LPC 2800 Evauation Board

Users Manual

Edition A.0

nOHaU

Philips LPC2800 Evaluation Board Users Manual
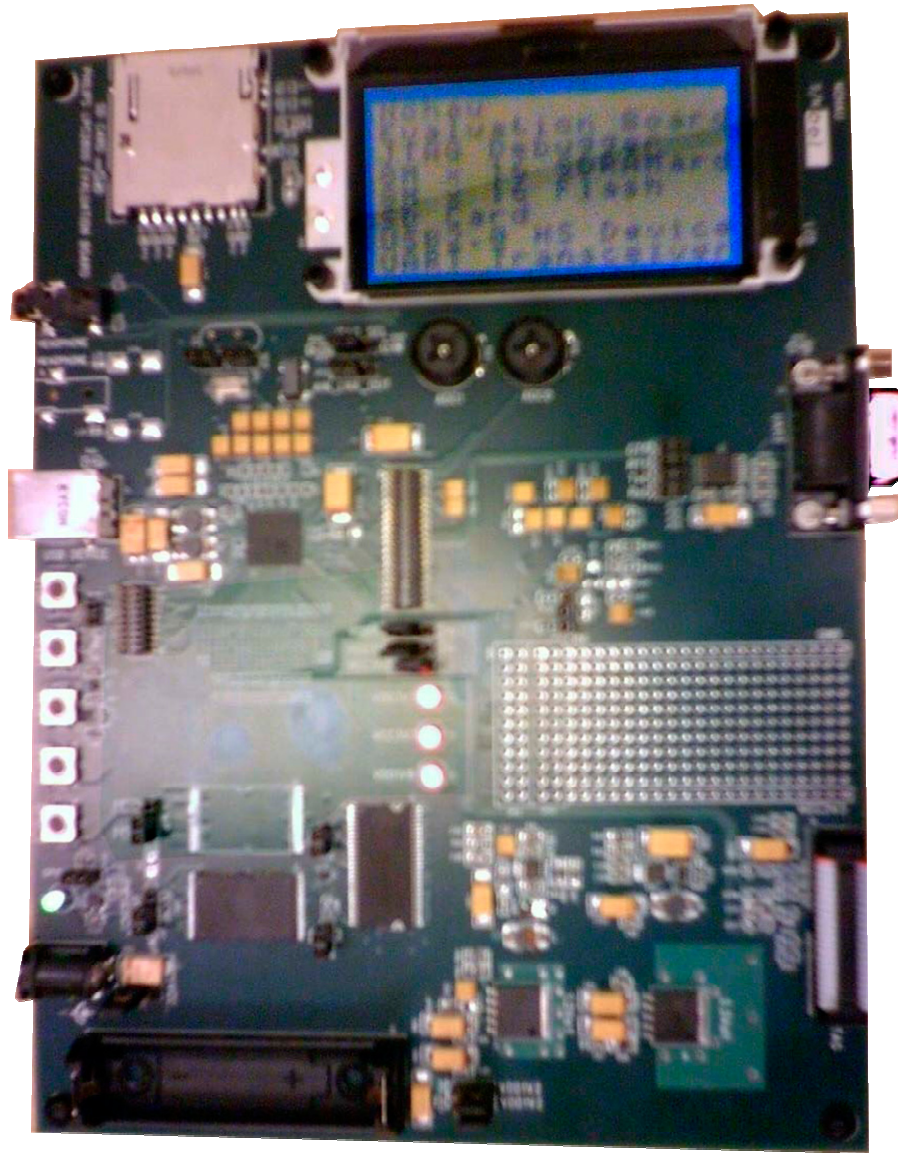
Revision History

Revision	Date	Author	Comments
A.0	May 12, 2006	Chun Sing Chu Mike Quirk	Initial Release

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1. Introduction

This document details the setup and configuration of the Philips LPC2800 evaluation board (hereafter referred to as the EVB).
The EVB is intended to provide a mechanism for easy customer evaluation of the Philips LPC2800 microcontroller and to facilitate hardware and software development.

1.1 EVB Feature List

The EVB provides the following features:

- Power Source Options:
    o AA size battery
    o USB
    o External 5V DC power supply.
- 20 Way JTAG connector.
- 16M (8M x 16) Bytes of SDRAM.
- 8M (4M x 16) Bytes of FLASH.
- Expandable to 16M (8M x 16) Bytes of FLASH.
- 1 x LCD Module with Epson S1D15605 built in.
- 1 x SD Card connector.
- 1 x USB connector (USB B Receptacle Connector for USB Device).
- 1 x UART (RS232) physical interface circuits connected to standard PC style DB9 male connector.
- 1 x Headphone jack (3.5mm).
- (Not installed) Additional Headphone jack (3.5mm).
- 2 x 10, 2 x 20 pin break-out headers.
- Reset pushbutton switch.
- Mode Selection pushbutton switches.
- Start, Stop pushbutton switches.
- 1 x User output LED.
- 3 x Power Supply Status LEDs.
- Small prototyping area consisting of an area of 0.1 inch spaced through holes with easy access to ground and 3.3V power supply points.

IMPORTANT

Before you apply power to the EVB, please **fully read** the following sections on how to correctly configure the board.

Failure to correctly configure the board may cause device or EVB damage.

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2. Configuration

This section details the configuration of each of the EVB functional blocks.

Throughout this document, all default jumper settings are clearly marked with "**(D)**" and are shown in **blue** text. This should allow a more rapid return to the default state of the EVB if required.

