ADSL2Plus Tester

(A9)

User's Manual

CK Technology

1. Overview

1.1 Product Overview

ADSL Tester can test conveniently the functions such as data transmission speed between DSLAM and ADSL Modem, signal level, NAS certification, DHCP and PPPoE connection, ping test, alarm and performance confirmation and monitoring of the conditions.

1.2 Standards

The Standards of ADSL Tester are as follows:

Items		Model No.:
Ethernet	Interface	10 Base T
	Connector	RJ45
ADSL Line	Line Code	DMT
	Downstream	32 kbps ~ 24 Mbps
	Upstream	32 kbps ~ 2 Mbps
	Standard	T1.413, G.922.1(G.dmt), G.922.2(G.Lite) G.992.3 Annex A(adsl2) G.992.4 Annex AB G.992.5 AnnexA(adsl2plus)
	Connector Loops	1 Pair(2 Wire)
	Connector	RJ45
DMM	Measure	Resistor, Loop Resistor, DC Voltage, Capacitance
	Connector	RJ45
Console	Interface	RS232C
	Connector	RJ11
Environment	Temperature	0 ~ 40°C
	Humidity	10% ~ 90%
Dimension		225mm X 104mm X 57mm
Electrical Characteristic	Battery	1.2V, 4000mA X 4EA
	Power Consumption	5W
Others		Graphic LCD(128X128)

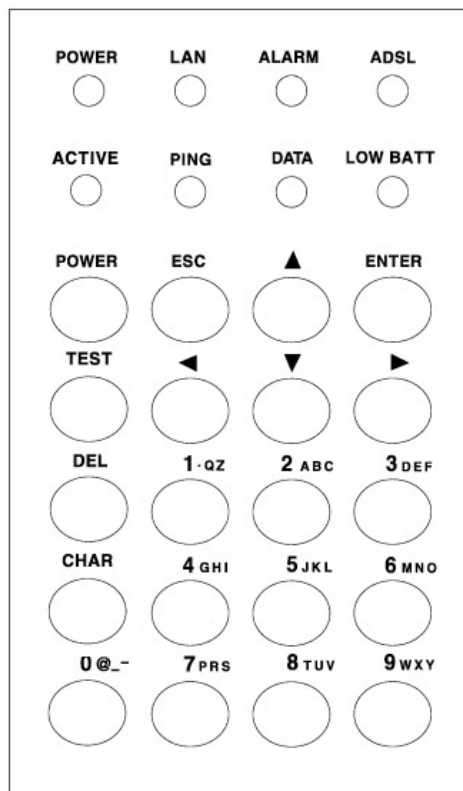|	Back Light
Weight	670g

1.3 Product Appearance and Accessories

1.3.1 Main Body

1.3.2 Key Pad/LED

1.3.2.1 Key Pad/LED Constitution

1.3.2.1.1　LED

ADSL Tester has 8 LEDs, and the respective LED functions are as follows;

◆ Power : Indicate power on

◆ LAN : Indicate connection with LAN

◆ Alarm : Indicate abnormal link

◆ ADSL : Indicate normal link

◆ Active : Indicate under working

◆ PING : Light up during the time of NAS confirmation and carrying out Ping

◆ Data : Indicate the state of data transmitted or received by ADSL line

◆ LOWBATT : Indicate that batteries are discharged and normal test is not impossible

◆ TEL : Indicate connection with telephone

1.3.2.2 Key Pad

Key Pad is consisted of 20 keys and the respective key functions are as follows;

◆ Power on/off

◆ TEST : One shot button for starting the adsl test immediately

◆ Direction keys(4 EA) : for move to front, back, left and right

◆ Enter : For set up confirmation

◆ ESC : For set up cancellation or move to high rank menu

◆ DEL : Delect character or number

◆ CHAR : Change the input mode, capital letter, small letter and number

1.3.3　LCD Display

LCD is for 128 X 128 Dot Graphic

◆ Can be displayed 20 characters X 10 Line in English

◆ Can be displayed 10 characters X 10 Line in Chinese, Korean and Japanese

◆ Can see the display easily by using Page up/down function in case of many sentences

