Asterisk Business Edition™
Version C.3.3
Digium Partner Certification

Interoperability Report
Yealink®
SIP-T20, SIP-T22, SIP-T26, SIP-T28

Rev. A

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Section 1: Executive Summary

This document covers the tests executed for validation of interoperability of the partner's product(s) with Digium's Asterisk Business Edition. All relevant information is included in order to allow the replication of these test scenarios.

1.1 Products Tested

Asterisk Business Edition has been thoroughly tested for interoperability against the partner's product(s) listed below. The software versions for all tested products are included.

1.1.1 Asterisk Business Edition

Product	Version	Remarks
Asterisk Business Edition	C.3.3	

1.1.2 Partner Equipment Tested (UUTs)

Partner	Product	Version	Remarks
Yealink	SIP-T20	9.41.0.80	
Yealink	SIP-T22	7.42.0.30	
Yealink	SIP-T26	6.41.0.10	
Yealink	SIP-T28	2.41.0.60	

- **Yealink SIP-T20 Features**
  - TI TITAN chipset and TI voice engine
  - 3-line LCD(2 x 15 characters and an icon line)
  - 2 VoIP accounts, Broadsoft validated
  - HD Voice: HD Codec, HD Handset, HD Speaker
  - 31 keys including 9 function keys
  - Voicemail, Intercom
  - Localized language, XML phonebook
  - FTP/TFTP/HTTP, PnP Auto-provision
  - SRTP/HTTPS/TLS, VLAN, QoS
  - PoE, Headset, Wall-Mounted

- **Yealink SIP-T22 Features**
  - TI TITAN chipset and TI voice engine
  - 132x64 graphic LCD
  - 3 VoIP accounts, Broadsoft validated
  - HD Voice: HD Codec, HD Handset, HD Speaker
  - 32 keys including 4 soft keys
  - SMS, Voicemail, Intercom
  - Localized language, XML phonebook
  - FTP/TFTP/HTTP, PnP Auto-provision
  - SRTP/HTTPS/TLS, VLAN, QoS
  - PoE, Headset, Wall-Mounted

- **Yealink SIP-T26 Features**
  - TI TITAN chipset and TI voice engine
  - 132x64 graphic LCD
  - 3 VoIP accounts, Broadsoft validated
  - HD Voice: HD Codec, HD Handset, HD Speaker
  - 45 keys including 13 programmable keys
  - BLF/BLA, SMS, Voicemail, Intercom
  - Localized language, XML phonebook
  - FTP/TFTP/HTTP, PnP Auto-provision
  - SRTP/HTTPS/TLS, VLAN, QoS
  - PoE, Headset, 2xRJ45, Expansion module

Yealink SIP-T28 Features

- TI TITAN chipset and TI voice engine
- 132x64 graphic LCD
- 3 VoIP accounts, Broadsoft validated
- HD Voice: HD Codec, HD Handset, HD Speaker
- 45 keys including 13 programmable keys
- BLF/BLA, SMS, Voicemail, Intercom
- Localized language, XML phonebook
- FTP/TFTP/HTTP, PnP Auto-provision
- SRTP/HTTPS/TLS, VLAN, QoS
- PoE, Headset, 2xRJ45, Expansion module

1.2 Summary of Test Results

A summary of the test results is provided below. Detailed test results are available in Section 4.

1.2.1 Feature Matrix

Feature	SIP-T20	SIP-T22	SIP-T26	SIP-T28
Registration	✓	✓	✓	✓
Call Origination	✓	✓	✓	✓
Call Termination	✓	✓	✓	✓
Codec	✓	✓	✓	✓
Call Failure Handle	✓	✓	✓	✓
Call Hold / Unhold	✓	✓	✓	✓
Call Forward	✓	✓	✓	✓
Call Transfer	✓	✓	✓	✓
Conference	✓	✓	✓	✓
Call Waiting	✓	✓	✓	✓
DND	✓	✓	✓	✓
Caller ID	✓	✓	✓	✓
Voicemail	✓	✓	✓	✓
BLF	✓	✓	✓	✓
Call Park / Call Retrieve	✓	✓	✓	✓
Call Pickup	✓	✓	✓	✓

Section 2: Test Configuration

This section describes the test configuration and setup, and any additional equipment that was required to perform the testing. A diagram of the test setup is available in Section 2.2.

