



# **WB40NBT**

## **Quick Start Guide**

Version 2.0

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**Embedded Wireless Solutions Support Center:**

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[www.lairdtech.com/wireless](http://www.lairdtech.com/wireless)

## REVISION HISTORY

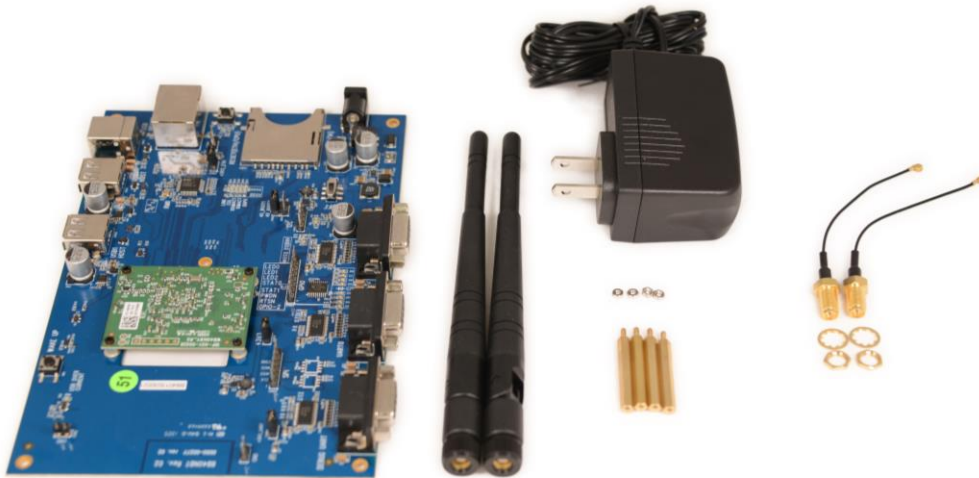
Revision	Date	Description	Approved By
1.0	21 March 2012	Initial version	Eric Bentley
1.1	2 Feb 2012	Reworked for BB rev 2 board	Eric Bentley
2.0	6 Feb 2015	Reworked for BB rev 3 board, general edits, new photos.	Eric Bentley

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## INVENTORY OF EQUIPMENT

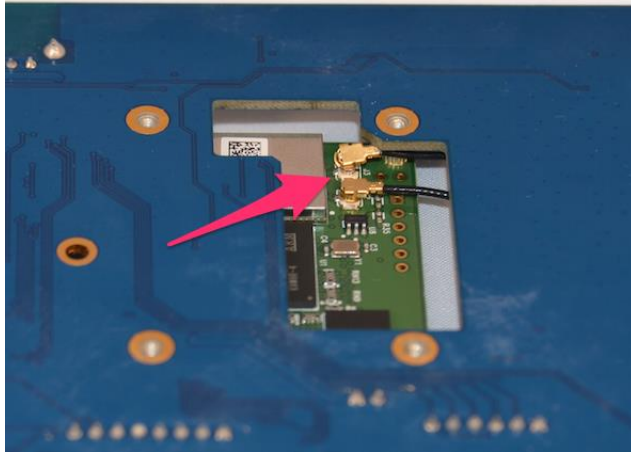
Qty.	Item
1	Laird BB40NBT rev 2 Break out board (WB40NBT attached)
2	5 Ghz/2.4 Ghz sma (male) Antenna
2	U.FL (female) to SMA (female) Ultra Micro Coax Cable
2	Male/Female USB Extension Cable
4	WB40N riser assembly (4 Screws, 4 Nuts)
2	Antenna washers (unused with Rev 2 board)
2	Antenna nuts (unused with Rev 2 board)
1	12v power supply



## HARDWARE INSTALLATION AND CONFIGURATION

To connect the SDC-WB40NBT to a computer, follow these steps:

1. Attach the four riser assembly mounting screws onto the breakout board. These screws are installed from the bottom of the breakout board.
2. Connect the 2 U.FL coax cables to the SDC-WB40NBT (the bottom of the smaller central board). Connect the SMA end to an antenna.



