1. What is AX1

AX1 Program is a Windows-based PC Program in order to evaluate the performance of iinChip™, WIZnet's Hardwired TCP/IP Chip.

AX1 is connected with iinChip™ Evaluation Board(EVB B/D) and TCP/IP Protocol through Internet. First of all, connected Internet TCP/IP Protocol transmits optional Packet or Files to iinChip™™ EVB B/D. Secondly, it checks the meeting point between returned Packet or Files from TCP/IP Protocol and transmitted Packet or Files. Finally, it measures the transmission and the reception speed

AX1's functions are like below.
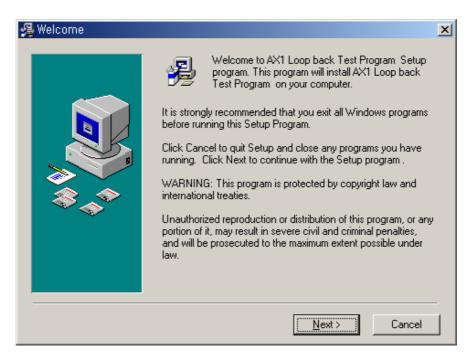- TCP Protocol Test
- UDP Protocol Test

2. Installation

You can install AX1 through Software CD included in iinChip™ EVB B/D Product Package or WIZnet 's homepage (http://www.wiznet.co.kr)
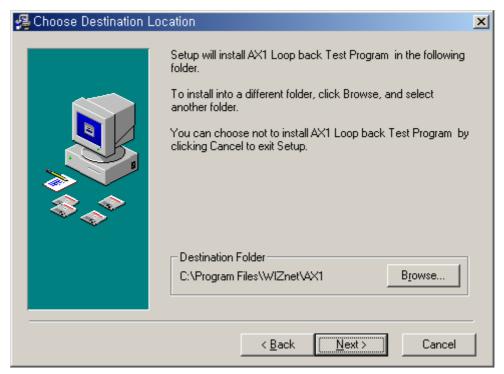
AX1 Program installation process is like below.

① Execute "AXInstallVX.X.exe"

'VX.X' of the file name means the Version of AX1 Program. Until now, the latest version is 3.1. You can get the latest version from WIZnet's homepage.
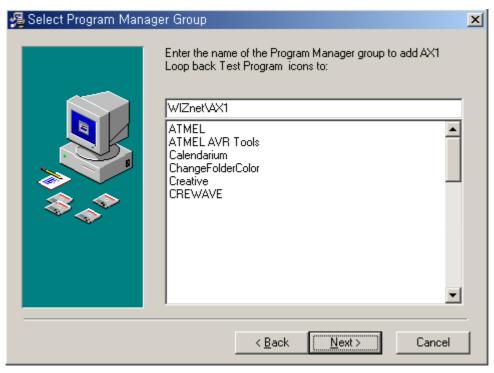
<Fig 2.1> AX1 install Program's execution

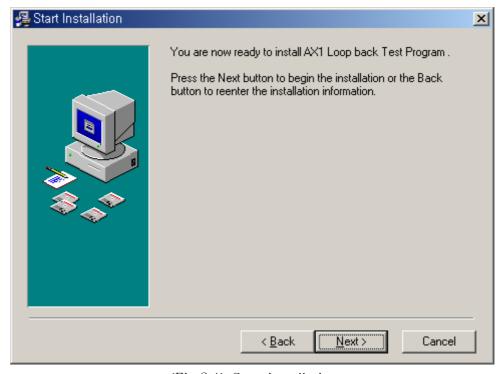② Appoint Directory for the install of AX1 Program

<Fig 2.2> AX1 Program 설치 Directory 지정

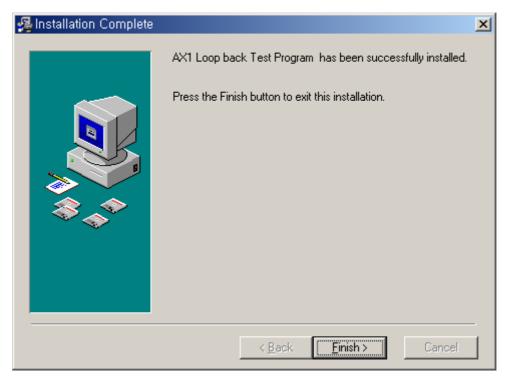③ Select registered name in "Program Manger Group"

<Fig 2.3> Select Program Manager Group

④ If you finish preparations for AX1 Program installation, start installation.