1.3.4　Accessories

1.3.4.1 RJ-11 Cable

ADSL Tester have cable which can be linked with existing RJ-11 cable in case of linking to ADSL line, and can be linked by clip.
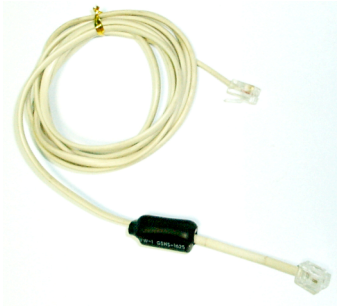
1.3.4.2 RJ-45 Cable(2 types)

RJ-45 Cable for carrying out the functions such as adsl test, lan test, and DMM test

1.3.4.4 Electric Charger

The input of Electric Charger is AC220V, and the Electric Charger can charge the battery in the ADSL Tester stably. Users can recognize the charging state by indicating LED. (It takes about 5 hours for full charging.)

◆ Can be charged by linking the cigar jack in vehicles.

◆ Can be charged by using the general 220V AC power line.

◆ As can be seen in above photograph, jointly using charger part which has LED, and the charger for 220V and vehicle is prepared separately.

1.3.4.5　Battery

Battery is inside the case, and can be charged by using the jack linked to Electric Charger.(Can be used over 4 hours and 30 minutes)

◆ Material : Ni-MH(Nickel-Metal Hydrogen)
◆ Capacity : 1.2V, 400mA(4EA)(

2.　Main Test Function

2.1　Summary of Main Function

◆ Automatic Testing / One Click Testing
- Test of all process scenarios by one click
- Test by selecting the items (DSLAM, NAS, Ping) on the display LCD
- Confirm the NAS certification and Ping Test after the test of DSLAM and 8 errors by button
◆ Strong Frame Check Function
- CRC, FEC, HEC and 5 other Frame check function
- Accurate check function for data transmission
◆ Consecutive Test Function
- For test of accurate performance for changing line in connection with the irregular modem link, fix the link consecutively 1 through 10 times and display the average value
◆ Strong Battery

- Extend the operation time by using 4000mA battery suitable for potable ADSL Tester

◆ Can record up to 64 tested data and check the data in office later. And the data can be transmitted to PC
◆ State indication by 8 LED(Signal waiting, under link set up, etc.)

2.2 ADSL test support mode
◆ Multi-mode
◆ G.MDT
◆ G.LITE
◆ T1.413
◆ ADSL2
◆ ADSL2+

2.3 ADSL Speed Test Items

DOWN STREAM	UP STREAM	UNIT
FAST	FAST	Kbps
INTERLEAVE	INTERLEAVE	Kbps
MAX	MAX	Kbps
MARGIN	MARGIN	dB
ATTENUATION	ATTENUATION	dB
POWER	POWER	dBm
CAPACITY	CAPACITY	%

2.4 ADSL Link Test Items

LINK TEST 1	LINK TEST 2
FEC FAST	LOD FAST
FEC INTERLEAVE	LOD INTERLEAVE
CRC FAST	LOS
CRC INTERLEAVE	LOF
HEC FAST	LPR
HEC INTERLEAVE	

2.5 Certification and IP Allocation

◆ Normal execution of certification or not

◆ IP allocation status(IP address)

◆ Gateway IP indication

2.6 Supporting Protocol and Ping Test

  Followings are G/W link Protocols ADSL Tester supporting

◆ PPPoE variable IP (RFC2516)

◆ PPPoA variable IP (RFC2364)

◆ RFC1483 / RFC2684 Bridged mode fixed IP (EoA My IP)

◆ RFC1483 / RFC2684 Routed mode fixed multi IP

◆ RFC1483 / RFC2684 Bridged mode (IP DSLAM CO)

2.7 Battery Consumption Economy Function

  For the economy of potable battery consumption, automatically the power will
  be put off in case that 5 minutes have passed without key input except for
  the time of test.

