Overview

The USB Composite HID and Audio Unified application is a simple demonstration program based on the MCUXpresso SDK. It is enumerated as a playback and recording device. Users can record the sound from this device via the "Sound Recorder" in the Windows Accessories and play music with the device.

System Requirement

Hardware requirements

- Mini/micro USB cable
- USB A to micro AB cable
- Hardware (Tower System base/module) with a SGTL board (except MAPS-KS22)
- Personal Computer

Software requirements

- The project files for the lite version example are in:

  <MCUXpresso_SDK_Install>/boards/<board>/usb_examples/usb_device_composite_hid_audio_unified_lite/<rtos>/<toolchain>.

  The project files for a non-lite version example are in:

  <MCUXpresso_SDK_Install>/boards/<board>/usb_examples/usb_device_composite_hid_audio_unified/<rtos>/<toolchain>

  Note

  The <rtos> is Bare Metal or FreeRTOS OS.

Getting Started

Hardware Settings

- Jumper settings for REV B:

  J17 1-2 and 3-5. Besides, two 33ohm resistors (R225 and R227) have to be populated on nets K21_MICRO_USB_DP and K21_MICRO_USB_DN and two 33ohm resistors (R224 and R226) on nets USB0_DP and USB0_DN have to be removed for using micro USB connector. 1-2 and 3-5. Besides , two 33ohm resistors (R224 and R226) have to be populated on nets USB0_DP and USB0_DN and two 33ohm resistors (R225 and R227) on nets K21_MICRO_USB_DP and K21_MICRO_USB_DN have to be removed for using TWR-SER board's mini USB connector.

- The Jumper settings REV C:

  J17 1-2 and 3-5, J24 1-2 for micro USB connector. 1-2, J24 2-3 for using TWR-SER mini USB connector.

  Note

  Set the hardware jumpers (Tower system/base module) to default settings.

Prepare the example

1. Download the program to the target board.
2. Connect the target board to the external power source (the example is self-powered).
3. Either press the reset button on your board or launch the debugger in your IDE to begin running the demo.
4. Connect a USB cable between the PC host and the USB device port on the board.

For detailed instructions, see the appropriate board User's Guide.

Run the example in Windows

1. Plug in the device which is running composite example into PC.
2. For the Audio recorder, a USB AUDIO DEMO device is enumerated in the Device Manager.
3. Right click on the sound control icon in the Start bar (near the clock) and select "Recording devices".

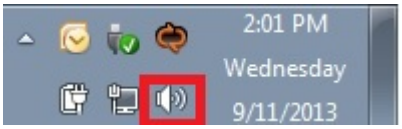

Figure 1: Sound control icon

4. In the opened window, select the "Microphone" device with the description "USB Audio + HID Demo" and click on the "Properties" button.