<Fig 2.4> Start installation

⑤ AX1 Program's installation complete

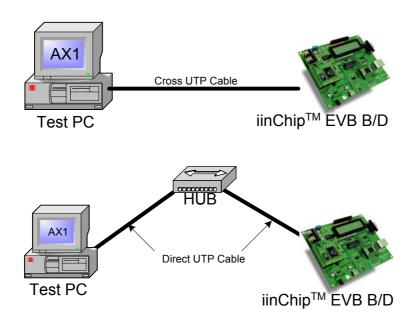<Fig 2.5> AX1 Program's installation complete

3. How to use

3.1. System Configuration

Let's look around Test PC installed AX1 Program and system composition of iinChip™ EVB B/D.

Test interface consists of two types like below.

- LAN (Local Area Network) interface
- WAN (Wide Area Network) interface

First of all, LAN interface is build up in the same Segment Network. You can connect Test PC to iinChip™ EVB B/D as one-to-one directly or indirectly through HUB. In the case of direct connection, the usage of Cross UTP Cable is essential. If you use HUB, Direct UTP Cable is needed. <Fig 3.1>is a System composition example in LAN interface.
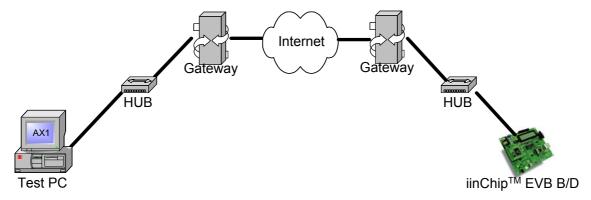
<Fig 3.1> System composition example in LAN interface

The same Segment Network in LAN means the Network information between Test PC and iinChip™ EVB B/D is same. That is to say, if Source IP Address of iinChip™ EVB B/D is '192.168.0.2', Gateway IP Address is '192.168.0.1' and Subnet Mask Value is '255.255.255.0', the Gateway IP Address of Test PC and Subnet Mask Value should be same with iinChip™ EVB B/D.

In other words, the Source IP Address of iinChip™ EVB B/D is endowed with '192.168.0.2', Gateway IP Address is settled to the same Segment Network with LAN through
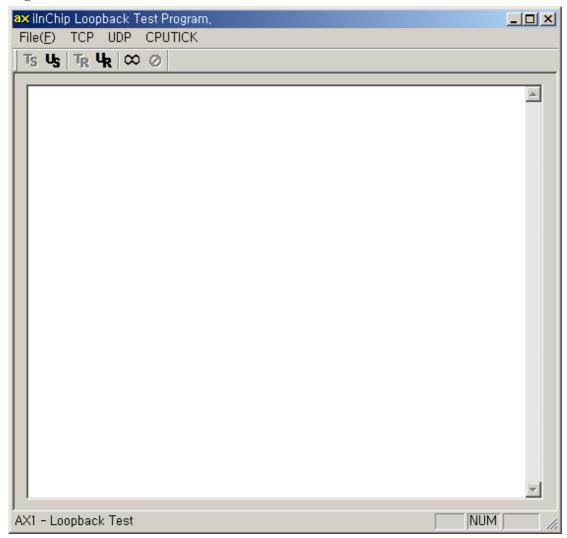
WAN interface means connected environment through internet in remote area, where WAN Test PC and iinChip™ EVB B/D are not located in the same Segment Network <Fig 3.2> is a System composition example in WAN interface.

<Fig 3.2> System composition example in WAN interface

3.2. How to Test

If Test environment is composed, execute AX1 Program in Test PC. <Fig 3.3>is AX1 Program execution window

<Fig 3.3> AX1 Program execution

Refer to <Table 3.1> and <Table 3.2> for understanding AX1 Program's various functions.

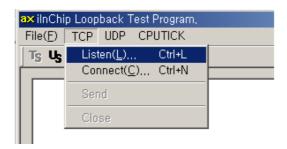| Menu	Sub-Menu	Description
File	Open	Open the file for Loopback
	About	Select Version information
	Exit	Exit Program
TCP	Listen	Wait iinChip™ EVB B/D's connection to TCP Server Mode
	Connect	Try iinChip™ EVB B/D's connection to TCP Client Mode
	Send	Send random Packet once through connected TCP Channel
	Close	Close connected TCP Channel
UDP	Open	Open UDP Channel
	Send	Send random Packet infinitely to iinChip™ EVB B/D through opened UDP Channel
	Close	Close opened UDP Channel
CPUTICK	CPUTICK	Calculate CPU Trick for exact Loopback speed measurement. This process spends 5 seconds. <Notice> Only support INTEL interrelated CPUs. In case of AMD's CPU, we do not guarantee exact Loopback speed.

