Firmware User's Manual

for

BT3010 Bluetooth Module

(Preliminary for Sample Evaluation Stage)

About This Manual

This manual provides a comprehensive firmware user's manual for TECOM Bluetooth^{TM} Module BT3010. It has been organized in such a way to make it easy to follow by users worldwide. In order to ensure optimal comprehension, the following list provides brief descriptions of the formatting styles used throughout this manual.

❑ **Commands:** Commands are always referred to by using the word "click" before them. These commands are always shown as bold-faced words. For example, click **Next,** click **OK**, or click **Cancel**.

❑ **Names of Windows (Dialog Boxes):** The names of the windows (also referred to as dialog boxes) that appear on the PC screen are always referred to in quotes. For example, the "Setup Complete" window.

❑ **Names of Options in Windows:** The names of options to choose from inside the windows that appear on the PC screen are always referred to in italics. For example, choose the *Yes, I want to restart my computer now* option from the window.

❑ **Notes:** In some cases, preparatory or cautionary information is needed before proceeding onto the next step in an installation process. This kind of information is provided in the form of notes, which are always referred to in bold-faced and italicized letters. For example, *Note: To access the TECOM Control Panel, the driver must be running. Also, make sure the Bluetooth^{TM} USB evaluation board is plugged into the notebook.*

Preface

The TECOM Bluetooth^{TM} Module BT3010 Manual

This manual contains information regarding the installation, operation, and configuration of the TECOM Bluetooth^{TM} Module BT3010. Additionally, it outlines the use of the "Firmware Downloader" and "HCI Test" Application.

The following chapters are included in this manual:

- **Chapter 1:** "Overview" offers a brief description of Bluetooth and the features of the TECOM Bluetooth^{TM} Module BT3010.

- **Chapter 2:** "TECOM Bluetooth^{TM} Module BT3010 USB Driver and Firmware Installation" describes the steps for installing the USB driver for TECOM Bluetooth^{TM} Module BT3010 USB Evaluation Board and details of the firmware download procedure.

- **Chapter 3:** "TECOM Bluetooth^{TM} Module BT3010 UART Evaluation Board Firmware Donwload" describes the steps for downloading the TECOM Bluetooth^{TM} Module BT3010 UART firmware.

- **Chapter 4:** "Updating the TECOM Bluetooth^{TM} Module BT3010 Firmware" details the procedure for updating to a new version of the Bluetooth firmware.

- **Chapter 5:** "HCI Testing Procedure" describes how to search for the other Bluetooth devices and create Bluetooth connections between devices.

- **Chapter 6:** "Software Uninstall" provides detailed steps for removing the TECOM Bluetooth^{TM} Module BT3010 USB driver from the PC.

- **Chapter 7:** "Trouble Shooting" answers some problems that might be encountered in installation and manipulation.

Chapter 1: Overview

About Bluetooth^{TM}

Bluetooth is a worldwide standard for the wireless communication of data & voice services between two devices. Bluetooth technology eliminates wires and cables between both stationary and mobile devices, provides the possibility of ad hoc networks and delivers the ultimate synchronicity between all your personal devices.

The Bluetooth wireless technology has been adopted not only by all major players in the telecom, computer and home entertainment industry, but also in such many other areas as the automotive industry and health care, automation and toys, etc. - almost all sectors of the economy.

Features

The TECOM Bluetooth^{TM} Module BT3010 provides the following features:

- Compliant with Bluetooth Specification V.1.1

- Supports USB, UART, and PCM Interfaces

- Evaluation board is available for USB or UART interface

- Supports 0 to 20dBm Output Power (Support Class 1, 2, 3)

- Operating distance up to 100 meters

- Supports point-to-multipoint connections

- Firmware support up to lower HCI layer

- Supports data rates up to 723 Kbps

Firmware Support

The TECOM Bluetooth^{TM} Module BT3010 provides the following software for evaluation & software development:

- Including firmware for the host control interfaces (for USB, UART interfaces), HCI, and the link manager, LM. The firmware is provided in the CD-R.

- A firmware donwloader, USB driver (for testing purpose only), and HCI Test program are available. *Note: USB Test driver is only provided for test & evaluation purpose, for commercial use, please contact third party software providers for solution.*

Chapter 2: TECOM Bluetooth Module BT3010 USB Driver & Firmware Installation

Bluetooth Module Evaluation Board for USB Interface System Requirement

Before installing the TECOM Bluetooth[TM] Module BT3010 USB driver for evaluation, please make sure the PC or Notebook PC meets the following requirements in order to run the software properly:

1. Hardware: Pentium Class PC, CPU speed 200MHz or above, with USB port.

2. Operating System: Windows 98SE.

   Note: For commercialized features requires third party driver & software.

Driver Installation Procedure

Note: Before downloading the firmware to BT3010 Bluetooth Module USB Evaluation Board, the system needs to install the provided USB driver first and followed by downloading the firmware for USB interface, then the user shall follow HCI testing procedure to begin the HCI testing.

1. The TECOM Bluetooth Module BT3010 USB Interface Evaluation Board should be plugged into your PC's USB port prior to installing the driver.

2. The PC automatically detects the device and a window will be displayed to request the user to install the driver. Please follow the standard hardware driver installation procedure. When the PC request the user to locate the source of driver files, please find the CD-Rom which contains the firmware, then go to the directory "USB Drivers", then select the filename "**bcbtusb.inf**" and click **Next** to complete the driver installation process.

3. Before using the firmware downloader, the user needs to adjust the device configuration first to allow the firmware downloader program to download the firmware without creating the conflict between the default setting of configuration.

4. For changing the device configuration, please go to "**Control Panel**" and select "**System**", then go to "**Device Manager**" and click on "**Blutonium Devices**"

5. The next step is to find "**Broadcom Blutonium Composite Device**" under the directory of "**Blutonium Devices**" and click on the "**Content**". Locate "**Blutonium Settings**" under the content of "**Broadcom Blutonium Composite Device**" then deselect "**Download Firmware**".

6. By completing the above process, the firmware download program is ready to download the firmware for further testing and software development.

Firmware Download Procedure

1. The TECOM Bluetooth Module BT3010 USB Interface Evaluation Board should be still plugged into your PC's USB port prior to downloading the firmware.

2. Please find the directory of CD-Rom which contains the firmware, you will find three files in the directory,
   - **BroadcomDownload.exe :** firmware download program
   - **Broadcom_2_2070(USB Loader).hex :** Downloader script for USB interface
   - **BBTFW_2_1_007(USB).hex :** firmware script for USB interface

3. Double click on **BroadcomDownload.exe** to start the program. In the "**Mini Driver**" box, select "**USB**" and deselect "**Send Version Information.**" (as Figure 1)
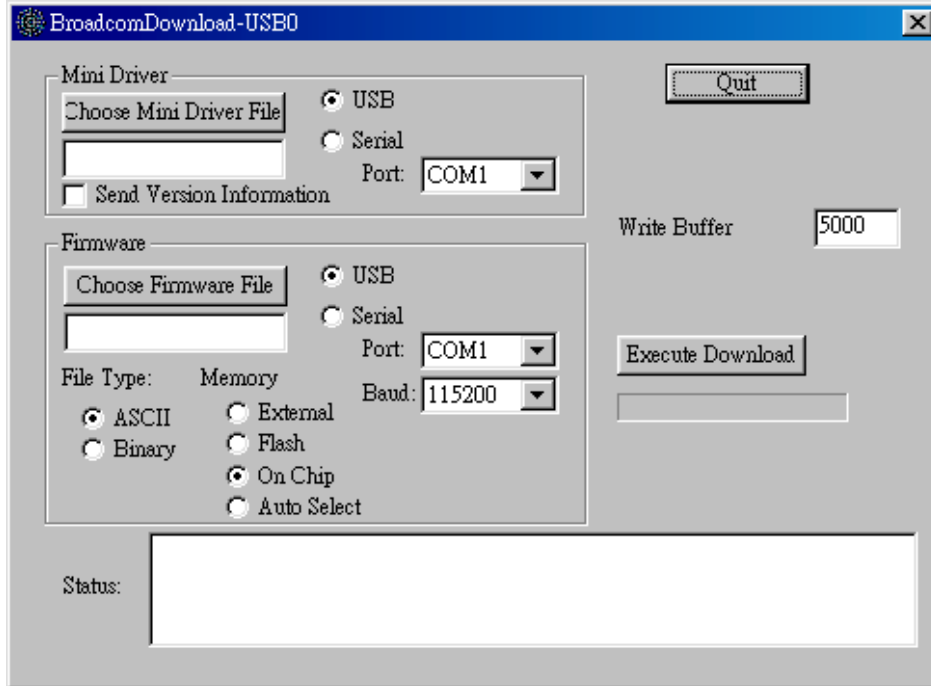
Figure 1: Downloader Configuration for USB Interface