2.1 Description of Test Setup

An isolated test network was created using a Linksys SR224G switch and a PC-based server running Asterisk Business Edition. The partner phone (UUT) was connected to the test network via the Linksys switch. Each feature listed in this document was tested by placing calls to and from the UUT and the Asterisk Business Edition server. Native Bridging was disabled to ensure all traffic was directed through the Asterisk Business Edition Server.

2.1.1 Other Equipment Used During Testing

Vendor	Product
Linksys	SR224G

2.2 Test Setup Diagram

The diagram listed below illustrates how the test equipment was connected during testing. This diagram applies to all tests within this report.

Section 3: Product Configuration

The relevant portions of the configuration for the tested products are included in this section.

/etc/asterisk/sip.conf

```
[general]

;*****
;*UUT*
;*****
[6002]
type=friend
username=6002
secret=6002
host=dynamic
context=testing
disallow=all
allow=ulaw
qualify=1000
subscribecontext=BLF_Enable
mailbox=6002

;*********
;*Phone A*
;*********
[6001]
type=friend
username=6001
secret=6001
host=dynamic
context=testing
disallow=all
allow=ulaw
qualify=yes
subscribecontext=BLF_Enable
mailbox=6001

;*********
;*Phone B*
;*********
[6003]
type=friend
username=6003
```

```
secret=6003
host=dynamic
context=testing
disallow=all
allow=ulaw
qualify=yes
subscribecontext=BLF_Enable
mailbox=6003

;*********
;*Phone C*
;*********
[6004]
type=friend
username=6004
secret=6004
host=dynamic
context=testing
disallow=all
allow=ulaw
qualify=yes
subscribecontext=BLF_Enable
mailbox=6004
```

/etc/asterisk/extensions.conf

```
[testing]
exten => _6XXX,1,Dial(sip/${EXTEN},4,j)
exten => _6XXX,n,VoiceMail(${EXTEN},20,j)
exten => _7XXX,1,Dial(sip/${EXTEN},4,j)
exten => _7XXX,n,VoiceMail(${EXTEN},20,j)
exten => asterisk,1,VoiceMailmain(${CALLERID(num)},s)
exten => 8500,1,VoiceMailMain()
exten => 5001,1,Meeme(${EXTEN},i)
exten => 5001,n,Hangup()

[BLF_Enable]
exten => 6000,hint,SIP/6000
exten => 6001,hint,SIP/6001
exten => 6002,hint,SIP/6002
exten => 6003,hint,SIP/6003
exten => 6004,hint,SIP/6004
```

/etc/asterisk/voicemail.conf

```
[default]
6001 => 6001,Yealink 6001,root@localhost
6002 => 6002,Yealink 6002,root@localhost
6003 => 6003,Yealink 6003,root@localhost
6004 => 6004,Yealink 6004,root@localhost
```

Section 4: Tests Performed

The specific tests performed for verification of functionality with the partner's product(s) are provided below.

4.1 Registration

Test Case	SN	Operations	Expected Results	PASS	FAIL
Registration	4.1-1	Register an account	Account registered	Pass (T20,T22,T26,T28)	
	4.1-2	Logout a registered account	Account unregistered	Pass (T20,T22,T26,T28)	
	4.1-3	1. Register an account 2. Set UUT's *Login Expire* to be 60	Approximately 60 seconds after last registration, UUT registers again to the PBX. It should be observed from SIP traces.	Pass (T20,T22,T26,T28)	

4.2 Call Origination

Test Case	SN	Operations	Expected Results	PASS	FAIL
Call Origination	4.2-1	1.UUT calls B	UUT rings back.	Pass (T20,T22,T26,T28)	
	4.2-2	2. UUT calls B. B doesn't answer the call	A few seconds later, UUT stops ringing back and then returns to IDLE or something else determined by the server setting.	Pass (T20,T22,T26,T28)	
	4.2-3	3. UUT calls B. B answers the call	UUT and B get in communication without any delay.	Pass (T20,T22,T26,T28)	
	4.2-4	4. UUT calls B. B answers and a few seconds later B hangs up.	UUT and B get in communication and then both return to IDLE after B's hanging up.	Pass (T20,T22,T26,T28)	
	4.2-5	5. UUT calls B. B rejects the call during ringing.	UUT stops ringing back and then returns to IDLE or something else determined by the server setting.	Pass (T20,T22,T26,T28)	
	4.2-6	6. UUT calls B. UUT cancels the call during ringing back.	UUT returns to IDLE.	Pass (T20,T22,T26,T28)	

