DECT to CSP, Terminator transfer to a second extension	CSP receives MOH, 2-way audio IP-DECT to extension, IP-DECT properly released, 2-way audio CSP to extension	Pass	CSP no MOH
5.4.4.65	IP-DECT to CSP, Terminator failed to transfer call to a second extension,	IP-DECT receives MOH, IP-DECT receives treatment, call successfully	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
	retrieve call	retrieved with 2-way audio, failed leg properly released		
5.4.4.66	IP-DECT to CSP, Terminator transfer to a second extension, Originator release before answer	IP DECT receives MOH, 2-way audio IP-DECT to extension, all call legs properly released	Pass	
5.4.4.67	IP-DECT to CSP, Originator transfer to PSTN	CSP receives MOH, 2-way audio IP-DECT to PSTN, IP-DECT properly released, 2-way audio CSP to PSTN	Pass	CSP no MOH
5.4.4.68	IP-DECT to CSP, Originator failed to transfer call to PSTN, retrieve call	CSP receives MOH, IP-DECT receives treatment, call successfully retrieved with 2-way audio, failed leg properly released	Pass	CSP no MOH
5.4.4.69	IP-DECT to CSP, Originator transfer to PSTN, release before answer	CSP receives MOH, 2-way audio IP-DECT to PSTN, all call legs properly released	Pass	CSP no MOH
5.4.4.70	IP-DECT to CSP, Terminator transfer to PSTN	IP-DECT receives MOH, 2-way audio CSP to PSTN, CSP properly released, 2-way audio IP-DECT to PSTN	Pass	
5.4.4.71	IP-DECT to CSP, Terminator failed to transfer call to PSTN,	IP-DECT receives MOH, CSP receives treatment, call	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
	retrieve call	successfully retrieved with 2-way audio, failed leg properly released		
5.4.4.72	IP-DECT to CSP, Terminator transfer to PSTN, Originator release before answer	IP-DECT receives MOH, 2-way audio CSP to PSTN, all call legs properly released	Pass	
5.4.4.73	IP-DECT to CSIPP, Originator transfer to a second extension	CSIPP receives MOH, 2-way audio IP-DECT to extension, IP-DECT properly released, 2-way audio CSIPP to extension	Pass	CSIPP no MOH
5.4.4.74	IP-DECT to CSIPP, Originator failed to transfer call to a second extension, retrieve call	CSIPP receives MOH, IP-DECT receives treatment, call successfully retrieved with 2-way audio, failed leg properly released	Pass	CSIPP no MOH
5.4.4.75	IP-DECT to CSIPP, Originator transfer to a second extension, release before answer	CSIPP receives MOH, 2-way audio IP-DECT to extension, all call legs properly released	Pass	CSIPP no MOH
5.4.4.76	IP-DECT to CSIPP, Terminator transfer to a second extension	CSIPP receives MOH, 2-way audio IP-DECT to extension, IP-DECT properly released, 2-way audio CSIPP to	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
		extension		
5.4.4.77	IP-DECT to CSIPP, Terminator failed to transfer call to a second extension, retrieve call	IP-DECT receives MOH, CSIPP receives treatment, call successfully retrieved with 2-way audio, failed leg properly released	Pass	
5.4.4.78	IP-DECT to CSIPP, Terminator transfer to a second extension, Originator release before answer	CSIPP receives MOH, 2-way audio IP-DECT to extension, all call legs properly released	Pass	
5.4.4.79	IP-DECT to CSIPP, Originator transfer to PSTN	CSIPP receives MOH, 2-way audio IP-DECT to PSTN, IP-DECT properly released, 2-way audio CSIPP to PSTN	Pass	CSIPP no MOH
5.4.4.80	IP-DECT to CSIPP, Originator failed to transfer call to PSTN, retrieve call	CSIPP receives MOH, IP-DECT receives treatment, call successfully retrieved with 2-way audio, failed leg properly released	Pass	CSIPP no MOH
5.4.4.81	IP-DECT to CSIPP, Originator transfer to PSTN, release before answer	CSIPP receives MOH, 2-way audio IP-DECT to PSTN, all call legs properly released	Pass	CSIPP no MOH
5.4.4.82	IP-DECT to CSIPP, Terminator transfer to	IP-DECT receives MOH, 2-way audio	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
	PSTN	CSIPP to PSTN, CSIPP properly released, 2-way audio IP-DECT to PSTN		
5.4.4.83	IP-DECT to CSIPP, Terminator failed to transfer call to PSTN, retrieve call	IP-DECT receives MOH, CSIPP receives treatment, call successfully retrieved with 2-way audio, failed leg properly released	Pass	
5.4.4.84	IP-DECT to CSIPP, Terminator transfer to PSTN, Originator release before answer	IP-DECT receives MOH, 2-way audio CSIPP to PSTN, all call legs properly released	Pass	When originator releases the call it become a blind or unattended transfer.

5.4.5 3-Way Conference

Test Case	Description	Expected Result	Pass/ Fail	Comments
3-Way Conference				
5.4.5.1	IP-DECT to IP-DECT2, Originator is the bridge	IP-DECT2 receives MOH, IP-DECT receives ringback, 3-way audio	N/A	The HS does not support 3WC
5.4.5.2	IP-DECT to IP-DECT2, Originator failed to bridged call to a IP-DECT3, retrieve call	IP-DECT2 receives MOH, IP-DECT receives treatment, call successfully retrieved with 2-way	N/A	The HS does not support 3WC

Test Case	Description	Expected Result	Pass/ Fail	Comments
		audio		
5.4.5.3	IP-DECT to IP-DECT2, Originator is the bridge, Terminator release before answer	IP-DECT2 receives MOH, IP-DECT receives ringback, IP-DECT2 properly released, 2-way audio IP-DECT – IP-DECT3 after answer	N/A	The HS does not support 3WC
5.4.5.4	IP-DECT to IP-DECT2, Originator is the bridge, Originator cancel 3 way call, retrieve original call	IP-DECT2 receives MOH, IP-DECT receives ringback, call successfully retrieved with 2-way audio	N/A	The HS does not support 3WC
5.4.5.5	IP-DECT to IP-DECT2, Terminator is the bridge	IP-DECT receives MOH, IP-DECT2 receives ringback, 3-way audio	N/A	The HS does not support 3WC
5.4.5.6	IP-DECT to IP-DECT2, Terminator failed to bridged call, retrieve original call	IP-DECT receives MOH, IP-DECT2 receives treatment, call successfully retrieved with 2-way audio	N/A	The HS does not support 3WC
5.4.5.7	IP-DECT to IP-DECT2, Terminator bridged to a IP-DECT3, Originator releases before answer	IP-DECT receives MOH, IP-DECT2 receives ringback, IP-DECT properly released, 2-way audio IP-DECT2 – IP-DECT3 after answer	N/A	The HS does not support 3WC
5.4.5.8	IP-DECT to IP-DECT2, Originator bridge to PSTN	IP-DECT2 receives MOH, IP-DECT receives ringback, 3-	N/A	The HS does not support 3WC

