Emulation Tech Note 12
Testing XDS560V2 STM Emulator's Ethernet Port on Wi-Fi
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1 OVERVIEW

This document details on testing XDS560v2 System Trace JTAG Emulator's Ethernet port with a Wi-Fi adapter.

2 HARDWARE TOOLS USED FOR TESTING

 - XDS560v2 System Trace JTAG Emulator(XDS560V2 STM)
 - Netgear WNCE2001 Universal WiFi Internet Adapter - Amazon.com: Netgear WNCE2001 Universal WiFi Internet Adapter: Electronics
 - Linksys Wireless-G Broadband Router WRT54GL.

3 SOFTWARE TOOLS USED FOR TESTING

Operating Systems Tested - Windows XP, Ubuntu 10.04
Code Composer Studio version Tested - 5.1.0.00013

4 RECOMMENDED PROCEDURE

4.1 THINGS TO NOTE

1. The detailed procedure presented below is specific to the hardware tools used for testing purposes which include Netgear WNCE2001 and Linksys Wireless-G Broadband router.
2. One requirement for setting up Netgear WNCE2001 Wi-Fi adapter is to disconnect all wireless connections to the router during setup.
3. Step 2 is probably not practical for corporate networks. Instead you should setup a dedicated JTAG debug network with a standalone router such as the Linksys Wireless-G Broadband router.
4. When the XDS560v2 is connected behind a wireless adapter finding the IP address of the XDS560v2 is a little more difficult so a static IP setup is preferred.

4.2 SETTING LINKSYS WRT54GL WIRELESS ROUTER

1. Begin setup of your Linksys Wireless Router by first plugging in the power. Give it 10 seconds or so to initialize.
2. Plug one end of an Ethernet cable into your laptop and the other into one of the ports labeled 1-4 on the router.
3. Open a web browser window on the connected computer and type http://192.168.1.1 into the address bar and press enter. A window will pop up prompting you for a username and password to access the configuration page for your router. Enter admin for both the username and password.
4. The setup page is as shown below

FIGURE 1: LINKSYS WIRELESS ROUTER SETUP PAGE

5. For our test setup at Spectrum Digital, we used the router's default settings. A user can customize the settings if needed.

4.2.1 CALCULATE THE RANGE OF IP ADDRESSESS

6. Calculate the range of IP addresses that can be used to access the router based on Local IP Address field and the Subnet Mask field shown in red box in figure 1.
7. There are a lot of IP Address Range calculators available on the web like this one http://www.csgnetwork.com/ipinfocalc.html.
8. The IP Address Range for Linksys WRT54GL's default settings is from 192.168.1.1 to 192.168.1.254.
9. Pick an address from the range to be used as static IP for XDS560V2 STM Emulator.
10. Please record the address in this box for future use, for example 192.168.1.2 would be a valid address for the Linksys router.

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4.3 SETTING NETGEAR WNCE2001 Wi-Fi ADAPTER

*   Please disconnect any wireless connection to the router and/or remove the Ethernet cable currently connected to the computer. You may restore the connection after the WNCE2001 installation is complete.
*   Connect the WNCE2001 to your computer, using the Ethernet cable (included) and one of the power connection options.

- Open your Internet browser and it will automatically take you to the setup page. Follow the instructions on the setup page.
- The name of the wireless router is "linksys" in the router's default settings.
- Disconnect the Ethernet cable from your computer.