4.3 Call Termination

Test Case	SN	Operations	Expected Results	PASS	FAIL
Call Termination	4.3-1	1. B calls UUT.	UUT rings.	Pass (T20,T22,T26,T28)	
	4.3-2	2. B calls UUT. UUT doesn't answer.	UUT gets a missed call.	Pass (T20,T22,T26,T28)	
	4.3-3	3. B calls UUT. UUT answers the call during ringing.	UUT and B get in communication without any delay.	Pass (T20,T22,T26,T28)	
	4.3-4	4. B calls UUT. UUT answers the call and a few seconds later UUT hangs up.	UUT and B get in communication and then both return to IDLE after UUT's hanging up.	Pass (T20,T22,T26,T28)	
	4.3-5	5. B calls UUT. UUT rejects the call during ringing.	UUT rings, then stops ringing and returns to IDLE.	Pass (T20,T22,T26,T28)	
	4.3-6	6. B calls UUT. B cancels the call during ringing back.	UUT rings, then stops ringing and gets a missed call.	Pass (T20,T22,T26,T28)	

4.4 Codec

Test Case	SN	Operations	Expected Results	PASS	FAIL
Codec	4.4-1	1. Go to UUT's web page. Click to ***Account -> Account X -> Codecs***	NA	NA	NA
	4.4-2	1. To enable one codec at a time on UUT (out of ***PCMU, PCMA, G729, G723_53, G723_63, G722, G726-16, G726-24, G726-32, G726-40***) 2. To make sure B has the same Codec enabled. 3. UUT calls B. 4. B answers the call.	On the server-supported Codec, the call between UUT and B can be established normally.	Pass (T20,T22,T26,T28)	

4.5 Call Failure Handle

Test Case	SN	Operations	Expected Results	PASS	FAIL
Call Failure	4.5-1	1. B's account is unregistered. 2. UUT calls B	UUT gets busy tone or something else determined by the server setting.	Pass (T20,T22,T26,T28)	
	4.5-2	UUT calls an undefined number.	UUT gets busy tone or something else determined by the server setting.	Pass (T20,T22,T26,T28)	
	4.5-3	1. UUT sets ***Return code when refuse*** to be ***404 (Not Found)*** via web page ***Phone -> Features*** 2. B calls UUT. 3. UUT rejects the call.	It should be observed from the SIP traces that UUT sends a 404 message to the PBX.	Pass (T20,T22,T26,T28)	
	4.5-4	1. UUT sets ***Return code when refuse*** to be ***480 (Temporarily Not Available).*** 2. B calls UUT. 3. UUT rejects the call.	It should be observed from the SIP traces that UUT sends a 480 message to the PBX.	Pass (T20,T22,T26,T28)	
	4.5-5	1. UUT sets ***Return code when refuse*** to be ***486 (Busy Here)*** 2. B calls UUT. 3. UUT rejects the call.	It should be observed from the SIP traces that UUT sends a 486 message to the PBX.	Pass (T20,T22,T26,T28)	

	4.5-6	1. UUT sets ***Return code when DND*** to be ***404 (Not Found).*** 2. UUT enables DND. 3. B calls UUT.	UUT rejects the call automatically. And it can be observed from the SIP traces that UUT sends a 404 message to PBX.	Pass (T20,T22,T26,T28)	
	4.5-7	1. UUT set ***Return code when DND*** to be ***480 (Temporarily Not Available)*** 2. UUT enables DND. 3. B calls UUT	UUT rejects the call automatically. And it can be observed from the SIP traces that UUT sends a 404 message to PBX.	Pass (T20,T22,T26,T28)	
	4.5-8	1. UUT sets ***Return code when DND*** to be ***486 (Busy Here)*** 2. UUT enables DND. 3. B calls UUT.	UUT rejects the call automatically. And it can be observed from the SIP traces that UUT sends a 486 message to PBX.	Pass (T20,T22,T26,T28)	

