Operation Manual/Programmers Guide for MAX298X HomePlug Evaluation Board Version 4.0

WARNING: THESE EVALUATION BOARDS ARE NOT FAULT-TOLERANT AND ARE DESIGNED, MANUFACTURED OR INTENDED FOR USE BY PERSONS UNFAMILIAR WITH AND UNTRAINED IN THE PRACTICE OF MEASURING AND DESIGNING WITH HIGH VOLTAGE ELECTRICAL CIRCUITS. THESE EVALUATION BOARDS HAVE 110/220VAC POWER DIRECTLY CONNECTED TO THEIR CIRCUITS, WHICH CAN CAUSE PERSONAL INJURY, DEATH, OR PHYSICAL DAMAGE. THEREFORE, CAUTION SHOULD BE EXERCISED WHEN TESTING THESE DEVICES. YOU MUST BE A SKILLED PERSON IN THE PRACTICE AND ART OF HIGH VOLTAGE CIRCUITRY IN ORDER TO UTILIZE THE CIRCUITS IN THESE EVALUATION BOARDS.

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1- Introduction

The evaluation board MAX2986Evkit is designed to introduce a highly integrated chipset including the MAX2986 BaseBand (BB) and MAX2980 Analog Front End (AFE) based on HomePlug 1.0 standard. This system transfers data over 120V or 240V AC power line. MAX2986 BaseBand uses an Orthogonal Frequency Division Multiplexing Modulation (OFDM) technique from 4.49MHz to 20.7MHz frequency band. The main features of the evaluation board are as follows.

- Transporting data over the AC powerline up to 14 Mbps
- Tunable bandwidth and power spectral density (PSD) characteristics of transmitted OFDM signal, to match the international regulatory requirements
- Excellent Quality of Service (QOS) by adopting various techniques at the physical layer (PHY) (such as adaptive coding rate technique) and the Media Access Control (MAC) layer (such as Automatic Repeat request (ARQ) technique)
- Optimized data rate and minimized error rate by using a link adaptation technique to adjust dynamically the size of signal constellation (DBPSK or DQPSK) as well as the rate of Forward Error Correcting (FEC)
- The lowest BOM cost for the complete HomePlug chipset solution
- Multiple digital interfaces such as MII/RMII, FIFO, Ethernet MAC and USB
- Strong immunity to jammer interferences
- Secure communication link using 56-bit DES encryption with key management

2- Minimum System Requirements and Components

- 2 PCs with 233MHz or higher processor clock speed
- 64MB of RAM or higher
- Ethernet network adapter or USB port
- Windows 2000 required for USB operation
- Windows 95 or higher required for Ethernet operation
- Set of 2 Power line adapter plugs
- Set of 2 crossover Ethernet cables
- Set of 2 USB cables
- Set of 2 Null-Modem DB-9 Serial cables
- CD-ROM Drive

3- Top view and building blocks of the evaluation board

The main building blocks for this evaluation kit includes various ICs, interface terminals, switches and jumpers as shown in Figure 1. The board can be configured for a desired interface through the jumpers as described in section 3.9.

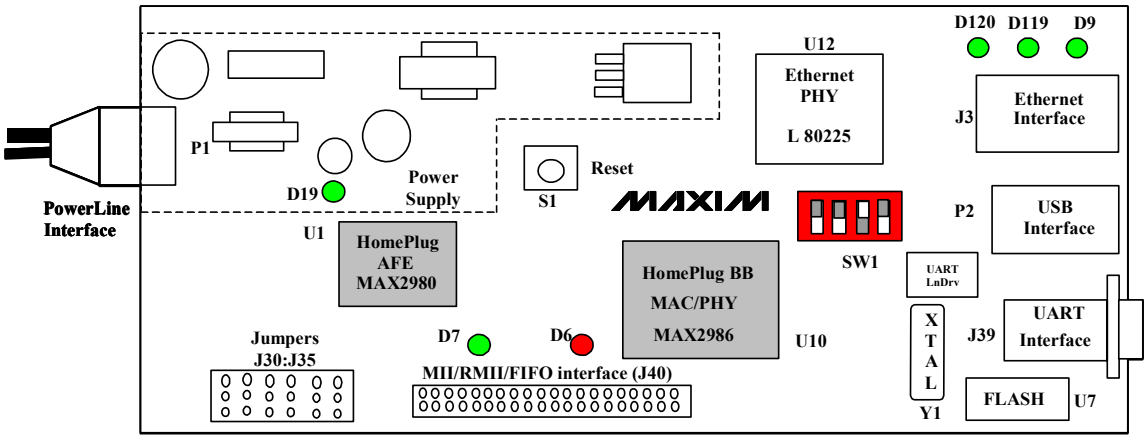


Figure 1. Top view of the evaluation board.

The main blocks of the evaluation board are described as follows.

3-1. Maxim power line transceiver chipset

The Maxim power line transceiver solution consists of a BaseBand chipset (MAX2986) and an Analog Front End (AFE) (MAX2980) chip. The MAX2986 MAC/PHY integrated circuit includes a baseband DSP core integrated with an ARM processor. The ARM processor implements Data Link and MAC functionalities. The AFE transmits and receives OFDM signals to and from the AC power line. The AFE transmitter consists of a DAC, an image rejection filter and line driver. The receiver is composed of an AGC, anti-

aliasing filter, high-pass filter and an ADC. The MAX2986 MAC/PHY chip is packaged in 144 LFBGA and MAX2980 AFE chip is packaged in 64-in LQFP.

3-2. AC power line interface

This board is connected to 110/220 Volt power line through an AC power inlet socket. The OFDM signal is transmitted and received through this interface. The power supply circuitry also uses the AC power line voltage to generate 3.3v and 1.8v DC voltages.

3-3. Clock

There is a single 30 MHz crystal on the board. This crystal drives MAX2986 internal PLLs to generate all internal clocks as well as a 25 MHz external clock to be used for MAX2980 AFE.

3-4. UART interface

A DB-9-Male connector for UART interface is provided to download MAC software from a PC into the MAX2986 MAC/PHY chip. **A Null-Modem (cross-over) serial cable is required for this application and is included in the evaluation package**. The PC's serial interface must be configured as described in this programmer's guide. **For UART operations jumpers J36 and J37 must be installed.**

3-5. USB interface

The Evkit supports USB 1.1 interface through a type A USB socket.

3-6. Ethernet interface

The evaluation board provides an RJ45 connector for 10/100 Ethernet interface. **Connect the Evkit to a PC using a crossover cable and to Hubs/Switches through a straight Ethernet cable.**

3-7. MII/RMII/FIFO interface

A 40-pin header (J40) connector provides access to MII/RMII/FIFO interfaces. The pinout of the header connector is shown in Figure 2.

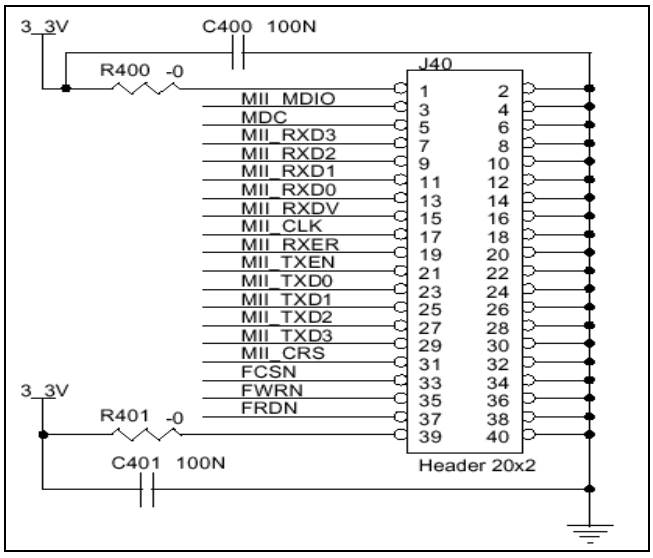


Figure 2. MII/RMII/FIFO (J40) connector pinout.

3-8. Flash memory

A non-volatile 1-Mbit FLASH memory with SPI Interface (designated as U7) is used to store the MAC firmware code. The MAX2986 MAC/PHY chip can be configured to boot from the FLASH memory.

3-9. Jumpers (J30-J35)

Jumpers J30-J32 are the boot jumpers used to set different boot options for MAX2986 MAC/PHY chip. Depending on these jumpers' settings, the MAX2985 MAC/PHY chip can read the MAC software either from FLASH memory or from a PC connected to the board through the UART interface.

Jumpers J33-J35 are used to set the upper layer interface such as Ethernet, USB, or MII/ RMII/ FIFO interfaces (see Table 1). The MAX2986 MAC/PHY chip reads the jumpers configuration during boot-up procedure.

Interface	ULIS2 (J33)	ULIS1 (J34)	ULIS0 (J35)
MII	1 (C-to-UP) 0 (C-to-DN)	1 (C-to-UP) 0 (C-to-DN)	0 (C-to-DN) 1 (C-to-UP)
RMII	1 (C-to-UP)	0 (C-to-DN)	1 (C-to-UP)
FIFO	1 (C-to-UP)	0 (C-to-DN)	0 (C-to-DN)
ETH (MII)	0 (C-to-DN)	1 (C-to-UP)	1 (C-to-UP)
USB	1 (C-to-UP)	1 (C-to-UP)	1 (C-to-UP)

Table 1. Jumper J33-J35 settings for upper layer interface selection.

