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## Revision History

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<th>Description</th>
</tr>
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<tr>
<td>December 2007</td>
<td>003</td>
<td>Added support for QOS, G.729.1 Codec, and ILBC Codec.</td>
</tr>
<tr>
<td>September 2007</td>
<td>002</td>
<td>Added support for the T.38 component. Removed support for the Intel® IXP42X product line of network processors and the Intel® IXP425 network gateway development platform.</td>
</tr>
<tr>
<td>July 2007</td>
<td>001</td>
<td>Initial release.</td>
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1.0 Introduction

The Intel® Infrastructure DSP Solution Version 1.2 is a software module that provides the basic voice and signal processing functionalities for Voice-Over-Internet Protocol (VoIP) applications on the Intel® IXP43X product line of network processors. The software is delivered as a library component that is meant to be integrated with a VoIP application program that uses the functionalities provided. A demo program, supported on Linux* platform is available to exercise the functionalities of the DSP solution library for evaluation purposes.

The demo program has been implemented to allow maximum flexibility in controlling and setting up the DSP solution. The document gives an overview of using this demo program.

Note: The Intel® Infrastructure DSP Solution Version 1.2 is referred to as the “DSP solution” throughout this document.

1.1 Terminology

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGC</td>
<td>Automatic Gain Control for voice data towards IP network</td>
</tr>
<tr>
<td>ALC</td>
<td>Automatic Level Control</td>
</tr>
<tr>
<td>CLI</td>
<td>Command Line Interface</td>
</tr>
<tr>
<td>DSCP</td>
<td>Differentiated Service Code Point</td>
</tr>
<tr>
<td>DSP</td>
<td>Digital Signal Processing</td>
</tr>
<tr>
<td>EC</td>
<td>Echo Cancellation</td>
</tr>
<tr>
<td>FEC</td>
<td>Forward Error Correction</td>
</tr>
<tr>
<td>FSK</td>
<td>Frequency Shift Keying</td>
</tr>
<tr>
<td>FXO</td>
<td>Foreign Exchange Office</td>
</tr>
<tr>
<td>FXS</td>
<td>Foreign Exchange Subscriber</td>
</tr>
<tr>
<td>HSS</td>
<td>High Speed Serial port</td>
</tr>
<tr>
<td>iLBC</td>
<td>internet Low Bitrate Codec</td>
</tr>
<tr>
<td>JB</td>
<td>Jitter Buffer</td>
</tr>
<tr>
<td>I/F</td>
<td>Interface</td>
</tr>
<tr>
<td>IP</td>
<td>Internet Protocol</td>
</tr>
<tr>
<td>ISR</td>
<td>Interrupt Service Routine</td>
</tr>
<tr>
<td>NLP</td>
<td>Non-linear Processing (for EC)</td>
</tr>
<tr>
<td>PCM</td>
<td>Pulse Coded Modulation</td>
</tr>
<tr>
<td>QOS</td>
<td>Quality of Service</td>
</tr>
<tr>
<td>RTP</td>
<td>Real Time Transport Protocol</td>
</tr>
<tr>
<td>SLIC</td>
<td>Subscriber Line Interface circuit</td>
</tr>
<tr>
<td>SP</td>
<td>Signal Processing</td>
</tr>
<tr>
<td>TC</td>
<td>Traffic Class</td>
</tr>
<tr>
<td>UDP</td>
<td>User Datagram Protocol</td>
</tr>
<tr>
<td>VAD</td>
<td>Voice Activity Detection</td>
</tr>
</tbody>
</table>
## 2.0 Demo Software Architecture

Figure 1 shows the illustration of the demo software architecture. Each module is described as follows:

**Command Line Interface** – This module serves as the user interface to display the menu and to receive the user selections and inputs from the keyboard. In Linux, it runs from the main thread after initialization. Based on user inputs, the Command Line Interface may perform one of the following:

1. Send a control message to a resource component
2. Send a user-defined message to the Message Agent
3. Send a message to the Client Task via the outbound message queue to start a demo routine
4. Call an initial routine to start a demo procedure.

**DSP Software Client Task** – This module is executed from a separate task or thread. It is intended to handle most of the control procedures that are implemented as message-driven state machines. The task is pending on the DSP solution's outbound message queue through which all reply messages and other events are consolidated.

**HSS driver** – This is a module that enables the DSP solution to read from and write to the HSS component of the Intel® IXP43X product line of network processors. The HSS driver component is used to transmit and receive PCM data from analog telephones.

**SLIC driver** – This is a platform-specific module to support analog telephone interface.

In Linux, only the HSS driver and SLIC driver are in kernel mode and other modules (DSP solution, Command Line Interface and DSP solution Client Task) are in the user mode.
3.0 Operation Guide

3.1 Overview

This guide describes the operation of the main demo program. For instructions on how to load/install the program in the Linux environment, refer to the Intel® Infrastructure DSP Solution Version 1.2 Release Notes.

Check that the J8 & J9 jumpers are plugged in to the Intel® IXP435 multi-service residential gateway reference platform. If not, plug in the jumpers.

The demo program of the DSP solution is started by running the executable `/IxDspCodeletApp`. You will be prompted to select the telephone interface, and country code selection. The example given below for the Intel® IXP435 multi-service residential gateway reference platform is for demo purposes and you can set other parameters based on your requirements.

Set the parameters as shown in the following table:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set country code (1:US, 81:Japan, 86:China)</td>
<td>1</td>
</tr>
<tr>
<td>Enter companding mode (0:A-law, 1:u-law, 2:Linear)</td>
<td>1</td>
</tr>
<tr>
<td>Enter SLIC type (0:Narrow band,1:Wide band)</td>
<td>0</td>
</tr>
</tbody>
</table>

```
./IxDspCodeletApp
Set country code (1:US, 81:Japan, 86:China) - 1
Enter companding mode (0:A-law, 1:u-law, 2:Linear) -1
Enter slic type (0:Narrow band,1:Wide band) - 0
```
Existing NPEA Image ID: 0x109E0000

New NPEA Image ID: 0x109E0000

---- Initializing HSS Device ----
DLcid 01020000-09

******************************************************************************
*         Intel Infrastructure DSP Solution       *
*         Release 1.2                        *
*      Dec 17 2007, 20:01:15                  *
*      Intel Corporation                    *
******************************************************************************

----------------------------------------
-      IxDspCodelet Demo Menu          -
----------------------------------------

0 - Print Menu
1 - Channel Setup
2 - Channel Teardown
3 - Show Channel Parameters
4 - Show Resource Parameters
5 - Set a Parameter
6 - Caller ID Demo
7 - Gateway and Fax Bypass Demo
8 - 3-Way Call Demo
9 - Player Demo
10 - SLIC APIs
11 - Diagnostic
12 - Socket Configuration
13 - CPU Occupancy
14 - CIDCW Demo
15 - Pulse Dial
16 - Set Plug-in parameter(s)
17 - Show Plug-in parameter(s)
18 - Multiconference Demo
19 - Exit
Please select test item -
ClientProcess started

**Note:**
The configuration information of the DSP solution is displayed to show the available number of TDM, IP terminations, the number of Audio Players, the number of mixer ports for conferencing, and the country code.

After initialization, the function `ixDspCodeletDemoMenu` is automatically invoked to bring up a menu for controlling the demo program.

```
./IxDspCodeletApp
```

Set country code (1:US, 81:Japan, 86:China) - 1
Enter companding mode (0:A-law, 1:u-law, 2:Linear) - 1
Enter slic type (0:Narrow band, 1:Wide band) - 0

Existing NPEA Image ID: 0x109E0000

New NPEA Image ID: 0x109E0000

---- Initializing HSS Device ----
DLCid 01020000-09
*************************************************** Intel Infrastructure DSP Solution *** Release 1.2 ***
Dec 17 2007, 20:01:15 *** Intel Corporation ***
***************************************************

- IxDspCodelet Demo Menu -

```
0 - Print Menu
1 - Channel Setup
2 - Channel Teardown
3 - Show Channel Parameters
4 - Show Resource Parameters
5 - Set a Parameter
6 - Caller ID Demo
7 - Gateway and Fax Bypass Demo
8 - 3-Way Call Demo
```
9 - Player Demo
10 - SLIC APIs
11 - Diagnostic
12 - Socket Configuration
13 - CPU Occupancy
14 - CICCW Demo
15 - Pulse Dial
16 - Set Plug-in parameter(s)
17 - Show Plug-in parameter(s)
18 - Multiconference Demo
19 - Exit

Please select test item -

ClientProcess started

To exit the test menu at the main menu enter 19, and re-enter at anytime by executing:

./IxDspCodeletApp

Menu selection 1 sets up a call according to default parameters and prompts for codec type. If 0 is entered for channel number, all channels are setup (as IXP435 reference platform has two FXS and one FXO port).

The pairs of call are setup as loopback calls from Ethernet port 0 to port 1. Once the calls are setup, audio is transferred between the channel pairs in the respective voice channels.

Menu selection 2 tears down a call on the specified channel(s). Menu selection 5 allows parameters of the channel to be changed. It also displays the current settings of the parameters and a short description when queried. All parameters as listed in the Intel® Infrastructure DSP Solution Version 1.2 API Reference Manual are accessible. For a more detailed description of the parameters, refer to the Intel® Infrastructure DSP Solution Version 1.2 API Reference Manual and the Intel® Infrastructure DSP Solution Version 1.2 Programmer’s Guide.

The modules listed below are assumed to be built into the application. For detailed information on how to build pluggable modules into the application, refer to the Intel® Infrastructure DSP Solution Version 1.2 Release Notes and the Intel® Infrastructure DSP Solution Version 1.2 Programmer’s Guide Appendix A.

- G711_10ms u-Law
- G711_10ms A-Law
- G729a/b
- G723.1
- G722
- G726 40 Kbps
- G726 32 Kbps
- G726 24 Kbps
- G726 16 Kbps
- G729.1
- iLBC 30 ms
- iLBC 20 ms
- T.38

If a codec that is not built into the application is selected while performing the test, it throws an error.

Note:
To run G.729.1 encoder/decoder in wideband mode, set G729.1 PCM mode parameter in ENC (encoder)/DEC (decoder) components to Wide Band. Please refer Section 3.7 to set a parameter.

3.2 Initial Setup

Socket Configuration should be done before any other menu options can be exercised. Select 12 – Socket Configuration from the IxDspCodelet Demo Menu as shown below. The example shown below assumes that you have setup Ethernet port 0 (for example, `ifconfig ixp1 192.168.10.1`) and port 1 (for example, `ifconfig ixp2 192.168.20.1`) for the IXP435 reference platform as per the Intel® Infrastructure DSP Solution Version 1.2 Release Notes. The fourth socket is not used.

Please select test item - 12

```
- IxDspCodelet Socket Menu -
0 - Print Menus
1 - Channel Configuration
2 - Disable Channel
3 - Show Channel Configuration
4 - Show Channel Statistics
5 - Create Sockets
6 - Default Configuration
7 - Exit
```

Please select test item - 6

Enabling Default Channel Configuration
ixp0/ixp2 IPAddrs of : 192.168.10.1 ixp1 IPAddr of : 192.168.20.1 is assumed

*** DSP Codelet Socket And Voice Channel Config Info ***

Chan#:RxSock#:TxSock#:Cfg:Act:Loc Port: Remote IP:Rem Port
In case SLIC is initialized as A-law in NarrowBand:

The default setting of PCM format in NET component is Mu-law. If the companding mode is selected as A-law during SLIC initialization, it requires changing the PCM format parameter in NET component to A-law. The following sequence of operations can be used to change the parameter:

From IxDspCodelet Demo Menu select the following item: 5 - Set a Parameter

Please select test item - 5
Enter the instance number (1,2,...; 0 for all instance) - 0
Enter the resource number

Enter the parameter id - 2
Enter the parameter value - 0

3.3 Menu Selection 1: Channel Setup

This allows calls to be setup. Individual channels can be setup by specifying the channel number. Channels number from 1 to N, where N is the number of channels supported. N is determined by the number of enabled time slots during HSS initialization. The DSP solution is setup to support from one to four channels, depending on runtime initialization.

After the channels are setup, you are prompted to select the codec. The frames per packet is set to 1 (10ms) for the demo. If you select the coder type menu option 0 for PassThru instead of CODEC, then the voice data passes without any processing. To get the PassThru behavior, you should also set the NET component parameter PCM format to PassThru. Refer to Section 3.7 to set a parameter.

