



XL-HCW224C-4 XL-HC224C

Ethernet over Coaxial Cable

Description of diagnostic tools



1. Introduction:

This document describing usage of provided HPNA Tools. Utilities are provided for deeper inspection by network administrators.

2. Network diagram

This is minimal network configuration to use most of the diagnostic tests.



3. Installation

3.1. Install a WinPcap.

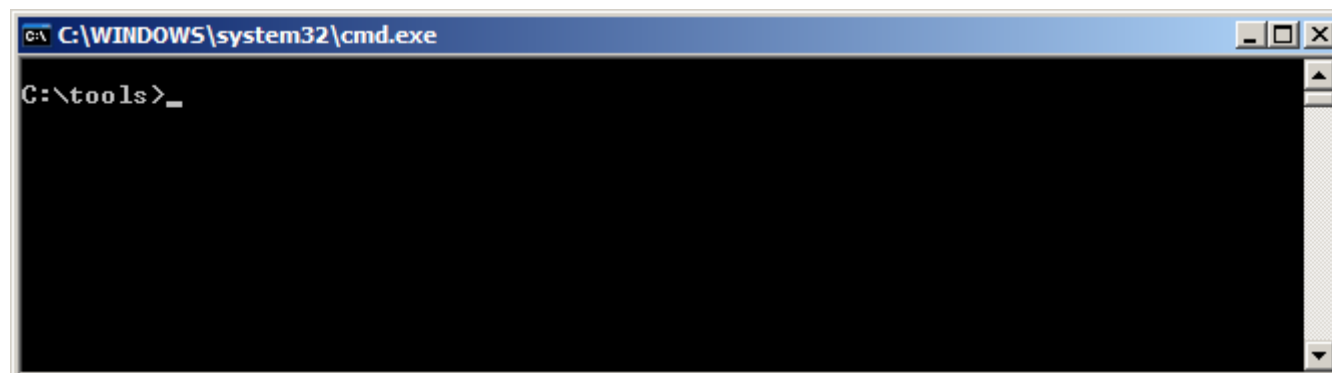
Run WinPcap 4.0.2 installer . WinPcap is the industry-standard tool for link layer network access in Windows environment. Make sure that your operating system is Windows XP. If not, it may not work.

WinPcap can be downloaded from
<http://www.winpcap.org>

Later versions WinPcap should be functional, but no guarantees.

3.2. Open a command prompt.

Make sure that your engineering tool files are located in the specified location of the command prompt.



List of commands for firmware update, view network or device information and reset.

```
C:\WINDOWS\system32\cmd.exe
Úpis adresáře C:\tools
01.07.2009 02:40      53 248 address.exe
01.07.2009 02:40      65 536 cert.exe
01.07.2009 02:40      61 440 coredump.exe
01.07.2009 02:41     172 032 devinf.exe
01.07.2009 02:40      61 440 DynamicConf.exe
01.07.2009 02:41      57 344 getigmpables.exe
01.07.2009 02:41      69 632 getimage.exe
01.07.2009 02:41      57 344 getstations.exe
01.07.2009 02:41      69 632 loadfw.exe
01.07.2009 02:42      81 920 netinf.exe
01.07.2009 02:42      94 208 netper.exe
01.07.2009 02:40     102 400 noisetest.exe
05.01.2009 14:39       8 704 pgnuplot.exe
01.07.2009 02:42      69 632 prog.exe
01.07.2009 02:42      57 344 read.exe
01.07.2009 02:42      57 344 reset.exe
01.07.2009 02:42      57 344 signal.exe
01.07.2009 02:42      73 728 stats.exe
01.07.2009 02:42      77 824 um.exe
01.07.2009 02:42      57 344 usbconfig.exe
01.07.2009 02:42      57 344 version.exe
05.01.2009 14:39     1 947 136 wgnuplot.exe
01.07.2009 02:42      65 536 write.exe
      23 souborů,      3 475 456 bajtů
Adresářů: 0, Volných bajtů: 87 796 285 440
C:\tools>
```

When use parameter -h you will get help on each command

4. Tools, commands

4.1. Netinf

netinf: is command for network information such as SNR, rate, Rx power and etc.

```
C:\tool>netinf
Thu Aug 13 17:36:19 2009

enabling CERT on devices
..
testing...
01> 00:05:6e:00:6f:6a-->00:05:6e:00:7d:24: pkts: 1000/1000 per: 0.00e+000 snr 38
.04db, rate: 256Mbps 32/8 Rx power: -1.65 dBm
02> 00:05:6e:00:7d:24-->00:05:6e:00:6f:6a: pkts: 1000/1000 per: 0.00e+000 snr 37
.88db, rate: 256Mbps 32/8 Rx power: -1.95 dBm
disabling CERT on devices
..
C:\tool>
```