4.   Then click on "**Choose Mini Driver File**" to select the appropriate mini-driver. For USB interface, the user shall select "**Broadcom_2_2070(USB Loader).hex"** in the "**Firmware**" directory.
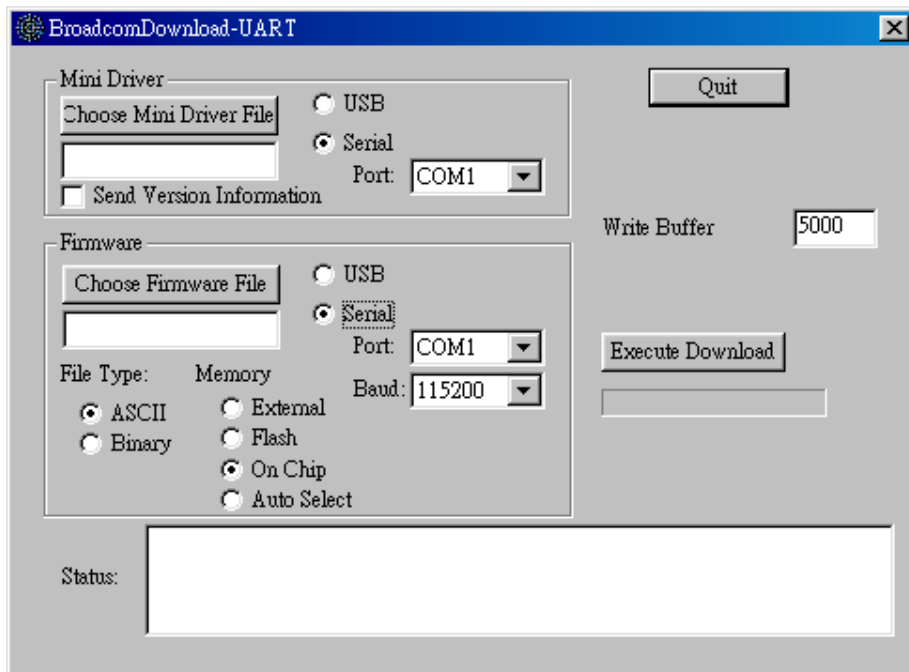
5.   In the "**Firmware**" box, please select "**USB**", "**ASCII**", and "**On Chip**". Then click on "**Choose Firmware File**" to select the appropriate firmware. For USB interface, the user shall select "**BBTFW_2_1_007(USB).hex**" in the "**Firmware**" directory. (as Figure 2)
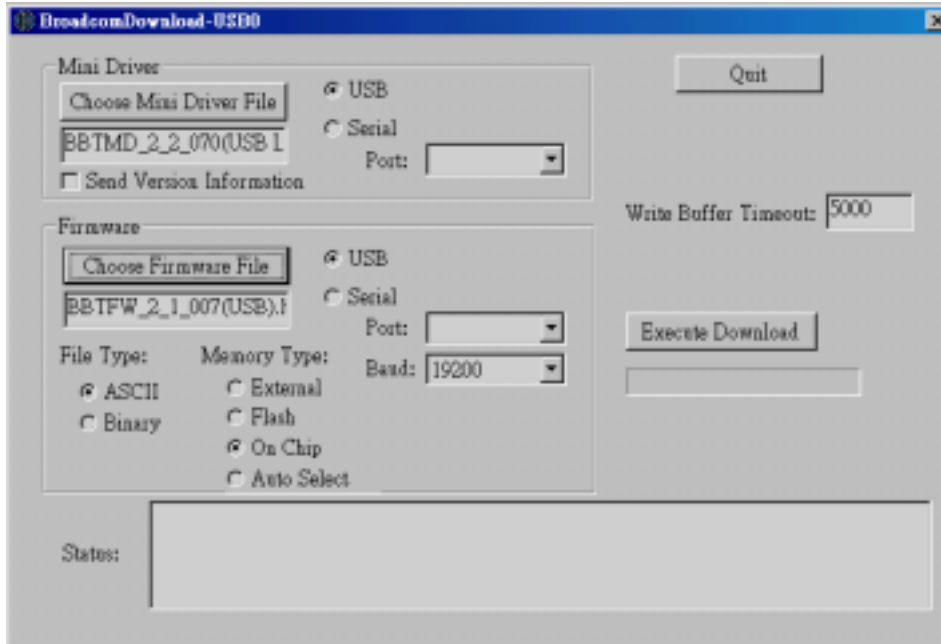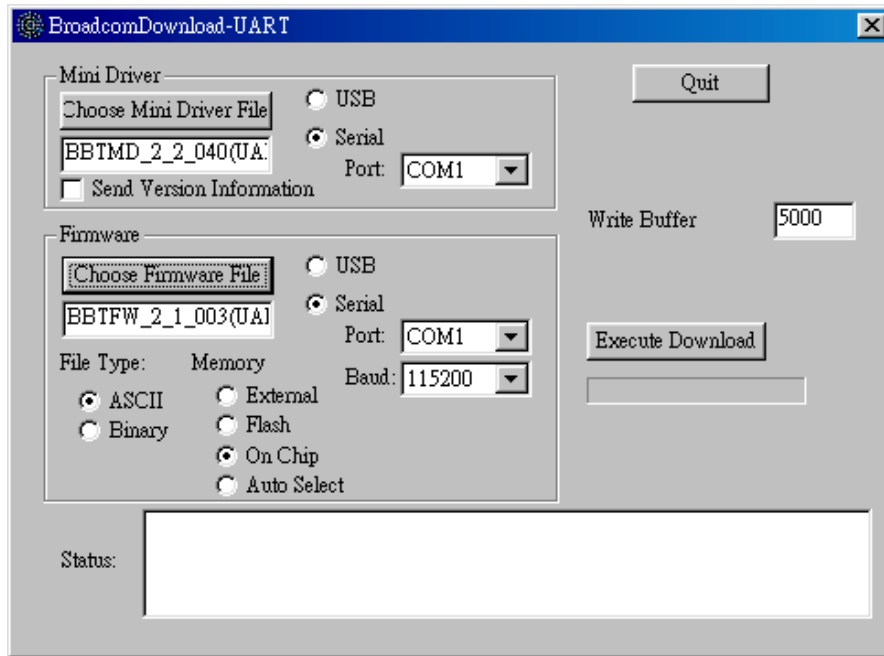
Figure 2: Downloader Configuration for USB Interface