Please select test item - 1
Enter the channel number (1,2,...; 0 for all channels) - 0

Coder types :

0:PassThru (for debug only)
1:G711_10ms u-Law
2:G711_10ms A-Law
3:G729a/b
4:G723.1
5:G722

-----:-------:-------:---:---:--------:---------------:--------
3.4 Menu Selection 2: Channel Teardown

By selecting item 2 of the menu, the channel(s) will be torn down. If it is never setup or already torn down, the informational error message is displayed.

Please select test item - 2
Enter the channel number (1,2,...; 0 for all channels) - 0

3.5 Menu Selection 3: Show Channel Parameters

This displays all the current parameters of the specified channel(s). Resource selections are NET (HSS interface and Echo Canceller); DEC (Decoder); ENC (Encoder); TG (Tone Generator, including FSK modulator), and TD (Tone Detector, including FSK demodulator). For further information on the parameters, refer to the Intel® Infrastructure DSP Solution Version 1.2 API Reference Manual and Intel® Infrastructure DSP Solution Version 1.2 Programmer’s Guide. All parameters of the specified channel are printed as below:

Note: AEC component in the NET Resource is not supported and all AEC parameters shown in the NET Resource Parameters are also not supported.

A codec type of -1 indicates that the call has not yet been set up.

Please select test item - 3
Enter the channel number (1,2,...; 0 for all channels) - 1

DSP resource NET[1] parameters
id value definition
-----------------------------------------------------------------
<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1</td>
<td>Current state (0:Idle, 1:Active)</td>
<td></td>
</tr>
<tr>
<td>1 3</td>
<td>L-Port Stream ID (T-Port Base - TDM:0, IP:3, Player:11, Mixer:15)</td>
<td></td>
</tr>
<tr>
<td>2 1</td>
<td>PCM format (0:A-law, 1:Mu-Law, 2:PassThru)</td>
<td></td>
</tr>
<tr>
<td>3 1</td>
<td>EC enable/disable (0:OFF, 1:ON)</td>
<td></td>
</tr>
<tr>
<td>4 6</td>
<td>EC tail length (2 ~ 64, multiple of 2, in 1-ms unit)</td>
<td></td>
</tr>
<tr>
<td>5 0</td>
<td>EC NLP (0:OFF, 1:NLP ON &amp; SUP OFF, 2:NLP &amp; SUP ON)</td>
<td></td>
</tr>
<tr>
<td>6 0</td>
<td>EC Freeze (0:adaptive, 1:freeze)</td>
<td></td>
</tr>
<tr>
<td>7 20</td>
<td>EC Delay compensation (0 ~ 240 in 0.125 ms unit)</td>
<td></td>
</tr>
<tr>
<td>8 100</td>
<td>Flash hook detection window (in 10-ms unit)</td>
<td></td>
</tr>
<tr>
<td>9 0</td>
<td>Timer counter (in 10-ms unit)</td>
<td></td>
</tr>
<tr>
<td>10 0</td>
<td>Rx Gain (+15 ~ -40 in 1 dB unit)</td>
<td></td>
</tr>
<tr>
<td>11 0</td>
<td>Tx Gain (+15 ~ -40 in 1 dB unit)</td>
<td></td>
</tr>
<tr>
<td>12 0</td>
<td>Short bypass enable/disable (0:OFF, 1:ON)</td>
<td></td>
</tr>
<tr>
<td>13 0</td>
<td>AEC enable/disable (0:OFF, 1:ON)</td>
<td></td>
</tr>
<tr>
<td>14 0</td>
<td>AEC Select algorithm (0: Sub Band, 1:Sub Band Fast)</td>
<td></td>
</tr>
<tr>
<td>15 16</td>
<td>AEC Tail length (1 ~ 128 ms tail length, in 1-ms unit)</td>
<td></td>
</tr>
<tr>
<td>16 1</td>
<td>AEC NLP enable/disable (0:OFF, 1: ON )</td>
<td></td>
</tr>
<tr>
<td>17 0</td>
<td>AEC Adaptation freeze (0:adaptive, 1:freeze)</td>
<td></td>
</tr>
<tr>
<td>18 0</td>
<td>AEC Howling control enable/disable (0: OFF, 1: ON)</td>
<td></td>
</tr>
<tr>
<td>19 0</td>
<td>AEC TD enable/disable (0:OFF, 1:ON)</td>
<td></td>
</tr>
<tr>
<td>20 0</td>
<td>Lip Sync Tx(PCM-&gt;IP)delay(0~1000ms in 1 ms unit)</td>
<td></td>
</tr>
<tr>
<td>21 0</td>
<td>Lip Sync Rx(PCM&lt;-IP)delay(0~1000ms in 1 ms unit)</td>
<td></td>
</tr>
<tr>
<td>22 0</td>
<td>EC Bypass (0: OFF, 1: ON)</td>
<td></td>
</tr>
<tr>
<td>23 0</td>
<td>EC ToneDisabler Mode (0:OFF, 1:Manual, 2:Auto, 3:Auto with Evt Report)</td>
<td></td>
</tr>
<tr>
<td>24 0</td>
<td>T30 Preamble Detector Enable (0:OFF, 1:ON)</td>
<td></td>
</tr>
<tr>
<td>25 0</td>
<td>Enable Event Report(0:Enable TDIS_PhaseReversal_TxEvt,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1:Enable TDIS_PhaseReversal_RxEvt,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2:Enable TDIS_Silence_TxEvt,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3:Enable TDIS_Silence_RxEvt,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4:Enable T30_Preamble_TxEvt,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5:Enable T30_Preamble_RxEvt,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6:Enable All Event Reports)</td>
<td></td>
</tr>
<tr>
<td>26 -35</td>
<td>EC ToneDisabler Silence Threshold(-30 ~ -50 in 1 dBm unit)</td>
<td></td>
</tr>
</tbody>
</table>
DSP resource DEC[1] parameters

<table>
<thead>
<tr>
<th>id</th>
<th>value</th>
<th>definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>Current state (0:Idle, 1:Active)</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>Volume adjustment in dB (+15 ~ -40). -99 for mute</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>ALC enable/disable (0:OFF, 1:ON)</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>CNG enable/disable (0:OFF, 1:ON)</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Code type (0:PassThru, 1:G711u, 2:G711a, 3:G729a, 4:G723, 5:G722, 6:G726_40, 7:G726_32, 8:G726_24, 9:G726_16, 10:G729.1, 11: ILBC_30ms, 12:ILBC_20ms)</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>Packet-loss report (0:OFF, 1:ON)</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>Report packet type change (0:OFF, 1:ON)</td>
</tr>
<tr>
<td>7</td>
<td>-1</td>
<td>OR'd auto-switch cntrl bits (1:G711u, 2:G711a, 4:G729a, 8:G723, 16:G722, 32:G726_40, 64:G726_32, 128:G726_24, 256:G726_16, 512:G729.1, 1024:ILBC_30ms, 2048:ILBC_20ms)</td>
</tr>
<tr>
<td>8</td>
<td>200</td>
<td>Jitter buffer maximum delay in ms (10 ~ 500)</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>Jitter buffer packet loss rate (in 0.1% unit)</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>Jitter buffer mode (0:Static 1:Histogram 2:RFC3550)</td>
</tr>
<tr>
<td>11</td>
<td>96</td>
<td>G726 40Kbps RTP payload type</td>
</tr>
<tr>
<td>12</td>
<td>97</td>
<td>G726 32Kbps RTP payload type</td>
</tr>
<tr>
<td>13</td>
<td>98</td>
<td>G726 24Kbps RTP payload type</td>
</tr>
<tr>
<td>14</td>
<td>99</td>
<td>G726 16Kbps RTP payload type</td>
</tr>
<tr>
<td>15</td>
<td>0</td>
<td>G726 packing format (0:LSB - VoIP, 1:MSB - AAL)</td>
</tr>
<tr>
<td>16</td>
<td>100</td>
<td>G729.1 RTP payload type</td>
</tr>
<tr>
<td>17</td>
<td>110</td>
<td>ILBC_30ms RTP Payload Type</td>
</tr>
<tr>
<td>18</td>
<td>111</td>
<td>ILBC_20ms RTP Payload Type</td>
</tr>
<tr>
<td>19</td>
<td>0</td>
<td>G729.1 PCM mode (0:NarrowBand 1:WideBand)</td>
</tr>
</tbody>
</table>

DSP resource ENC[1] parameters

<table>
<thead>
<tr>
<th>id</th>
<th>value</th>
<th>definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>Current state (0:Idle, 1:Active)</td>
</tr>
<tr>
<td>id</td>
<td>value</td>
<td>definition</td>
</tr>
<tr>
<td>----</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>Current state (0:Idle, 1:Active)</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>Volume adjustment in dB (+15 ~ -20)</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Mode (0: V.23, 1: Bellcore 202)</td>
</tr>
</tbody>
</table>
### DSP resource TD[1] parameters

<table>
<thead>
<tr>
<th>id</th>
<th>value</th>
<th>definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>Current state (0:Idle, 1:Active)</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>L-Port Stream ID (T-Port Base - TDM:0, IP:3, Player:11, Mixer:15)</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Tone clamping enable/disable (0:OFF, 1:ON)</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Tone clamping buffer size</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Tone event report (0:None, 1:Tone On, 2:Tone Off, 3:Both)</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>RFC2833 event enable/disable (0:OFF, 1:ON)</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>Update rate of RFC2833 packets (in 10-ms unit)</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>Redundancy of end-of-RFC2833-packet</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
<td>Redundancy of begin-of-RFC2833-packet</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>Suppress Encoder in RFC2833 event (0:NO, 1:YES)</td>
</tr>
<tr>
<td>10</td>
<td>101</td>
<td>RFC2833 payload type</td>
</tr>
<tr>
<td>11</td>
<td>200</td>
<td>Minimum CS-bit length required by FSK receiver</td>
</tr>
<tr>
<td>12</td>
<td>100</td>
<td>Minimum mark-bit length required by FSK receiver</td>
</tr>
<tr>
<td>13</td>
<td>20</td>
<td>Extra stop bits allowed between the data</td>
</tr>
<tr>
<td>14</td>
<td>8</td>
<td>FSK receiver Baud rate (reserved for future)</td>
</tr>
<tr>
<td>15</td>
<td>0</td>
<td>FSK adaptive threshold (0: Non-adaptive, 1:Adaptive)</td>
</tr>
<tr>
<td>16</td>
<td>0</td>
<td>FSK Minimum No. of data bytes to receive (0: default, 0-15)</td>
</tr>
</tbody>
</table>

### Menu Selection 4: Show Resource Parameter

This allows a parameter of a selected resource to be displayed. Resource selections are NET (HSS interface and Echo Canceller); DEC (Decoder); ENC (Encoder); TG (Tone Generator, including FSK modem); TD (Tone Detector, including FSK demodulator); PLY (Audio Player); MIX (3-way call mixer); T38 (T.38 component), and MA (Message Agent).

**Note:** AEC component in the NET Resource is not supported and all AEC parameters shown in the NET Resource Parameters are also not supported.
Please select test item - 4

Enter the instance number (1,2,...; 0 for all instance) - 1

Enter the resource number


DSP resource TD[1] parameters

<table>
<thead>
<tr>
<th>id</th>
<th>value</th>
<th>definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>Current state (0:Idle, 1:Active)</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>L-Port Stream ID (T-Port Base -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TDM:0, IP:3, Player:11, Mixer:15)</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Tone clamping enable/disable (0:OFF, 1:ON)</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Tone clamping buffer size</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Tone event report (0:None, 1:Tone On, 2:Tone Off, 3:Both)</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>RFC2833 event enable/disable (0:OFF, 1:ON)</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>Update rate of RFC2833 packets (in 10-ms unit)</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>Redundancy of end-of-RFC2833-packet</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
<td>Redundancy of begin-of-RFC2833-packet</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>Suppress Encoder in RFC2833 event (0:NO, 1:YES)</td>
</tr>
<tr>
<td>10</td>
<td>101</td>
<td>RFC2833 payload type</td>
</tr>
<tr>
<td>11</td>
<td>200</td>
<td>Minimum CS-bit length required by FSK receiver</td>
</tr>
<tr>
<td>12</td>
<td>100</td>
<td>Minimum mark-bit length required by FSK receiver</td>
</tr>
<tr>
<td>13</td>
<td>20</td>
<td>Extra stop bits allowed between the data</td>
</tr>
<tr>
<td>14</td>
<td>8</td>
<td>FSK receiver Baud rate (reserved for future)</td>
</tr>
<tr>
<td>15</td>
<td>0</td>
<td>FSK adaptive threshold (0: Non-adaptive, 1:Adaptive)</td>
</tr>
<tr>
<td>16</td>
<td>0</td>
<td>FSK Minimum No. of data bytes to receive (0: default, 0-15)</td>
</tr>
</tbody>
</table>

3.7 Menu Selection 5: Set a Parameter

This allows any parameters of a call to be modified. The parameters ID and current values of the specified resource are prompted. Resource selections are NET (HSS interface and Echo Canceller); DEC (Decoder); ENC (Encoder); TG (Tone Generator, including FSK modem); TD (Tone Detector, including FSK demodulator); PLY (Audio Player); MIX (3-way call summer); T38 (T.38 component), and MA (Message Agent). For further information on the parameters, refer to the Intel® Infrastructure DSP Solution Version 1.2 API Reference Manual and Intel® Infrastructure DSP Solution Version 1.2 Programmer's Guide.
Note: AEC component in the NET Resource is not supported and all AEC parameters shown in the NET Resource Parameters are also not supported.

