

**EVM Test Procedure**

**TLV320AIC3104EVM**

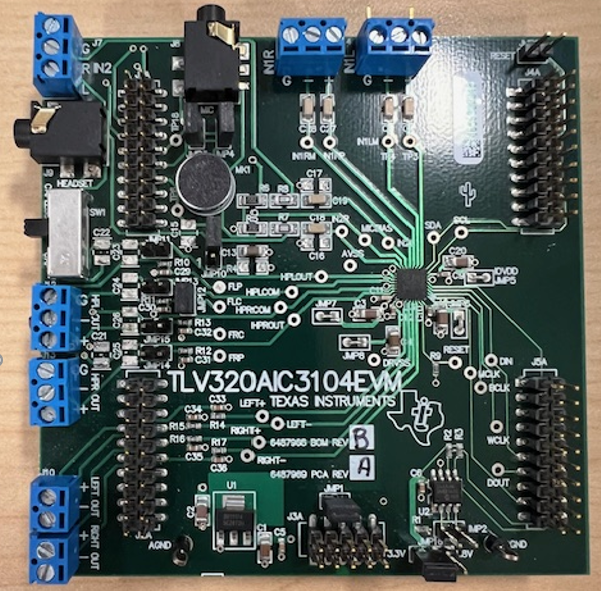
**TEST PROCEDURE**

# Rev. B

**12/22/2023**

1. **GENERAL**
   1. **Purpose**
      1. To provide detailed instructions for testing the TLV320AIC3104EVM Evaluation Module.
   2. **Scope**
      1. Covers complete instructions for testing the TLV320AIC3104EVM.
   3. **Reference Documentation**
      1. TLV320AIC3104EVM User’s Guide
      2. TLV320AIC3104 Datasheet
   4. **Materials**
      1. Test Log attached to end of this procedure.
   5. **Definitions**
      1. *EVM* is reference to Evaluation Module assembly, in this case, the TLV320AIC3104EVM.
      2. *GUI* is reference to the test Graphical User Interface, the AIC3xevmtester for USB-MODEVM or AIC310X EVM GUI for AC-MODEVM.
      3. *DUT* is reference to Device Under Test, in this case, the TLV320AIC3104.
2. **SAFETY**
   1. Safety Glasses are to be worn.
   2. This test must be performed by qualified personnel trained in electronics theory and understand the risks and hazards of the assembly to be tested.
   3. ESD precautions must be followed while handling electronic assemblies while performing this test.
   4. Precautions should be observed to avoid touching areas of the assembly that may get hot or present a shock hazard during testing.
3. **QUALITY**
   1. Test data or reports shall be made available upon request by Texas Instruments.
4. **APPAREL**
   1. Electrostatic smock
   2. Electrostatic Gloves or finger cots
   3. Safety Glasses
   4. Ground ESD wrist strap
5. **EQUIPMENT**
   1. Hardware Required:
      1. TLV320AIC3104EVM evaluation module.
      2. USBMODEVM or AC-MODEVM Controller Board.
      3. USB Cable (Type A-B).
      4. Wire for EVM testing.
   2. Software required:
      1. AIC3xevmtester GUI (aic3x\_test\_installv102.zip) installed in the test computer for USB-MODEVM or AIC310X EVM GUI download from the [product folder](https://www.ti.com/tool/TLV320AIC3109EVM-K) link.
      2. Latest [NI-VISA drivers](http://www.ni.com/nisearch/app/main/p/bot/no/ap/tech/lang/en/pg/1/sn/catnav:du,n8:3.25.123.1640,ssnav:ndr/) should be installed in the test computer.
      3. [USB-MODEVM windows 7 drivers](https://e2e.ti.com/support/data_converters/audio_converters/w/design_notes/2821.windows-7-compatibility-for-aic-evms) for the USB-MODEVM controlled board.
      4. AC-MODEVM driver will be installed in the product folder GUI setup.
6. **EQUIPMENT SETUP – With USB-MODEVM**
   1. The EVM is tested using the USB-MODEVM or AC-MODEVM. Refer to the USB-MODEVM test procedure (EDGE# 6463994) to ensure that the USB-MODEVM board used is programmed with the USBMODEVM105.BIN firmware before attempting to test the TLV320AIC3104EVM or AC-MODEVM (EDGE# 6641452) for programming the XMOS processor.
   2. Set the EVM switches jumpers as shown below:

