QNX 6.5.0 SP1
Setup Manual
For Raspberry PI Board

User's Manual: Software

BCM 2835

www.swhwc.net

Rev.1.00 July 23,2014

Table of Contents

1. Overview 2
1.1 Features 2
1.2 Scope 2
1.3 Target System 2
1.4 List of Abbreviations and Acronym 2
1.5 Environmental Requirement 2

2. Building QNX6.5.0 SP1 OS image 3
2.1 Prerequisites 3
2.2 Build QNX 6.5.0 SP1 BSP 3

3. Boot up QNX 6.5.0 SP1 4
3.1 Prerequisites 4
3.1.1 SD Card 4
3.2 Boot up steps 4
3.2.1 Step 1: Copy the necessary files to SD card. 4
3.2.2 Step 2: Connect serial port of Raspberry PI to Window PC 4
3.2.3 Step 3: Connect HDMI LCD to Raspberry PI board 4
3.2.4 Step 4: Insert SD to Raspberry PI board 5
3.2.5 Step 5: Setup serial port for Window PC 5
3.2.6 Step 6: Power up Raspberry PI board 5
3.2.7 Step 7: Show U-boot messages 5
3.2.8 Step 8: Load QNX 6.5.0 image to the board. 6
3.2.9 Step 8: Boot up finish. 6

4. Test driver 7
4.1.1 Serial driver: 7
4.1.2 SD driver: 7
4.1.3 Graphics driver: 7

LIST OF TABLES

Table 1.1 Environment Requirement **2**

1. Overview

1.1 Features

In the case of V.1.0.0 BSP, following drivers/libraries/utilities are supported:

1) IPL
2) Startup
3) Serial driver
4) ARM timer
5) SD driver
6) Display driver
7) Mailbox libraries

1.2 Scope

This document scope applies to the evaluation of reproducing QNX6.5.0 SP1 image and testing QNX BSP drivers for Raspberry PI platform.

1.3 Target System

1) Target platform: Raspberry PI platform.
2) Target software: QNX SDP 6.5.0 SP1

1.4 List of Abbreviations and Acronym

Abbreviation	Full Form
BSP	Board Support Package
Mailbox	Mail Box
IPL	Initial Program Loader
SDP	Software Development Package
Momentics IDE	QNX Momentics Integrated Development Environment

1.5 Environmental Requirement

Table 1.1 Environment Requirement

Equipment	Explanation
Windows Host PC	Windows 7 or XP are recommended as OS
Terminal software	TeraTerm (version 4.75 or newer)

2. Building QNX6.5.0 SP1 OS image

2.1 Prerequisites

1) Extract QNX6.5.0 SP1 BSP for Raspberry PI board (filename: bsp-ntotrunk-broadcom-bcm2835-trunk.zip) to a folder on Windows Host PC (ex: C:\bsp-ntotrunk-broadcom-bcm2835-trunk)

2) QNX6.5.0 SP1 SDP installed on Windows Host PC.

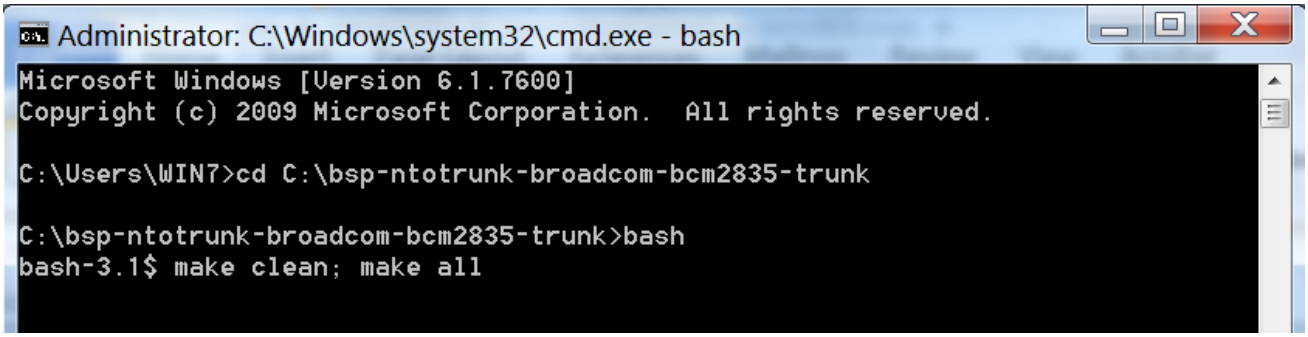
2.2 Build QNX 6.5.0 SP1 BSP

To generate the QNX image for Raspberry PI board, following commands from the command prompt console:

$ cd <QNX_BSP_Root_Directory>

$ bash

$ make clean; make all



QNX 6.5.0 SP1 image is created at: bsp-ntotrunk-broadcom-bcm2835-trunk/images/ifs-bcm2835.bin

3. Boot up QNX 6.5.0 SP1

3.1 Prerequisites

3.1.1 SD Card

We need a 8Gbyte SD memory card. Please check in http://www.raspberrypi.org/wp-content/uploads/2012/04/quick-start-guide-v2_1.pdf for more detail.