4.6 Call Hold / Unhold

Test Case	SN	Operations	Expected Results	PASS	FAIL
Hold/Unhold	4.6-1	1. UUT is on a call with B. 2. UUT presses Hold.	1. UUT shows Hold. 2. Both parties cannot hear each other.	Pass (T20,T22,T26,T28)	
	4.6-2	1. UUT is on a call with B. 2. UUT presses Hold. 3. UUT presses Resume softkey or Hold key to unhold the call.	The call on hold can be resumed.	Pass (T20,T22,T26,T28)	
	4.6-3	1. UUT is on a call with B. 2. UUT presses Hold. 3. B hangs up during hold.	The call is terminated. Both return to IDLE.	Pass (T20,T22,T26,T28)	
	4.6-4	1. UUT is on a call with B. 2. UUT presses Hold. 3. UUT hangs up during hold.	The call is terminated. Both return to IDLE.	Pass (T20,T22,T26,T28)	

4.7 Call Forward

Test Case	SN	Operations	Expected Results	PASS	FAIL
Always Forward	4.7-1	1. To go to UUT's web page. Click to ***Phone -> Features***. 2. To enable ***Always*** Forward and specify the ***Target*** to be phone C's number. 3. Confirm the settings.	UUT's LCD shows an ICON indicating Forward enabled.	Pass (T20,T22,T26,T28)	
	4.7-2	1. UUT enables ***Always*** Forward and ***Call Waiting***. 2. UUT sets Forward ***Target*** to be C. 3. B calls UUT when UUT is in IDLE.	1. The call is forwarded to C. 2. B shows that it is calling C. 3. C rings. 4. UUT indicates the call is forwarded to C.	Pass (T20,T22,T26,T28)	
	4.7-3	1. UUT enables ***Always*** Forward and ***Call Waiting***. 2. UUT sets Forward ***Target*** to be C. 3. B calls UUT when UUT is on another call.	1. The call is forwarded to C while UUT keeps in talking normally. 2. B shows that it is calling to C. 3. C rings 4. UUT indicates the call is forwarded to C.	Pass (T20,T22,T26,T28)	

	4.7-4	1. UUT enables ***Always*** Forward and disables ***Call Waiting***. 2. UUT sets Forward ***Target*** to be C. 3. B calls UUT when UUT is in IDLE.	1. The call is forwarded to C. 2. B shows that it is calling C. 3. C rings. 4. UUT indicates the call is forwarded to C.	Pass (T20,T22,T26,T28)	
	4.7-5	1. UUT enables ***Always*** Forward and disables ***Call Waiting***. 2. UUT sets Forward ***Target*** to be C. 3. B calls UUT when UUT is on another call.	1. The call is forwarded to C while UUT keeps in talking normally. 2. B shows that it is calling to C. 3. C rings 4. UUT indicates the call is forwarded to C.	Pass (T20,T22,T26,T28)	
Busy Forward	4.7-6	1. To go to UUT's web page. Click to ***Phone -> Features***. 2. To enable ***Busy*** Forward and specify the ***Target*** to be phone C's number. 3. Confirm the settings.	UUT's LCD shows an ICON indicating Forward enabled.	Pass (T20,T22,T26,T28)	

	4.7-7	1. UUT enables ***Busy*** Forward and ***Call Waiting***. 2. UUT sets Forward ***Target*** to be C. 3. B calls UUT when UUT is in IDLE. 4. UUT rejects the call.	1. The call is forwarded to C. 2. B shows that it is calling C. 3. C rings. 4. UUT indicates the call is forwarded to C.	Pass (T20,T22,T26,T28)	
	4.7-8	1. UUT enables ***Busy*** Forward and ***Call Waiting***. 2. UUT sets Forward ***Target*** to be C. 3. B calls UUT when UUT is on another call. 4. UUT rejects the B's call.	1. The call is forwarded to C. 2. B shows that it is calling C. 3. C rings. 4. UUT indicates the call is forwarded to C.	Pass (T20,T22,T26,T28)	
	4.7-9	1. UUT enables ***Busy*** Forward and disables ***Call Waiting***. 2. UUT sets Forward ***Target*** to be C. 3. B calls UUT when UUT is in IDLE. 4. UUT rejects the call.	1. The call is forwarded to C. 2. B shows that it is calling C. 3. C rings. 4. UUT indicates the call is forwarded to C.	Pass (T20,T22,T26,T28)	