6. Click on the "**Execute Download**" button. Status messages should appear in "**Status**" window as the download procedure progress.
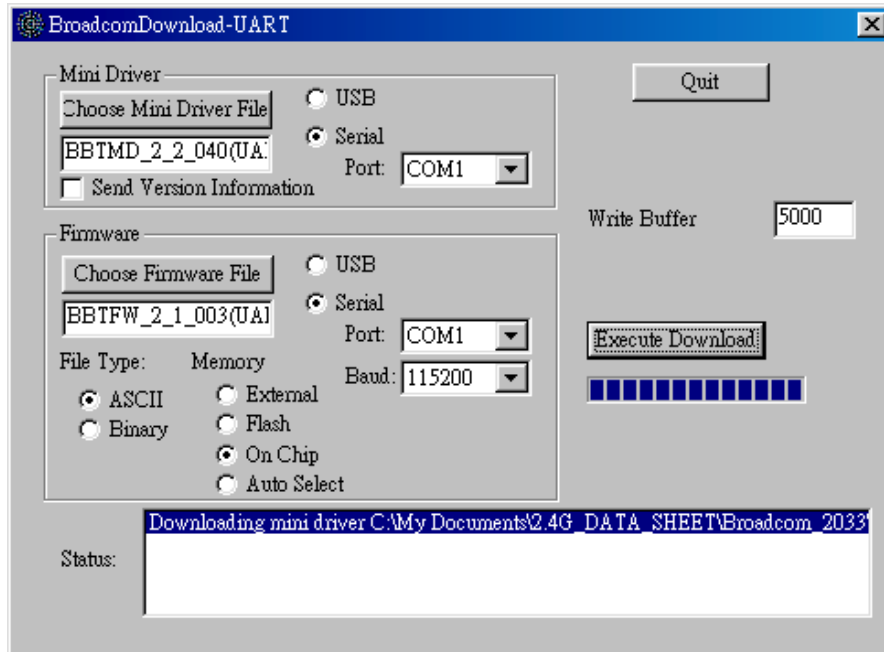
7. When the download is complete, click "**Quit**" to exit the program and the system is ready for further HCI testing or software development.
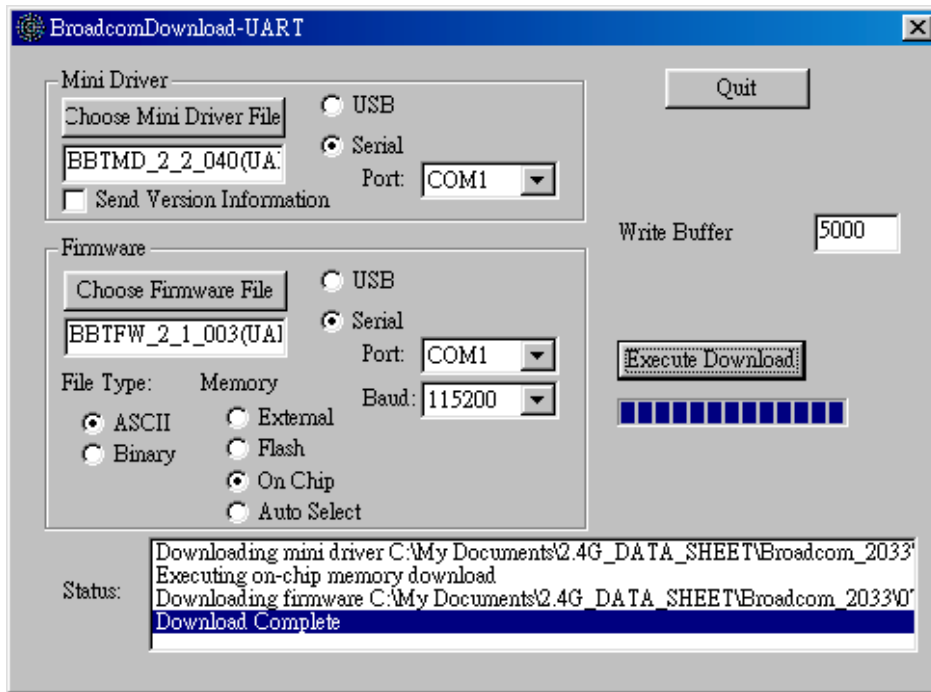
8. For HCI testing procedure, please go directly to "**Chapter 5: HCI Testing Procedure**"

Chapter 3: TECOM Bluetooth Module BT3010 UART Firmware Download

Firmware Download Procedure

1. The TECOM Bluetooth Module BT3010 UART Interface Evaluation Board should be powered up by **5V AC Adapter** and plugged into your PC's COM port prior to downloading the firmware.

2. Please find the directory of CD-Rom which contains the firmware, you will find three files in the directory,

   - **BroadcomDownload.exe :** firmware download program
   - **BBTMD_2_2_040(UART Loader 115200).hex :** Downloader script for UART interface
   - **BBTFW_2_1_003(UART).hex :** firmware script for UART interface

3. Double click on **BroadcomDownload.exe** to start the program; in the "**Mini Driver**" box, select "**Serial**" and select a serial port "**COM1**". (as Figure 3)

Figure 3: Downloader Configuration for UART Interface

4. Then click on "**Choose Mini Driver File**" to select the appropriate mini-driver. For UART interface, the user shall select "**BBTMD_2_2_040(UART Loader 115200).hex"** in the "**Firmware**" directory.

5. In the "**Firmware**" box, please select "**UART**", "**ASCII**", and "**On Chip**". Then click on "**Choose Firmware File**" to select the appropriate firmware. For USB interface, the user shall select "**BBTFW_2_1_003(UART).hex**" in the "**Firmware**" directory. (as Figure 4)

Figure 4: Downloader Configuration for UART Interface

6. Click on the "**Execute Download**" button. Status messages should appear in "**Status**" window as the download procedure progress. (as Figure 5)

Figure 5: Executing firmware download procedure

7. When the download is complete, click "**Quit**" to exit the program and the system is ready for further HCI testing or software development. (as Figure 6)

Figure 6: Firmware download completed

8. For HCI testing procedure, please go to "**Chapter 5: HCI Testing Procedure**"

Chapter 4: Updating The TECOM Bluetooth Module BT3010 Firmware

The steps to update the firmware and documentation for TECOM Bluetooth^{TM} Module BT3010 are a simple process as detailed below.

1. For the updated version of TECOM's Bluetooth^{TM} Module BT3010 firmware ; please visit TECOM webside www.tecom.com.tw   to find out the updated news; then go to TECOM FTP site, ftp.tecom.com.tw for downloading.

2. OEM customers shall have a set of unique username and password for accessing TECOM's FTP server. If the username and password are forgotten, please contact TECOM's sales account manager for the information.

Chapter 5: HCI Testing Procedure

The HCI Testing procedure provides instructions for creating point-to-point ACL links between two Bluetooth Module Evaluation Boards.

System Requirement for Bluetooth Module HCI Test Program

Before using HCI Test Program for testing, please make sure the PC or Notebook PC meets the following requirements in order to run the software properly:

1. To create connection, it requires two units of PCs to perform the testing procedure

2. Hardware: Pentium Class PC, CPU speed 200MHz or above, with RS-232 (for UART interface testing) and USB port (for USB interface testing).

3. Operating System: Windows 98SE.

    Note: For commercialized features requires third party USB driver & software.

Create the ACL Link

Once the device driver & firmware for TECOM Bluetooth™ Module BT3010 for USB or UART interfaces has been installed into two PC with Windows 98SE installed, one for **Master**, the other one for **Slave**, the steps for the use of "**HCI Test**" program are a simple process as detailed below.

1. HCI Test program filed called "**hcitest_1.exe**" can be found in CD-Rom, click on the file to launch the program.

2. Once the program is launched, a "Communications Interface" window will be displayed, please select the interface options "**Serial Interface**" or "**USB Interface**", if it is an UART interface device, please select *Serial Interface* and set the "**Serial Port**" and "**Baud Rate** " in the Serial Parameters box, then click **OK**. The configuration of both Master and Slave shall be the same. (as Figure 7)
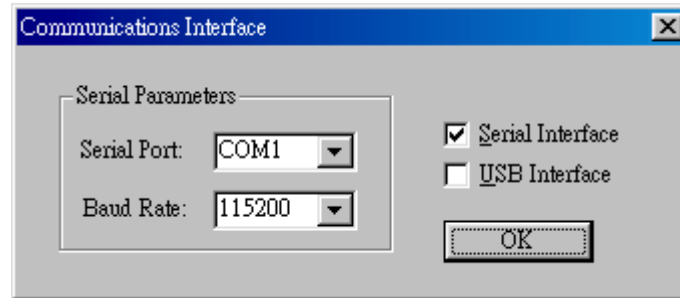
Figure 7: Configure Communications Interface