|  |  |
| --- | --- |
| **Switch** | **Setting** |
| SW1 | Set to CAPLESS |
| **Jumper** | **Setting** |
| JMP1 | Installed |
| JMP2 | Removed |
| JMP3 | Installed |
| JMP4 | Installed |
| JMP5 | Buss wire soldered in |
| JMP6 | Buss wire soldered in |
| JMP7 | Buss wire soldered in |
| JMP8 | Buss wire soldered in |
| JMP9 | Removed |
| JMP10 | Connect 2 to 3 |
| JMP11 | Removed |
| JMP12 | Installed |
| JMP13 | Removed |
| JMP14 | Removed |
| JMP15 | Removed |
| JMP16 | Connect 2 to 3 |

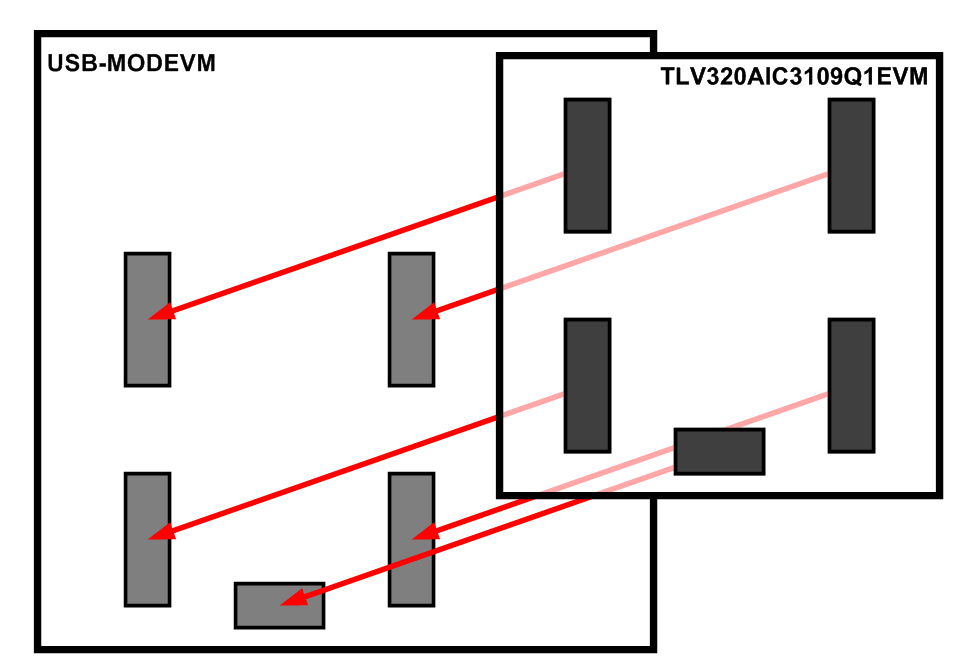


* 1. For USB-MODEVM, verify that the jumpers and switches in the USBMODEVM are configured as below.