	4.7-10	1. UUT enables ***Busy*** Forward and disables ***Call Waiting***. 2. UUT sets Forward ***Target*** to be C. 3. B calls UUT when UUT is on another call.	1. The call is forwarded to C. 2. B shows that it is calling C. 3. C rings. 4. UUT indicates the call is forwarded to C.	Pass (T20,T22,T26,T28)	
No Answer Forward	4.7-11	1. To go to UUT's web page. Click to ***Phone -> Features***. 2. To enable ***No Answer*** Forward and specify the ***Target*** to be phone C's number. 3. Confirm the settings.	UUT's LCD shows an ICON indicating Forward enabled.	Pass (T20,T22,T26,T28)	
	4.7-12	1. UUT enables ***No Answer*** Forward and ***Call Waiting***. 2. UUT sets Forward ***Target*** to be C and sets ***After Ring Time*** to be 10. 3. B calls UUT when UUT is in IDLE.	1. If UUT doesn't answer the call, the call will be forwarded to C after 10 seconds ringing. 2. If UUT answers the call within 10 seconds, the call can be established normally.	Pass (T20,T22,T26,T28)	

	4.7-13	1. UUT enables ***No Answer*** Forward and ***Call Waiting***. 2. UUT sets Forward ***Target*** to be C and sets ***After Ring Time*** to be 10. 3. B calls UUT when UUT is on another call.	1. If UUT doesn't answer the call, the call will be forwarded to C after 10 seconds ringing. 2. If UUT answers the call within 10 seconds, the call can be established normally.	Pass (T20,T22,T26,T28)	
	4.7-14	1. UUT enables ***No Answer*** Forward and disables ***Call Waiting***. 2. UUT sets Forward ***Target*** to be C and sets ***After Ring Time*** to be 10. 3. B calls UUT when UUT is in IDLE.	1. If UUT doesn't answer the call, the call will be forwarded to C after 10 seconds ringing. 2. If UUT answers the call within 10 seconds, the call can be established normally.	Pass (T20,T22,T26,T28)	
	4.7-15	1. UUT enables ***No Answer*** Forward and disables ***Call Waiting***. 2. UUT sets Forward ***Target*** to be C and sets ***After Ring Time*** to be 10. 3. B calls UUT when UUT is on another call.	B gets busy tone or something else determined by the server setting.	Pass (T20,T22,T26,T28)	

4.8 Call Transfer

Test Case	SN	Operations	Expected Results	PASS	FAIL
Call Transfer--- Blind Transfer	4.8-1	1. UUT is on a call with B. 2. UUT presses ***TRAN*** button to go to dial mode, types in C's number, and then presses ***TRAN*** button again to make a blind transfer.	1. B is put on hold when UUT presses ***TRAN*** for the first time. 2. When UUT presses ***TRAN*** for the second time, B will call to C and UUT may return to IDLE or stay on hold before C answers the call.	Pass (T20,T22,T26,T28)	
	4.8-2	1. UUT is on a call with B. 2. UUT makes a blind transfer to C. 3. C answers the call.	1. UUT returns to IDLE. 2. The call between B and C is established normally.	Pass (T20,T22,T26,T28)	
	4.8-3	1. UUT is on a call with B. 2. UUT makes a blind transfer to C. 3. C rejects the call.	UUT is still connected with B and the call stays on hold.	Pass (T20,T22,T26,T28)	
	4.8-4	1. UUT is on a call with B. 2. UUT makes a blind transfer to C. 3. UUT rejects the call.	1. UUT returns to IDLE. 2. B keeps calling C. 3. If C answers, the call can be established normally.	Pass (T20,T22,T26,T28)	