3. Technical Matters

3.1 Diagram
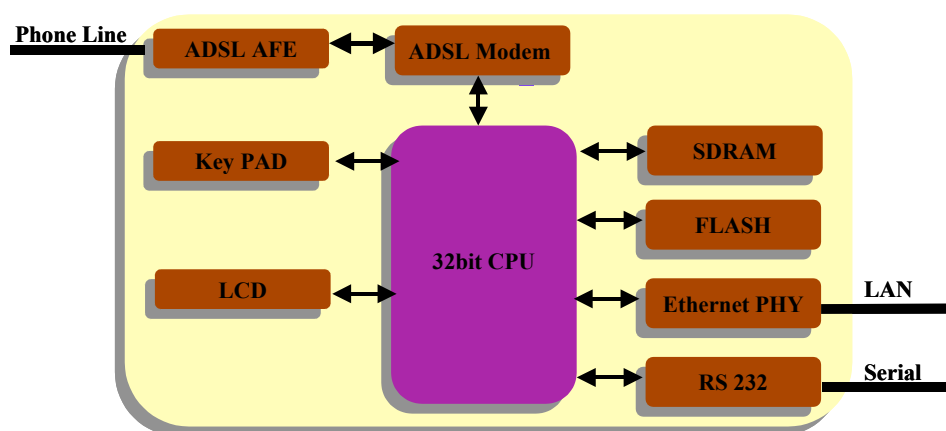
3.2 Explanation

◆ Using 32bit ARM core based CPU

◆ Having Flash Memory, up-grade is very easy later

◆ Consisting of 128X128 dots graphic LCD part, Key pad part, modem part

◆ Modem part have ST series Chip and the link characteristic is very excellent
  User can talk by telephone function during the time of modem test

◆ Using 4 EA of 1.2V, 4000mA batteries, there is no problem in case of long
  time operation, too.(Can be used for at least 4 hours)

◆ For high speed charging, charger is connecting with Power Jack

◆ Can be linked with PC and RJ-45 connector for up-grade

3.3 Transmission Speed

◆ Link rate by distance (G.DMT, ANSI Mode)

(Unit : kbps)

Distance	0Km	3Km	4Km	Remarks
Down Stream	8,000	6,000	2,500	Must be
Up Stream	800	700	600	within ±10%

◆ Link Rate with real ADSL line (basis of 8Mbps)

(Unit : kbps)

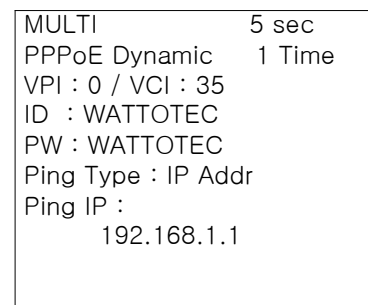| Items	Down Stream	Up Stream	Remarks
Rated Speed	8,192	800	Must be within ±10%

