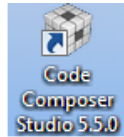


The list of steps to implement the c code on DSK 6416 kit using CC studio version 5.5.

DSP Starter Kit (DSK) 6416 in Code Composer Studio V5.5

1. Open Code composer Studio(CCS) using short cut of CCS 5.5.0



2. Choose the Workspace location (Preferably on D Drive like D:\CSLab\A1, D:\CSLab\A2....)

3. Create new project by menu **Project** **New CCS Project**

4. Enter Project name USN_Exp_name(e.g. EC104_Ask.Dont give project name start with number).

Output type: Executable (default)

Device Family: C6000

Variant: C641x Performance Value DSP, DSK6416

Connection: Spectrum Digital DSK-EVM-eZdsp on board Emulator

Project template and examples: Empty Project

☐ **Advanced setting:**

Linker Command file: C:\DSK6416\support\C6416dsk.cmd Click finish (Fig.1)

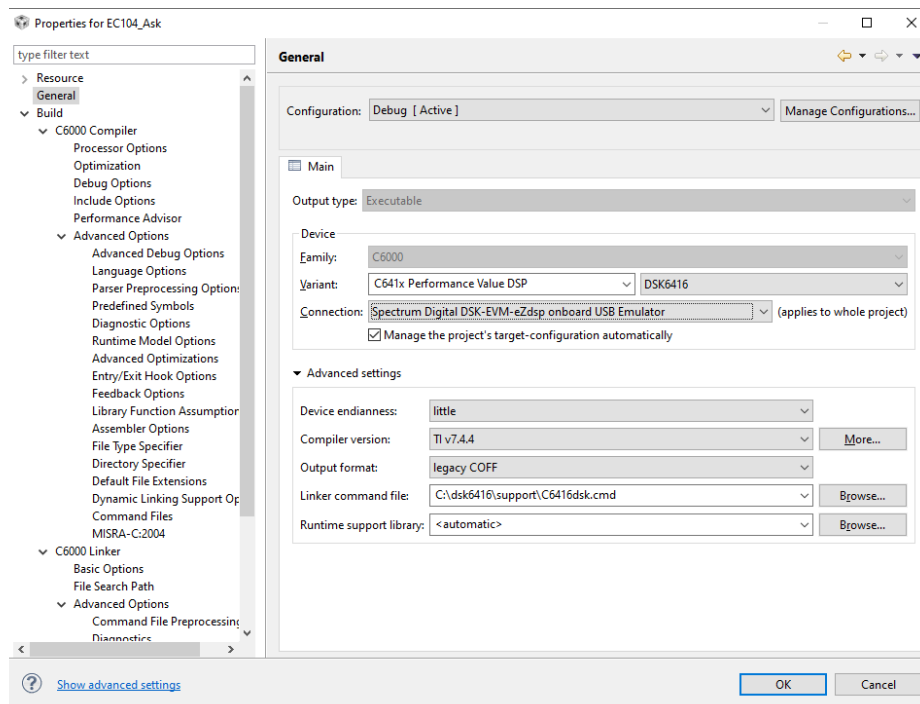


Fig.1 Creating New Project

5.If any previous project(e.g EC104_ASK) can be deleted in the Project Explorer by right click \leftarrow on the previous project & click on delete \leftarrow , then give "Ok" on pop-up menu (**Note:** Do not select the option **Delete the Project contents on disk**. See Fig.2. It will delete someone project files)

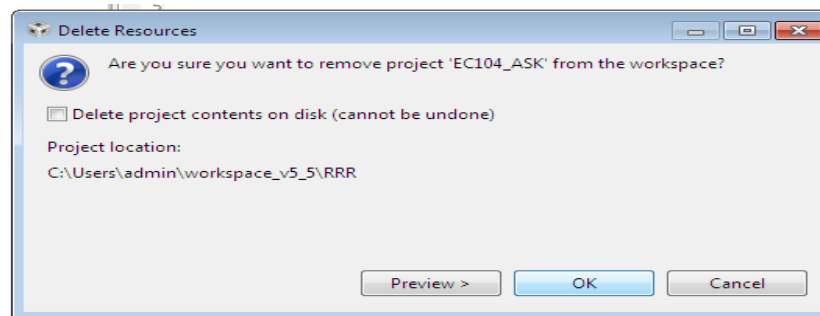


Fig.2. Deletion of previous project.