Please select test item - 5
Enter the instance number (1,2,...; 0 for all instance) - 1
Enter the resource number


DSP resource TD[1] parameters

id value definition
-----------------------------------------------
0 0 Current state (0:Idle, 1:Active)
1 0 L-Port Stream ID (T-Port Base -
                          TDM:0, IP:3, Player:11, Mixer:15)
2 1 Tone clamping enable/disable (0:OFF, 1:ON)
3 3 Tone clamping buffer size
4 1 Tone event report (0:None, 1:Tone On, 2:Tone Off, 3:Both)
5 1 RFC2833 event enable/disable (0:OFF, 1:ON)
6 5 Update rate of RFC2833 packets (in 10-ms unit)
7 3 Redundancy of end-of-RFC2833-packet
8 0 Redundancy of begin-of-RFC2833-packet
9 1 Suppress Encoder in RFC2833 event (0:NO, 1:YES)
10 101 RFC2833 payload type
11 200 Minimum CS-bit length required by FSK receiver
12 100 Minimum mark-bit length required by FSK receiver
13 20 Extra stop bits allowed between the data
14 8 FSK receiver Baud rate (reserved for future)
15 0 FSK adaptive threshold (0: Non-adaptive, 1:Adaptive)
16 0 FSK Minimum No. of data bytes to receive (0: default, 0~15)

Enter the parameter id - 2
Enter the parameter value - 0

<<MsgAck received (ch=1 res=TD)>>

3.8 Menu Selection 6: Caller ID

This sends a Caller ID string to a Caller ID capable phone. The type of Caller ID is aligned with the country code selected.
Note: Currently, this feature works only on analog interface due to SLIC codec interface requirements.

Please select test item - 6
Using US call ID specifications
Enter the channel number (1,2,...; 0 for all channels) - 1
Enter the number to be displayed (Default: '0123456789') - 12345

3.9 Menu Selection 7: Gateway and Fax Bypass Demo

This menu item works only for analog interface and simulates the real call scenario as the previous DSP Demo program (IxDspCodeletApp). This menu item prompts you to select coder type, fax bypass enable and trace enable options. Once the selections are made, dial tone (based on country code selection) is heard once the handset is off-hook. Phone 1 (connected to FXS Port 1) may dial “222” to call phone 2 (connected to FXS Port 2) and phone 2 may dial “111” to call phone 1. This will not work in “Pulse Dialing” mode.

If fax bypass is enabled and a fax tone is detected, the channel is set to clear for fax activities. If trace is enabled, all activities of state transition and its actions are printed on screen.

If FEC mode for the T.38 is to be turned ON, then set the FEC parameters before starting the Gateway demo. FEC parameters can be set through menu option 5: Set a Parameter. Steps to set a parameter are described in Section 3.7. Set the following parameters:

Please select test item - 5
Enter the instance number (1,2,...; 0 for all instance) - 0
Enter the resource number
Enter the parameter id - 2
Enter the parameter value - 1

While two phones are having a conversation, it is not possible to select the following menu items: channel setup, channel teardown, Call ID and 3-Way call demo. However, it is possible to select the menu items to change and show resource/channel parameters.

Please select test item - 7
1 :G711_10ms u-Law
2 :G711_10ms A-Law
3 :G729a/b
4 :G723.1
5 :G722
6 :G726 40Kbps
7 :G726 32Kbps
8 :G726 24Kbps
Enter the coder type - 1
Fax mode (0:Disabled, 1:Fax Bypass, 2:T38) ? 2
Enable trace (0:no, 1:yes) ? 1
GW[1]: Reset channel parameters
GW[2]: Reset channel parameters

Note: The Gateway Demo call may fail reporting invalid number dialed, while running T.38 testing with channel Trap (FaxLab). In such cases, change the Tx Gain parameter of the NET component to -3dB (Default value is set to 0dB), reducing the echo level of the dial tone for the successful detection of DTMF tones. Please refer to Section 3.7 to set a parameter.

3.10 Menu Selection 8: 3-Way Call Demo
This menu item allows you to enter the 3-Way call demo. The 3-Way call demo can be performed using two boards as explained in Section 3.20

3.11 Menu Selection 9: Player Demo
This selection plays voice prompts and takes in dialed digits on the phone to direct the prompts.

Please select test item - 9
Enter the channel number (1,2,...; 0 for all channels) - 1
End of player demo

The initial prompt is:
Please dial your number
You are allowed a small time window to start entering a string of digits on the phone dial pad. A short time after the digit string is entered, the Player Demo plays the second voice prompt, followed by announcement of the digits that has been dialed:
The number you have dialed is …
If the entry is not a numeric digit, then the third voice prompt is played:
You have dialed an invalid number
Then Player Demo eventually ends after a period of in-activity on the dial pad.

3.12 Menu Selection 10: SLIC APIs
This selection brings up a secondary menu that allows more specific test functions to be executed. Each item in this menu corresponds to a basic control message or a user-defined higher level control message.
Please select test item - 10
Select the following tests for SLIC

1: Slic Start Ringing
2: Slic stop Ringing
3: Slic Hook Status
4: Get PCM configuration
5: Get Chip Details
6: Read from the Register
7: Write to the Register
8: Set the device into loopback mode
9: Get the loopback mode status of the device
10: Verify Communication with chip
11: Set PCM configuration
12: Initialise SLIC
13: Register the callback function
14: Reset the loopback mode of the device
15: Make FXO Off hook
16: Make FXO On hook
17: Enable Ring Detection
18: Disable Ring Detection
19: Slic Start Normal Ringing
20: Slic Start Short Ringing
21: FXS Polarity Inverse
22: FXS Onhook Transmission

3.12.1 SLIC APIs Menu Selection 1: SLIC Start Ringing

This selection allows for applying a ringing signal to a particular chip. Before applying start ringing signal, ensure that SLIC is already initialized, which is done through the menu options as described in Section 3.12.12.

Please select test item - 10
Select the following tests for SLIC

1: Slic Start Ringing
2: Slic stop Ringing
3: Slic Hook Status
4: Get PCM configuration
5: Get Chip Details
6: Read from the Register
7: Write to the Register
8: Set the device into loopback mode
9: Get the loopback mode status of the device
10: Verify Communication with chip
11: Set PCM configuration
12: Initialise SLIC
13: Register the callback function
14: Reset the loopback mode of the device
15: Make FXO Off hook
16: Make FXO On hook
17: Enable Ring Detection
18: Disable Ring Detection
19: Slic Start Normal Ringing
20: Slic Start Short Ringing
21: FXS Polarity Inverse
22: FXS Onhook Transmission

The phone connected to FXS0 starts ringing.

3.12.2 SLIC APIs Menu Selection 2: SLIC Stop Ringing

This selection allows to send a “stop ringing signal” to a particular chip that is already ringing.

Enter your option - 2
Enter the chip number (0,1:FXS; ) - 1

The phone connected to FXS0 stops ringing

3.12.3 SLIC APIs Menu Selection 3: SLIC Hook Status

This menu selection allows to read the hook status of the FXS chips used in the board. Before starting this test ensure that SLIC is already initialized, which is done through the menu option as described in Section 3.12.12.

Enter your option - 3
Enter the chip number (0,1:FXS; ) - 1
ON hook

Based on the hook status, OFF hook or ON hook is displayed.
3.12.4 **SLIC APIs Menu Selection 4: Get PCM Configuration**

This menu selection allows to read PCM configuration of the FXS chip. Before starting this test ensure that SLIC is already initialized, which is done through the menu options as described in Section 3.12.12.

Enter your option - 4

Enter the chip number (0,1:FXS, 30:FXO; ) - 1

PCM enable

Mu – LAW

8 - bits transfer

The configurations read are PCM enabled/disabled, Narrow band/Wide band, A Law/Mu Law.

3.12.5 **SLIC APIs Menu Selection 5: Get Chip Details**

This menu selection allows to read the make and manufacture of the FXO/FXS device. The chips can be Si3210, Si3211, Si3210M, and Si3050. Before starting this test ensure that SLIC is already initialized, which is done through the menu options as described in Section 3.12.12.

Enter your option - 5

Enter the chip number (0,1:FXS, 30:FXO; ) - 1

Si3216

3.12.6 **SLIC APIs Menu Selection 6: Read from the Register**

This menu selection allows reading from the direct registers of FXS/FXO device. Register 1-59 in case of FXO and Register 1-108 for FXS. Before starting this test ensure that SLIC is already initialized, which is done through the menu options as described in Section 3.12.12.

Enter your option - 6

Enter the chip number (0,1:FXS, 30:FXO; ) - 0

Enter the register number (0,1,......128;)- 1

data is 0xa8

3.12.7 **SLIC APIs Menu Selection 7: Write to the Register**

This menu selection allows writing to the direct registers of FXS/FXO device. Register 1-59 in case of FXO and Register 1-108 for FXS.

*Note:* All registers are not writable. Before starting this test, ensure that SLIC is already initialized, which is done through the menu options as described in Section 3.12.12.

Enter your option - 7

Enter the chip number (0,1:FXS, 30:FXO; ) - 0

Enter the register number (0,1,......128;)- 1

Enter the data in decimal - 16
3.12.8 **SLIC APIs Menu Selection 8: Set the Device into Loopback Mode**

This menu selection sets the device FXS/FXO into digital loop back mode. Before starting this test ensure that SLIC is already initialized, which is done through the menu options as described in Section 3.12.

Enter your option - 8

Enter the chip number (0,1:FXS; ) - 0

3.12.9 **SLIC APIs Menu Selection 9: Get the Loopback Mode Status of the Device**

This menu selection gets the loop back mode status of the FXS/FXO device. Before starting this test ensure that SLIC is already initialized, which is done through the menu options as described in Section 3.12.

Enter your option - 9

Enter the chip number (0,1:FXS; ) - 0

Chip is in digital loopback mode

3.12.10 **SLIC APIs Menu Selection 10: Verify Communication with Chip**

This menu selection verifies the communication with the chip (FXS/FXO). This is an optional test and if the tests like SLIC Start Ringing and SLIC Stop Ringing work, then it is not necessary to perform this test.

Enter your option - 10

Enter the chip number (0,1:FXS, 30:FXO; ) - 0

Verify Communication ...

Communication exists with chip

3.12.11 **SLIC APIs Menu Selection 11: Set PCM Configuration**

This menu selection sets the PCM configuration of FXS. The configuration can be PCM enabled/disabled, A law/Mu law and Narrow band/Wide band. This is an optional feature, if SLIC is already initialized, then this is not required.

Enter your option - 11

Enter the chip number (0,1:FXS, 30:FXO; ) - 0

0:Disable PCM transfer, 1: Enable PCM transfer- 1

0:A-law, 1:Mu-law, 2:Reserved, 3:Linear- 1

0:8-bits-transfer, 1:16-bits-transfer- 0

3.12.12 **SLIC APIs Menu Selection 12: Initialize SLIC**

This menu selection initializes both FXS and FXO.

Enter your option - 12

0:A-law, 1:Mu-law, 2:Linear- 1

0:Narrowband, 1:Wideband- 0
3.12.13 **SLIC APIs Menu Selection 13: Register the Callback Function**

This menu selection registers the callback functions for the FXS chips. Before starting this test ensure that SLIC is already initialized, which is done through the menu options as described in Section 3.12.12.