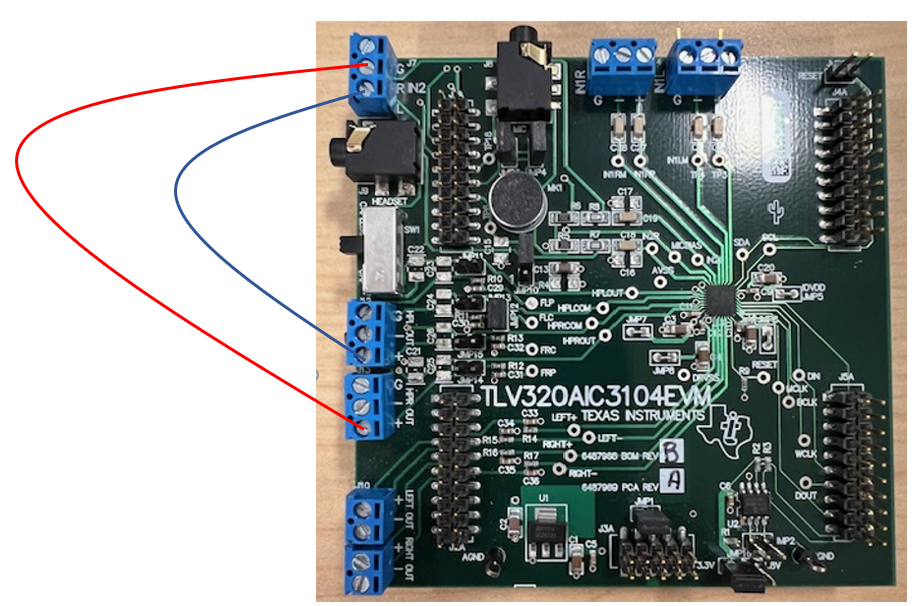
|  |  |
| --- | --- |
| **Switch** | **Setting** |
| SW1 | 1-2: ON |
| SW2 | 1-7: ON  8: OFF |
| SW3 | 1: ON  2-8: OFF |

|  |  |
| --- | --- |
| **Jumper** | **Setting** |
| JMP1 | Installed |
| JMP2 | Removed |
| JMP3 | Removed |
| JMP4 | Removed |
| JMP5 | Installed 2-3 (*FSX*) |
| JMP6 | Installed 1-2 (USB) |
| JMP7 | Installed 1-2 (*FSX*) |
| JMP8 | Removed |

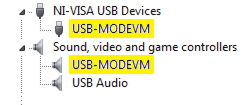
* 1. Plug in the TLV320AIC3104EVM to the USB-MODEVM board assuring that the power and digital interface connectors are properly aligned.



* 1. Connect a wire from HPLOUT/HPROUT (+) and LINE2L/LINE2R as indicated in below diagram.

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* 1. Plug in the USB cable from the PC to the USB-MODEVM.
  2. Verify that the USB-MODEVM drivers are correctly installed. In Device manager, the EVM should be recognized as follows:

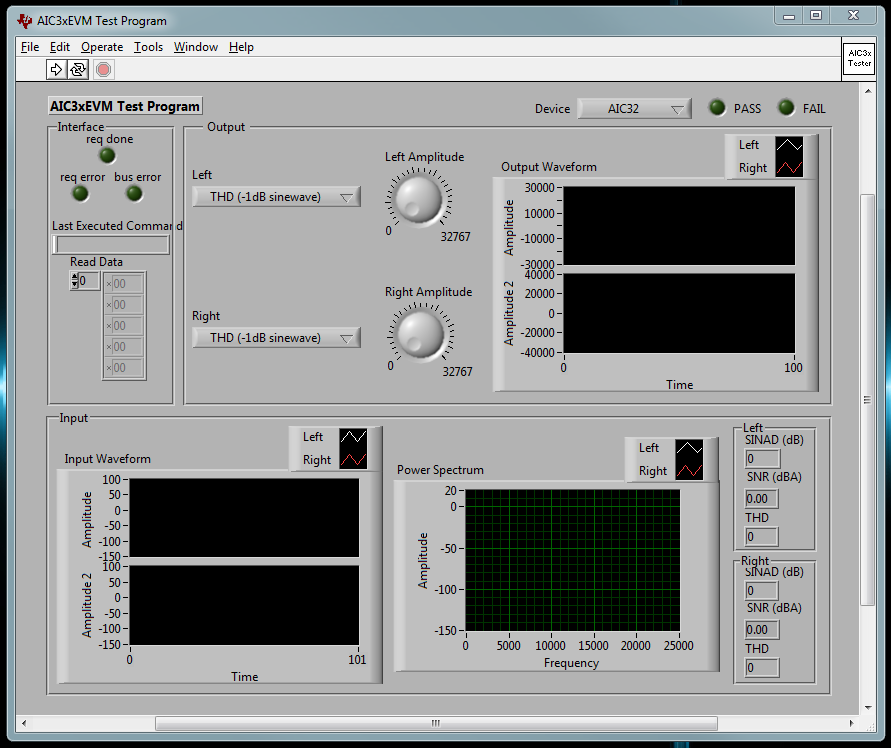


* 1. If the EVM is not recognized as indicated, install the drivers mentioned in step 5.2.
  2. Select USB-MODEVM as the default playback and recording device.

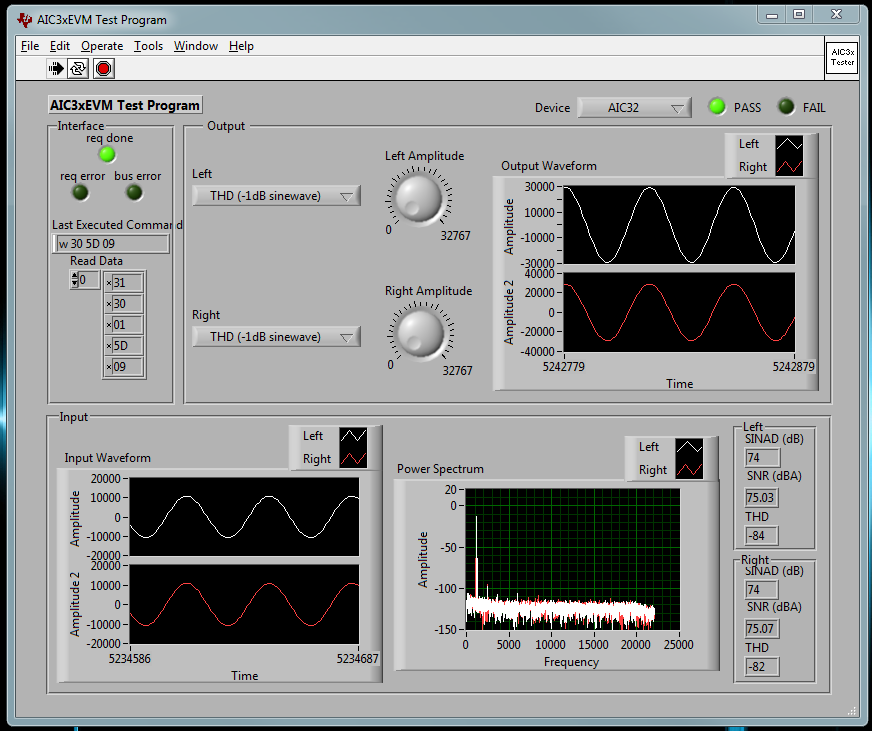
1. **EQUIPMENT SETUP – With AC-MODEVM**
   1. The EVM is tested using the AC-MODEVM. Refer to the AC-MODEVM (EDGE# 6641452) for programming the XMOS processor before attempting to test the TLV320AIC3104EVM.
   2. Keep the same EVM jumper settings as in the USB-MODEVM section *6.2* above.
   3. Plug in the TLV320AIC3104EVM to the AC-MODEVM board assuring that the power and digital interface connectors are properly aligned.
   4. Connect a wire from HPLOUT/HPROUT (+) terminal to LINE2L/LINE2R terminal similar to section *6.5* above for USB-MODEVM.
   5. Plug in the USB cable from the PC to the AC-MODEVM.
   6. Verify that the AC-MODEVM drivers are correctly installed.
   7. In Device manager, the EVM should be recognized as follows:



1. **PROCEDURE – with USB-MODEVM**
   1. Run AIC3xevmtester.exe. A screen like below figure should appear after executing the GUI.

