

Explanation

This project shows how to give a multi-media board wireless access to an Internet router and implements a simple UDP server/client communications protocol.

I chose not to use MikroElektronika libraries but to write my own driver. As you can see, the Microchip MCW1001A is not an easy device to interface (see file 70671A.pdf in the Documents folder). However, the learning experience was well worth the effort.

This project also gave me experience with Dany's USB_HID DLL for Delphi... which I used for the UsbUtility.exe program (see LibStock, Communication, USB, and look for Dany's project).

Thanks Dany.

Procedure:

After connecting the click board to the MM board as shown in the wiring diagram and attaching the USB cables to the PC, load the project code into flash. Start UsbUtility.exe program. It should recognize the MM board as a HID device. On my computer it shows the following...

17 device(s) found

Device ID: 11, Val Gretchev, WiFi Test, VID:1234, PID:0001

Diagnostic messages from the MM will be displayed on this window.

The TFT LCD should show the start screen with the Scan button active. Click on the Scan button to begin a search for nearby access points. The code is set to interact with WPA2 configurations only. Therefore, your router must be set to use this configuration. Other configurations can be enabled in the code and then re-compiled but I have not tested them. If your router is configured properly, you should see it listed on the TFT LCD. Select it by clicking on the label. This doesn't work very well and you may have to click it several times before the label turns blue indicating that the click was recognized. Try clicking on the first character of the label.

If the USE_PASSWORD #define in WiFiPlus.h was set to 1, the code will switch screens to receive a password. Enter your router password and click the Return key. The TFT LCD switches back to the start screen with the Connect button showing.

Click on Connect button and wait about 30 seconds for the click board to calculate the 32-byte key which it uses to connect to the router. During this time a Wait message in red flashes at the bottom of the screen. When the connection with the router is finally established, the label changes to green with the message "IP address: xx.xx.xx.xx" and the DHCP assigned IP address.

Explanation

Click on Start UDP to open a server port number 6060. The server will listen for messages on this port.

Start the UDP_Client.exe program and set the IP address to be the same as the one assigned by the router. Make sure the port number is 6060. Use the enter key after changing the IP address or Port number. Click on UDP, Command A or Command B to verify that communications with the MM board has been established.

After a connection is made with the router, you can use UdpUtility to read out the 32-byte key computed by MCW1001A. Copy this key into SET_CP_SECURITY_WPA_MSG_BINARY in the appropriate place. Then set the USE_PASSWORD to 0. Connection now to the router will use the key instead of the password bypassing the long calculation.

At this point you can change the code or programs to suit your purposes. Good luck.