Emulation Tech Note 13
Multiple XDS560V2 CLASS emulators
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1 INTRODUCTION

This tech note describes the steps for using multiple XDS560v2 class emulators connected to a single PC.

2 REQUIREMENTS

- PC running Windows XP Professional with SP2 or higher, Windows 7, Linux Ubuntu 10.04 or higher.
- USB Hub or PC with multiple USB ports. A USB hub is recommended when working in a development environment.
- Spectrum Digital CCS driver install 5.0.0.8 or higher.
- CCS 4.2 or higher for Windows Operating Systems. CCS 5.1 or higher for Linux Operating Systems.

3 PROCEDURE

To support multiple XDS560V2 class emulators on a single PC, the low level emulation drivers have two ways to distinguish between emulators. One method is via modifying sd560v2opts with the emulator's serial number which is unique to each emulator. The other method is via modifying emulator's port number with address which is detailed under section 3.2.

- Plug each emulator to the PC via USB cable.
- Once all the emulators are installed on the PC, launch Sd560v2Config utility from the desktop.
- From the USB Tab, select on Find all Connected XDS560V2 USB emulators and click on the start button. The output is as shown in figure 1 below
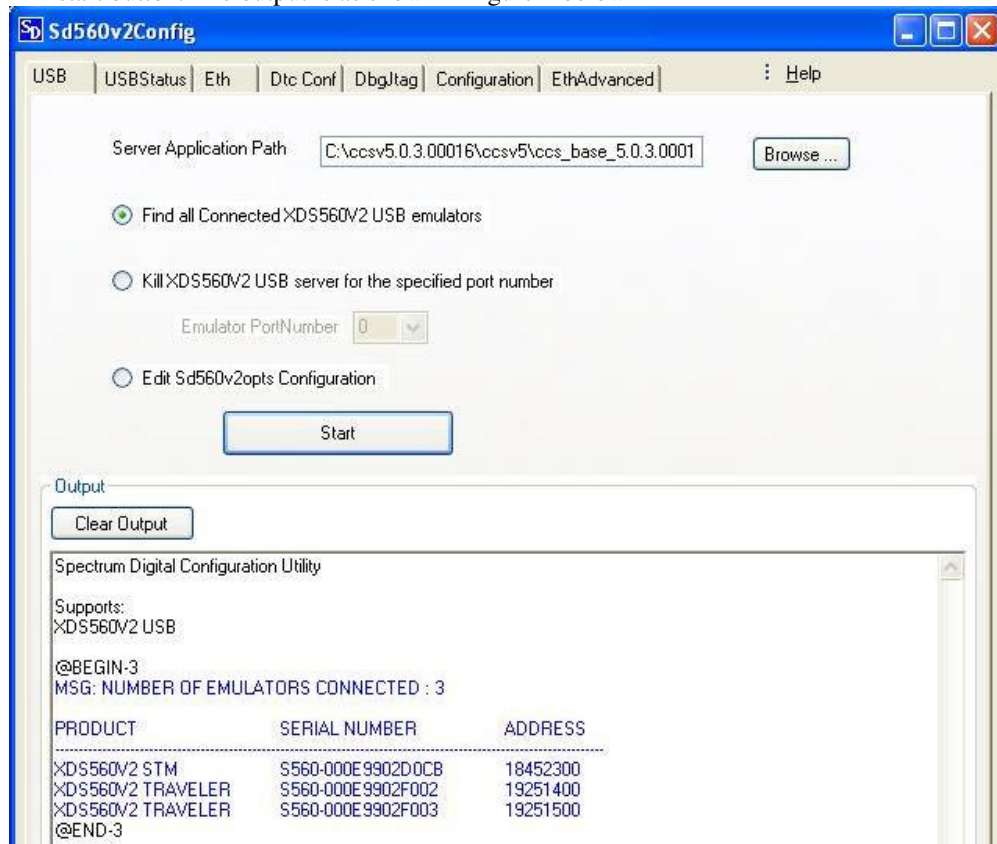

FIGURE 1: Sd560v2Config to print serial numbers and addresses of emulators connected.

3.1 TECHNIQUE 1 – Modifying sd560v2opts

The procedure to edit sd560v2opts configuration file manually is as follows.