3-10. Ethernet PHY configuration switch (SW1)

Configuration input pins for Auto-NEGotiation (ANEG pin), 10/100 Mbps (SPEED pin) and Duplex Mode (DPLX pin) associated with LSI's L80255 chip (designated as U12 on board) are set by means of SW1 switch that is labeled as ETH_PHY on the board.

Note: Firmware version 1.8 or higher supports 10 Mbps – Full duplex mode only and SW1 switch setting is shown in the Table 2.

SPD	DPLX	ANG
0 (ON)	1 (OFF)	1 (OFF)

Table 2. Switch setting for Ethernet PHY configuration.

3-11. LEDs

LED D19 indicates the presence of the 3.3V power supply.

LEDs D6 and D7 indicate powerline communication activities. D6 indicates a network collision when it is blinking. D7 indicates the establishment of data link between two HomePlug devices when it is "ON".

LEDs D9, D119 and D120 are Ethernet interface indicators. D9 "**ETH_LNK**" indicates that the Ethernet link is set up. D119 "**ETH_FD**" indicates that the link is in full-duplex when it is on; otherwise the link is in half-duplex mode. D120 "**ETH_SP**" indicates that the link data speed is 100Mbps when it is on; otherwise the link data transmission rate is 10Mbps.

3-12. Reset Button

Reset functionality is provided through a push-button switch (designated as S1 on board). Both FLASH memory and Ethernet PHY (LSI's L80255 chip designated as U12 on board) are connected to the reset signal.

4- System Operation

The evaluation board is used to network various devices through the AC power line medium using any of Ethernet, USB, MII/RMII/FIFO interfaces. These interfaces (upper layer interface) are selected through the jumpers J33-J35. The MAX2986 MAC/PHY chip reads this configuration during boot-up procedure. **Note that only one upper layer interface can be activated at a given time and every time the jumper status is changed, the board must be reset.**

4-1. Power line networking using Ethernet interface

A power line-networking environment can be set up using Ethernet interface. The setup procedure to connect two PCs using the Ethernet interface (as illustrated in Figure 3) is described in following steps. **Ethernet interface is the default setup for this board.**

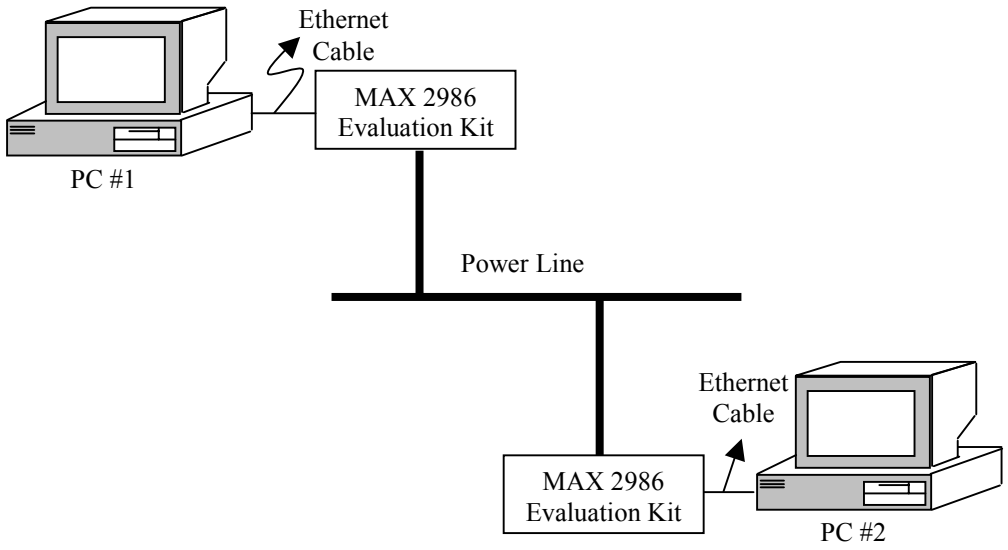


Figure 3. Setup for HomePlug connectivity using Ethernet interface.

Test Preparation Steps

Step 1:
Make sure that jumpers and switch SW1 are set as shown in Figure 4 (the details of these settings are given in Sections 4-1-1 to 4-1-3).

Step 2:
Connect the power line cable to the P1 connector.

Step 3:
Connect one end of the cross-over Ethernet cable to the RJ-45 socket (J3) and connect the other end of the cable to a RJ-45 socket (Ethernet socket) on PC. Connect serial cable between evaluation board and the PCs as well.

Step 4:
Plug the powerline cable to the powerline outlet.

Step 5:
Repeat steps 1 through 4 for the second board.

Step 6:
Run terminal software, Tera Term is included in the software package.

Step 7:
Reset both evaluation boards using the reset button S1.

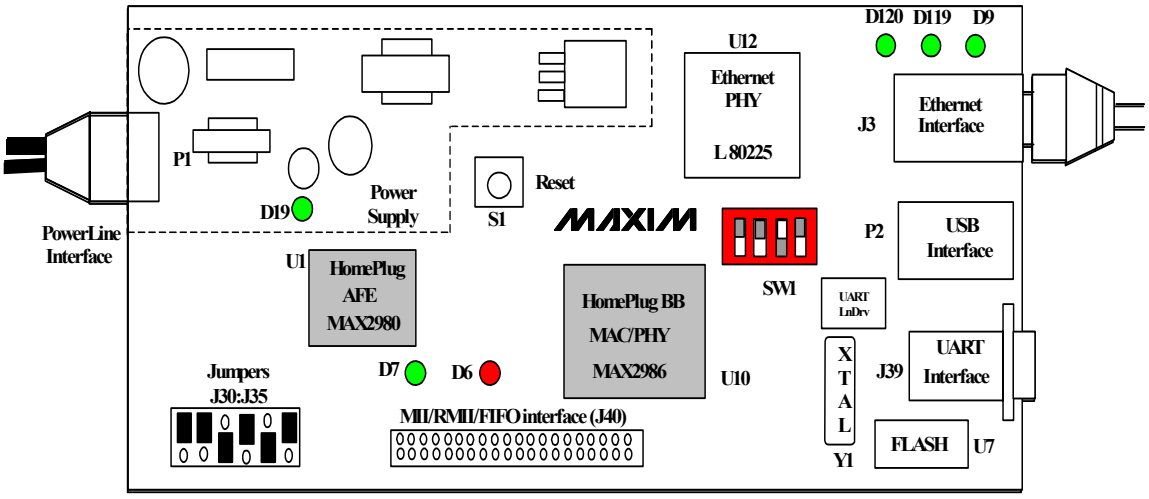


Figure 4. Switch and jumpers setting for Powerline to Ethernet interface connection.

Step 8:
Upon resetting the board, following messages on terminal adaptor (Installation and configuration for terminal adaptor is described in chapter 5) indicates code download was successful and EvKit is ready for operation.

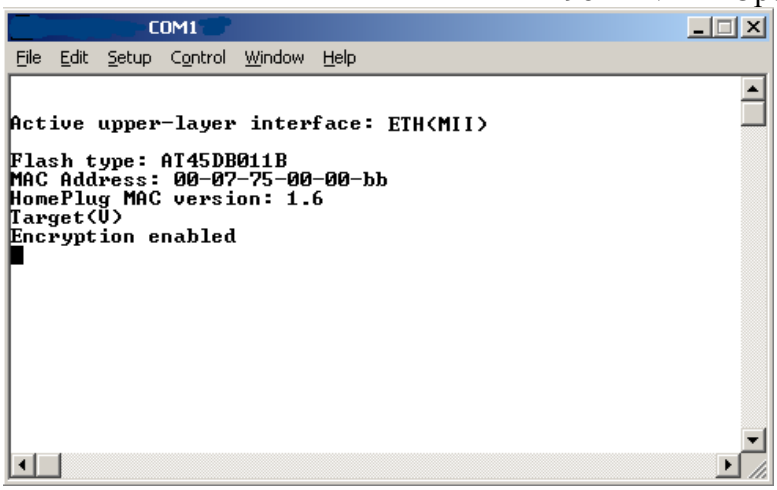


Figure 5. Terminal program display.

Step 8:
Open a command prompt window on both PCs. Execute the following command to determine the IP address of each PC.

ipconfig

Step 9: You should see a message similar to Figure 6 in the command window of each PC. Ensure both PCs have compatible IP addresses and subnet masks to allow for proper communication. The quickest method to ensure this is to manually set the IP address within the network setting of windows and selecting TCP/IP properties of the Ethernet adapter of each PC. Set IP address of PC #1 to be 11.11.11.11 with a subnet mask of 255.255.0.0. Set IP address of PC#2 to 11.11.12.12 with a subnet mask of 255.255.0.0. An example is shown in Figure 7.