4. Test Method

4.1 Menu Structure
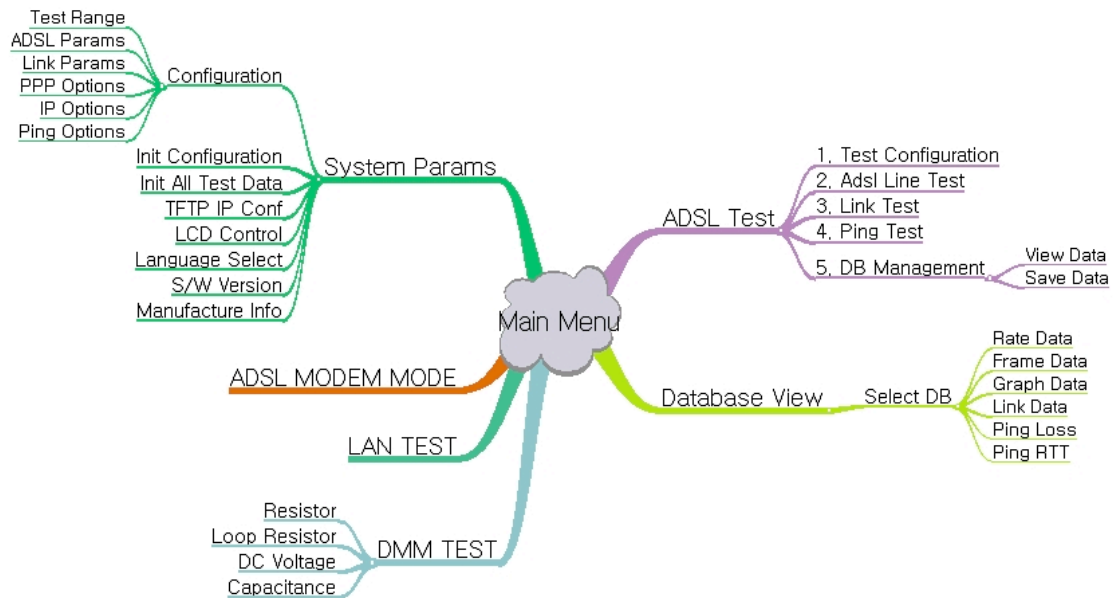
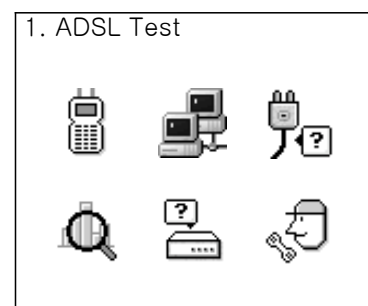### 4.2 Test Method

◆ Push "POWER" key and Logo will be displayed. A few seconds later, the current set-up mode will be displayed.

◆ Test mode, time, number of times, PVC value and ID and password for protocol link.

◆ Pushing any key in this menu, main menu will be displayed

```
MULTI              5 sec
PPPoE Dynamic     1 Time
VPI : 0 / VCI : 35
ID  : WATTOTEC
PW : WATTOTEC
Ping Type : IP Addr
Ping IP :
       192.168.1.1
```

4.2.1 Main Menu

◆ Main Menu are 6 items as follows

◆ Key : TEST, ▲, ▼, ◀, ▶, ENTER

```
1. ADSL Test
```

4.2.2 ADSL Test

◆ Pushing "TEST" key in main menu, the test will be carried out according to the existing saved configuration.

◆ Selecting 1 or ADSL Test Menu icon and press "Enter" Key, test will be carried out together with Configuration

4.2.2.1 Range Config

◆ Set-up the Test Range

◆ Key : ▲, ▼, ◀, ▶, ENTER, ESC

◆ Use the "▶" key for changing the ON/OFF Value

```
Test Range
ADSL: ON
Link : ON
Ping : ON
```

4.2.2.2 ADSL Parameter Config

◆ Set-up the Test number of times, Test time and ADSL Mode.

◆ Key : ▲, ▼, ◀, ▶, ENTER, ESC, DEL, number keys("0"~"9")

◆ Use the "▶" key for changing the mode

```
ADSL Params
Loop : 1
Time : 5
Mode : MULTI
```

4.2.2.3 Link Parameter Config

◆ Set-up the PVC Value and Link Protocol for Link

◆ Key : ▲, ▼, ◀, ▶, ENTER, ESC, DEL, number

```
Link Params
VPI : 0
VCI : 32
Mode : PPPoE Dynamic
```

keys("0"~"9")

◆ Use the " ▸ " key for changing the mode

4.2.2.4 PPP Options

◆ Set-up the ID and password for PPP authentication

◆ Set-up at the time of using PPPoE mode and PPPoA mode

◆ Key : ▲, ▼, ◀, ▶, ENTER, ESC, DEL, number keys("0"~"9"),
   CHAR

```
PPP Options            ABC
ID : ck-tech
PW : ck-tech



```

4.2.2.5 IP Options

◆ Set-up when Link Mode is EoA-Static or IoA-Static

◆ Key : ▲, ▼, ◀, ▶, ENTER, ESC, DEL, number keys("0"~"9")

```
IP Options
Protocol IP :
        192.168.11.80
Protocol GW :
        192.168.11.1


