Editing the Configuration of 3D Glasses Using BlueTool™

Associated Part Family:CYW20702

This document provides a procedure for editing the configuration of Bluetooth-enabled 3D glasses using Cypress's BlueTool® software and a Bluetooth CYW20702-equipped host.The document is intended for design engineers.

Contents

1 Introduction

BlueTool is a proprietary Cypress software tool for exercising, testing, scripting, debugging, and programming devices that use Cypress Bluetooth chips. BlueTool runs on a standard PC running the Microsoft® Windows® operating system. BlueTool interfaces with the Cypress Bluetooth chips at the HCI protocol layer. The HCI UART is supported.

1.1 Cypress Part Numbering Scheme

Cypress is converting the acquired IoT part numbers from Broadcom to the Cypress part numbering scheme. Due to this conversion, there is no change in form, fit, or function as a result of offering the device with Cypress part number marking. The table provides Cypress ordering part number that matches an existing IoT part number.

Table 1. Mapping Table for Part Number between Broadcom and Cypress

Broadcom Part Number	Cypress Part Number
BCM20702	CYW20702

1.2 Acronyms and Abbreviations

In most cases, acronyms and abbreviations are defined on first use.

For a comprehensive list of acronyms and other terms used in Cypress documents, go to: http://www.cypress.com/glossary.

2 IoT Resources

Cypress provides a wealth of data at http://www.cypress.com/internet-things-iot to help you to select the right IoT device for your design, and quickly and effectively integrate the device into your design. Cypress provides customer access to a wide range of information, including technical documentation, schematic diagrams, product bill of materials, PCB layout information, and software updates. Customers can acquire technical documentation and software from the Cypress Support Community website (http://community.cypress.com/).

3 System Requirements

3.1 Host System Requirements

A personal computer running the Microsoft® Windows® operating system is required to use BlueTool™. Cypress recommends running Windows XP; however, other versions of Windows are also supported.

Note: BlueTool is constantly being revised, resulting in operational and other changes to the graphical user interface. Consequently, this document contains only basic instructions on using BlueTool. These instructions should remain the same for all BlueTool releases. If discrepancies exist between this document and the version of BlueTool you are using, contact your Cypress technical representative or visit Cypress's CSP (see IoT Resources on page 1).

3.2 Hardware Requirements

In addition to a host personal computer, the following hardware is required:

- A host system Bluetooth device. (A USB dongle with a CYW20702 is assumed throughout this document.)
- Bluetooth-enabled 3D glasses.

4 Software Requirements

BlueTool is required. It is available for download from the Cypress CSP for those with access privileges. Those who require access should contact their Cypress representative.

5 System Connections

Figure 1 shows a basic setup with a host system that is connected via Bluetooth with Bluetooth-enabled 3D glasses.

Figure 1. System Setup
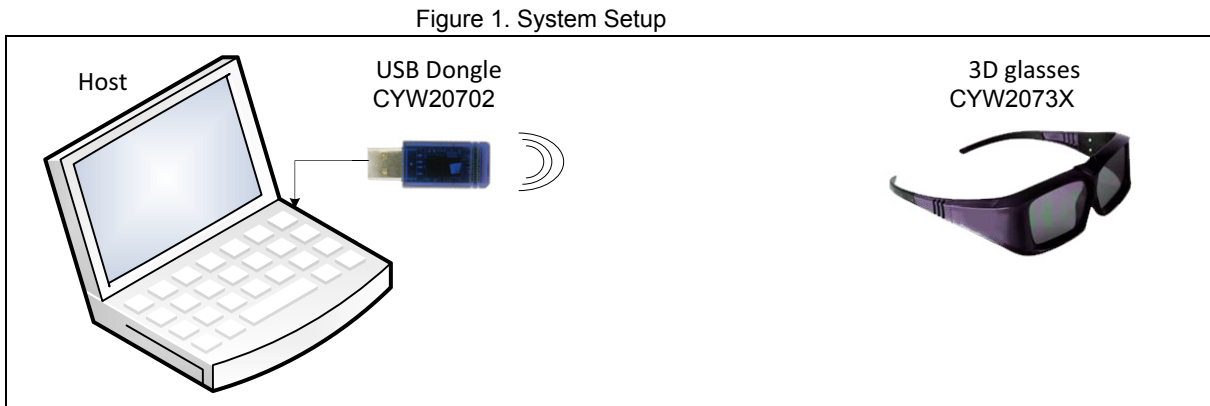
# 6   Determining the Bluetooth Host Device and Port