To get help enter
netinf -h

```
netinf -i <ip> -m <mac> [-l <len>] [-n <num>] [-p <pe>] [-f] [-w]
-i <ip> - network card ip address
-m <mac> - mac address of local device
-l <len> - test packet payload length (1-1480). default=1480
-n <num> - number of test packets. default=1000
-p <pe> - test with fixed PE or 255 (default) for rate negotiation , or 254 for 3210 PSD measurements Only )
-f - full report
-R - time to wait for station table refresh (see note)
-o <filename> - output results also to <filename> in CSV format ( for easy convert to excel)
-d - print detailed PE information (SNR Based ,PER based)
-D - run netinf only on downstream from master to endpoints (MXU)
-U - run netinf only on upstream from endpoints to master (MXU)
-g - print master (MXU)
```

Example: netinf -i 192.168.1.1 -m 00-C5-D9-00-00-22 -l 1400 -n 10000 -p 255

Note:

- tool reset the local device before querying the station table to insure station table is refreshed.
- use the -R to increase the delay between the reset and the station table query on large networks delay is given in milliseconds, where 0 disable the reset completely.
- when the switch is omitted the default delay is 2 seconds
- when in MxU network, the test will be conducted only master<-->endpoint. The connection between endpoints will not be tested.

4.2. Address

address: is command for showing MAC address information of its device.

Parameters:

address -i <ip>
-i <ip> - network card ip address

4.3. Devinf

devinf: is command for device information such as number of endpoints, MAC address, H/W version and etc.

```
C:\tool>devinf
Thu Aug 13 17:38:55 2009

01> 00:05:6e:00:6f:6a: ver=CG3210H 1.9.3 hw=Coax 12-44 #1.0 pin=CG3210 nas=0 ln
k=1 syn=1
02> 00:05:6e:00:7d:24: ver=CG3210H 1.9.3 hw=Coax 12-44 #1.0 pin=CG3210 nas=1 ln
k=1 syn=1
Total number of devices: 2

C:\tool>_
```

To get help enter
devinf -h

```
devinf [-i <ip>] [-m <mac>] [-h] [-p] [-f <file>]
-i <ip> - network card ip address
-m <mac> - device's mac address
-M <mac> - local device's mac address (get entire network connected to device)
-f <file> - specify output file. default: stdout
-v - verbose mode
-p - print entire prm.inf
-q - periodic quality test result
-h - help
```

4.4. Getstations

getstations: is command which list all the MAC address of the connected endpoints.

Parameters:

```
getstations -i <ip> [-t <mac>]
-i <ip> - network card ip address [optional]
-m <mac> - device mac address [optional]
-l          - display only HPNA devices [default]
-p          - display hosts behind each HPNA device
-d          - display detailed information on every station
-x          - display index information before MAC address
```

4.5. Netper

netper: is command for networks packet error rate(PER).

```
C:\tool>netper
tx      rx      crc      dropped  LOSS      PER      %idle_ti
me
12      12      0        0        0         0.00E+000  98.48
C:\tool>_
```

To get help enter netpers -h

netper [options]

```
-f <fname> Target file name
-p <sec>   Calc PER periodically (sec between each sampling)
-i <ip>    ip address of nic
-l <mac>   mac address of local device
-b        Show also broadcast channels
-t        Print Time Stamp in console output
```

Notes:

- 1.The tool should be executed on the Master
- 2.A timestamp will be added to the specified file name

4.6. Version

version: is command for chipset version information.

Parameters:

```
version -i <ip>
-i <ip> - network card ip address
-m <mac> - device's mac address
-f      - print full version information
```

4.7. Stats

stats: is command for tx/rx packets, tx/rx bytes, tx/rx broadcast, tx/rx multicast and etc.

```
C:\tool>stats
```

```
tx_pkt: 432
rx_pkt: 574
tx_byte: 56353
rx_byte: 62199
tx_bcast: 7
rx_bcast: 70
tx_mcast: 2
rx_mcast: 88
rx_crc: 0
rx_short: 0
tx_short: 0
tx_dropped: 0
rx_dropped: 0
ctl_loc_req: 159
ctl_loc_rep: 159
ctl_rem_req: 0
ctl_rem_rep: 0
avg_period: 1021014
avg_idle: <98.56%>
avg_tx: <0.04%>
cyc_period: 15013
cyc_idle: <98.65%>
cyc_tx: <0.00%>
```

```
C:\tool>
```

Parameters:

stats -[im]

-i <nic> NIC IP address

-m <mac> device's MAC address

-p periodically read statistics (default interval is 1000 [ms], see comment)

-t <interval> used with -p to set a different time interval [ms]

-d detailed - print all counters)

When using -p switch, pressing 'c' will zero the displayed counters (not the device's counters). Pressing any other key will exit the monitoring loop

4.8. Reset

reset: is command for resetting its device.

Usage of this command does not produce any report, just resetiny device.