The main EVB functional blocks are shown below to help with quick location of jumpers etc. The EVB has been designed to try and make it as easy as possible to use. The PCB has detailed silkscreen legend and, where possible, has been segmented into functional blocks.
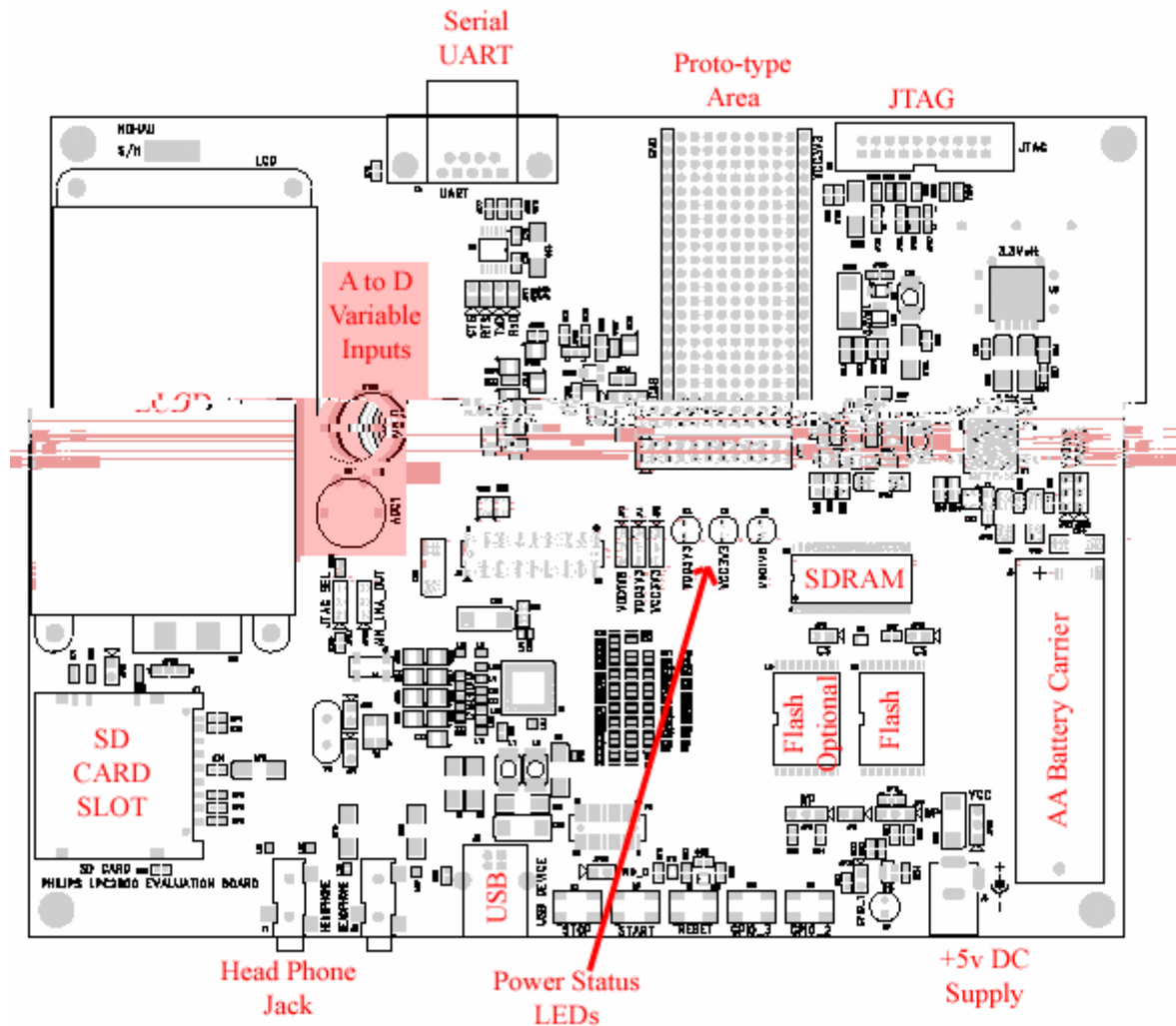
Figure 2-1 EVB Functional Blocks

2.1 System/RTC Crystal Selection

2.1.1 System Crystal Selection Jumpers (JP1, JP2)

The EVB supports 2 possible MCU system clock crystal sources:
- (1) An on-board system clock crystal Y2 (12MHz).
- (2) A socket Y3 for user system clock crystal .
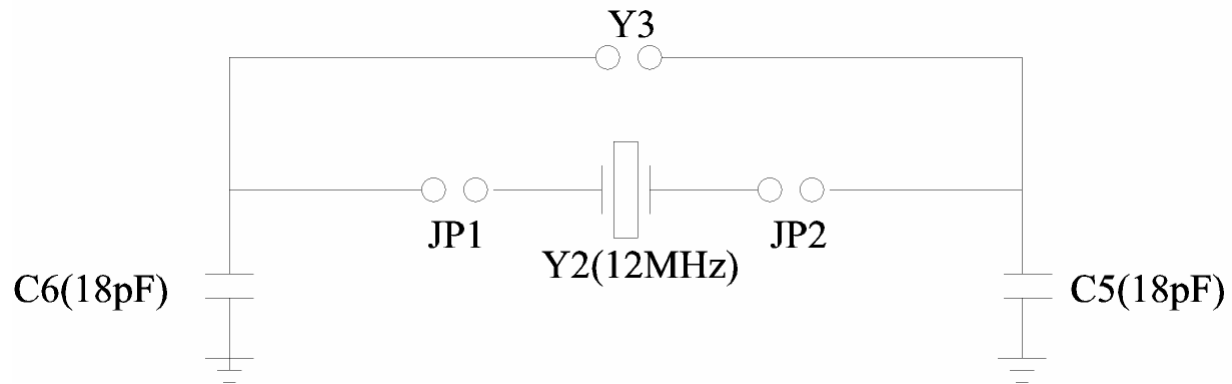
Figure 2-2 System Crystal Selection

The selection between these options is controlled using jumpers (JP1, JP2) as shown below:

Table 2-1 System Oscillator Selection Jumpers

Jumper	PCB Legend	Position	Description
JP1		FITTED (D)	Connects the on-board system clock crystal Y2.
		REMOVED	Disconnects the on-board system clock crystal. Connects the user system clock crystal Y3.
JP2		FITTED (D)	Connects the on-board system clock crystal Y2.
		REMOVED	Disconnects the on-board system clock crystal. Connects the user system clock crystal Y3.