To determine the port of the Bluetooth host that will be used to configure the paired 3D glasses, perform the following steps:

1. On a Windows® system, open the Device Manager. One way to do this is to perform the following steps:
    a. Right-click **My Computer** and click **Properties**.
    b. Click the **Hardware** tab and then click on **Device Manager.**

2. In the Device Manager window, verify the presence of an embedded Bluetooth 4.0 USB device or a Bluetooth device attached via a USB serial port.

    For an embedded Bluetooth device, verify that the device is listed under Bluetooth Devices similarly to what is shown in the following example:
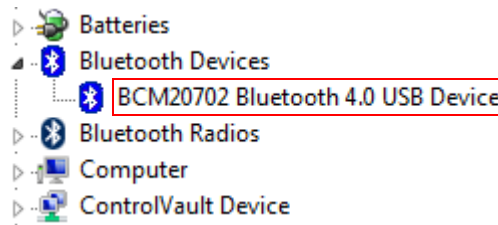

    For a Bluetooth device attached via a USB serial port, verify its presence under Ports (COM & LPT), which in the case of the following example is USB Serial Port (COM4).
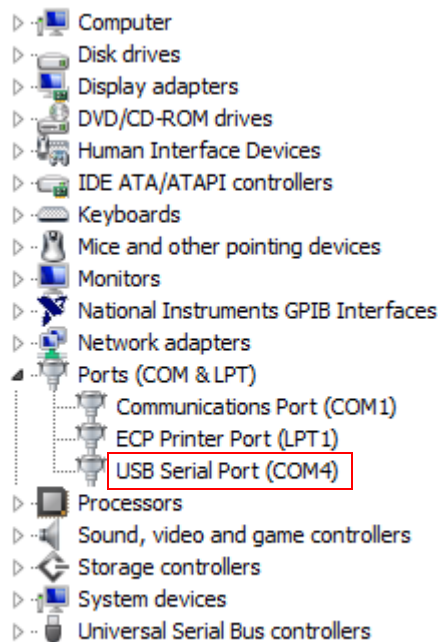
7 Launching BlueTool and Displaying the Log Window

Complete these steps to launch BlueTool and display the log window:

1. Click **Start > All Programs>Cypress BlueTool > BlueTool** to open the BlueTool application.

2. In BlueTool, click **View > Log Window** to display the log window.

3. Click **View > Log Window Details** to enable the log window to display detailed log information.
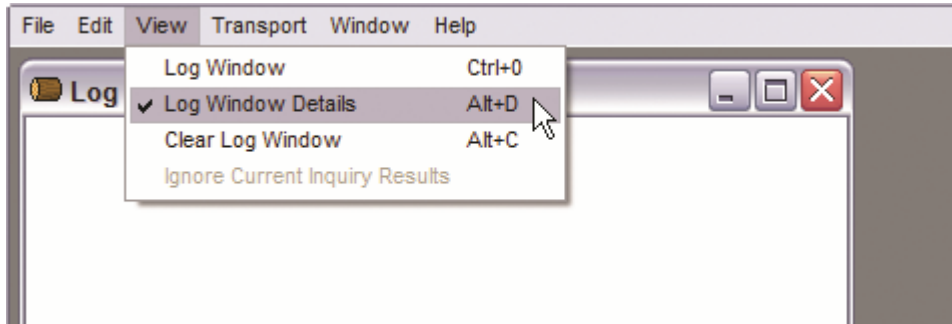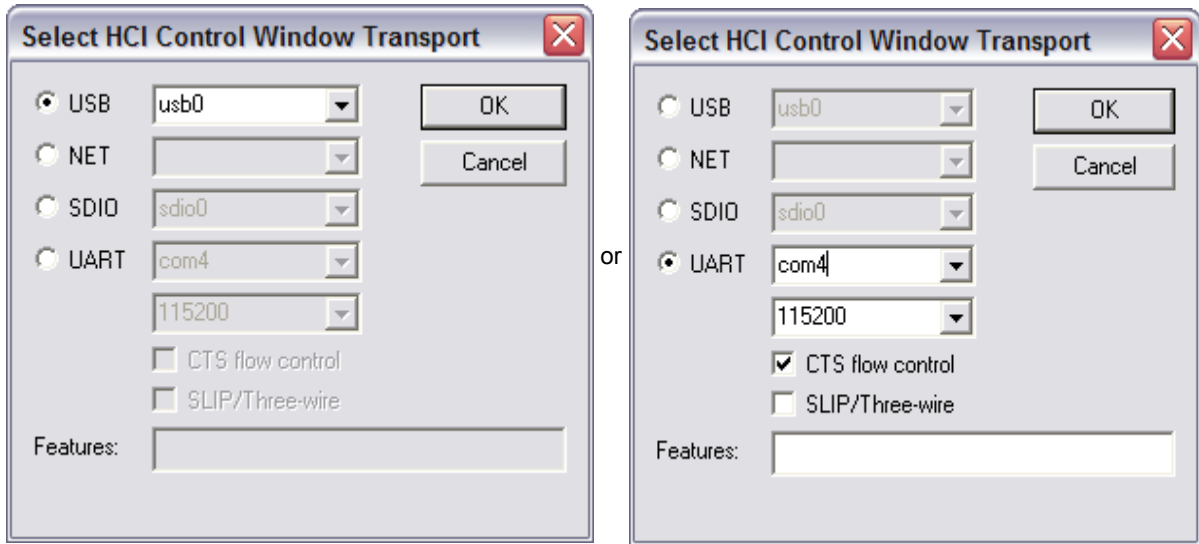