Test Case	Description	Expected Result	Pass/ Fail	Comments
		way audio		
5.4.5.9	IP-DECT to IP-DECT2, Originator failed to bridge call to PSTN, retrieve call	IP-DECT2 receives MOH, IP-DECT receives treatment, call successfully retrieved with 2-way audio	N/A	The HS does not support 3WC
5.4.5.10	IP-DECT to IP-DECT2, Originator bridge to PSTN, terminator releases before answer	IP-DECT2 receives MOH, IP-DECT receives ringback, IP-DECT2 properly released, 2-way audio IP-DECT – PSTN after answer	N/A	The HS does not support 3WC
5.4.5.11	IP-DECT to IP-DECT2, Terminator bridge to PSTN	IP-DECT receives MOH, IP-DECT2 receives ringback, 3-way audio	N/A	The HS does not support 3WC
5.4.5.12	IP-DECT to IP-DECT2, Terminator failed to bridge call to PSTN, retrieve call	IP-DECT receives MOH, IP-DECT2 receives treatment, call successfully retrieved with 2-way audio	N/A	The HS does not support 3WC
5.4.5.13	IP-DECT to IP-DECT2, Terminator bridge to PSTN, Originator release before answer	IP-DECT receives MOH, IP-DECT2 receives ringback, IP-DECT properly released, 2-way audio IP-DECT2 – PSTN after answer	N/A	The HS does not support 3WC
5.4.5.14	PSTN to IP-DECT, terminator bridge to IP-DECT2	PSTN receives MOH, IP-DECT receives ringback, 3-way	N/A	The HS does not support 3WC

Test Case	Description	Expected Result	Pass/ Fail	Comments
		audio		
5.4.5.15	PSTN to IP-DECT, terminator failed to bridge call	PSTN receives MOH, IP-DECT receives treatment, call successfully retrieved with 2-way audio	N/A	The HS does not support 3WC
5.4.5.16	PSTN to IP-DECT, terminator attempt to bridge, PSTN releases before call is answered	PSTN receives MOH, IP-DECT receives ringback, PSTN properly released, 2-way audio IP-DECT – IP-DECT2 after answer	N/A	The HS does not support 3WC
5.4.5.17	IP-DECT to PSTN, originator bridge to IP-DECT2	PSTN receives MOH, IP-DECT receives ringback, 3-way audio	N/A	The HS does not support 3WC
5.4.5.18	IP-DECT to PSTN, originator failed to bridge call	PSTN receives MOH, IP-DECT receives treatment, call successfully retrieved with 2-way audio	N/A	The HS does not support 3WC
5.4.5.19	IP-DECT to PSTN, originator attempts to bridge call, PSTN releases before call is answered	PSTN receives MOH, IP-DECT receives ringback, PSTN properly released, 2-way audio IP-DECT – IP-DECT2 after answer	N/A	The HS does not support 3WC
5.4.5.20	IP-DECT to CSP, Originator is the bridge	CSP receives MOH, IP-DECT receives ringback, 3-way audio	N/A	The HS does not support 3WC
5.4.5.21	IP-DECT to CSP,	CSP receives MOH,	N/A	The HS does not support

Test Case	Description	Expected Result	Pass/ Fail	Comments
	Originator failed to bridged call to a IP-DECT2, retrieve call	IP-DECT receives treatment, call successfully retrieved with 2-way audio		3WC
5.4.5.22	IP-DECT to CSP, Originator is the bridge, Terminator release before answer	CSP receives MOH, IP-DECT receives ringback, CSP properly released, 2-way audio IP-DECT – IP-DECT2 after answer	N/A	The HS does not support 3WC
5.4.5.23	IP-DECT to CSP, Originator is the bridge, Originator cancel 3 way call, retrieve original call	CSP receives MOH, IP-DECT receives ringback, call successfully retrieved with 2-way audio	N/A	The HS does not support 3WC
5.4.5.24	IP-DECT to CSP, Terminator is the bridge	IP-DECT receives MOH, CSP receives ringback, 3-way audio	Pass	
5.4.5.25	IP-DECT to CSP, Terminator failed to bridged call, retrieve original call	IP-DECT receives MOH, CSP receives treatment, call successfully retrieved with 2-way audio	Pass	
5.4.5.26	IP-DECT to CSP, Terminator bridged to a IP-DECT2, Originator releases before answer	IP-DECT receives MOH, CSP receives ringback, IP-DECT properly released, 2-way audio CSP – IP-DECT2 after answer	Pass	
5.4.5.27	IP-DECT to CSP, Originator bridge to PSTN	CSP receives MOH, IP-DECT receives ringback, 3-way	N/A	The HS does not support 3WC

Test Case	Description	Expected Result	Pass/ Fail	Comments
		audio		
5.4.5.28	IP-DECT to CSP, Originator failed to bridge call to PSTN, retrieve call	CSP receives MOH, IP-DECT receives treatment, call successfully retrieved with 2-way audio	N/A	The HS does not support 3WC
5.4.5.29	IP-DECT to CSP, Originator bridge to PSTN, terminator releases before answer	CSP receives MOH, IP-DECT receives ringback, CSP properly released, 2-way audio IP-DECT – PSTN after answer	N/A	The HS does not support 3WC
5.4.5.30	IP-DECT to CSP, Terminator bridge to PSTN	IP-DECT receives MOH, CSP receives ringback, 3-way audio	Pass	
5.4.5.31	IP-DECT to CSP, Terminator failed to bridge call to PSTN, retrieve call	IP-DECT receives MOH, CSP receives treatment, call successfully retrieved with 2-way audio	Pass	
5.4.5.32	IP-DECT to CSP, Terminator bridge to PSTN, Originator release before answer	IP-DECT receives MOH, CSP receives ringback, IP-DECT properly released, 2-way audio CSP – PSTN after answer	Pass	
5.4.5.33	IP-DECT to CSIPP, Originator is the bridge	CSIPP receives MOH, IP-DECT receives ringback, 3-way audio	N/A	The HS does not support 3WC
5.4.5.34	IP-DECT to CSIPP, Originator failed to bridged call to a IP-	CSIPP receives MOH, IP-DECT receives treatment,	N/A	The HS does not support 3WC

Test Case	Description	Expected Result	Pass/ Fail	Comments
	DECT3, retrieve call	call successfully retrieved with 2-way audio		
5.4.5.35	IP-DECT to CSIPP, Originator is the bridge, Terminator release before answer	CSIPP receives MOH, IP-DECT receives ringback, CSIPP properly released, 2-way audio IP-DECT – IP-DECT2 after answer	N/A	The HS does not support 3WC
5.4.5.36	IP-DECT to CSIPP, Originator is the bridge, Originator cancel 3 way call, retrieve original call	CSIPP receives MOH, IP-DECT receives ringback, call successfully retrieved with 2-way audio	N/A	The HS does not support 3WC
5.4.5.37	IP-DECT to CSIPP, Terminator is the bridge	IP-DECT receives MOH, CSIPP receives ringback, 3-way audio	Pass	
5.4.5.38	IP-DECT to CSIPP, Terminator failed to bridged call, retrieve original call	IP-DECT receives MOH, CSIPP receives treatment, call successfully retrieved with 2-way audio	Pass	
5.4.5.39	IP-DECT to CSIPP, Terminator bridged to a IP-DECT3, Originator releases before answer	IP-DECT receives MOH, CSIPP receives ringback, IP-DECT properly released, 2-way audio CSIPP – IP-DECT2 after answer	Pass	
5.4.5.40	IP-DECT to CSIPP, Originator bridge to	CSIPP receives MOH, IP-DECT	N/A	The HS does not support