Enter the chip number (0,1:FXS, 30:FXO; ) - 0

3.12.14 **SLIC APIs Menu Selection 14: Reset the Loopback Mode of the Device**

This menu selection disables the digital loop back mode of the FXS/FXO device. Before starting this test ensure that SLIC is already initialized, which is done through the menu options as described in Section 3.12.12.

Enter your option - 14

Enter the chip number (0,1:FXS; ) - 0

Sending the Loopback reset Cmd=0

3.12.15 **SLIC APIs Menu Selection 15: Make FXO Off Hook**

This menu selection allows to apply a Off-Hook signal on a particular chip.

Before starting this test, ensure that SLIC is already initialized, which is done through the menu options as described in Section 3.12.12. To test this feature, connect FXO port to one FXS port (say FXS0) through a straight cable. Connect a phone to FXS1 port. Keep the phone ON hook and follow the sequence as below.

Enter your option - 15

<< Off-hook command to FXO. >>

The hook state notification events are displayed on the screen.

3.12.16 **SLIC APIs Menu Selection 16: Make FXO On Hook**

This menu selection allows to perform On-Hook on a particular chip. Before starting this test ensure that SLIC is already initialized, which is done through the menu options as described in Section 3.12.12. In order to test this feature, connect FXO port to one FXS port (say FXS0) through a straight cable. Connect a phone to FXS1 port. Keep the phone OFF hook and follow the sequence as below.

Enter your option - 16

<< On-hook command to FXO. >>

The hook state notification events are displayed on the screen.

3.12.17 **SLIC APIs Menu Selection 17: Enable Ring Detection**

This menu selection enables the FXO port of the platform to detect the ring signal and terminal print will be shown if ring signal is detected. No input parameter is expected because there is only one FXO port on the IXP435 reference platform.

Enter your option - 17

<< Enable Ring Detection command to FXO. >>
3.12.18 SLIC APIs Menu Selection 18: Disable Ring Detection
This menu selection disables the FXO port of the platform, preventing it from detecting the ring signal. No input parameter is expected because there is only one FXO port on the IXP435 reference platform.

Enter your option - 18
<< Disable Ring Detection command to FXO. >>

3.12.19 SLIC APIs Menu Selection 19: Slic Start Normal Ringing
This menu selection allows for applying a ringing signal with Ring Active Timer of 1 second and Ring Inactive Timer of 2 seconds. Before applying the start ringing signal, ensure that SLIC is already initialized.

Enter your option - 19
Enter the chip number (0,1:FXS; ) - 0

3.12.20 SLIC APIs Menu Selection 20: Slic Start Short Ringing
This menu selection allows for applying a ringing signal with Ring Active Timer of 0.5 seconds and Ring Inactive Timer of 0.5 seconds. Before applying the start ringing signal, ensure that SLIC is already initialized.

Enter your option - 20
Enter the chip number (0,1:FXS; ) - 0

3.12.21 SLIC APIs Menu Selection 21: FXS Polarity Inverse
This menu selection allows for inversing the polarity state of the FXS port. With Polarity Inverse, an On Hook non-ringing FXS port will start ringing or an On Hook ringing FXS port will stop ringing.

Enter your option - 21
Enter the chip number (0,1:FXS; ) - 0
<< Polarity Inverse on FXS (chip=0). >>

3.12.22 SLIC APIs Menu Selection 22: FXS Onhook Transmission
This menu selection allows for enabling On Hook Transmission on FXS port. With On Hook transmission enabled, PCM data will go through the FXS port even during On Hook. An example use case is to enable On Hook Transmission on FXS port and transmit Caller ID signal during On Hook.

Enter your option - 22
Enter the chip number (0,1:FXS; ) - 0
<< Enable Forward Onhook Transmission on FXS (chip=0). >>

3.13 Menu Selection 11: Diagnostic
This selection brings up a secondary menu that allows more specific test functions to be executed. Each item in this menu is corresponding to a basic control message or a user-defined higher level control message.
AEC component in the NET Resource is not supported and all AEC parameters shown in the NET Resource Parameters are also not supported.

Please select test item - 11

----------------------------------------
-      IxDspCodelet Diagnostic Menu    -
----------------------------------------

0 - Print Menu
1 - Reset a resource
2 - Start a resource
3 - Stop a resource
4 - Ping a resource
5 - Set multiple params
6 - Start codec
7 - Start Player
8 - Play tones
9 - Play FSK data
10 - Receive digits
11 - Receive FSK
12 - Get XR statistics
13 - Start an IP term
14 - Stop an IP term
15 - Setup call w/parms
16 - Set clear channel
17 - Link 2 terms
18 - Create 3W call
19 - Back to 2W call
20 - T38 Switch
21 - Load a voice prompt
22 - Play raw data file
23 - QoS Configuration
24 - Show Version
25 - Exit

Please select test item -
3.13.1 Diagnostic Menu Selection 1: Reset a Resource

This allows a specified resource to be reset. Resource selections are NET (HSS interface and Echo Canceller); DEC (Decoder); ENC (Encoder); TG (Tone Generator, including FSK modem); TD (Tone Detector); MIX (3-Way call mixer); and MA (Message Agent). For further information on the parameters, refer to the Intel® Infrastructure DSP Solution Version 1.2 API Reference Manual and the Intel® Infrastructure DSP Solution Version 1.2 Programmer’s Guide.

Please select test item - 1
Enter the instance number (1,2,...; 0 for all instances) - 1
Enter the resource number
Resource : (1:Net, 2:DEC, 3:ENC, 4:TG, 5:TD, 6:PLY, 7:MIX, 8:T38, 9:MA) -

3.13.2 Diagnostic Menu Selection 2: Start a Resource

This allows a specified resource to be started.

Please select test item - 2
Enter the instance number (1,2,...; 0 for all instances) - 1
Enter the resource number
Resource : (1:Net, 2:DEC, 3:ENC, 4:TG, 5:TD, 6:PLY, 7:MIX, 8:T38, 9:MA) -

3.13.3 Diagnostic Menu Selection 3: Stop a Resource

This allows a specified resource to be stopped.

Please select test item - 3
Enter the instance number (1,2,...; 0 for all instances) - 1
Enter the resource number
Resource : (1:Net, 2:DEC, 3:ENC, 4:TG, 5:TD, 6:PLY, 7:MIX, 8:T38, 9:MA) -

3.13.4 Diagnostic Menu Selection 4: Ping a Resource

This pings a specified resource for testing purposes.

Please select test item - 4
Enter the instance number (1,2,...; 0 for all instances) - 1
Enter the resource number
Resource : (1:Net, 2:DEC, 3:ENC, 4:TG, 5:TD, 6:PLY, 7:MIX, 8:T38, 9:MA) -

3.13.5 Diagnostic Menu Selection 5: Set Multiple Params

This allows multiple parameters of a selected resource to be changed.

Note: AEC component in the NET Resource is not supported and all AEC parameters shown in the NET Resource Parameters are also not supported.
It prompts for the number of parameters that must be changed:

Please select test item - 5
Enter the instance number (1,2,...; 0 for all instances) - 1
Enter the resource number
Enter the number of parameters to be set - 2

DSP resource TD[1] parameters

<table>
<thead>
<tr>
<th>id</th>
<th>value</th>
<th>definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>Current state (0:Idle, 1:Active)</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>L-Port Stream ID (T-Port Base -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TDM:0, IP:3, Player:11, Mixer:15)</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Tone clamping enable/disable (0:OFF, 1:ON)</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Tone clamping buffer size</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>Tone event report (0:None, 1:Tone On, 2:Tone Off, 3:Both)</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>RFC2833 event enable/disable (0:OFF, 1:ON)</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>Update rate of RFC2833 packets (in 10-ms unit)</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>Redundancy of end-of-RFC2833-packet</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
<td>Redundancy of begin-of-RFC2833-packet</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>Suppress Encoder in RFC2833 event (0:NO, 1:YES)</td>
</tr>
<tr>
<td>10</td>
<td>101</td>
<td>RFC2833 payload type</td>
</tr>
<tr>
<td>11</td>
<td>200</td>
<td>Minimum CS-bit length required by FSK receiver</td>
</tr>
<tr>
<td>12</td>
<td>100</td>
<td>Minimum mark-bit length required by FSK receiver</td>
</tr>
<tr>
<td>13</td>
<td>20</td>
<td>Extra stop bits allowed between the data</td>
</tr>
<tr>
<td>14</td>
<td>8</td>
<td>FSK receiver Baud rate (reserved for future)</td>
</tr>
<tr>
<td>15</td>
<td>0</td>
<td>FSK adaptive threshold (0: Non-adaptive, 1:Adaptive)</td>
</tr>
<tr>
<td>16</td>
<td>0</td>
<td>FSK Minimum No. of data bytes to receive (0: default, 0~15)</td>
</tr>
</tbody>
</table>

Enter the parameter id - 2
Enter the parameter value - 0
Enter the parameter id - 3
Enter the parameter value - 0

<<MsgAck received (ch=1 res=TD)>>
3.13.6 Diagnostic Menu Selection 6: Start Codec

This starts the selected resource (Only for Decoder and Encoder). You are prompted to select the codec:

Please select test item - 6
Enter the instance number (1,2,...; 0 for all instances) - 1
Enter the resource number
  Resource : (2:DEC, 3:ENC) - 2
  0 : PassThru (for debug only)  
  1 : G711_10ms u-Law
  2 : G711_10ms A-Law
  3 : G729a/b
  4 : G723.1
  5 : G722
  6 : G726 40Kbps
  7 : G726 32Kbps
  8 : G726 24Kbps
  9 : G726 16Kbps
  10: G729.1
  11: iLBC 30ms
  12: iLBC 20ms
Enter the type of Codec - 1

3.13.7 Diagnostic Menu Selection 7: Start Player

This starts the player to play registered voice prompts. This includes the pre-registered voice prompts for the Player Demo, and any user voice prompts that have been loaded by the load a voice prompt or play a raw data file diagnostic menu selections. A string of prompts can be linked in a list to allow concatenation (up to 14).

The offset and length field allows a portion of the prompt to be played (length of 0 indicates playing the entire prompt). The last prompt should have a next link field set to 127 (end).

Note: If the next link field is set to 0, the prompt is played continuously until the particular player resource is stopped. For start player to work, parameter 1 of Net resource has to be set to 9 (player).

Please select test item - 7
Enter the instance number (1,2,...; 0 for all instances) - 1
Enter the number of prompts (1 ~ 14) - 1
Registered Prompt List:
prompt handle   file name
----------------------------------
0          Hardcoded voice data
1          Hardcoded voice data

Segment 1 :

Enter the prompt handle - 1
Enter the offset (multiple of 10 if G.729) - 0
Enter the length (0: end of the segment) - 0
Enter the next link (fwd:>0, back:<=0, end:127) - 127

3.13.8 Diagnostic Menu Selection 8: Play Tones

This plays a specified tone to the corresponding voice channel according to the default
tone templates, and user defined tone templates. Since the tone is generated directly
to the HSS side, which is already setup by default, this will work even when no calls are
setup on the channel. Tone ID’s are RFC2833 tone ID’s.

The valid tone IDs are dependent on the country code set. The default for DTMF tone is
100ms on time.

Please select test item - 8
Enter the instance number (1,2,...; 0 for all instances) - 1
Enter the number of tones to be played - 3

DTMF tone IDs = 0-15
Call progress tone IDs = Dial:66, Ring:70, Busy:72, CW:79
Examples of user-added tone IDs = 251-255

Enter the tone id - 3
Enter the tone id - 4
Enter the tone id - 72

3.13.9 Diagnostic Menu Selection 9: Play FSK Data

This plays a specified string out as FSK data, intended for Caller ID testing. It prompts
for an ASCII string.

Please select test item - 9
Enter the instance number (1,2,...; 0 for all instances) - 1
Enter an ASCII string - 1234
3.13.10 Diagnostic Menu Selection 10: Receive Digits

This test collects digit strings played on a specified voice channel according to the default tone templates. The menu prompts you to select: number of digits to receive, termination digit, timeout of the first digit, inter-digit timeout and the overall timeout.

Please select test item - 10
Enter the instance number (1,2,...; 0 for all instances) - 1
Enter the number of digits to receive - 3
Enter the termination digit bits (*=1024 #=2048 *#=3072) - 1024
Enter the first digit time out (in second) - 15
Enter the inter-digit time out (in second) - 10
Enter the total time out (in second) - 20
digits rcvd = '563'

Note: The TD resource of the specified channel (test item 2) must be started prior to the test.