2.1.2 RTC Crystal

The EVB has a MCU RTC clock crystal.
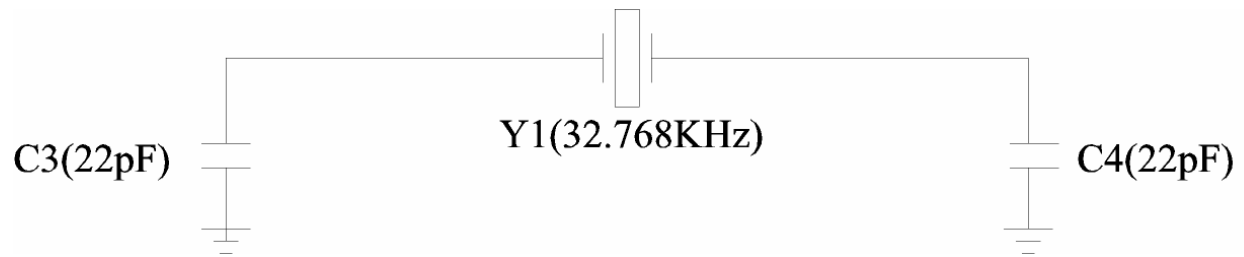
Figure 2-3 RTC Crystal

2.2 Power Supply Configuration

2.2.1 DC Power Supply Connector (J4)

This connector should be used to connect an

2.2.4 Power Supply Configuration Jumpers

The EVB has 2 voltage regulators and 2 DC-DC converters on board:

- The 5V input for the 3.3V voltage regulator (U8) and the 1.2V voltage regulator (U7) can be provided either with the DC Power Supply Connector (J4) or with the USB B Receptacle Connector (J2).

Table 2-2 Voltage Regulators Input Selection Jumper

Jumper	PCB Legend	Position	Description
JP20	VCC	1-2 (D)	**5V input is provided with the DC Power Supply Connector (J4).**
		2-3	**5V input is provided with the USB B Receptacle Connector (J2).**

- The on-chip (MCU) DC-DC converters and the on-board DC-DC converters (U9, U10) can be powered either by the battery or the 1.2V voltage regulator (U7) .

Table 2-3 DC-DC Converters Input Selection Jumper

Jumper	PCB Legend	Position	Description
JP21	VDD1V2	1-2 (D)	**The DC-DC converters are powered by the battery.**
		2-3	**The DC-DC converters are powered by the 1.2V Voltage Regulator (U7).**

Table 2-4 DC-DC Converters Selection Jumper

Jumper	PCB Legend	Position	Description
JP22	VDD1V2	1-2	**The on-chip (MCU) DC-DC converters are powered.**
		2-3 (D)	**The on-board DC-DC converters (U9, U10) are powered.**

2.2.5 Recommended Power Supply Configuration Jumpers
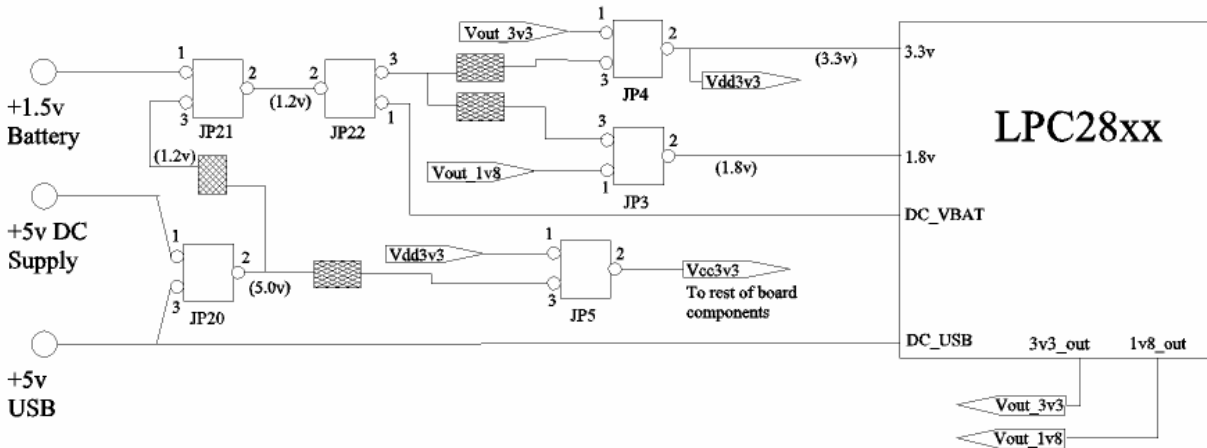
Figure 2-5 Recommended Power Supply Configuration Jumpers

Table 2-8 Recommended Power Supply Configuration Jumpers

Power Source	JP3	JP4	JP5	JP20	JP21	JP22	Limitations
External +5v	2-3	2-3	2-3	1-2	2-3	2-3	None
Power by USB	2-3	2-3	2-3	2-3	2-3	2-3	All should work providing the Auto-refresh rate on the SDRAM is about 16µs.
Power by 1.5v AA Battery	2-3	2-3	1-2	N/C	1-2	2-3	Recommended don't use External memory

2.2.6 Power Status LEDs (D1, D2, D3)

When power is applied to the EVB, the red Power Status LEDs (D1, D2, D3) show the presence of the EVB peripherals 3.3V voltages, the MCU 3.3V voltages, the MCU 1.8V voltages.

