

KwikBlue Module Development Kit Installation Guide

Revision 1.04

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Regulatory Compliance

The KwikBlue-1 Class 1 Module using *Bluetooth* wireless technology complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

This equipment generates and radiates radio-frequency energy. To comply with FCC RF exposure compliance requirements, the following antenna installation and device operation configurations must be satisfied: (1) Users are not permitted to make changes or modify the system in any way, and (2) connecting external antennas to the card is prohibited. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: For end-users of the KwikBlue-1 Class 1 Module, the FCC ID# LUBBTM-2 must be displayed on the outside of the host, i.e., "Contains FCC ID: LUBBTM-2."

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1. Overview

Socket offers the fully-supported KwikBlue Module Development Kit to aid developers incorporating *Bluetooth*® wireless technology into their product designs. This is a development and interface kit, providing a reference for Socket's small form factor KwikBlue Module which is mounted on a versatile adapter board, allowing the module to communicate via an RS-232 serial interface. There is also an optional CODEC board which supports the development of *Bluetooth* audio solutions. The Module Dev Kit is compatible with the Windows CE operating system.

The KwikBlue Module utilizes the Cambridge Silicon Radio (CSR) BC02 chipset and comes in a standard carrier module format which is a highly-integrated small footprint board-to-board connectible package. The Module is also available as a Surface Mount Device (SMD) for custom applications.

The term "KwikBlue-1" refers to the Class 1 version of Socket's carrier module using *Bluetooth* wireless technology which transmits data up to 100 meter/300 feet. The term "KwikBlue-2" refers to the Class 2 version of Socket's carrier module using *Bluetooth* wireless technology which transmits data up to 10 meter/30 feet.

NOTE: The SMD module version is described in the "KwikBlue SMD Module Specification" (Socket document P/N 6410-00195), located on the *KwikBlue Dev Kit 008D CD* (Socket P/N 6230-00008-D).

2. Hardware Description

2.1. KwikBlue-1 (Class 1) Module – Top View

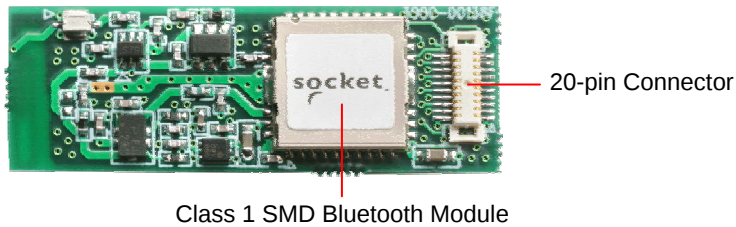


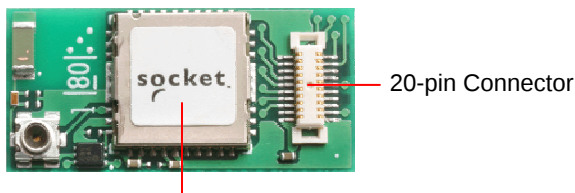
Figure 1: Top View of the KwikBlue-1 Module

The KwikBlue-1 Module contains CSR's BC2-EXT (BC02) chipset which has a complete transceiver radio and baseband controller section: 16 bit RISC processor, RAM and Flash memory. Also built in are a high- accuracy reference oscillator and a subclock for managing power to extremely low levels. Protocol software is already downloaded into the integrated Flash memory and it interfaces to the HCI layer of the upper layer protocol stack on an appropriate host system.

Features	Values
Carrier Module Dimensions	35.0 x 12.0 x 2.8 mm (height above PCB)
Power Level	+16 dBm Max.
Program Memory	4 Mbits (256k bytes x 16 bits) Flash
RAM	32k bytes x 16 bits
Reference Oscillator	Built-in
Sub Clock Oscillator	Built-in
Audio Interface	PCM A-Law, μ -Law (CVSD)
Serial Data Interface	UART (BCSP)
Physical Connection	Board-to-board connector: Matsushita Electric Works AXK6F20345

Table 1: KwikBlue-2 Module Features List

2.2. KwikBlue-2 (Class 2) Module – Top View



Class 2 SMD Bluetooth Module

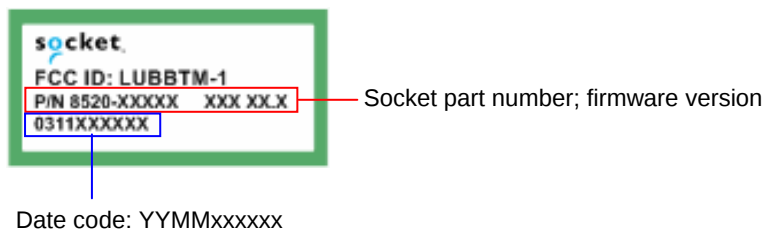
Figure 2: Top View of the KwikBlue-2 Module

The KwikBlue-2 Module contains CSR's BC2-EXT (BC02) chipset which has a complete transceiver radio and baseband controller section: 16 bit RISC processor, RAM and Flash memory. Also built in are a high- accuracy reference oscillator and a subclock for managing power to extremely low levels. Protocol software is already downloaded into the integrated Flash memory and it interfaces to the HCI layer of the upper layer protocol stack on an appropriate host system.

Features	Values
Carrier Module Dimensions	25.0 x 12.0 x 2.9 mm
Power Level	+4 dBm Max.
Program Memory	4 Mbits (256k bytes x 16 bits) Flash
RAM	32k bytes x 16 bits
Reference Oscillator	Built-in
Sub Clock Oscillator	Built-in
Audio Interface	PCM A-Law, μ -Law (CVSD)
Serial Data Interface	UART (BCSP)
Physical Connection	Board-to-board connector: Matsushita Electric Works AXK6F20345

Table 2: KwikBlue-2 Module Features List

2.3. Bottom View of KwikBlue Module



Date code: YYMMxxxxxx

Figure 3: Bottom View of the KwikBlue Module

2.4. KwikBlue Module Development Board

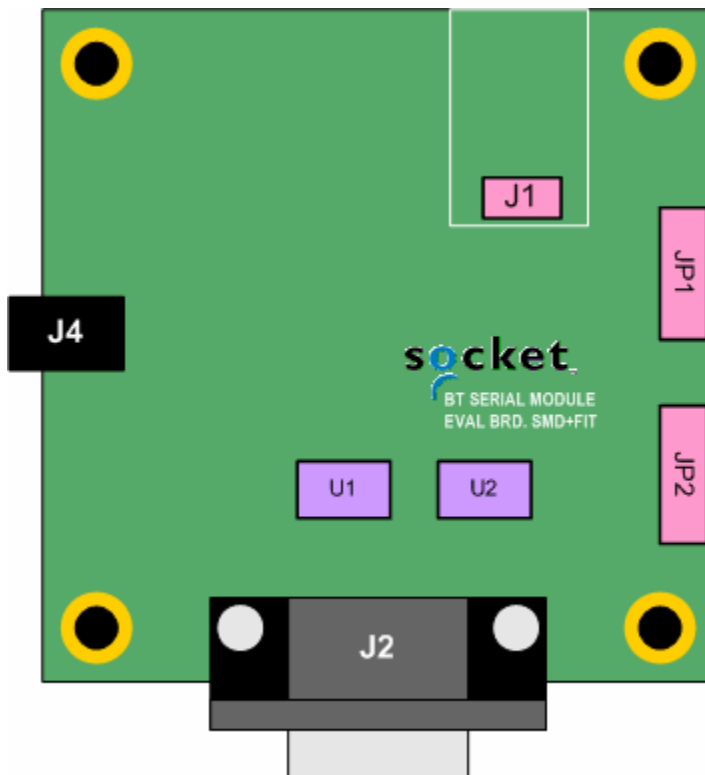


Figure 4: KwikBlue Development Board

The KwikBlue Module Development Board includes the following features:

- Connector J1 support for KwikBlue-1 or KwikBlue-2 Modules.
- RS 232 serial port with 9-pin right angle D-type male connector (J2)
- Power jack connector for 5 VDC power adapter (J4)

2.5. Optional CODEC Board

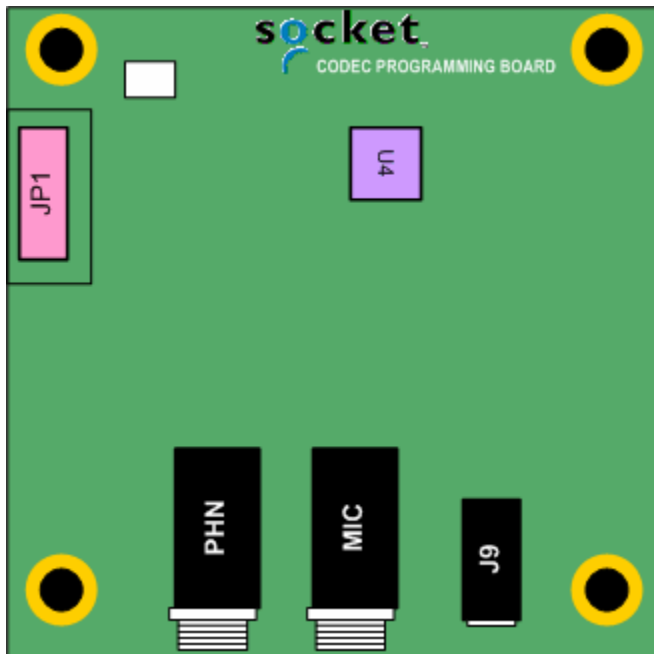


Figure 5: Optional CODEC Board

This optional board provides an interface to the industry standard Motorola MC145483 telephone quality CODEC. The CODEC board has the following features:

- 2.5 mm jack for microphone/line-in (MIC)
- 2.5 mm jack for speaker/line-out (PHN)
- 3.5 mm combination microphone speaker jack (J9)

Note: the speaker output is designed to drive a 700 ohm or greater load.

Please refer to the MC145483 data sheet for more information.

3. System Requirements

3.1. KwikBlue-1 Development Hardware Requirements

KwikBlue-1 Module to Module Development Kit	(9010-00459)
(2) KwikBlue development boards	(7010-00120)
(2) KwikBlue-1 Modules	(8520-00080)
(2) Socket's CF Ruggedized Serial I/O cards	(8510-00115)
(2) PC Card to CF card adapters	(8520-00031)
(2) 5 VDC power adapters	(8530-00015)
(2) Null modem adapters	(8520-00081)

Local hosts with PC Card/CF Slot

3.2. KwikBlue-2 Development Hardware Requirements

KwikBlue-2 Module to Module Development Kit	(9010-00460)
(2) KwikBlue development boards	(7010-00120)
(2) KwikBlue-2 Modules	(8520-00069)
(2) Socket's CF Ruggedized Serial I/O cards	(8510-00115)
(2) PC Card to CF card adapters	(8520-00031)
(2) 5 VDC power adapters	(8530-00015)
(2) Null modem adapters	(8520-00081)

Local hosts with PC Card/CF Slot

3.3. Optional CODEC Audio Board

CODEC Board	(7010-00133)
Dev Board to CODEC cable	(8100-00200)

3.4. WinCE or Local Host Software Requirements

- Socket's *Bluetooth* stack – WinCE
- Socket's test applications, PrintDemo – WinCE
- CSR's BlueSuite/BlueChat – WinCE and desktop
- CSR's BlueSuite/PSTool – desktop
- CSR's BlueSuite/BlueTest – desktop

3.5. User-Supplied Local Host Software Requirements

- User-supplied *Bluetooth* stack
- User-supplied function test applications
- User-supplied radio test applications

4. Desktop Test Set-up

- 1) Install the Serial I/O high speed drivers from the *Serial I/O High Speed Installation Disc* to your Windows 98/2K/XP system.
- 2) Install the BlueSuite software. This software must be installed on a system with a Compact Flash or PC Card slot, such as a laptop. Run "BlueSuiteCasira_v1.18.exe" located on the *KwikBlue Dev Kit 008D CD* under "Utilities\CSR\BlueSuite." Follow the installation instructions; the default install location is "C:\Program Files\CSR\BlueSuite." Read the information in "PSTool.txt" for further instructions.
- 3) Reboot your system.
- 4) Assemble KwikBlue Development Board components (without optional CODEC board):