3.13.11 Diagnostic Menu Selection 11: Receive FSK

This menu selection starts FSK reception with a specified timeout period. The received data is printed out in hex format. One way to test FSK receive is to perform an internal loop back from the Tone Generator (FSK transmit) to the Tone Detector (FSK receive). This can be done by using the router to assign the Tone Detector of the desired channel to listen to the IP termination (Tone Generator). After the Receive FSK selection is initiated with a timeout period to provide adequate time to set up the transmission, then the Play FSK selection is initiated.

Please select test item - 11
Enter the instance number (1,2,...; 0 for all instances) - 1
Enter the timeout (in 1 second unit) - 30

3.13.12 Diagnostic Menu Selection 12: Get XR Statistics

This gets the statistics from the Jitter Buffer of the Decoder resource component, and measures ERLE & MFPP.

Please select test item - 12
3 - Get MFPP statistics
4 - Exit

Please select test item - 1
Enter the instance number {1,2,...; 0 for all instances} - 1
Reset the statistics {1:yes, 0:no} ? 1

<<MsgGetJBStatCmplt received (ch=1)>>
Total received packets : 196884
Lost packets via network : 1
Decoder's erasure frames : 1
Received Tone packets : 0
Maximum jitter (milliseconds): 8
Minimum jitter (milliseconds): 0
Mean Jitter (milliseconds): 0
Standard Deviation jitter (milliseconds): 0
JB Maximum Delay (milliseconds): 200
JB Absolute Maximum Delay (milliseconds): 500
JB Nominal Delay (milliseconds): 10
JB Discard Rate(maximum 255) : 0

----------------------------------------
| IxDspCodelet Extended Report Menu |
----------------------------------------

0 - Print Menu
1 - Get JB statistics
2 - Get ERLE statistics
3 - Get MFPP statistics
4 - Exit

Please select test item - 2
Enter the instance number {1,2,...; 0 for all instances} - 1

<<MsgGetERLEStatCmplt received (ch=1)>>
Value of ERLE(dB) : 37

----------------------------------------
0 - Print Menu
1 - Get JB statistics
2 - Get ERLE statistics
3 - Get MFPP statistics
4 - Exit

Please select test item - 3
Enter the instance number (1,2,...; 0 for all instances) - 1

<<MsgGetMFPPStatCmplt received (ch=1)>>
Value of MFPP : 1

3.13.13 Diagnostic Menu Selection 13: Start an IP Term

This is a sub-functional engineering test, designed to verify resources setup corresponding to a specified IP. It must be combined with other test items for a complete functional test.

It starts an IP by sending the user-defined message IX_DSP_CODELET_MSG_START_IP to MA (Message Agent) to start ENC, DEC, TD and stop TG.

Please select test item - 13
IP channel = 1

<<IxDspCodeletMsgSetupAck received (ch=1, numDspReply=1, numErr=0)>>

3.13.14 Diagnostic Menu Selection 14: Stop an IP

Similar to start an IP, this test stops an IP by sending the user-defined message IX_DSP_CODELET_MSG_STOP_IP to MA (Message Agent) to stop ENC, DEC, TD and TG.

Please select test item - 14
IP channel = 1

<<IxDspCodeletMsgStopAck received (ch=1, numDspReply=3, numErr=0)>>

3.13.15 Diagnostic Menu Selection 15: Setup Call w/parms

This sets up a call with a set of call parameters by sending the user-defined message IX_DSP_CODELET_MSG_SETUP_CALLWPARMS.

Please select test item - 15
TDM channel = 1
IP channel = 1
Auto switch = 0
Decoder type = 3
Encoder type = 3  
VAD = 1  
Frames Per Packet = 3  
RFC2833 = 1  
RFC2833 payload type = 101  
Tone clamp = 1  
Tone report = 1

3.13.16 Diagnostic Menu Selection 16: Set Clear Channel

This allows a channel to be cleared with specified coder. It is intended for fax bypass feature. You are prompted for the TDM channel and IP channel of a voice path.

Please select test item - 16

TDM channel = 1  
IP channel = 1  
Code type = 1

3.13.17 Diagnostic Menu Selection 17: Link 2 Terms

This allows changing of the full duplex routing between any TDM and IP terminations, and to the mixer. This allows many configurations, for example, an HSS channel can be routed back to another HSS channel for TDM loopback, and similarly for IP loopback. Other configurations allow 3-way conference support, and IP tone detection. The example below shows a demo to link between channel 1 of TDM termination and channel 1 of IP termination.

Please select test item - 17

Type of Term 1 (0:Null, 1:TDM, 2:IP, 3:Mixer) = 1

Channel of Term 1 = 1

Type of Term 2 (0:Null, 1:TDM, 2:IP, 3:Mixer) = 2

Channel of Term 2 = 1

Make sure the TDM and IP terminations are re-connected properly before going to other test and demo selections.

3.13.18 Diagnostic Menu Selection 18: Create 3W Call

This Menu option cannot be used with single IXP435 reference platform. The 3-way call demo can be performed using two boards as explained in Section 3.20.

3.13.19 Diagnostic Menu Selection 19: Back to 2W Call

This switches a 3-way call previously set by Select 18 back to a 2-way call.

Make sure the TDM and IP terminations are re-connected properly before going to other test and demo selections.

Please select test item - 19
3.13.20 Diagnostic Menu Selection 20: T38 Switch
This selection switches a channel between voice and T38 fax modes.

- Please select test item - 20
- TDM channel = 1
- IP channel = 1
- mode (0:voice, 1:fax) = 1
- fax mode (32:receive, 36:send) = 32

3.13.21 Diagnostic Menu Selection 21: Load a Voice Prompt
This menu selection loads a voice prompt from a .wav file. Supported wave file formats are G.711uLaw, G.711aLaw, and G.729a. The file reader will determine the format and data size, and reads the raw data into allocated memory. The memory data is then registered with the DSP solution. This data can then be played by the Start Play menu selection via the displayed handle associated with the file name. The file path and name is prompted.

Note: The file device is similar to the one which provides boot program to the boot device.

- Please select test item - 21
- Enter full path wave file name (e.g. /wave/pcm.wav): /music.wav

3.13.22 Diagnostic Menu Selection 22: Play a Raw Data File
This menu selection is similar to the previous menu selection, but loads and plays a raw data file with G.711uLaw, G.711aLaw, and G.729a supported formats (with no header information). You must enter the sample size to be read and the data format. Note that this information is only entered once, as the same allocated buffer and data format is reused subsequently. After the data is loaded, the play is automatically initiated.

This menu selection is useful for loading and playing various files for testing purposes (for example, FSK database). For play a raw data file to work, parameter 1 of Net resource has to be set to 9 (player).

- Please select test item - 22
- Enter maximum sample size (8000=>1 sec.): 8000
- Coder Type (1:uLaw;2:aLaw;3:G.729): 1
- Enter full path raw data file name (e.g. /data/pcm.dat): /music.dat

Current settings: max. size = 80000, type = uLaw

- Enter the instance number (1,2,...; 0 for all instance) - 1

3.13.23 Diagnostic Menu Selection 23: QoS Configuration
This menu selection is useful for setting hardware accelerated QoS based on DSCP field (in IP header), to reduce packet loss.

- Please select test item - 21
QOS Configuration Menu
1: Set DSCP Value for voice packets
2: Set DSCP-TC Map
3: Show DSCP-TC Map
4: Clear DSCP-TC Map
5: Exit

Enter your option - 1

Enter the DSCP Value (Decimal value [0-63]): 46
This DSCP value for the outgoing voice packets on all ethernet ports.

QOS Configuration Menu
1: Set DSCP Value for voice packets
2: Set DSCP-TC Map
3: Show DSCP-TC Map
4: Clear DSCP-TC Map
5: Exit

Enter your option - 2

Enter the DSCP Value (Decimal value [0-63]): 46
Enter the TC Value [0-3]: 3
This configures the DSCP to TC mapping for all ethernet ports. TC-0 is the lowest priority and TC-3 is the highest priority.

QOS Configuration Menu
1: Set DSCP Value for voice packets
2: Set DSCP-TC Map
3: Show DSCP-TC Map
4: Clear DSCP-TC Map
5: Exit

Enter your option - 3
Port: 1

DSCP[TC]
0[0]1[0]2[0]3[0]4[0]5[0]6[0]7[0]8[0]9[0]1
0[0]11[0]12[0]13[0]14[0]15[0]16[0]17[0]18[0]19[0]2
0[0]21[0]22[0]23[0]24[0]25[0]26[0]27[0]28[0]29[0]3
0[0]31[0]32[0]33[0]34[0]35[0]36[0]37[0]38[0]39[0]4
0[0]41[0]42[0]43[0]44[0]45[0]46[0]47[0]48[0]49[0]5
0[0]51[0]52[0]53[0]54[0]55[0]56[0]57[0]58[0]59[0]6
0[0]61[0]62[0]63[0]

Port: 2

DSCP[TC]
0[0]1[0]2[0]3[0]4[0]5[0]6[0]7[0]8[0]9[0]1
0[0]11[0]12[0]13[0]14[0]15[0]16[0]17[0]18[0]19[0]2
0[0]21[0]22[0]23[0]24[0]25[0]26[0]27[0]28[0]29[0]3
0[0]31[0]32[0]33[0]34[0]35[0]36[0]37[0]38[0]39[0]4
0[0]41[0]42[0]43[0]44[0]45[0]46[0]47[0]48[0]49[0]5
0[0]51[0]52[0]53[0]54[0]55[0]56[0]57[0]58[0]59[0]6
0[0]61[0]62[0]63[0]

This shows DSCP-TC map done.

QOS Configuration Menu

1: Set DSCP Value for voice packets
2: Set DSCP-TC Map
3: Show DSCP-TC Map
4: Clear DSCP-TC Map
5: Exit

Enter your option - 4

Using this menu we can clear DSCP-TC Map done.

QOS Configuration Menu

1: Set DSCP Value for voice packets
2: Set DSCP-TC Map
3: Show DSCP-TC Map
4: Clear DSCP-TC Map
Enter your option - 3

Port: 1
DSCP[TC]
0[0]1[0]2[0]3[0]4[0]5[0]6[0]7[0]8[0]9[0]1
0[0]11[0]12[0]13[0]14[0]15[0]16[0]17[0]18[0]19[0]2
0[0]21[0]22[0]23[0]24[0]25[0]26[0]27[0]28[0]29[0]3
0[0]31[0]32[0]33[0]34[0]35[0]36[0]37[0]38[0]39[0]4
0[0]41[0]42[0]43[0]44[0]45[0]46[0]47[0]48[0]49[0]5
0[0]51[0]52[0]53[0]54[0]55[0]56[0]57[0]58[0]59[0]6
0[0]61[0]62[0]63[0]

Port: 2
DSCP[TC]
0[0]1[0]2[0]3[0]4[0]5[0]6[0]7[0]8[0]9[0]1
0[0]11[0]12[0]13[0]14[0]15[0]16[0]17[0]18[0]19[0]2
0[0]21[0]22[0]23[0]24[0]25[0]26[0]27[0]28[0]29[0]3
0[0]31[0]32[0]33[0]34[0]35[0]36[0]37[0]38[0]39[0]4
0[0]41[0]42[0]43[0]44[0]45[0]46[0]47[0]48[0]49[0]5
0[0]51[0]52[0]53[0]54[0]55[0]56[0]57[0]58[0]59[0]6
0[0]61[0]62[0]63[0]

QOS Configuration Menu
1: Set DSCP Value for voice packets
2: Set DSCP-TC Map
3: Show DSCP-TC Map
4: Clear DSCP-TC Map
5: Exit

Enter your option - 5

This exit from QoS Configuration menu back to the Diagnostic Menu.
3.13.24 Diagnostic Menu Selection 24: Show Version

This menu selection shows the version, build number, date, and time of the software.

DLcid 01020000-09

******************************************************************************
  * Intel Infrastructure DSP Solution *
  * Release 1.2                      *
  * Dec 17 2007, 20:01:15             *
  * Intel Corporation                *
******************************************************************************

3.13.25 Diagnostic Menu Selection 25: Exit

This exits the Diagnostic Menu and goes back to the main menu.

3.14 Menu Selection 12: Socket Configuration

This selection brings up a secondary menu that allows more specific test functions to be executed. Each item in this menu is corresponding to a basic control message or a user-defined higher level control message.