3.2 Boot up steps

Please follow the steps:

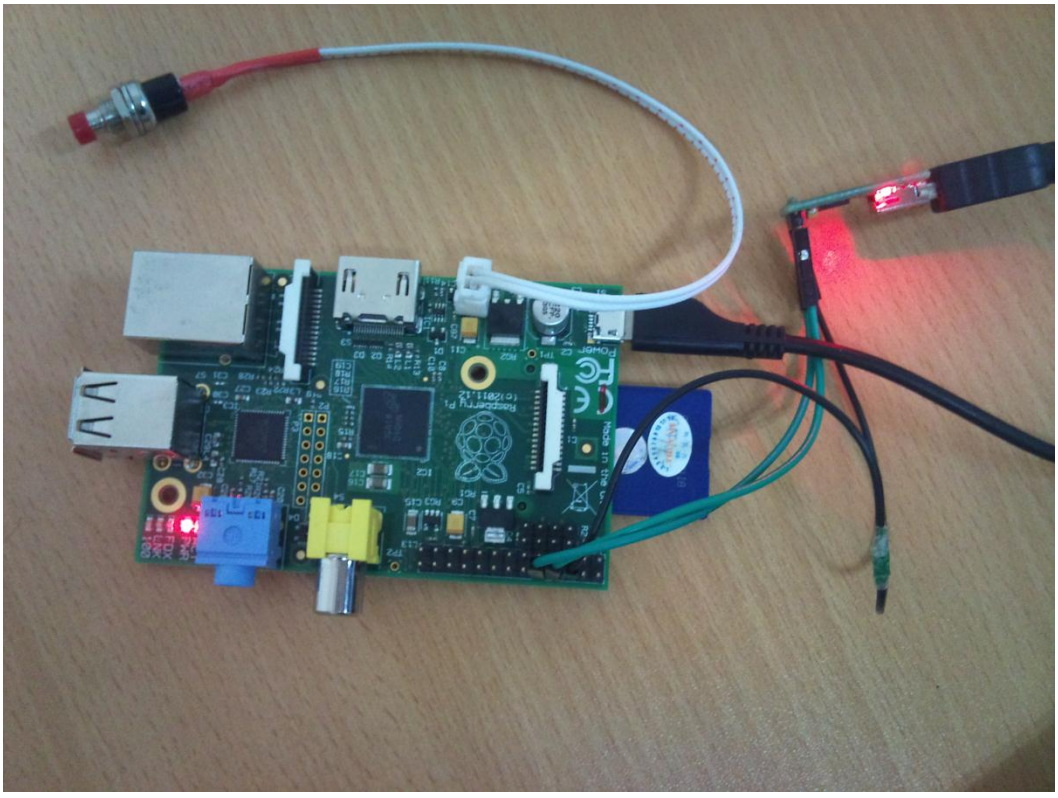
3.2.1 Step 1: Copy the necessary files to SD card.

Copy files bellows to sd memory card:

"bsp-ntotrunk-broadcom-bcm2835-trunk/images/ifs-bcm2835.bin".
bootcode.bin
kernel.img
start.elf

3.2.2 Step 2: Connect serial port of Raspberry PI to Window PC

Connect USB-UART to header P1 on Raspberry PI board:



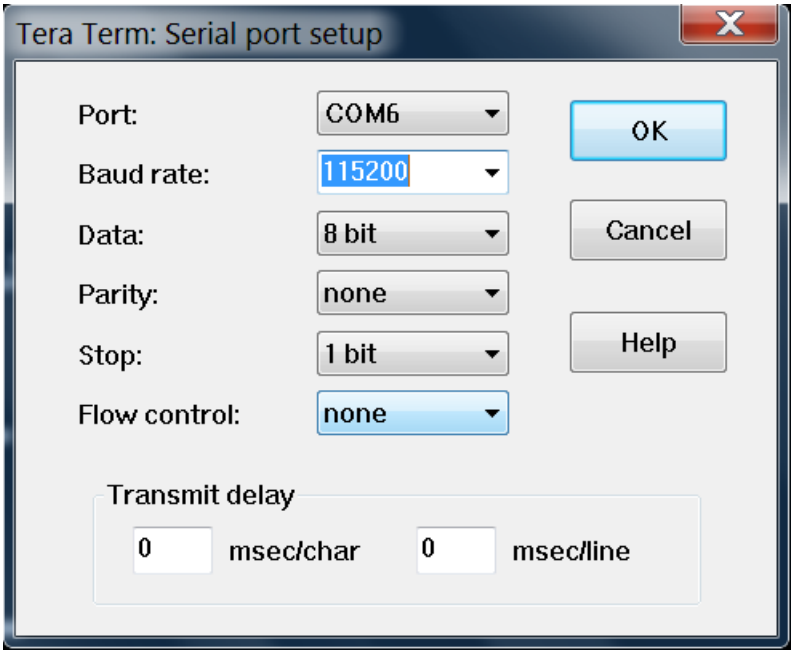
3.2.3 Step 3: Connect HDMI LCD to Raspberry PI board