3. Two windows will be displayed, "**HCI Test**" is for configuration (as Figure 8) and the "**Results**" is for test result (as Figure 9).
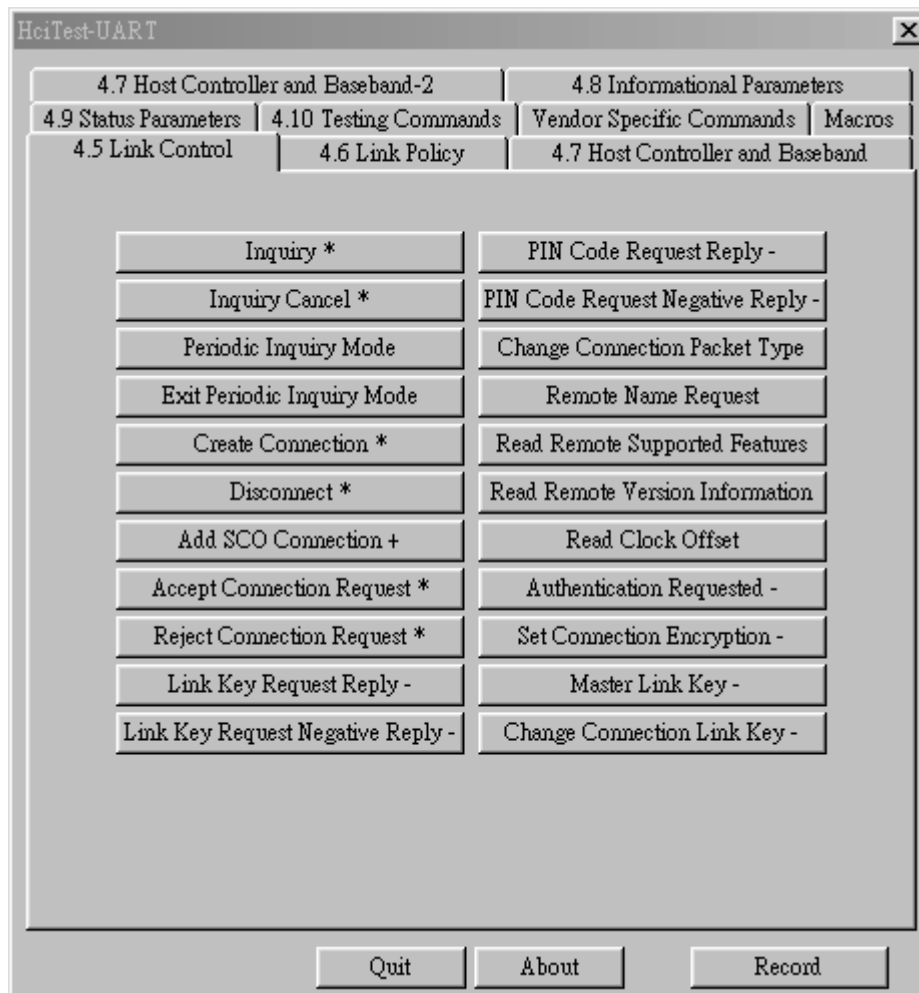
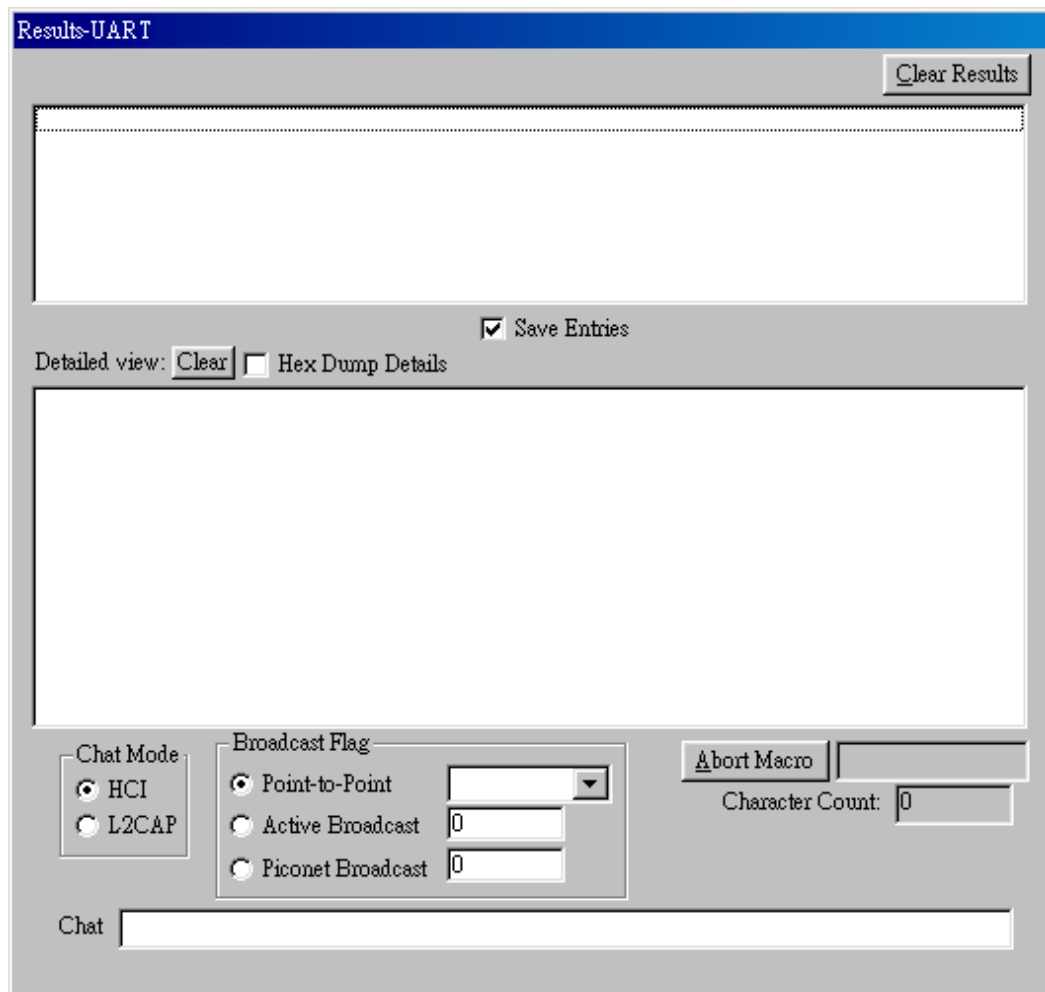

Figure 8: Configure HCI Test Program

Figure 9: Result of Execution of HCI Test Program

4. On both computers, select "**4.7 Host Controller and Baseband-2**" box, then click on the **Reset** button. (as Figure 10), The user can see result from the "**Result**" Window (as Figure 11)
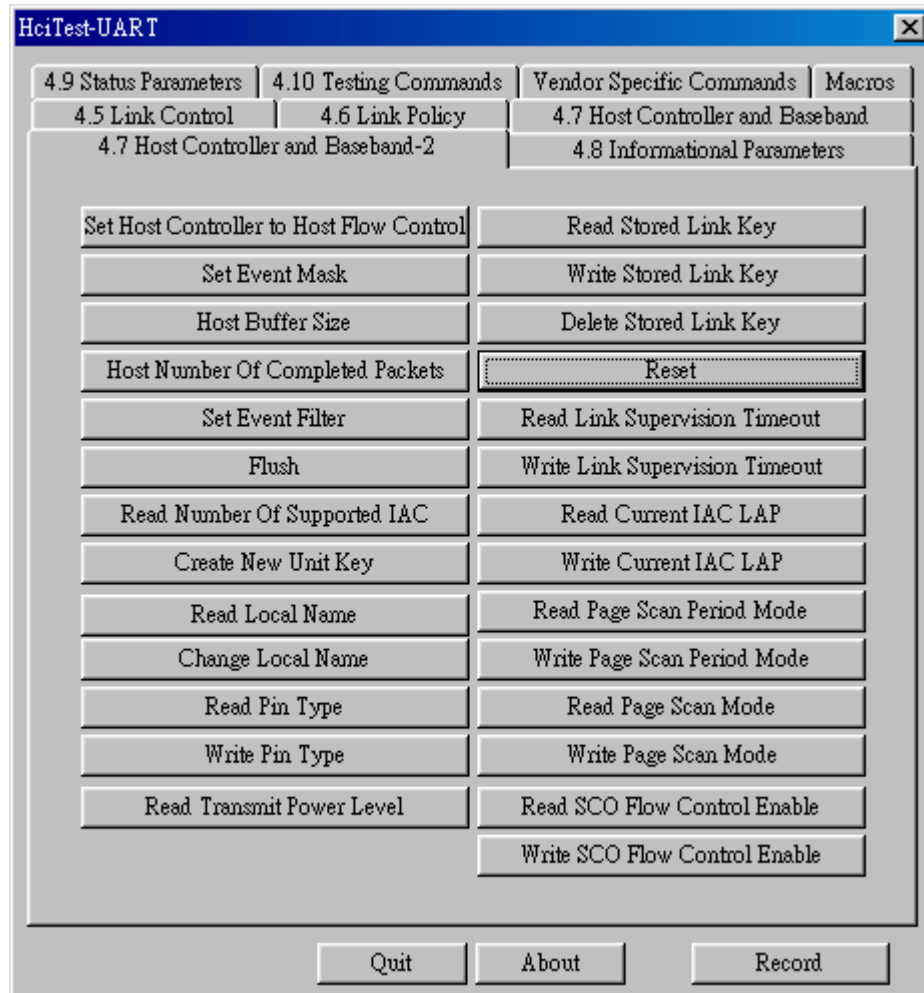

