



PCnet™-HOME Software
HOMELANDIAG - DOS Diagnostics Utility
User Reference Guide
Version 1.0

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Introduction

HOMELANDIAG is a DOS based diagnostics program designed to help with silicon validation and system level testing of the PCnet-Home controller.

HOMELANDIAG supports the following controllers and PHYs.

Controllers:

PCnet-Home - Am79C978

PHYs:

AMD - Am79C978 (Internal 10 BaseT)

AMD - Am79C978 (Internal 10 HomePNA)

AMD - Am79C872 (QFEX)

AMD - Am79C873 (NetPHY-1)

National Semiconductor Corp. - 83840, 83840A

Level One - LXT970, LXT970A

ICS - 1890

The standard operating environment for HOMELANDIAG is in an IBM PC/AT clone with the MS-DOS operating system. HOMELANDIAG is a 16-bit stand-alone MS-DOS program that runs in real mode.

The following tests are supported:

- Resource tests
- Internal Loopback tests
- External Loopback tests
- Node-to-Node Send-Receive tests at user configurable power levels and data rates
- EPROM/REGISTER/SRAM test

How to Run the HOMELANDIAG Utility

Copy HOMELANDIAG.EXE and ND_MAIN.EXE to the same directory.

At the prompt, type -
HOMELANDIAG

HOMELANDIAG /? displays the command line parameters that can be used.

The '/log' option creates two log files
HOMELANDIAG.LOG - Provides a log of test executed.
ND_MAIN.LOG - Provides a detailed log of tests executed.

Tests Supported

The following tests are supported in this utility:

<u>Test name</u>	<u>Test Category</u>	<u>Description</u>
Resource Test	I/O access DMA (Bus Master) Interrupt	Check CSR88/CSR89 Check ability to DMA Initialization Block Check IDON interrupt generation
Internal Loopback	Internal Loopback	Check 10 and 100 Tx/Rx Loopback w/Interrupt
External Loopback	External Loopback	Check 10 and 100 Tx/Rx Loopback w/Interrupt
EPROM/REGISTER/SRAM Test	Register Bits EEPROM checksum PCI register access SRAM write/read	Walking 1 in zeros, walking 0 in ones Check checksum value currently in EEPROM. Check PCI Configuration Space access Check SRAM Write/Read capability
Link Test SENDER	<p>Please refer to the 'SENDER RESPONDER' section below for a detailed explanation of the test setup.</p> <p>This test requires 2 systems on the network.</p> <p>This Test must be started ONLY after the Link Test Responder has been started on the other Test System. The purpose of this test is to check if the link between two systems enabled with PCnet-Home adapter cards.</p>	
Link Test RESPONDER	<p>Please refer to the 'SENDER RESPONDER' section below for a detailed explanation of the test setup.</p> <p>This test when started sets the system in a state such that for every packet it receives it transmits a broadcast packet.</p>	

Sender Responder Test

This section describes the setup required for Link Test SENDER and Link Test RESPONDER. These two tests are interdependent. The purpose of this test is to verify if two PCnet™-Home Adapter cards can communicate with each other.

1. You require two systems, system #1 and system #2, enabled with PCnet™-Home adapter cards that are on the same network. Please make sure that no other systems are on the same network.

Connect the systems via the PHY which is under test, 10BaseT PHY or the HomePNA PHY.

2. Make sure you select the same PHY under test (10 BaseT or HomePNA) on both systems, system#1 and system#2.
3. Start the Link Test Responder on system #1. You will see the following prompt on the screen
'Running Link Test as Responder, please wait...'
4. Please wait until you see the following prompt displayed on the screen
'<== Responding'
'Press any key to terminate'
5. Now system #1 is ready to respond - Whenever it receives broadcast packet it transmits a preconfigured broadcast packet.
6. Now system #2 is ready to start the Link Test Sender.

If HomePNA PHY is the PHY under test then you will be given a choice to select the Power/Speed mode. The system #1 is then automatically programmed to the same mode.

When you select the mode, a broadcast packet is sent out on the wire by system #2. System #2 then waits for 5 seconds to receive a broadcast packet from system #1 (which is ready to receive and transmit packets). If system #2 does NOT receive a broadcast packet within 5 seconds a 'Failed' prompt appears on the screen otherwise a 'Passed' prompt appears on the screen.

If 10 BaseT is the PHY under test then you will NOT be given a choice to select the Power/Speed Mode as this PHY does not support the functionality. But the rest of the explanation is the same as for above (as described for the HomePNA PHY).

User Interface

HOMELANDIAG comes with a simple user interface that consists of a main control program, called HOMEDIAG, that is launched from the MS-DOS command line. HOMEDIAG contains a sequence of calls to the diagnostic module, ND_MAIN.EXE, where the individual tests are launched.

When the user is prompted to enter a choice - if the user types in an invalid choice, it is ignored and no action is taken.

Log File Creation

If the '/log' option is used 2 files are created namely -

HOMELANDIAG.LOG	This file contains the PCI-scan information and also the test results in not very detailed form.
ND_MAIN.LOG	This file contains detailed information (which can be enabled via setting DOS environment variables as described below).

```

/*****
check_debug_flags - Check for debug flags in DOS environment variables.

Debug use only:
netdiag - Log: Show the settings of the debug variables below.
dump1 - Log: Show Command Block Arguments.
dump2 - Log: Show Globals, Show CSRs.
dump3 - Log: Show IB, Show Rings, Show Tx/Rx Buffers.
dump4 - Log: Trace information for low level functions.
dump5 -
dump6 - Log: Test 4, Show data path configuration.
dump7 - Log: If dump3 enabled, Show full contents of Rx buffers.
dump8 - Log: SRAM access details.
dump9 - Log: Flash access details.
dump10 -
debug1 - Log: Disable low level HW I/O to controller (BCRs, etc.).
debug2 - Enable wake up of the Turbo Debugger.
debug3 - PRETEND AMD Flash detected: AM29F010.
debug4 - PRETEND SRAM detected: xxxx pages.
*****/

```

Known Issues

The nd_main.log file is created by default (even when the '/log' option is not enabled). The log information is appended to this file for every test.

The message " Warning: Test Not Supported" appears on the screen and log files when the 'PHY' under test cannot run under the particular test configuration. This message can be ignored as it indicates that the particular test is not valid for the 'PHY' selected.

Important Note

HOMELANDIAG has been tested with the following PHY's only -

- AMD - Am79C978 (Internal 10 BaseT)
- AMD - Am79C978 (Internal HomePNA)