Knowles Voice Vibration Sensor Evaluation Tool User Guide

DESCRIPTION

The Knowles Voice Vibration Sensor Evaluation Tool is a basic application to allow evaluation of Voice Vibration Sensor (V2S). It can be used with V2S200D Evaluation Kit for recording and playback of audio as well as setting basic filters and gains on audio channels.

Refer to https://www.knowles.com/V2S for more details on the V2S sensor, getting ordering information and for installation instructions of this tool.

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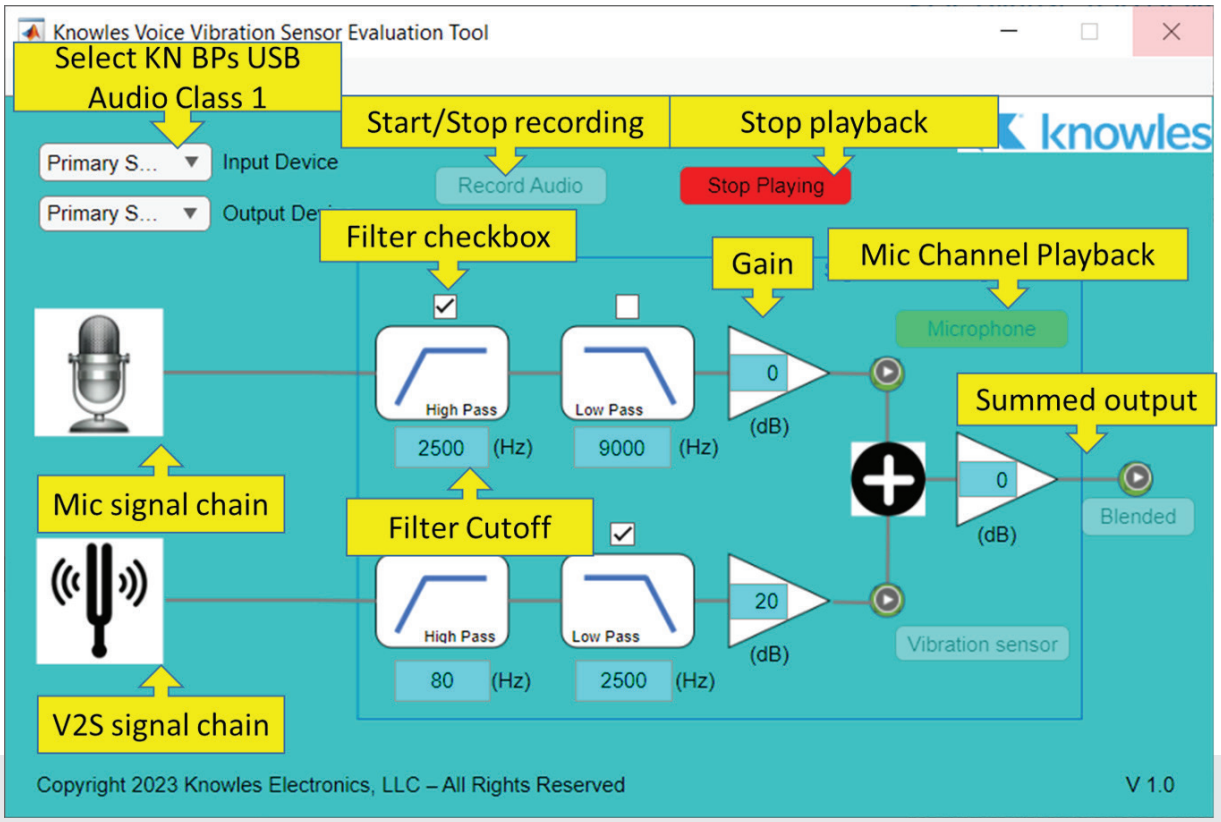
INITIAL SETUP AND BRINGUP

Download the application package from https://www.knowles.com/V2S. Read and accept the license agreement before proceeding. Follow the installation steps.

GRAPHICAL USER INTERFACE



Input Device (drop down)
Select “Line (USB AUDIO CODEC)” from pull down selector.

Output Device (drop down)
Choose an output source for audio playback.

Filter (checkbox)
Enable/Disable High Pass or Low Pass filters

Filter (textbox)
Corner frequency for the filter
Note: The upper limit of the Hi Pass filter is 22.05KHz

Gain (textbox)
Gain added to the input audio signal.

Record Audio (button)
Press to begin audio recording.
Press “Stop Recording” to stop recording

Audio Playback Options
Microphone – playback microphone audio
Vibration Sensor – playback V2S sensor audio
Blended – playback blended microphone and V2S audio

File (Menu)
Various option to save and load configuration
Various options to save audio files

SUGGESTED EVALUATION STEPS

1. Connect V2S200D Evaluation Kit to PC via USB
2. Select the desired PDM clock rate
3. Launch the Voice Vibration Sensor Evaluation Tool
4. Load previously saved configuration file (optional)
5. Create a real or synthetic loud environment in the background e.g. people talking, music playing or wind blowing into the earphone. This emulates real world condition of trying to have a voice call at a busy airport, restaurant or street etc.
6. Put the earbud in ear and hit “Record Audio” button
7. Speak normally for a few seconds and hit “Stop Recording”
8. Try various configurations of filters and gains for evaluations. Sample steps could be:
   a. Disable all filters and playback Microphone channel. This sets a baseline of voice call experience in noisy background.
   b. Put ~20dB gain to V2S channel to roughly equalize the signal strength between voice vibrations and sound waves.
   c. Playback Vibration Sensor Channel. This demonstrates V2S sensor capability to pick-up speaker sounds while suppressing background sounds.
   d. Select desired filtering and playback individual or blended audio channels
   e. V2S channel can usually pick-up reasonable signal strength up to 2500-3000Hz bandwidth. More or less bandwidth may be experienced based on user, earbud wearing style etc.
   f. Good balance of speech intelligibility through noise suppression and high fidelity can usually be achieved by blending low frequencies from the V2S channel (Low Pass @ 2500Hz) and high frequencies from the Microphone channel (High Pass @ 2500Hz) respectively.

TROUBLESHOOTING

» **No sound on any channel**
Ensure correct input is selected under Input Device

Ensure V2S200D Evaluation Kit is plugged in correctly and a non-OFF clock setting is selected using the dip switch

Ensure Audio Output device is correctly selected and ON

» **No sound on the V2S channel**
Check ~20dB gain is applied to amplify the weak vibration signals

» **Same output on both channels**
Ensure correct input is selected under Input Device

» **Playback audio sounds distorted**
Reduce gain settings to prevent speaker saturation

Use high quality headphones as the Output Device

INFORMATION

FOR FURTHER INFORMATION ON TECHNOLOGY, DELIVERY TERMS AND CONDITIONS AND PRICES, PLEASE CONTACT A KNOWLES REPRESENTATIVE.

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REVISION HISTORY

Revision	Description	Date
1	Initial Release	3/27/23
2		
3		
4		
5		