2.3 JTAG Connector (J6)

The JTAG connector (J6) on the edge of the EVB supports the 20 way debug interface connector.
When connecting or removing the JTAG debug interface, power must be removed from both the EVB and the JTAG debug interface.

```
VTref  1  ■  ●   2 Vsupply
NTRST  3  ●  ●   4 VSS
  TDI  5  ●  ●   6 VSS
  TMS  7  ●  ●   8 VSS
  TCK  9  ●  ●  10 VSS
       11  ●  ●  12 VSS
  TDO 13  ●  ●  14 VSS
NSRST 15  ●  ●  16 VSS
       17  ●  ●  18 VSS
       19  ●  ●  20 VSS
```
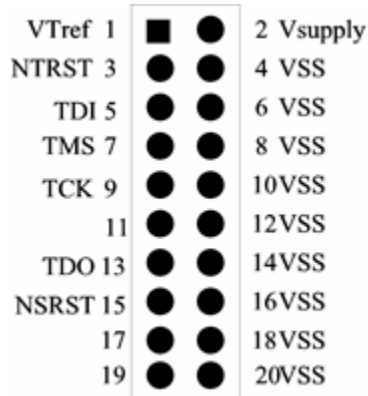
Figure 2-6 JTAG Connector

2.3.1 JTAG Configuration Jumper (JP24)

The JTAG Select Input, JTAG_SEL is configurated by the jumper (JP24).

Table 2-9 JTAG Configuration Jumper

Jumper	PCB Legend	Position	Description
JP24	JTAG_SEL	1-2 (D)	The JTAG_SEL is set to HIGH. The JTAG debug interface is enabled.
		2-3	The JTAG_SEL is set to LOW. The JTAG debug interface is disabled.

2.4 Reset Push Button Switch (S1)

An active low, push button RESET switch (S1) with a MIXIM MAX823REXK-T device is provided on the EVB. When the EVB peripherals 3.3V voltages drop below a certain threshold level (2.63V), the MAXIM MAX823REXK-T device will automatically assert the MCU reset line in order to prevent incorrect operation of the MCU or EVB circuitry. The MAXIM MAX823REXK-T device also provides a de-bounced input for the active low, push button RESET switch (S1). As the JTAG hardware debug probe has the ability to assert the MCU reset line, additional open-drain output buffering scheme is created as shown in Figure 2-7.
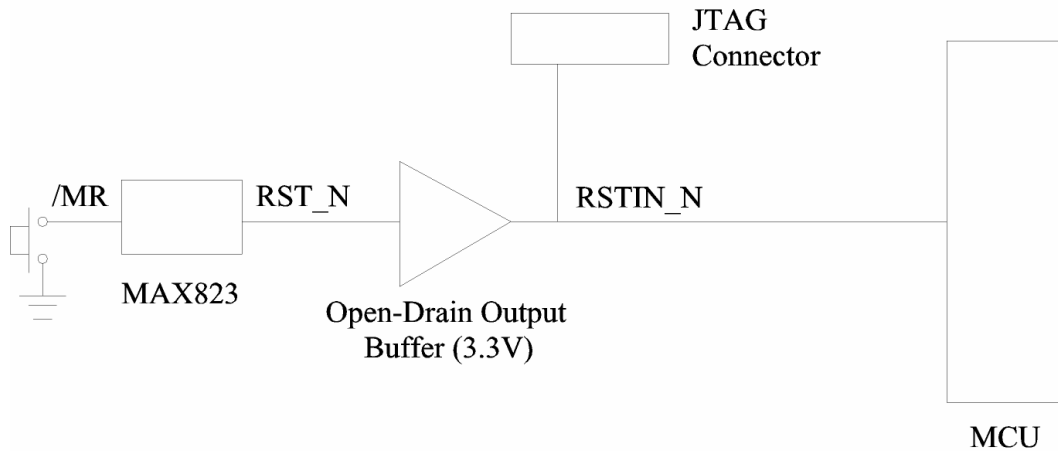
Figure 2-7 Reset buffering Scheme

2.5 Boot Select Inputs Push Button Switches (S4, S5)

The Boot Select Inputs, GPIO_2, GPIO_3 are controlled by the push button switches (S4, S5).

Table 2-10 Boot Select Input Push Button Switches

Jumper	PCB Legend	Position	Description
S4	GPIO_2	**Press and Hold**	**GPIO_2 is set to HIGH.**
		Release (D)	**GPIO_2 is set to LOW.**
S5	GPIO_3	**Press and Hold**	**GPIO_3 is set to HIGH.**
		Release (D)	**GPIO_3 is set to LOW.**

2.6 RS232 Configuration

The EVB has one MAXIM MAX3232ECAE RS232 transceiver device, providing RS232 signal translation for the MCU. The MAXIM MAX3232ECAE device has a 9 way male D-Type connector associated. Each of the MCU signals to the RS232 transceiver is jumpered to allow individual isolation if required.

