Overview

The Composite CDC and Audio Unified project is a simple demonstration program based on the MCUXpresso SDK. It is enumerated as a COM port and playback/recording device, which the COM port can be opened using terminal tools, such as TeraTerm. The purpose of this demo is to show how to build a composite USB device and to provide a simple example for further development.

System Requirement

Hardware requirements

- Mini/micro USB cable
- USB A to micro AB cable
- Hardware (Tower module/base board, and so on) for a specific device
- Personal Computer

Software requirements

- The project files are in:
  <MCUXpresso_SDK_Install>/boards/<board>/usb_examples/usb_device_composite_cdc_audio_unified/<rtos>/<toolchain>
  For a lite version, the project files are in:
  <MCUXpresso_SDK_Install>/boards/<board>/usb_examples/usb_device_composite_cdc_audio_unified/<rtos>/<toolchain>
  Note
  The <rtos> is Bare Metal or FreeRTOS OS.

Getting Started

Hardware Settings

- Jumper settings for evkmimxrt685 REV.E is : J7-1 <–> J7-2, J8-1 <–> J8-2.

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.

Note

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

Run the example in Windows OS

1. Plug in the device which is running composite example into PC.
2. A COM port and a Audio Device is enumerated in the Device Manager.

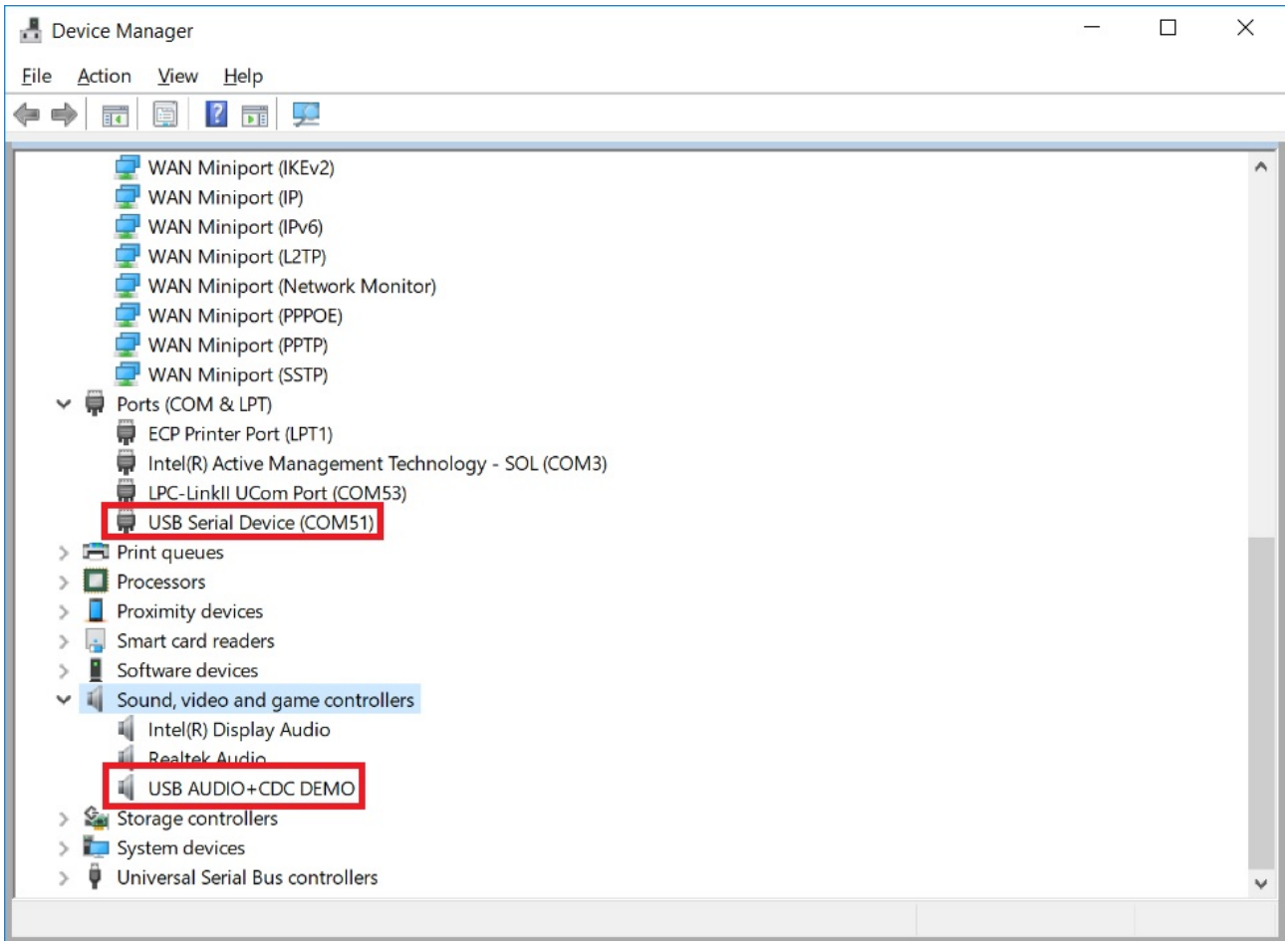

Figure 1: The device enumerated in the device manager

3. Open the COM port in a terminal tool, such as the Putty.
4. Type some characters, which are echoed back from the COM port.

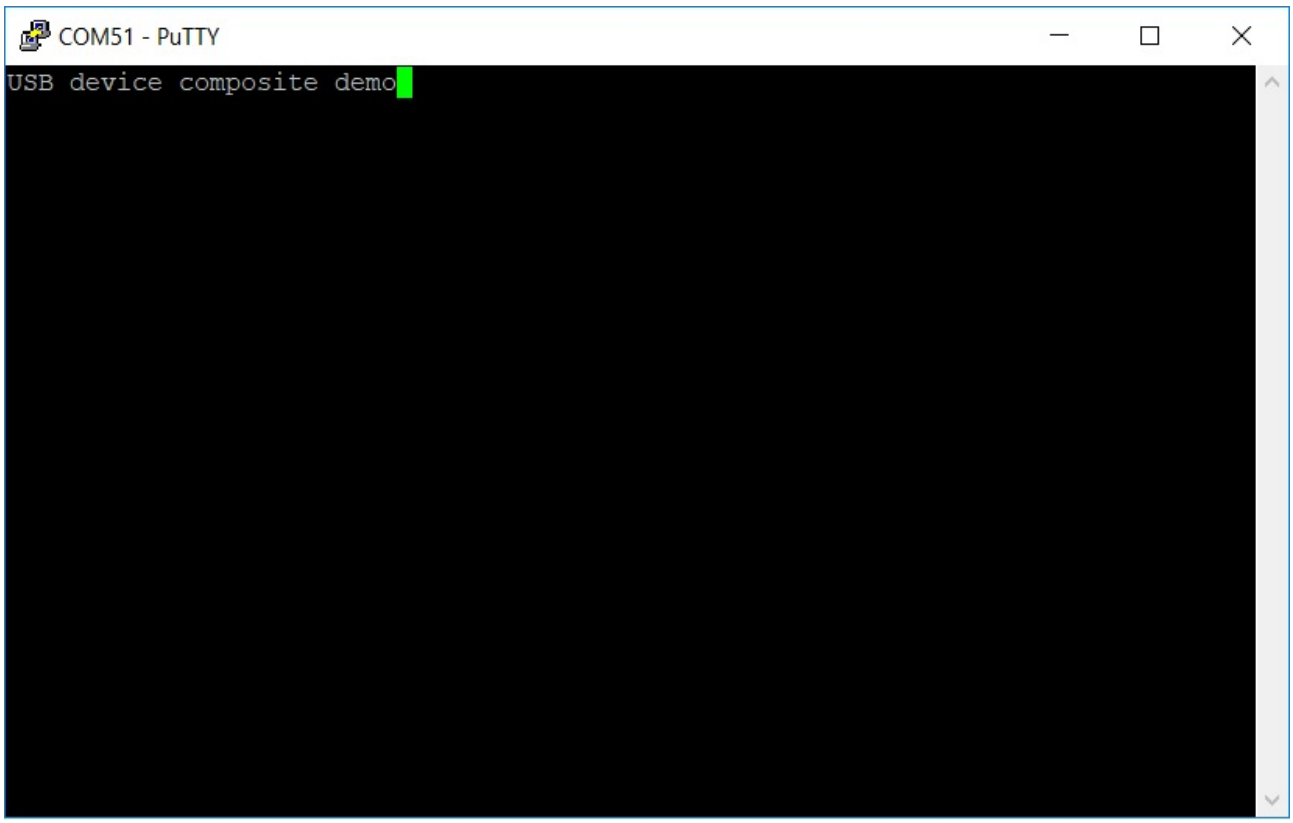

Figure 2: Run virtual com example

5. Right click on the sound control icon in the Start bar (near the clock) and select "Recording devices".
6. In the opened window, select the "Microphone" device with the description "USB Audio + CDC Demo" and click on the "Properties" button.