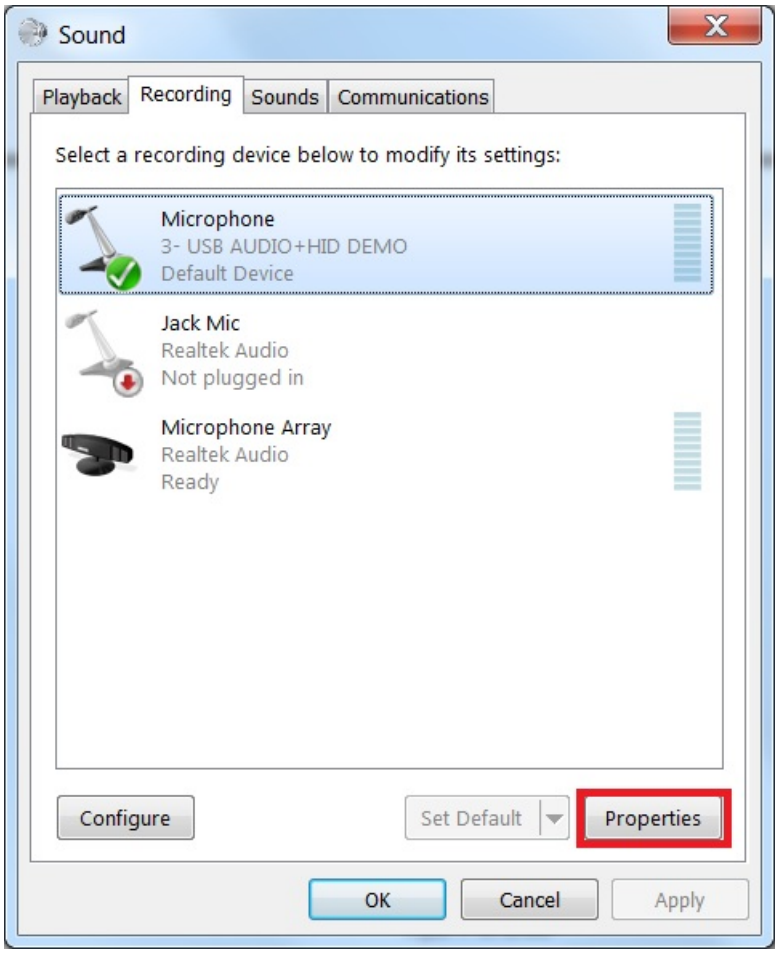

Figure 2: Select properties

5. In the new window, go to "Levels" tab, move the slide until 100%, and click on "OK".

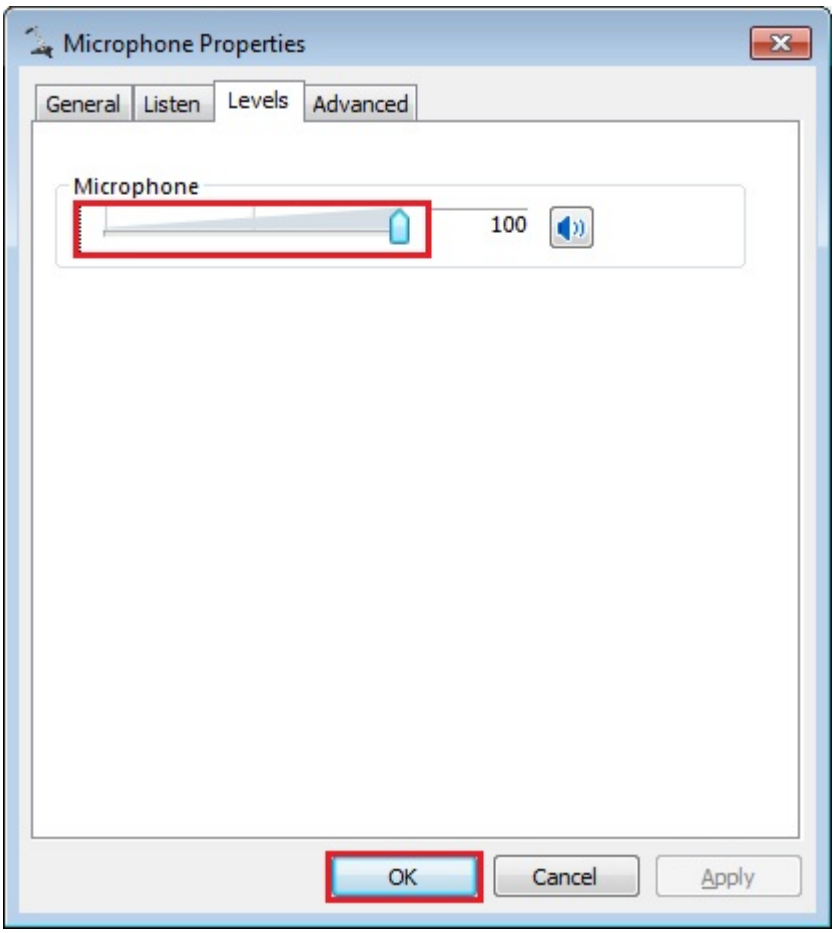

Figure 3: Change level

6. Ensure that "USB Audio + HID Demo" is still selected in the previous window and click on the "Set Default" button. Finally, click on the "OK" button.