*Figure 1: Antenna Cable Connections*

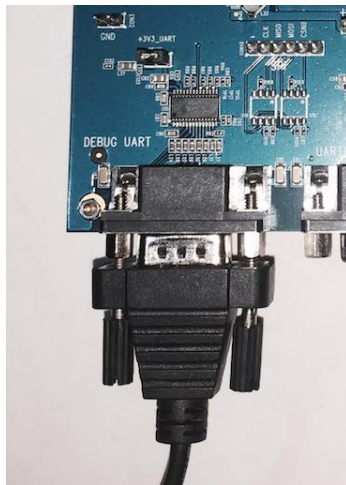
3. (Rev 3 boards only) – Mount the antennae in the antenna holes on the BB40NBT rev 3 board. Use the Antenna nut and washer to secure the antennae.

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**Note:** (Rev 2 boards do not have antenna mounting holes)

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4. Connect the Antennae to the SMA connectors.
5. Connect a USB-to-RS232 adapter to the position labeled DEBUG UART on the BB40NBT breakout board.



*Figure 2: RS232 Connection*

6. Connect the power supply to the wall outlet; put the barrel into the DC connector on the breakout board.

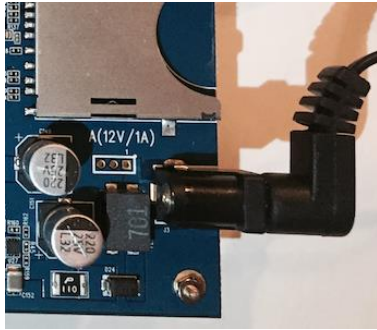


Figure 3: Power Supply Connection

## Basics of the BB40NBT Board

The Laird WB40NBT is a flexible communications module providing a variety of interfaces which are made available on the BB49NBT. Additional information regarding all interfaces and their usage and configuration is available in the WB40 Reference Manual.