<Table 3.1> AX1 Program Menu description

Tool Icons	Description
T_S	File Loopback one time through connected TCP Channel
U_S	File Loopback one time to User selected destination through opened Open UDP Channel
T_R	File Loopback User appointed times through connected TCP Channel
U_R	File Loopback User appointed times through opened UDP Channel
∞	File Loopback repeat infinitely through TCP or UDP Channel
∅	Stop Loopback repeat test

<Table 3.2> AX1 Program Tool Icons description

3.2.1. TCP Server Test

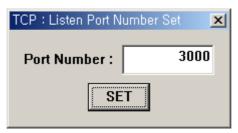TCP Server is working like below.

- AX1 Program: TCP Loopback Server
- iinChip™ EVB B/D: TCP Loopback Client

① Click Menu [TCP > Listen]

<Fig 3.4> TCP Server Listen

② Select Waiting Server Listen Port

<Fig 3.5> Server Port Selection

③ Wait the time when iinChip™ EVB B/D connects to Listen Port appointed in

advanced ② step

④ Operate iinChip™ EVB B/D in TCP Loopback Server

Refer to iinChip™ EVB Manual for iinChip™ EVB B/D's operating setting.

⑤ Complete connection with iinChip™ EVB B/D

<Fig 3.6> Complete TCP connection between Test PC and iinChip™ EVB B/D

⑥ Packet or File Loopback through connected TCP Channel
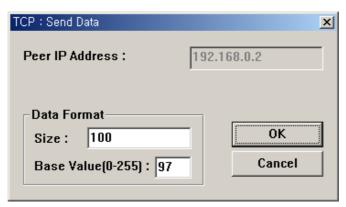
3.2.1.1. TCP Packet Loopback

Random Packet Loopback one time to iinChip™ EVB B/D through connected TCP Channel.

① Click Menu [TCP > Send]

<Fig 3.7> TCP Packet Loopback

② Create TCP Packet's Size and Value

<Fig 3.8> TCP Packet creation
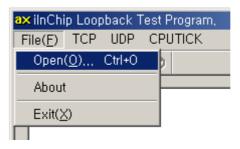
③ Created TCP Packet Loopback to iinChip™ EVB B/D

<Fig 3.9> TCP Packet Loopback execution

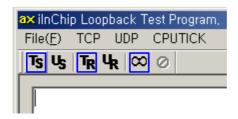### 3.2.1.2. TCP File Loop-back

Random File Loopback to iinChip™ EVB B/D through connected TCP Channel
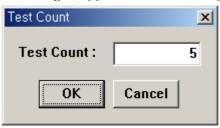
① Click Menu [File > Open] and Open Loopback File

<Fig 3.10> TCP Loopback File Open

② Click a Tool Icon of [Ts], [T$_R$], and [∞]. And then, Opened File Loopback
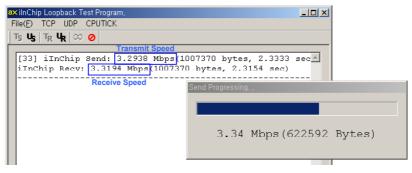
<Fig 3.11> TCP File Loopback Tool Icons

If you select the Tool Icon, "[T$_R$]", appoint TCP File Loopback repeat times.

<Fig 3.12> TCP File Loopback Test Count creation
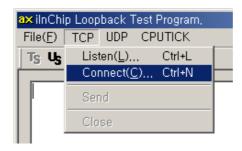
③ TCP File Loopback Test

<Fig 3.13> TCP File Loopback 실행

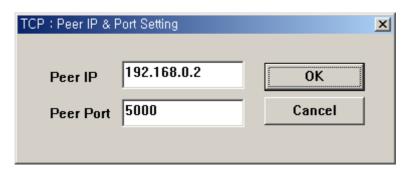### 3.2.2. TCP Client Test

TCP Client is working like below.

- AX1 Program: TCP Loopback Client
- iinChip™ EVB B/D: TCP Loopback Server

① Operate iinChip™ EVB B/D in TCP Loopback Server

  Refer to iinChip™ EVB Manual for iinChip™ EVB B/D operating setting

② Click Menu [TCP > Connect]

<Fig 3.14> TCP Client connection trial

③ iinChip™ EVB B/D's IP and Listen Port Setting for TCP Loopback Test

<Fig 3.15> iinChip™ EVB B/D's IP and Listen Port Setting for TCP Loopback Test

④ Try connection to iinChip™ EVB B/D appointed in advanced ③ step.