8 Setting Up the HCI Control Transport

Complete these steps to set up the HCI control transport and sanity test host control by issuing a reset.
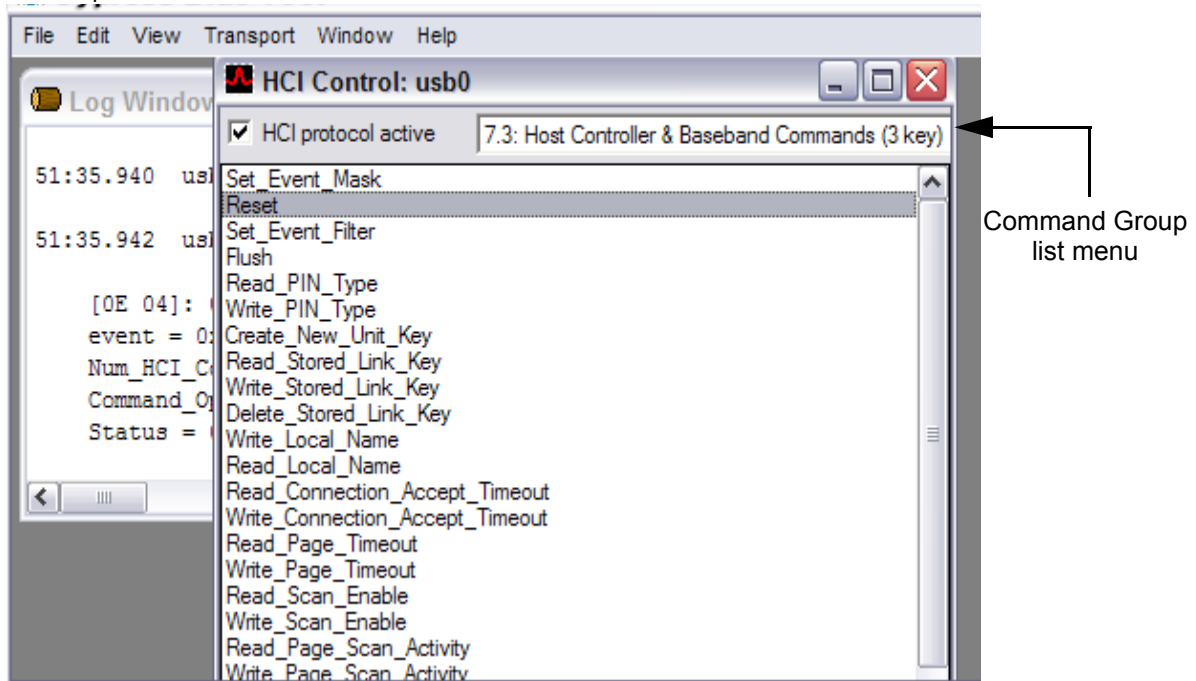
1. Click **Transport > HCI Control** (keyboard shortcut **CTRL+1**) to display the Select HCI Control Window Transport window.
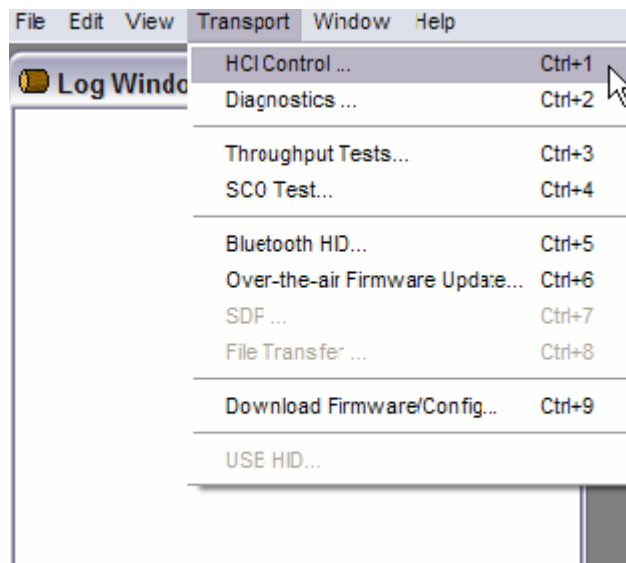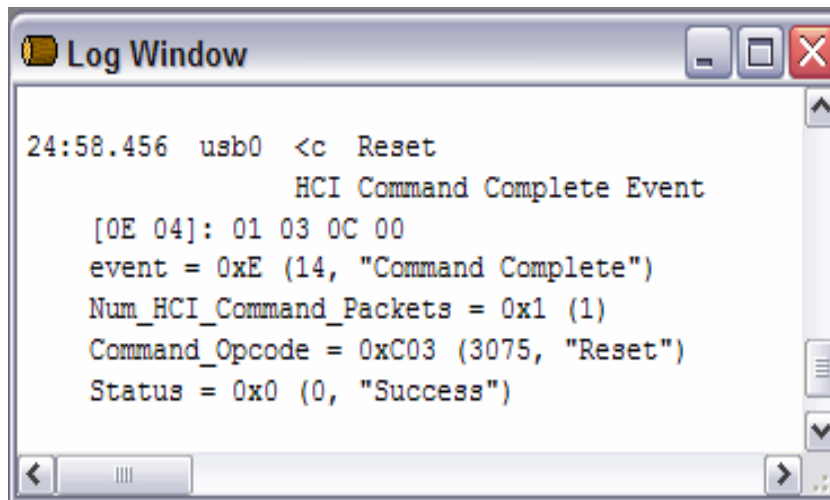
2. Select the appropriate option (either UART or USB). If the transport is UART, then select or type the COM port (see Determining the Bluetooth Host Device and Port on page 3) and click **OK**. If the transport is USB, then select **usb0** and click **OK**.