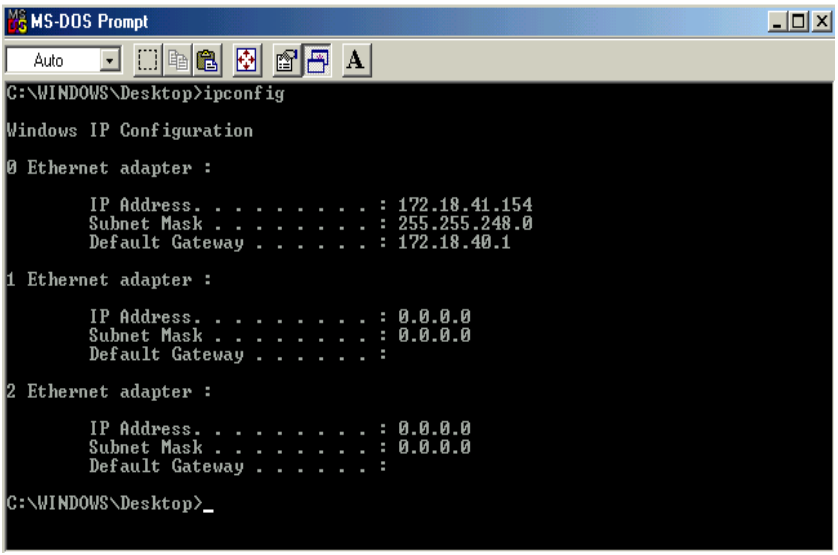


Figure 6. IP Address info on Command Prompt.

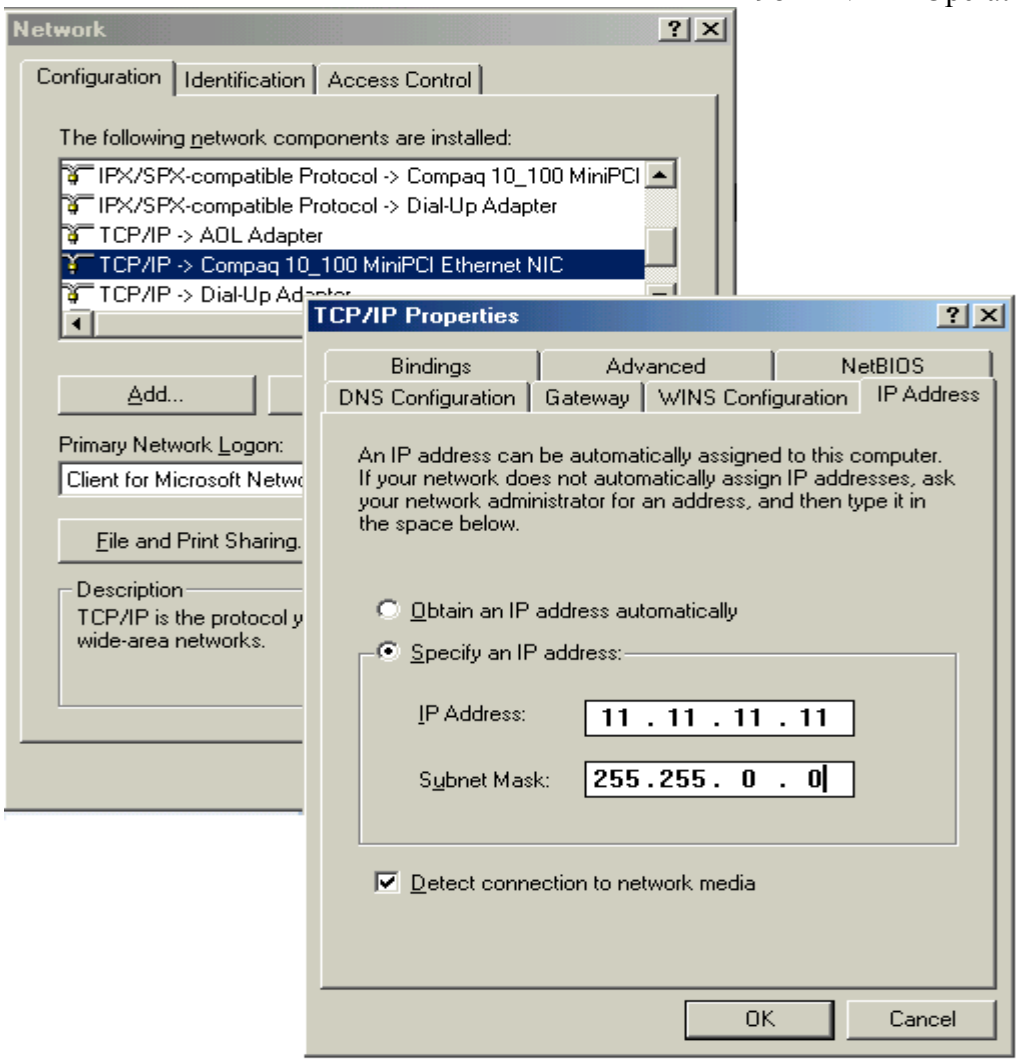


Figure 7. Setting the IP address of the Ethernet Adapter.

Step 10:

Execute the following command to ping other PC.

Ping <IP address of PC to be pinged (e.g. 11.1.1.1) > -t

Press Ctrl-C to stop the program.

Step 11:

You should see following message on command windows (as shown in Figure 8), which means HomePlug connection, is established.

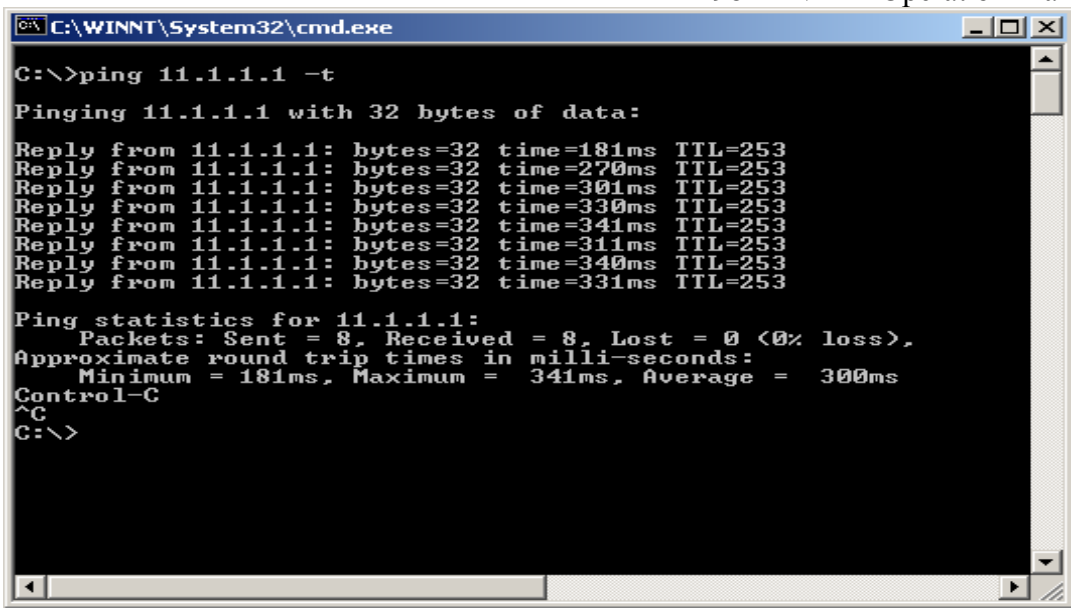


Figure 8. PING Messages on Command Prompt Window.

You can apply the same test on the other PC to PING in the reverse direction.

4-1-1. Booting up the system to program the MAC/PHY chip from the FLASH Memory

Jumpers J30 to J32 are used to set different boot option (downloading the MAC software) for MAX2986 MAC/PHY chip. Following configuration downloads the MAC software from FLASH memory.

Boot-up Mode	BP0 (J32)	BP1 (J31)	BP2 (J30)
Encrypted Image Download from FLASH	1 (C-to-UP)	0 (C-to-DN)	1 (C-to-UP)

Table 3. Jumpers J30-J32 settings for downloading the MAC software from the Flash.

For the procedure to download the MAC software into the FLASH memory itself, please see Section 6. Note that the MAC/PHY software can be downloaded into the MAC/PHY MAX2986 chip directly from the PC through the UART interface. For detail description of this procedure see Section 5.

4-1-2. Setting up Ethernet as the upper layer interface

In order to set Ethernet as an upper layer interface for the powerline MAC software, the jumpers J33-J35 must be configured properly as shown in Table 4.

Jumper	Value
J33	0 (Jumper C-to-DN)
J34	1 (Jumper C-to-UP)
J35	1 (Jumper C-to-UP)

Table 4. Jumper settings to select Ethernet as upper layer interface.

4-1-3. Ethernet PHY configuration

Ethernet PHY is also configured through switch SW1 (labeled ETH-PHY). Table 5 shows the required switch settings for this mode.

Jumper	Value
ANG (SW-1)	1 (Switch OFF)
DPLX (SW-2)	1 (Switch OFF)
SPD (SW-3)	0 (Switch ON)

Table 5. 10 Mbps/ full duplex SW1 switch settings.

4-2. Power line networking using the USB interface

MAX2986Evkit can be set up to transport data over AC power line wires through USB interface. In this section, the procedures to configure the evaluation board for USB interface are described. A typical setup configuration including jumpers and switches are shown in Figure 9.