	4.8-5	1. UUT is on a call with B. 2. B makes a blind transfer to C. 3. C answers the call.	1. The call between UUT and C is established normally. 2. B returns to IDLE.	Pass (T20,T22,T26,T28)	
	4.8-6	1. UUT is on a call with B. 2. B makes a blind transfer to C. 3. C rejects the call.	1. UUT is still connected with B and the call stays on hold.	Pass (T20,T22,T26,T28)	
Call Transfer---Attended Transfer	4.8-7	1. UUT is on a call with B. 2. UUT presses ***TRAN*** button to go to dial mode, types in C's number, and then presses ***Send Key*** (* or #) or ***OK*** button to make a call to C. 3. UUT presses ***TRAN*** button to make an attended transfer.	1. B is put on hold when UUT presses ***TRAN*** for the first time. 2. When UUT presses ***Send Key*** or ***OK*** button, UUT will call to C and B stays on hold. 3. B keeps on hold when UUT is calling and talking with C. 4. The call between B and C is established normally after UUT makes the attended transfer.	Pass (T20,T22,T26,T28)	
	4.8-8	1. UUT is on a call with B. 2. UUT makes an attended transfer to C.	1. The call between B and C is established normally. 2. UUT returns to IDLE.	Pass (T20,T22,T26,T28)	

	4.8-9	1. UUT is on a call with B. 2. B makes an attended transfer to C	1. The call between UUT and C is established normally. 2. B returns to IDLE.	Pass (T20,T22,T26,T28)	

4.9 Conference

Test Case	SN	Operations	Expected Results	PASS	FAIL
Conference	4.9-1	1. UUT is on a call with B. 2.UUT presses ***CONF*** button to go to dial mode, types in C's number and then presses ***Send Key*** (* or #) or ***OK*** button. 3. C answers the call.	1. A conference among UUT, B and C is established when 3 parties can hear others.	Pass (T20,T22,T26,T28)	
	4.9-2	1. UUT, B and C are in a conference call whose initiator is UUT. 2. B hangs up the call.	1. B is disconnected. 2. UUT and C are in communication.	Pass (T20,T22,T26,T28)	
	4.9-3	1. UUT, B and C are in a conference call whose initiator is UUT. 2. C hangs up the call.	1. C is disconnected. 2. UUT and C are in communication.	Pass (T20,T22,T26,T28)	
	4.9-4	1. UUT, B and C are in a conference call whose initiator is UUT. 2. UUT hangs up the call.	1. The conference is terminated and all 3 parties return to IDLE.	Pass (T20,T22,T26,T28)	

4.10 Call Waiting

Test Case	SN	Operations	Expected Results	PASS	FAIL
Call Waiting	4.10-1	1. To go to UUT's web page. Click to ***Phone -> Features.*** 2. To find the option ***Call Waiting***.	NA	NA	NA
	4.10-2	1. UUT enables ***Call Waiting***. 2. B calls UUT when UUT is in IDLE. 3. UUT answers the call.	The call is established normally.	Pass (T20,T22,T26,T28)	
	4.10-3	1. UUT enables ***Call Waiting***. 2. B calls UUT when UUT is on another call. 3. UUT answers the call from B.	1. UUT hears a prompt tone during its talking with another call. 2. After UUT answers the call, it can talk with B and the former call is placed on hold.	Pass (T20,T22,T26,T28)	
	4.10-4	1. UUT disables ***Call Waiting***. 2. B calls UUT when UUT is in IDLE. 3. UUT answers the call.	The call is established normally.	Pass (T20,T22,T26,T28)	

	4.10-5	1. UUT disables ***Call Waiting***. 2. B calls UUT when UUT is on another call.	1. No differences on UUT's current call. 2. B gets busy tone or something else determined by the server setting.	Pass (T20,T22,T26,T28)	

4.11 DND

Test Case	SN	Operations	Expected Results	PASS	FAIL
DND	4.11-1	1. To press DND in IDLE to enable/disable DND.	The LCD will show an ICON indicating that DND is enabled.	NA	NA
	4.11-2	1. UUT enables DND. 2. B calls UUT.	1. B fails to connect to UUT. 2. UUT gets a missed call.	Pass (T20,T22,T26,T28)	
	4.11-3	1. UUT enables DND and then disable it. 2. B calls UUT.	The call can be established normally.	Pass (T20,T22,T26,T28)	