Select HCI Control Window Transport

- ◉ USB usb0 ▼
- ○ NET
- ○ SDIO sdio0 ▼
- ○ UART com4 ▼
        115200 ▼
  ☐ CTS flow control
  ☐ SLIP/Three-wire
- Features:

OK   Cancel

or

Select HCI Control Window Transport

- ○ USB usb0 ▼
- ○ NET
- ○ SDIO sdio0 ▼
- ◉ UART com4 ▼
        115200 ▼
  ☑ CTS flow control
  ☐ SLIP/Three-wire
- Features:

OK   Cancel

3. In the HCI Control window, select **7.3 Host Controller & Baseband Commands (3 key)** from the Command Group list menu and double-click **Reset** to issue a reset command.
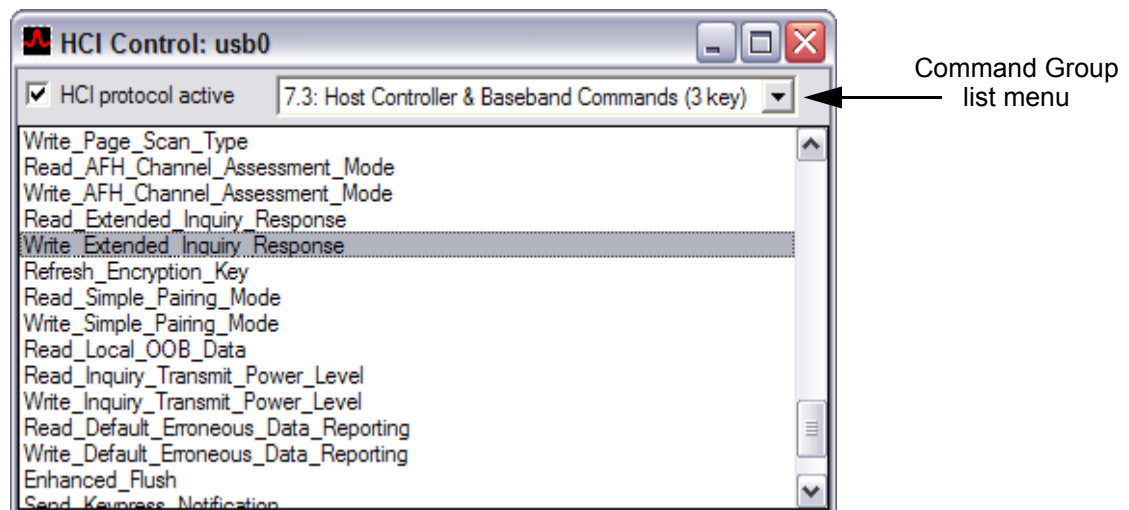
File   Edit   View   Transport   Window   Help

HCI Control: usb0

☑ HCI protocol active   7.3: Host Controller & Baseband Commands (3 key)

Log Window

51:35.940   us
51:35.942   us

[0E 04]:
event = 0
Num_HCI_C
Command_O
Status =

Set_Event_Mask
Reset
Set_Event_Filter
Flush
Read_PIN_Type
Write_PIN_Type
Create_New_Unit_Key
Read_Stored_Link_Key
Write_Stored_Link_Key
Delete_Stored_Link_Key
Write_Local_Name
Read_Local_Name
Read_Connection_Accept_Timeout
Write_Connection_Accept_Timeout
Read_Page_Timeout
Write_Page_Timeout
Read_Scan_Enable
Write_Scan_Enable
Read_Page_Scan_Activity
Write_Page_Scan_Activity