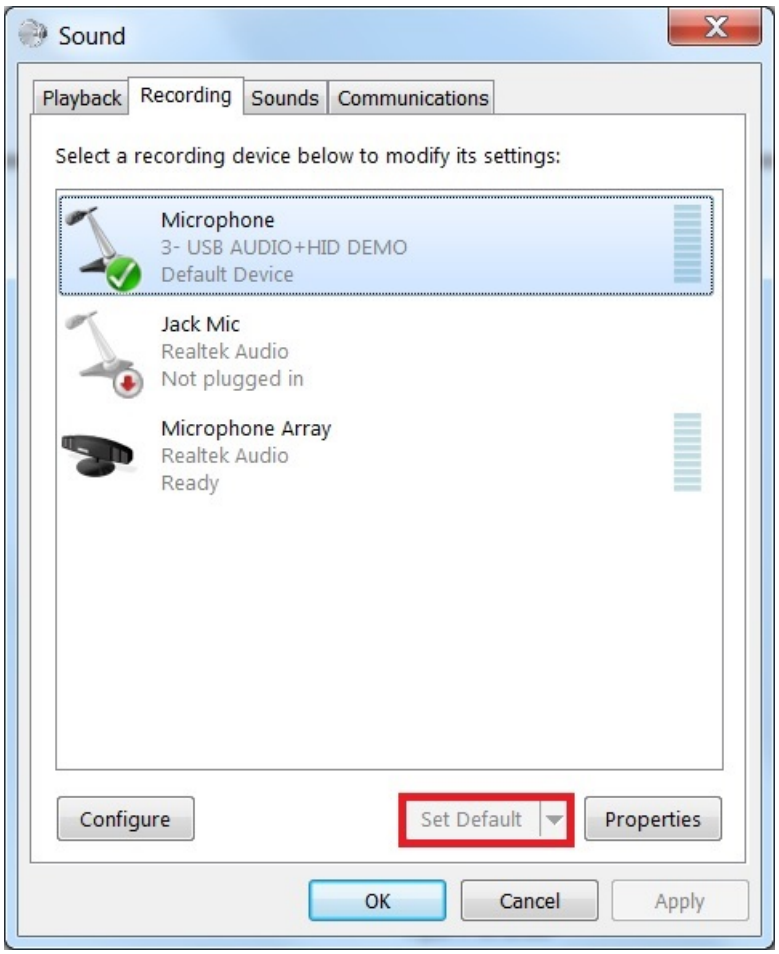

Figure 4: Set default

7. Plug a line in cable into the line in slot, for example, J9 on SGTL board and connect the other end into PC or mobile phone.
8. Open the "Sound Recorder" application and record audio.
9. After recording, open the recorder file with any media player.
10. In the opened window, select the "Speakers" device with the description "USB Audio + HID Demo" and click on the "Properties" button.