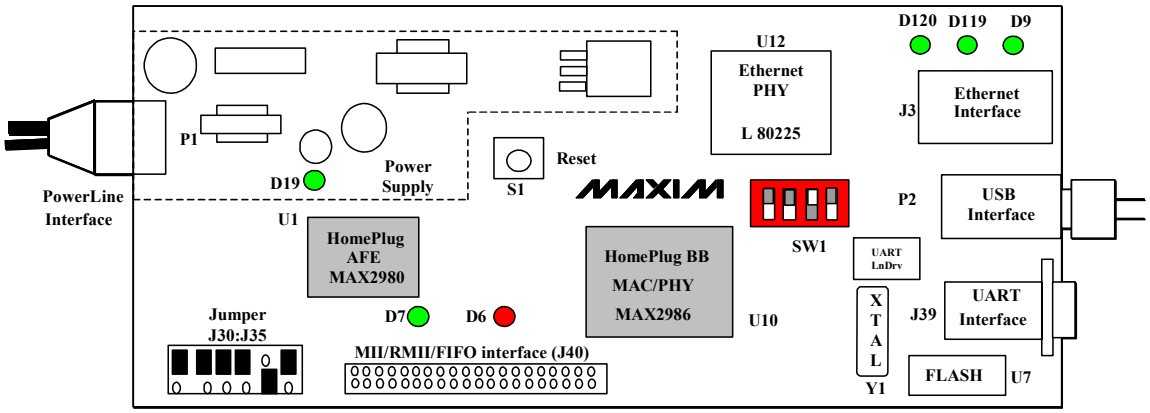


Figure 9. Switch and jumpers setting for Powerline to USB interface connection.

4-2-1. Booting up the system to program the MAC/PHY chip from the FLASH Memory

Jumpers J30- J32 are used to set different boot options for the MAX2986 MAC/PHY chip. In order for the MAX2986 MAC/PHY chip to download the MAC software from the FLASH memory, set the jumpers as shown in Table 3.

4-2-2. Setting up USB as upper layer interface

In order to set USB as an upper layer interface for the powerline MAC software, the jumpers J33-J35 must be configured as shown in Table 6.

Jumper	Value
J33	1 (Jumper C-to-UP)
J34	1 (Jumper C-to-UP)
J35	1 (Jumper C-to-UP)

Table 6. Jumper settings to select USB as upper layer interface.

Test Preparation Steps

Step 1:
Make sure that jumpers and switch SW on board are set as shown in Figure 9.

Step 2:
Make sure Maxim HomePlug USB driver software is installed on PC as described in Section 7.

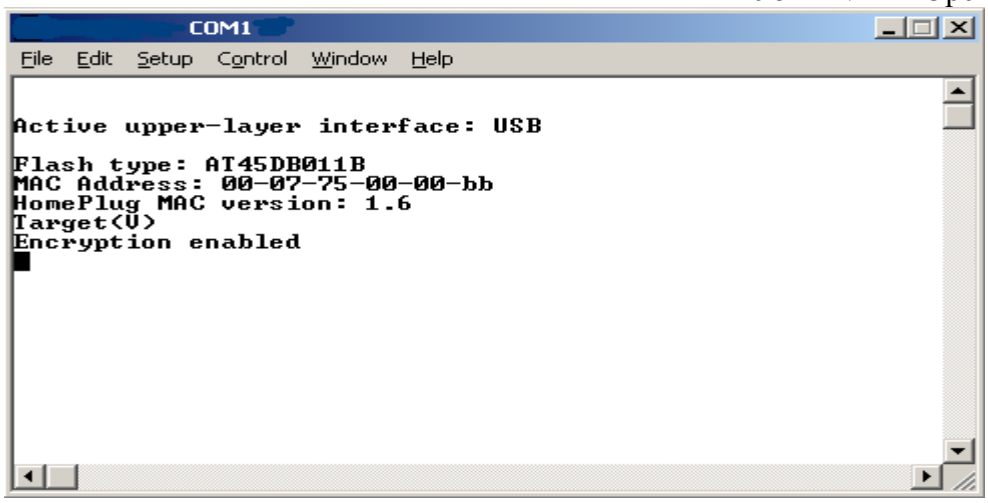
Step 3:
Connect the power line cable to the P1 connector.

Step 4:
Connect the USB cable to Type A USB socket (P2) and plug the other side of the USB connector to the PC. Make sure that PC recognizes a USB connection.

Step 5:
Repeat step 1 to step 4 for the second board.

Step 6:
Reset both evaluation boards using the reset switch S1.

Step7:
Upon resetting the board, following messages on terminal adaptor (Installation and configuration for terminal adaptor is described in chapter 5) indicates code download was successful and EvKit is ready for operation.



Step 8:
Open a command prompt window on either PC.

Step 9:
Execute the following command to ping the other PC.

Ping <IP address of PC to be pinged (e.g. 11.1.1.1) > -t

Press Ctrl-C to stop the program.

Step 10:
You should see following massage on command windows (as shown in Figure 10), which indicates the HomePlug connection is established.

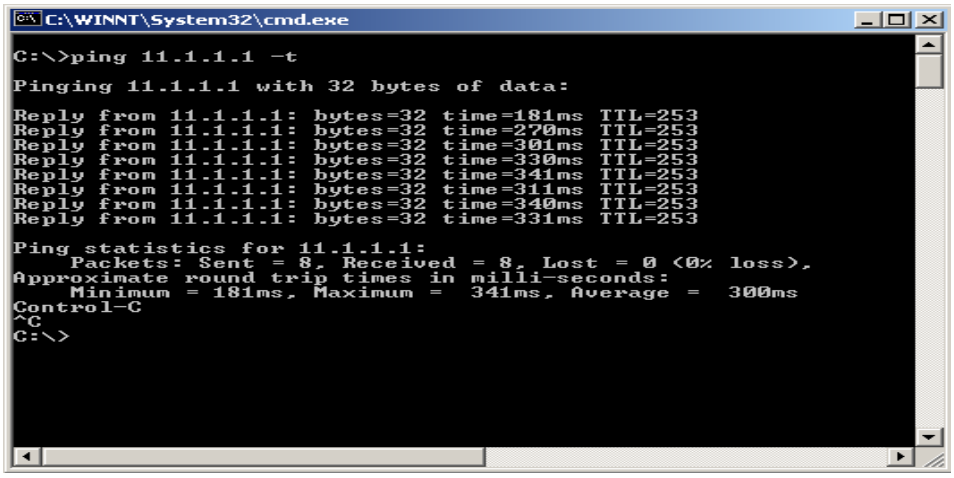


Figure 10. PING messages on command prompt window (USB test).

You can apply the same test on the other PC to PING in the reverse direction.

5- How to download software from PC into the MAC/PHY processor memory

The evaluation board has the capability to program MAX2986 MAC/PHY Chip through the UART interface. In order to download MAC software directly from a PC into the chip, follow the procedure below. **Jumpers J36 and J37 must be installed on board. Only software in FSH format can be downloaded through UART interface.**

Step 1:
Set the jumpers as given in Table 7.

Boot-up Mode	BP0 (J32)	BP1 (J31)	BP2 (J30)
Simple Code Download through UART Interface	1 (C-to-UP)	1 (C-to-UP)	1 (C-to-UP)

Table 7 – Boot processor jumper settings (J30-J32)

Step 2:
Connect a DB-9-Male connector (designated as J39 on board)) to the UART connector. Connect the other end of the connector to the COM1 (or COM2) terminal of the PC. Note that a Null-Modem (cross-over) serial cable to be used.

Step 3:
Use a terminal application program such as Tera Term software (it is supplied with the Evaluation Kit software package) to access to the PC serial port terminals. The Tera Term program, provide the window to the user, as shown in Figure 11, through which the user will be able to configure the port and send/receive data.

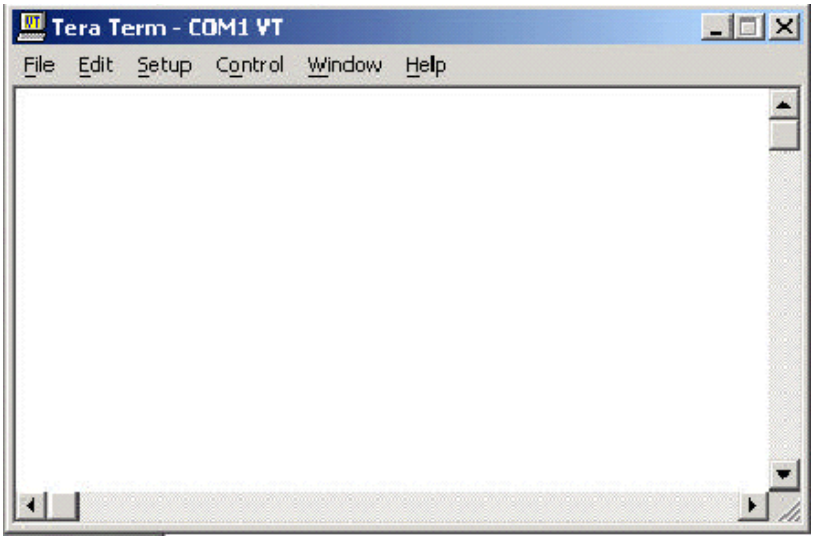


Figure 11. Tera Term terminal access window.

