SIP Trunking User Manual

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1. Introduction

Congratulations on your new Broadvoice SIP trunk connection. This manual will cover the basic setup and call flows as well as provide some useful information on your connection going forward.

2. Connection to Broadvoice

All SIP trunk connections to Broadvoice are done over the public internet. Broadvoice does not currently offer any dedicated circuit connections or BGP peering.

Connection Details

Peering IP:	208.64.8.13 or 206.15.130.13
Protocol:	SIP
Port:	5060
Protocol:	UDP
Codecs:	G711u, G729a
FAX:	T.38, G711u pass through
DTMF:	RFC2833, G711u in-band

3. Technical Contacts

Technical Support 24x7
(Call Center 5am to 8pm PST Monday - Friday, 6am to 5pm Weekends, On Call after hours):

Email: Support@Broadvoice.com
Phone: 800-991-5015
Live chat via website at www.Broadvoice.com

4. Product Guidelines

A SIP trunk is a session between one or more SIP endpoints on your network and Broadvoice's border elements. Trunks may be Termination only or Bi-directional (Origination and Termination).

Trunk ID

When the trunk is configured you will be assigned a trunk ID. This will be a 10 digit domestic telephone number, and may be a number you ported in or, if no numbers are ported, Broadvoice will assign this number. This 10 digit TN cannot be canceled as long as this trunk is active, and should be referenced whenever contacting support.

Lines

A SIP Trunk can have multiple public IP's associated with it. Each public IP address defined as eligible to send/receive traffic on this trunk will need to have port capacity associated to it. Calls will be sent to the first available IP that has not reached capacity, and will not roll over to subsequent IP's until all capacity has been used. Any IP defined as a member of the trunk is eligible to send an outbound call.

Ports

All SIP trunks are assigned a specific number of available ports. Every concurrent outgoing or incoming call will use one port. Most customers will have only one IP endpoint and all ports will be assigned to that endpoint, however it is possible to configure multiple endpoints and assign ports across them to facilitate load balancing and fail-over. Each product will include a specific number of ports, and additional ports can be provisioned at an additional charge.

DID's

All SIP trunks can have a virtually unlimited number of DID's associated with them. Calls to these DID's use ports but do not incur any additional charges. DID's are available anywhere within the Broadvoice footprint and can be ported in from other carriers. DID's each have a monthly recurring charge associated with them to maintain the number. Each DID provisioned will come with the following:

- LIDB registration
- CNAM
- E911 Service

Toll Free

All SIP trunks can have a virtually unlimited number of toll free numbers associated with them. Calls to toll free numbers will use ports on your trunk as well as be billed at the rate defined in your service plan. Toll Free numbers each have a monthly recurring charge associated with them to maintain the number.

Origination

All calls originated via a SIP trunk will have:

• Calling Number (when not marked private)
• Calling Name (CNAM) when available

Termination

SIP trunks include a volume of minutes per month to be used for termination within the lower 48 states and Canada. All calls within this footprint are not charged up to the included minute amount.

- All minutes beyond this are charged at the blended domestic rate specified in the service plan.
- Calls to Alaska, Hawaii, Caribbean islands, and international destinations are billed at the current price indicated on our international rates page:
  http:// www.Broadvoice.com/cloud_pbx_global.aspx
- Directory assistance calls are billed at $0.99 per call and $0.10 per minute after 2 minutes if call completion is requested.
- Operator service calls are billed at $3.00 per call

All these rates are subject to change. Please refer to our terms of service page for details:
http://www.Broadvoice.com/terms.html

5. Technical Guidelines

Below are the guidelines for what call flows are and are not supported with Broadvoice SIP Trunking. Please review these completely.

Signaling requirements and behavior

In order to ensure complete interoperability and experience the best possible results with Broadvoice SIP trunking please ensure the following behavior in your switch signaling:

Invites are sent using 10D format as described below

1. Domestic Calls: 1 + area code + number
2. OR Domestic Calls: area code + number
3. OR Domestic Calls: 7D number IF within the same area code as destination
4. International Calls: 011 + country code + number
5. Canada: 1 + area code + number
6. Caribbean islands: 1 + area code + number
7. 211 – Calls to 211 United Way / Human services are supported based on the calling number sent at no charge
8. 311 – Non emergency city services are supported based on the calling number sent at no charge
9. 411 – Information / Directory assistance calls are supported with an additional charge per call
10. 511 – Traffic information calls are supported based on the calling number as no charge
11. 611 – This will go to phone power support
12. 711 – TTY service for the hearing impaired are supported at no charge
13. 811 – Dig alert calls are supported based on the calling number sent at no charge
14. 911 can be supported if inbound numbers are provisioned. If a 911 call is sent from a non-provisioned number it will be answered but a charge of $75 will be applied.

All signaling traffic contains public IP’s in all headers described below:

1. From
2. To
3. Contact
4. Topmost VIA
5. SDP

Privacy

1. P-Asserted-Identitiy or Remote-party-ID are used to convey all privacy. It is recommended that a PAI header be inserted on all Invites but is not required.
2. Calls sent with privacy MUST have a PAI header inserted.
3. Inbound calls with privacy enabled will NOT have a PAI header describing the original

caller

4. Wholesale customers will receive PAI headers on inbound calls that have privacy enabled.
5. Calls sent with an anonymous from header should include a valid RPID or PAI header describing the true calling party for services that do not respect anonymity. If this header is not included the Trunk ID will be used.

Caller ID:

Valid options to set for the from number in traffic are:

1.
    1. Any 10 digit number provisioned on your trunk.
    2. In conjunction with the "Truth in Caller ID Act of 2010" all calls sent with a caller ID other than one of the numbers on your trunk will have their caller ID changed to the trunk ID.
    3. Customers may set any CNAM value desired, however delivery is left to the discretion of the terminating telco, and as such is best effort.
    4. Wholesale customers may set any 10 digit North American number.

2. SIP Options keep-alives:
    1. To ensure reliable service Broadvoice will send SIP Options messages to all configured customer endpoints to determine their availability. Any 2xx or 4xx class response to these messages will confirm that your equipment is up and ready to take calls. Failure to respond to these keep-alives will result in that endpoint not being offered calls until a keep-alive is successfully responded to.

3. Voice Codec
    1. Broadvoice supports only G711 and G729
    2. Silence suppression is not supported

4. DTMF
    1. Broadvoice supports both DTMF via RFC 2833 and InBand. SIP INFO is not supported.

5. Session Timers
    1. Broadvoice will use a re-invite to detect orphaned calls every 15 minutes. If the re-invite is not responded we will assume the call leg is orphaned and tear it down.
    2. Broadvoice supports a maximum call length of 4 hours.

6. Bandwidth and connectivity
    1. The customer is responsible for managing their own bandwidth and connectivity.
    2. A typical G711uLaw call will consume 84kbps of bandwidth. Please provision ports appropriately

7. Quality monitoring
    1. Broadvoice provides RTP statistics in its CDR's between the customer endpoint and its border elements purely for customer diagnostic purposes.