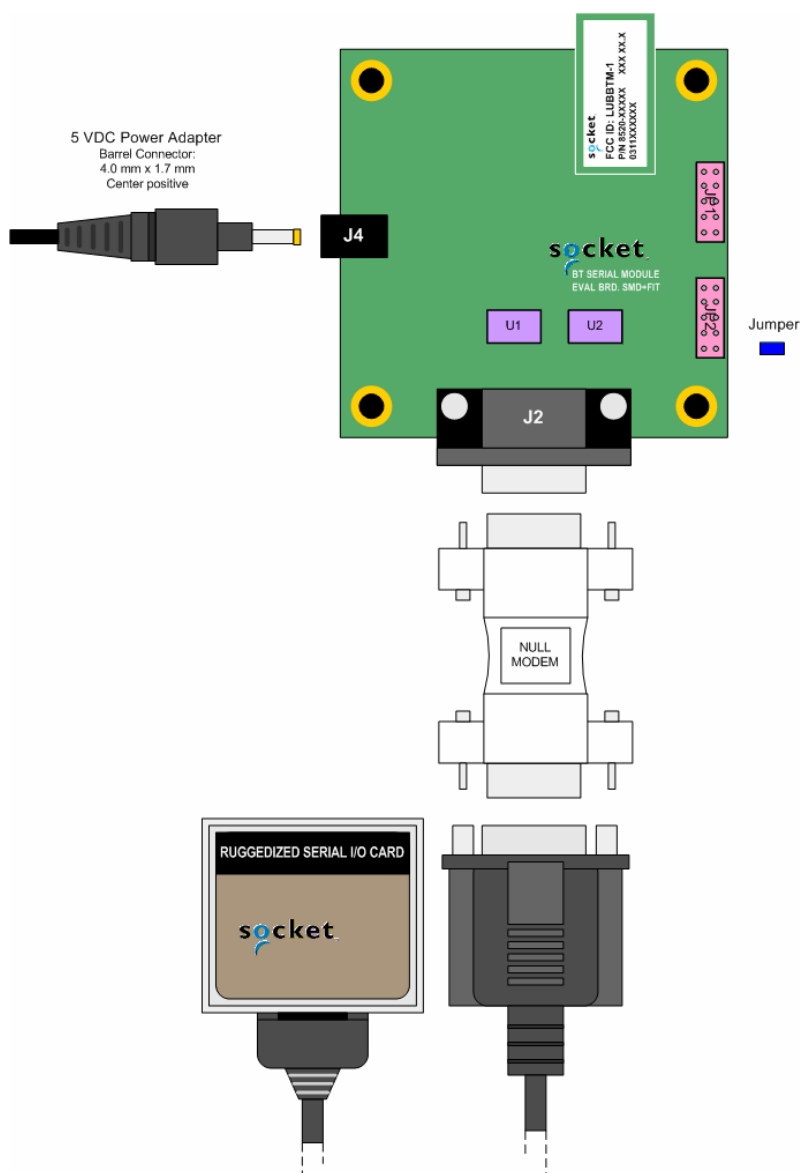


Figure 6: Desktop Test - KwikBlue Development Board Set-up

- a. Insert jumper on JP2; default configuration is pins 1 to 2 for the KwikBlue Module. See *Chapter 11, KwikBlue Development Board Jumpers* for all jumper configurations.
 - b. Connect the null modem adapter to KwikBlue Dev Board connector J2.
 - c. Connect the CF Ruggedized Serial I/O (CF RIO) Card to the null modem adapter.
 - d. Connect the 5 VDC power supply to KwikBlue Dev Board connector J4.
- 5) Insert the CF RIO card into the CF/PC card slot of your system. A tray icon should appear indicating the card is in use. Click on this once to show the COM number the CF RIO card is operating on (or use **My Computer, Device Manager**).
- 6) Run the PSTOOL.exe utility (C:\Program Files\CSR\BlueSuite). Select BCSP and the COM port number where the serial card is located. Click on BdAddr to verify the KwikBlue Module is being read from. You should see a non-zero 16 byte hex number. The PSTOOL.exe utility can be used to program the module parameters.
- 7) BlueChat2.exe: this program is available in both desktop and WinCE versions. The desktop version is in the folder "C:\Program Files\CSR\BlueSuite" from the above install. The WinCE software can be found on the *KwikBlue Dev Kit 008D CD* in the "\Utilities\CSR\BlueSuite\BlueSuite 118 CE" folder.

Desktop to Desktop: you must have two desktop systems and two development board assemblies set up as described above running BlueChat2.exe. Select BCSP, the COM the serial card is on, and the baud rate. Select the "Role" for one system as the Slave and the Role for the other system as the Master.

Desktop to WinCE: copy and install the CSR WinCE BlueSuite software from the *KwikBlue Dev Kit 008D CD* folder "\Utilities\CSR\BlueSuite\BlueSuite 118 CE" to your WinCE device.

- a. Using the CF RIO connected to KwikBlue Module:
 - If you have not completed the WinCE Test Set-up section, you can install the Socket high-speed Serial Drivers from the *Serial I/O High Speed Driver Installation Disc* to your WinCE device.
 - If you have completed the WinCE Test Set-up section, you need to disable the Socket Bluetooth stack from loading. This can be done by renaming the BCSPStack.dll in the \Windows directory.
 - After setting up the KwikBlue Dev Board, insert the CF RIO card into the CF/PC card slot of your WinCE device. You can now run the BlueChat2.exe on the WinCE side. Select the "Role" for one system as the Slave and the Role for the other system as the Master.
- b. KwikBlue Module (or Dev Board) is hard-wired to serial port:
 - If you wish to embed the module with a high-speed-baud rate (greater than 115 Kbps), you must have a UART (such as Socket's CF or PC serial cards) that supports the higher baud rates. Refer to *Chapter 5.1, Module Baud Rate Configuration* for setting the baud rate of the module.
 - BlueChat2.exe will communicate through the Serial driver on the COM that the KwikBlue Module is connected to.
 - If you have completed the WinCE Test Set-up section, you need to disable the Socket *Bluetooth* stack from loading. This can be done by renaming the BCSPStack.dll in the \Windows directory.

- You can now run the BlueChat2.exe on the WinCE side. Select the "Role" for one system as the Slave and the Role for the other system as the Master.
 - WinCE to WinCE test: you must have two WinCE systems set up as described above. Select BCSP, the COM the serial card is on, and the baud rate. Select the "Role" for one system as the Slave and the Role for the other system as the Master.
- 8) BlueTest.exe: BlueTest.exe is used to test various module functions. Select BCSP, the COM the serial card is on, and the baud rate. Click on one of the "RF Test Mode" items such as TXSTART. This will display a list of parameters in the "Test Arguments" window. This utility is used for *Bluetooth* SIG and FCC conformance testing.

5. Hardware Configuration

5.1. Module Baud Rate Configuration

The default KwikBlue Module speed is 115200 bps. To use the high-speed driver (921600 bps), you must have a high-speed UART (such as Socket's CF or PC serial cards) that supports this speed and the baud rate of the module must be re-programmed. Follow the software install instructions in the "Desktop Test Set-up" section:

1. Click on the BdAddr to verify that the KwikBlue module is being read from. You should see a non-zero 16 byte hex number.
2. Select UART_Baud_Rate - change the key to the value you wish to use. Select "Set" to write the new value into firmware.
3. Power cycle the module for the new firmware changes to take effect.

5.2. Firmware Upgrade

If firmware upgrades become available, Socket support will assist you in updating your system if necessary.

6. WinCE Test Setup

The information below pertains to Socket's Bluetooth WinCE driver Versions - Drakar Stack Version 1.4.3.38 and previous. It does not apply to Drakar Stack Dev Version 1.4.4.0 and higher. The KwikBlue module is available in two configurations: HCI and Virtual Machine (VM). The default factory delivery is with a HCI stack interface. Please contact Socket for information on VM configurations since they are typically custom configurations.

- HCI (Host Controller Interface): the Bluetooth stack drivers are run under an OS (currently the drivers are for the Windows CE OS).
- Virtual Machine (VM): in this mode, a scaled-down version of the *Bluetooth* stack runs on the KwikBlue module itself. The module can be programmed to run a small application. The module does not need any other drivers.

7. HCI Test Setup

The following tests are set up for KwikBlue Modules to be used in an HCI configuration. In this configuration, the Bluetooth stack drivers are run on a Windows CE device. The KwikBlue Module Dev Kit provides support for Pocket PC 2000/2002/2003, HPC 2000 and CE .NET devices (CE .NET devices are custom builds and may require factory support. Please contact Socket regarding these platforms). The following processors are supported: ARM, ARMV4, ARMV4T, ARMV4i, MIPS and SH3.

7.1. Test 1 - Devices with Compact Flash or PC Card Slots

This test connects the CF Ruggedized Serial I/O (CF RIO) card with the KwikBlue Module Dev Board and runs the *Bluetooth* drivers on a Windows CE device.