Please select test item - 12

----------------------------------------
- IxDspCodelet Socket Menu -
----------------------------------------

0 - Print Menus
1 - Channel Configuration
2 - Disable Channel
3 - Show Channel Configuration
4 - Show Channel Statistics
5 - Create Sockets
6 - Default Configuration
7 - Exit

Please select test item -

Typical socket configuration is a two step process.

Use option -1 (channel configuration) to provide the source & destination channels and destination IP address information.

Use option-5 (Create Sockets) to activate the configuration provided in step 1
Use option-6 (Default Configuration) to setup the socket configuration

3.14.1 **Socket Configuration Menu Selection 1: Channel Configuration**

This selection configures the available channels.

Please select test item - 1
Enter the Src channel number (1,2 ...) - 1
Enter the Dst channel number (1,2 ...) - 2
Enter the Dst IP:10.223.96.78

3.14.2 **Socket Configuration Menu Selection 2: Disable Channel**

This menu selection disables the corresponding channel.

Please select test item - 2
Enter the channel number to Disable (1,2 ... or 0 for all) - 1

3.14.3 **Socket Configuration Menu Selection 3: Show Channel Configuration**

This selection displays the channel configuration.

Please select test item - 3

*** DSP Codelet Socket And Voice Channel Config Info ***

<table>
<thead>
<tr>
<th>Chan#</th>
<th>RxSock#</th>
<th>TxSock#</th>
<th>Cfg</th>
<th>Act</th>
<th>Loc Port</th>
<th>Remote IP</th>
<th>Rem Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>11</td>
<td>Y</td>
<td>Y</td>
<td>2000</td>
<td>192.168.20.1</td>
<td>2001</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>13</td>
<td>Y</td>
<td>Y</td>
<td>2001</td>
<td>192.168.10.1</td>
<td>2000</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
<td>15</td>
<td>Y</td>
<td>Y</td>
<td>2002</td>
<td>192.168.20.1</td>
<td>2003</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
<td>17</td>
<td>Y</td>
<td>Y</td>
<td>2003</td>
<td>192.168.10.1</td>
<td>2002</td>
</tr>
</tbody>
</table>

3.14.4 **Socket Configuration Menu Selection 4: Show Channel Statistics**

This selection shows the channel statistics.

Please select test item - 4

*** DSP Codelet Socket Statistics ***

Channel 0 Statistics:

----------------------
Number of Rx pkts: 0
Total Rx bytes: 0
Number of invalid Rx data lengths: 0
Number of socket Rx failed: 0
Number of Successful Tx pkts: 0
Total Successful Tx bytes: 0
Number of times all Tx data was not transmitted: 0
Number of times socket Tx failed: 0
Number of remote signalling events sent: 0
Number of remote signalling events received: 0
Number of voice packets dropped: 0

Channel 1 Statistics:
----------------------
Number of Rx pkts: 0
Total Rx bytes: 0
Number of invalid Rx data lengths: 0
Number of socket Rx failed: 0
Number of Successful Tx pkts: 0
Total Successful Tx bytes: 0
Number of times all Tx data was not transmitted: 0
Number of times socket Tx failed: 0
Number of remote signalling events sent: 0
Number of remote signalling events received: 0
Number of voice packets dropped: 0

Channel 2 Statistics:
----------------------
Number of Rx pkts: 0
Total Rx bytes: 0
Number of invalid Rx data lengths: 0
Number of socket Rx failed: 0
Number of Successful Tx pkts: 0
Total Successful Tx bytes: 0
Number of times all Tx data was not transmitted: 0
Number of times socket Tx failed: 0
Number of remote signalling events sent: 0
Number of remote signalling events received: 0
Number of voice packets dropped: 0

Channel 3 Statistics:
----------------------
Number of Rx pkts: 0
Total Rx bytes: 0
Number of invalid Rx data lengths: 0
Number of socket Rx failed: 0
Number of Successful Tx pkts: 0
Total Successful Tx bytes: 0
Number of times all Tx data was not transmitted: 0
Number of times socket Tx failed: 0
Number of remote signalling events sent: 0
Number of remote signalling events received: 0
Number of voice packets dropped: 0

3.14.5 Socket Configuration Menu Selection 5: Create Sockets

This selection creates the sockets for the various channels.

Please select test item - 5

*** DSP Codelet Socket And Voice Channel Config Info ***

<table>
<thead>
<tr>
<th>Chan#:RxSock#:TxSock#:Cfg:Act:Loc Port:</th>
<th>Remote IP:Rem Port</th>
</tr>
</thead>
</table>
3.14.6  **Socket Configuration Menu Selection 6: Default Configuration**

This selection configures the channels with the default configuration. This menu option also assumes that the two Ethernet interfaces (ixp1 and ixp2) of the same board are configured with IP addresses 192.168.10.1 and 192.168.20.1 respectively. The default configuration will not work for any other combination of channels and IP address. For all other combinations the two step method described in Section 3.14.1 and Section 3.14.5 has to be used. The default configuration is not useful for calls across boards over an IP network. The fourth socket is not used.

Please select test item - 6

Enabling Default Channel Configuration

ixp0/ixp2 IPAddrs of : 192.168.10.1 ixp1 IPAddrs of : 192.168.20.1 is assumed

*** DSP Codelet Socket And Voice Channel Config Info ***

| Chan#:RxSock#:TxSock#:Cfg:Act:Loc Port: | Remote IP:Rem Port |
|-----------------:-----------------:-------:--------:---------------:--------:--------|

3.14.7  **Socket Configuration Menu Selection 7: Exit**

This selection would exit the socket configuration and return to the main menu.

3.15  **Menu Selection 13: CPU Occupancy**

This selection is not supported in the current release.

3.16  **Menu Selection 14: CIDCW Demo**

Connect the telephone to port 1 of the board. Start the codelet application by typing 'IxDspCodeletApp' Set the country code to Japan (81) during initialization. Ensure the phone is off-hook. Select Caller ID-Call Waiting demo menu option (Menu option 14) Enter the test phone number to be displayed as the Caller ID at the prompt. You hear Call Waiting Tone on phone connected to Channel-1. The number entered in prompt is displayed on the phone. Go back to the demo codelet main menu.

**Note:** This demo is supported on Channel-1 for Japan only.

Please select test item - 14

Enter the number to be displayed (Default: '0123456789') - 584652
3.17 Menu Selection 15: Pulse Dial

This menu selection demonstrates the pulse dialing capability. The pulse dialing feature supports only single channel demo at a time. You are prompted to enter the channel from which the digits have to be collected, number of digits expected, inter digit timeout value and flash hook window size. A phone is connected to the RJ11 port in the board from which the digits can be dialed in. The phone should be set to pulse mode for this option to work. You are asked to go off hook and dial the digits. The dialed digits are displayed.

Please select test item - 15
Enter the channel number (1,2,...; Only one channel) - 1
Enter Number of Digits to be collected (1 to 20) : 2
Enter InterDigit Timeout Value (5 - 30 secs) : 20
Enter Flash Hook window Size (1000 - 2200 milli secs) : 2000

Number of expected digits -> 2
Inter Digit Timeout value-> 20
Channel Number-> 1
Flash Hook Window Size (ms)-> 2000
Now Go off hook and Dial the digits
Dialed Digits of 1 channel = 1 2
Please go ONHOOK and Press ENTER to go to MAIN MENU

3.18 Menu Selection 16: Set Plug-in Parameter(s)

This menu selection demonstrates the procedure to set the plug-in (EC and Codec) parameters directly. This allows setting for all channels together or for individual channels for the selected plug-in.

After selecting the desired plug-in, zero based USCI ID (not the same as Intel® Infrastructure DSP Solution parameter ID) will be prompted. The complete description of USCI ID is provided in the Intel® Infrastructure DSP Solution Version 1.2 Programmer’s Guide and the Intel® Infrastructure DSP Solution Version 1.2 API Reference Manual.

Note: AEC component in the NET Resource is not supported and all AEC parameters shown in the NET Resource Parameters are also not supported.

The following steps show how to set the EC plug-in module for all channels,

Please select test item - 16
Enter the instance number (1,2,...; 0 for all instance) - 0
Enter the resource number
Resource : (1:Net, 2:DEC, 3:ENC) - 1
Echo Canceller types :
1 : Acoustic Echo Canceller (AEC)
2 : Line Echo Canceller (LEC)

Enter the type - 2
Enter the plugin parameter id (USCI index) - 3
Enter the parameter value - 2

**** Writing plugin type 2 parameter ID:3, Value=2 ****
Successfully set the channel :1 Param ID 3 Value = 2
Successfully set the channel :2 Param ID 3 Value = 2
Successfully set the channel :3 Param ID 3 Value = 2

******** Done ********

Similarly you can set parameters of the decoder and encoder components by selecting resource DEC or ENC respectively.

3.19 Menu Selection 17: Show Plug-in Parameter(s)

This menu selection demonstrates how to access the desired plug-in parameter values.

This menu selection allows you to show either all channels or individual channels for the selected plug-in. After you select the desired plug-in module, the application asks for zero based USCI ID. The complete description of USCI ID is provided in the Intel® Infrastructure DSP Solution Version 1.2 Programmer's Guide and the Intel® Infrastructure DSP Solution Version 1.2 API Reference Manual.

Note: AEC component in the NET Resource is not supported and all AEC parameters shown in the NET Resource Parameters are also not supported.

The following steps show how to get parameter values of EC plug-in module for all channels,

Please select test item - 17
Enter the instance number (1,2,...; 0 for all instance) - 0
Enter the resource number
Resource : (1:Net, 2:DEC, 3:ENC) - 1
Echo Canceller types :
1 : Acoustic Echo Canceller (AEC)
2 : Line Echo Canceller (LEC)

Enter the type - 2
Enter the plugin parameter id (USCI index) - 3

**** Reading plugin type 2 parameters ****
Successfully read for channel :1 Param ID 3 Value = 2
Sucessfully read for channel :2 Param ID 3 Value = 2
Sucessfully read for channel :3 Param ID 3 Value = 2
****** Done ******

Similarly you can view parameter data for decoder and encoder components by selecting resource DEC or ENC respectively.

### 3.20 Menu Selection 18: Multi-conference Call Demo

This menu option is not supported in IXP435 reference platform. To setup multi-conference call follow the below procedure.

**Figure 2.** Single 3-Way Call Demo Setup Using Two Boards for the Intel® IXP435 Multi-Service Residential Gateway Reference Platform

On Board-2:

```
-------------------------------
- IxDspCodelet Demo Menu -
-------------------------------
0 - Print Menu
1 - Channel Setup
2 - Channel Teardown
3 - Show Channel Parameters
4 - Show Resource Parameters
5 - Set a Parameter
6 - Caller ID Demo
7 - Gateway and Fax Bypass Demo
8 - 3-Way Call Demo
9 - Player Demo
10 - SLIC APIs
```
11 - Diagnostic
12 - Socket Configuration
13 - CPU Occupancy
14 - CIDCW Demo
15 - Pulse Dial
16 - Set Plug-in parameter(s)
17 - Show Plug-in parameter(s)
18 - Multiconference Demo
19 - Exit
Please select test item - 12

----------------------------------------
-   IxDspCodelet Socket Menu   -
----------------------------------------
0 - Print Menus
1 - Channel Configuration
2 - Disable Channel
3 - Show Channel Configuration
4 - Show Channel Statistics
5 - Create Sockets
6 - Default Configuration
7 - Exit
Please select test item - 1
Enter the Src channel number (1,2 ...) - 1
Enter the Dst channel number (1,2 ...) - 1
Enter the Dst IP:192.168.20.1

----------------------------------------
-   IxDspCodelet Socket Menu   -
----------------------------------------
0 - Print Menus
1 - Channel Configuration
2 - Disable Channel
3 - Show Channel Configuration
4 - Show Channel Statistics
5 - Create Sockets
6 - Default Configuration
7 - Exit

Please select test item - 1

Enter the Src channel number (1,2 ...) - 2
Enter the Dst channel number (1,2 ...) - 2
Enter the Dst IP:192.168.20.1

-----------------------------------------------------
-     IxDspCodelet Socket Menu                  -
-----------------------------------------------------
0 - Print Menus
1 - Channel Configuration
2 - Disable Channel
3 - Show Channel Configuration
4 - Show Channel Statistics
5 - Create Sockets
6 - Default Configuration
7 - Exit

