

# Technical Package General Guideline

## Introduction:

The technical package we provide is a sample project which collect two channel stereo data and play back to the lineout immediately. At the same time, partial data are being transmitted back to the PC through RS-232 USB and being update and plotted by Matlab.

### DE2i-150 board side:

Collect, store and play back audio signals. Transmit data back to the host computer.

### Host computer side:

Collect and display data.

## Important variables:

You may want to check these important variables through debug mode to understand data collection.

*leftChannel*, *rightChannel*: The instant value collected from AIC.

*leftChanneldata[BUFFERSIZE]*, *rightChannelData[BUFFERSIZE]*: Integer arrays that store a set of data.

*leftCount*, *rightCount*: counters that specify the location to place the new data.

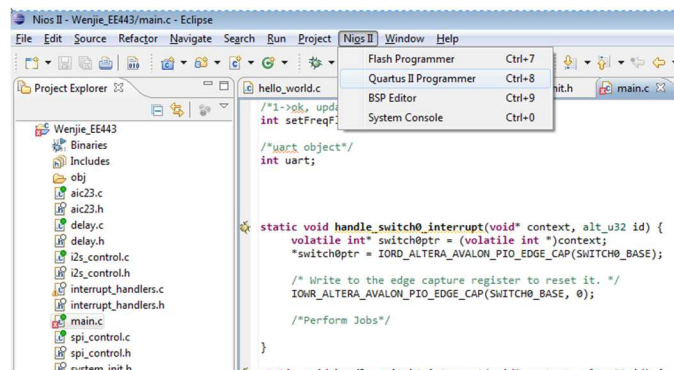
## How to use this technical package:

Step 1.

Follow the instruction to download and import our package into your own project.

Step 2.

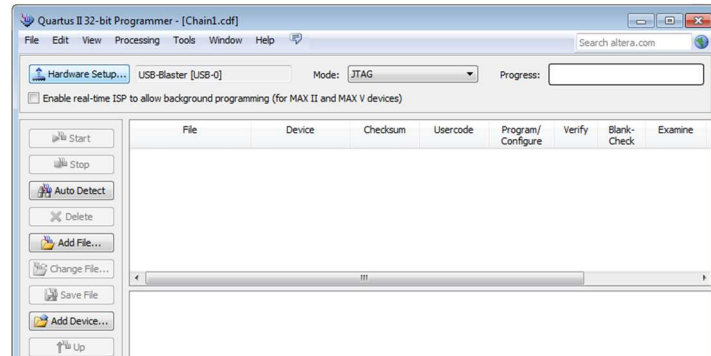
Open Quartus II programmer.



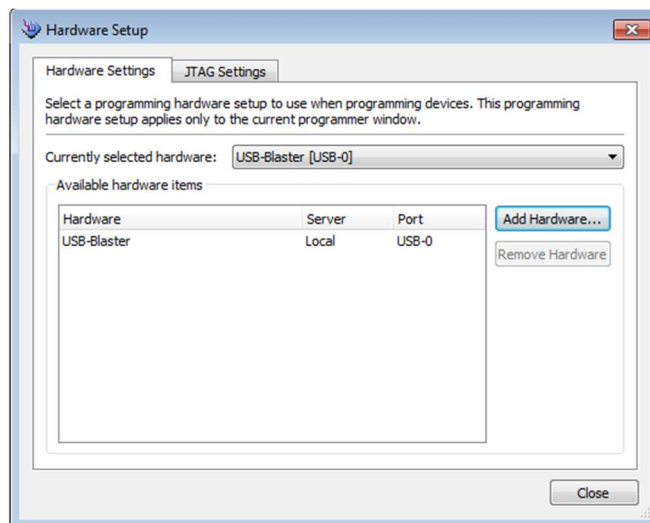
Step 3.