Note:

If you want to connect the UART to a PC, you must use a DB9 Female-to-Female "NULL MODEM" cable.
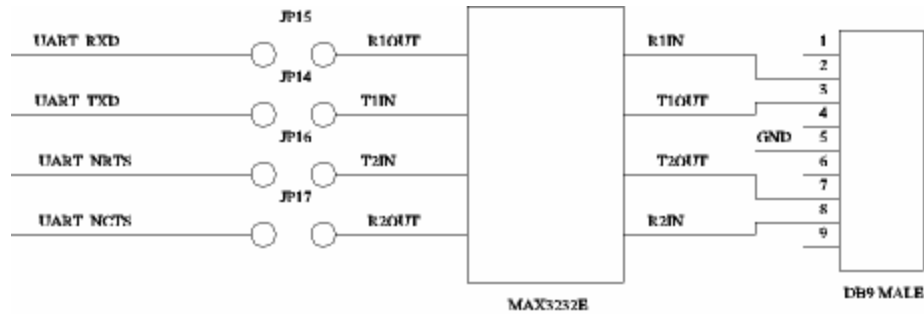
Figure 2-8 UART Schematics

2.6.1 UART Configuration Jumpers (JP14, JP15, JP16, JP17)

Table 2-11 UART Configuration Jumpers

Jumper	PCB Legend	Position	Description
JP14	TxD	FITTED (D)	Connects UART_TXD to MAXIM MAX3232ECAE device.
		REMOVED	Disconnects UART_TXD from MAXIM MAX3232ECAE device.
JP15	RxD	FITTED (D)	Connects UART_RXD to MAXIM MAX3232ECAE device.
		REMOVED	Disconnects UART_RXD from MAXIM MAX3232ECAE device.
JP16	RTS	FITTED (D)	Connects UART_NRTS to MAXIM MAX3232ECAE device.
		REMOVED	Disconnects UART_NRTS from MAXIM MAX3232ECAE device.
JP17	CTS	FITTED (D)	Connects UART_NCTS to MAXIM MAX3232ECAE device.
		REMOVED	Disconnects UART_NCTS from MAXIM MAX3232ECAE device.

2.7 SD Card Connector (J1)

The EVB supports SD Card with a SD Card connector.
The Detect switch of the SD Card connector is connected to the pin 1 of the jumper (JP18).
The output of the Detect switch is LOW when the SD Card is inserted.
The Protect switch of the SD Card connector is connected to the pin 2 of the jumper (JP18).
The output of the Protect switch is LOW when the SD Card is not write-protected.

2.8 USB Connector (J2)

The EVB has an USB B Receptacle Connector for USB Device.

2.9 LCD Module (J10)

The EVB has a LCD module with Epson S1D15605 built in.

2.9.1 Interface Mode Select Configuration Jumper (JP31)

The Interface Mode Select of the LCD module is configured by the jumper (JP31).

Table 2-12 Interface Mode Select Configuration Jumper

Jumper	PCB Legend	Position	Description
JP31	**C86**	**1-2** **2-3 (D)**	**The Interface Mode Select is set to HIGH. 68 Series is selected.** **The Interface Mode Select is set to LOW. 80 series is selected.**

2.10 NOR FLASH Chip Selects

The device size of the MCU static memory chip select is only 2M x 16 and the device size of the on-board Nor Flash is 4M x16. The on-board Nor Flash chip select are re-created as shown in Figure 2-8.
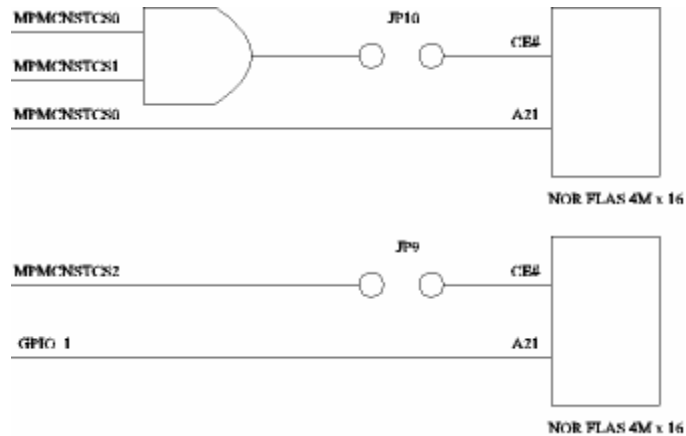
Figure 2-9 FLASH Chip Selects

2.10.1 NOR FLASH Chip Select Configuration Jumpers (JP10, JP9)

Table 2-13 FLASH Chip Select Configuration Jumpers

Jumper	PCB Legend	Position	Description
JP10	CS	**FITTED (D)**	**The re-created Nor Flash chip select is connected to the Nor Flash device (U3).**
		REMOVED	The re-created Nor Flash chip select is disconnected from the Nor Flash device (U3).
JP9	CS	**FITTED (D)**	**The MPMCNSTCS2 is connected to the Nor Flash device (U4).**
		REMOVED	The MPMCNSTCS2 is disconnected from the Nor Flash device (U4).

2.10.2 NOR FLASH Write Protect Configuration Jumpers (JP7, JP8)

Table 2-14 FLASH Write Protect Configuration Jumpers

Jumper	PCB Legend	Position	Description
JP7	WP	**1-2 (D)**	**The Nor Flash device (U3) is not write-protected.**
		2-3	The Nor Flash device (U3) is write-protected.
JP8	WP	**1-2 (D)**	**The Nor Flash device (U4) is not write-protected.**
		2-3	The Nor Flash device (U4) is write-protected.

2.11 ADC Potentiometer (R106, R107)

The ADC0 is connected to the EVB Peripherals 3.3V voltages through the potentiometer R106.
The ADC1 is connected to the EVB Peripherals 3.3V voltages through the potentiometer R107.

2.12 Start, Stop Inputs Push Button Switches (S3, S2)

2.12.1 Start Input Push Button Switch (S3)

The Start Inputs, DCDC_START is controlled by the push button switch (S3).

Table 2-15 Start Input Push Button Switch

Jumper	PCB Legend	Position	Description
S3	START	**Press and Hold**	**DCDC_START is set to LOW.**
		Release (D)	**DCDC_START is set to HIGH.**

2.12.2 Stop Input Push Button Switch (S2)

The Stop Inputs, DCDC_STOP is controlled by the push button switch (S2).