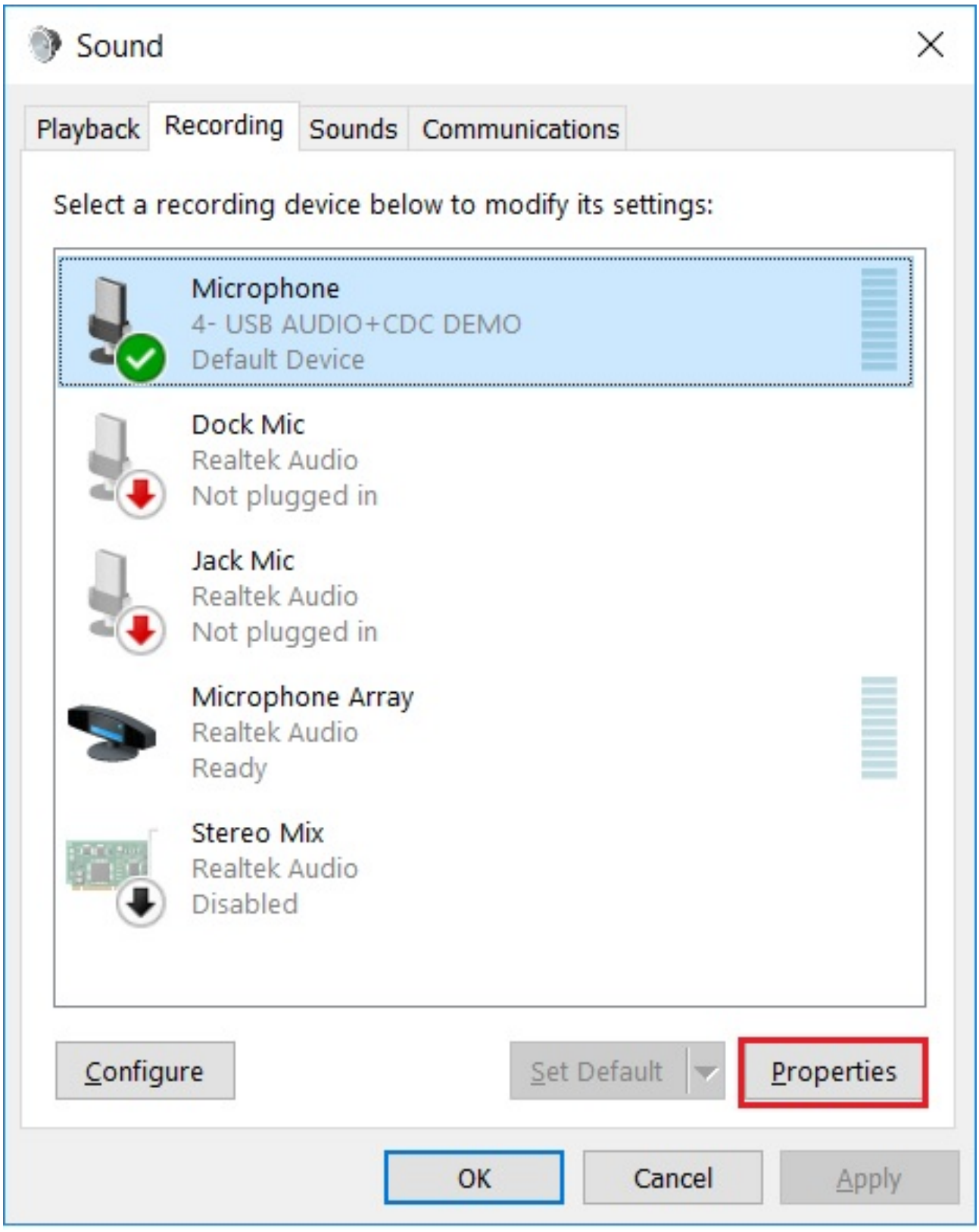

Figure 3: Select properties

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

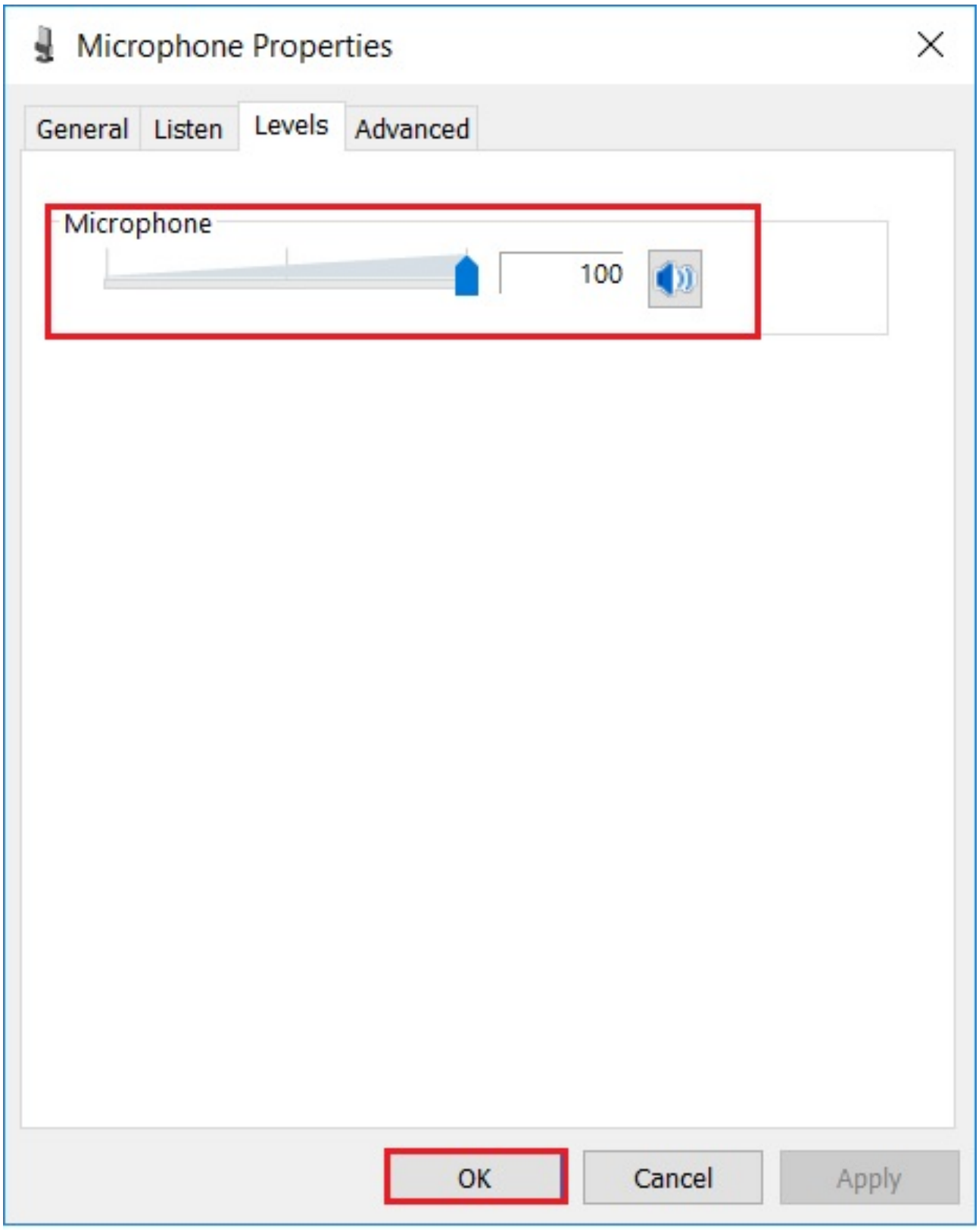

Figure 4: Change level

8. In the previous window, ensure that the "Microphone" is still selected and click on the "Set Default" button. Finally, click on the "OK" button.