4.4 EMULATOR AND TEST SETUP

- Configure XDS560V2 STM Emulator to use static IP Address which was noted under step 10 of section 4.2.1. The procedure for configuring can be found under section 7 in the linked document http://support.spectrumdigital.com/ccs40/xds560v2_stm/files/Sd560v2Config_Readme.pdf.
- The emulator is ready to be used from Code Composer Studio. Configure CCS to use "Spectrum Digital XDS560V2 STM LAN Emulator" for Ethernet connection and configure the "The Emulator IP Address" under the "Connections Properties" to the static IP Address which was noted under step 10 section 4.2.1.
- Please note that the Laptop which is used for testing the emulator should also be connected to the Linksys wireless router (wired or wireless).
- Figure 2 shows Spectrum Digital test setup for testing the Emulator's Ethernet port over Wi-Fi.
  - o The emulator with Wi-Fi adapter connected to a dm6446 target is located 100 feet from the wireless router.
  - o The laptop is connected wirelessly to the router and is located 100 feet from the router.
  - o A simple cio test was performed on the emulator from Code Composer Studio on the Laptop.
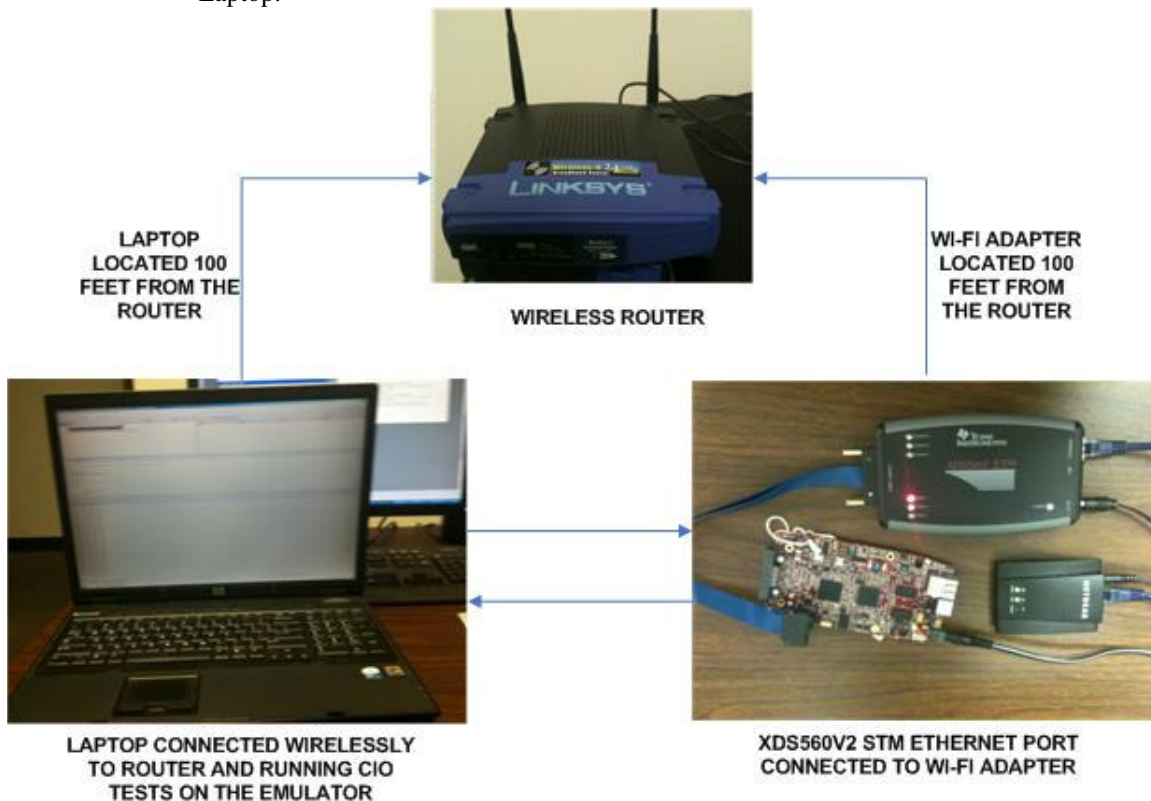

FIGURE 1: SPECTRUM DIGITAL XDS560V2 STM EMULATOR ETHERNET OVER WI-FI TEST SETUP

5 ALTERNATE PROCEDURE

XDS560V2 STM Emulator is by default configured to use DHCP. If the emulator is not configured to use static IP, the various ways to find the IP Address to the emulator are:

- If you have access to a computer which has Code Composer Studio installed near to the emulator, connect the emulator to the computer's USB port and follow the instructions under section 6.1 in the linked document
  http://support.spectrumdigital.com/ccs40/xds560v2_stm/files/Sd560v2Config_Readme.pdf.
- If suppose you do not have access to any PC near the emulator,
  - From the test PC's desktop launch Sd560v2Cnfg utility.
  - From the Eth tab, click on FindEthernetDevices button.
  - If the emulator is connected to Wi-Fi adapter, the physical address of the emulator is recognized from windows as the Wi-Fi adapter's MAC address and not the Emulator's MAC address.
  - Sd560v2Cnfg utility uses discovery tool to determine the IP Address of the emulator. The detailed explanation of the discovery tool can be found under section 5.6 in the linked document
    - http://support.spectrumdigital.com/ccs40/xds560v2_stm/files/Sd560v2Config_Readme.pdf.
  - As the MAC address recognized by the PC is not the Emulator's MAC address, the EthTab doesn't show any devices in the table.
  - The discovery tool generates an arpcache.txt file located under <APPLICATION_DATA_DIR>/.spectrumdigital/ directory.
  - Open the arpcache.txt file and match the Wi-Fi adapter's MAC address to find the IP address of XDS560V2 STM emulator.

6 PERFORMANCE MEASUREMENTS

Table 1 shows CIO test results performed on the test setup from various distances.

TEST SETUP	DISTANCE OF EMULATOR FROM THE ROUTER	DISTANCE OF TEST COMPUTER FROM THE ROUTER	CIO – PRINT (in seconds)	CIO – READ (in seconds)	CIO –WRITE (in seconds)
WIRED	NA	NA	20.5	10.218	10.469
WIRELESS	25 FEET	25 FEET	56.45	30.016	31.390
WIRELESS	50 FEET	50 FEET	81.5	63.89	74.109
WIRELESS	100 FEET	100 FEET	135.89	65.75	78.125

7 TROUBLESHOOTING

- For Linksys Wireless-G Broadband Router WRT54GL related issues please visit the linked website http://homesupport.cisco.com/en-us/wireless/lbc/WRT54G.
- For Net gear WNCE2001 Universal Wi-Fi Internet Adapter related issues please visit the linked website http://kb.netgear.com/app/answers/detail/a_id/14157/~/wnce2001-faqs.