- From the sd560v2config utilities USB Tab, select on Edit Sd560v2opts configuration and press on start button as shown on figure 2 below. This should open sd560v2opts.cfg file in a notepad.
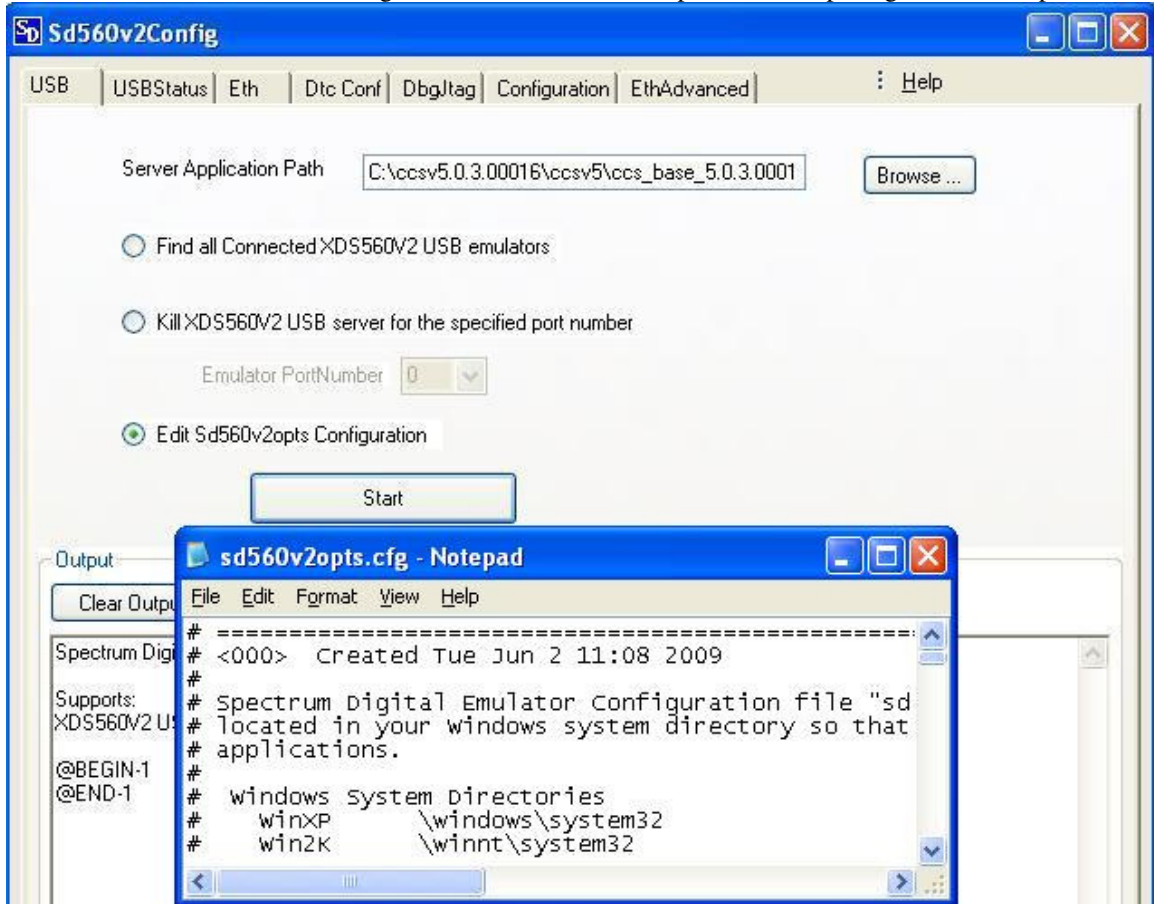

FIGURE 2: Sd560v2Config to open sd560v2opts.cfg file.

- The configuration file has default configuration for a XDS560V2 class emulator mapped to port address 0. The configuration options are as listed below.

```
# SDXDS560V2USB Port 0
#
[EmulatorId=000]
EmuPortAddr=0x000
EmuPortMode=USB
EmuProductName=SDXDS560V2USB
EmuSerialNumber=ANY
EmuLogFile=SDXDS560V2_Log_0.txt
#Log level 1-3
#Level 1: Errors
#Level 2: Errors + Command
#Level 3: Errors + Command + Debug stats
EmuLogVerbose=0
#EmuPCName=
EmuUsbTimeoutSeconds=180
EmuShutDownTimeoutMinutes=15
```

- To assign EmulatorId 0 to a specific serial number simply copy and paste one of the serial numbers from Figure 1 above into EmuSerialNumber option. Now you should have the following.