Configure the board by following these steps:

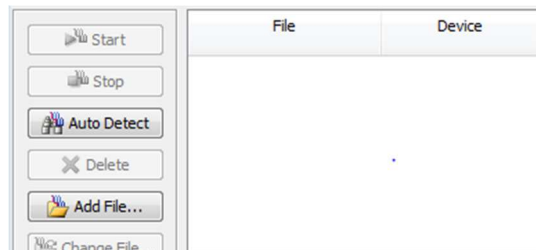
1. Click on Hardware Setup:



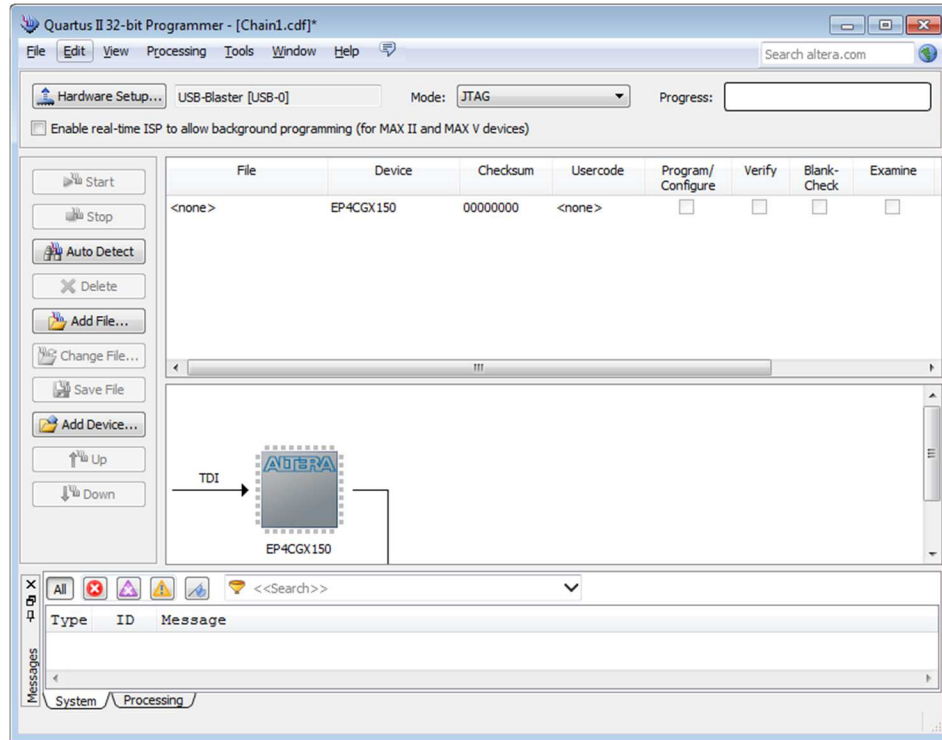
2. Look for USB0 (make sure you turn on the board and connect Jtag to your PC).