Parameters:

reset -i <ip>

-i - IP address

-m - Device's MAC address

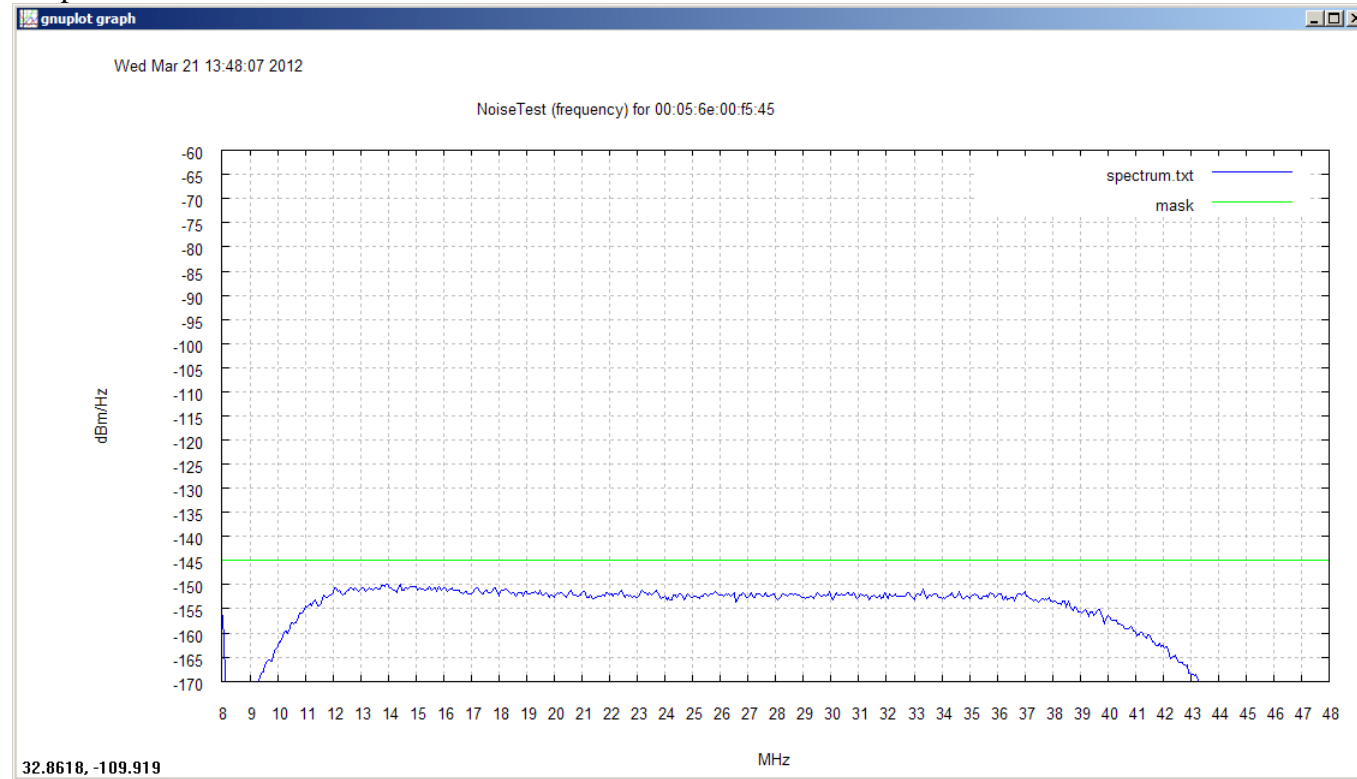
- f - Full reset
- s - Soft reset 1, device reset and remains in ROM configuration mode (no SW activation)
- h - This help

4.9. Noisetest

noisetest is command for getting noise levels of network

Noisetets is able to show in graphical form noise levels in frequency and time doamin.

Graphical result from test



In basic test you should choice in `-i` parameter IP address of endpoint, not master unit. See more parameters bellow or using `-h`.

To get help enter
noisetets `-h`

```
noisetest [-i <ip>] -t <file> -f <file> [-l <mac>] [-s <mac>] [-p] [-R <reps>] [-n] [-d <dir>] [-g]
-i <ip> - network card ip address
-t <file> - time domain output file
-f <file> - frequency domain output file
-l <mac> - local devices MAC address
-s <mac> - servers MAC address
-p      - don't plot graphs
-R <reps> - number of samples (default = 32)
-n      - run for all stations in network
-E      - when used with -n run on all EP stations in network
```


-M - when used with -n run on MASTER station only
-a - append output files
-d <dir> - plot graphs using files from directory <dir>
-g - save graph picture also in a gif file (name .gif)
-k <dir> - gif file directory (if not set the file will be saved in local dir)

Example:

```
noisetest -i 192.168.1.2 -t tdomaine.log -f fdomain.log
```

Please note that utility is using additional applications in same directory – above all wgnuplot.exe components. Applications generate data files which allows also later show if results.