6. Start to write the source program in main.c & save by File \leftarrow Save \leftarrow

7. **C6000 Compiler setting**, Go Project \leftarrow Properties \leftarrow Build \leftarrow C6000 Compiler \leftarrow

a) Include Support files, Chip select (CSL) & Board support (BSL) files, (Fig.3)

("\${CG_TOOL_ROOT}/include" –Default file should be available)

- C:\DSK6416\support
- C:\DSK6416\include\csl
- C:\DSK6416\include\bsl

(In, Add dir to #include search path (--include_path,-I)Add path (by option )

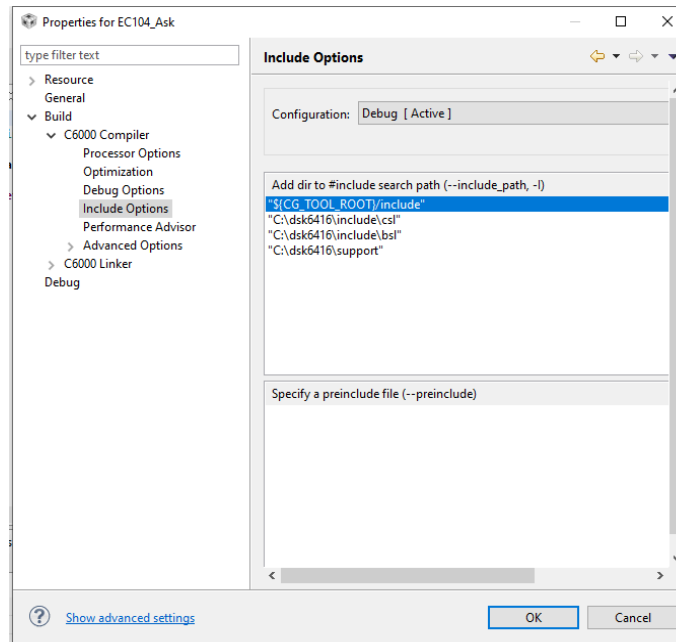



Fig.3. Inclusion of chip select, board support files in C6400 Compiler.

b) In Advanced Options,

Predefined Symbols: CHIP_6416 (Remove any previous symbols by delete )(Fig.4)

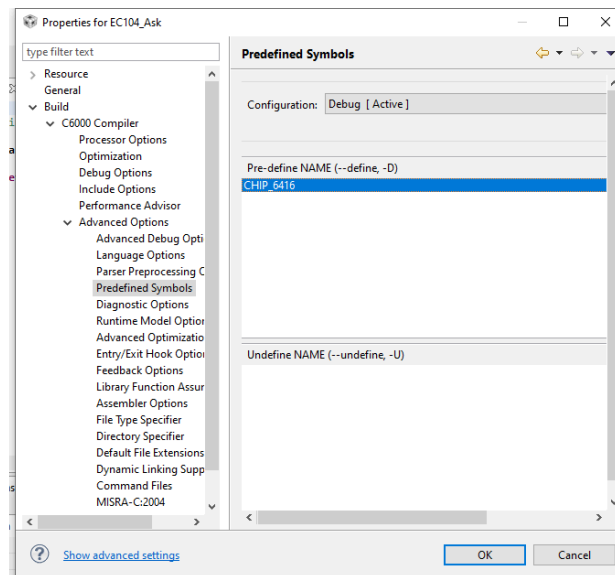


Fig.4. Define predefined symbol in C6400 Compiler.