```

4.2.2.6 Ping Parameter Config

◆ Set-up Ping times, Packet Size, Destination IP Address

◆ Key : ▲, ▼, ◀, ▶, ENTER, ESC, DEL, number keys("0"~"9")

```
Ping Params            ABC
Loop : 1
Size  : 5
Type : HOSTNAME
DNS IP :
        168.126.63.1
Dest IP:
        192.168.1.1
Dest HOSTNAME
www.yahoo.com
```

4.2.2.7 View Test Result

◆ View and Save Test Result

◆ Key : ▲, ▼, ENTER, ESC

```
Test Data
1. View Data
2. Save Data
```

4.2.2.7.1 View Data

◆ Refer to 4.2.5

4.2.2.7.2 Save Data

◆ Input the Data name to be recorded

◆ Key : ◀, ▶, ENTER, ESC, DEL, CHAR, number keys("0"~"9")

```
Save Data          ABC
ID :
```

4.2.3 LAN Test

◆ Selecting 2 or LAN Test Menu icon and pushing the "Enter" Key, LAN test will be carried out together with Configuration

4.2.3.1 Link Parameter Config

◆ Set-up the PVC Value and Link Protocol for Link

◆ Key : ▲, ▼, ◀, ▶, ENTER, ESC, DEL, number keys("0"~"9")

◆ Use the "▶" key for changing the mode

```
Link Params
Mode : PPPoE Dynamic
```

4.2.3.2 PPP Options

◆ Set-up the ID and password for PPP authentication

◆ Set-up at the time of using PPPoE mode and PPPoA mode

◆ Key : ▲, ▼, ◀, ▶, ENTER, ESC, DEL, number keys("0"~"9"),
    CHAR

```
PPP Options          ABC
ID : ck-tech
PW : ck-tech
```

4.2.3.3 IP Options

◆ Set-up when Link Mode is EoA-Static or IoA-Static

◆ Key : ▲, ▼, ◀, ▶, ENTER, ESC, DEL, number keys("0"~"9")

```
IP Options
Protocol IP :
        192.168.11.80
Protocol GW :
        192.168.11.1
```

4.2.3.4 Ping Parameter Config

◆ Set-up Ping times, Packet Size, Destination IP Address

◆ Key : ▲, ▼, ◀, ▶, ENTER, ESC, DEL, number keys("0"~"9")

```
Ping Params          ABC
Loop : 1
Size : 5
Type : HOSTNAME
DNS IP :
        168.126.63.1
Dest IP:
        192.168.1.1
Dest HOSTNAME
www.yahoo.com
```

4.2.4 DMM Test

◆ Selecting 3 or DMM Test Menu icon and pushing the "Enter" Key, DMM test Menu will be displayed

◆ Key : ▲, ▼, ENTER, ESC, number keys("1"~"4")

```
DMM TEST
1. Resistor
2. Loop Resistor
3. DC Voltage
4. Capacitance
```

4.2.4.1 Resistor Calculation

◆ Selecting 1 or Resistor Test Menu and pushing the "Enter" Key, Open Loop Resistor Calculation Result will be displayed

◆ Key : ESC

```
OPEN LOOP RESISTOR
Resistorp[ohm]
TYPE: TIP_RNG
T_R : > 5MOhm
```

4.2.4.2 Loop Resistor Calculation

◆ Selecting 2 or Loop Resistor Test Menu and pushing the "Enter" Key, Loop Resistor Calculation Result will be displayed

◆ Key : ESC

```
LOOP RESISTOR
    loop Ohm
TYPE: TIP_RNG
T_R :    50.0 Ohm
```

4.2.4.3 DC Voltage Calculation

◆ Selecting 3 or DC Voltage Test Menu and pushing the "Enter" Key, DC Voltage Calculation Result will be displayed

◆ Key : ESC

```
DC_VOLTAGE
    DCV
TYPE: TIP_RNG
T_R :    50.0 V
```

4.2.4.4 Capacitance Calculation

◆ Selecting 4 or Capacitance Test Menu and pushing the "Enter" Key, Capacitance Calculation Result will be displayed

```
CAPACITANCE
    CAP
TYPE: TIP_RNG
T_R :    50.0 nF
```