Please select test item - 5

*** DSP Codelet Socket And Voice Channel Config Info ***

Chan#:RxSock#:TxSock#:Cfg:Act:Loc Port: Remote IP:Rem Port
-----:-------:-------:---:---:--------:---------------:--------
- IxDspCodelet Socket Menu -

0 - Print Menus
1 - Channel Configuration
2 - Disable Channel
3 - Show Channel Configuration
4 - Show Channel Statistics
5 - Create Sockets
6 - Default Configuration
7 - Exit

Please select test item - 7

- IxDspCodelet Demo Menu -

0 - Print Menu
1 - Channel Setup
2 - Channel Teardown
3 - Show Channel Parameters
4 - Show Resource Parameters
5 - Set a Parameter
6 - Caller ID Demo
7 - Gateway and Fax Bypass Demo
8 - 3-Way Call Demo
9 - Player Demo
10 - SLIC APIs
11 - Diagnostic
12 - Socket Configuration
13 - CPU Occupancy
14 - CIDCW Demo
15 - Pulse Dial
16 - Set Plug-in parameter(s)
17 - Show Plug-in parameter(s)
18 - Multiconference Demo
19 - Exit

Please select test item - 1
Enter the channel number (1, 2, ..., 0 for all channels) - 1

Coder types :
0: PassThru (for debug only)
1: G711 10ms u-Law
2: G711 10ms A-Law
3: G729a/b
4: G723.1
5: G722
6: G726 40Kbps
7: G726 32Kbps
8: G726 24Kbps
9: G726 16Kbps
10: G729.1
11: iLBC 30ms
12: iLBC 20ms

Enter the coder type - 1

<<IxDspCodeletMsgSetupAck received (ch=1, numDspReply=10, numErr=0)>>

----------------------------------------
-      IxDspCodelet Demo Menu          -
----------------------------------------
0 - Print Menu
1 - Channel Setup
2 - Channel Teardown
3 - Show Channel Parameters
4 - Show Resource Parameters
5 - Set a Parameter
6 - Caller ID Demo
7 - Gateway and Fax Bypass Demo
8 - 3-Way Call Demo
9 - Player Demo
10 - SLIC APIs
11 - Diagnostic
12 - Socket Configuration
13 - CPU Occupancy
14 - CIDCW Demo
15 - Pulse Dial
16 - Set Plug-in parameter(s)
17 - Show Plug-in parameter(s)
18 - Multiconference Demo
19 - Exit

Please select test item - 1
Enter the channel number (1,2,...; 0 for all channels) - 2

Coder types :
0:PassThru (for debug only)
1:G711_10ms u-Law
2:G711_10ms A-Law
3:G729a/b
4:G723.1
5:G722
6:G726 40Kbps
7:G726 32Kbps
8:G726 24Kbps
9:G726 16Kbps
10:G729.1
11:iLBC 30ms
12:iLBC 20ms

Enter the coder type - 1

<<IxDspCodeletMsgSetupAck received (ch=2, numDspReply=10, numErr=0)>>

On Board-1:
----------------------------------------
- IxDspCodelet Demo Menu -
0 - Print Menu
1 - Channel Setup
2 - Channel Teardown
3 - Show Channel Parameters
4 - Show Resource Parameters
5 - Set a Parameter
6 - Caller ID Demo
7 - Gateway and Fax Bypass Demo
8 - 3-Way Call Demo
9 - Player Demo
10 - SLIC APIs
11 - Diagnostic
12 - Socket Configuration
13 - CPU Occupancy
14 - CIDCW Demo
15 - Pulse Dial
16 - Set Plug-in parameter(s)
17 - Show Plug-in parameter(s)
18 - Multiconference Demo
19 - Exit

Please select test item - 12

- IxDspCodelet Socket Menu -
Please select test item - 1
Enter the Src channel number (1,2 ...) - 1
Enter the Dst channel number (1,2 ...) - 1
Enter the Dst IP: 192.168.20.2

----------------------------------------
-      IxDspCodelet Socket Menu        -
----------------------------------------
  0 - Print Menus
  1 - Channel Configuration
  2 - Disable Channel
  3 - Show Channel Configuration
  4 - Show Channel Statistics
  5 - Create Sockets
  6 - Default Configuration
  7 - Exit
Please select test item - 1
Enter the Src channel number (1,2 ...) - 2
Enter the Dst channel number (1,2 ...) - 2
Enter the Dst IP: 192.168.20.2

----------------------------------------
-      IxDspCodelet Socket Menu        -
----------------------------------------
  0 - Print Menus
  1 - Channel Configuration
  2 - Disable Channel
  3 - Show Channel Configuration
  4 - Show Channel Statistics
  5 - Create Sockets
Please select test item - 5

*** DSP Codelet Socket And Voice Channel Config Info ***

Chan#:RxSock#:TxSock#:Cfg:Act:Loc Port:      Remote IP:Rem Port
-----:-------:-------:---:---:--------:---------------:--------


----------------------------------------

-      IxDspCodelet Socket Menu        -

----------------------------------------

0 - Print Menus
1 - Channel Configuration
2 - Disable Channel
3 - Show Channel Configuration
4 - Show Channel Statistics
5 - Create Sockets
6 - Default Configuration
7 - Exit

Please select test item - 7

----------------------------------------

-      IxDspCodelet Demo Menu          -

----------------------------------------

0 - Print Menu
1 - Channel Setup
2 - Channel Teardown
3 - Show Channel Parameters
4 - Show Resource Parameters
5 - Set a Parameter
6 - Caller ID Demo
7 - Gateway and Fax Bypass Demo
8 - 3-Way Call Demo
9 - Player Demo
10 - SLIC APIs
11 - Diagnostic
12 - Socket Configuration
13 - CPU Occupancy
14 - CIDCW Demo
15 - Pulse Dial
16 - Set Plug-in parameter(s)
17 - Show Plug-in parameter(s)
18 - Multiconference Demo
19 - Exit

Please select test item - 11

----------------------------------------
-      IxDspCodelet Diagnostic Menu    -
----------------------------------------
0 - Print Menu
1 - Reset a resource
2 - Start a resource
3 - Stop a resource
4 - Ping a resource
5 - Set multiple params
6 - Start codec
7 - Start Player
8 - Play tones
9 - Play FSK data
10 - Receive digits
11 - Receive FSK
12 - Get XR statistics
13 - Start an IP term
14 - Stop an IP term
15 - Setup call w/parms
16 - Set clear channel
17 - Link 2 terms
18 - Create 3W call
19 - Back to 2W call
20 - T38 Switch
21 - Load a voice prompt
22 - Play raw data file
23 - QoS Configuration
24 - Show Version
25 - Exit

Please select test item - 18

Instance No (1-4): 1
Type of Party 1 (1:TDM, 2:IP) = 1
Channel of party 1 = 1
Type of Party 2 (1:TDM, 2:IP) = 2
Channel of Party 2 = 1
Type of Party 3 (1:TDM, 2:IP) = 2
Channel of Party 3 = 2

<<IxDspCodeletMsg3WAck received (ch=1, numDspReply=9, numErr=0)>>

----------------------------------------
- IxDspCodelet Diagnostic Menu  -
----------------------------------------

0 - Print Menu
1 - Reset a resource
2 - Start a resource
3 - Stop a resource
4 - Ping a resource
5 - Set multiple params
6 - Start codec
7 - Start Player
8 - Play tones
9 - Play FSK data
10 - Receive digits
11 - Receive FSK
12 - Get XR statistics
13 - Start an IP term
14 - Stop an IP term
15 - Setup call w/parms
16 - Set clear channel
17 - Link 2 terms
18 - Create 3W call
19 - Back to 2W call
20 - T38 Switch
21 - Load a voice prompt
22 - Play raw data file
23 - QoS Configuration
24 - Show Version
25 - Exit
Please select test item - 24

----------------------------------------
<table>
<thead>
<tr>
<th>IxDspCodelet Demo Menu</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - Print Menu</td>
</tr>
<tr>
<td>1 - Channel Setup</td>
</tr>
<tr>
<td>2 - Channel Teardown</td>
</tr>
<tr>
<td>3 - Show Channel Parameters</td>
</tr>
<tr>
<td>4 - Show Resource Parameters</td>
</tr>
<tr>
<td>5 - Set a Parameter</td>
</tr>
<tr>
<td>6 - Caller ID Demo</td>
</tr>
<tr>
<td>7 - Gateway and Fax Bypass Demo</td>
</tr>
<tr>
<td>8 - 3-Way Call Demo</td>
</tr>
<tr>
<td>9 - Player Demo</td>
</tr>
<tr>
<td>10 - SLIC APIs</td>
</tr>
<tr>
<td>11 - Diagnostic</td>
</tr>
<tr>
<td>12 - Socket Configuration</td>
</tr>
</tbody>
</table>
----------------------------------------
13 - CPU Occupancy
14 - CIDCW Demo
15 - Pulse Dial
16 - Set Plug-in parameter(s)
17 - Show Plug-in parameter(s)
18 - Multiconference Demo
19 - Exit

Please select test item - 5
Enter the instance number (1,2,...; 0 for all instance) - 1
Enter the resource number

DSP resource ENC[1] parameters

<table>
<thead>
<tr>
<th>id</th>
<th>value</th>
<th>definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>Current state (0:Idle, 1:Active)</td>
</tr>
<tr>
<td>1</td>
<td>16</td>
<td>L-Port Stream ID (T-Port Base - TDM:0, IP:3, Player:11, Mixer:15)</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>AGC enable/disable (0:OFF, 1:ON)</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>VAD enable/disable (0:OFF, 1:ON)</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Code type (0:PassThru, 1:G711u, 2:G711a, 3:G729a, 4:G723, 5:G722, 6:G726_40, 7:G726_32, 8:G726_24, 9:G726_16, 10:G729.1, 11:ILBC_30ms, 12:ILBC_20ms)</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Number of frames per packet</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>Packet-loss report (0:OFF, 1:ON)</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>G723 encoding rate (0:6.3k, 1:5.3k)</td>
</tr>
<tr>
<td>8</td>
<td>96</td>
<td>G726 40Kbps RTP payload type</td>
</tr>
<tr>
<td>9</td>
<td>97</td>
<td>G726 32Kbps RTP payload type</td>
</tr>
<tr>
<td>10</td>
<td>98</td>
<td>G726 24Kbps RTP payload type</td>
</tr>
<tr>
<td>11</td>
<td>99</td>
<td>G726 16Kbps RTP payload type</td>
</tr>
<tr>
<td>12</td>
<td>0</td>
<td>G726 packing format (0:LSB - VoIP, 1:MSB - AAL)</td>
</tr>
<tr>
<td>13</td>
<td>0</td>
<td>Volume adjustment in dB (+15 ~ -40). -99 for mute</td>
</tr>
<tr>
<td>14</td>
<td>100</td>
<td>G729.1 RTP payload type</td>
</tr>
<tr>
<td>15</td>
<td>11</td>
<td>G729.1 Encoding rate(0:8k, 1:12k, 2:14k, 3:16k)</td>
</tr>
</tbody>
</table>
4:18k, 5:20k, 6:22k, 7:24k, 8:26k, 9:28k, 10:30k, 11:32k)

16 11  G729.1 MBS (0:8k,1:12k,2:14k,3:16k 4:18k, 5:20k, 
  6:22k, 7:24k, 8:26k, 9:28k, 10:30k, 11:32k, 
  12-14: reserved, 15: No_MBS )

17 11  G729.1 Maximum Encoding Rate (0:8k,1:12k,2:14k,3:16k 
  4:18k,5:20k,6:22k,7:24k,8:26k,9:28k,10:30k,11:32k)

18 110  ILBC_30ms RTP Payload Type 
19 111  ILBC_20ms RTP Payload Type 
20 0  G729.1 PCM mode (0:NarrowBand 1:WideBand)

Enter the parameter id - 4 
Enter the parameter value - 1
<<MsgAck received (ch=1 res=ENC)>>

----------------------------------------
-       IxDspCodelet Demo Menu        -
----------------------------------------

  0 - Print Menu
  1 - Channel Setup
  2 - Channel Teardown
  3 - Show Channel Parameters
  4 - Show Resource Parameters
  5 - Set a Parameter
  6 - Caller ID Demo
  7 - Gateway and Fax Bypass Demo
  8 - 3-Way Call Demo
  9 - Player Demo
 10 - SLIC APIs
 11 - Diagnostic
 12 - Socket Configuration
 13 - CPU Occupancy
 14 - CIDCW Demo
 15 - Pulse Dial
 16 - Set Plug-in parameter(s)
17 - Show Plug-in parameter(s)
18 - Multiconference Demo
19 - Exit