- a) Bluetooth SDK Install: run Setup.exe from the *Bluetooth_Stack_Dev_Tools_CR4.3.38 CD*. This will install the *Bluetooth* SDK files to your desktop in the folder 'C:\Drakar Stack Dev Files'. This includes the WinCE *Bluetooth* stack and sample applications.
- b) Bluetooth Driver Install: the *Bluetooth* driver is contained in a *.cab and can be copied to your device via ActiveSync or through a storage card.

- i) ActiveSync: once your device is ActiveSync'd to your desktop, run Setup.exe from:

C:\Drakar Stack Dev Files\Installs\Main Stack Release\Disk1\Setup.exe

Follow the on-screen instructions to install the *Bluetooth* drivers to your device.

- ii) Storage Card: if your device does not support ActiveSync, you can manually copy the Bluetooth *.cab to a storage card and install it to your device. The *Bluetooth* *.cab is contained in the folder:

C:\Drakar Stack Dev Files\Installs\Main Stack Release\CABs

The *.cab name is in the form "BtStack.PlatformProcessor.Cab":

BtStack.CENETARMV4.CAB	(CENET, ARMV4 processor, wide (HPC) screen layout)
BtStack.CENETPPCARMV4.CAB	(CENET, ARMV4 processor, Pocket PC screen layout)
BtStack.CENETPPCARMV4T.CAB	(CENET, ARMV4T processor, Pocket PC screen layout)
BtStack.HPC2000ARM.CAB	
BtStack.HPC2000MIPS.CAB	
BtStack.PPC2003ARMV4.CAB	
BtStack.PPCARM.CAB	
BtStack.PPCMIPS.CAB	
BtStack.PPCSH3.CAB	

Once you have copied the *.cab to your device, click on the *.cab to install the drivers.

- c) Serial Card Setup: to configure the CF RIO card for use with the KwikBlue module and drivers, a serial card configuration utility must be run. The KwikBlue Serial Card Wizard is installed from a *.cab. The *.cab must be copied to your device either through ActiveSync or a storage card. The *.cab is located on the *KwikBlue Dev Kit 008D CD* under the folder "KwikBlue Serial Card Wizard" directory. Copy the *.cab that matches your OS and processor to your device and click to install.

- d) The KwikBlue Serial Card Wizard, KwikBlueWizard.exe, is installed to the “C:\Program Files\Socket KwikBlue” directory. A shortcut should be available from the **Start, Programs** menu of your device. Run the KwikBlue Serial Card Wizard. From the drop-down menu, select “Serial Card KwikBlue at 115K”:

- Serial Card KwikBlue at 115 Kbps - This is the default module configuration and sets the *Bluetooth* drivers to work with a module programmed at 115200 bps.
- Serial Card KwikBlue at 921 Kbps - This configures the *Bluetooth* drivers to work with a module programmed at 921600 bps.

NOTE: Do not install the Serial drivers from the *Serial I/O High Speed Driver Installation Disc*. This will overwrite the Serial card *Bluetooth* configuration settings.

- e) Reset your device.
- f) Assemble KwikBlue Development Board components:

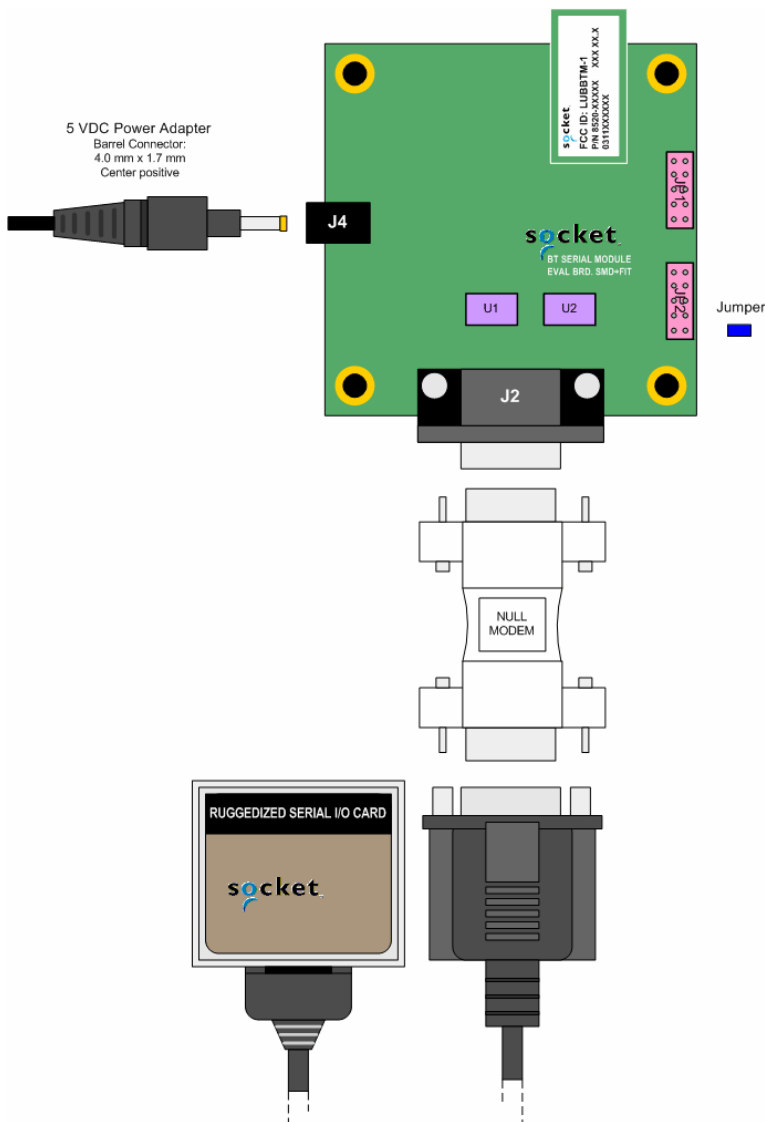


Figure 7: HCI Test - KwikBlue Development Board Set-up

- g) Insert jumper on JP2; default configuration is pins 1 to 2 for the KwikBlue Module. See *Chapter 11, KwikBlue Development Board Jumpers* for all jumper configurations.
- h) Connect the null modem adapter to KwikBlue Dev Board connector J2.
- i) Connect the CF Ruggedized Serial I/O (CF RIO) Card to the null modem adapter.
- j) Connect the 5 VDC power supply to KwikBlue Dev Board connector J4.
- k) You should see the *Bluetooth* stack load. A *Bluetooth* icon will appear in the task bar tray on your screen. At this point, you can configure the *Bluetooth* UI options. You can then copy over and run some of the *Bluetooth* sample applications from the *Bluetooth_Stack_Dev_Tools_CR4.3.38 CD* such as *BlueRfcDemo.exe*, etc. Refer to the "C:\Drakar Stack Dev Files\Demos" folder. There is also a small sample source program in the *KwikBlue Dev Kit 008D CD* "Utilities\PrintDemo" folder. This program has a **Print File** menu selection that can be used to send a file.

7.2. Test 2 - KwikBlue Module (or Dev Board) Hard-Wired to Serial Port

The Bluetooth drivers are run on a Windows CE device. If you wish to embed the KwikBlue Module with its default settings (HCI mode, drivers running on a Windows CE device), the standard speed is 115200 bps. To use the high-speed driver (921600 bps), you must have a high-speed UART that supports this speed and the baud rate of the module must be re-programmed.