Runtime Model Options:

Data Access model: far (Fig.5)

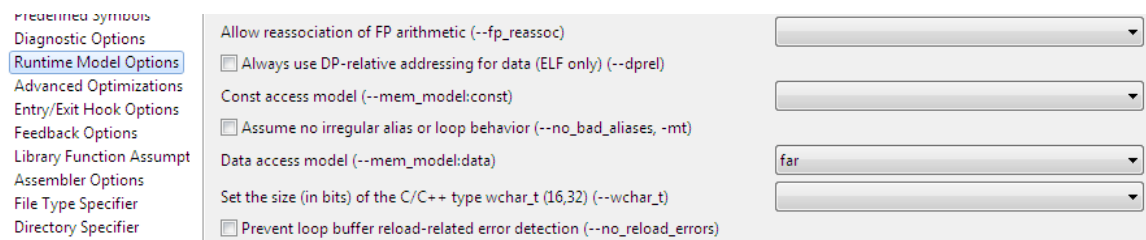


Fig.5. Define Runtime Memory Model in C6400 Compiler.

8. C6000 Linker Settings:

a) Under Basic option: (Fig.6)

- Set C system stack size: 0x800
- Heap size for C/C++ dynamic memory allocation: 0x800

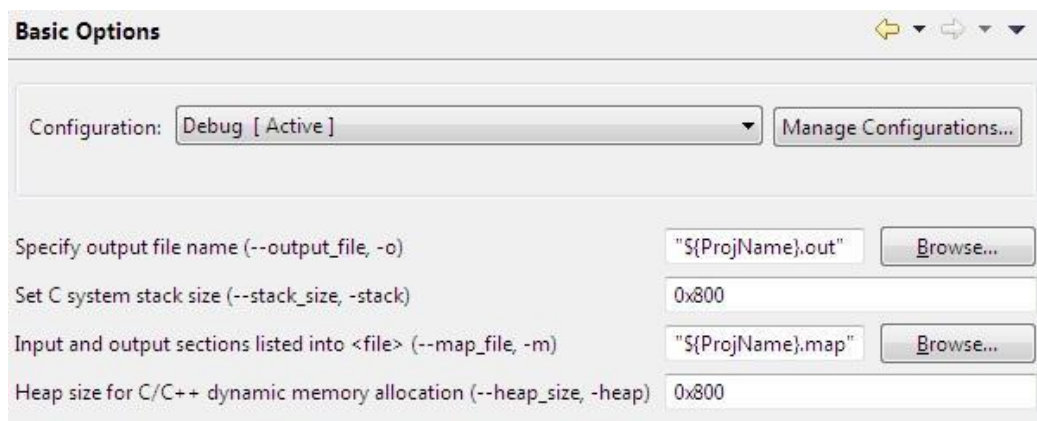


Fig.6. Define stack & heap size in C6400 Compiler.

b) Under File Search Path:

("libc.a" should be available)

Add following Library Paths (Fig.7.)

- C:\DSK6416\lib\ds6416bsl.lib
- C:\DSK6416\lib\csl6416.lib

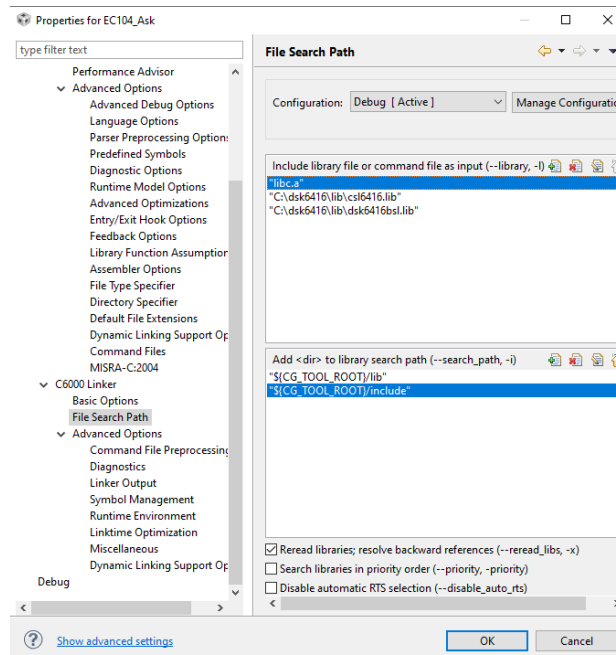


Fig.7. Inclusion of Board & chip support libraries in C6400 Linker

c) In Advanced Options:

In Diagnostics: **Choose Suppress warning (--no warning)** (Fig.8.)

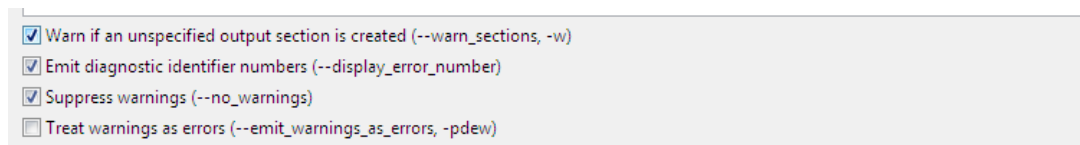


Fig.8. C6400 Linker Diagnostic option

Then Click **Ok**

9. Support files to Project

Project **Add Files..** Then browse to C:\DSK6416\support then add following

- C6416dskinit.c
- C6416dskinit.h
- Vectors_intr.asm

& choose File operation Copy files then enter **Ok**

10. Build the Project:

Manual Build: Project **Build Automatically** (Unclick)

Project **Build Project**

Project is build successfully & output file(.out) is generated((Fig.9.) & can be seen in console,

```

CDT Build Console [EC104_PAM]

'Building target: EC104_PAM.out'
'Invoking: C6000 Linker'
"C:/ti/ccsv5/tools/compiler/c6000_7.4.4/bin/cl6x" -mv6700 --abi=coffabi -g
--define=CHIP_6713 --display_error_number --diag_warning=225 --diag_wrap=off
--mem_model:data=far -z --stack_size=0x400 -m"EC104_PAM.map" --heap_size=0x400
-i"C:/ti/ccsv5/tools/compiler/c6000_7.4.4/lib"
-i"C:/ti/ccsv5/tools/compiler/c6000_7.4.4/include" --reread_libs --warn_sections
--display_error_number --no_warnings --diag_wrap=off
--xml_link_info="EC104_PAM_linkInfo.xml" --rom_model -o "EC104_PAM.out" "./main.obj"
"./c6713dskinit.obj" "./Vectors_intr.obj" "./C6713dsk.cmd" -l"libc.a"
-l"C:\DSK6713\lib\dsk6713bs1.lib" -l"C:\DSK6713\lib\cs16713.lib"
<Linking>
'Finished building target: EC104_PAM.out'

**** Build Finished ****