Please select test item - 5
Enter the instance number (1,2,...; 0 for all instance) - 1
Enter the resource number


DSP resource DEC[1] parameters

<table>
<thead>
<tr>
<th>id</th>
<th>value</th>
<th>definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>Current state (0:Idle, 1:Active)</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>Volume adjustment in dB (+15 ~ -40). -99 for mute</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>ALC enable/disable (0:OFF, 1:ON)</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>CNG enable/disable (0:OFF, 1:ON)</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Code type (0:PassThru, 1:G711u, 2:G711a, 3:G729a,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4:G723, 5:G722, 6:G726_40, 7:G726_32, 8:G726_24,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9:G726_16, 10:G729.1, 11: ILBC_30ms, 12:ILBC_20ms)</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>Packet-loss report (0:OFF, 1:ON)</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>Report packet type change (0:OFF, 1:ON)</td>
</tr>
<tr>
<td>7</td>
<td>-1</td>
<td>OR'd auto-switch cntrl bits (1:G711u, 2:G711a, 4:G729a,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8:G723, 16:G722, 32:G726_40, 64:G726_32, 128:G726_24,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>256:G726_16, 512:G729.1, 1024:ILBC_30ms, 2048:ILBC_20ms)</td>
</tr>
<tr>
<td>8</td>
<td>200</td>
<td>Jitter buffer maximum delay in ms (10 ~ 500)</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>Jitter buffer packet loss rate (in 0.1% unit)</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>Jitter buffer mode (0:Static 1:Histogram 2:RFC3550)</td>
</tr>
<tr>
<td>11</td>
<td>96</td>
<td>G726 40Kbps RTP payload type</td>
</tr>
<tr>
<td>12</td>
<td>97</td>
<td>G726 32Kbps RTP payload type</td>
</tr>
<tr>
<td>13</td>
<td>98</td>
<td>G726 24Kbps RTP payload type</td>
</tr>
<tr>
<td>14</td>
<td>99</td>
<td>G726 16Kbps RTP payload type</td>
</tr>
<tr>
<td>15</td>
<td>0</td>
<td>G726 packing format (0:LSB - VoIP, 1:MSB - AAL)</td>
</tr>
<tr>
<td>16</td>
<td>100</td>
<td>G729.1 RTP payload type</td>
</tr>
<tr>
<td>17</td>
<td>110</td>
<td>ILBC_30ms RTP Payload Type</td>
</tr>
<tr>
<td>18</td>
<td>111</td>
<td>ILBC_20ms RTP Payload Type</td>
</tr>
</tbody>
</table>
190 G729.1 PCM mode (0:NarrowBand 1:WideBand)
Enter the parameter id - 4
Enter the parameter value - 1
<<MsgAck received (ch=1 res=DEC)>>

IxDspCodelet Demo Menu

0 - Print Menu
1 - Channel Setup
2 - Channel Teardown
3 - Show Channel Parameters
4 - Show Resource Parameters
5 - Set a Parameter
6 - Caller ID Demo
7 - Gateway and Fax Bypass Demo
8 - 3-Way Call Demo
9 - Player Demo
10 - SLIC APIs
11 - Diagnostic
12 - Socket Configuration
13 - CPU Occupancy
14 - CIDCW Demo
15 - Pulse Dial
16 - Set Plug-in parameter(s)
17 - Show Plug-in parameter(s)
18 - Multiconference Demo
19 - Exit

Please select test item - 5
Enter the instance number (1,2,...; 0 for all instance) - 2
Enter the resource number


DSP resource DEC[2] parameters
id value definition
--------------------------------------------------------------
0 0 Current state (0:Idle, 1:Active)
1 0 Volume adjustment in dB (+15 ~ -40). -99 for mute
2 1 ALC enable/disable (0:OFF, 1:ON)
3 1 CNG enable/disable (0:OFF, 1:ON)
4 1 Code type (0:PassThru, 1:G711u, 2:G711a, 3:G729a,
   4:G723, 5:G722, 6:G726_40, 7:G726_32, 8:G726_24,
   9:G726_16, 10:G729.1, 11: ILBC_30ms, 12:ILBC_20ms)
5 0 Packet-loss report (0:OFF, 1:ON)
6 1 Report packet type change (0:OFF, 1:ON)
7 -1 OR'd auto-switch cntrl bits (1:G711u, 2:G711a, 4:G729a,
   8:G723, 16:G722, 32:G726_40, 64:G726_32, 128:G726_24,
   256:G726_16, 512:G729.1, 1024:ILBC_30ms, 2048:ILBC_20ms)
8 200 Jitter buffer maximum delay in ms (10 ~ 500)
9 1 Jitter buffer packet loss rate (in 0.1% unit)
10 1 Jitter buffer mode (0:Static 1:Histogram 2:RFC3550)
11 96 G726 40Kbps RTP payload type
12 97 G726 32Kbps RTP payload type
13 98 G726 24Kbps RTP payload type
14 99 G726 16Kbps RTP payload type
15 0 G726 packing format (0:LSB - VoIP, 1:MSB - AAL)
16 100 G729.1 RTP payload type
17 110 ILBC_30ms RTP Payload Type
18 111 ILBC_20ms RTP Payload Type
19 0 G729.1 PCM mode (0:NarrowBand 1:WideBand)
Enter the parameter id - 4
Enter the parameter value - 1
<<MsgAck received (ch=2 res=DEC)>>
0 - Print Menu
1 - Channel Setup
2 - Channel Teardown
3 - Show Channel Parameters
4 - Show Resource Parameters
5 - Set a Parameter
6 - Caller ID Demo
7 - Gateway and Fax Bypass Demo
8 - 3-Way Call Demo
9 - Player Demo
10 - SLIC APIs
11 - Diagnostic
12 - Socket Configuration
13 - CPU Occupancy
14 - CIDCW Demo
15 - Pulse Dial
16 - Set Plug-in parameter(s)
17 - Show Plug-in parameter(s)
18 - Multiconference Demo
19 - Exit

Please select test item - 5
Enter the instance number (1,2,...; 0 for all instance) - 2
Enter the resource number

DSP resource ENC[2] parameters
id      value     definition
--------------------------------------------------------------
0 0      Current state (0:Idle, 1:Active)
1 17     L-Port Stream ID (T-Port Base -
                     TDM:0, IP:3, Player:11, Mixer:15)
2 0      AGC enable/disable (0:OFF, 1:ON)
3 0      VAD enable/disable (0:OFF, 1:ON)
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of frames per packet</td>
<td>1</td>
</tr>
<tr>
<td>Packet-loss report</td>
<td>0:OFF, 1:ON</td>
</tr>
<tr>
<td>G723 encoding rate</td>
<td>0:6.3k, 1:5.3k</td>
</tr>
<tr>
<td>G726 40Kbps RTP payload type</td>
<td></td>
</tr>
<tr>
<td>G726 32Kbps RTP payload type</td>
<td></td>
</tr>
<tr>
<td>G726 24Kbps RTP payload type</td>
<td></td>
</tr>
<tr>
<td>G726 packing format</td>
<td>0:LSB - VoIP, 1:MSB - AAL</td>
</tr>
<tr>
<td>Volume adjustment in dB</td>
<td>+15 ~ -40, -99 for mute</td>
</tr>
<tr>
<td>G729.1 RTP payload type</td>
<td></td>
</tr>
<tr>
<td>G729.1 Encoding rate</td>
<td>0:8k, 1:12k, 2:14k, 3:16k, 4:18k, 5:20k, 6:22k, 7:24k, 8:26k, 9:28k, 10:30k, 11:32k</td>
</tr>
<tr>
<td>G729.1 MBS</td>
<td>0:8k, 1:12k, 2:14k, 3:16k, 4:18k, 5:20k, 6:22k, 7:24k, 8:26k, 9:28k, 10:30k, 11:32k, 12-14: reserved, 15: No_MBS</td>
</tr>
<tr>
<td>G729.1 Maximum Encoding Rate</td>
<td>0:8k, 1:12k, 2:14k, 3:16k, 4:18k, 5:20k, 6:22k, 7:24k, 8:26k, 9:28k, 10:30k, 11:32k</td>
</tr>
<tr>
<td>ILBC_30ms RTP Payload Type</td>
<td></td>
</tr>
<tr>
<td>ILBC_20ms RTP Payload Type</td>
<td></td>
</tr>
<tr>
<td>G729.1 PCM mode</td>
<td>0:NarrowBand, 1:WideBand</td>
</tr>
</tbody>
</table>

Enter the parameter id - 4
Enter the parameter value - 1

<<MsgAck received (ch=2 res=ENC)>>

- IxDspCodelet Demo Menu
4 - Show Resource Parameters  
5 - Set a Parameter  
6 - Caller ID Demo  
7 - Gateway and Fax Bypass Demo  
8 - 3-Way Call Demo  
9 - Player Demo  
10 - SLIC APIs  
11 - Diagnostic  
12 - Socket Configuration  
13 - CPU Occupancy  
14 - CIDCW Demo  
15 - Pulse Dial  
16 - Set Plug-in parameter(s)  
17 - Show Plug-in parameter(s)  
18 - Multiconference Demo  
19 - Exit  
Please select test item - 11

----------------------------------------
- IxDspCodelet Diagnostic Menu -
----------------------------------------
0 - Print Menu  
1 - Reset a resource  
2 - Start a resource  
3 - Stop a resource  
4 - Ping a resource  
5 - Set multiple params  
6 - Start codec  
7 - Start Player  
8 - Play tones  
9 - Play FSK data  
10 - Receive digits  
11 - Receive FSK  
12 - Get XR statistics
13 - Start an IP term
14 - Stop an IP term
15 - Setup call w/parms
16 - Set clear channel
17 - Link 2 terms
18 - Create 3W call
19 - Back to 2W call
20 - T38 Switch
21 - Load a voice prompt
22 - Play raw data file
23 - QoS Configuration
24 - Show Version
25 - Exit

Please select test item - 13
IP channel = 1

<<IxDspCodeletMsgSetupAck received (ch=1, numDspReply=3, numErr=0)>>

----------------------------------------
-      IxDspCodelet Diagnostic Menu    -
----------------------------------------

0 - Print Menu
1 - Reset a resource
2 - Start a resource
3 - Stop a resource
4 - Ping a resource
5 - Set multiple params
6 - Start codec
7 - Start Player
8 - Play tones
9 - Play FSK data
10 - Receive digits
11 - Receive FSK
12 - Get XR statistics
13 - Start an IP term
14 - Stop an IP term
15 - Setup call w/parms
16 - Set clear channel
17 - Link 2 terms
18 - Create 3W call
19 - Back to 2W call
20 - T38 Switch
21 - Load a voice prompt
22 - Play raw data file
23 - QoS Configuration
24 - Show Version
25 - Exit

Please select test item - 13

IP channel = 2

<<IxDspCodeletMsgSetupAck received (ch=2, numDspReply=3, numErr=0)>>

Setting up conference calls with narrowband, wideband, and combination of both using two boards:

Case 1: Both boards narrowband:

This case is explained in detail in Section 3.20.

Case 2: Both boards wideband:

1. Configure the SLIC to wideband at the start of the codelet application for both the boards.
2. Steps to setup conference are the same as in Section 3.20 except that wideband (G.722) codec should be selected for all IP terminations.

Case 3: Mixer Board wideband and board-2 narrowband:

1. Configure the SLIC to wideband at the start of the codelet application for Mixer board.
2. Configure the SLIC to narrowband at the start of the codelet application for board-2.
3. Steps to set up conference are the same as in Section 3.20

Note: Codec type [G.711, G.723, G.726, G.729, G.729.1, iLBC] selected for IP termination in Mixer board should match with board-2 IP termination codec types.

Case 4: Mixer board narrowband and board-2 wideband:

1. Configure the SLIC to narrowband at the start of the codelet application for Mixer board.
2. Configure the SLIC to wideband at the start of the codelet application for board-2.
3. Steps to setup conference are same as in Section 3.20 except IP terminations in both boards should be configured with wideband codec (G.722)
3.21 Menu Selection 19: Exit

When selected, the test menu exits and goes to the system shell. The test menu can be re-entered by using the `ixDspCodeletApp` command.

§ §