Test Case	Description	Expected Result	Pass/ Fail	Comments
	PSTN	receives ringback, 3-way audio		3WC
5.4.5.41	IP-DECT to CSIPP, Originator failed to bridge call to PSTN, retrieve call	CSIPP receives MOH, IP-DECT receives treatment, call successfully retrieved with 2-way audio	N/A	The HS does not support 3WC
5.4.5.42	IP-DECT to CSIPP, Originator bridge to PSTN, terminator releases before answer	CSIPP receives MOH, IP-DECT receives ringback, CSIPP properly released, 2-way audio IP-DECT – PSTN after answer	N/A	The HS does not support 3WC
5.4.5.43	IP-DECT to CSIPP, Terminator bridge to PSTN	IP-DECT receives MOH, CSIPP receives ringback, 3-way audio	Pass	
5.4.5.44	IP-DECT to CSIPP, Terminator failed to bridge call to PSTN, retrieve call	IP-DECT receives MOH, CSIPP receives treatment, call successfully retrieved with 2-way audio	Pass	
5.4.5.45	IP-DECT to CSIPP, Terminator bridge to PSTN, Originator release before answer	IP-DECT receives MOH, CSIPP receives ringback, IP-DECT properly released, 2-way audio CSIPP – PSTN after answer	Pass	

5.4.6 Calling Line Identification

Test Case	Description	Expected Result	Pass/ Fail	Comments
Calling Line Identification				
5.4.6.1	IP-DECT to IP-DECT2, Calling Line identification type I	Calling Line ID presented at terminator	Pass	
5.4.6.2	IP-DECT to CSP, Calling Line identification type I	Calling Line ID presented at terminator	Pass	
5.4.6..3	IP-DECT to CSIPP, Calling Line identification type I	Calling Line ID presented at terminator	Pass	
5.4.6.3	CSIPP to IP-DECT2, Calling Line identification type I	Calling Line ID presented at terminator	Pass	
5.4.6.4	CSP to IP-DECT2, Calling Line identification type I	Calling Line ID presented at terminator	Pass	
5.4.6..4	IP-DECT to PSTN, Calling Line identification type I	Calling Line ID presented at terminator	Pass	
5.4.6.5	PSTN to IP-DECT, Calling Line identification type I	Calling Line ID presented at terminator	Pass	
5.4.6.6	IP-DECT to IP-DECT2, Type II on terminator, call in progress between two end points	Calling Line ID presented at terminator	Pass	
5.4.6..5	IP-DECT to IP-	Calling Line ID	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
	DECT2, Type II on originator, call in progress between two end points	presented at terminator		
5.4.6.7	IP-DECT to IP-DECT2, Type II on originator, call in progress between End point and PSTN	Calling Line ID presented at terminator	Pass	
5.4.6.8	IP-DECT to IP-DECT2, Type II on terminator, call in progress between PSTN and End point	Calling Line ID presented at terminator	Pass	
5.4.6..6	IP-DECT to IP-DECT2, Calling Line identification type I Restricted	Calling Line ID *not* presented at terminator	N/A	IP-DECT cannot restrict Calling Line Identification.
5.4.6.9	IP-DECT to CSP, Calling Line identification type I Restricted	Calling Line ID *not* presented at terminator	N/A	IP-DECT cannot restrict Calling Line Identification.
5.4.6.10	IP-DECT to CSIPP, Calling Line identification type I Restricted	Calling Line ID *not* presented at terminator	N/A	IP-DECT cannot restrict Calling Line Identification.
5.4.6..7	CSIPP to IP-DECT2, Calling Line identification type I Restricted	Calling Line ID *not* presented at terminator	N/A	IP-DECT cannot restrict Calling Line Identification.
5.4.6.11	CSP to IP-DECT2, Calling Line identification type I	Calling Line ID *not* presented at terminator	N/A	IP-DECT cannot restrict Calling Line Identification.

Test Case	Description	Expected Result	Pass/ Fail	Comments
	Restricted			
5.4.6.12	Multiline IP-DECT (single line presented, others not) to IP-DECT Line Presented (Calling party)	Calling Line ID presented at terminator	N/A	Multiline is not supported by IP-DECT IP-DECT cannot restrict Calling Line Identification.
5.4.6..8	Multiline IP-DECT (single line presented, others not) IP-DECT to IP-DECT Name Presented (Calling Party)	Calling Name presented at terminator	N/A	Multiline is not supported by IP-DECT IP-DECT cannot restrict Calling Line Identification.
5.4.6.13	Multiline IP-DECT (single line presented, others not) IP-DECT to IP-DECT line and Name Presented (Calling Party)	Calling Line ID and Calling Name presented at terminator	N/A	Multiline is not supported by IP-DECT IP-DECT cannot restrict Calling Line Identification.
5.4.6.14	Multiline IP-DECT (single line presented, others not) IP-DECT to IP-DECT Line restricted (Calling Party)	Calling Line ID *not* presented at terminator	N/A	Multiline is not supported by IP-DECT IP-DECT cannot restrict Calling Line Identification.
5.4.6..9	Multiline IP-DECT (single line presented, others not) IP-DECT to IP-DECT Name restricted (Calling Party)	Calling Name *not* presented at terminator	N/A	Multiline is not supported by IP-DECT IP-DECT cannot restrict Calling Line Identification.

Test Case	Description	Expected Result	Pass/ Fail	Comments
5.4.6.15	Multiline IP-DECT (single line presented, others not) IP-DECT to IP-DECT Line and Name restricted (Calling Party)	Calling Line ID and Name *not* presented at terminator	N/A	Multiline is not supported by IP-DECT IP-DECT cannot restrict Calling Line Identification.
5.4.6.16	Call Forward (IP-DECT to IP-DECT2, forwarded to IP-DECT3)	Calling Line ID presented at IP-DECT3	Pass	
5.4.6..1 0	Call Transfer (IP-DECT to IP-DECT2, originator transfer to IP-DECT3)	Calling Line ID presented at IP-DECT3	Pass	
5.4.6.17	Call Transfer (IP-DECT to IP-DECT2, terminator transfer to IP-DECT3)	Calling Line ID presented at IP-DECT3	Pass	

5.4.7 Calling Name Presentation

Test Case	Description	Expected Result	Pass/ Fail	Comments
Calling Name Presentation				
5.4.7.1	IP-DECT to IP-DECT2, Calling Party Name	Calling Name presented at terminator	Pass	
5.4.7.2	IP-DECT to IP-DECT2, Calling Party Name Restricted	Calling Name *not* presented at terminator	N/A	IP-DECT cannot restrict Calling Line Identification.

Test Case	Description	Expected Result	Pass/ Fail	Comments
5.4.7.3	IP-DECT to CSP, Calling Party Name	Calling Name presented at terminator	Pass	
5.4.7.4	IP-DECT to CSP, Calling Party Name Restricted	Calling Name *not* presented at terminator	N/A	
5.4.7.5	IP-DECT to CSIPP, Calling Party Name	Calling Name presented at terminator	Pass	
5.4.7.6	IP-DECT to CSIPP, Calling Party Name Restricted	Calling Name *not* presented at terminator	N/A	IP-DECT cannot restrict Calling Line Identification.
5.4.7.7	CSP to IP-DECT, Calling Party Name	Calling Name presented at terminator	Pass	
5.4.7.8	CSP to IP-DECT, Calling Party Name Restricted	Calling Name *not* presented at terminator	N/A	IP-DECT cannot restrict Calling Line Identification.
5.4.7.9	CSIPP to IP-DECT, Calling Party Name	Calling Name presented at terminator	Pass	
5.4.7.10	CSIPP to IP-DECT, Calling Party Name Restricted	Calling Name *not* presented at terminator	N/A	IP-DECT cannot restrict Calling Line Identification.
5.4.7.11	IP-DECT to PSTN, Calling Party Name	Calling Name presented at terminator	Pass	
5.4.7.12	PSTN to IP-DECT, Calling Party Name	Calling Name presented at terminator	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
5.4.7.13	Multline IP-DECT (single line presented, others not) to IP-DECT Line Presented (Calling party)	Calling Line ID presented at terminator	N/A	Multiline is not supported by IP-DECT IP-DECT cannot restrict Calling Line Identification.
5.4.7.14	Multline IP-DECT (single line presented, others not) IP-DECT to IP-DECT Name Presented (Calling Party)	Calling Name presented at terminator	N/A	Multiline is not supported by IP-DECT IP-DECT cannot restrict Calling Line Identification.
5.4.7.15	Multline IP-DECT (single line presented, others not) IP-DECT to IP-DECT line and Name Presented (Calling Party)	Calling Line ID and Calling Name presented at terminator	N/A	Multiline is not supported by IP-DECT IP-DECT cannot restrict Calling Line Identification.
5.4.7.16	Multline IP-DECT (single line presented, others not) IP-DECT to IP-DECT Line restricted (Calling Party)	Calling Line ID *not* presented at terminator	N/A	Multiline is not supported by IP-DECT IP-DECT cannot restrict Calling Line Identification.
5.4.7.17	Multline IP-DECT (single line presented, others not) IP-DECT to IP-DECT Name restricted (Calling Party)	Calling Name *not* presented at terminator	N/A	Multiline is not supported by IP-DECT IP-DECT cannot restrict Calling Line Identification.
5.4.7.18	Multline IP-DECT (single line	Calling Line ID and Calling Name *not*	N/A	Multiline is not supported by IP-DECT