Figure 10: Click on Reset
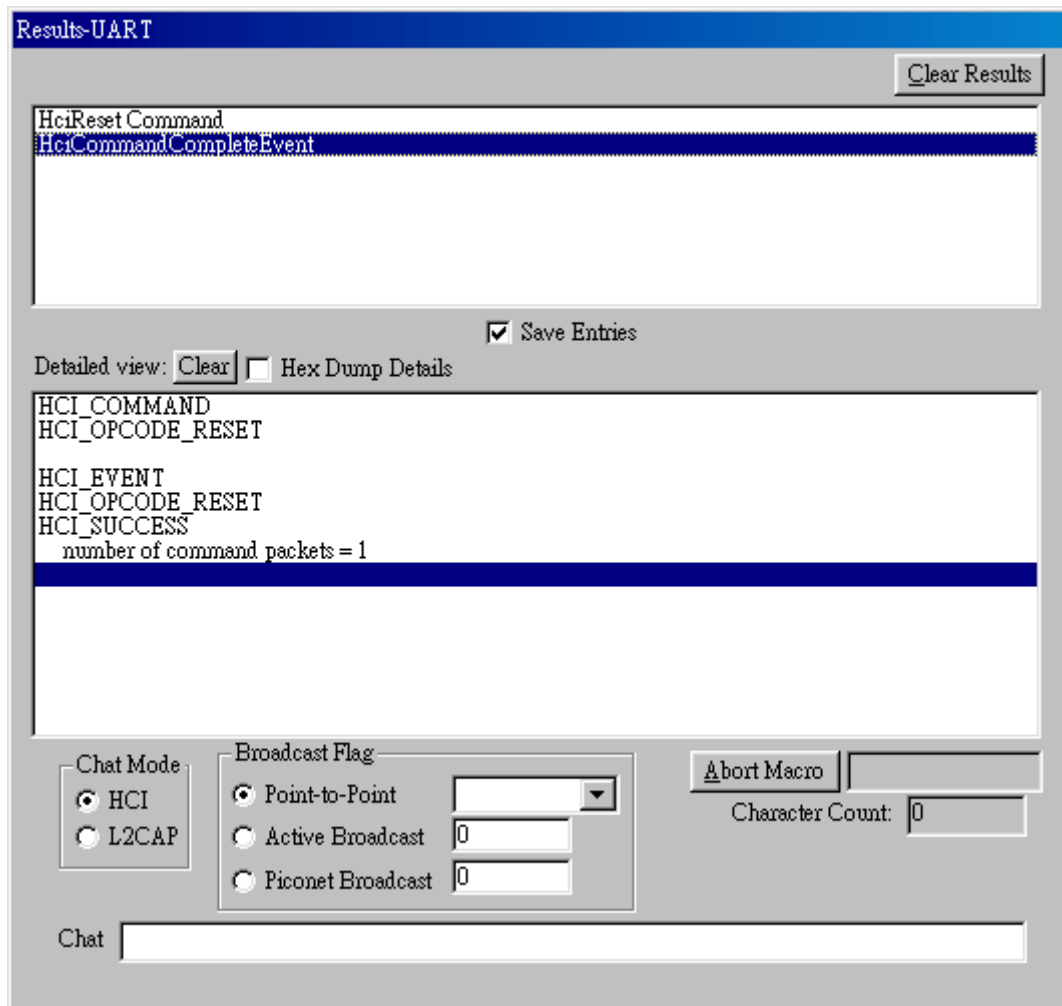
Figure 11: Show test result

5. On both computers, select "**4.8 Information Parameters**" box, then click on the "**Read Buffer Size**" button. (as Figure 12).
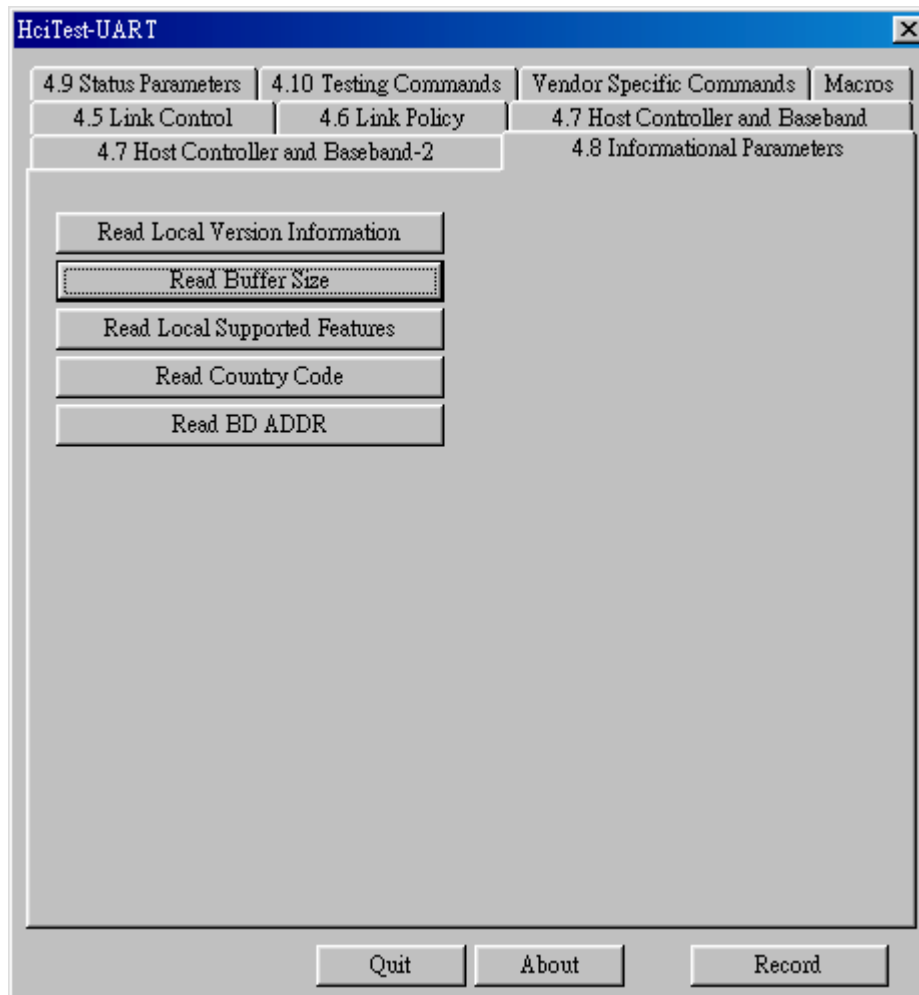
Figure 12: Show test result

6. On both computers, select "**Vender Specific Command**" box, then click on the "**Write BD_ADDR**" button. (as Figure 13). A "**Write Bluetooth Device Address**" window will appear on both sides of the PC, please input any 12 hex digits on each side (as Figure 14 (Master), Figure 15 (Slave)). The digits on both sides shall be different.

Figure 13: Write Bluetooth Device Address
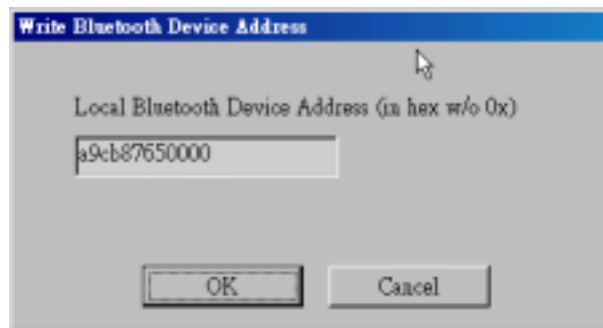
Figure 14: Write Bluetooth Device (Master Device) Address
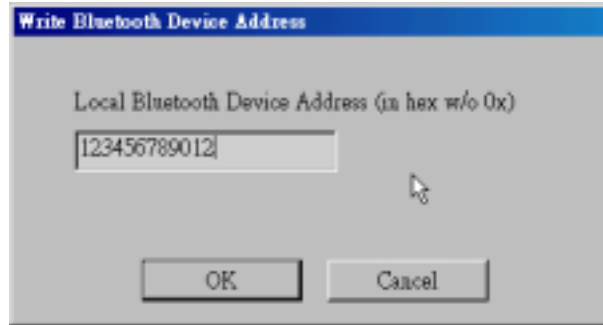
Figure 15: Write Bluetooth Device (Slave Device) Address

7. On the Slave computer, select "**4.7 Host Controller and Baseband**" box, then click on the "**Write Scan Enable**" button. (as Figure 16). A "**Write Scan Enable**" window will appear (as Figure 17), please deselect *Inquiry Scan Enable* (as Figure 18).
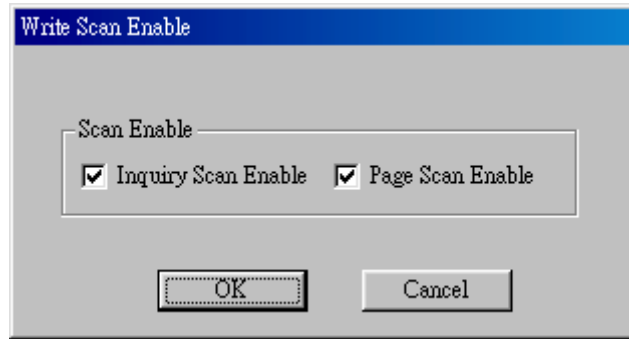