4.12 Caller ID

Test Case	SN	Operations	Expected Results	PASS	FAIL
Caller ID	4.12-1	1. UUT is in IDLE. 2. B calls UUT.	UUT displays B's name.	Pass (T20,T22,T26,T28)	
	4.12-2	1. UUT is on another call. 2. B calls UUT. 3. UUT switches to the interface of B's call.	UUT displays B's name.	Pass (T20,T22,T26,T28)	
	4.12-3	1. UUT is set to forward its calls to C. 2. B calls UUT.	C rings and displays B's name.	Pass (T20,T22,T26,T28)	
	4.12-4	1. UUT is in IDLE. 2. B calls UUT. 3. UUT answers the call and then makes a blind transfer to C. 4. B and C are in communication.	1. B displays C's name 2. C displays B's name	Pass (T20,T22,T26,T28)	
	4.12-5	1. UUT is in IDLE. 2. B calls UUT. 3. UUT answers the call and then makes an attended transfer to C. 4. B and C are in communication.	1. B displays C's name 2. C displays B's name	Pass (T20,T22,T26,T28)	

	4.12-6	1. UUT is on a call with B. 2. UUT initiates a conference with C.	UUT displays both B and C's names.	Pass (T20,T22,T26,T28)	

4.13 Voicemail

Test Case	SN	Operations	Expected Results	PASS	FAIL
Voicemail	4.13-1	B calls UUT and gets failed by some reasons.	B is directed to Voicemail box of UUT.	Pass (T20,T22,T26,T28)	
	4.13-2	B leaves a voicemail to UUT.	1. UUT gets the voicemail. 2. There's a prompt tone played 3. There's a prompt message and an ICON show on LCD. 4. The LED on Message button is on. 5. UUT can dial to its voicemail box to listen to the voicemail.	Pass (T20,T22,T26,T28)	
	4.13-3	UUT listens to all the voicemails.	1. The prompt tones won't be played until next voicemail arrives. 2. The ICON disappears and there's no prompt message. 3. The LED on Message button is off.	Pass (T20,T22,T26,T28)	

4.14 BLF

Test Case	SN	Operations	Expected Results	PASS	FAIL
BLF	4.14-1	1. To go to UUT's webpage. Click to ***Phone -> DSS Key -> Memory Key.*** 2. To set ***Type*** of ***DSS Key1*** as ***BLF***. 3. Specify the to-be-monitored ***Extension***. 4. Confirm the settings.	NA	NA	NA
	4.14-2	1. UUT sets ***DSS Key1*** as ***BLF***. 2. The monitored ***Extension*** is set to be an inexistent number.	The LED on DSS Key1 is off.	Pass (T20,T22,T26,T28)	
	4.14-3	1. UUT sets ***DSS Key1*** as ***BLF***. 2. The monitored ***Extension*** is set to be B's number. 3. B is in IDLE.	The LED on DSS Key1 is green light on.	Pass (T20,T22,T26,T28)	
	4.14-4	1. UUT sets ***DSS Key1*** as ***BLF***. 2. The monitored ***Extension*** is set to be B's number. 3. B is dialing out.	The LED on DSS Key1 is red light on.	Pass (T20,T22,T26,T28)	

	4.14-5	1. UUT sets ***DSS Key1*** as ***BLF***. 2. The monitored ***Extension*** is set to be B's number. 3. B is in communication with another call.	The LED on DSS Key1 is red light on.	Pass (T20,T22,T26,T28)	
	4.14-6	1. UUT sets ***DSS Key1*** as ***BLF***. 2. The monitored ***Extension*** is set to be B's number. 3. B is having another call coming.	The LED on DSS Key1 is red light on.	Pass (T20,T22,T26,T28)	

4.15 Call Park / Call Retrieve

Test Case	SN	Operations	Expected Results	PASS	FAIL
Call Park/Call Retrieve	4.15-1	1. To go to UUT's webpage. Click to ***Phone -> DSS Key -> Memory Key.*** 2. To set ***Type*** of ***DSS Key1*** as ***KeyEvent*** and ***Mode*** as ***Call Park***. 3. Specify the right ***Line*** and desired parking orbit to ***Extension***. 4. Confirm the settings.	NA	NA	NA
	4.15-2	1. UUT sets ***DSS Key1*** as ***Call Park***. 2. The ***Extension*** is set to be a certain parking orbit. 3. Press ***DSS Key1*** when UUT is in IDLE.	No difference on UUT.	Pass (T20,T22,T26,T28)	