To program the module parameters, follow the software install instructions in the "Desktop Test Set-up" section. Follow the steps in *Chapter 5.1, Module Baud Rate Configuration*. Communication between the module and *Bluetooth* drivers is through the Serial driver on the COM port the module is connected to.

- a) Follow Steps 1 and 2 as outlined in *Test 1 - Devices with Compact Flash or PC Card Slots* to install the *Bluetooth* drivers.
- b) Modify the following registries to configure the *Bluetooth* drivers for use with the module:
 - i) Identify the Serial port the module is connected to. As an example, if the module is connected to HKLM\BuiltIn\Serial2, the registry entry would be:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Socket Communications\Bluetooth\BT  
Device\ComKey="Drivers\BuiltIn\Serial2"
```

- ii) Specify the baud for communication between the module and *Bluetooth* drivers, i.e,

```
HKEY_LOCAL_MACHINE\SOFTWARE\Socket Communications\Bluetooth\BT  
Device\config="921600 8 E 1 1 1 0"
```

```
HKEY_LOCAL_MACHINE\SOFTWARE\Socket Communications\Bluetooth\BT  
Device\config="115200 8 E 1 1 1 0"
```

- c) There is a program on the *KwikBlue Dev Kit 008D CD* that can be used to open a COM port on your device and verify the module is connected correctly. The program is called PrintDemo.exe and is under the “\Utilities\Print Demo” folder.
- i) The KwikBlue Module sends out a repeating sequence of connection bytes “C0 00 41 00 BE DA DC ED ED C0” every 250 ms. These bytes indicate to the *Bluetooth* drivers running on the WinCE device that the module is ready to be used. When the COM port that the module is connected to is opened, the bytes can be displayed. This indicates that the module is connected correctly and ready to be used by the *Bluetooth* drivers. The baud rate for opening the port is specified in Port.c and must be set:

```
PortDCB.BaudRate = 921600;
```

```
PortDCB.BaudRate = 115200; (default module baud)
```

- ii) The PrintDemo.exe has a menu selection called 'Load Stack'. This is a one line ActivateDevice() call to the registry to which loads the stack. The code is provided below for reference. The ActivateDevice() call loads BCSPStack.dll.