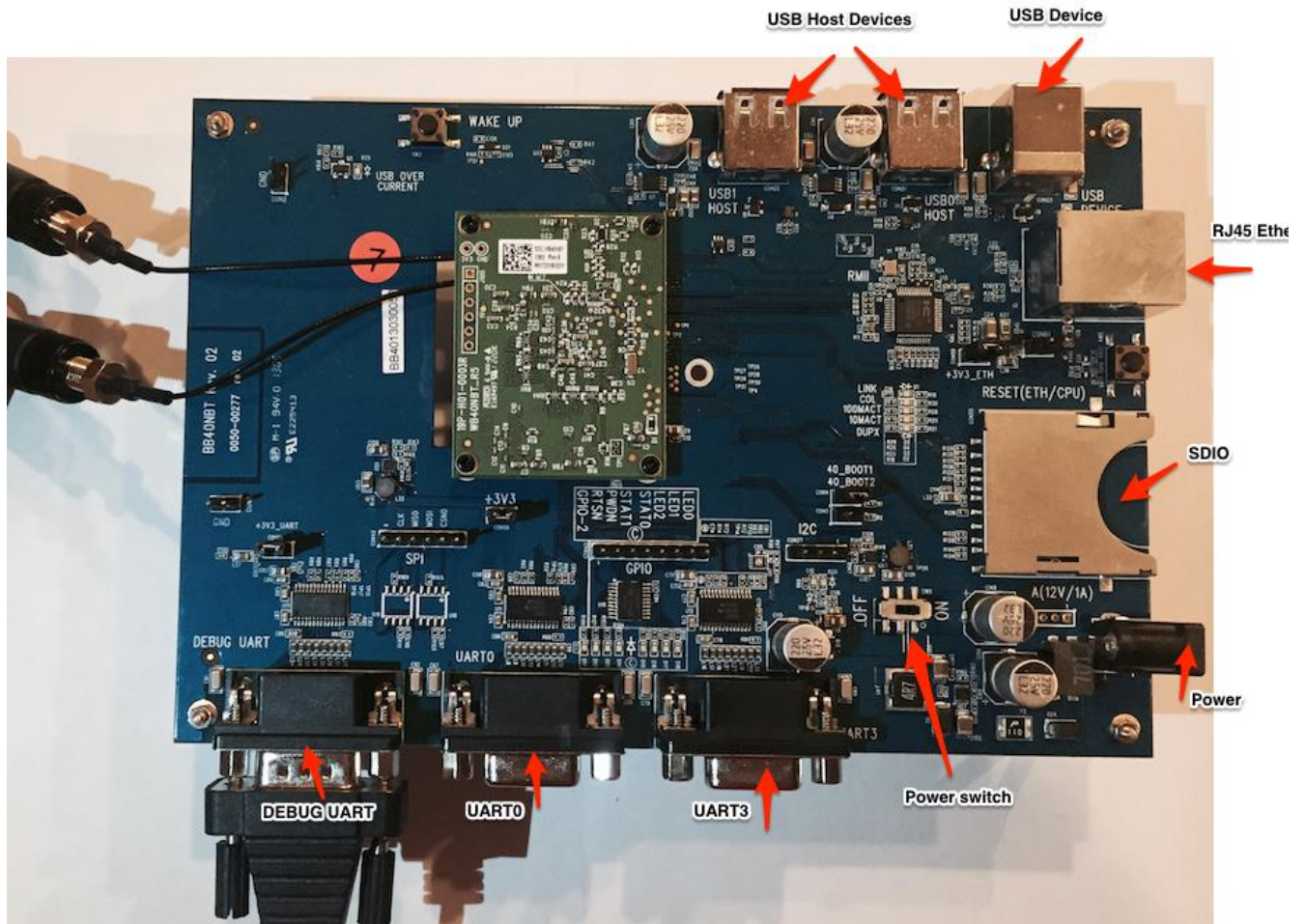


Figure 4: BB40NBT Evaluation Board

The WB40NBT is configurable via either the command line or the web-based version of the Laird Configuration Manager (LCM).

This section briefly details each interface available on the BB40NBT board.

- Debug UART – used for CLI communications with the WB40NBT module
- UART0 – Spare UART
- UART 3 – unused
- USB Host Devices
  - Available for mass storage devices. These automount starting at /media/usb0
- USB Device
  - Available for gadget operation.
  - By default, the port is disabled. Use the command:  
`# /etc/init.d/opt/S91g_ether start`  
to put in Ethernet gadget mode.
  - The IP address of the Ethernet gadget port defaults to 192.168.3.1.
  - The WebLCM is always available on this port when the Ethernet Gadget is enabled.
- Ethernet jack
  - The WebLCM is always available on the Ethernet port
  - The IP address for this port is provided by the DHCP server the WB40BT is connected to

## Host Software Installation and Initial Communication with the BB40NBT

The following items are used in this section:

Qty.	Item
1	BB40NBT Breakout board with WB40NBT module fitted as described above
1	USB to RS232 cable
1	Power supply 12V / 1A with wall (US/European) adapter

To set up the WB40NBT, follow these steps:

1. Ensure you have loaded the driver for your USB-to-RS232 cable. Depending on your cable, the drivers may be automatically installed by your operating system. If they are not, you will need to download and install the device drivers for the cable.
2. Connect the USB A-type connector of the USB-to-RS232 cable to the computer. Your computer should recognize the USB-to-serial adapter and load the appropriate drivers.
3. Connect the DB9 connector of your USB-to-RS232 cable to the port marked Debug UART shown in [Figure 2](#).
4. To send commands to the WB40NBT you will need to download and set up a terminal emulator, such as Putty or TeraTerm, on your host. Note that a variety of emulators are available.

To download and set up TeraTerm, follow these steps:

1. Navigate to the Source-Forge (TeraTerm) website: <http://en.sourceforge.jp/projects/ttssh2/releases/>
2. Download the emulator.