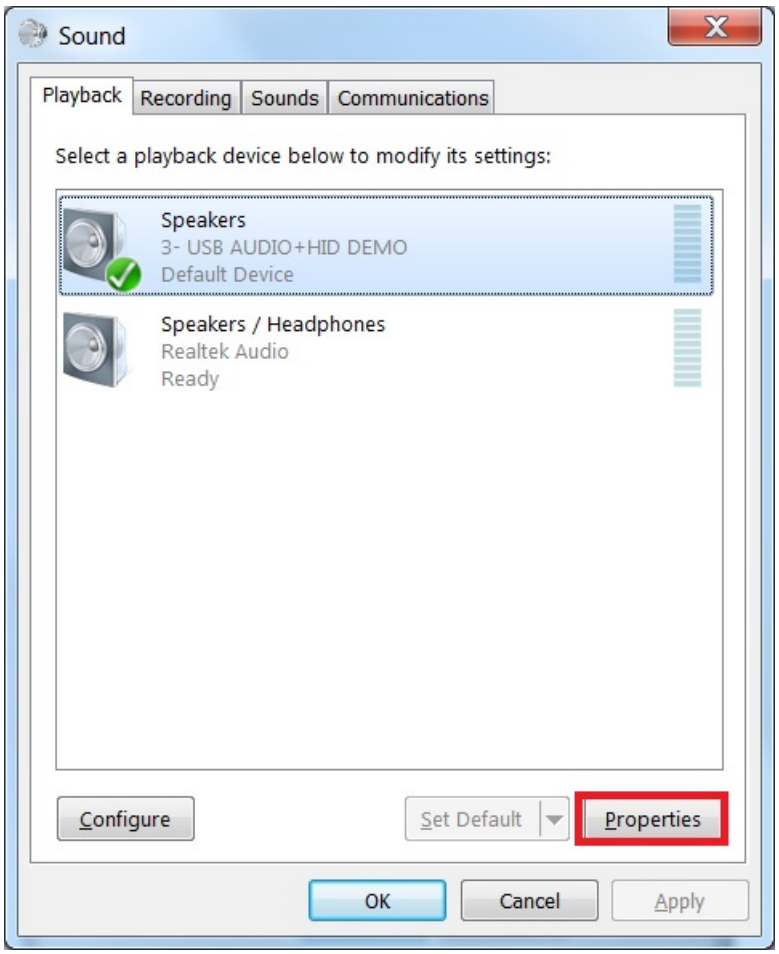

Figure 5: Select properties

11. In the new window, go to "Levels" tab, move the slide until 100%, and click on "OK".

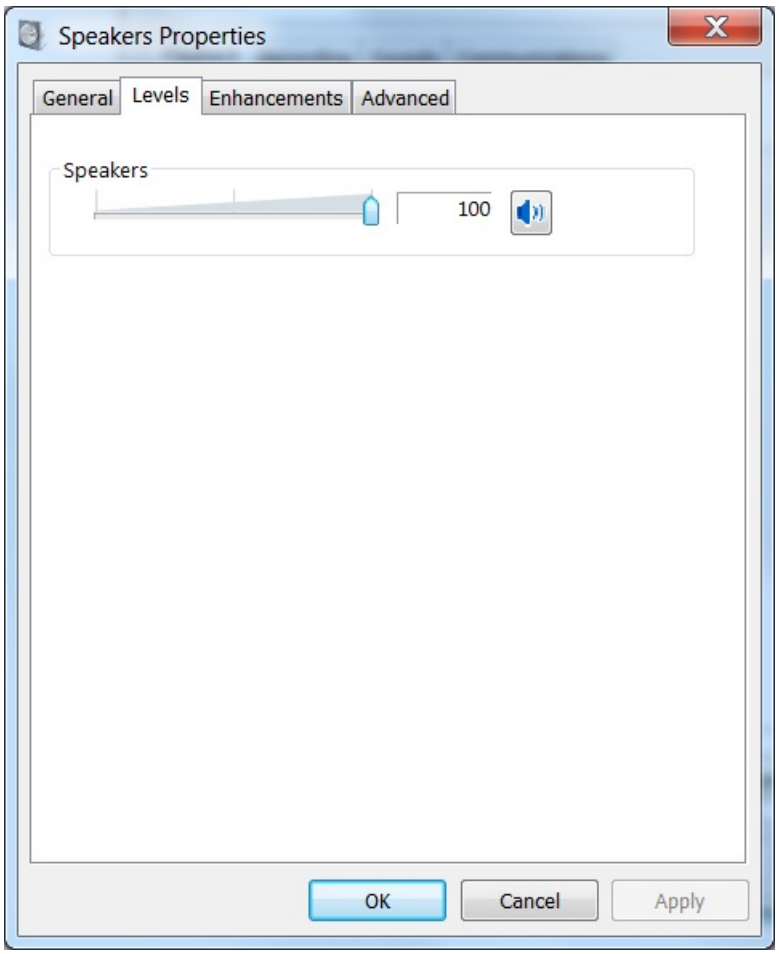

Figure 6: Change level

12. Ensure that "USB Audio + HID Demo" is still selected in the previous window and click on the "Set Default" button. Finally, click on the "OK" button.

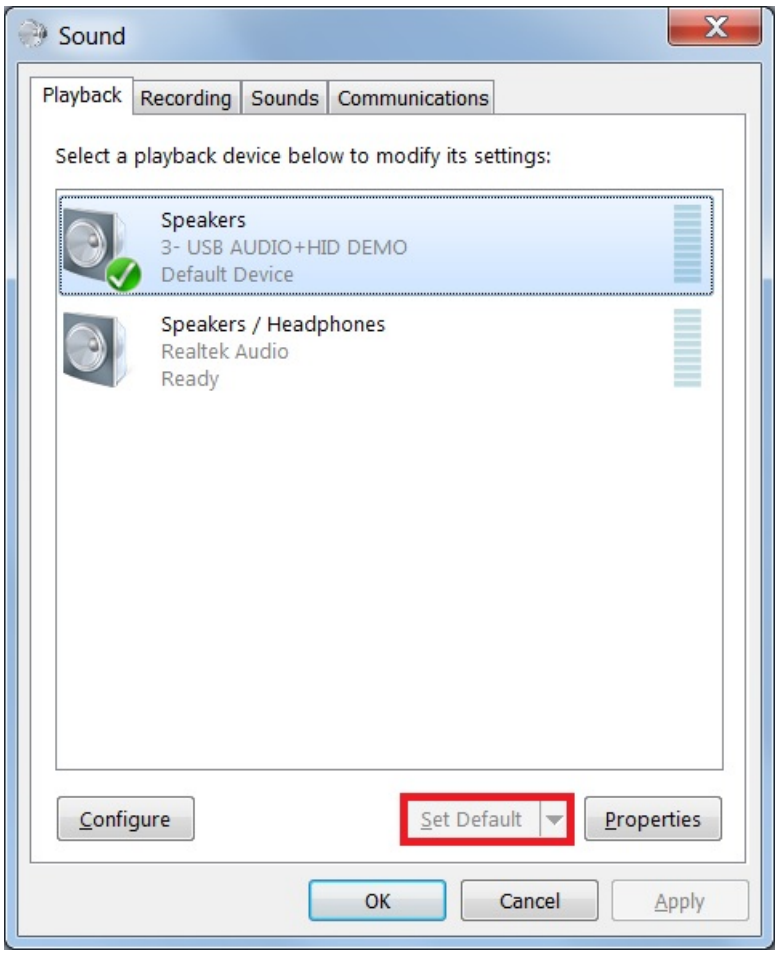

Figure 7: Set default

13. Open the Window Media Player application, select, and play the song.
14. Use the mute/unmute button shown in the debug console's print information to mute/unmute speaker, it only control the speaker.

Note

- On some platforms, the recorder may have noise since the audio clock and USB SOF are not synchronized, this problem only happens on Windows but not on Mac OSX since the latter uses unified engine.
- This example doesn't support Audio Device Class 2.0.