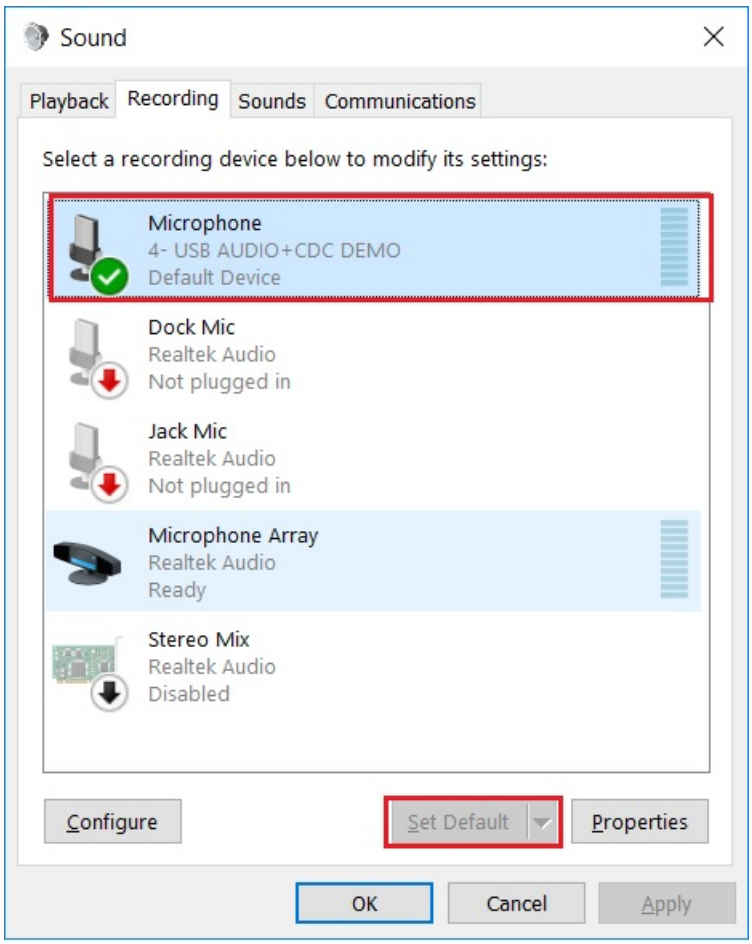

Figure 5: Set default

9. Open the "Sound Recorder" application and record audio for about 5-10 seconds.
10. After recording, open the recorder file with any media player.
11. Switch to "playback" tab and select the "Speakers" device with the description "USB Audio + CDC Demo" and click on the "Properties" button.