Table 2-16 Stop Input Push Button Switch

Jumper	PCB Legend	Position	Description
S2	STOP	**Press and Hold**	**DCDC_STOP is set to HIGH.**
		Release (D)	**DCDC_START is set to LOW.**

2.12.3 Stop Input Configuration Jumper (JP29

The Stop Inputs, DCDC_STOP can be optionally controlled by the GPIO_0.
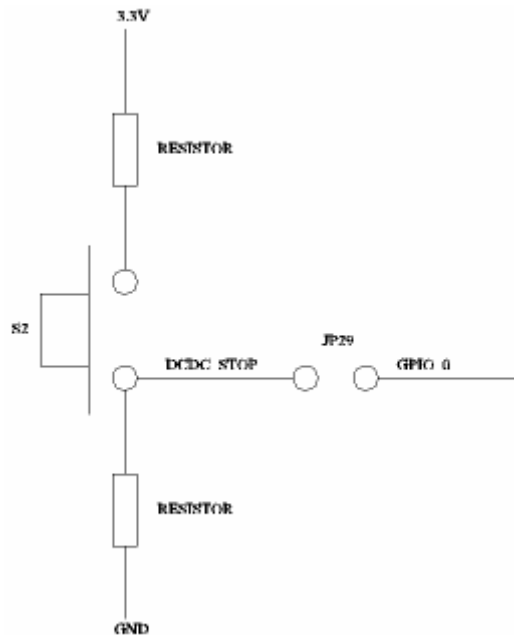
Figure 2-10 Stop Input Configuration Jumper

Table 2-17 Stop Input Configuration Jumper

Jumper	PCB Legend	Position	Description
JP29	GPIO_0	FITTED	Connects GPIO_0 to DCDC_STOP.
		REMOVED (D)	Disconnects GPIO_0 from DCDC_STOP.

2.13 User Output LED (D9)

2.13.1 User Output Configuration Jumper (JP30)

Table 2-18 User Output Configuration Jumper

Jumper	PCB Legend	Position	Description
JP30	GPIO_1	FITTED (D)	LED (D9) is driven by GPIO_1.
		REMOVED	LED (D9) is not driven by GPIO_1.

Caution : The GPIO_1 is used as the address input, A21 of the optional additional 8M (4M x 16) Bytes of FLASH.

2.14 HeadPhone Jacks (J7, J8)

2.14.1 Headphone Jack (J7)

The headphone outputs, AOUT_A, AOUT_B, AOUT_CA and AOUT_CB are connected to the headphone jack (J7).

2.14.2 Headphone Configuration Jumper (JP25)

Table 2-19 Headphone Configuration Jumper

Jumper	PCB Legend	Position	Description
JP25	AIN_LNA_OUT	1-2 (D)	**Headphone DC coupled with reference biasing.**
		2-3	**Headphone AC coupled without reference biasing.**

2.14.1 Headphone Jack (J8)

The SDAC outputs, DAC_OUT_A and DAC_OUT_B are connected to the optional headphone jack (J8) with VERFP decoupled.

3. Default Jumpers Summary Table

Table 2-20 Default Jumpers Summary Table

Jumper	PCB Legend	Position	Description
JP1		FITTED (D)	Connects the on-board system clock crystal Y2.
JP2		FITTED (D)	Connects the on-board system clock crystal Y2.
JP20	VCC	1-2 (D)	5V input is provided with the DC Power Supply Connector (J4).
JP21	VDD1V2	1-2 (D)	The DC-DC converters are powered by the battery.
JP22	VDD1V2	2-3 (D)	The on-board DC-DC converters (U9, U10) are powered.
JP3	VDD1V8	2-3 (D)	The MCU 1.8V voltages are provided with the on-board DC-DC converter (U9).
JP4	VDD3V3	2-3 (D)	The MCU 3.3V voltages are provided with the on-board DC-DC converter (U10).
JP5	VCC3V3	1-2 (D)	The EVB peripherals 3.3V voltages are provided with the DC-DC converter.
JP24	JTAG_SEL	1-2 (D)	The JTAG_SEL is set to HIGH. The JTAG debug interface is enabled.
JP14	TxD	FITTED (D)	Connects UART_TXD to MAXIM MAX3232ECAE device.
JP15	RxD	FITTED (D)	Connects UART_RXD to MAXIM MAX3232ECAE device.
JP16	RTS	FITTED (D)	Connects UART_NRTS to MAXIM MAX3232ECAE device.
JP17	CTS	FITTED (D)	Connects UART_NCTS to MAXIM MAX3232ECAE device.

Table 2-20 Default Jumpers Summary Table (cont.)

Jumper	PCB Legend	Position	Description
JP31	C86	2-3 (D)	The Interface Mode Select is set to LOW. 80 series is selected.
JP10	CS	FITTED (D)	The re-created Nor Flash chip select is connected to the Nor Flash device (U3).
JP9	CS	FITTED (D)	The MPMCNSTCS2 is connected to the Nor Flash device (U4).
JP7	WP	1-2 (D)	The Nor Flash device (U3) is not write-protected.
JP8	WP	1-2 (D)	The Nor Flash device (U4) is not write-protected.
JP29	GPIO_0	REMOVED (D)	Disconnects GPIO_0 from DCDC_STOP.
JP30	GPIO_1	FITTED (D)	LED (D9) is driven by GPIO_1.
JP25	AIN_LNA_OUT	1-2 (D)	Headphone DC coupled with reference biasing.

4. Break-Out Headers

This section details the pinout for the break-out headers on the EVB.