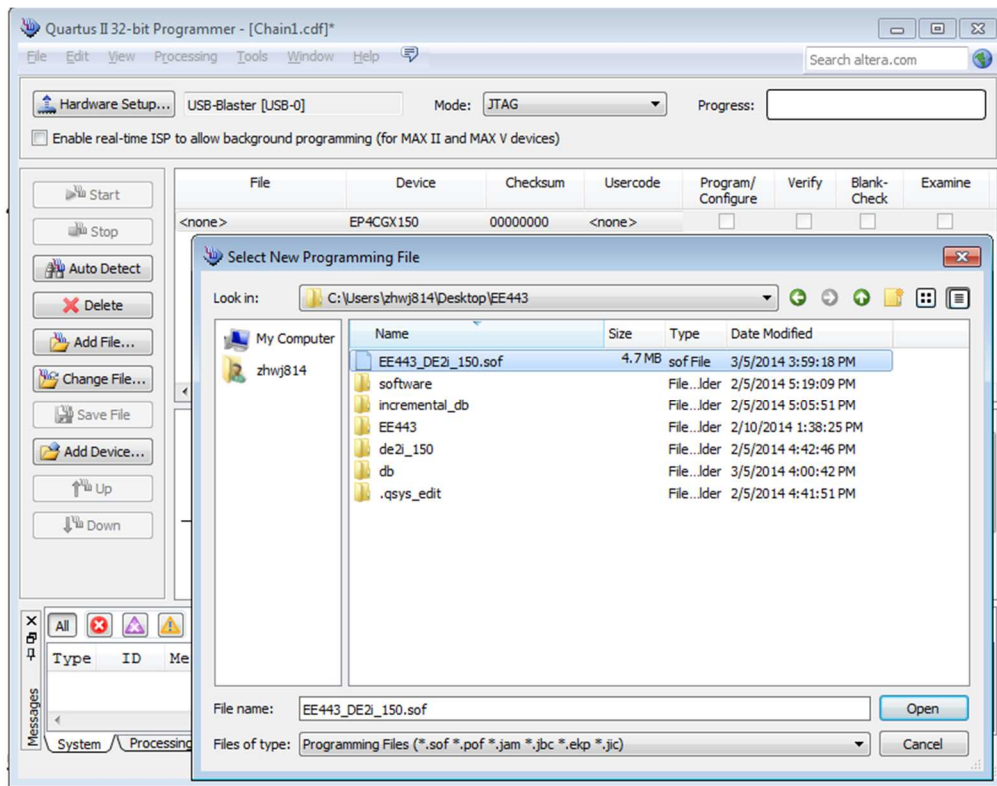
3. Click on AutoDetect



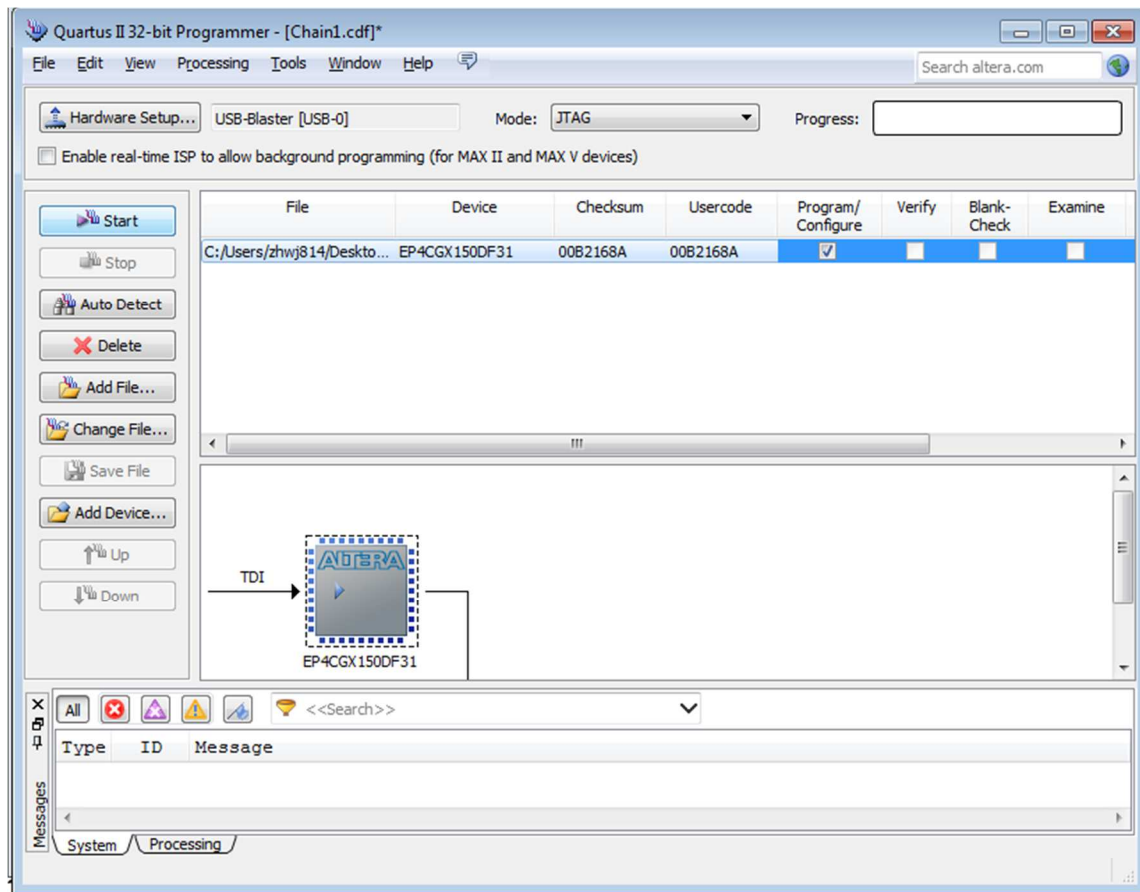
4. Now you should be able to detect the device:



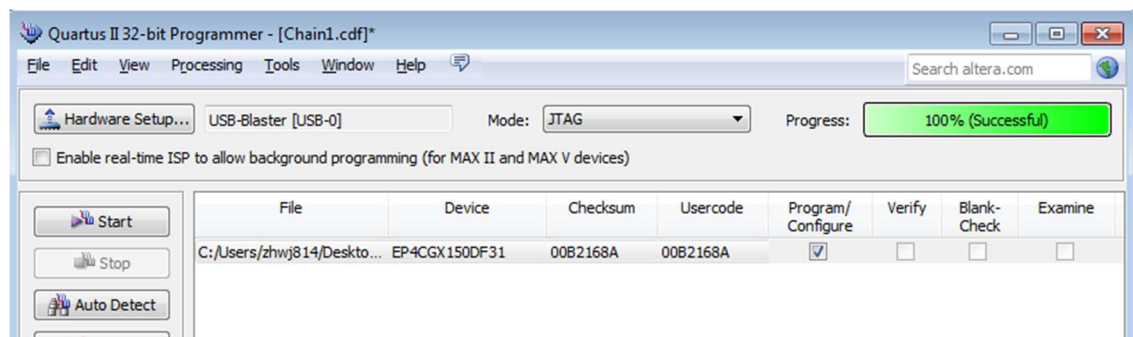
5. Double click on <none> under File section and choose the eof file from our package.



6. Tick the “Program/Configure” box and click on “Start”.



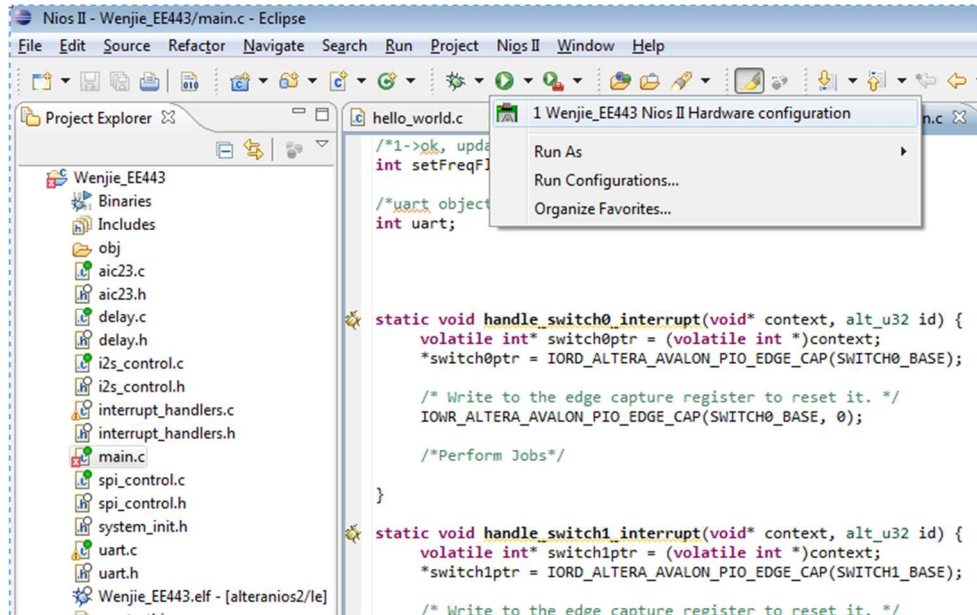
7. The programmer starts configuring the board and please wait until you see the “success”.



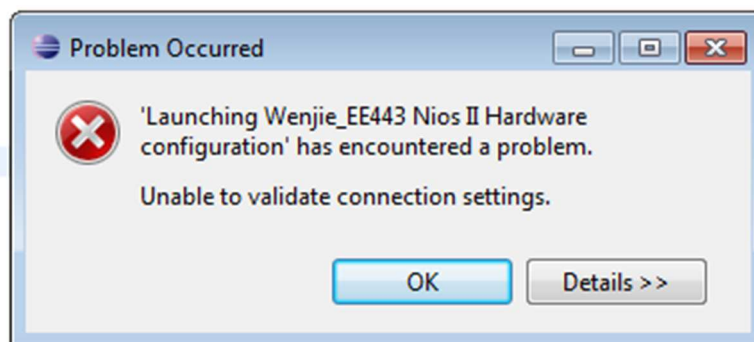
Now the hardware setup of your board should be completed. And you can now program your code to the board.