"
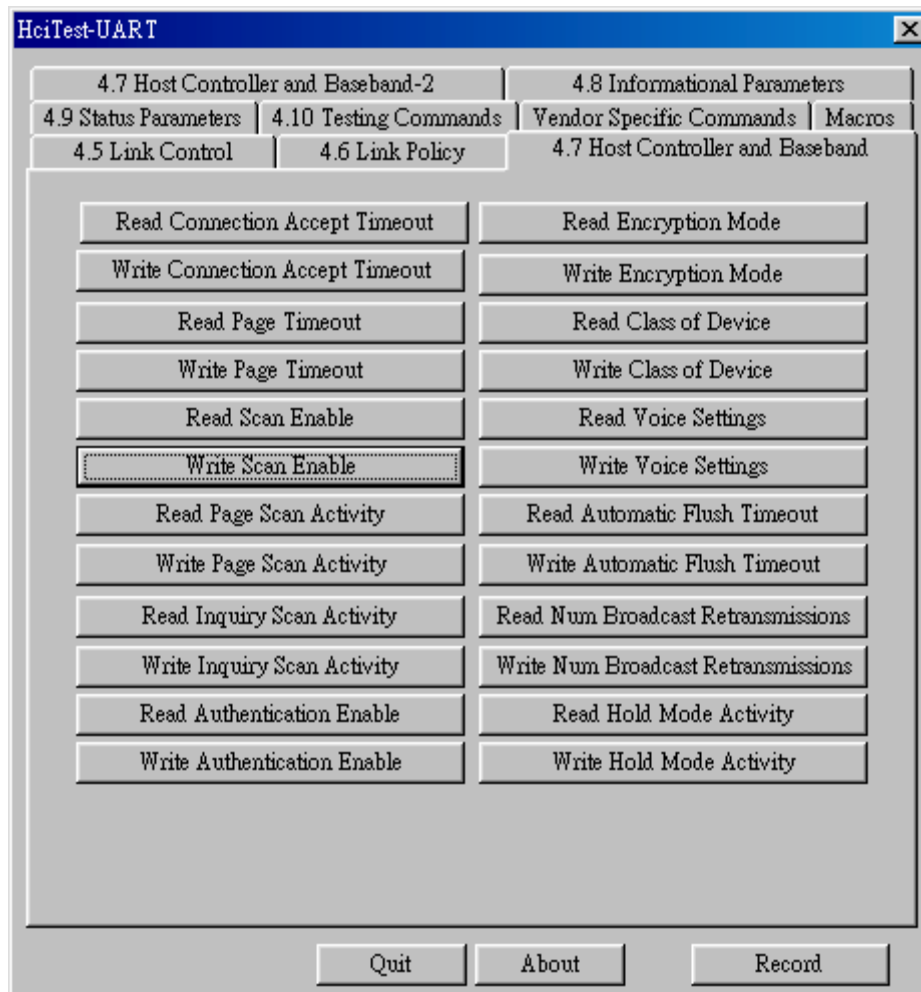
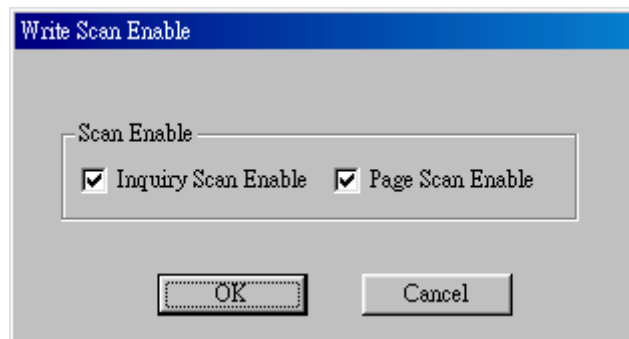**Figure 16: Write Scan Enable**

Figure 17: Write Scan Enable Window Appear

Figure 18: Deselect Inquiry Scan Enable

8. On the Master computer, click on "**4.5 Link Control**" box, and then click on the "**Create Connection**" button. (as Figure 19). A "**Create Connection**" window will appear, clicks on **OK** (as Figure 20).
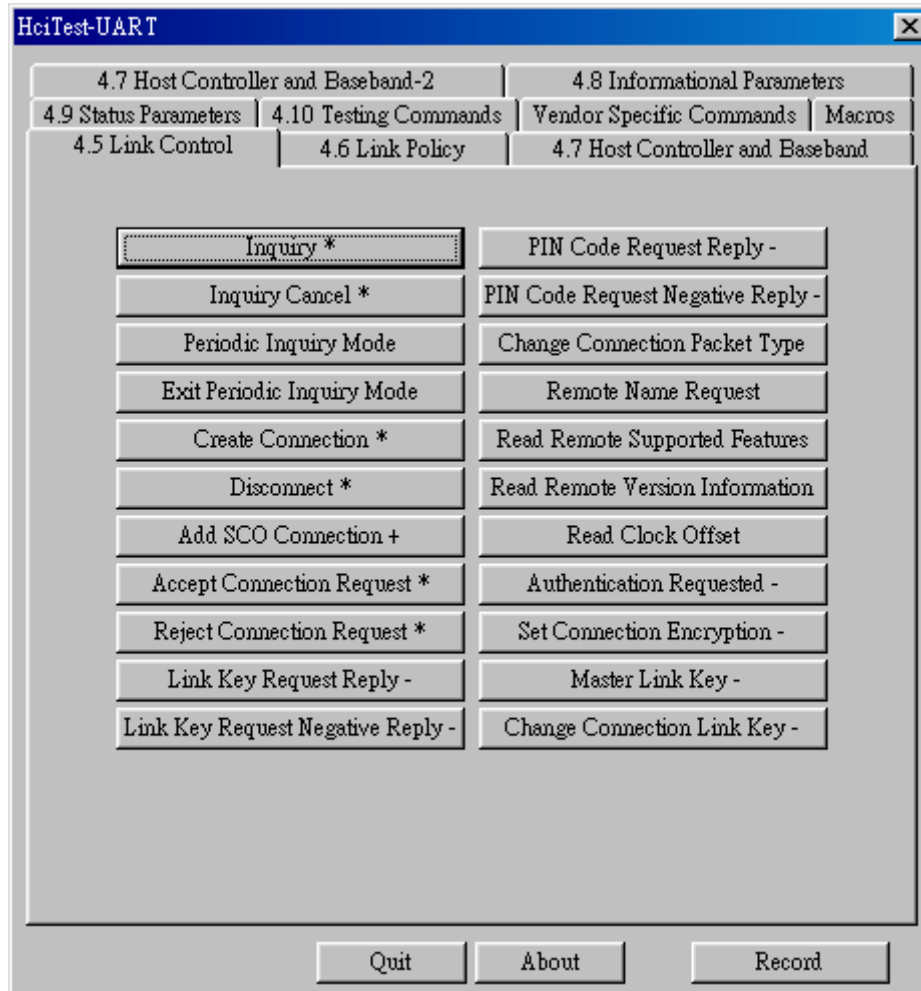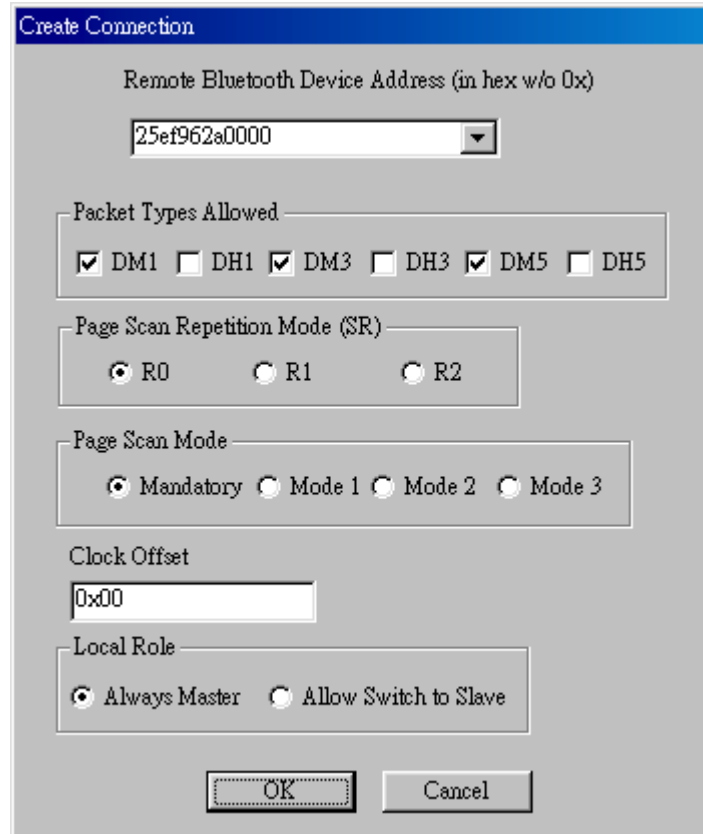