Supported Call Flows

- Call established from Customer endpoint to PSTN
- Call established from PSTN to Customer endpoint
- Call established from PSTN to Customer endpoint, Customer endpoint plays ring back
- Call established from Customer endpoint to PSTN, Broadvoice plays ring back
- RE-INVITE changing media preferences after call is established
- UPDATE changing media preferences during ring back but before 200OK
- Call established from Customer endpoint to PSTN with privacy
- Call established from PSTN to Customer endpoint with privacy
- SIP options health checks

Unsupported Call Flows

- Call transfer bridged in the phone power network
- Call hold via RFC 2543

Billing Behavior

- Billing on all outgoing calls commences at the 200OK
- Billing on all Toll-free calls commences at the 200OK
- Broadvoice is aware that some international destinations MAY send a 200ok while they are still playing ring-back. This call will be considered answered and billable.
- Once the customer has acknowledged their trunk is in production, they will be held responsible for all calls originating from their configured IP address.

6. Suggested Interoperability Testing

It is recommended that customers perform the following sample call flows to ensure complete functionality of their Broadvoice SIP Trunk prior to going into production, since improper behavior in any of these flows may result in improper billing treatment or impaired service.
It is encouraged that customers perform packet captures from their IP PBX and submit them to their interop engineer at Broadvoice to validate the correct behavior, however if this is not an option, customers can work with their interop engineers to lookup the call flows in our cache and validate the correct behavior for any of the tests they wish to perform.

6.1 Outbound Calls

Test Case 1.1.1:

Normal Call, Ring Back From PSTN End, 18x with SDP, With Answer , Hang-up from PSTN.

```
|Time      | 66.159.235.87                                  |
|          |                  |          208.64.8.13        |
|123.301   |      INVITE SDP ( g711U )                      |SIP From: sip:8886076937@66.159.235.87 To:sip:8188547456@208.64.8.13
|          |(5060)   ------------------>  (5060)            |
|123.304   |      100 Trying|                               |SIP Status
|          |(5060)   <------------------  (5060)            |
|123.325   |      183 Session Progress SDP ( g711U)         |SIP Status
|          |(5060)   <------------------  (5060)            |
|123.353   |      RTP (g711U)                               |RTP Num packets:134  Duration:2.660s SSRC:0x319EB48F
|          |(13442)  ------------------>  (49734)           |
|123.435   |      RTP (g711U)                               |RTP Num packets:322  Duration:6.419s SSRC:0x5A02423F
|          |(13442)  <------------------  (49734)           |
|126.017   |      200 OK SDP ( g711U)                       |SIP Status
|          |(5060)   <------------------  (5060)            |
|126.020   |      ACK      |                                |SIP Request
|          |(5060)   ------------------>  (5060)            |
|126.034   |      RTP (g711U)                               |RTP Num packets:192  Duration:3.819s SSRC:0x2C5812E3
|          |(13442)  ------------------>  (49734)           |
|129.867   |      BYE      |                                |SIP Request
|          |(5060)   <------------------  (5060)            |
|129.870   |      200 OK   |                                |SIP Status
|          |(5060)   ------------------>  (5060)            |
```

Test Case 1.1.2:

Normal Call, Ring Back From PSTN End, 18x with SDP, With Answer , Hang-up from Customer Proxy.

```
|Time      | 66.159.235.87                                  |
|          |                  |          208.64.8.13        |
|123.301   |      INVITE SDP ( g711U )                      |SIP From: sip:8886076937@66.159.235.87 To:sip:8188547456@208.64.8.13
|          |(5060)   ------------------>  (5060)            |
|123.304   |      100 Trying|                               |SIP Status
|          |(5060)   <------------------  (5060)            |
|123.325   |      183 Session Progress SDP ( g711U)         |SIP Status
|          |(5060)   <------------------  (5060)            |
|123.353   |      RTP (g711U)                               |RTP Num packets:134  Duration:2.660s SSRC:0x319EB48F
|          |(13442)  ------------------>  (49734)           |
|123.435   |      RTP (g711U)                               |RTP Num packets:322  Duration:6.419s SSRC:0x5A02423F
|          |(13442)  <------------------  (49734)           |
|126.017   |      200 OK SDP ( g711U)                       |SIP Status
|          |(5060)   <------------------  (5060)            |
|126.020   |      ACK       |                               |SIP Request
|          |(5060)   ------------------>  (5060)            |
|126.034   |      RTP (g711U)                               |RTP Num packets:192  Duration:3.819s SSRC:0x2C5812E3
|          |(13442)  ------------------>  (49734)           |
|129.867   |      BYE       |                               |SIP Request
|          |(5060)   ------------------>  (5060)            |
|129.870   |      200 OK   |                                |SIP Status
|          |(5060)   <------------------  (5060)            |
```

Test Case 1.2.1:

Ring No Answer, SIP End Hangup During Ring back, SIP Resp Cancel & SIP Resp 487

```
|Time      | 66.159.235.87                                    |
|          |                  |          208.64.8.13          |
|3.654     |     INVITE SDP ( g711U )                         |SIP From: sip:8886076937@66.159.235.87 To:sip:8188547456@208.64.8.13
|          |(5060)  ------------------>  (5060)               |
|3.657     |     100 Trying|                                  |SIP Status
|          |(5060)  <------------------  (5060)               |
|3.680     |     183 Session Progress SDP ( g711U)            |SIP Status
|          |(5060)  <------------------  (5060)               |
(|3.701    |     RTP (g711U)                                  |RTP Num packets:81  Duration:1.599s SSRC:0x3BF31B37
|          |(10514)  ------------------>  (49742)             |
|3.777     |     RTP (g711U)                                  |RTP Num packets:78  Duration:1.538s SSRC:0x303272F2
|          |(10514)  <------------------  (49742)             |
|5.321     |     CANCEL  |                                    |SIP Request
|          |(5060)  ------------------>  (5060)               |
|5.322     |     200 OK   |                                   |SIP Status
|          |(5060)  <------------------  (5060)               |
|5.328     |     487 Request Terminated                       |SIP Status
|          |(5060)  <------------------  (5060)               |
|5.331     |     ACK      |                                   |SIP Request
|          |(5060)  ------------------>  (5060)               |
```

Test Case 1.2.2:

Ring No Answer, Timeout

```
|Time      | 66.159.235.87                                    |
|          |                  |          208.64.8.13          |
|78.655    |     INVITE SDP ( g711U )                         |SIP From: sip:8886076937@66.159.235.87 To:sip:8188547456@208.64.8.13
|          |(5060)  ------------------>  (5060)               |
|78.658    |     100 Trying|                                  |SIP Status
|          |(5060)  <------------------  (5060)               |
|78.758    |     180 Ringing                                  |SIP Status
|          |(5060)  <------------------  (5060)               |
|138.818   |     504 Server Time-out                          |SIP Status
|          |(5060)  <------------------  (5060)               |
|138.821   |     ACK     |                                    |SIP Request
|          |(5060)  ------------------>  (5060)               |
```

Test Case 1.2.3:

User Busy, SIP Resp 486

```
|Time      | 66.159.235.87                                    |
|          |          |          208.64.8.13                  |
|78.655    |     INVITE SDP ( g711U )                         |SIP From: sip:8886076937@66.159.235.87 To:sip:8188547456@208.64.8.13
|          |(5060)  ------------------>  (5060)               |
|78.658    |     100 Trying|                                  |SIP Status
|          |(5060)  <------------------  (5060)               |
|78.758    |     486 Busy Here                                |SIP Status
|          |(5060)  <------------------  (5060)               |
||78.858   |     ACK     |                                    |SIP Request
|          |(5060)  ------------------>  (5060)               |
```

Test Case 1.3.1:

1 Hour hold time & SIP Session Timers

```
|Time       | 66.159.235.87                                  |
|           |                   |         208.64.8.13        |
|0.000      |      INVITE SDP ( g711U)                       |SIP From: sip:8886076937@66.159.235.87 To:sip:8188547456@208.64.8.13
|           |(5060)   ------------------>  (5060)            |
|0.003      |      100 Trying|                               |SIP Status
|           |(5060)   <------------------  (5060)            |
|0.105      |      180 Ringing                               |SIP Status
|           |(5060)   <------------------  (5060)            |
|6.020      |      183 Session Progress SDP ( g711U)         |SIP Status
|           |(5060)   <------------------  (5060)            |
|6.022      |      200 OK SDP ( g711U)                       |SIP Status
|           |(5060)   <------------------  (5060)            |
|6.026      |      ACK      |                                |SIP Request
|           |(5060)   ------------------>  (5060)            |
|936.060    |      INVITE SDP ( g711U)                       |SIP Request
|           |(5060)   <------------------  (5060)            |
|936.063    |      100 Trying|                               |SIP Status
|           |(5060)   ------------------>  (5060)            |
|936.063    |      200 OK SDP ( g711U)                       |SIP Status
|           |(5060)   ------------------>  (5060)            |
|936.070    |      ACK      |                                |SIP Request
|           |(5060)   <------------------  (5060)            |
|1866.105          |      INVITE SDP ( g711U)                |SIP Request
|           |(5060)   <------------------  (5060)            |
|1866.109          |      100 Trying|                        |SIP Status
|           |(5060)   ------------------>  (5060)            |
|1866.109          |      200 OK SDP ( g711U)                |SIP Status
|           |(5060)   ------------------>  (5060)            |
|1866.118          |      ACK      |                         |SIP Request
|           |(5060)   <------------------  (5060)            |
|2796.175          |      INVITE SDP ( g711U)                |SIP Request
|           |(5060)   <------------------  (5060)            |
|2796.179          |      100 Trying|                        |SIP Status
|           |(5060)   ------------------>  (5060)            |
|2796.179          |      200 OK SDP ( g711U)                |SIP Status
|           |(5060)   ------------------>  (5060)            |
|2796.185          |      ACK      |                         |SIP Request
|           |(5060)   <------------------  (5060)            |
```

Test Case 1.4.1:

Single choice, g711 20ms

```
|Time      | 66.159.235.87                                          |
|          |                          |          208.64.8.13        |
|8.597     |    INVITESDP ( g711U)                                  |SIP From: sip:8886076937@66.159.235.87 To:sip:3234931422@208.64.8.13
|          |(5060)   ------------------>  (5060)                     |
|8.600     |       100 Trying|                                      |SIP Status
|          |(5060)   <------------------  (5060)                     |
|9.136     |       RTP (g711U)                                      |RTP Num packets:2985  Duration:59.696s SSRC:0x8B93B6CF
|          |             |(14874)  <------------------  (49796)     |
|10.125    |       183 Session Progress SDP ( g711U)                |SIP Status
|          |(5060)   <------------------  (5060)                     |
|10.154    |       RTP (g711U)                                      |RTP Num packets:329  Duration:6.559s SSRC:0x4561C605
|          |(14874)  ------------------>  (49796)                    |
|16.723    |       200 OK SDP ( g711U)                              |SIP Status
|          |(5060)   <------------------  (5060)                     |
|16.726    |       ACK      |                                       |SIP Request
|          |(5060)   ------------------>  (5060)                     |
|16.734    |       RTP (g711U)                                      |RTP Num packets:2608  Duration:52.136s SSRC:0x2B5A9D00
|          |(14874)  ------------------>  (49796)                    |
|68.872    |       BYE      |                                       |SIP Request
|          |(5060)   <------------------  (5060)                     |
|68.875    |       200 OK   |                                       |SIP Status
|          |(5060)   ------------------>  (5060)                     |
```

v=0
o=root 1562814183 1562814183 IN IP4 66.159.235.87
s=Asterisk PBX 1.6.0.26-FONCORE-r78
c=IN IP4 66.159.235.87
b=CT:384
t=0 0
m=audio 11332 RTP/AVP 0 8
a=rtpmap:0 PCMU/8000
a=rtpmap:8 PCMA/8000
a=silenceSupp:off - - - -
a=ptime:20
a=sendrecv

Test Case 1.4.2:

InBand DTMF, g711 20ms

```
|Time      | 66.159.235.87                                  |
|          |                  |          208.64.8.13        |
|154.676   |     INVITE SDP ( g711U)                        |SIP From: sip:8886076937@66.159.235.87 To:sip:13234931422@208.64.8.13
|          |(5060)  ------------------>  (5060)             |
|          |154.678  |      100 Trying|                     |SIP Status
|          |         |(5060)  <------------------  (5060)   |
|155.230   |     RTP (g711U)                                |RTP Num packets:1498  Duration:29.958s SSRC:0x9BA14863
|          |(19568)  <------------------  (49840)           |
|156.151   |     183 Session Progress SDP ( g711U)          |SIP Status
|          |(5060)  <------------------  (5060)             |
|156.179   |     RTP (g711U)                                |RTP Num packets:260  Duration:5.181s SSRC:0x3202F5F9
|          |(19568)  ------------------>  (49840)           |
|161.364   |     200 OK SDP ( g711U)                        |SIP Status
|          |(5060)  <------------------  (5060)             |
|161.367   |     ACK     |                                  |SIP Request
|          |(5060)  ------------------>  (5060)             |
|161.378   |     RTP (g711U)                                |RTP Num packets:1192  Duration:23.818s SSRC:0x2F7DB77E
|          |(19568)  ------------------>  (49840)           |
|          |185.211  |      BYE     |                       |SIP Request
|          |(5060)  <------------------  (5060)             |
|185.214   |     200 OK   |                                 |SIP Status
|          |(5060)  ------------------>  (5060)             |
```

Test Case 1.4.3:

DTMF RFC2833 named events, g711 20ms

```
|Time      | 66.159.235.87                                  |
|          |                  |          208.64.8.13        |
|9.582     |     INVITE SDP ( g711U)                        |SIP From: sip:8886076937@66.159.235.87 To:sip:13234931422@208.64.8.13
|          |(5060)  ------------------>  (5060)             |
|9.584     |     100 Trying|                                |SIP Status
|          |(5060)  <------------------  (5060)             |
|10.066    |     RTP (g711U)                                |RTP Num packets:2637  Duration:52.736s SSRC:0x12C74C40
|          |(15990)  <------------------  (49852)           |
|11.008    |     183 Session Progress SDP ( g711U)          |SIP Status
|          |(5060)  <------------------  (5060)             |
|          |11.032   |      RTP (g711U)                     |RTP Num packets:453  Duration:9.039s SSRC:0x130D55E3
|          |(15990)  ------------------>  (49852)           |
|20.082    |     200 OK SDP ( g711U)                        |SIP Status
|          |(5060)  <------------------  (5060)             |
|20.085    |     ACK     |                                  |SIP Request
|          |(5060)  ------------------>  (5060)             |
|20.093    |     RTP (g711U)                                |RTP Num packets:2138  Duration:42.736s SSRC:0x217E7D92
|          |(15990)  ------------------>  (49852)           |
|62.835    |     BYE     |                                  |SIP Request
|          |(5060)  <------------------  (5060)             |
|62.838    |     200 OK   |                                 |SIP Status
|          |(5060)  ------------------>  (5060)             |
```

Test Case 1.4.4:

Fax InBand, g711 20ms

```
|Time      | 66.159.235.87                                     |
|          |                  |         208.64.8.13            |
|154.676   |     INVITE SDP ( g711U)                           |SIP From: sip:8182644371@66.159.235.87 To:sip:13234931422@208.64.8.13
|          |(5060)   ------------------>  (5060)               |
|154.678   |     100 Trying|                                   |SIP Status
|          |(5060)   <------------------  (5060)               |
|155.230   |     RTP (g711U)                                   |RTP Num packets:1498  Duration:29.958s SSRC:0x9BA14863
|          |(19568)  <------------------  (49840)              |
|156.151   |     183 Session Progress SDP ( g711U)             |SIP Status
|          |(5060)   <------------------  (5060)               |
|156.179   |     RTP (g711U)                                   |RTP Num packets:260  Duration:5.181s SSRC:0x3202F5F9
|          |(19568)  ------------------>  (49840)              |
|161.364   |     200 OK SDP ( g711U)                           |SIP Status
|          |(5060)   <------------------  (5060)               |
|161.367   |     ACK      |                                    |SIP Request
|          |(5060)   ------------------>  (5060)               |
|161.378   |     RTP (g711U)                                   |RTP Num packets:1192  Duration:23.818s SSRC:0x2F7DB77E
|          |(19568)  ------------------>  (49840)              |
|185.211   |     BYE      |                                    |SIP Request
|          |(5060)   <------------------  (5060)               |
|185.214   |     200 OK   |                                    |SIP Status
|          |(5060)   ------------------>  (5060)               |
```

Test Case 1.4.5:

Fax Re-Invite to T.38, g711 20ms

```
|Time      | 66.159.235.87                                     |
|          |         | 208.64.8.13                             |
|0.000     | INVITE SDP (g711U)                                |SIP From: sip:8182644371@66.159.235.87 To:sip:8188547456@208.64.8.13
|          |(5060) ------------------> (5060)                  |
|0.044     | 100 Trying|                                       |SIP Status
|          |(5060) <------------------ (5060)                  |
|0.844     | 180 Ringing                                       |SIP Status
|          |(5060) <------------------ (5060)                  |
|2.285     | 200 OK SDP ( g711u)                               |SIP Status
|          |(5060) <------------------ (5060)                  |
|2.293     | ACK      |                                        |SIP Request
|          |(5060) ------------------> (5060)                  |
|2.659     | INVITE SDP ( t38)                                 |SIP From: sip:8182644371@66.159.235.87 To:sip:8188547456@208.64.8.13
|          |(5060) ------------------> (5060)                  |
|2.697     | 100 Trying|                                       |SIP Status
|          |(5060) <------------------ (5060)                  |
|2.866     | 200 OK SDP ( t38)                                 |SIP Status
|          |(5060) <------------------ (5060)                  |
|2.874     | ACK      |                                        |SIP Request
|          |(5060) ------------------> (5060)                  |
|61.085    | BYE      |                                        |SIP Request
|          |(5060) ------------------> (5060)                  |
|61.136    | 200 OK   |                                        |SIP Status
|          |(5060) <------------------ (5060)                  |
```

Test Case 1.4.6:

Single choice, g729 20ms, DTMF RFC283

```
|Time      | 66.159.235.87                                   |
|          |                  |          208.64.8.13         |
|16.219    |     INVITE SDP ( g729a)                         |SIP From: sip:8886076937@66.159.235.87 To:sip:13234931422@208.64.8.13
|          |(5060)  ------------------>  (5060)               |
|16.222    |     100 Trying|                                 |SIP Status
|          |(5060)  <------------------  (5060)               |
|16.727    |     RTP (g729a)                                 |RTP Num packets:2183  Duration:43.657s SSRC:0x6F6EB7AF
|          |(12014)  <------------------  (49782)             |
|17.598    |     183 Session Progress SDP ( g729a)           |SIP Status
|          |(5060)  <------------------  (5060)               |
|17.632    |     RTP (g729a)                                 |RTP Num packets:1449  Duration:28.958s SSRC:0x6FC75316
|          |(12014)  ------------------>  (49782)             |
|46.599    |     200 OK SDP ( g729a)                         |SIP Status
|          |         |(5060)   <------------------  (5060)    |
|46.602    |     ACK     |                                   |SIP Request
|          |(5060)  ------------------>  (5060)               |
|46.610    |     RTP (g729a)                                 |RTP Num packets:689  Duration:13.759s SSRC:0x5ABA6A78
|          |(12014)  ------------------>  (49782)             |
|60.383    |     BYE     |                                   |SIP Request
|          |(5060)  ------------------>  (5060)               |
|60.389    |     200 OK   |                                  |SIP Status
|          |(5060)  <------------------  (5060)               |
```

Test Case 1.5.1:

Normal Call with no FROM number

Please ensure you set privacy using either a P-Asserted-Identitiy header or a Remote-Party-ID header to denote the actual calling party for billing and compliance purposes.

```
|Time      | 66.159.235.87                                   |
|          |         |          208.64.8.13                  |
|123.301   | INVITE SDP ( g711U )                            |SIP From: sip:Unknown@66.159.235.87 To:sip:8188547456@208.64.8.13
|          |(5060) ------------------> (5060)                 |
|123.304   | 100 Trying|                                     |SIP Status
|          |(5060) <------------------ (5060)                 |
|123.325   | 183 Session Progress SDP ( g711U)               |SIP Status
|          |(5060) <------------------ (5060)                 |
|123.353   | RTP (g711U)                                     |RTP Num packets:134 Duration:2.660s SSRC:0x319EB48F
|          |(13442) ------------------> (49734)               |
|123.435   | RTP (g711U)                                     |RTP Num packets:322 Duration:6.419s SSRC:0x5A02423F
|          |(13442) <------------------ (49734)               |
|126.017   | 200 OK SDP ( g711U)                             |SIP Status
|          |(5060) <------------------ (5060)                 |
|126.020   | ACK      |                                      |SIP Request
|          |(5060) ------------------> (5060)                 |
|126.034   | RTP (g711U)                                     |RTP Num packets:192 Duration:3.819s SSRC:0x2C5812E3
|          |(13442) ------------------> (49734)               |
|129.867   | BYE      |                                      |SIP Request
|          |(5060) <------------------ (5060)                 |
|129.870   | 200 OK  |                                       |SIP Status
|          |(5060) ------------------> (5060)                 |
```