Command Group list menu

4. Verify success of the reset command by viewing the log window.
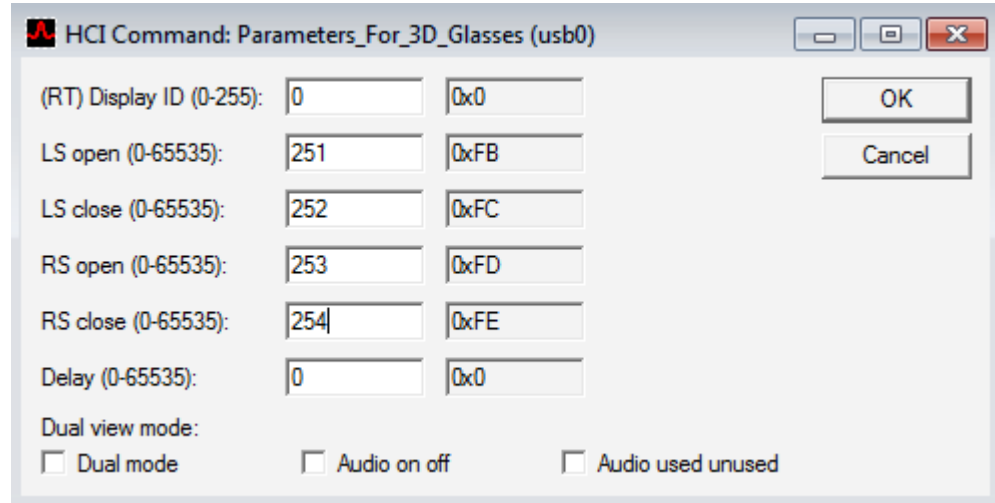

9   Changing the Extended Inquiry Response Field

Complete these steps to write to and read back from the Extended Inquiry Response (EIR) field in NVRAM.

1. In the HCI Control window, select **7.3 Host Controller & Baseband Commands (3 key)** from the Command Group list menu and double-click **Write_Extended_Inquiry_Response**.

2. In the Write_Extended_Inquiry_Response HCI command window, enter the data to write to NVRAM, being sure to separate each byte by one space. Click **OK** when done entering the data.

3. If prompted with a window labeled **Not enough bytes**, click **Yes** to continue.

4. Verify success of the EIR write command by viewing the Log window. The results should look similar to those shown here, where the data is displayed followed by the Success message.

5. (Optionally read back the NVRAM values just written.) In the HCI Control window, select **7.3 Host Controller & Baseband Commands (3 key)** and double-click **Read_Extended_Inquiry_Response**.

```
Log Window                                                              _ □ ✕
03:24.518  usb0  <c  Read_Extended_Inquiry_Response            FEC_Required: 0x0   ▲
                     HCI Command Complete Event
        [0E F5]:
        01 51 0C 00 00 06 FF 0F 00 00 0D 64 02 0A 00 04 0D 3C 04 00 00 00 00 00 00 00 00 00 00 00 00
        00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
        00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
        00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
        00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
        00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
        00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
        00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
        00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
        event = 0xE (14, "Command Complete")
        Num_HCI_Command_Packets = 0x1 (1)
        Command_Opcode = 0xC51 (3153, "Read_Extended_Inquiry_Response")
        Status = 0x0 (0, "Success")
        FEC_Required = 0x0 (0)
        Extended_Inquiry_Response = "06 FF 0F 00 00 0D 64 02 0A 00 04 0D 3C 04 00 00 00 00 00 00 00 00 00 00 00 00
```

Note: To successfully read back values just written to NVRAM, be sure not to issue a Reset between the Write_Extended_Inquiry_Response and Read_Extended_Inquiry_Response commands.

10   Configuring Parameters for 3D Glasses

Complete these steps to configure parameters for 3D glasses.

1. In the HCI Control window, select **0: Vendor-specific Commands (0 key)** and double-click **Parameters_For_3D_Glasses**.

2. In the Parameters_For_3D_Glasses HCI command window, insert values for the **Display ID**, **LS open**, **LS close**, **RS open**, and **RS close** and then click **OK** to save the values to NVRAM.

Note: The values for shutter control and delay are in microseconds. Only Display ID, LS open, LS close, RS open, and RS close will get written to NVRAM; the Delay value will not be saved. Furthermore, this command does not prefetch the existing values for these parameters. Thus, the command window will always show all values as zeroes regardless of the actual values written in NVRAM.

3. To verify NVRAM values, in the HCI Control window, select **0: Vendor-specific Commands (0 key)** and double-click **Read_RAM**.
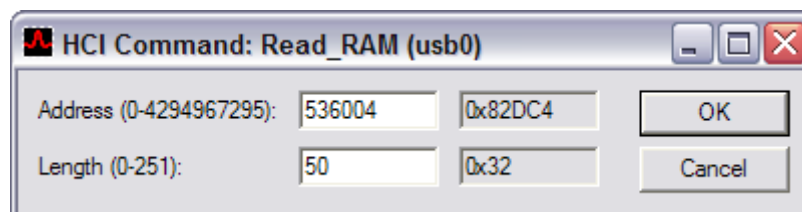
4. In the Read_RAM HCI command window, set the address and number of bytes and click **OK**.