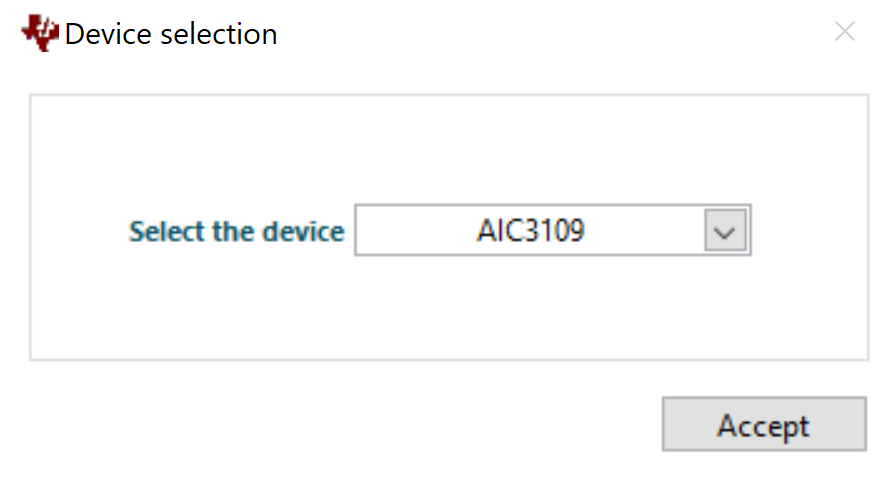


* 1. If an error message appears, then it is possible that either the computer doesn’t have the latest NI-VISA drivers, or that the USB-MODEVM drivers are not installed. Please refer to section 5.2 for details on the software requirements.
  2. Make sure the *Device* control in the upper right corner is set to AIC32. This works with the TLV320AIC3104 device as well.
  3. Press ***Run*** (button with an arrow pointing to the right, located in the in the toolbar).
  4. The GUI will start the test routine by sending some configuration commands to the DUT. After the DUT is configured, the ***req done*** and ***PASS*** indicators should light up green. There may be some occasional blinking of both ***PASS*** and ***FAIL*** lights; allow time for it to settle to a stable reading.