Test Case 1.5.2:

Normal Call to toll free

```
|Time     | 66.159.235.87                                   |
|         |                  |           208.64.8.13        |
|12.741   |     INVITE SDP ( g711U)                         |SIP From: sip:8182644371@66.159.235.87 To:sip:18886076937@208.64.8.13
|         |(5060)  ------------------>  (5060)              |
|12.744   |     100 Trying|                                 |SIP Status
|         |(5060)  <------------------  (5060)              |
|16.627   |     RTP (g711U)                                 |RTP Num packets:524  Duration:10.499s SSRC:0xA452F3EF
|         |(11890)  <------------------  (49868)            |
|20.329   |     183 Session Progress SDP ( g711U)           |SIP Status
|         |(5060)  <------------------  (5060)              |
|20.355   |     RTP (g711U)                                 |RTP Num packets:11  Duration:0.201s SSRC:0x2249B35A
|         |(11890)  ------------------>  (49868)            |
|20.568   |     200 OK SDP ( g711U)                         |SIP Status
|         |(5060)  <------------------  (5060)              |
|20.571   |     ACK      |                                  |SIP Request
|         |(5060)  ------------------>  (5060)              |
|20.578   |     RTP (g711U)                                 |RTP Num packets:328  Duration:6.543s SSRC:0x17CDBA38
|         |(11890)  ------------------>  (49868)            |
|27.136   |     BYE      |                                  |SIP Request
|         |(5060)  ------------------>  (5060)              |
|27.141   |     200 OK   |                                  |SIP Status
|         |(5060)  <------------------  (5060)              |
```

Test Case 1.5.3:

International Call (011 + CC + XXXXXXXXXX)
Hong Kong weather -011-852-187-8200
Speaking Clock (UK) – 011-44-871-789-3642

```
|Time     | 66.159.235.87                                   |
|         |                  |           208.64.8.13        |
|19.353   |     INVITE SDP ( g711U)                         |SIP From: sip:8182644371@66.159.235.87 To:sip:0118521878200@208.64.8.13
|         |(5060)  ------------------>  (5060)              |
|19.356   |     100 Trying|                                 |SIP Status
|         |(5060)  <------------------  (5060)              |
|19.839   |     RTP (g711U)                                 |RTP Num packets:37  Duration:0.719s SSRC:0x86D5AF18
|         |(11810)  <------------------  (49880)            |
|20.995   |     RTP (g711U)                                 |RTP Num packets:476  Duration:9.519s SSRC:0xA31AF737
|         |(11810)  <------------------  (49880)            |
|22.425   |     183 Session Progress SDP ( g711U)           |SIP Status
|         |(5060)  <------------------  (5060)              |
|22.463   |     RTP (g711U)                                 |RTP Num packets:172  Duration:3.422s SSRC:0x747D29AB
|         |(11810)  ------------------>  (49880)            |
|25.894   |     200 OK SDP ( g711U)                         |SIP Status
|         |(5060)  <------------------  (5060)              |
|25.897   |     ACK      |                                  |SIP Request
|         |(5060)  ------------------>  (5060)              |
|25.903   |     RTP (g711U)                                 |RTP Num packets:230  Duration:4.587s SSRC:0x2F289189
|         |(11810)  ------------------>  (49880)            |
|30.523   |     BYE      |                                  |SIP Request
|         |(5060)  ------------------>  (5060)              |
|30.528   |     200 OK   |                                  |SIP Status
|         |(5060)  <------------------  (5060)              |
```

Test Case 1.5.4:

Service Call (311)

```
|Time     | 66.159.235.87                                    |
|         |                  |          208.64.8.13          |
|5.722    |     INVITE SDP ( g711U)                          |SIP From: sip:8182644371@66.159.235.87 To:sip:311@208.64.8.13
|         |(5060)  ------------------>  (5060)               |
|         |5.725      |       100 Trying|                    |SIP Status
|         |(5060)  <------------------  (5060)               |
|7.503    |     183 Session Progress SDP ( g711U)            |SIP Status
|         |(5060)  <------------------  (5060)               |
|7.526    |     RTP (g711U)                                  |RTP Num packets:246  Duration:4.899s SSRC:0x1AF0D829
|         |(19174)  <------------------  (49876)             |
|7.527    |     RTP (g711U)                                  |RTP Num packets:20  Duration:0.380s SSRC:0x5D2A707F
|         |(19174)  ------------------>  (49876)             |
|7.915    |     200 OK SDP ( g711U)                          |SIP Status
|         |(5060)  <------------------  (5060)               |
|7.919    |     ACK     |                                    |SIP Request
|         |(5060)  ------------------>  (5060)               |
|7.928    |     RTP (g711U)                                  |RTP Num packets:225  Duration:4.477s SSRC:0x761D4B27
|         |(19174)  ------------------>  (49876)             |
|12.431   |     BYE     |                                    |SIP Request
|         |(5060)  ------------------>  (5060)               |
|12.436   |     200 OK   |                                   |SIP Status
|         |(5060)  <------------------  (5060)               |
```

Test Case 1.5.5:

Emergency (911)

When placing this call indicate to the PSAP that you are placing a test call and ask to confirm the service address. This will NOT result in a 911 dispatch to your location. DO NOT HANG UP UNTIL YOU SPEAK WITH THE OPERATOR.

```
|Time     | 66.159.235.87                                    |
|         |          |            |        208.64.8.13       |
|5.722    |     INVITE SDP ( g711U)                          |SIP From: sip:8182644371@66.159.235.87 To:sip:911@208.64.8.13
|         |(5060)  ------------------>  (5060)               |
|5.725    |     100 Trying|                                  |SIP Status
|         |(5060)  <------------------  (5060)               |
|         |7.503      |   183 Session Progress SDP ( g711U)  |SIP Status
|         |(5060)  <------------------  (5060)               |
|7.526    |     RTP (g711U)                                  |RTP Num packets:246  Duration:4.899s SSRC:0x1AF0D829
|         |(19174)  <------------------  (49876)             |
|7.527    |     RTP (g711U)                                  |RTP Num packets:20  Duration:0.380s SSRC:0x5D2A707F
|         |(19174)  ------------------>  (49876)             |
|7.915    |     200 OK SDP ( g711U)                          |SIP Status
|         |(5060)  <------------------  (5060)               |
|7.919    |     ACK     |                                    |SIP Request
|         |(5060)  ------------------>  (5060)               |
|7.928    |     RTP (g711U)                                  |RTP Num packets:225  Duration:4.477s SSRC:0x761D4B27
|         |(19174)  ------------------>  (49876)             |
|12.431   |     BYE     |                                    |SIP Request
|         |(5060)  ------------------>  (5060)               |
|12.436   |     200 OK   |                                   |SIP Status
|         |(5060)  <------------------  (5060)               |
```

6.2 Inbound Calls

Test Case 2.1.1:

Normal Call, Ring Back From PSTN End, 18x with SDP, With Answer , Hang-up from PSTN.

```
|Time     | 66.159.235.87                                        |
|         |                 |          208.64.8.13               |
|123.301  |     INVITE SDP ( g711U )                             |SIP From: sip:8188547456@66.159.235.87 To:sip:8182644371@208.64.8.13
|         |(5060)  ------------------>  (5060)                   |
|123.304  |     100 Trying|                                      |SIP Status
|         |(5060)  <------------------  (5060)                   |
|123.325  |     183 Session Progress SDP ( g711U)                |SIP Status
|         |(5060)  <------------------  (5060)                   |
|123.353  |     RTP (g711U)                                      |RTP Num packets:134  Duration:2.660s SSRC:0x319EB48F
|         |(13442)  ------------------>  (49734)                 |
|123.435  |     RTP (g711U)                                      |RTP Num packets:322  Duration:6.419s SSRC:0x5A02423F
|         |(13442)  <------------------  (49734)                 |
|126.017  |     200 OK SDP ( g711U)                              |SIP Status
|         |(5060)  <------------------  (5060)                   |
|126.020  |     ACK      |                                       |SIP Request
|         |(5060)  ------------------>  (5060)                   |
|126.034  |     RTP (g711U)                                      |RTP Num packets:192  Duration:3.819s SSRC:0x2C5812E3
|         |(13442)  ------------------>  (49734)                 |
|129.867  |     BYE      |                                       |SIP Request
|         |(5060)  <------------------  (5060)                   |
|129.870  |     200 OK   |                                       |SIP Status
|         |(5060)  ------------------>  (5060)                   |
```

Test Case 2.1.2:

Normal Call, Ring Back From PSTN End, 18x with SDP, With Answer, Hang-up from Customer Proxy.

```
|Time     | 66.159.235.87                                        |
|         |                 |          208.64.8.13               |
|123.301  |     INVITE SDP ( g711U )                             |SIP From: sip:8188547456@66.159.235.87 To:sip:8182644371@208.64.8.13
|         |(5060)  ------------------>  (5060)                   |
|123.304  |     100 Trying|                                      |SIP Status
|         |(5060)  <------------------  (5060)                   |
|123.325  |     183 Session Progress SDP ( g711U)                |SIP Status
|         |(5060)  <------------------  (5060)                   |
|123.353  |     RTP (g711U)                                      |RTP Num packets:134  Duration:2.660s SSRC:0x319EB48F
|         |(13442)  ------------------>  (49734)                 |
|123.435  |     RTP (g711U)                                      |RTP Num packets:322  Duration:6.419s SSRC:0x5A02423F
|         |(13442)  <------------------  (49734)                 |
|126.017  |     200 OK SDP ( g711U)                              |SIP Status
|         |(5060)  <------------------  (5060)                   |
|126.020  |     ACK      |                                       |SIP Request
|         |(5060)  ------------------>  (5060)                   |
|126.034  |     RTP (g711U)                                      |RTP Num packets:192  Duration:3.819s SSRC:0x2C5812E3
|         |(13442)  ------------------>  (49734)                 |
|129.867  |     BYE      |                                       |SIP Request
|         |(5060)  ------------------>  (5060)                   |
|129.870  |     200 OK   |                                       |SIP Status
|         |(5060)  <------------------  (5060)                   |
```

Test Case 2.2.1:

Ring No Answer, SIP End Hangup During Ring back, SIP Resp Cancel & SIP Resp 487

```
|Time     | 66.159.235.87                                       |
|         |                 |        208.64.8.13               |
|3.654    |     INVITE SDP ( g711U )                            |SIP From: sip:8188547456@66.159.235.87 To:sip:8182644371@208.64.8.13
|         |(5060)  ------------------>  (5060)                  |
|3.657    |     100 Trying|                                     |SIP Status
|         |(5060)  <------------------  (5060)                  |
|3.680    |     183 Session Progress SDP ( g711U)               |SIP Status
|         |(5060)  <------------------  (5060)                  |
|3.701    |     RTP (g711U)                                     |RTP Num packets:81  Duration:1.599s SSRC:0x3BF31B37
|         |(10514)  ------------------>  (49742)                |
|3.777    |     RTP (g711U)                                     |RTP Num packets:78  Duration:1.538s SSRC:0x303272F2
|         |(10514)  <------------------  (49742)                |
|5.321    |     CANCEL   |                                      |SIP Request
|         |(5060)  ------------------>  (5060)                  |
|5.322    |     200 OK   |                                      |SIP Status
|         |(5060)  <------------------  (5060)                  |
|5.328    |     487 Request Terminated                          |SIP Status
|         |(5060)  <------------------  (5060)                  |
|5.331    |     ACK      |                                      |SIP Request
|         |(5060)  ------------------>  (5060)                  |
```

Test Case 2.2.2:

Ring No Answer, Timeout

```
|Time     | 66.159.235.87                                       |
|         |                |        208.64.8.13                |
|78.655   |     INVITE SDP ( g711U )                            |SIP From: sip:8188547456@66.159.235.87 To:sip:8182644371@208.64.8.13
|         |(5060)  ------------------>  (5060)                  |
|78.658   |     100 Trying|                                     |SIP Status
|         |(5060)  <------------------  (5060)                  |
|78.758   |     180 Ringing                                     |SIP Status
|         |(5060)  <------------------  (5060)                  |
|138.818  |     504 Server Time-out                             |SIP Status
|         |(5060)  <------------------  (5060)                  |
|138.821  |     ACK      |                                      |SIP Request
|         |(5060)  ------------------>  (5060)                  |
```

Test Case 2.2.3:

User Busy, SIP Resp 486

```
|Time     | 66.159.235.87                                       |
|         |        |        208.64.8.13                        |
|78.655   |     INVITE SDP ( g711U )                            |SIP From: 8188547456 sip:@66.159.235.87 To:sip:8182644371@208.64.8.13
|         |(5060)  ------------------>  (5060)                  |
|78.658   |     100 Trying|                                     |SIP Status
|         |(5060)  <------------------  (5060)                  |
|78.758   |     486 Busy Here                                   |SIP Status
|         |(5060)  <------------------  (5060)                  |
||78.858  |     ACK      |                                      |SIP Request
|         |(5060)  ------------------>  (5060)                  |
```

Test Case 2.3.1:

1 Hour hold time & SIP Session Timers

```
|Time      | 66.159.235.87                                    |
|          |                    |          208.64.8.13        |
|0.000     |     INVITE SDP ( g711U)                          |SIP From: sip:8188547456@66.159.235.87 To:sip:8182644371@208.64.8.13
|          |(5060)  ------------------>  (5060)               |
|0.003     |     100 Trying|                                  |SIP Status
|          |(5060)  <------------------  (5060)               |
|0.105     |     180 Ringing                                  |SIP Status
|          |(5060)  <------------------  (5060)               |
|6.020     |     183 Session Progress SDP ( g711U)            |SIP Status
|          |(5060)  <------------------  (5060)               |
|6.022     |     200 OK SDP ( g711U)                          |SIP Status
|          |(5060)  <------------------  (5060)               |
|6.026     |     ACK     |                                    |SIP Request
|          |(5060)  ------------------>  (5060)               |
|936.060   |     INVITE SDP ( g711U)                          |SIP Request
|          |(5060)  <------------------  (5060)               |
|936.063   |     100 Trying|                                  |SIP Status
|          |(5060)  ------------------>  (5060)               |
|936.063   |     200 OK SDP ( g711U)                          |SIP Status
|          |(5060)  ------------------>  (5060)               |
|936.070   |     ACK     |                                    |SIP Request
|          |(5060)  <------------------  (5060)               |
|1866.105        |     INVITE SDP ( g711U)                    |SIP Request
|          |(5060)  <------------------  (5060)               |
|1866.109        |     100 Trying|                            |SIP Status
|          |(5060)  ------------------>  (5060)               |
|1866.109        |     200 OK SDP ( g711U)                    |SIP Status
|          |(5060)  ------------------>  (5060)               |
|1866.118        |     ACK     |                              |SIP Request
|          |(5060)  <------------------  (5060)               |
|2796.175        |     INVITE SDP ( g711U)                    |SIP Request
|          |(5060)  <------------------  (5060)               |
|2796.179        |     100 Trying|                            |SIP Status
|          |(5060)  ------------------>  (5060)               |
|2796.179        |     200 OK SDP ( g711U)                    |SIP Status
|          |(5060)  ------------------>  (5060)               |
|2796.185        |     ACK     |                              |SIP Request
|          |(5060)  <------------------  (5060)               |
```

Test Case 2.4.1:

Single choice, g711 20ms

```
|Time     | 66.159.235.87                                          |
|         |                 |           208.64.8.13                |
|8.597    |    INVITESDP ( g711U)                                  |SIP From: sip:3234931422@66.159.235.87 To:sip:8182644371@208.64.8.13
|         |(5060)   ------------------>  (5060)                    |
|8.600    |       100 Trying|                                      |SIP Status
|         |(5060)   <------------------  (5060)                    |
|9.136    |       RTP (g711U)                                      |RTP Num packets:2985  Duration:59.696s SSRC:0x8B93B6CF
|         |(14874)  <------------------  (49796)                   |
|10.125   |       183 Session Progress SDP ( g711U)                |SIP Status
|         |         |(5060)   <------------------  (5060)          |
|10.154   |       RTP (g711U)                                      |RTP Num packets:329  Duration:6.559s SSRC:0x4561C605
|         |(14874)  ------------------>  (49796)                   |
|16.723   |       200 OK SDP ( g711U)                              |SIP Status
|         |(5060)   <------------------  (5060)                    |
|16.726   |       ACK      |                                       |SIP Request
|         |(5060)   ------------------>  (5060)                    |
|16.734   |       RTP (g711U)                                      |RTP Num packets:2608  Duration:52.136s SSRC:0x2B5A9D00
|         |(14874)  ------------------>  (49796)                   |
|68.872   |       BYE      |                                       |SIP Request
|         |(5060)   <------------------  (5060)                    |
|68.875   |       200 OK   |                                       |SIP Status
|         |(5060)   ------------------>  (5060)                    |
```

```
v=0
o=root 1562814183 1562814183 IN IP4 66.159.235.87
s=Asterisk PBX 1.6.0.26-FONCORE-r78
c=IN IP4 66.159.235.87
b=CT:384
t=0 0
m=audio 11332 RTP/AVP 0 8
a=rtpmap:0 PCMU/8000
a=rtpmap:8 PCMA/8000
a=silenceSupp:off - - - -
a=ptime:20
a=sendrecv
```

Test Case 2.4.2:

InBand DTMF, g711 20ms

```
|Time     | 66.159.235.87                                          |
|         |                 |           208.64.8.13                |
|154.676  |       INVITE SDP ( g711U)                              |SIP From: sip:13234931422@66.159.235.87 To:sip:8182644371@208.64.8.13
|         |(5060)   ------------------>  (5060)                    |
|154.678  |       100 Trying|                                      |SIP Status
|         |         |(5060)   <------------------  (5060)          |
|155.230  |       RTP (g711U)                                      |RTP Num packets:1498  Duration:29.958s SSRC:0x9BA14863
|         |(19568)  <------------------  (49840)                   |
|156.151  |       183 Session Progress SDP ( g711U)                |SIP Status
|         |(5060)   <------------------  (5060)                    |
|156.179  |       RTP (g711U)                                      |RTP Num packets:260  Duration:5.181s SSRC:0x3202F5F9
|         |(19568)  ------------------>  (49840)                   |
|         |161.364  |       200 OK SDP ( g711U)                    |SIP Status
|         |         |(5060)   <------------------  (5060)          |
|161.367  |       ACK      |                                       |SIP Request
|         |(5060)   ------------------>  (5060)                    |
|161.378  |       RTP (g711U)                                      |RTP Num packets:1192  Duration:23.818s SSRC:0x2F7DB77E
|         |(19568)  ------------------>  (49840)                   |
|185.211  |       BYE      |                                       |SIP Request
|         |         |(5060)   <------------------  (5060)          |
|185.214  |       200 OK   |                                       |SIP Status
|         |(5060)   ------------------>  (5060)                    |
```

Test Case 2.4.3:

DTMF RFC2833 named events, g711 20ms

```
|Time     | 66.159.235.87                                  |
|         |          |          |       208.64.8.13        |
|9.582    |     INVITE SDP ( g711U)                        |SIP From: sip:13234931422@66.159.235.87 To:sip:8182644371@208.64.8.13
|         |(5060)   ------------------>  (5060)            |
|9.584    |     100 Trying|                                |SIP Status
|         |(5060)   <------------------  (5060)            |
|10.066   |     RTP (g711U)                                |RTP Num packets:2637  Duration:52.736s SSRC:0x12C74C40
|         |(15990)  <------------------  (49852)           |
|11.008   |     183 Session Progress SDP ( g711U)          |SIP Status
|         |(5060)   <------------------  (5060)            |
|11.032   |     RTP (g711U)                                |RTP Num packets:453  Duration:9.039s SSRC:0x130D55E3
|         |          |(15990)  ------------------>  (49852)|
|20.082   |     200 OK SDP ( g711U)                        |SIP Status
|         |(5060)   <------------------  (5060)            |
|20.085   |     ACK      |                                 |SIP Request
|         |(5060)   ------------------>  (5060)            |
|20.093   |     RTP (g711U)                                |RTP Num packets:2138  Duration:42.736s SSRC:0x217E7D92
|         |(15990)  ------------------>  (49852)           |
|62.835   |     BYE      |                                 |SIP Request
|         |(5060)   <------------------  (5060)            |
|62.838   |     200 OK   |                                 |SIP Status
|         |(5060)   ------------------>  (5060)            |
                                                                     |
```

Test Case 2.4.4:

Fax InBand, g711 20ms

```
|Time     | 66.159.235.87                                  |
|         |          |          |       208.64.8.13        |
|154.676  |     INVITE SDP ( g711U)                        |SIP From: sip:13234931422@66.159.235.87 To:sip:8182644371@208.64.8.13
|         |(5060)   ------------------>  (5060)            |
|154.678  |     100 Trying|                                |SIP Status
|         |(5060)   <------------------  (5060)            |
|155.230  |     RTP (g711U)                                |RTP Num packets:1498  Duration:29.958s SSRC:0x9BA14863
|         |(19568)  <------------------  (49840)           |
|156.151  |     183 Session Progress SDP ( g711U)          |SIP Status
|         |(5060)   <------------------  (5060)            |
|156.179  |     RTP (g711U)                                |RTP Num packets:260  Duration:5.181s SSRC:0x3202F5F9
|         |(19568)  ------------------>  (49840)           |
|161.364  |     200 OK SDP ( g711U)                        |SIP Status
|         |(5060)   <------------------  (5060)            |
|161.367  |     ACK      |                                 |SIP Request
|         |(5060)   ------------------>  (5060)            |
|161.378  |     RTP (g711U)                                |RTP Num packets:1192  Duration:23.818s SSRC:0x2F7DB77E
|         |(19568)  ------------------>  (49840)           |
|185.211  |     BYE      |                                 |SIP Request
|         |(5060)   <------------------  (5060)            |
|185.214  |     200 OK   |                                 |SIP Status
|         |(5060)   ------------------>  (5060)            |
```

Test Case 2.4.5:

Fax Re-Invite to T.38, g711 20ms

```
|Time     | 66.159.235.87                            |
|         |            | 208.64.8.13                 |
|0.000    | INVITE SDP ( g729 g711U)                 |SIP From: sip:8182644371@66.159.235.87 To:sip:8188547456@208.64.8.13
|         |(5060) ------------------> (5060)         |
|0.044    | 100 Trying           |                   |SIP Status
|         |(5060) <------------------ (5060)         |
|0.844    | 180 Ringing                              |SIP Status
|         |(5060) <------------------ (5060)         |
|2.285    | 200 OK SDP ( g711)                       |SIP Status
|         |(5060) <------------------ (5060)         |
|2.293    | ACK     |                                |SIP Request
|         |(5060) ------------------> (5060)         |
|2.659    | INVITE SDP ( t38)                        |SIP From: sip:8182644371@66.159.235.87 To:sip:8188547456@208.64.8.13
|         |(5060) ------------------> (5060)         |
|2.697    | 100 Trying|                              |SIP Status
|         |(5060) <------------------ (5060)         |
|2.866    | 200 OK SDP ( t38)                        |SIP Status
|         |(5060) <------------------ (5060)         |
|2.874    | ACK     |                                |SIP Request
|         |(5060) ------------------> (5060)         |
|61.085   | BYE     |                                |SIP Request
|         |(5060) ------------------> (5060)         |
|61.136   | 200 OK  |                                |SIP Status
|         |(5060) <------------------ (5060)         |
```

Test Case 2.5.1:

Normal Call with no FROM number

```
|Time     | 208.64.8.13                              |
|         |           | 66.159.235.87                |
|3.667    | INVITE SDP ( g711U g729 telephone-event) |SIP From: sip:anonymous@208.64.8.13:5060 To:sip:8182644371@66.159.235.87
|         |(5060) ------------------> (5060)         |
|3.673    | 100 Trying|                              |SIP Status
|         |(5060) <------------------ (5060)         |
|4.087    | 180 Ringing                              |SIP Status
|         |(5060) <------------------ (5060)         |
|4.113    | 180 Ringing                              |SIP Status
|         |(5060) <------------------ (5060)         |
|8.407    | 200 OK SDP ( g711U)                      |SIP Status
|         |(5060) <------------------ (5060)         |
|8.415    | ACK     |                                |SIP Request
|         |(5060) ------------------> (5060)         |
|8.426    | RTP (g711U)                              |RTP Num packets:41 Duration:0.819s SSRC:0x21393734
|         |(50108) <------------------ (14634)       |
|8.486    | RTP (g711U)                              |RTP Num packets:39 Duration:0.779s SSRC:0xA93D5285
|         |(50108) ------------------> (14634)       |
|9.271    | BYE     |                                |SIP Request
|         |(5060) <------------------ (5060)         |
|9.276    | 200 OK  |                                |SIP Status
|         |(5060) ------------------> (5060)         |
```

```
INVITE sip:8182644371@66.159.235.87:5060;transport=udp SIP/2.0
Via: SIP/2.0/UDP 208.64.8.13:5060;branch=z9hG4bKfi36h0203ov17fs2o3c0.1
Allow-Events: message-summary, refer, dialog, line-seize, presence, call-info
Max-Forwards: 69
Call-ID: 333837CD@192.168.22.50
From: "Anonymous" <sip:anonymous@208.64.8.13:5060>;tag=192.168.22.50+1+1d942f+fe35a170
To: <sip:8182644371@66.159.235.87>
CSeq: 111174205 INVITE
Expires: 180
Organization: Phone Power
Supported: 100rel, resource-priority
Content-Length: 164
Content-Type: application/sdp
Contact: "Anonymous" <sip:SD8f5rd-vp9pmjrfsar7sflvprmu1ptp9plqvsvp6hvjh0pgveip1or8fbo50sc4v1@208.64.8.65:5060;transport=udp>
v=0
o=- 2701192565 2701192565 IN IP4 208.64.8.13
s=-
c=IN IP4 208.64.8.65
t=0 0
m=audio 50108 RTP/AVP 0 18 101
a=rtpmap:101 telephone-event/8000
a=ptime:20
```

Test Case 2.5.2:

Call to Toll Free number

```
|Time      | 66.159.235.87                                     |
|          |          |        208.64.8.13                     |
|12.741    |     INVITE SDP ( g711U)                           |SIP From: sip:18886076937@66.159.235.87 To:sip:8182644371@208.64.8.13
|          |(5060)  ------------------>  (5060)                 |
|12.744    |     100 Trying|                                   |SIP Status
|          |(5060)  <------------------  (5060)                 |
|16.627    |     RTP (g711U)                                   |RTP Num packets:524  Duration:10.499s SSRC:0xA452F3EF
|          |(11890)  <------------------  (49868)              |
|20.329    |     183 Session Progress SDP ( g711U)             |SIP Status
|          |(5060)  <------------------  (5060)                 |
|20.355    |     RTP (g711U)                                   |RTP Num packets:11  Duration:0.201s SSRC:0x2249B35A
|          |(11890)  ------------------>  (49868)              |
|20.568    |     200 OK SDP ( g711U)                           |SIP Status
|          |        |(5060)   <------------------  (5060)      |
|20.571    |     ACK      |                                    |SIP Request
|          |(5060)  ------------------>  (5060)                 |
|20.578    |     RTP (g711U)                                   |RTP Num packets:328  Duration:6.543s SSRC:0x17CDBA38
|          |(11890)  ------------------>  (49868)              |
|27.136    |     BYE      |                                    |SIP Request
|          |(5060)  ------------------>  (5060)                 |
|27.141    |     200 OK   |                                    |SIP Status
|          |(5060)  <------------------  (5060)                 |
```

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