3. Run the downloaded file and navigate through the installer. Select the standard default settings when prompted.
4. Open TeraTerm.  
Upon opening, TeraTerm prompts for connection information. We are using a serial connection (not the default TCP/IP).
5. Select **Serial**.
6. From the **Port** drop-down menu, choose the COM port which has a description similar to the USB-to-RS232 cable you are using: e.g. *Prolific Serial-to-USB Comm Port*. Remember this COM port number.
7. Set the serial port's settings to match the WB40NBT's communications protocol. To adjust settings, navigate to **Setup > Serial port**.
8. Adjust the settings (as needed) according to the following:

<b>Port</b>	Must match the COM port of your USB-to-RS232 cable.
<b>Baud Rate</b>	115200 (TeraTerm defaults to 9600 baud communications)
<b>Data</b>	8 bit
<b>Parity</b>	None
<b>Stop</b>	1 bit
<b>Flow Control</b>	None

9. Press **OK** to save the settings and to return to the terminal.

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**Note:** Assuming all settings have been set properly, you should now be able to communicate with the WB40NBT. The terminal presented will be the Linux shell onboard the WB40NBT, and behaves likewise.

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10. Slide the Power switch to the ON position. A Red LED will light on the BB40NBT board. Wait until the WB40NBT has completed booting and you see the prompt:

```
Summit Data Communications  
summit login:
```

11. Enter the username and password. The default user name is **root** and the default password is **summit**.

---

**Note:** When entering the password, don't be alarmed if text or asterisks do not show. This is normal operation in Linux.

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After logging in, the following should display to indicate that you are now in the Linux shell:

```
#
```



## Laird CLI Basics

The Laird CLI provides a command line interface to control the Wi-Fi features of the WB40NBT.

The Linux shell prompt is represented by the “#” symbol. From the prompt, enter `sdc_cli` to start the Laird CLI. When the Laird CLI starts, the prompt will change to “`sdc#`”.

Full information on the commands available within the CLI is available in the SDC\_CLI guide, which is found in the Documentation tab of the [WB40NBT product page at lairdtech.com](http://www.lairdtech.com/WB40NBT-product-page).

Information regarding using the CLI commands is also available by typing `help` at the `sdc#` prompt.

Additional help is available for the commands **iface**, **profile**, **global** and **auto-profile** using the syntax `<command> help` at the `sdc#` prompt.

To see the status of the WB40NBT, type `status` at the `sdc#` prompt. The returned status should resemble the following.

```
Status: AP mode
Config name: Default
SSID:
Channel: 0
RSSI: 0
Device Name:
MAC: 00:17:23:e0:38:e4
IP: 192.168.1.1
AP Name:
AP MAC:
AP IP:
Bit Rate: auto
Tx Power: 0 mW
Beacon Period: 0
DTIM: 0
```

To exit from the `sdc#` prompt at any time, enter the command `exit`. You will be returned to the Linux shell prompt, #.

## WB40NBT File System

This section details some important contents of the WB40NBT file system. For more in depth information consult the WB40NBT reference manual.

*Table 1: Main components*

Directory	Content of note	Comment
/usr/bin	sdc_supp	Laird Supplicant
	sdc_cli	Laird CLI
/usr/lib	libsdc_sdk.so.1.0	Laird SDK library
	libsdc_sdk.so.1	A symbolic link to SDK library

## Quick Start Guide

### SDC-WB40NBT

/etc/network	wireless.sh	Networking scripts. See the WB40 reference manual for details.
/etc/init.d	startup scripts	The lowest numbered startup scripts are executed first.
/etc/init.d/opt/	optional startup scripts	Create a symlink to the item to be started: # ln -s /etc/init.d/opt/<name-of-script> /etc/init.d
/etc/ssl	default wifi certificate location for all certificates	DO NOT put your certificates in /etc/ssl/certs directory
/etc/summit/firmware	Various firmware files	Various firmware files for the WB40 wifi and BT radios

## ADDITIONAL DOCUMENTATION

For more in depth documentation about the WB40NBT, including Hardware Integration Guide, Application Notes, and more, visit the documentation tab of the [WB40NBT product page at lairdtech.com](http://www.lairdtech.com/wb40nbt)