Figure 19: Create Connection

Figure 20: Create Connection

9. On the Slave computer, a "**Accept Connection Request**" window will appear, click on the "**Write Scan Enable**" button immediately before timeout. (as Figure 21). Please see the "**Result**" window for detailed information. (as Figure 22)
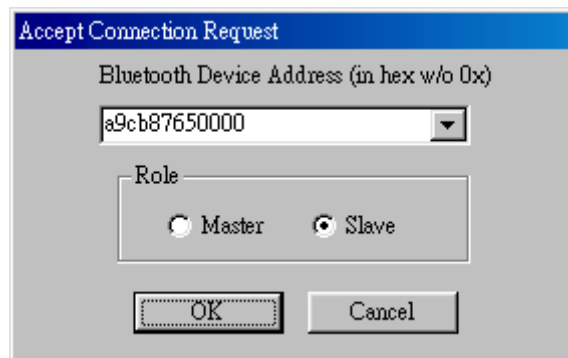

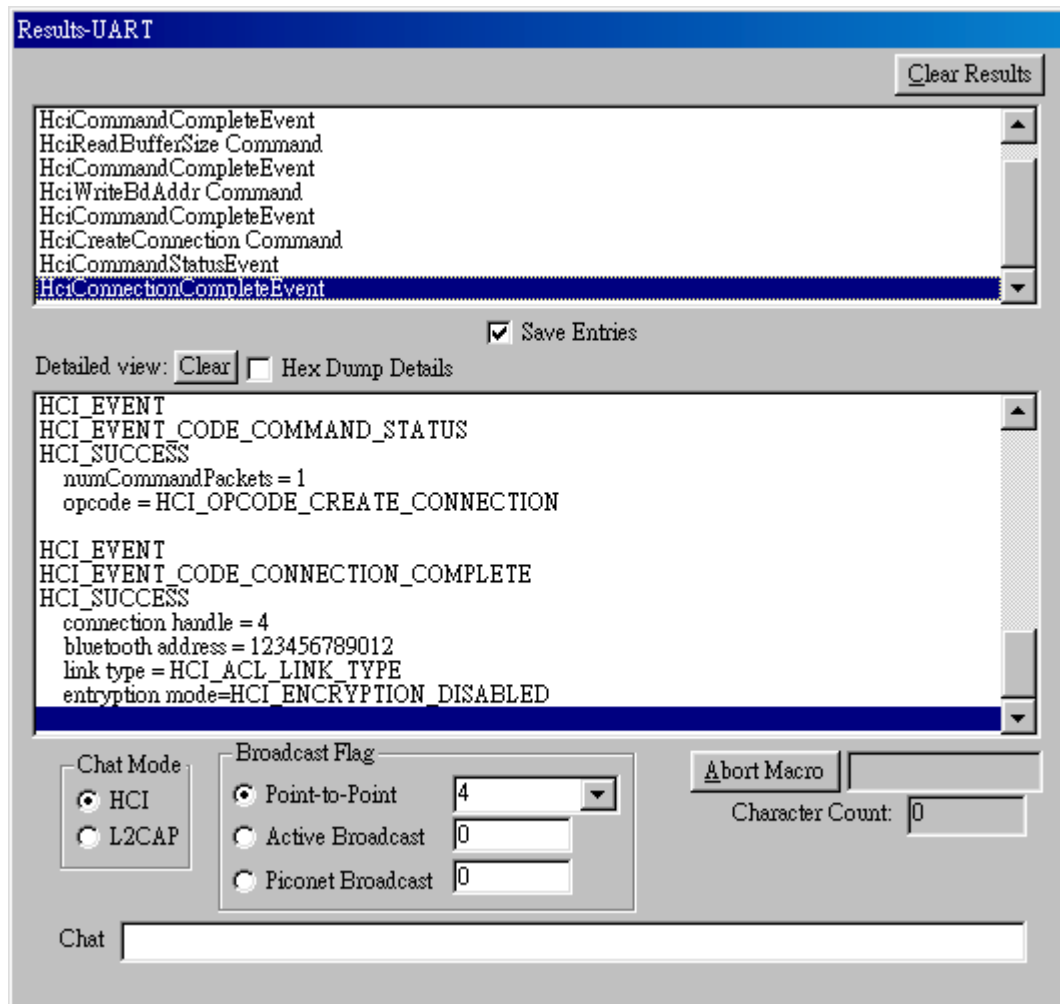**Figure 21: Accept Connection Request from Master Device**

Figure 22: Successful Connection Result on Master Device

10. On the Master computer, input "**Hello Slave!**" into "**Chat**" dialogue box and click "**Enter**"
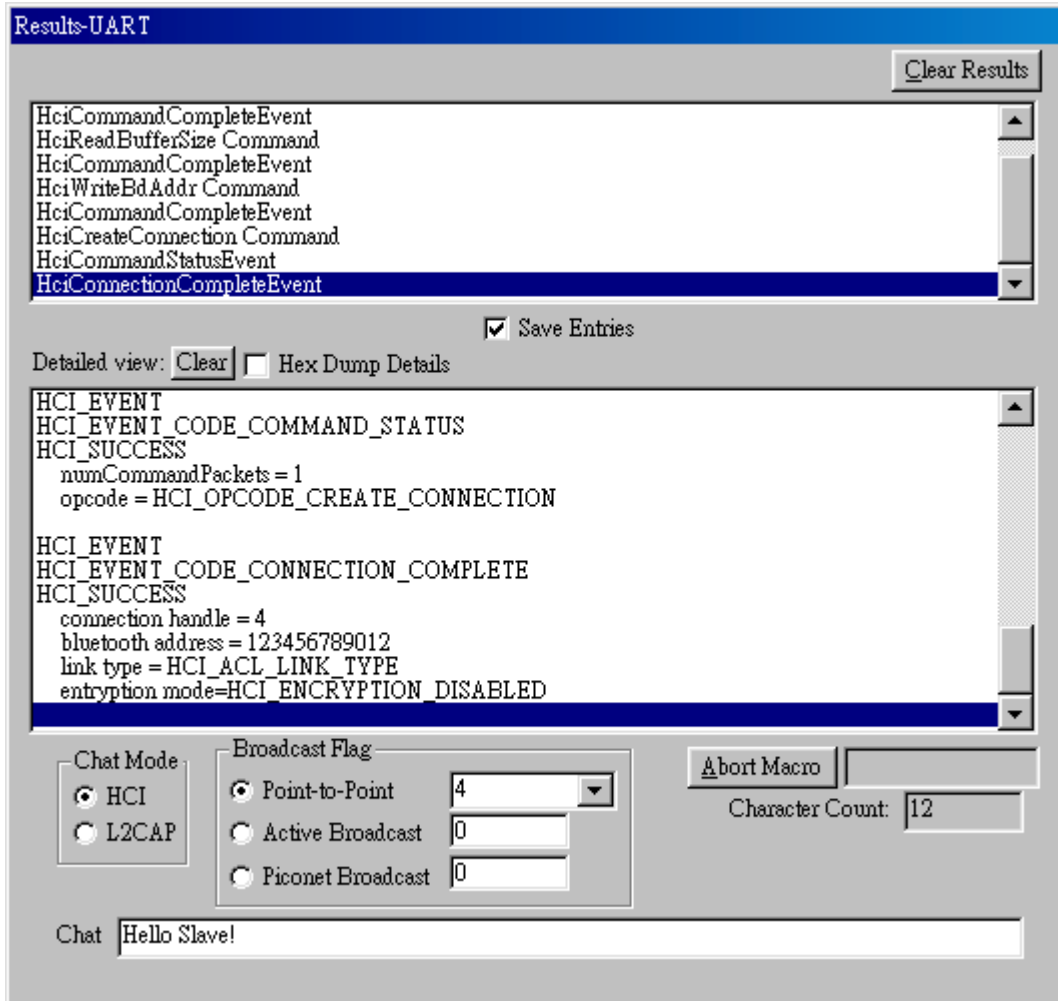   button on the keyboard. (as Figure 23).