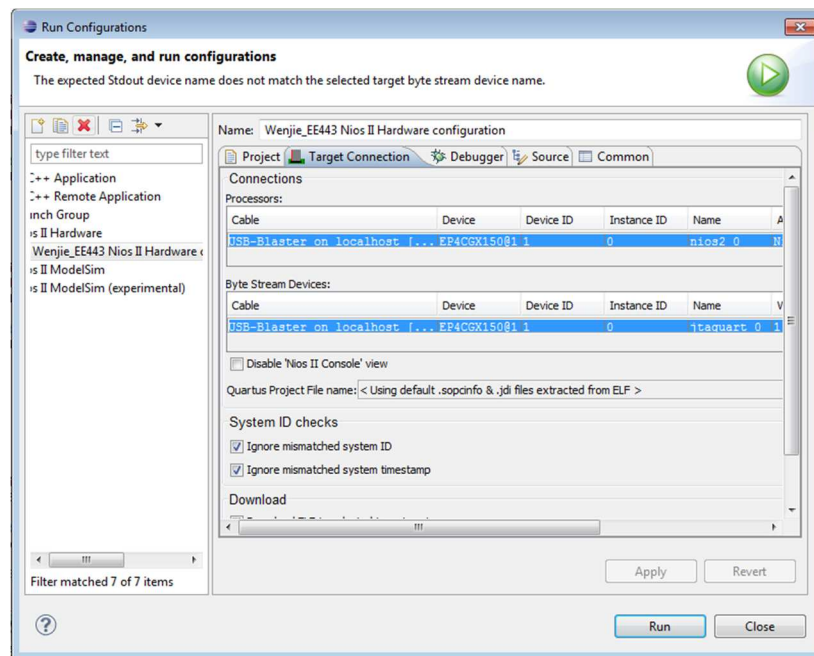
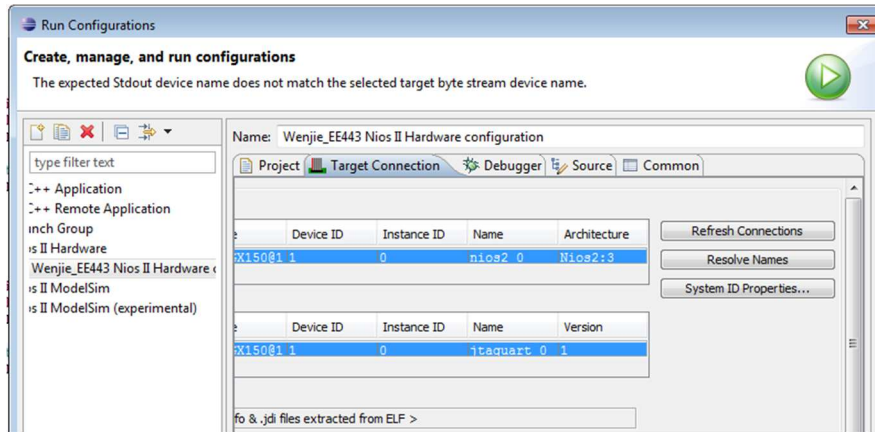
Step 4.

Program your NIOS II project onto the board:



If you see an error says invalid connection. Please open the running configuration and drag all the way to the right and click on “Refresh connects” and tick “ignore mismatched system ID” and “ignore mismatched system timestamp” boxes and hit “Run”.





Step 5.

Go to this website "<http://onlinetonegenerator.com>" and generate a low frequency signal, for example, a 500 Hz tone.

- Home
- Instrument Tuning
- Subwoofer Testing
- Hearing Test
- Noise Generator
- Binaural Beats
- 432Hz Frequency
- DTMF Signals
- The Pips
- Acoustic Theory

# Online Tone Generator

**Welcome to the Online Tone Generator. It's free, simple and easy to use.**

Enter your desired frequency and press play. You will hear a pure tone sine wave sampled at a rate of 44.1kHz. The tone will continue until the stop button is pushed. Online Tone Generator is now compatible with the **latest versions of Chrome, Firefox and Safari** so if you don't hear any sound, please update your browser and try again.

Alternatively, you can download and save a 10 second WAV file that can be played at any time and is universally compatible with all browsers and software.

**Attention!** Always make sure headphones/speakers are set to a low volume to avoid damage to hearing or equipment.

500 Hertz

play

stop

save

Step 6.

Run “test.m” function in your PC Matlab software and you should see the value sent from the DE2i Board. Please be aware that this is only partial of the data so the plot is not representing the actual signal. This issue happens because of the physical RS-232 transmission rate. (The maximum RS232 transmission rate is 115200 bit per second which means 7200 integers per second, however, the speed is even slower due to data update in the software. When you use the package, RS232 can transfer only about 1000 or less integer value per second)