4.1 Break-Out Header (JP9)

Signal	Pin		Pin	Signal
RSTIN_N	1	○ ○	2	ADC0
ADC1	3	○ ○	4	ADC2
ADC3	5	○ ○	6	ADC4
AIN_A	7	○ ○	8	AIN_VCOM
AIN_LNA_OUT	9	○ ○	10	ADC_VREF
AIN_B	11	○ ○	12	AIN_LNA
AOUT_B	13	○ ○	14	AOUT_A
AOUT_CA	15	○ ○	16	AOUT_CB
DAC_OUT_B	17	○ ○	18	DAC_OUT_A
UART_TXD	19	○ ○	20	UART_RXD
UART_NCTS	21	○ ○	22	UART_NRTS
MCI_DAT3	23	○ ○	24	MCI_DAT1
MCI_DAT2	25	○ ○	26	MCI_DAT0
MCI_CMD	27	○ ○	28	MCI_CLK
LCD_RW_WR	29	○ ○	30	LCD_RS
LCD_E_RD	31	○ ○	32	LCD_DB7
LCD_DB6	33	○ ○	34	LCD_DB5
LCD_DB3	35	○ ○	36	LCD_DB4
LCD_DB2	37	○ ○	38	LCD_DB0
LCD_DB1	39	○ ○	40	LCD_CSB

Figure 2-11 Break-Out Header (JP9)

4.2 Break-Out Header (JP11)

Signal	Pin		Pin	Signal
DAO_WS	1	○ ○	2	DAO_DATA
DAO_CLK	3	○ ○	4	DAO_BCK
DAI_WS	5	○ ○	6	DAI_DATA
CAI_BCK	7	○ ○	8	IIC_SCL
II2_SDA	9	○ ○	10	GPIO_3
GPIO_2	11	○ ○	12	GPIO_1
GPIO_0	13	○ ○	14	DCDC_START
DCDC_STOP	15	○ ○	16	GND
GND	17	○ ○	18	GND
GND	19	○ ○	20	GND

Figure 2-12 Break-Out Header (JP11)

4.3 Break-Out Header (JP12)

MPMC.D2	1	○	○	2	MPMC.D3
MPMC.D8	3	○	○	4	MPMC.D5
MPMC.D7	5	○	○	6	MPMC.D6
MPMC.D12	7	○	○	8	MPMC.D13
MPMC.NSTCS1	9	○	○	10	MPMC.NSTCS0
MPMC.BLOUT1	11	○	○	12	MPMC.BLOUT0
MPMC.A18	13	○	○	14	MPMC.A17
MPMC.A14	15	○	○	16	MPMC.A13
MPMC.A10	17	○	○	18	MPMC.A9
MPMC.A7	19	○	○	20	MPMC.A6
MPMC.A3	21	○	○	22	MPMC.A2
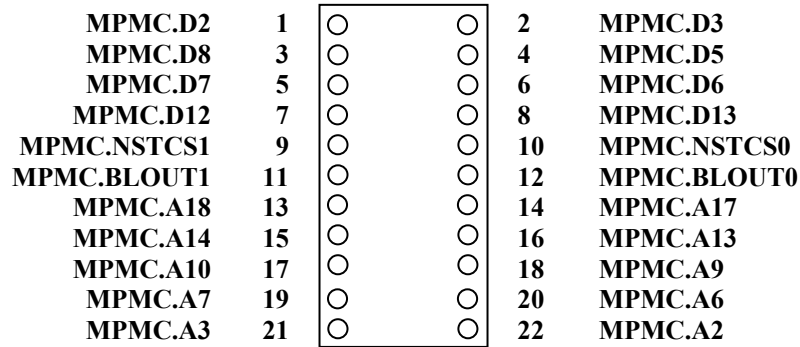
Figure 2-11 Break-Out Header (JP12)

4.4 Break-Out Header (JP13)

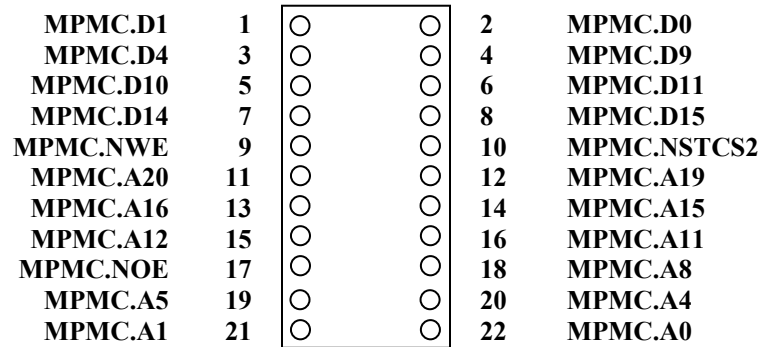|					
MPMC.D1	1	○	○	2	MPMC.D0
MPMC.D4	3	○	○	4	MPMC.D9
MPMC.D10	5	○	○	6	MPMC.D11
MPMC.D14	7	○	○	8	MPMC.D15
MPMC.NWE	9	○	○	10	MPMC.NSTCS2
MPMC.A20	11	○	○	12	MPMC.A19
MPMC.A16	13	○	○	14	MPMC.A15
MPMC.A12	15	○	○	16	MPMC.A11
MPMC.NOE	17	○	○	18	MPMC.A8
MPMC.A5	19	○	○	20	MPMC.A4
MPMC.A1	21	○	○	22	MPMC.A0

Figure 2-12 Break-Out Header (JP13)

5. Seehau Configuration
Installing from the CD

•To install the Seehau software, do the following:

1. Insert the Seehau CD into your CD ROM drive. The installation process will start automatically.

2. Click **Install Seehau Interface for EMUL-ARM** and follow the instructions that appear on your screen.

•If the installation does not start automatically, you might have your Windows Autorun feature disabled. You will then need to do one of three things:

1. Use Windows Explorer and navigate to the CD root directory. Double-click **Autorun.exe.** The Windows Install Shield will start the installation process.

2. Right-click on the CD ROM symbol while running Windows Explorer and select **AutoPlay** to start the installation process.