5. By viewing the Log window, verify the shutter control values are as expected.
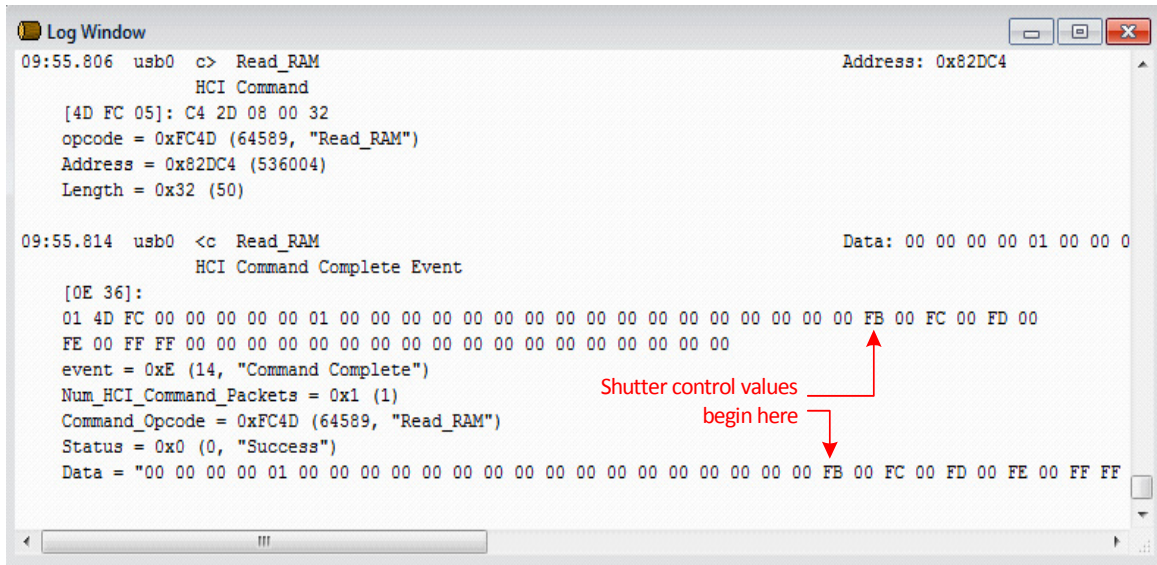
11 Issuing 3D Synchronization Training Parameters