    ```
    # SDXDS560V2USB Port 0
    #
    [EmulatorId=000]
    EmuPortAddr=0x000
    EmuPortMode=USB
    EmuProductName=SDXDS560V2USB
    EmuSerialNumber=S560-000E9902F002
    EmuLogFile=SDXDS560V2_Log_0.txt
    #Log level 1-3
    #Level 1: Errors
    #Level 2: Errors + Command
    #Level 3: Errors + Command + Debug stats
    EmuLogVerbose=0
    #EmuPCName=
    EmuUsbTimeoutSeconds=180
    EmuShutDownTimeoutMinutes=15
    ```

- The sd560v2cfg file has four port configurations defined by default. If the end user has more than four emulators connected to the PC, just copy and paste the configuration options and assign EmulatorId to 005 and so on.
- Following is the complete instantiation for our example setup.

    ```
    # SDXDS560V2USB Port 0
    #
    [EmulatorId=000]
    EmuPortAddr=0x000
    EmuPortMode=USB
    EmuProductName=SDXDS560V2USB
    EmuSerialNumber=S560-000E9902F002
    EmuLogFile=SDXDS560V2_Log_0.txt
    #Log level 1-3
    #Level 1: Errors
    #Level 2: Errors + Command
    #Level 3: Errors + Command + Debug stats
    EmuLogVerbose=3
    #EmuPCName=
    EmuUsbTimeoutSeconds=180
    EmuShutDownTimeoutMinutes=15

    # SDXDS560V2USB Port 1
    [EmulatorId=001]
    EmuPortAddr=0x001
    EmuPortMode=USB
    EmuProductName=SDXDS560V2USB
    EmuSerialNumber=S560-000E9902D0CB
    #EmuLogFile=SDXDS560V2_Log_1.txt
    #Log level 1-3
    #Level 1: Errors
    #Level 2: Errors + Command
    #Level 3: Errors + Command + Debug stats
    EmuLogVerbose=0
    #EmuPCName=
    EmuUsbTimeoutSeconds=180
    EmuShutDownTimeoutMinutes=15
    ```

```
# SDXDS560V2USB Port 2
#
[EmulatorId=002]
EmuPortAddr=0x002
EmuPortMode=USB
EmuProductName=SDXDS560V2USB
EmuSerialNumber= S560-000E9902F003
#EmuLogFile=SDXDS560V2_Log_2.txt
#Log level 1-3
#Level 1: Errors
#Level 2: Errors + Command
#Level 3: Errors + Command + Debug stats
EmuLogVerbose=0
#EmuPCName=
EmuUsbTimeoutSeconds=180
EmuShutDownTimeoutMinutes=15
```

3.2 MAPPING SERIAL NUMBER TO EMULATOR

- Each emulator has a unique serial number which is based on the MAC Address of the emulator. Figure 3 below shows a sample label that is attached to the back of the emulator.

FIGURE 3: XDS560V2 STM EMULATOR LABEL

- The serial number of XDS560V2 class emulators is formed by appending the string S560- to the MAC address (with "-" removed) of the emulator. As an example, the MAC address from figure 3 above is 00-0E-99-02-D0-CB. The serial number of the device is S560-000E9902D0CB.

3.3 TECHNIQUE 1 – USAGE SETUP

Mark your emulators with their corresponding port numbers based on their serial numbers for your future reference.