Test Case	Description	Expected Result	Pass/ Fail	Comments
	presented, others not) IP-DECT to IP-DECT Line and Name restricted (Calling Party)	presented at terminator		IP-DECT cannot restrict Calling Line Identification.
5.4.7.19	Call Forward (IP-DECT to IP-DECT2, forwarded to IP-DECT3)	Calling Name presented at IP-DECT3	Pass	
5.4.7.20	Call Transfer (IP-DECT to IP-DECT2, originator transfer to IP-DECT3)	Calling Name presented at IP-DECT3	Pass	
5.4.7.21	Call Transfer (IP-DECT to IP-DECT2, terminator transfer to IP-DECT3)	Calling Name presented at IP-DECT3	Pass	

5.4.8 Multiple Lines per Phone

Test Case	Description	Expected Result	Pass/ Fail	Comments
Multiple Lines per Phone				
5.4.8.1	IP-DECT1 line 1 calls IP-DECT2 line 1, IP-DECT1 line 2 calls IP-DECT2 line 2, etc. (all IP-DECT1 lines occupied). Alternate between calls.	2-way audio on each call. Held calls receive MOH. Connected Line ID and Name display reflects current call.	Pass	No MOH
5.4.8.2	IP-DECT line 1 calls CSP, IP-DECT line 2	2-way audio on each call. Held calls	Pass	No MOH

Test Case	Description	Expected Result	Pass/ Fail	Comments
	calls CSP, etc. (all IP-DECT1 lines occupied). Alternate between calls.	receive MOH. Connected Line ID and Name display reflects current call.		
5.4.8.3	IP-DECT line 1 calls CSIPP, IP-DECT line 2 calls CSIPP, etc. (all IP-DECT1 lines occupied). Alternate between calls.	2-way audio on each call. Held calls receive MOH. Connected Line ID and Name display reflects current call.	Pass	
5.4.8.4	IP-DECT2 calls IP-DECT1 line 1, CSP calls IP-DECT1 line 2, CSIPP calls IP-DECT1 line 3, PSTN calls IP-DECT1 line 4. Alternate between calls. All originators release.	2-way audio on each call. Held calls receive MOH. Calling Line ID and Name display reflects current call. All calls properly released.	Pass	No MOH
5.4.8.5	IP-DECT1 line 1 calls IP-DECT2, IP-DECT1 line 2 calls CSP, IP-DECT1 line 3 calls CSIPP, IP-DECT1 line 4 calls PSTN. Alternate between calls. All originators release.	2-way audio on each call. Held calls receive MOH. Connected Line ID and Name display reflects current call. All calls properly released.	N/A	IP-DECT does not support 2 lines
5.4.8.6	Line Busy: CFWD Busy Line 1 to Line 2, CFWD Busy Line 2 to Line 3, Line 1 in call with Line 2, CSP calls Line 1	2-way audio between CSP and Line 3.	N/A	IP-DECT does not support 2 lines
5.4.8.7	CSP calls IP-DECT	3-way audio between	N/A	IP-DECT does not support 2

Test Case	Description	Expected Result	Pass/ Fail	Comments
	line 1. CSIPP calls IP-DECT line 2. Place line 1 on hold, answer line 2. Bring line 1 into conference.	parties.		lines
5.4.8.8	CSP calls IP-DECT line 1. Blind transfer to line 2. Pick up line 2.	Line 1 properly released. 2-way audio with Line 2.	N/A	IP-DECT does not support 2 lines
5.4.8.9	MWI – Single line: leave VMAIL on line 2, retrieve and delete line 2 VMAIL	Line 2 message waiting is indicated, indicator cleared when VMAIL deleted	N/A	IP-DECT does not support 2 lines
5.4.8.10	MWI – All lines: leave VMAIL on all lines, retrieve and delete each	MWI consistent with voice mail state per line.	N/A	IP-DECT does not support 2 lines
5.4.8.11	IP-DECT1 to IP-DECT2, IP-DECT3 Call Forking – IP-DECT2 Answers	2-way audio, IP-DECT3 ring stop	N/A	IP-DECT does not support call Forking
5.4.8.12	IP-DECT1 to IP-DECT2, IP-DECT3 Call Forking – IP-DECT3 Answers	2-way audio, IP-DECT2 ring stop	N/A	IP-DECT does not support call Forking
5.4.8.13	IP-DECT1 to IP-DECT2, CSIPP Call Forking – IP-DECT2 Answers.	2-way audio, CSIPP ring stop	N/A	IP-DECT does not support call Forking
5.4.8.14	IP-DECT1 to IP-DECT2, CSIPP Call	2-way audio, IP-	N/A	IP-DECT does not support

Test Case	Description	Expected Result	Pass/ Fail	Comments
	Forking – CSIPP Answers.	DECT2 ring stop		call Forking
5.4.8.15	IP-DECT1 to IP-DECT2, CSP Call Forking – IP-DECT2 Answers.	2-way audio, CSP ring stop	N/A	IP-DECT does not support call Forking
5.4.8.16	IP-DECT1 to IP-DECT2, CSP Call Forking – CSP Answers.	2-way audio, IP-DECT2 ring stop	N/A	IP-DECT does not support call Forking
5.4.8.17	IP-DECT1 to IP-DECT2, IP-DECT3 Call Forking, Race condition– IP-DECT2 and IP-DECT3 Answer	2-way audio, other phone ring stop	N/A	IP-DECT does not support call Forking
5.4.8.18	IP-DECT1 to IP-DECT2, CSIPP Call Forking, Race condition– IP-DECT2 and CSIPP Answer	2-way audio, other phone ring stop	N/A	IP-DECT does not support call Forking
5.4.8.19	IP-DECT1 to IP-DECT2, CSP Call Forking, Race condition– IP-DECT2 and CSP Answer	2-way audio, other phone ring stop	N/A	IP-DECT does not support call Forking
5.4.8.20	IP-DECT1 to IP-DECT2, IP-DECT3 Call Forking –IP-DECT2 CFWD all to IP-DECT3. IP-DECT3 Answers	Only IP-DECT3 rings, 2-way audio IP-DECT1 to IP-DECT3	N/A	IP-DECT does not support call Forking
5.4.8.21	IP-DECT1 to IP-DECT2, IP-DECT3	Only IP-DECT3 rings, 2-way audio IP-	N/A	IP-DECT does not support