Step 4:
From the set up menu configure the serial port as shown in Figure 12. Note that your COM port settings may vary depending on serial port used on the PC.

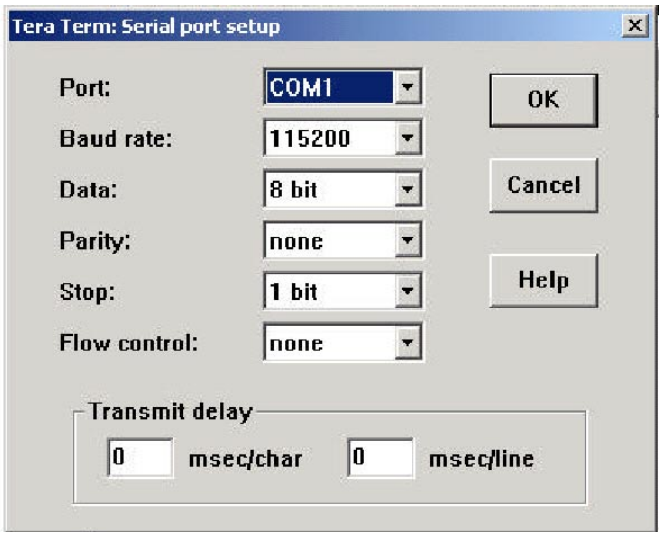


Figure 12. Serial port configuration window.

Step 5:
Press the reset switch button (S1) to get the **"Waiting for image…"** prompt on Tera Term terminal access window, as shown in Figure 13.

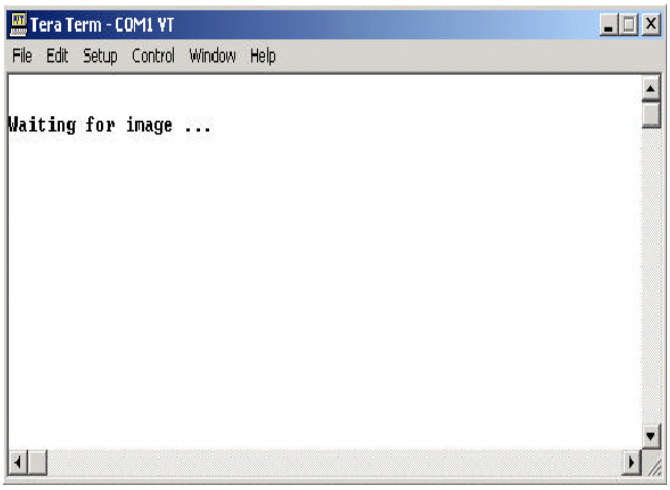


Figure 13. Tera Term terminal access window after resetting the board.

Step 6:
From the file menu in Tera Term terminal access window choose "send file", and from the send file selection window as shown in Figure 14, select the desired file and click "open". Make sure that the binary format option is selected.

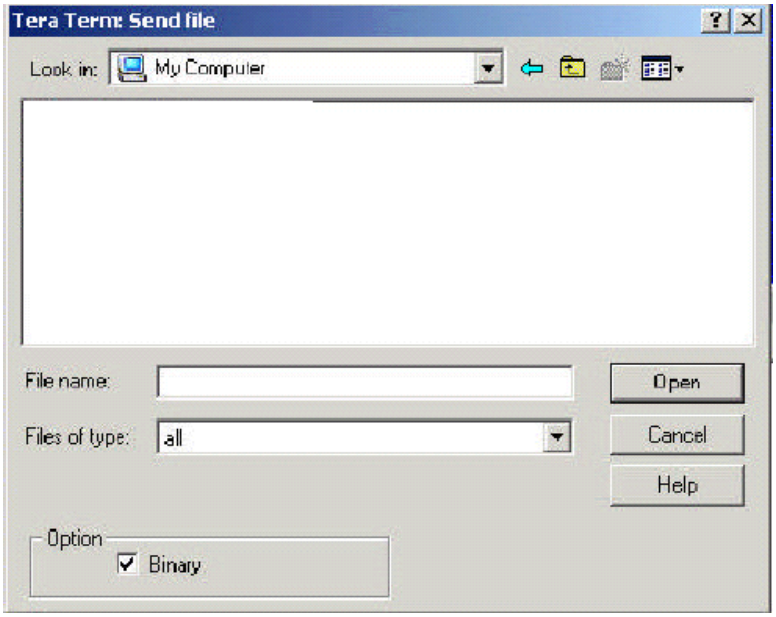


Figure 14. Send file selection window.

6 - How to Program The Flash memory

In order to program the Flash memory, first set the jumpers J30-J32 according to Table 7 in Section 5 so the MAC/PHY processor can be programmed from a PC through the UART interface. **Jumpers J36 and J37 must be installed on board.**
First the FLASH programmer is downloaded into the MAC/PHY on chip processor memory. The programmer will control the procedure for reading the MAC software and re-programming the FLASH memory. Once the programming is completed, set the jumpers J30-J32 back to the positions given in Table 3 so every time the board is rebooted from the FLASH memory. The procedure details are given below step by step.

Step 1:
Set up the PC serial terminal according to the description in Section 5 using Tera term access terminal. Reset the evaluation board (S1) to get the **"Waiting for image…"** prompt on the Tera Term terminal access window.

Step 2:
Send the file **uart2flash.fsh** to the board through the terminal program. This file is supplied with the Evaluation Kit and is located in "…\Flash\".

Step 3:
The terminal window shows prompt **"Ready to receive CDL encrypted image from UART…"** as shown in Figure 15.

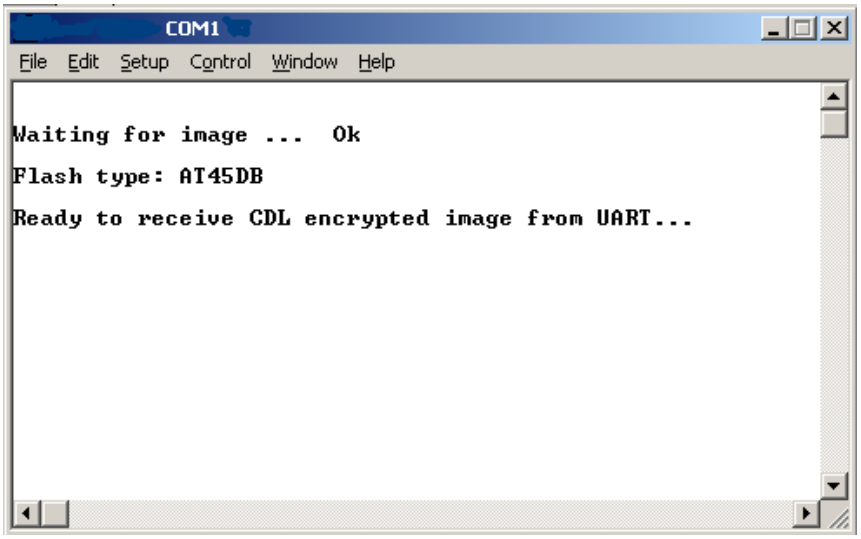


Figure 15. Board is ready to receive encrypted Flash image.

Step 4:
Send the Flash image file through the terminal program. The Flash image file is in binary format (name.bin) and is generated by the Flash Image Utility supplied with the

Evaluation Kit software package. The name of the file represents the physical address (Device MAC Address) that will be assigned to the board whenever the board is booted-up from the Flash memory.

Step 5:

Upon completion of file transfer, Flash programming starts. Next, several parameters are posted on the Tera Term terminal window and the content of Flash memory is verified. The last message indicates end of Flash programming. The binary image file is now programmed to the FLASH memory.

Every time the board is reset (by means of push button reset switch (S1) on the board), data is downloaded from the FLASH memory into the MAX2986 MAC/PHY chip.

7- Software Installation

Note that it is important to install WinCap software before installing any software.

7.1 WinCap installation

Step 1:
Run **WinPcap_2_3_nogui.exe** program located in /Evkit/Maxim_Evkit_Software/WinCap folder for installation.

Step 2:
Restart Windows.

7.2 How to Install USB driver (Requires Windows 2000)

In order to use the USB interface when transmitting/receiving data to/from power line, Maxim USB Device Driver should be installed on the connecting PC. USB Device Driver supports Windows 2000.

7-2-1. Installation Steps

Step 1:
Make sure the board is configured to load MAC program from Flash (see Table 3) and that the upper layer interface is selected to be USB (see Table 6).

Step 2:
Connect the power line cable to the P1 connector and Plug the other end of powerline cable to the powerline outlet and reset the EvKit.

Step 3
Connect the USB cable to USB connector (P2) and connect the other end of USB cable to the PC with Windows 2000 operating system. Windows 2000 will detect a new USB device as shown in Figures 16 and 17.

Figure 16. Found new hardware windows.

Figure 17. Windows status bar when USB device is connected.