3.3.1 TECHNIQUE 1 – CODE COMPOSER STUDIO SETUP

Modify the Emulator I/O Port number option under the target configuration for XDS560V2 class emulators to match the emulator you are connecting to. A sample configuration is shown in figure 4 below. The port number field to be modified is marked in red.
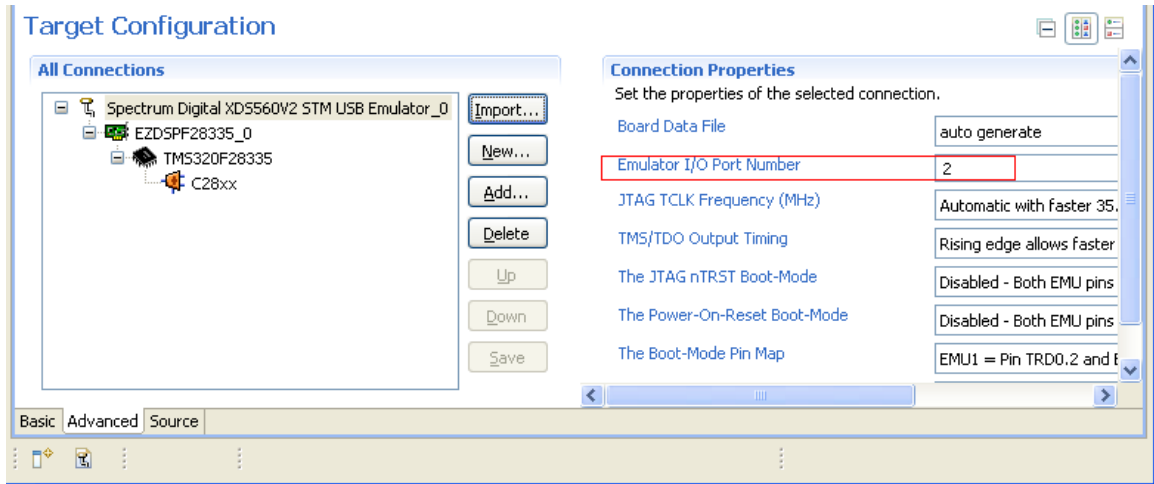
FIGURE 4: CODE COMPOSER STUDIO SETUP

3.3.2 TECHNIQUE 1 – MISCELLAENOUS SETUP

While accessing the emulator from Sd560v2Config utility, modify the port number based on the emulator you are testing on. The port number field has to be modified on USBStatus Tab, dtc_conf tab and dbgjtag tab. This is as shown in Figure 5 below. The address fields to be modified are marked in red.
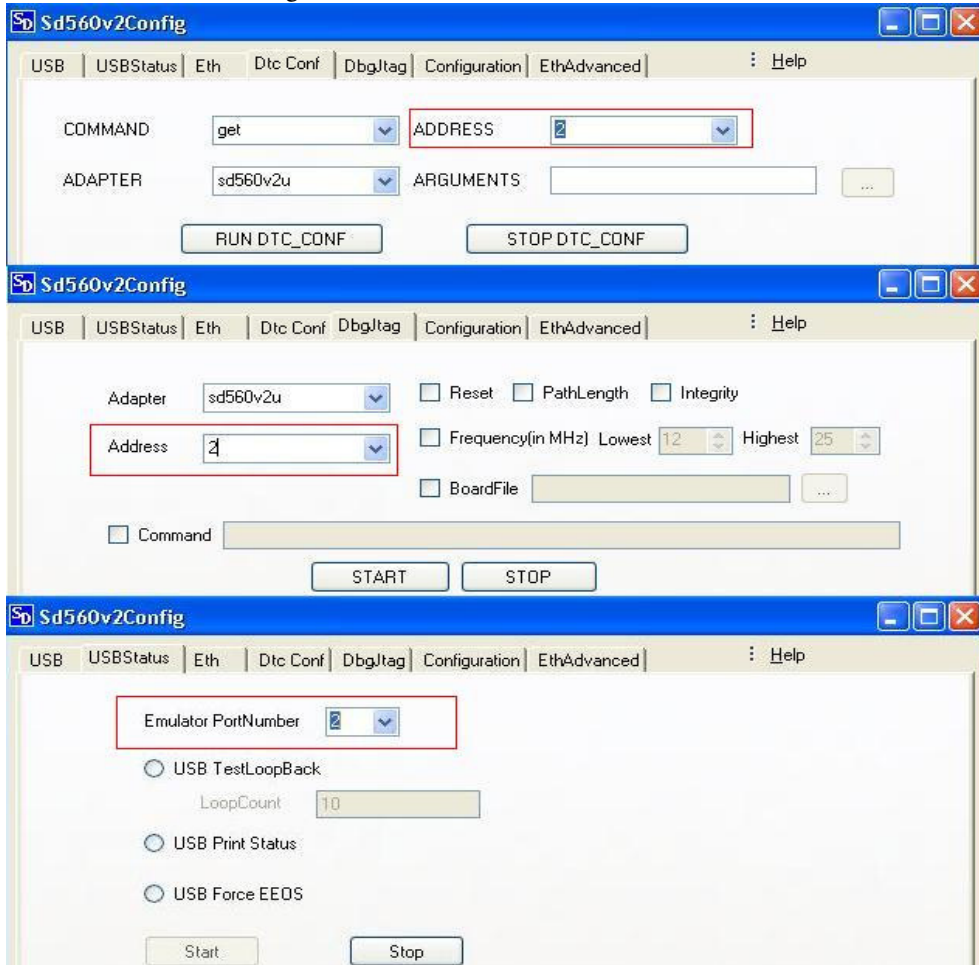