Test Case	Description	Expected Result	Pass/ Fail	Comments
	Call Forking –IP-DECT2 Busy. IP-DECT3 Answers	DECT1 to IP-DECT3		call Forking
5.4.8.22	Call Forking – Multiline IP-DECT	Two lines on IP-DECT ring, 2-way audio on answered line, ring stop on other line	N/A	IP-DECT does not support call Forking
5.4.8.23	Call Forking – Multicall IP-DECT (Call waiting)	Call waiting indication on in-use line, 2-way audio on answered line, call waiting indication ends when call answered	N/A	IP-DECT does not support call Forking

5.4.9 Message Waiting Indicator

Test Case	Description	Expected Result	Pass/ Fail	Comments
Message Waiting Indicator				
5.4.9.1	Call IP-DECT, leave voice mail	MWI activated	Pass	
5.4.9.2	Retrieve only voice mail	MWI cleared	Pass	
5.4.9.3	Call IP-DECT, leave 2 voice mails, retrieve one, hang up, retrieve second voice mail, hang up	MWI activates with first voice mail, stays active after first retrieve, clears after second retrieve	Pass	
5.4.9.4	Active call, second inbound call goes to VM, leave voice mail	MWI activates while in call	Pass	

5.4.10 Speed Dial

Test Case	Description	Expected Result	Pass/ Fail	Comments
Speed Dial				
5.4.10.1	Speed dial max digits (25)	INVITE sent with all 25 digits	Pass	
5.4.10.2	Configure and use a speed dial assigned to a 25 digit number, with external access number prefix (9).	INVITE sent with all digits	Pass	
5.4.10.3	Speed dial min digits (4 digit ext):	INVITE sent with all digits	Pass	
5.4.10.4	Configure and use a speed dial to a 4 digit number	INVITE sent with all digits	Pass	
5.4.10.5	Speed dial no entry	Call does not originate	Pass	
5.4.10.6	Max Speed dial entries. Use first and last entries, and one other	All speed dial entries populated and usable	Pass	
5.4.10.7	Exceed Max Speed Dial entries.	Entry n+1 rejected, all other entries remain intact and usable	N/A	
5.4.10.8	Re-assign existing speed dial to new number (25 digit to 4 digit)	Number successfully changed and usable	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
5.4.10.9	Delete Speed Dial Entry.	Number no longer usable. Remaining entries unchanged.	Pass	
5.4.10.10	Reset phone	Speed dial configuration persists through reset	N/A	
5.4.10.11	Power cycle phone	Speed dial configuration persists through power cycle	Pass	

5.4.11 TLS/SRTP

Test Case	Description	Expected Result	Pass/ Fail	Comments
Consultative Transfer & TLS/SRTP				
5.4.11.1	CSP calls DECT1, DECT1 calls DECT2, DECT1 XFERs to CSP	CSP receives MOH, 2-way audio IP-DECT to IP-DECT1, IP-DECT2 properly released, 2-way audio IP-DECT2 to CSP	Pass	
5.4.11.2	CSIPP calls DECT1, DECT1 calls DECT2, DECT1 XFERs to CSIPP	CSIP receives MOH, 2-way audio IP-DECT1 IP-DECT2, IP-DECT properly released, 2-way audio IP-DECT2 CSIPP extension	Pass	
5.4.11.3	PSTN calls DECT1, DECT1 calls	PSTN receives MOH, 2-way audio IP-DECT	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
	DECT2, DECT1 XFERs to PSTN	to IP-DECT2 , IP-DECT properly released, 2-way audio IP-DECT2 to PSTN		

5.5 System Control and Verification

These tests are executed to determine the impact on calls, the Communications Manager and the 3rd party application when combinations of the aforementioned fail by power failure or network connectivity problems. Testing robustness of the application through hardware and software fault insertion i.e. failover/failback.

Test Case	Description	Expected Result	Pass/ Fail	Comments
Registration and Digest Authentication (Basic)				
5.5.1	IP-DECT Authenticated on Registration (name only) (Positive)	IP-DECT registers successfully	Pass	
5.5.2	IP-DECT Authenticated on Registration (name Only) (Negative)	IP-DECT registration rejected, retries	Pass	
5.5.3	IP-DECT Authenticated on Registration (name and password) (Positive)	IP-DECT registers successfully	Pass	
5.5.4	IP-DECT Authenticated on Registration (name	IP-DECT registration rejected, retries	Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
	and password) (Negative)			
5.5.5	IP-DECT Authenticated on Origination	IP-DECT resends INVITE with Authorization header, successfully originates call	Pass	
5.5.6	IP-DECT Re-Registers before Registration Time Expires	Re-registration successful, IP-DECT can originate calls	Pass	
5.5.7	IP-DECT Responds to Keep-Alive	IP-DECT maintains registration	Pass	
5.5.8	Restart IP-DECT phone remotely	IP-DECT restarts and registers successfully	N/A	
5.5.9	IP-DECT Multiline registration	All lines register successfully and can originate calls	N/A	
5.5.10	Loses network connection then re-connected	IP-DECT can originate calls after registration	Pass	

5.6 SIP Endpoint Functionality Verification

These tests are executed to verify specific information about the third-party product to Cisco. This is in relation to the IVT Questionnaire supplied by the vendor.

Test Case	Description	Expected Result	Pass/ Fail	Comments
Voice Codec Support				
5.6.1	G.711 µ-law		Pass	
5.6.2	G.711 A-law		Pass	
5.6.3	G.723		Pass	Works fine between IP-Dect phones, not working with Cisco
5.6.4	G.729		Pass	
5.6.5	Packetization period		Pass	
5.6.6	Codec negotiation		Pass	
5.6.7	Midcall codec renogiation		N/A	
General Phone Functions				
5.6.8	Phone display (missed calls, called numbers, received calls)		Pass	
5.6.9	All visible buttons and soft keys function as labeled		Pass	
5.6.10	User configuration options		N/A	
General Dial Services				
5.6.11	Redial simple		Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
5.6.12	Last Call Return		Pass	
SRTP				
5.6.13	Configure SRTP on CUCM IP-DECT to SCCP phone		Pass	
5.6.14	IP-DECT to SIP phone		Pass	
5.6.15	SCCP to IP-DECT		Pass	
5.6.16	SIP to IP-DECT		Pass	

5.7 Support for SIP-based RFCs and Drafts

The goal of this section is to verify specific features and functions based on SIP related RFCs and draft specifications. These tests only apply to those features that are supported.

All calls should stay connected for at least the duration of the "session" timer.

Test Case	Description	Expected Result	Pass/ Fail	Comments
Diversion Header Indication Support				
5.7.1	ISDN to SIP, GW sends INVITE with Diversion info, CFU		Pass	
5.7.2	ISDN to SIP, GW sends INVITE with Diversion info, CFTOD		Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
5.7.3	ISDN to SIP, GW sends INVITE with Diversion info, CFB		Pass	
5.7.4	ISDN to SIP, GW sends INVITE with Diversion info, CFNA		Pass	
5.7.5	ISDN to SIP, GW sends INVITE with Diversion info, CFUNV		Pass	
5.7.6	SIP to ISDN, CallManger sends INVITE with Diversion info, CFU		Pass	
5.7.7	SIP to ISDN, CallManger sends INVITE with Diversion info, CFTOD		N/A	CFTOD not available
5.7.8	SIP to ISDN, CallManger sends INVITE with Diversion info, CFB		Pass	
5.7.9	SIP to ISDN, CallManger sends INVITE with Diversion info, CFNA		Pass	
5.7.10	SIP to ISDN, CallManger sends INVITE with Diversion info, CFUNV		Pass	

Test Case	Description	Expected Result	Pass/ Fail	Comments
Privacy Headers, Remote-Party-ID Headers				
5.7.11	PSTN to IP-DECT, GW sends INVITE with Remote-Party-ID Header		Pass	
5.7.12	IP-DECT to PSTN, GW sends INVITE with Remote-Party-ID Header		Pass	

5.8 Reliability and Stability

The vendor's product will be tested for general products reliability, stability . and redundancy capabilities. Tests will   verify the ability of the product to support Communications Manager redundancy, architecture, and stability with repetitive calls (simultaneously or independent) in a constant manner with various hold times of up to 24 hours without any operational defects or loss of audio quality. The goal for these tests is to make sure the phone has some mechanism that in case of a "SUB" failure, it can re-register to the other "SUB", without any manual intervention.

