Procedures to be followed for Xen 10

- [ ] PWR SEL Jumper Setting - Connect pin 2 to 3
- [ ] FT2232 PWR Jumper should be connected
- [ ] Plug in the USB cable to the USB connector on the Xen10 board, and the other end of the cable to a USB port on your PC. Turn on the power switch. 3 LEDS should glow.
- [ ] Once you connect Xen10 to your PC and power it on, Windows 7 and higher versions automatically search for available drivers. Inside Device Manager, under other devices you will see 2 uninstalled devices named Dual RS232-HS with yellow warning (Ensure the Xen10 board is connected to the host as given in step 1). Right click on the first one and select Update driver. Now select Browse the computer for driver software, and click Next. Now, provide the path to the folder CMD MAX10 (which you extracted in step 4). Click Next. Same for the other option.
- [ ] Connect LCD on LCD header named as 16x2 LCD. Ensure pin-1 of LCD is connected to the corresponding pin-1 of the 16x2 LCD header.
- [ ] Connect header pins of Header-1 using jumper wires. Do not connect pin-31 to pin-32. Pin-1 should be connected to adjacent pin i.e., pin-2, similarly pin-3 to pin-4, pin-5 to pin-6 and so on until pin-29 to pin-30. Pin-31 and pin-32 corresponds to the VCC and GND and thus should not be connected.
- [ ] Program the Xen10 board with test MAX10 10M25SAE144C8G.svf file or test MAX10 10M08SAE144C8G.svf file (Depending on which device you are using) using UrJTAG
- [ ] make SW8 on and within one second make it off. This will reset the system. On successful reset LCD will display "Welcome: Xen10 Design by WEL" this also implies SW8 is working properly. Adjust LCD CONTRAST pot if message is not clearly visible.
- [ ] After few seconds "Push PB1 for starting" will be displayed on LCD. Press and hold PB1 at least for a second to start Xen10 board testing
- [ ] After testing of clock generators "Test SW and LED" will appear on LCD. Turn on SW1. Notice one led will blink at a time and shift through all the LEDs. Similarly when SW2 is turned on keeping the SW1 on, two LEDs will blink and shift and so on until SW7 is turned on where seven LEDs will blink and shift. Remember not to turn on SW8 as this is reserved for reset. Once all switches till SW7 are on, LCD will display done. User has to manually check the correctness of switches and LEDs by observing the desired LED pattern output. If desired output occurs then corresponding switches and LEDs are working. When Switch and LED test is done then LCD will display "Switch Off ALL Switches". So we have switch off all switches from SW1 to SW7
- [ ] After completing switch and LED test, LCD will display "Test: Push Button". Press each push button at least once to pass the test. If any of the LEDs are glowing then push button is working properly.
- [ ] Switch on SW4 and press PB2 after the LCD displays "SW on SW4, Press PB2: test Header". After pressing PB2,if LCD displays all zeros in second row then all pin headers are working properly.

- [ ] After that LCD will display ″All tests Done.″ which means all test are completed.
- [ ] Compile the project.
- [ ] Go to Assignments → Pin Planner. A new window opens up, showing you the schematic of the device selected (in this case, MAX 10), and below, the signal lines that need to be pin assigned under All Pins section. In-front of a Node, click in the blank space in column Location. Type 38 and automatically PIN 38 will appear. Press Enter.
- [ ] Compile again.
- [ ] Now go to Tools → Programmer. A programmer window will open. You should see the project output file myLogicCkt.sof in this window. If not add it.
- [ ] In the programmer window, go to File → Create (JAM, SVF...). A new window will open. Select the file format as Serial Vector Format (SVF) and click on ok.
- [ ] Click on jtag.exe file.
- [ ] A terminal window with a jtag> prompt opens up. Give the command ″cable ft2232″ without double inverted commas and hit enter. If the drivers have been installed, you should see a message Connected to libftd2xx driver.
- [ ] Now, give the command ″detect″ and hit enter.It will show device details.
- [ ] Give the command svf “path to the file myLogic.svf”. Hit enter and it will take some time before the board programming is completed.