Note: In situations where the driver has been installed once and later uninstalled, or an incomplete installation has taken place, only the Windows status bar (see figure 15) will be shown. In such cases, double click on USB device icon on the status bar to open the **"Unplug or Eject Hardware"** menu. Then click on the **"properties"** button to open **"USB Device Properties"** window. On this window, under the **"Driver"** selection, choose the **"Update Driver"** to open **"Upgrade Device Driver Wizard"**. Click on **"Next"** and continue with **Step 5** as follows.

Step 4
If Windows displays a window stating "**Digital Signature Not Found**" as shown in Figure 18, press "**Yes**" and continue.

Figure 18. Digital signature not found message from Windows.

Step 5
Windows will provide options to search for device drivers as shown in Figure 19. Select **"Search for a suitable driver for my device (recommended)",** then press **"Next" .**

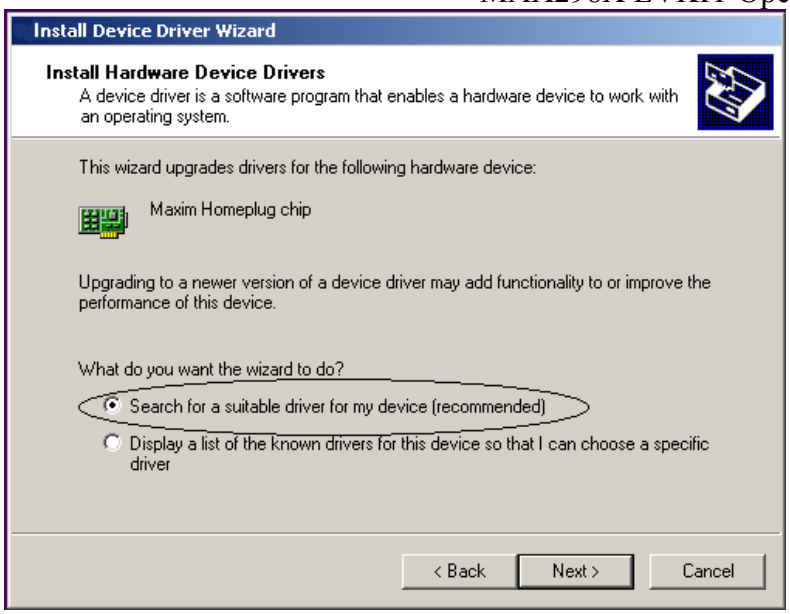


Figure 19. Device driver wizard window.

Step 6

Next window is shown in Figure 20. Select **"Specify a location"** option then press **"Next"** to continue**.**

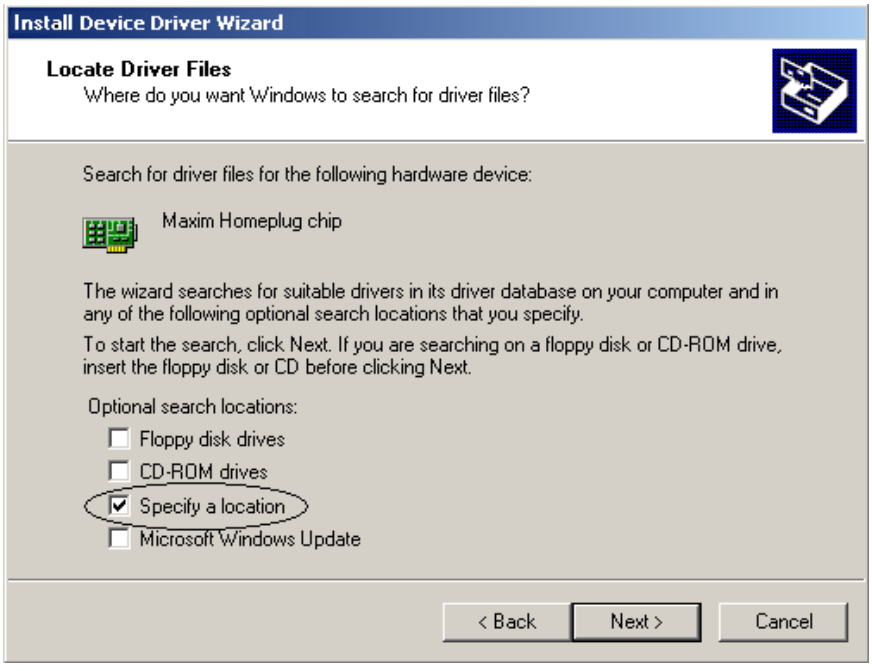


Figure 20. Specifying a location during installation.

Step 7

Next, direct the Device Driver wizard to location of **HPdrv.inf** in USB Device Driver directly. This file is supplied with the software package.

Step 8
Follow windows instructions to complete driver installation.

7-2-2. How to Verify Driver Installation

In order to verify that the USB driver has been properly installed, double click on the USB icon in Windows status bar as shown in Figure 17. The **"Unplug or Eject Hardware"** window will appear as shown in Figure 21. Verify that **"Maxim HomePlug chip"** is listed under **"Hardware devices"**.

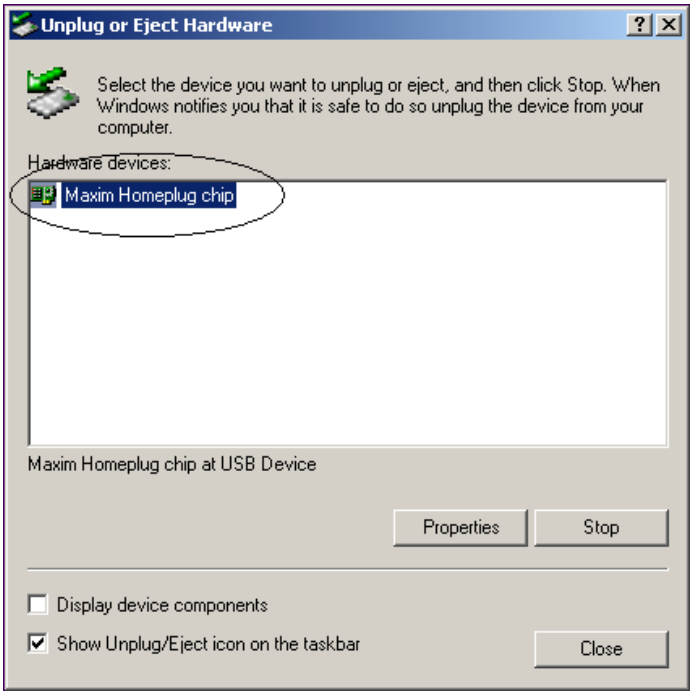


Figure 21 - Unplug or eject hardware Window.

7-2-3. Setting an IP Address for the USB Network Adapter Device Driver

Step 1:
On Windows start menu, select the following menus: **Settings / Network and Dial-up Connections / Local Area Connection 2** as shown in Figure 22. Note that if there is no Ethernet LAN connection on the PC, there will be shown only one "**Local Area Connection"**, which is created by USB device driver.

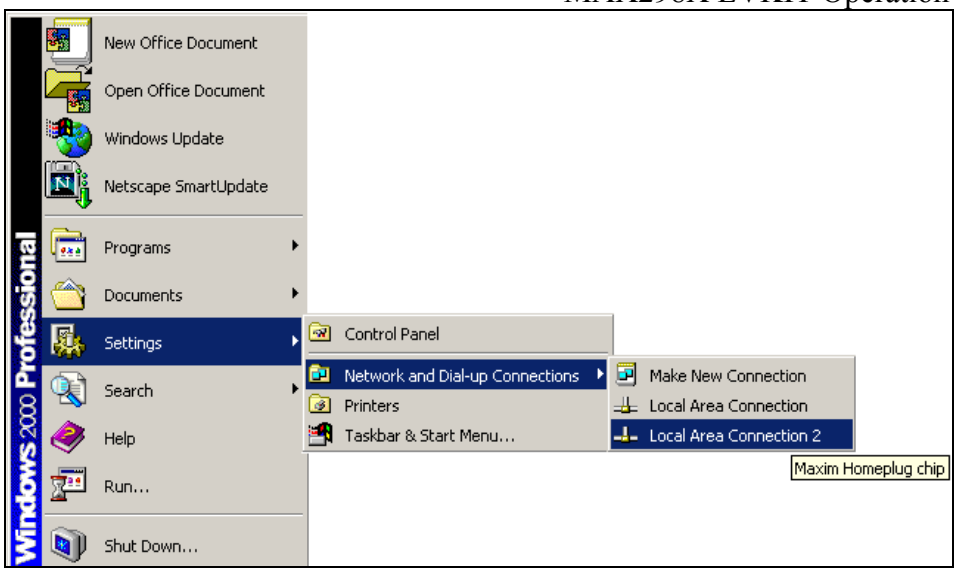


Figure 22. Checking local area connection created by USB driver.