Test Case	Description	Expected Result	Pass/ Fail	Comments
Primary Call Control Failure				
5.8.1	IP-DECT Registers with secondary server when the primary is unavailable		Pass	
5.8.2	IP-DECT re-Registered when primary is back in service		Pass	
5.8.3	Multi-line IP-DECT Registers with		N/A	

Test Case	Description	Expected Result	Pass/ Fail	Comments
	secondary server when the primary is unavailable			
5.8.4	Multi-line IP-DECT re-Registered when primary is back in service		N/A	
5.8.5	Basic call, IP-DECT uses secondary server when primary is unavailable		Pass	
5.8.6	Call to PSTN using secondary server when primary is unavailable		Pass	
5.8.7	Call from PSTN, call is terminated by secondary when primary is unavailable		Pass	
5.8.8	Active call, failover occurs		Pass	The call continues established
5.8.9	Failover occurs during call setup		Pass	Call Setup failed
5.8.10	IP-DECT Registers with SRST server when the CCM is unavailable		N/A	SRST Not supported
5.8.11	IP-DECT re-Registered when CCM is back on service		N/A	
5.8.12	Basic call, IP-DECT		N/A	

Test Case	Description	Expected Result	Pass/ Fail	Comments
	uses SRST server when CCM is unavailable			
5.8.13	Call to PSTN using SRST server when CCM is unavailable		N/A	
5.8.14	Call from PSTN, call is terminated by SRST when CCM is unavailable		N/A	
5.8.15	Active call, failover occurs		N/A	
Recovery from Loss of Power				
5.8.16	Remove power from IP-DECT with active call	Call lost, device recovers and can originate / terminate new calls when power restored without test engineer intervention	Pass	
Recovery from Loss of Uplink Connectivity				
5.8.17	Network Bounce – IP-DECT idle	LAN connection loss/recovery within 10 seconds	Pass	
5.8.18	Network outage – IP-DECT idle	LAN connection loss/recovery within 3 minutes	Pass	
5.8.19	Network Bounce – Multi-line IP-DECT	LAN connection loss/recovery within 10 seconds	N/A	IP-DECT HS not supports multiple lines
5.8.20	Network outage –	LAN connection	N/A	

Test Case	Description	Expected Result	Pass/ Fail	Comments
	Multi-line IP-DECT	loss/recovery within 3 minutes		
5.8.21	Network Bounce – IP-DECT in-call	LAN connection loss/recovery within 10 seconds	Pass	
5.8.22	Network outage – IP-DECT in-call	LAN connection loss/recovery within 3 minutes	Pass	
5.8.23	Network Bounce – IP-DECT with call on-hold	LAN connection loss/recovery within 10 seconds	Pass	
5.8.24	Network outage – IP-DECT with call on-hold	LAN connection loss/recovery within 3 minutes	Pass	
5.8.25	Network Bounce – IP-DECT in ring state	LAN connection loss/recovery within 10 seconds	Pass	
5.8.26	Network outage – IP-DECT in ring state	LAN connection loss/recovery within 3 minutes	Pass	

6 References

Description	Related url
Website	http://www.ascom.com
Technical Documentation	http://www.ascomwireless.com/support.htm
User Guide	N/A
Administrator Guide	https://www.ascom-ws.com/AscomPartnerWeb/en/startpage/
IVT Questionnaire	Cisco Dashboard
Application Note	config_notes_for_cisco call_manager_in_ip-dect_cn_92424gb.pdf

7 Glossary

The following list describes specific acronyms and definitions for terms used throughout this document:

ACD   Automatic Call Distributor. A device that distributes calls to agents based on administratively settable rules.
BHCA   Busy Hour Calls Attempted.
BHCC   Busy Hour Calls Completed.
DID   Direct Inward Dialing
DNIS   Dial Number Identification Service, the telephone number being dialed, same as called party number.
DSP   Digital Signal Processor
E1   32 64kpbs timeslots on a 2.048 Mbps serial interface
ICS   Integrated Communication System.
IP   Internet Protocol
ISDN   Integrated Services Digital Network
IVR   Interactive Voice Response
IVT   Interoperability Verification Testing
LAN   Local Area Network
MCS   Media Convergence Server.
MCU   Multi-point Control Unit
POTS   Plain Old Telephone Service
PRI   Primary Rate Interface: ISDN interface to 64kbps D channel plus 23 (T1) or 30 (E1)B channels for voice or data.
PSTN   Public Switched Telephone Network

RAS	Registration Admission Status
RTCP	Real Time Transport Control Protocol
RTP	Real Time Transport Protocol
T1	24 64kpbs timeslots on a 1.544 Mbps serial interface
UM	Unified Messaging. A voice mail system that includes fax and email capabilities.
Agent Phone	A client application typically used in a Call Center environment, which allows graphical call control of the agent's phone.
Call Center	A place where calls are answered and/or calls are made. A typical call center will have lots of people, called agents, answering phones. Outbound calls are typically made using a machine-automated process and inbound calls are typically answered by an IVR system before being placed in an on-hold queue to wait for a live agent.
Client App	A TAPI or JTAPI based program that allows call control through a Windows interface but does not actually handle termination for a CTI port device like a SoftPhone does.
JTAPI	Java Telephony API is a set of APIs for Java-based telephony control. JTAPI applications, like Java, are platform independent and depend on another API, TAPI in the case of Cisco, to control the actual telephony hardware.
Prompt quality	Like speech quality except that the call is between a phone and an automated system such as IVR.
SimClient	The name applied to a Cisco proprietary end point simulator. A SimClient machine can simulate the traffic of up to 1000 simultaneous calls. Used by Cisco, and Cisco partners, to stress test applications.
SoftPhone	Controls and handles media termination for a CTI port device. Typically refers to a software program, programmed in TAPI or JTAPI, which acts like a PBX phone. An example of a PBX phone is the Cisco 7960.
Speech quality	When grading the quality of sound as passed between two phones we call it speech quality.
TAPI	AKA Microsoft Windows Telephony API. TAPI is a standard group of Win32 APIs that allow communications applications to control telephony functions.
Auto Registration	Auto Registration is a feature of Call Manager where a phone can be added to the network. The phone will get an IP address and TFTP address through DHCP, and find the Call Manager through the .CNF provided information.
Call Forward Busy	Configurable feature that re-routes incoming calls to an alternate line when the first line is in use.
Call Forward No Answer	Configurable feature that re-routes incoming calls from one phone to another phone when the first phone is not answered after a certain number of rings.
Call Park	Call Park allows you to place a call on hold at an extension specified by your system administrator so that anyone on the IP Telephony network can retrieve it. For example, you could park a call at extension 3000. Anyone on the system can dial 3000 to retrieve the call.
Call Waiting	Call Waiting lets you receive a second incoming call on the same line without disconnecting the first call. When the second call arrives, you hear a brief call waiting indicator tone.
Conference	Conference allows you to connect three or more people into one phone conversation.
Configuration file	An unformatted ASCII file that stores initialization information for an application. For Cisco Call Manager, files in the .cnf format define the parameters for Cisco IP Phone connection.