3.2.4 Step 4: Insert SD to Raspberry PI board

Insert SD card which has the necessary files into SD slot of Raspberry PI board.

3.2.5 Step 5: Setup serial port for Window PC

From Window PC open Tera Term program and set up as following:



3.2.6 Step 6: Power up Raspberry PI board

Raspberry PI board is powered up by plug the board to PC via USB port.

3.2.7 Step 7: Show U-boot messages

The terminal will output as bellows:

```
U-Boot 2013.01-rc1 (Nov 27 2013 - 17:00:39)

DRAM:  128 MiB
WARNING: Caches not enabled
MMC:   bcm2835_sdhci: 0
Using default environment

In:    serial
Out:   lcd
Err:   lcd
mbox: Timeout waiting for response
bcm2835: Could not set USB power state
Net:   Net Initialization Skipped
No ethernet found.
Hit any key to stop autoboot:  0
reading uEnv.txt
** Unable to read file uEnv.txt **
reading boot.scr
** Unable to read file boot.scr **
```

3.2.8 Step 8: Load QNX 6.5.0 image to the board.

Enter command as bellow to start up QNX 6.5.0:

=>fatload mmc 0 0x00200000 ifs-bcm2835.bin; go 0x00200000

3.2.9 Step 8: Boot up finish.

Wait for a while to see QNX 6.5.0 image is booting up …

4. Test driver

4.1.1 Serial driver:

Make sure can type some commands.

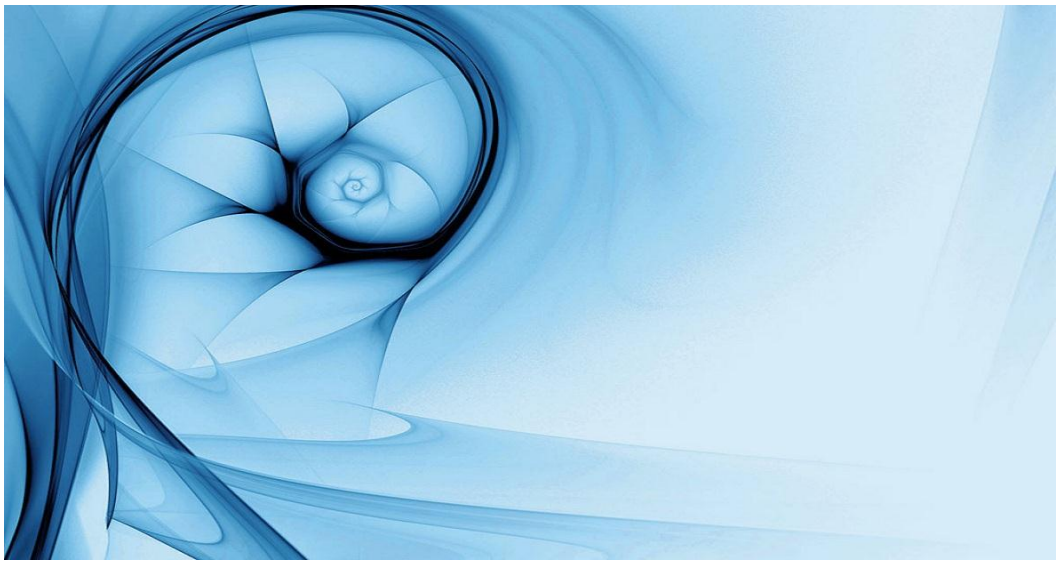
4.1.2 SD driver:

Make sure /dev/hd0 is created in file system by command:

```
# ls /dev/
```

4.1.3 Graphics driver:

Make sure QNX 6.5.0 background image is shown on the HDMI LCD:



REVISION HISTORY	QNX 6.5.0 SP1 Setup Manual For Raspberry PI Board

Rev.	Date	Description	
		Page	Summary
1.00	Jul 23, 2014	-	First release