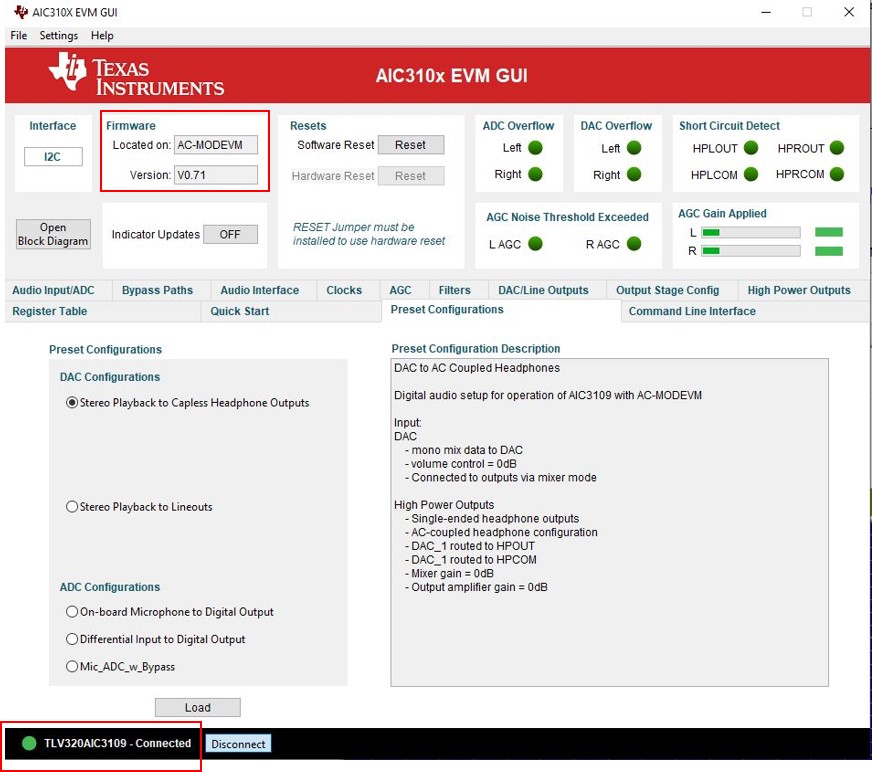


* 1. If ***PASS*** light is stable, then the EVM passes.
  2. If ***PASS*** light is not light up, and ***FAIL***light turns on, the EVM fails.
  3. If the unit fails, specify that failed assemblies are to be marked with failure step and dispositioned according with section 9.0. Passing units should also be specified in section 9.0.
  4. Stop testing by pressing the ***Stop*** (button with stop-sign button in the toolbar).
  5. Disconnect the USB cable and remove the EVM from the USB-MODEVM board.
  6. Remove wire used for the test and keep jumpers as indicated in the table of section 6.2 for shipment.
  7. Switch to another EVM and loop back to section 6, continue until all units have been tested.

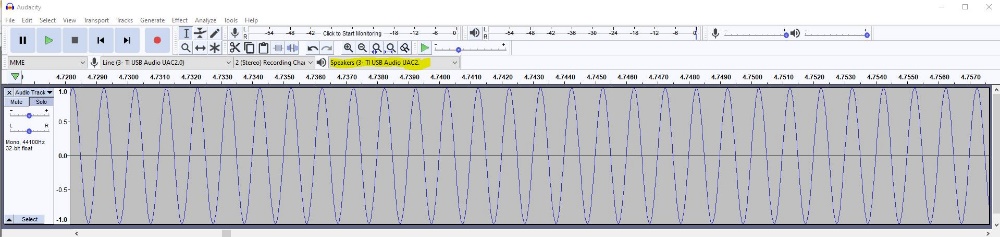
1. **PROCEDURE – with AC-MODEVM**
   1. Open the AIC310x EVM GUI and select the AIC3104 device from the pull-down menu as shown and hit accept:

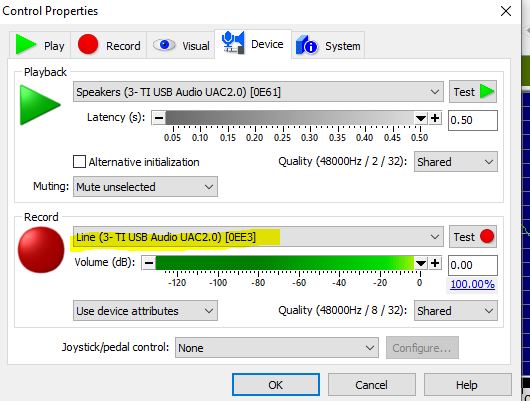


* 1. Check the EVM Connection and the board type from GUI as shown, make sure it’s showing the correct AC-MODEVM with TLV320AIC3104.