```
HANDLE g_hBCSP;
case IDC_LOAD_BCSP:
    g_hBCSP = ActivateDevice (TEXT("SOFTWARE\\Socket
Communications\\Bluetooth\\Bt Device"), 0);
    if(g_hBCSP == NULL)
    { MessageBox(hDlg, TEXT("ActivateDevice (BCSP) Failed"), TEXT("Error
BCSP Load"), MB_OK);
    }
    break;
```

- d) BCSPStack.dll in turn loads BtDevMan.exe. BtDevMan.exe appears as a *Bluetooth* icon running in the screen tray task bar.
- e) Virtual COM Port configurations: BtDevMan.exe loads BTVCOMM.dll. All *Bluetooth* COM ports that are used by the stack come from BTVCOMM.dll. *Bluetooth* needs at least one default COM port to function. For industrial type applications where the remote device being connected to expects to be a printer or GPS device, the default COM port is usually configured to be the "Bluetooth COM Port" (Serial Profile). For more commercial applications where the remote device is expected to be a phone, the default COM port is configured to be the "Bluetooth Phone Port" (this is the standard retail release configuration). The following registries enable a Virtual COM port for use.
- f) HKEY_LOCAL_MACHINE\SOFTWARE\Socket Communications\BtDevMan\1.0
- ```
[TYPE_DWORD] COMEnabled=1 (Bluetooth COM Port (Serial Profile))
[TYPE_DWORD] FaxEnabled=0
[TYPE_DWORD] DesktopEnabled=0
[TYPE_DWORD] LapEnabled=0
[TYPE_DWORD] PrinterEnabled=0
[TYPE_DWORD] PhoneEnabled=0
```

- g) HKEY\_LOCAL\_MACHINE\SOFTWARE\Socket Communications\Bluetooth\BtDevMan\1.0\BuiltInPort

BuiltInPort (DWORD) displays the check-box that appears on the COM Ports tab in the UI. It has one of the following values:

0 = Phone (Enabled by default if BuiltInPort key is not present)  
1 = Lap  
2 = Desktop  
3 = Printer  
4 = Fax  
5 = Bt COM Port

(BTVCOMM.dll could also be loaded by an ActivateDevice() call).

BtDevWin.exe launches the Device Discovery window. This is also launched by selecting **Advanced Features, Bluetooth Devices** from the tray icon menu.

- h) After completing the ActivateDevice() on BCSPStack.dll, the *Bluetooth* stack should load. A *Bluetooth* icon will appear in the task bar tray on your screen; at this point, the Bluetooth UI options can be configured. *Bluetooth* sample applications, such as BlueRfcDemo.exec, can be copied over and run from the *KwikBlue Dev Kit 008D CD* “\Drakar Stack Dev Files\Demos” folder. The PrintDemo sample source program in the *KwikBlue Dev Kit 008D CD* “\Utilities\PrintDemo” folder contains a **Print File** menu selection that can be used to send a file.

## 8. Suspend\Resume

Keeping the *Bluetooth* hardware active during a suspend still has some issues which is why the module should be powered down during a suspend:

- 1) On Suspend, the KwikBlue Module should be powered down. The mechanism for power-down is customer implementation dependent.
- 2) On Resume, the KwikBlue Module should be powered back up. The mechanism for power-up is customer implementation dependent. On power-up, the KwikBlue module running at 921 Kbps requires approximately 800 ms to become connectable.
- 3) On Resume, BCSPStack.dll must be shutdown. A DeActivateDevice() call must be made on 'HKLM\Software\Socket Communications\Bluetooth\Bt Device\' with the handle obtained earlier from the ActivateDevice() call. This will cause BCSPStack.dll to shutdown the rest of the stack (Windows\BtDevMan.exe).
- 4) The stack must then be loaded with an ActivateDevice() call on 'HKLM\Software\Socket Communications\Bluetooth\Bt Device\'.

## 9. Bluetooth Driver List

The following binaries comprise the *Bluetooth* drivers for the module case. They are placed in the \Windows directory of the device.

- BlueSocket.dll
- BtDevMan.exe
- BtDevWin.exe
- BTEExchange.dll
- Btvcomm.dll
- ToothSocket.dll
- ConnectWiz.exe
- Drakar.dll
- DkUiUtils.dll
- BCSPStack.dll (used by embedded modules and Rev G (and higher) CF Cards With *Bluetooth* Wireless Technology)
- ScktIrda.cpl (IrDa Control Panel configuration utility - optional)

Binaries that occur in the retail release but are not included in a module build:

- WendyStack.dll (only used by older Rev F CF Cards With *Bluetooth* Wireless Technology - not in production any more)
- SDBTASckt.dll (SDIO driver - SDIO slot devices only)
- SIO\_BT.DLL (high speed serial driver - Rev G and above cards only)
- BtCustomSetup.dll (set-up wizard for \*.cab install, not part of stack)

## 10. Certification Testing Utilities

The CSR software provides some utilities such as BlueTest.exe (see Desktop Test Set-up) which can be used in certification testing. At the time of this release, there are not CSR utilities that can be run under Windows CE, CE .NET or Windows Mobile for certification testing. Check the CSR website for the latest information <http://www.csr.com/home.htm>.

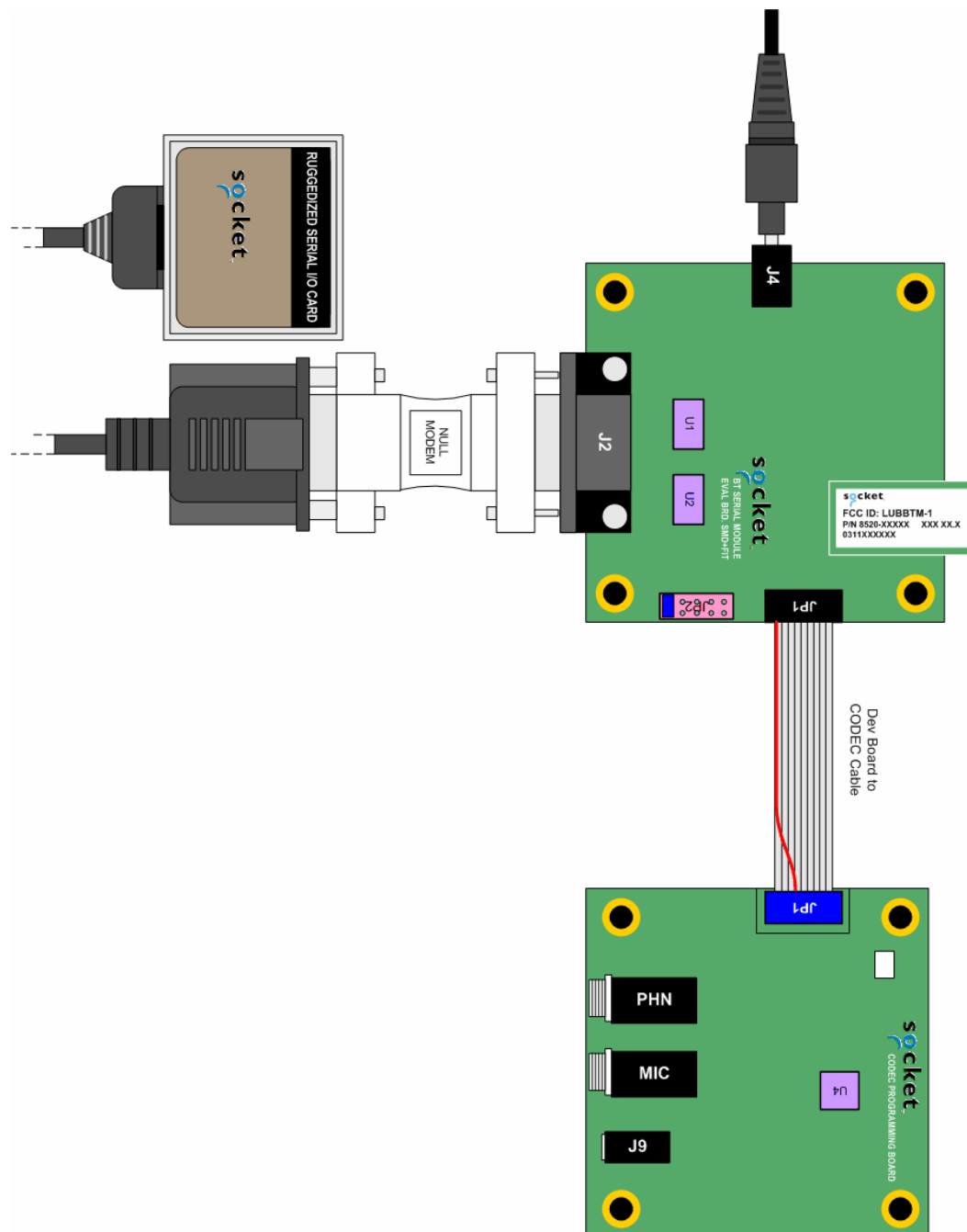
If it is desired to use BlueTest.exe on the desktop, a WinCE utility is needed to pass data between BlueTest.exe and the module. When running this WinCE utility, the *Bluetooth* drivers must be disabled so the utility can communicate directly with the KwikBlue Module. The utility opens two COM ports; the first COM port is to the module, the second COM port is to the incoming connection from BlueTest.exe on the desktop side. Once this bi-directional communication has been established, BlueTest.exe can be used for certification testing.

## 11. KwikBlue Development Board Jumpers

| JP2                     | Description                                 |
|-------------------------|---------------------------------------------|
| Pin 1 to 2              | Install only for BC02 module                |
| Pin 3 to 4              | Install only for BC01 module                |
| Pin 5 to 6              | Install to light LED when power is on       |
| Pin 6 to 8              | Install to connect LED to PIO_1             |
| Pin 7 to 8              | Install to connect RS232 signal RI to PIO_1 |
| Pin 9 to 10             | Install to connect INVALID# RS232 to PIO_1  |
| Factory default jumpers |                                             |

**Table 3: KwikBlue Development Board Jumpers**

## 12. Audio CODEC Setup (Optional)



**Figure 8: Optional Audio CODEC Board Setup**

Setting up the CODEC board:

- Using 10-pin ribbon cable, connect CODEC JP1 to KwikBlue Development Board connector JP1.
- Connect headphone/microphone to CODEC connector J9.
- Connect 5 VDC power supply to KwikBlue development board connector J4

### 13. KwikBlue Development Board Bill of Materials (BOM)

(refer to the schematic “0200-00120-03.pdf” on the *KwikBlue Dev Kit 008D CD*)

| Qty | Reference                   | Description                                       | Mfr       | Part Number     |
|-----|-----------------------------|---------------------------------------------------|-----------|-----------------|
| 4   | C1, C2, C3, C4              | CAP, 0.1UF, 16V, Y5V, +80/-20%, CERAMIC           | Panasonic | ECJ-0EF1C104Z   |
| 1   | C11                         | CAP, 1UF, 16V, TE, 20%, TANTALUM                  | Panasonic | ECS-T1CY105R    |
| 1   | C12                         | CAP, 4.7UF, 16V, 20%, TANTALUM                    | Panasonic | ECS-T1CY475R    |
| 1   | C13                         | CAP, 0.1UF, 10V, 10%, CERAMIC                     | Panasonic | ECJ-0EB1A104K   |
| 1   | C14                         | CAP, 470PF, 50V, 10%, CERAMIC                     | Panasonic | ECJ-0EB1H471K   |
| 1   | C15                         | CAP, 0.1UF, 10V, 10%, CERAMIC                     | Panasonic | ECJ-0EB1A104K   |
| 2   | C16, C17                    | CAP, 0.01UF, 16V, X7R, 10%, CERAMIC               | Panasonic | ECJ-0EB1C103K   |
| 1   | C8                          | CAP, 4.7UF, 16V, 20%, TANTALUM                    | Panasonic | ECS-T1CY475R    |
| 1   | CR2                         | DIO, MA8068, 6.8V, 150MW, ZENER                   | Panasonic | MA8068          |
| 2   | CR3, CR1                    | DIO, BAT54C, 30V, 200MA, SILICON SCHOTTKY BARRIER | Diodes    | BAT54C          |
| 1   | CR4                         | DIO, MA8056, 5.6V, 150MW, ZENER                   | Panasonic | MA8056          |