Complete these steps to issue 3D synchronization training sequence parameters.
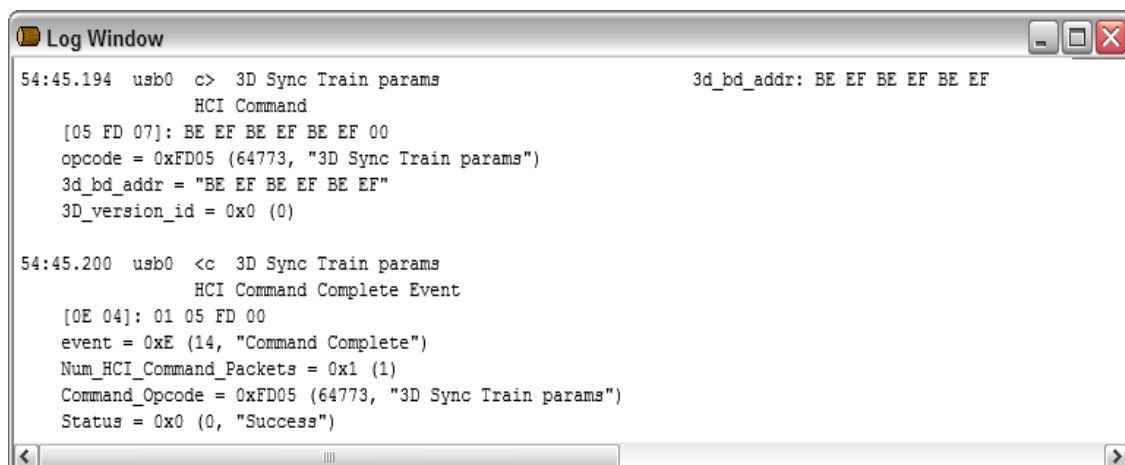
1. In the HCI Control window, select **0: Vendor-specific Commands (0 key)** and double-click **3D_Sync_Train_params**.
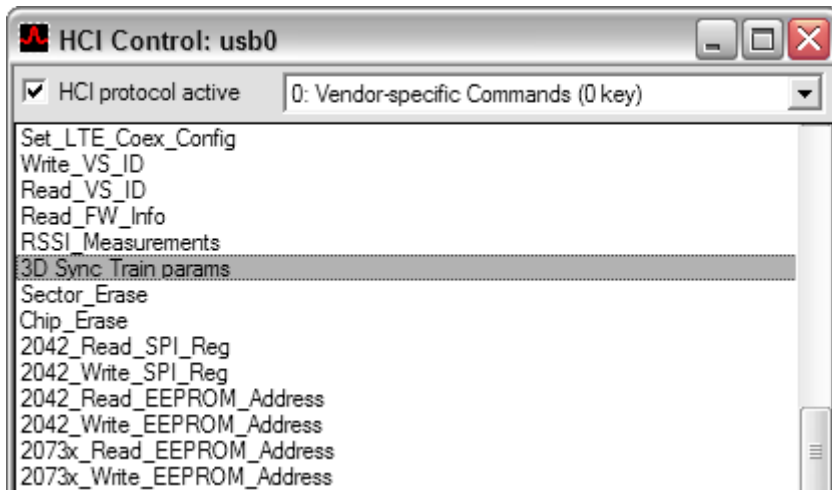
2. In the **3d_bd_addr** field in the 3D Sync Train params window, enter the new host address, inserting a space between each byte. When done entering the address, click **OK**.
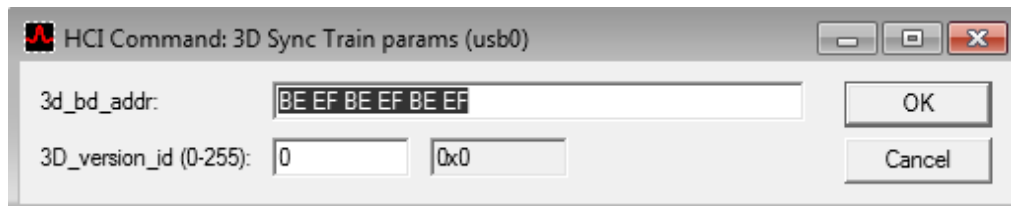
3. View the Log window to verify a successful status.


```
Log Window                                                                    _ □ ✕
54:45.194  usb0  c>  3D Sync Train params                    3d_bd_addr: BE EF BE EF BE EF
                     HCI Command
    [05 FD 07]: BE EF BE EF BE EF 00
    opcode = 0xFD05 (64773, "3D Sync Train params")
    3d_bd_addr = "BE EF BE EF BE EF"
    3D_version_id = 0x0 (0)

54:45.200  usb0  <c  3D Sync Train params
                     HCI Command Complete Event
    [0E 04]: 01 05 FD 00
    event = 0xE (14, "Command Complete")
    Num_HCI_Command_Packets = 0x1 (1)
    Command_Opcode = 0xFD05 (64773, "3D Sync Train params")
    Status = 0x0 (0, "Success")
```

12   References

The references in this section may be used in conjunction with this document.

Note: Cypress provides customer access to technical documentation and software through its Customer Support Portal (CSP) and Downloads and Support site (see IoT Resources).

Document or Item Name	Item Number	Source
[1] BLUETOOL_MI_1.6.3.2 (or later)	BLUETOOL_MI_1.6.3.2.zip	community.cypress.com
[2] BTSP User's Guide	–	Bundled with the BlueTool software package

Document History

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*B	5882509	AESATMP8	09/13/2017	Updated logo and Copyright.

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