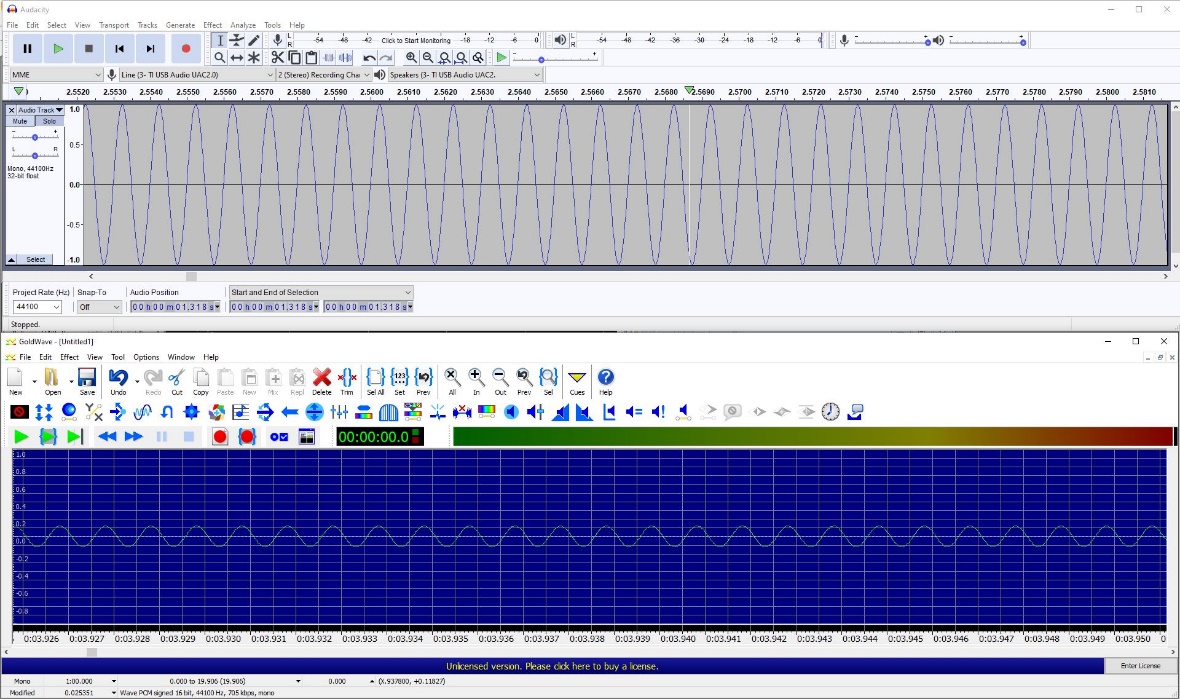


* 1. Click on Preset Configurations tab and select “On-board Microphone to Digital Output” for ADC Configurations and hit the Load button and then select “Stereo Playback to Capless Headphone Outputs” for DAC Configurations and hit the Load button.
  2. Open Audacity and create a 1 KHz tone of amplitude level of 1 and set playback/Speaker device to TI USB Audio UAC2, then open GoldWave and set record device to TI USB Audio UAC2.0 as shown below:





* 1. Set Windows Sound Volume to 100%.
  2. Open a new mono track in GoldWave to record the tone coming back from the ADC input (IN1 +) terminal. Once open hit the “record in the current selection” button follows by hitting the “Ru” button in Audacity to play the 1 KHz tone. The play and record tone is shown below:



* 1. Check the recorded signal and verify level to be above 0.2 as shown in GoldWave above.
  2. The test is complete.

1. **MATERIAL DISPOSITION & TRANSFER**
   1. **Conforming Material**

On the ESD bag, in text clearly visible and readable to the naked eye, add:

***For evaluation only; not FCC approved for resale.***

This can be included on the label below or added as a separate label.

Units that have passed this test procedure shall be packaged into anti-static ESD approved bags, labeled per table below and shipped per the P.O.

|  |  |
| --- | --- |
| **Label 1**  **Assembly Number+Dash Number**  **(if Applicable)** | **Label 2**  **IC Number** |
|  | **TLV320AIC3104EVM-K** |

* 1. **Non-Conforming** **Material**

If yield loss is 2% or less, scrap non-conforming units and adjust P.O. to reflect total amount shipped. Contact EVM coordinator for assistance if yield loss approaches, or exceeds 5%,

**CHANGE HISTORY**:

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Changes** | **Reason** | **By** |
| 6/30/2017 | Original | - | Diego Meléndez |
| 12/13/2023 | Rev. B | Add AC-MODEVM controller | Peter Djuandi |
|  |  |  |  |
|  |  |  |  |