Group Pick Up	A feature that allows users to pick up incoming calls within their own group or within other call pickup groups by dialing the group call pickup number for that group.
Failover/Failbac k	Failover describes the action a 3rd party phone must take to re-register to the Secondary Call Manager if the Primary Call Manager is no longer available. Failback describes what happens when the Primary Call Manager becomes available again.
Forward All	Forward All lets you set up a Cisco IP Phone so that all calls destined for that Cisco IP Phone automatically ring another phone. You can forward all calls to Cisco IP Phones or non-Cisco IP Phones. Forward All remains in effect until you cancel it.
Hold	Hold lets you store a call on the line for later retrieval. While a call is on hold, you can place another call or use any of the other features of the phone. While on hold, the caller hears an intermittent tone.
Manual Registration	Manual registration describes the process by which a user configures an IP telephone manually on the target Call Manager. Manual registration also requires the following to be manually entered into the phone: IP, submask, DNS, TFTP, and Default Gateway.
Message Waiting Indicator (MWI)	MWI should be set to ON whenever a new message has been left in a user's voice mail and set to OFF whenever a new message has been listened to.
Mute	Mute allows you to listen, but the other party cannot hear you.
Shared Line Extension	A shared line extension is an extension shared by two or more phones similar to a POTS 'party line'. However, unlike a 'party line', if one of the shared line IP phones makes or receives a call, the other phones cannot hear the conversation.
Speakerphone	You can use speakerphone to place and answer calls without using the handset. Use speakerphone with any other feature.
Transfer	Transfer allows you to send an existing call to another extension. You can cancel the transfer by pressing HOLD.

8 Attachments

8.1 Review Action Items

1. Partner to resolve/advice:

Description	Test Table	Test Case

2. Partner to reflect the following outcome in their Application Note:

Description	Test Table	Test Case

8.2 Review Action Items

A review by Cisco was conducted and the comments for the same can be found at *<URL for weblog>*

9 Appendix A 3rd Party Serviceability Information

9.1 3rd Party Support Contact Information

Team	Main Location	Additional Location	Additional Location
Phone	**+ 46 31 55 94 50**		
Fax			
E-mail	**support@ascom.se**		
Hours			

The IP Telephony category requires 24x7 support contact. List all applicable after hours numbers.

9.2 3rd Party Product Isolation Procedures
Please describe in this section how to isolate your product from the Call manager to help in determining the cause of any issue.

9.3 Troubleshooting
In this section please provide the links or names of the appropriate PDF files to help in trouble shooting the application that was tested. You will have to also provide the PDF documents with this report in order to have coordinated support.

9.3.1 Installation and Configuration

9.3.2 Upgrades and patch application

9.3.3 Debugging and Diagnostics

9.3.4 Error Messages

9.3.5 Tools / Aids

9.3.6 List of Commands

9.3.7 Redundancy and Recovery

10 Appendix B Test Approach

The goal of the IVT is to test in a customer-like environment to ensure that it behaves in a reliable manner under conditions that reflect typical customer usage and product deployment. This includes the exercise of provisioning, generating call traffic of supported types, maintenance activities, troubleshooting, and fault insertion. The IVT will focus on the following seven main areas:

- Phase 1: Installation & Configuration
- Phase 2: Application Reliability Verification
- Phase 3: Scalability, Stress, Performance and Load Testing
- Phase 4: Informational tests
- Phase 5: Negative Tests
- Phase 6: Live Monitoring of VoIP Recording
- Phase 7: Recording on Demand
- Phase 8: Voice Quality

10.1 IVT Entrance Criteria

General:

Partner Application needs to comply with the Cisco AVVID Partner program checklist.

Documentation:

- ❑ Product documentation needs to be available (drafts).
- ❑ Customer oriented documentation
- ❑ Provisioning documentation
- ❑ The following documents need to be in Approved state:
- ❑ IVT Questionnaire
- ❑ Test Plan

Software

- ❑ Component software needs to undergo Bug-Scrubs to have a clear idea of the active problems in the code.
- ❑ No severity 1 or 2 defects that affect the Application
- ❑ Acceptance of severity 3 defects depends on the impact in the test effort.
- ❑ 100% component code development complete.
- ❑ 100% component product specific feature test complete.
- ❑ Component test coverage and results documented and reviewed.
- ❑ Integration test complete. Results reviewed and approved by the AVVID Partner Team.
- ❑ Components successfully integrate into IVT lab.

Hardware:

- ❑ ONLY General Availability hardware will be used for IVT (prototypes are accepted by approval from Cisco).

❑ Components successfully integrate into IVT lab.

10.2 IVT Exit Criteria

1. All test cases executed and passed.
2. Release notes written and reviewed for all defects filed during the test.
3. Test results documented, reviewed and analyzed in an IVT Test Report (IVT Test Report Template, ENG-249889).

10.3 Error report handling (software and hardware)

1. Code corrections to defects found during the IVT should be tested before being introduced in the test-bed(s).
2. Workarounds that deviate from the test end goals are not to be accepted.
3. IVT Test engineers should understand and agree on the bug cause, effect, and solution.
4. Test cases that were affected by the bug should be executed again. These extra test case executions should be documented. Proper documentation should indicate the new version of code and/or hardware used.

10.4 Defect Tracking Information/Problem Reporting and Severity Levels

The following table lists the defined alarm categories and description that are being used by Cisco's DEFECT (Distributed Defect Tracking System).

Sev		Defect Documentation	Description
1	Catastrophic	Reasonably common circumstances cause the entire system to fail, or a major subsystem to stop working, or other devices on the network to be disrupted, and there's no workaround. Example: turning on DECNET causing the router to crash after sending gratuitous IP ARP replies claiming the addresses of all the neighboring routers.	Common circumstance causes the entire system or a major subsystem to stop working affects other areas/devices no workaround
2	Severe	Important functions are unusable, and there's no workaround but the router's other functions and the rest of the network work normally. Example: IP helper addresses being ignored.	Important functions are unusable does not affect other areas/devices no workaround
3	Moderate	Things fail under very unusual circumstances, or minor feature doesn't work at all, or things fail but there's a low-impact workaround. This is the highest level for documentation bugs. Example: LAT not working unless you have an IP address on the interface.	Very unusual circumstances cause failure minor feature doesn't work at all there's a low impact workaround This is the highest level for

			documentation bugs.
4	Minor	Things fail under very unusual circumstances, and recover pretty much by themselves. Users don't need to install any work around, and performance impact is tolerable. Example: The first segment for each TCP connection is always retransmitted.	Very unusual circumstances cause failure Automatic recovery without workaround Any performance impact is tolerable
5	Cosmetic	No real detrimental effect on system functionality. Example: "connection" spelled "connection" in a display. Enhance requests should normally get "cosmetic".	No detrimental effect on system functionality Enhance requests

It is expected that any problems witnessed by IVT testing teams will result in the opening of a Defect. The following information is required to successfully create the Defect:

Severity (use the guidelines listed above to determine the severity)
In addition to a severity level, Defects are also given a priority status. Priorities are used to indicate the urgency of fixing a problem. This is especially important for issues facing products that are in the deployment phase of their lifecycle. The DE-Priority field helps to set, monitor, and communicate business priorities that allow appropriate response to customer problems. For example, customer-affecting Defects will be fixed before Defect of equal severity that does not affect a customer.