FIGURE 5: MISCELLAENOUS SETUP

3.4 TECHNIQUE 2 – USING ADDRESS AS PORT NUMBER

1. This technique is used especially on PC's running Windows 7 operating system, where a user is not allowed to modify sd560v2cfg.opts configuration file.
2. Each device has a unique encoded address that is shown in the Address column in Figure 1.
3. Mark each emulator with their corresponding addresses based on their serial number for future reference.
4. Now the emulators are all ready to be used under CCS or sd560v2config utility.
5. The address used in technique 2 overrides the serial numbers used in technique 1.

3.4.1 TECHNIQUE 2 – CODE COMPOSER SETUP

- This feature is supported only on spectrum digital emulation driver install package 5.0.0.8 or above.
- This feature is only supported on Spectrum Digital STM Traveler Emulator connection xml. This connection xml can be used on all XDS560v2 class emulators.
- Modify your target connection to use Spectrum Digital STM Traveler Emulator connection
- Alter the Emulator I/O Port Number to match the emulators address noted under section 3.4(option 3).
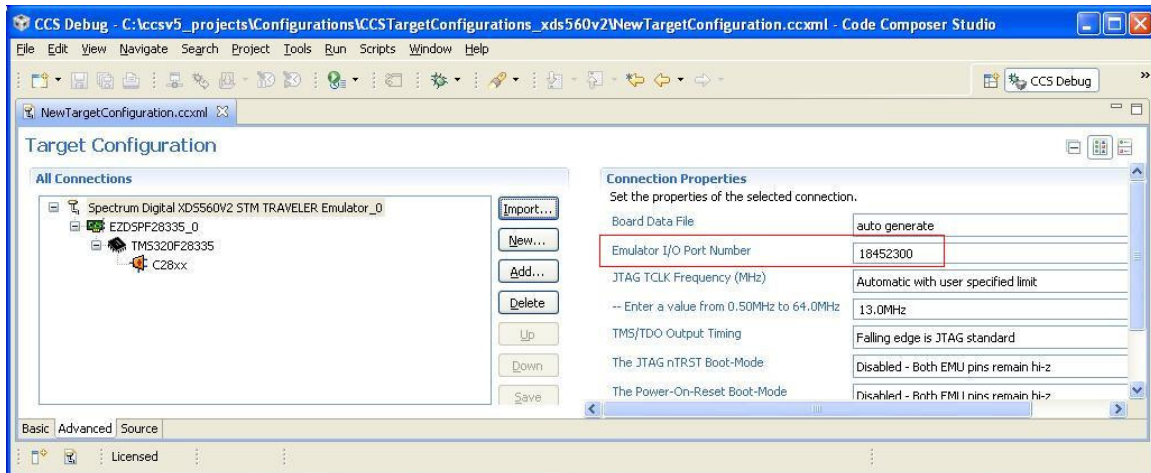- A sample configuration is shown in figure 6 below.

FIGURE 6: TECHNIQUE 2: Code Composer Studio Setup.