| 1   | CR5                         | LED, LED-BLUE-CLEAR, 3.7V, 20MA, CLEAR            | Liteon    | LTST-C191CBKT   |
| 1   | J1                          | CON, CON20-SMT, VERT, FEM, SKT, GOLD PLATED       | Matsushi  | AXK5F20545J     |
| 1   | J2                          | CON, DB9-M-RT, METAL HOUSING                      | AMP       | 747840-4        |
| 1   | J4                          | CON, PJACK-1.65MM-RT, PLASTIC HOUSING             | CUI       | PJ-016          |
| 2   | JP2, JP1                    | HDR, HDR10-DIP, VERT, STAMPED PIN GOLD            | Samtec    | TSW-105-07-S-D  |
| 1   | Q1                          | REG, MIC5205-3.3BM5, 3.3V, 1%                     | Micrel    | MIC5205-3.3BM5  |
| 2   | R2, R3                      | RES, 2.7K, 200V, 1/8W, 5%, THICK FILM             | Panasonic | ERJ-6GEYJ272V   |
| 2   | R4, R5                      | RES, 330K, 50V, 1/16W, 5%, THICK FILM             | Panasonic | ERJ-2GEJ334X    |
| 1   | R6                          | RES, 100K, 100V, 1/16W, 5%, THICK FILM            | Panasonic | ERJ-2GEJ104     |
| 1   | R7                          | RES, 470K, 100V, 1/16W, 5%, THICK FILM            | Panasonic | ERJ-2GEJ470     |
| 1   | R8                          | RES, 560, 50V, 1/16W, 5%, THICK FILM              | Panasonic | ERJ-2GEJ561     |
| 1   | U1                          | ANA, MAX3243                                      | Maxim     | MAX3243CAI      |
| 1   | U2                          | ANA, PI5A100, 2V/6V                               | Pericom   | PI5A100W        |
| 2   | U7, U6                      | LOG, SN74LVCG17, 1.65V-5.5V                       | TI        | SN74LVC1G17DCKR |
| 4   | HDW- 4-40 HEXNUT            | HDW, HEXNUT-4-40, 4-40                            | BF        | H216            |
| 4   | HDW- M/F 4-40 HEX STANDOFFS | HDW, SPACER-HEX-M-F, 4-40, 0.500, ALUMINUM        | Keystone  | 8401            |

**Table 4: KwikBlue Development Board Bill of Materials**

## 14. CODEC Board Bill of Materials (BOM)

(refer to the schematic "0200-00133-01.pdf" on the *KwikBlue Dev Kit 008D CD*)

| Qty | Reference                          | Description                                   | Mfr       | Part Number        |
|-----|------------------------------------|-----------------------------------------------|-----------|--------------------|
| 1   | C12                                | CAP, 68UF, 10V, TC, 10%, CERAMIC              | Matsuo    | 267E1002686K-720   |
| 1   | C13                                | CAP, 0.01UF, 50V, Y5V, +80/-20, CERAMIC       | Samsung   | CL10F103ZBNC       |
| 2   | C14, C23                           | CAP, 470PF, 50V, X7R, 10%, CERAMIC            | Panasonic | ECU-V1H471KBV      |
| 1   | C15                                | CAP, 10UF, 10V, Y5V, +80/-20, CERAMIC         | Murata    | GRM230Y5V106Z010AL |
| 4   | C16, C17,<br>C22, C25              | CAP, 0.1UF, 25V, Y5V, +80/-20%, CERAMIC       | Panasonic | ECJ-1VF1H104Z      |
| 4   | C18, C19,<br>C20, C21              | CAP, 1000PF, 25V, X7R, 10%, CERAMIC           | AVX       | 06033C102KATRA     |
| 2   | J7, J6                             | CON, PHNO-ST-3.5MM, RT, PLASTIC HOUSING       | SWTCRAFT  | 35RAPC4BV4         |
| 1   | J9                                 | CON, PHNO-ST-2.5MM, PLASTIC HOUSING           | DGS       | 2502               |
| 1   | JP1                                | HDR, HDR10-DIP, VERT, STAMPED PIN GOLD        | Samtec    | TSW-105-07-S-D     |
| 1   | L3                                 | IND, 5.6UH, 120MA, 5%                         | Panasonic | ELJ-FC5R6JF        |
| 1   | POT1                               | POT, 50K, 300VDC, 1/4W, 10%                   | Bourns    | 3214W-1-503E       |
| 4   | R44, R45,<br>R49, R52              | RES, 1K, 50V, 1/16W, 5%, THICK FILM           | Panasonic | ERJ-3GSYJ1.0K      |
| 6   | R46, R50,<br>R54, R58,<br>R70, R72 | RES, 0.0, 100V, 1/16W, 5%, THICK FILM         | Panasonic | ERJ-3GSYJ0.0       |
| 2   | R47, R53                           | RES, 75K, 50V, 1/16W, 5%, THICK FILM          | Panasonic | ERJ-3GSYJ753       |
| 1   | R48                                | RES, 20K, 50V, 1/10W, 5%, THICK FILM          | Panasonic | ERJ-3GEYJ20K       |
| 2   | R71, R64                           | RES, 100K, 50V, 1/16W, 5%, THICK FILM         | Panasonic | ERJ-3GSYJ100K      |
| 2   | TP3, TP4                           | HDR, HDR1-SIP, VERT, STAMPED PIN GOLD         | Sullins   | PZC01SAAN          |
| 1   | U4                                 | PER, MC145483, 3V                             | Motorola  | MC145483SD         |
| 1   | HDW-<br>RIBBON<br>CABLE            | HDW, 10PIN-CBL, 6"                            | AMP       | A3AAG-1006G        |
| 4   | HDW- 4-40<br>HEXNUT                | HDW, HEXNUT-4-40, 4-40                        | BF        | H216               |
| 4   | HDW- M/F 4-<br>40 HEX<br>STANDOFFS | HDW, SPACER-HEX-M-F, 4-40, 0.500,<br>ALUMINUM | Keystone  | 8401               |

**Table 5: CODEC Board Bill of Materials**

## 15. Errata

Pins 1 and 3 on the CODEC board were reversed so the CODEC-to-dev-kit cable has corrected this condition. The next revision of the board and cable will reflect the proper board layout.

**16. Appendix A: BC01 vs. BC02 Pin Assignments**

| <b>BC01 vs. BC02 Pin Assignments</b> |                       |                       |                                        |              |
|--------------------------------------|-----------------------|-----------------------|----------------------------------------|--------------|
| <b>BC01 – Class 1</b>                | <b>BC02 – Class 2</b> | <b>BC02 – Class 1</b> | <b>Changed between Class 1 &amp; 2</b> | <b>Pin #</b> |
| GROUND                               | GROUND                | GROUND                |                                        | 1            |
| PCM_OUT                              | PCM_OUT               | PCM_OUT               |                                        | 2            |
| PCM_IN                               | PCM_IN                | PCM_IN                |                                        | 3            |
| PCM_PWR_DWN                          | PIO_1                 | PIO_5                 | YES                                    | 4            |
| VBUS_IN                              | PIO_4                 | PIO_4                 |                                        | 5            |
| UART_RXD                             | UART_RXD              | UART_RXD              |                                        | 6            |
| UART_TXD                             | UART_TXD              | UART_TXD              |                                        | 7            |
| RESET                                | RESET                 | RESET                 |                                        | 8            |
| USB_WAKE                             | PIO_3                 | PIO_3                 |                                        | 9            |
| VCC                                  | SPI_CSB               | SPI_CSB               | YES                                    | 10           |
| GROUND                               | GROUND                | GROUND                |                                        | 11           |
| UART_RTS                             | UART_RTS              | UART_RTS              |                                        | 12           |
| USB_DETACH                           | SPI_CLK               | SPI_CLK               | YES                                    | 13           |
| UART_CTS                             | UART_CTS              | UART_CTS              |                                        | 14           |
| PCM_SYNC                             | PCM_SYNC              | PCM_SYNC              |                                        | 15           |
| USB_D+                               | PIO_2                 | PIO_2                 | YES                                    | 16           |