4.2.5. Database View

◆ Display the list of recorded test results

◆ DEL : Delete a one Saved Database

◆ Key : ▲, ▼, ENTER, ESC, DEL

```
Database View
01 : [waytotec]
02 : ------
03 : ------
04 : ------
05 : ------
06 : ------
07 : ------
08 : ------
09 : ------
```

4.2.5.1 Data View Menu

◆ The menu for displaying test results

◆ Key : ▲, ▼, ENTER, ESC, number keys("1"~"6")

```
View Data
1.Rate Data
2.Frame Data
3.Graph Data
4.Link Data
5.Ping Loss
6.Ping RTT
```

4.2.5.2 Rate Data

◆ Display the ADSL Mode, ADSL Link Rate, Link Rate Max, Capability,

　　Margin, Attenuation, Power Value

◆ Key : ▲, ▼, ESC

```
Rate            DOWN  UP
DB #: 1 [waytotec]
TIME: 1
MODE: G.DMT Int
RATEKbps: 8128     576
MAX Kbps:11612     584
CAP    %:   70     99
MAR   dB: 18.0    0.0
ATTN  dB:  0.0    0.0
POW  dBm:  8.5    12.5
```

4.2.5.3 Frame Data
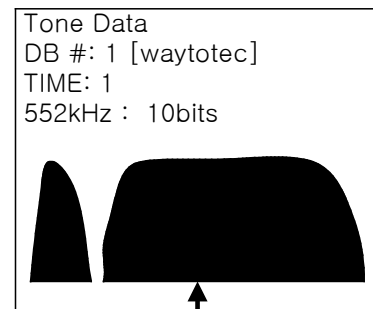
◆ Display the CRC, FEC, HEC, LOM, LOC, LOP, LOF, LOS Value

◆ Key : ▲, ▼, ESC

FRAME	NEAR	FAR
DB #: 1 [waytotec]		
TIME: 1		
CRC	0	0
FEC	0	0
HEC	0	0
LOM	NO	NO
LOC	NO	NO
LOP	NO	NO
LOF	NO	NO

4.2.5.4 Graph Data

◆ Display the Carrier Graph

◆ Key : ▲, ▼, ◀, ▶, ESC, number key "1" (Big Left), number key "3" (BIG Right)

```
Tone Data
DB #: 1 [waytotec]
TIME: 1
552kHz : 10bits
```

4.2.5.5 Link Data

◆ Display the Link Mode, certification state, allocated IP and Gateway

◆ Key : ▲, ▼, ESC

```
Link Data
DB #: 1 [waytotec]
TIME: 1
PPPoE Dynamic
NAS AUTH :    PASS
ASSIGN IP
     211.105.14.201
ASSIGN GATEWAY
     211.105.14.202
```

4.2.5.6 Ping Loss

◆ Display the Ping Loss results

◆ Key : ▲, ▼, ESC

```
Ping Loss
DB #: 1 [waytotec]
TIME: 1
PING TYPE: IP Addr
Dest IP:
     163.126.63.1
TX   :     10 times
RX   :     10 times
LOSS:     0.0%
```

4.2.5.7 Ping RTT

◆ Display the Ping RTT results

◆ Key : ▲, ▼, ESC

```
Ping RTT
DB #: 1 [waytotec]
TIME: 1
PING TYPE: IP Addr
Dest IP:
      163.126.63.1
MAX   :    2 ms
MIN   :    2 ms
AVR   :    2 ms
```

4.2.5 ADSL Modem Mode

◆ Selecting 5 or ADSL Modem Mode Menu icon and pushing the "Enter" Key, ADSL Tester will be modem

◆ Key : ESC

4.2.6 System Params

◆ Selecting 6 or System Params Menu icon and pushing the "Enter" Key, View or Configure the several Information and config

4.2.6.1 Configuration

◆ setting the configuration value when on click test is performed.