Priority Level	Definition
1	(Showstopper) Testing cannot continue. The problem requires immediate resolution. Current development may be interrupted. There is a high impact to a customer or shipping products. There are regular status updates sent to the project management. Response time 24 hours.
2	(High) Testing may continue but must be modified. Resolution is required in the current product release. There is significant urgency. Full time resources are assigned to resolving the problem. There are regular status updates sent to the project management. Response time 48 hours.
3	(Medium) Testing continues in other areas. A resolution is required before the next scheduled product release. An out-of-cycle phase-in is required. There are regular status updates sent to the project management. Response time 5 days.
4	(Low) No customer, testing, or development impact. Problem is obviously an error but does not cause confusion; problem is intermittent. A fix can be phased into a scheduled release.
5	(Very Low) Problem is so rare or minor it is likely to be missed by most users and has no real impact.

Although there is a close relationship between severity and priority, the levels do not have to match. Customer-affecting Defect with a low severity can have a high priority to indicate the urgency of needing to have the Defect fixed. Problem resolution times

depend on the priority, various attributes of software/hardware and the development team; hence it is not predictable.

11 Appendix C IVT Troubleshooting Tools and Default configurations

11.1 Trace Utility for Call Manager

This trace provides the greatest level of detailed information of a call. This can be enabled with follow available trace levels:

Error – Traces alarm conditions and events
Special – Traces all error conditions plus process and device initialization messages.
State Transition – Traces all Special conditions plus subsystem state transitions that occur during normal operation.
Significant – Traces All State Transition conditions plus media events that occur during normal operation.
Entry/Exit – This trace level is not currently used.
Arbitrary – Traces all significant conditions plus low-level debugging information.
Detailed – Traces all Arbitrary conditions plus detailed debugging information.

Note – *Phases 3 (Performance) and 6 (Failover) should have trace settings configured for the CTI Manager and Call Manager services for each Call Manager machine. Use the following instructions to configure this tracing:*

Open Call Manager Administration > Attendant console > Call Manager Serviceability.
Click Trace > Configuration and select the server/service you would like to enable tracing for.
Verify that "Tracing On" is enabled and that the Debug Trace Level is set to Error.
Verify that, for each service where tracing is being enabled, the Enable File Trace Log option has been enabled and configured.
Repeat for each service and each Call Manager machine.

For all testing the following traces will be set on:

CDR ON, CCM ON, SDL ON

11.2 Trace Utility for TAPI/JTAPI

Turning on tracing for the TAPI Service Provider

Go to "Start", "Settings", "Control Panel" and select "Phone and Modem Options". Go to "Advanced" tab. Select the "CiscoTSP0XX" and click "Configure" button.

Go to "Trace" tab.
Select "Trace On" check box and select the
1. "TSP Trace" to trace the TSP internal messages. Select Error to just log errors in the TSP Select Detailed to log internal messages for debugging purposes.
2. "CTI Trace" to trace the messages sent between CTI and TSP
3. "TSPI Trace" to trace the requests and events sent between TSP and TAPI

Directory : is the path for the trace log. For example, c:\Temp No. of Files: Set this to a value greater than or equal to 1 enables rolling log files. For example, a value of 10 will cause up to
10 log files to be used in a cyclic fashion. Max lines/file: specifies the maximum number of trace statements that will be written to each log file. For example, a value of 1000 will cause up to 1000 trace statements to be written to each log file.

11.3 Event Log

Cisco Call Manager events are logged in the Windows 2000 Event Log. User can use the Event Viewer to see the system, security, and Attendant console events for the Windows 2000 Server and Call Manager services. The Cisco Call Manager errors are logged under Attendant console logs.

11.4 What to collect when preparing for and reporting CM related problems

When you are collecting information to report or troubleshoot a CCM problem please use the following procedure to ensure you are gathering the correct information.

1) Make sure the SDL (SDLxxx_100_xxxxxx files) trace settings are set appropriately. Check/set the following "Call Manager" service parameters from the CM administration. Under Service->Service Parameters select the IP address of the server. Then select the Cisco CallManager service from the list of services.

- SdlTraceDataFlags, set to 0x00000110
- SdlTraceFlag, set to T
- SdlTraceMaxLines - set to between 10000 and 20000.
- SdlTraceTotalNumFiles - set it to at least 100. If you are running high traffic, this number should be increased significantly. The best thing to do is after running for a while; see how much time looking at the date/time of the SDL files is capturing. If the files are being overwritten before you would be able to save it off, increase the SdlTraceTotalNumFiles appropriately.
- SdlTraceTypeFlags, set to 0x8000EB15

Important: When changing the parameters. Don't forget to click the "update" button" after making any changes.

2) Make sure the SDL (SDLxxx_200_xxxxxx files) trace settings are set appropriately. Check/set the following "CTI Manager" service parameters from the CM administration. Under Service->Service Parameters select the IP address of the server. Then select the Cisco CTIManager service from the list of services.

- SdlTraceDataFlags, set to 0x00000110
- SdlTraceFlag, set to T
- SdlTraceMaxLines - set to between 10000 and 20000.
- SdlTraceTotalNumFiles - set it to at least 100. If you are running high traffic, this number should be increased significantly. The best thing to do is after running for a

while; see how much time is being captured by looking at the date/time of the SDL files. If the files are being overwritten before you would be able to save it off, increase the SdlTraceTotalNumFiles appropriately.
- SdlTraceTypeFlags, set to 0x0000CB15

Important: When changing the parameters. Don't forget to click the "update" button" after making any changes.

3) Make sure the CallManager serviceability (ccmxxxxxxxx files) trace settings are setup for the "CallManager" service. In the CM administration under Attendant console->Cisco CallManager Serviceability, select Trace->Configuration. Select the IP address of the server from the list of servers. Select Cisco CallManager from the list of Configured Services.
The Trace On check box should be checked.
Under Trace Filter Settings:
The Debug Trace Level should be set to Detailed.
Under Cisco CallManager Trace Fields make sure the check boxes for the trace related to the problem are checked. For example, if the problem has to do with a call made through a DT-24+ gateway, check the check box labeled Enable DT-24+/DE-30+ Trace.
Under Trace Output Settings:
The Enable File Trace Log check box should be checked.
The File Name edit box should contain a valid path and file name.
The default for Maximum No. of Files is 250.
The default for Maximum No. of Lines per File is 10000.
The default for Maximum No. of Minutes per File is 1440.
As with the SDL traces, after the test has been running a while, check to see if the CallManager trace files are being overwritten too soon (before they can be copied). If they are, increase the Maximum No. of Files parameter appropriately.

4) Make sure the CTIManager serviceability (ccmxxxxxxxx files) trace settings are setup for the "CTIManager" service. In the CM administration under Attendant console->Cisco CallManager Serviceability, select Trace->Configuration. Select the IP address of the server from the list of servers. Select Cisco CTIManager from the list of Configured Services.
The Trace On check box should be checked.
Under Trace Filter Settings:
The Debug Trace Level should be set to Detailed.
The Cisco CTIManager Trace Fields check box should be checked.
The Enable All Trace check box should be checked.
Under Trace Output Settings:
The Enable File Trace Log check box should be checked.
The File Name edit box should contain a valid path and file name.
The default for Maximum No. of Files is 250.
The default for Maximum No. of Lines per File is 10000.
The default for Maximum No. of Minutes per File is 1440.
As with the SDL traces, after the test has been running a while, check to see if the CallManager trace files are being overwritten too soon (before they can be copied). If they are, increase the Maximum No. of Files parameter appropriately.

END