```

Fig.9. Console Window After successful Build

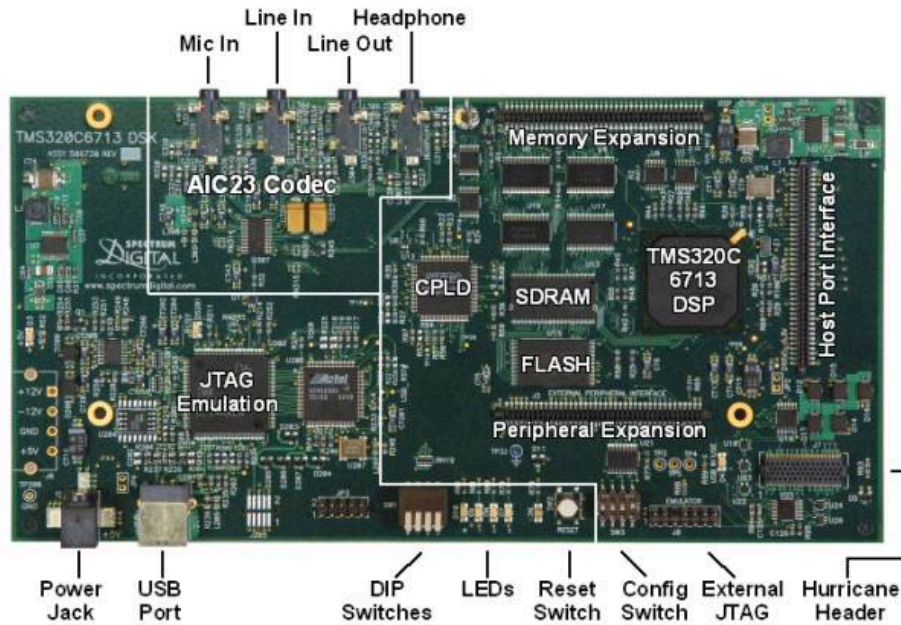


Fig.10. C6416 DSP Starter kit board

11. Connection of Input & Output signals

Connect the Function generator with CRO through stereo cable and choose the Sine signal & verify that input signal amplitude $< 1.5\text{ V}$ & Frequency less than Sampling frequency/2 (Sampling frequency can be found in the program)

(**Imp Note: Never Exceed the input voltage greater than 1.5V**). Verify the input voltage in the CRO before connecting to DSP Kit

Connect the Function generator to **LINE IN** in the DSP Kit through Stereo cable

Connect the CRO to **LINE OUT** in the DSP Kit through stereo cable

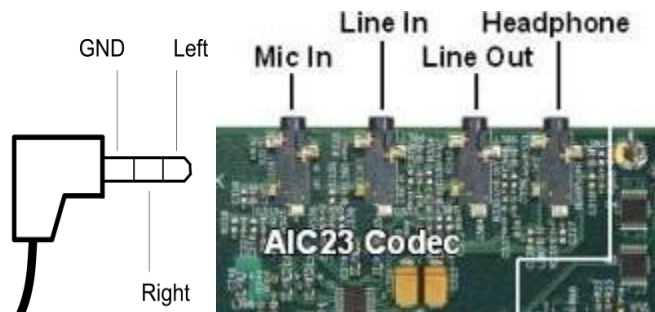


Fig.11. Stereo pin connection diagram

12. Debug the Program

Go CCS V5.5, Select Run \leftarrow Debug \leftarrow

The Spectrum Digital DSK-EVM-eZdsp onboard USB Emulator is connected to DSK 6416 Target board (On successful connection) & shown in the Debug console. If it's not connected (error msg shown as "emulator error"), check that the Diagnostics Window is closed (Step 11) or unplug the power supply & reconnect it

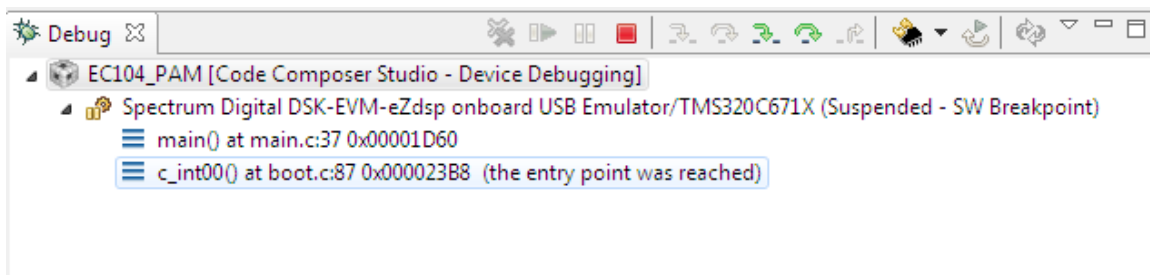


Fig.12. Screenshot On successful connection of Target

13. Run the Program,

Go to Run \leftarrow Resume \leftarrow

14. Verify the waveform in the CRO .