◆ Key : ▲, ▼, ENTER, ESC, number keys("1"~"6")

```
Configuration
1.TEST Range
2.ADSL Params
3.Link Params
4.PPP Options
5.IP Options
6.Ping Params
```

4.2.6.2 Range Config

◆ Refer to 4.2.2.1

4.2.6.3 ADSL Parameter Config

◆ Refer to 4.2.2.2

4.2.6.4 Link Parameter Config

◆ Refer to 4.2.2.3

4.2.6.5 PPP Options
◆ Refer to 4.2.2.4

4.2.6.6 IP Options
◆ Refer to 4.2.2.5

4.2.6.7 Ping Parameter Config
◆ Refer to 4.2.2.6

4.2.6.2 Init Configuration
◆ Initialize the Parameter for ADSL test in Default value

4.2.6.3 Init All Test Data
◆ Delete all saved Test Data

4.2.6.4 TFTP IP Conf

◆ Set-up the Tester IP for Software Upgrade

◆ Key : ▲, ▼,◀,▶, ENTER, ESC, number keys("1"~"4")

```
TFTP Params
DB #: 1 [waytotec]
IP:
      192.168.1.30
```

4.2.6.5 LCD Control

◆ Control the LCD Character Contrast

◆ Key : ◀, ▶,ESC,ENTER

```
LCD Control
Contrast:■■■■
```

4.2.6.6 Language Select

◆ Control the LCD Character Contrast

◆ Key : ▲, ▼,◀,▶, ENTER, ESC,

```
Language Select
Lang: English    ▶
```

4.2.6.6 S/W Version

◆ Display the software version number

◆ Key : ESC

```
S/W Version
VERSION : CK2.05.10
```

4.2.6.6.9 Manufacturer

◆ Display the Manufacturer Information

◆ Key : ESC

```
Manufacturer
ZIP CODE: 132-899
ADDRESS:
    3F, Dongsan Bldg,
    14-4, Chang Dong,
    Dobong-Ku, Seoul,
    Korea
HOME:ww.cktek.co.kr
TEL : +82-2-999-4077
CK Tecknolodgy Inc.
```

4.3 Char and Number Input Method

◆ Using Number keys, input the English capital letters and small letters and the Arabic
  numerals

◆ Pushing the each Number key, allocated characters as following table will be
  displayed

Number Key	Char Value
1	q,z (Q, Z)
2	a,b,c (A, B, C)
3	d.e.f (D, E, F)
4	g.h.i (G, H, I)
5	j.k.l (J, K, L)
6	m.n.o (M, N, O)
7	p.r.s (P, R, S)
8	t.u.v (T, U, V)
9	w.x.y(W,X,Y)
0	@,_,-(@,_,-)

◆ Pushing the Function key, allocated characters as following table will be
  displayed

Function Key	Mean
DEL	Char Delete Key
TEST	ADSL Test Hot Key
CHAR	Input Mode Change Key (Capital Letter, Small Letter, Number)

◆ In Char Input Mode, possible input mode will be indicated on the top of the right side
◆ Pushing the "CHAR" key, the display will be changed to the input mode for
  English capital letters and lower case letters and the Arabic numerals
  respectively
◆ For input next character, input "▸" Key
◆ Using "◂" Key and "▸" Key, user can input with moving between characters

◆ Use the "DEL" key for correcting the inputted characters

4.4 Software Upgrade

◆ Connecting LAN Cable

◆ Setup tester's IP Address (Main Menu->6.System Params->4.TFTP IP Conf)

◆ Store firmware in PC

◆ Input following command at Dos prompt

    tftp -i Tester_IP_Address put firmware_file

    ex) tftp -i 192.168.1.30 put image.bin

◆ Re-booting after Upgrade

4.4 Software Upgrade

◆ Connecting LAN Cable

◆ Endow IP Address (Main Menu->5.System Params->3.TFTP IP Conf)

◆ Store firmware in PC

◆ Input following commend in Dos prompt

　　　tftp -i Tester_IP_Address put firmware_file

　　　ex) tftp -i 192.168.1.30 put image.bin

◆ Re-booting after Upgrade