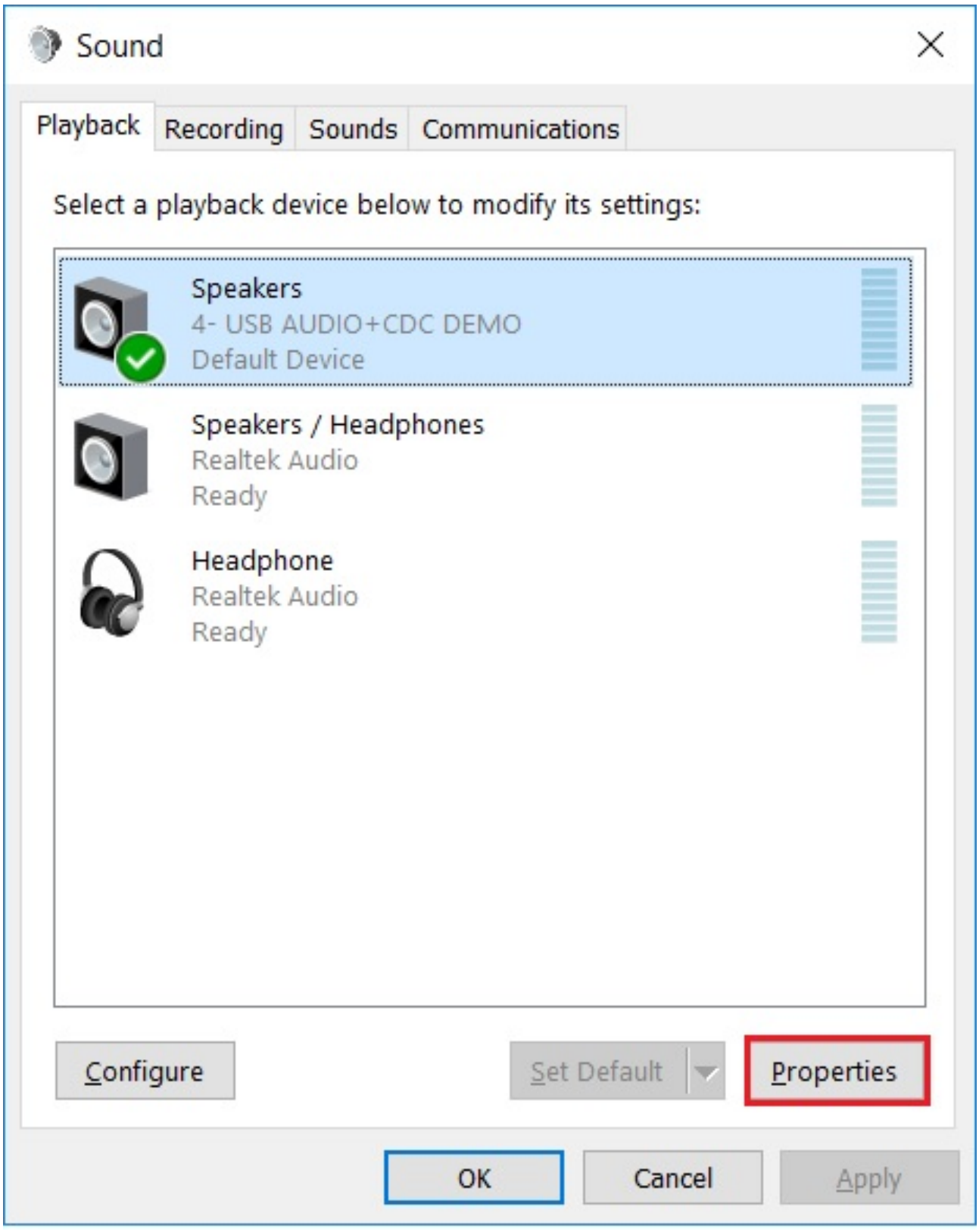

Figure 6: Select properties

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

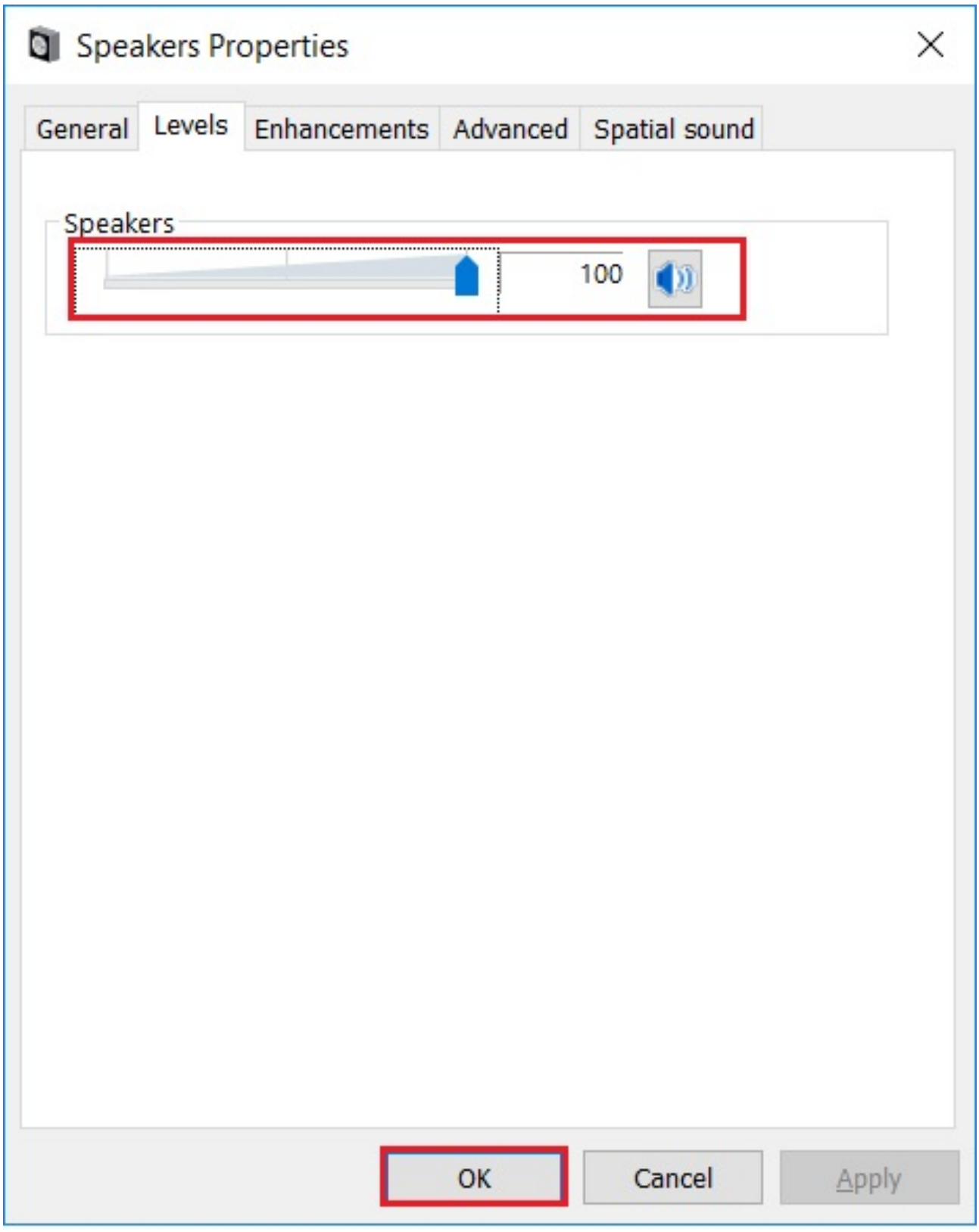

Figure 7: Change level

13. In the previous window, ensure that the "Speakers" is still selected and click on the "Set Default" button. Click on the "OK" button.

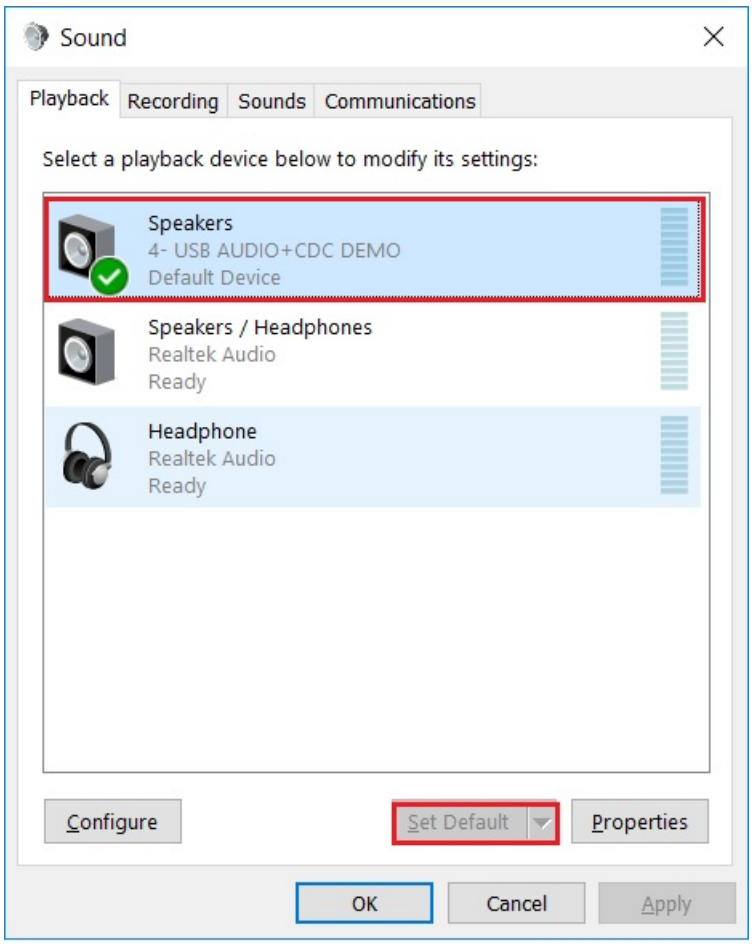

Figure 8: Set default

14. Open the Window Media Player application, select, and play the song.

Note

1. USB audio class 2.0 is enabled by default.
2. Based on the USB spec, the feedback endpoint data length should be 3 bytes if the device is full speed. In this case, device can work on Mac OS. However, device can not work on Win 10 and feedback data length must be set 4. There is a workaround to fix this issue, please open the macro USB_DEVICE_WORKAROUND_AUDIO_20_WINDOWS when meets the following conditions:
   - USB device is full speed and USB audio class 2.0 is enabled.
   - USB device uses feedback endpoint.
   - USB host is Windows 10.
3. When device functionality is changed, such as USB auido class 2.0 or UAC 5.1, please uninstall the previous PC driver to make sure the device with changed functionality can run normally.