| USP_D-                               | SPI_MOSI              | SPI_MOSI              | YES                                    | 17           |
| PCM_CLK                              | PCM_CLK               | PCM_CLK               |                                        | 18           |
| NC                                   | SPI_MISO              | SPI_MISO              | YES                                    | 19           |
| VCC_PA                               | VCC_3.3V              | VCC_3.3V              |                                        | 20           |

**Table 6: BC01 vs. BC02 Pin Assignments**

| BC01 Class 1 Module Pin Assignments |                                                      |           |       |
|-------------------------------------|------------------------------------------------------|-----------|-------|
| Signal Name                         | Function                                             | Direction | Pin # |
| GROUND                              | Ground                                               |           | 1     |
| PCM_OUT                             | PCM data stream output                               | OUT       | 2     |
| PCM_IN                              | PCM data stream input                                | IN        | 3     |
| PCM_PWR_DWN                         | PCM power down control output                        | OUT       | 4     |
| VBUS_IN                             | For self-power mode, sense if VBUS is ON             | IN        | 5     |
| UART_RXD                            | UART/RxD from DTE                                    | IN        | 6     |
| UART_TXD                            | UART/TxD to DTE                                      | OUT       | 7     |
| RESET                               | System reset                                         | IN        | 8     |
| USB_WAKE                            | Wake up host when events occur during Suspend/Resume | OUT       | 9     |
| VCC                                 | Power supply                                         |           | 10    |
| GROUND                              | Ground                                               |           | 11    |
| UART_RTS                            | UART/Ready to send to DTE                            | OUT       | 12    |
| USB_DETACH                          | Disconnect D+/D- from host                           | IN        | 13    |
| UART_CTS                            | UART/Clear to send from DTE                          | IN        | 14    |
| PCM_SYNC                            | PCM frame sync input/output (8 KHz)                  | OUT       | 15    |
| USB_D+                              | Positive USB differential data bus                   | IN/OUT    | 16    |
| USB_D-                              | Negative USB differential data bus                   | IN/OUT    | 17    |
| PCM_CLK                             | PCM reference clock input/output (256 KHz)           | OUT       | 18    |
| NC                                  | For internal test use                                | NC        | 19    |
| VCC_PA                              | Power supply                                         |           | 20    |

Table 7: BC01 Class 1 Module Pin Assignments

| BC02 Class 2 Module Pin Assignments |                                         |           |       |
|-------------------------------------|-----------------------------------------|-----------|-------|
| Signal Name                         | Function                                | Direction | Pin # |
| GROUND                              | Power supply return                     |           | 1     |
| PCM_OUT                             | Serial data from audio CODEC            | IN        | 2     |
| PCM_IN                              | Serial data to audio CODEC              | OUT       | 3     |
| PIO_1                               | Generic I/O local host                  | OUT       | 4     |
| PIO_4                               | Generic I/O local host RS232 (DTR)      | OUT       | 5     |
| UART_RXD                            | Serial data from local host RS232 (RXD) | IN        | 6     |
| UART_TXD                            | Serial data to local host RS232 (TXD)   | OUT       | 7     |
| RESET                               | Reset module when HIGH                  | IN        | 8     |
| PIO_3                               | Generic I/O local host RS232 (DSR)      | IN        | 9     |
| SPI_CSB                             | SPI chip select                         | IN        | 10    |
| GROUND                              | Power supply return                     |           | 11    |
| UART_RTS                            | Local host must not send when HIGH      | OUT       | 12    |
| SPI_CLK                             | SPI Clock                               | IN        | 13    |
| UART_CTS                            | Module must not send when HIGH          | IN        | 14    |
| PCM_SYNC                            | Audio CODEC signal                      | OUT       | 15    |
| PIO_2                               | Generic I/O local host RS232 (DCD)      | IN        | 16    |
| SPI_MOSI                            | SPI master out slave in                 | IN        | 17    |
| PCM_CLK                             | Audio CODEC signal                      | OUT       | 18    |
| SPI_MISO                            | SPI master in slave out                 | OUT       | 19    |
| VCC_3.3V                            | Power supply                            |           | 20    |

**Table 8: BC02 Class 2 Module Pin Assignments**

| BC02 Class 1 Module Pin Assignments |                                         |           |       |
|-------------------------------------|-----------------------------------------|-----------|-------|
| Signal Name                         | Function                                | Direction | Pin # |
| GROUND                              | Power supply return                     |           | 1     |
| PCM_OUT                             | Serial data from audio CODEC            | IN        | 2     |
| PCM_IN                              | Serial data to audio CODEC              | OUT       | 3     |
| PIO_5                               | Generic I/O local host                  | OUT       | 4     |
| PIO_4                               | Generic I/O local host RS232 (DTR)      | OUT       | 5     |
| UART_RXD                            | Serial data from local host RS232 (RXD) | IN        | 6     |
| UART_TXD                            | Serial data to local host RS232 (TXD)   | OUT       | 7     |
| RESET                               | Reset module when HIGH                  | IN        | 8     |
| PIO_3                               | Generic I/O local host RS232 (DSR)      | IN        | 9     |
| SPI_CSB                             | SPI chip select                         | IN        | 10    |
| GROUND                              | Power supply return                     |           | 11    |
| UART_RTS                            | Local host must not send when HIGH      | OUT       | 12    |
| SPI_CLK                             | SPI Clock                               | IN        | 13    |
| UART_CTS                            | Module must not send when HIGH          | IN        | 14    |
| PCM_SYNC                            | Audio CODEC signal                      | OUT       | 15    |
| PIO_2                               | Generic I/O local host RS232 (DCD)      | IN        | 16    |
| SPI_MOSI                            | SPI master out slave in                 | IN        | 17    |
| PCM_CLK                             | Audio CODEC signal                      | OUT       | 18    |
| SPI_MISO                            | SPI master in slave out                 | OUT       | 19    |
| VCC_3.3V                            | Power supply                            |           | 20    |

**Table 9: BC02 Class 1 Module Pin Assignments**