Step 2:

"Local Area Connection Status" window will appear as shown in Figure 23. Select "**Properties".**

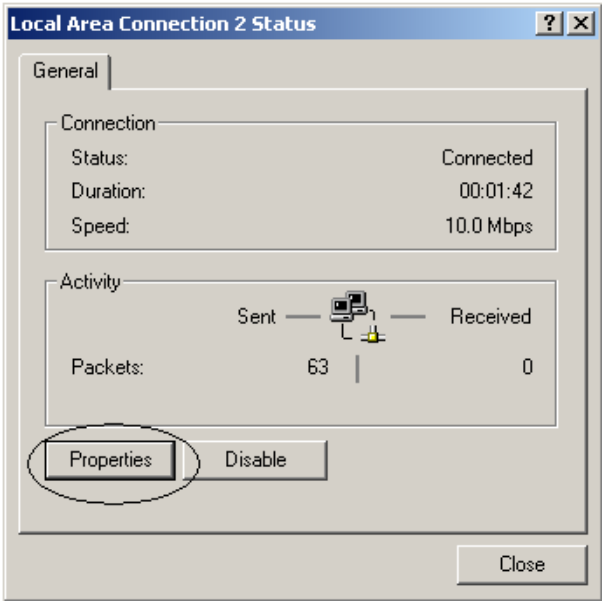


Figure 23. Local area connection status window.

Step 3:

"Local Area Connection Properties" will appear as shown in Figure 24. Make sure **"Maxim HomePlug chip"** is listed under **"Connected using".** Select **"Internet Protocol (TCP/IP)"** and press **"Properties".**

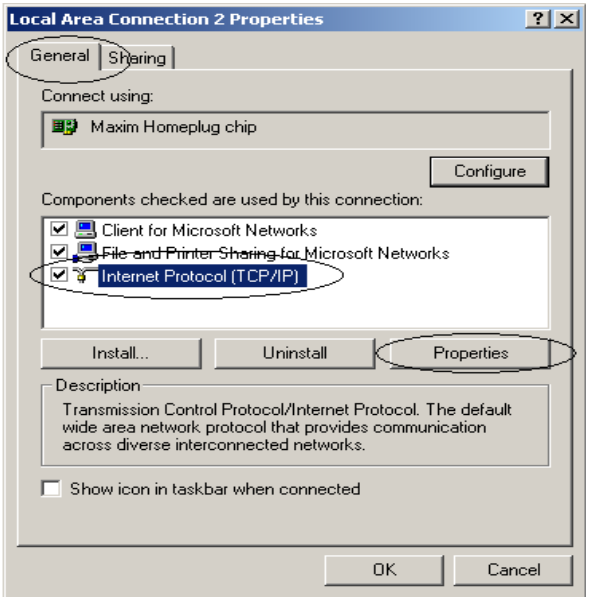


Figure 24. Local area connection properties window.

Step 4:

"Internet Protocol (TCP/IP) Properties" window will appear as shown in Figure 25. Configure the IP address. This IP address will be used when the PC is connected to other devices through Homeplug Evaluation board.

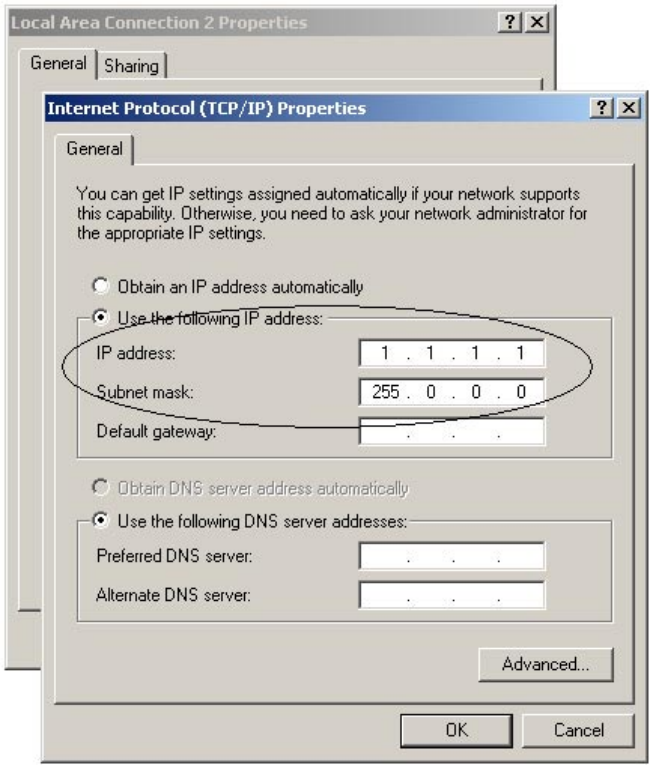


Figure 25. Internet protocol (TCP/IP) properties.

7-2-4. Uninstalling the Driver

Step 1:
Make sure the Evaluation board is connected to the power line and to the PC through USB interface as described in the installation steps.

Step 2:
Double click on the USB icon in Windows status bar as shown in Figure 17. The **"Unplug or Eject Hardware"** window will be appear as shown in Figure 26. Verify that **"Maxim HomePlug chip"** is listed under **"Hardware devices"**. Press **"Properties".**

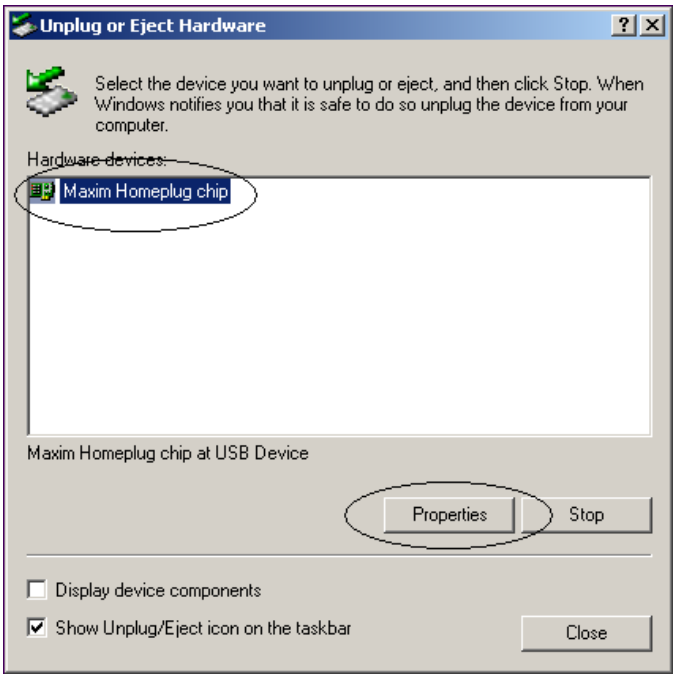


Figure 26. Unplug or eject hardware Window.

Step 3:
"Maxim HomePlug chip Properties" window will appear as shown in Figure 27. Press **"Uninstall"** to remove the USB device driver. Follow Windows instructions to complete driver uninstallation.

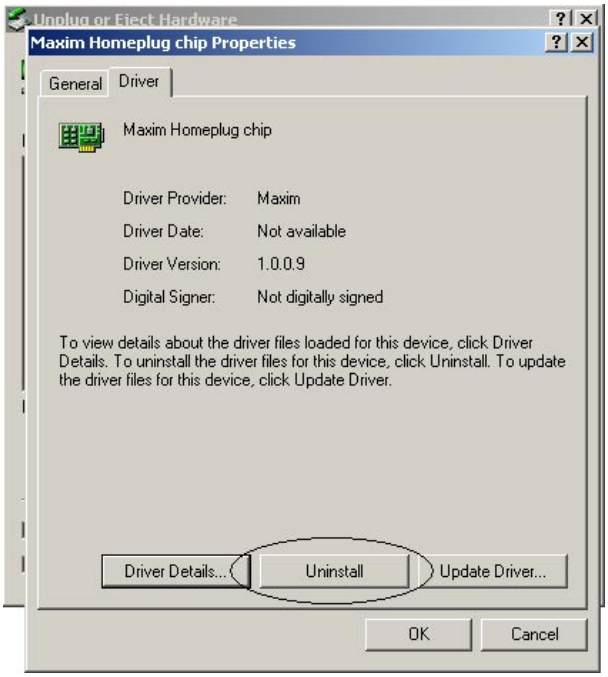


Figure 27. Maxim HomePlug chip Properties Window.

8- How to verify that Upper layer (USB/Ethernet/…) interface is selected properly

When loading the program into the MAC/PHY processor memory either from PC or FLASH memory, upon completion of the file transfer, the selection of the upper layer and some other information such as MAC address, software version and encryption status (disables or enabled) can be verified as described bellow.

Step 1:
Connect a DB-9-Male connector (designated as J39 on board)) to the UART connector. Connect the other end of the connector to the COM1 (or COM2) terminal of the PC. Note use a Null-Modem (cross-over) serial cable. **Jumpers J36 and J37 must be installed on board.**

Step 2:
Use a terminal application program such as Tera Term software to access to the PC serial port terminals. The Tera Term program, provides a window to the user, as shown in Figure 11, through which the user is able to receive data from the MAX2986 MAC/PHY chip on the board,

Step 3:
Each time the board is reset and after the FALSH memory data are downloaded into the MAC/PHY processor, **"Ok"** prompt will appear on terminal screen followed by other informative messages as shown in Figure 28. The same information is also monitored each time the MAC/PHY processor is programmed by a PC.