Figure 23: Type in "Hello Slave!" in Master Device Side

11. On the Slave computer, the screen show "***Hello Slave!***" message from Master computer. Then on the Slave side input "***Hello Master!***" message into "**Chat**" dialogue box and click "**Enter**" button on the keyboard to send the massage back to Master computer. (as Figure 24).
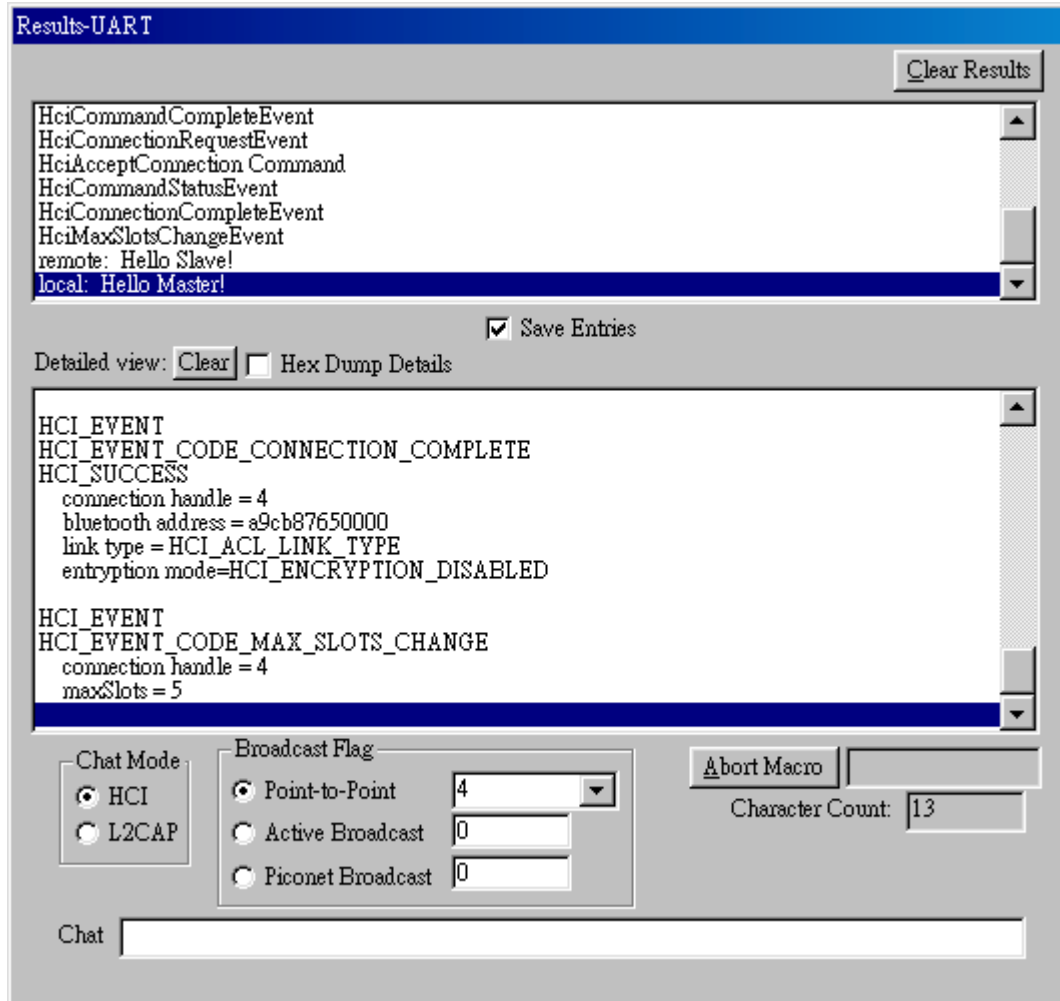

Figure 24: Receive "Hello Slave!" and Type in "Hello Master!" in Slave Device Side

12. On the Slave computer, the screen show "***Hello Master!***" message from Slave computer.. (as Figure 25).
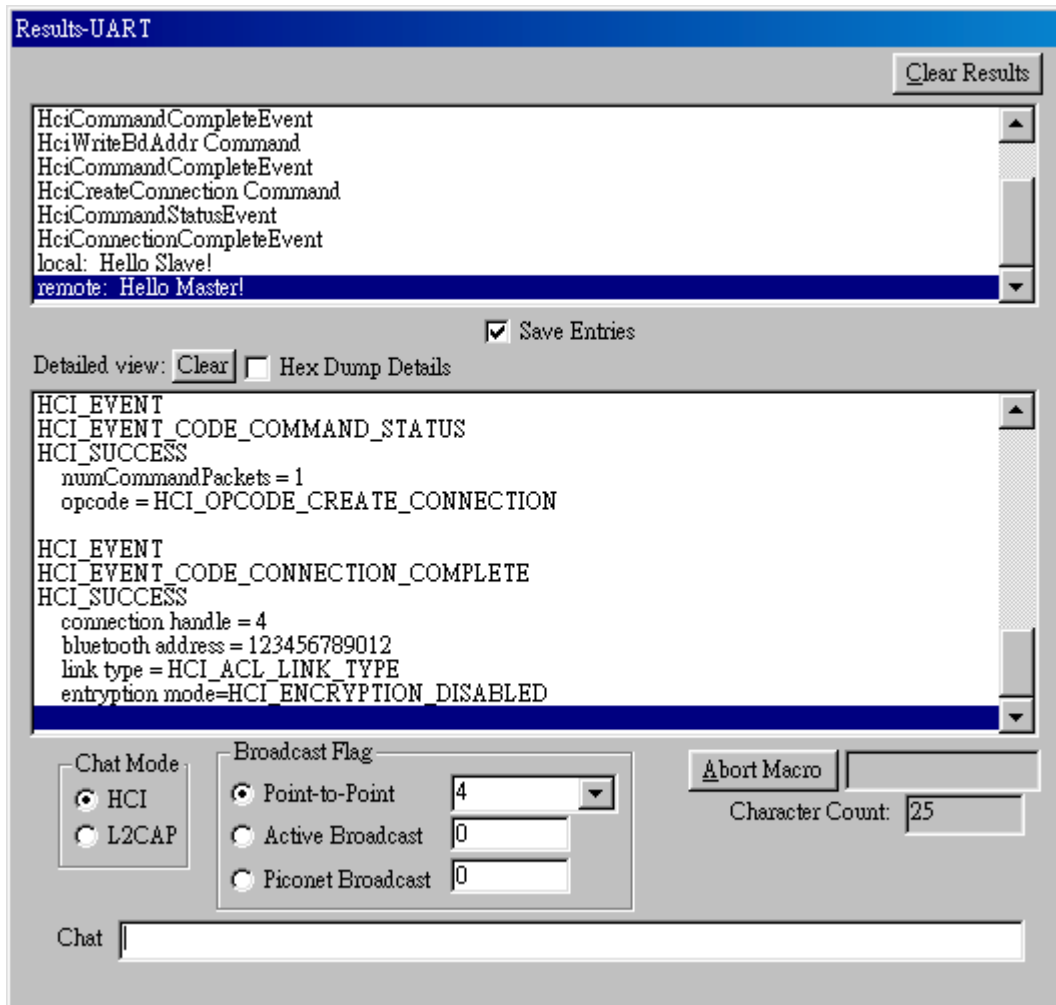
Figure 25: Receive "Hello Master!" Message from Slave Device

13. For further testing on the data transmission, the user could use Telnet terminal program to send message or file between these two devices.

Chapter 6: Software Uninstall

Remove the TECOM Bluetooth Module BT3010 firmware by performing the following steps.

1. To uninstall the USB test driver, please go to CD-Rom and find "**BCBTRMV_1.5.exe**" file inside the directory of "**USB Driver**", then click on it to remove the device driver.

2. Once the driver is removed, please find "**regedit**" program and open it, find the path " **\ HKEY_LOCAL_MACHINE\Enum\USB\VID_0A5C&PID_2033**" in the directory of "**My Computer**" and delete it.

Chapter 7: Trouble Shooting

1. **If there is any problem encountered during installation process:**

    ● Please email to TECOM, sales@ tecom.com.tw