	4.15-3	1. UUT sets ***DSS Key1*** as ***Call Park***. 2. The ***Extension*** is set to be a certain parking orbit. 3. B calls UUT. 3. UUT answers the call and then press ***DSS Key1***.	1. UUT returns to IDLE. 2. B is placed on hold. 3. C can dial a certain feature code to retrieve the parked call, which means C can dial the feature code to talk to B.	Pass (T20,T22,T26,T28)	
	4.15-4	1. UUT sets ***DSS Key1*** as ***Call Park***. 2. The ***Extension*** is set to be a certain parking orbit. 3. B calls UUT. 3. UUT press ***DSS Key1*** during ringing.	It depends. Most PBX cannot handle such kind of operation and hence the call park will fail.	Pass (T20,T22,T26,T28)	

4.16 Call Pickup

Test Case	SN	Operations	Expected Results	PASS	FAIL
Call Pickup	4.16-1	1. To go to UUT's webpage. Click to ***Phone -> DSS Key -> Memory Key.*** 2. To set ***Type*** of ***DSS Key1*** as ***KeyEvent*** and ***Mode*** as ***Pick Up***. 3. Specify the right ***Line.*** 4. Set ***Extension*** to be feature code + extension number. (e.g. *98102 where *98 is the feature code and 102 is the extension number) 5. Confirm the settings.	NA	NA	NA
	4.16-2	1. UUT sets ***DSS Key1*** as ***Pick Up***. The Extension is set to be feature code + B's number. 2. C calls B. B is ringing. 3. UUT presses ***DSS Key1***.	1. UUT picks the call on B and it can talk with C. 2. UUT presses DSS Key1 again to terminate the call.	Pass (T20,T22,T26,T28)	

Section 5: Glossary of Common Terms

The following is a glossary of common telecommunication acronyms and terms that may be used in this test report.

Term	Definition
Codec	Coder/Decoder, Compressor/Decompressor. Software or hardware (or a combination of both) that converts data to a code and later decodes it, e.g. telephone firmware that converts digital signals to analog, and vice versa. Also, technology (such as MPEG) that compresses data (such as sound files) for storage and decompresses it for processing.
DND	Do Not Disturb
Fast Busy	A busy signal (also referred to as a “reorder”) in telephony is an audible or visual signal to the calling party that indicates failure to complete the requested connection of that particular telephone call.
Gateway	A general term used by various companies to refer to the controlling interface between the PBX and the phones within a local area network. Other companies’ “gateways” are called Call Managers or Call Servers.
PBX	Private Branch Exchange. Originally referring to a system providing local telephone service (“public exchange”) and access to the PSTN, PBX now typically refers to whatever connection a phone user has to other users or to the outside world. In some cases, that connection is a call manager, call server, or gateway, or some other box or combination of boxes. In some IP protocols there might not even be such a box, but simply a direct access to the Internet.
POE	Power over Ethernet (POE) technology is a system to transmit electrical power, along with data over a standard Ethernet cable to remote devices such as IP Telephones, remote network switched, and other appliances where it would be inconvenient or more expensive to provide a separate power supply for the device.
SIP	Session Initiation Protocol (SIP) is the Internet Engineering Task Force's (IETF's) standard for multimedia conferencing over IP. SIP is an ASCII-based, application- layer control protocol (defined in RFC 2543) that can be used to establish, maintain, and terminate calls between two or more end points.
TDM	Time-Division Multiplexing. A type of digital signaling and transmission (sometimes used in digital-to-analog or analog-to digital systems) in which two or more signals or bit streams are transferred simultaneously as sub-channels in one communication channel, physically “taking turns” on the channel. Examples of TDM communications include T1, E1, and J1 digital lines.

Term	Definition
TFTP	Trivial (or Thin) File Transport Protocol. A simple form of FTP, TFTP uses UDP and provides no security features. It is often used by servers to download firmware or configurations to IP phones, embedded network devices, routers, and other devices whose user interfaces are simple or not included.
UUT	Unit Under Test. In a formal test setup, the UUT is the device that is being tested or evaluated.
VoIP	Voice-over Internet Protocol