⑤ Complete connection with iinChip™ EVB B/D

<Fig 3.16> Complete TCP connection between Test PC and iinChip™ EVB B/D

⑥ Packet or File Loopback through connected TCP Channel

3.2.2.1. TCP Packet Loop-back

Random Packet Loopback one time to iinChip™ EVB B/D through connected TCP Channel

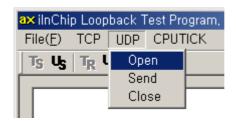Operate Test in the same way of TCP Server. Refer to chapter 3.2.1.1

3.2.2.2. TCP File Loopback

Random File Loopback to iinChip™ EVB B/D through connected TCP Channel

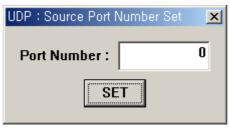Operate Test in the same way of TCP Server. Refer to chapter 3.2.1.2

3.2.3. UDP

iinChip™ EVB B/D and random Packet or File Loopback through UDP Channel

① Click Menu [UDP > Open]

<Fig 3.17> UDP Channel Open

② Appoint UDP Source Port which will be used in AX1 Program
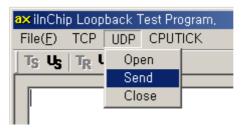

<Fig 3.18> UDP Source Port Setting

If you want to use random Source Port, appoint the Port Number as 0(Zero)

If you do not appoint specific Source Port for UDP Channel and you use random Source Port, skipping former steps (① and ②) does not matter.

3.2.3.1. UDP Packet Loopback

Packet Loopback infinitely to iinChip™ EVB B/D through UDP Channel
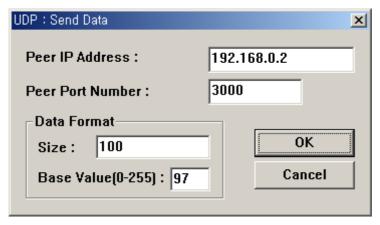
① Click Menu [UDP > Send]

<Fig 3.19> UDP Packet Loopback

② Select EVB B/D's IP Address and Port for Loopback

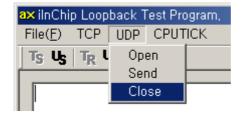Appoint UDP Packet's Size and Value

<Fig 3.20> iinChip™ EVB B/D and UDP Packet Setting

③ Infinite repeat execution of appointed UDP Packet Loopback

<Fig 3.21> UDP Packet Loopback execution

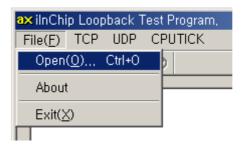④ If you want to stop UDP Packet Loopback execution, Click Menu [UDP > Close]

<Fig 3.22> UDP Channel Close

3.2.3.2. UDP File Loopback

File Loopback to iinChip™ EVB B/D through UDP Channel. UDP Loopback File Test is a little different from TCP Loopback File Test.

Since TCP Loopback File Test guarantee Data Flow Control, sending File process is repeated. It is a separate issue and irrelevant to reception success or not. Otherwise, UDP Loopback File Test does not guarantee Data Flow Control. Therefore, before completion of sending File Data that iinChip™ EVB B/D received to AX1 (i.e. until completion of File Data Loopback), the next File Data cannot be transmitted.
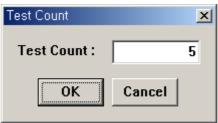
① Click Menu [File > Open] and Open Loopback File
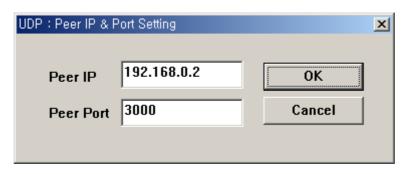

<Fig 3.23> UDP Loopback File Open

② Click a Tool Icons of [Us], [U$_R$], and [∞]. Loopback opened File

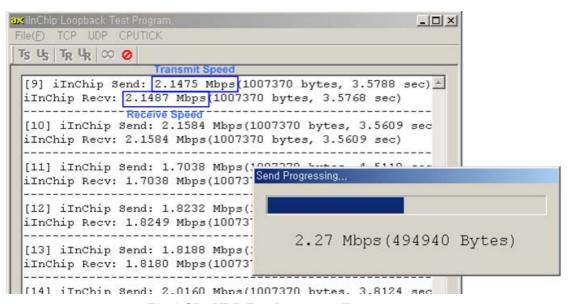If you select the Tool Icon, "[U$_R$]", appoint UDP File Loopback repeat times.

<Fig 3.12> UDP File Loopback Test Count appointment

③ iinChip™ EVB B/D's IP Address and UDP Port Setting for Loopback

<Fig 3.24> iinChip™ EVB B/D's IP and Port Setting for UDP Loopback Test

④ UDP File Loopback Test

<Fig 3.25> UDP File Loopback Test execution