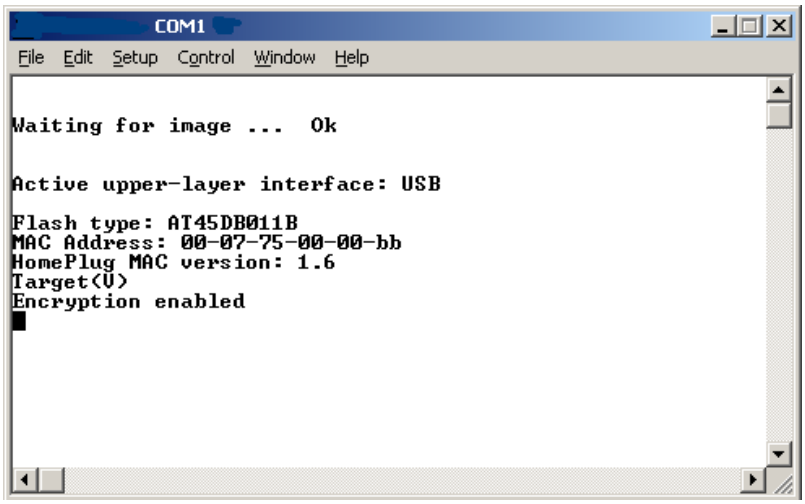


Figure 28. Monitoring MAC software information through the serial interface.

8.1 HomePlug Manager Software

This software provides capability to set the encryption password key for Homeplug EvKit. The procedures below are required to set the password using management GUI.

Step 1:
Make sure you have already installed **WinPcap_2_3_nogui.exe** program located in /Evkit/Maxim_Evkit_Software/WinCap.

Step 2:
Run **HPManager.exe** file located in /Evkit/Maxim_Evkit_Software /HP_GUI folder. You will see a window similar to Figure 29.

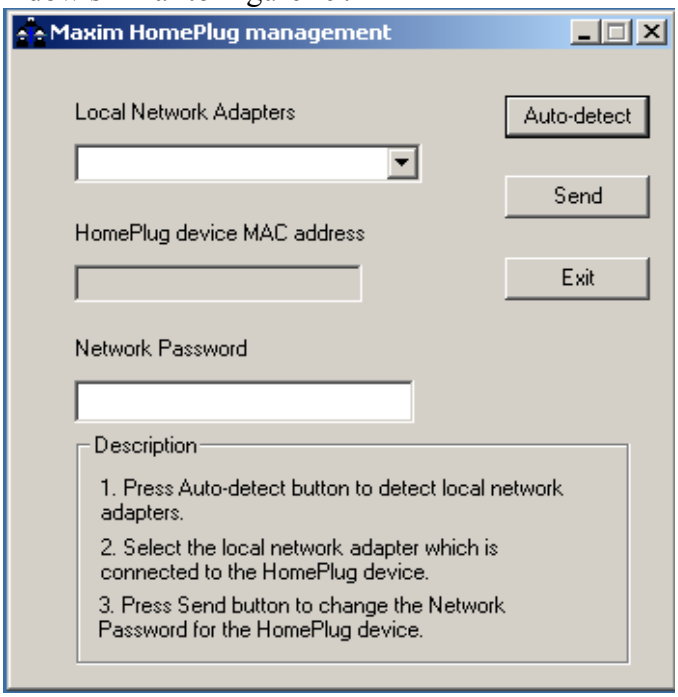


Figure 29: HomePlug management Window.

Step 3:
Press the "Auto-detect" button, and the program will automatically detect the local network adaptor. Name of network adaptor/adaptors will be listed in the menu under the "Local Network Adapters" field. The MAC address associated with the HomePlug device is also appeared in "HomePlug device MAC address" field as shown in Figure 30.

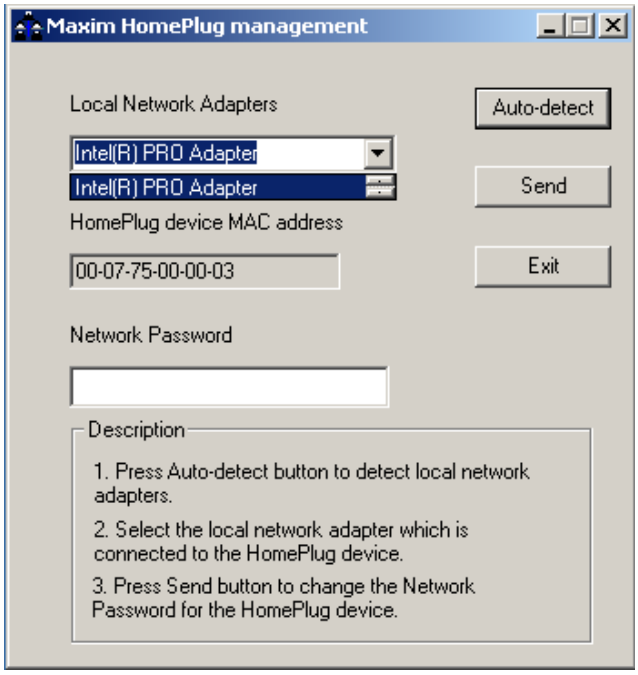


Figure 30. Automatic detection of local network adaptor and HomePlug device MAC address.

Step 4:

From the menu in the "Local Network Adapters" list, select the network adapter that is connected to the HomePlug device. **For those with USB interfaces only, select the network adapter that is listed as "Maxim Integrated Product**" (see Figure 31).

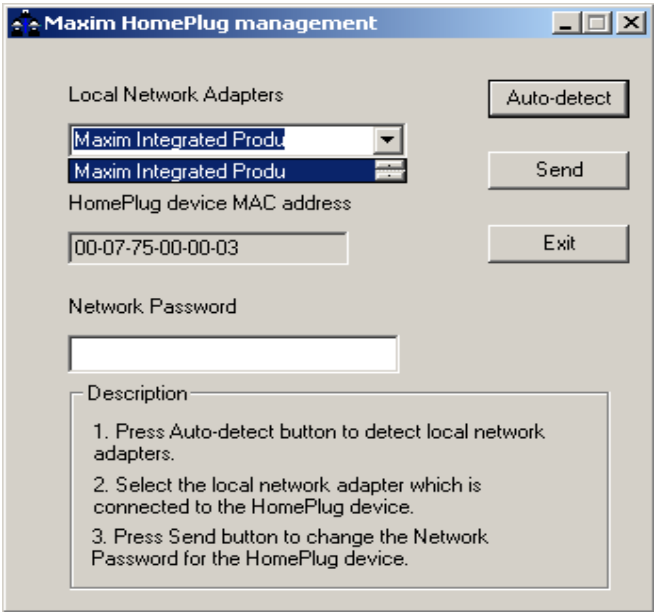


Figure 31. Selecting the network adaptor in HomePlug management Window.

Step 5:
Type a new password in the "Network Password" field as shown in Figure 32. Then push the "Send" button to send the new password to the HomePlug device.

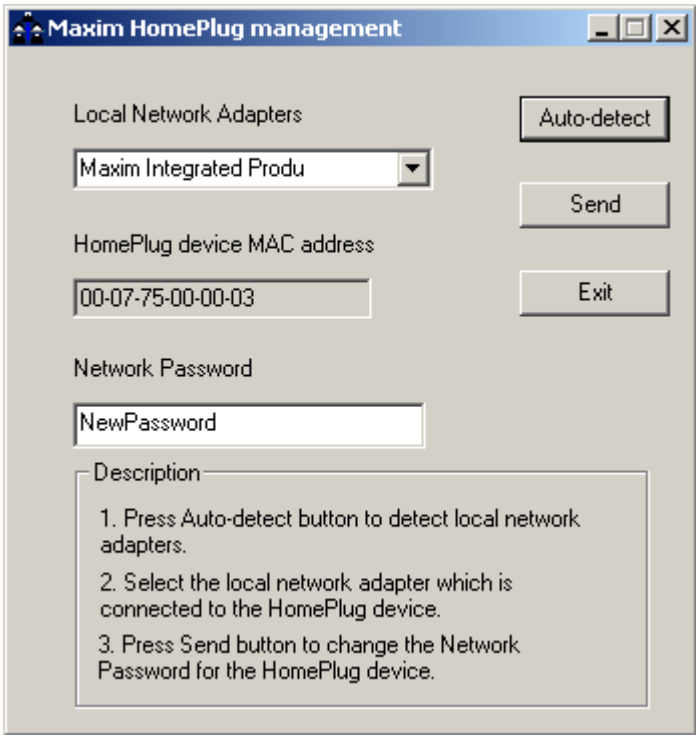


Figure 32. Typing a new password in HomePlug management Window

HomePlug manager confirms that the password has been sent to the HomePlug device as shown in Figure 33.

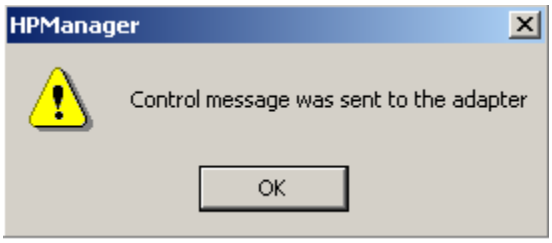


Figure 33. Window message indicating that the password has been sent.