3.4.2 TECHNIQUE 2 – MISCELLAENEOUS SETUP

While accessing the emulator from Sd560v2Config utility, modify the address fields to match the emulator's address you are testing on. The address field has to be modified on USBStatus Tab, dtc_conf tab and dbgjtag tab. This is as shown in Figure 7 below. The address fields to be modified are marked in red.
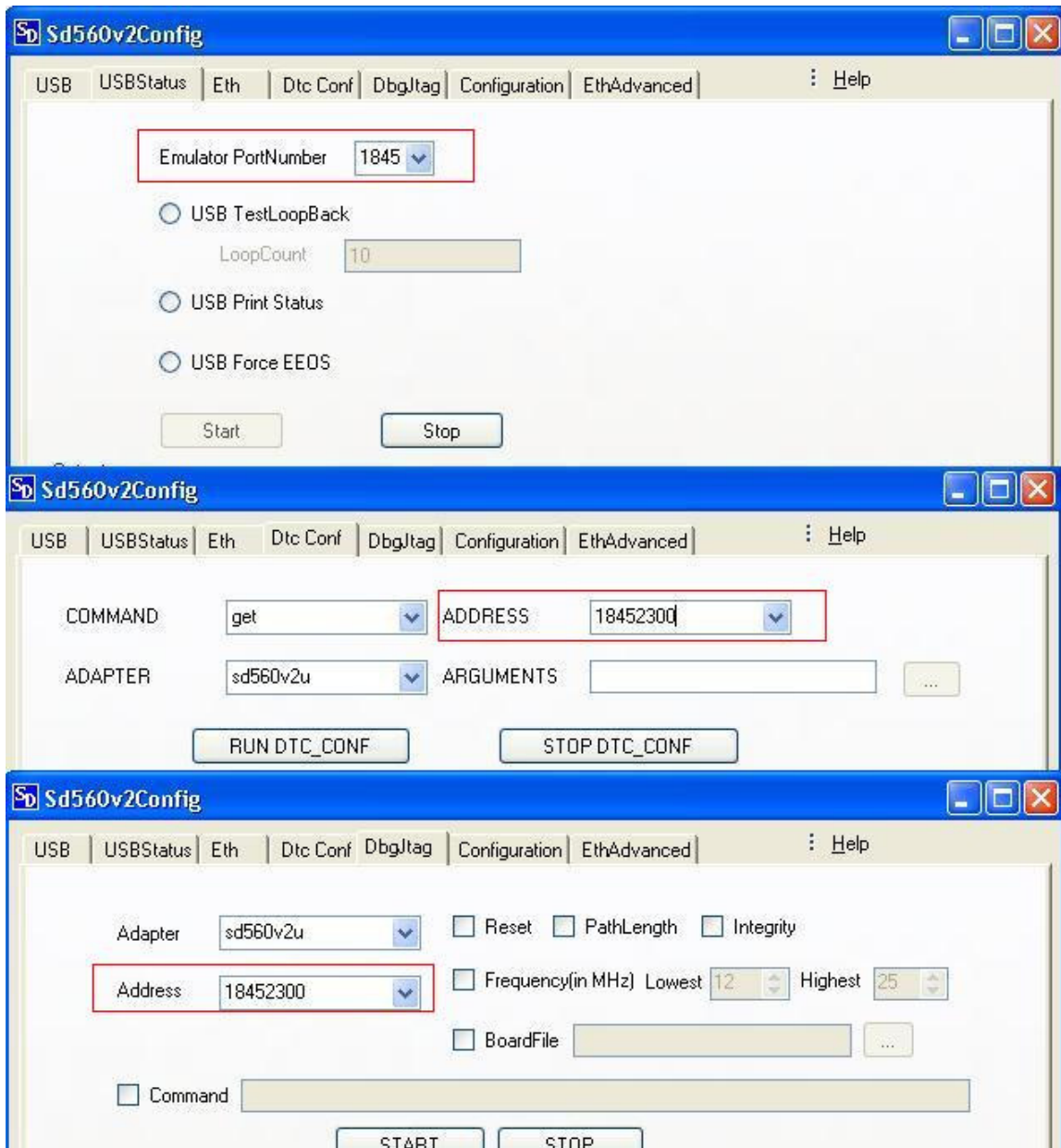
FIGURE 7: TECHNIQUE 2- Miscellaneous setup