3. From the taskbar, select **Start**, then **Settings**. Click on **Control Panel,** then **Add/Remove Programs,** and then **Install.** The installation process will start when you select the correct path to the CD.

Downloading and Installing the Seehau Software From the Internet

1. Go to the Nohau web site (http://www.nohau.com). Click **Downloads**. The Nohau Software Downloads page opens.

2. Click **Current Seehau Software**. The Seehau Software Status page opens.

3. Locate the EMUL–ARM product listing. There will be two listings: one for documentation and one for software.

4. Click **Information and Download (Seehau).**

5. Review the information on the page.

6. Click **Yes I Want to Download.** A Customer Information Form page opens. Complete this form, then click **Proceed**. (You have the option to download more than one product.) A verification page opens with the information you have just entered. If all information is correct, select **SEND** at the bottom of the page. A message will open that verifies your information has been sent.

7. Click **Go to Download**. The **Available Download Areas** page opens.

8. Click either option for a download site. The Nohau Software Updates page opens.

9. Click the EMUL–ARM link.

10. Click the ARM.exe link. The application will start downloading. Make a note of the directory for this downloaded file.

11. Following the download, go to the directory which has the downloaded file. Click the ARM.exe file and follow the installation instructions.

•After installing the Seehau software, the **Setup Complete** dialog box appears, allowing you to view the Readme.txt file and/or launch the SeehauARM configuration.

> **Note**
>
> • You must launch the SeehauARM configuration before running the Seehau software.

Seehau Configuration Program

● After installing Seehau, it is recommended that you automatically start the Seehau Configuration program. Do the following steps before starting Seehau:

1. From the **Setup Complete** dialog box, select **Launch SeehauARM Configuration**.

2. Click **Finish**.

● If you do not choose to automatically start the Seehau Configuration Program, do the following:

● From the **Start** menu, select **Programs.**

● Select **SeehauARM**. then click **Config** to open the **Emulator Configuration** window displaying the **Connect** tab (Figure 2-14). Please note that it is not necessary to be connected at this time.
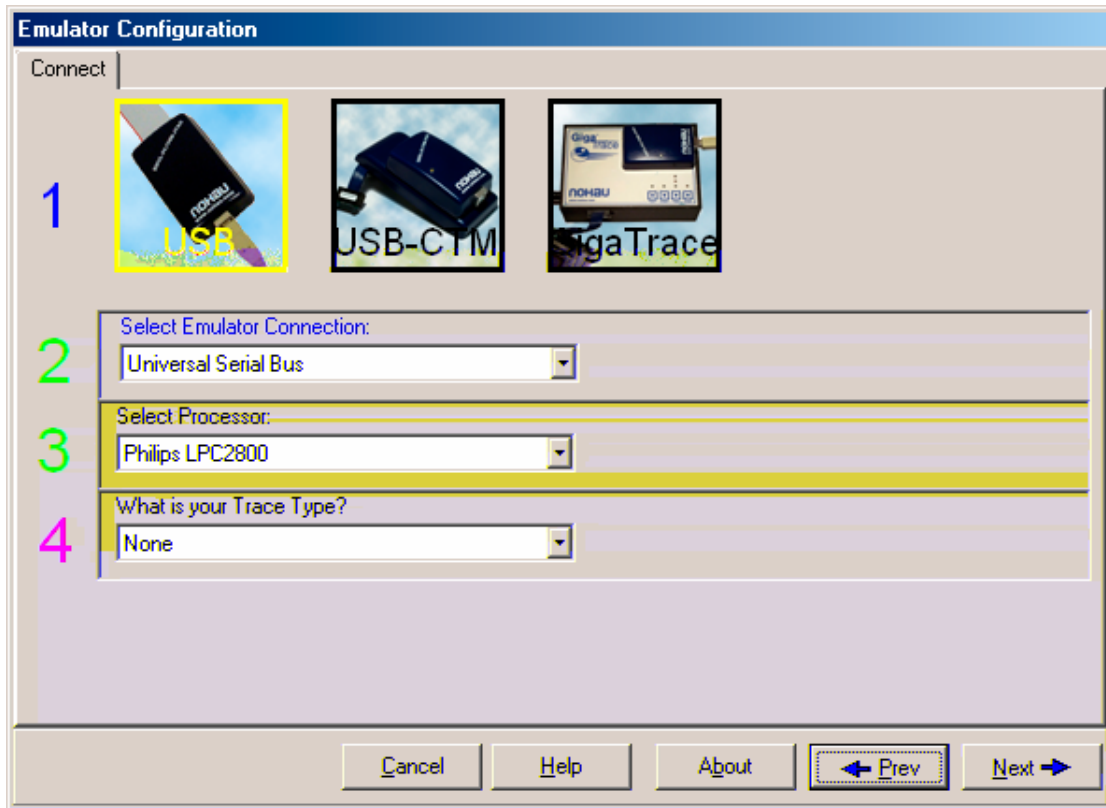

Figure 2-14: Emulator Configuration Window Displaying the Connect Tab

Configuring the Communications Interface Connect Tab

• The graphical user interface for this tab is divided into four regions:

1. Region 1 – **Communications Interface:**
   Displays the three communications interface options for the ARM. The USB is for the pod only. If you have the optional Compact Trace Module (CTM), choose the USB-CTM (in the middle). The third box is for the GigaTrace option.

2. Region 2 – **Select Emulator Connection**:
   No action required. Default is **Universal Serial Bus.**

3. Region 3 – **Select Processor**:
   Default **is ARM7 (generic).** Click on the arrow to view the drop down list for the other devices. For **ARM9,** select **ARM9 (generic).**

4. Region 4 – **What is your Trace Type?:**
   The default is **Yes** if trace is supported (based on earlier selections).

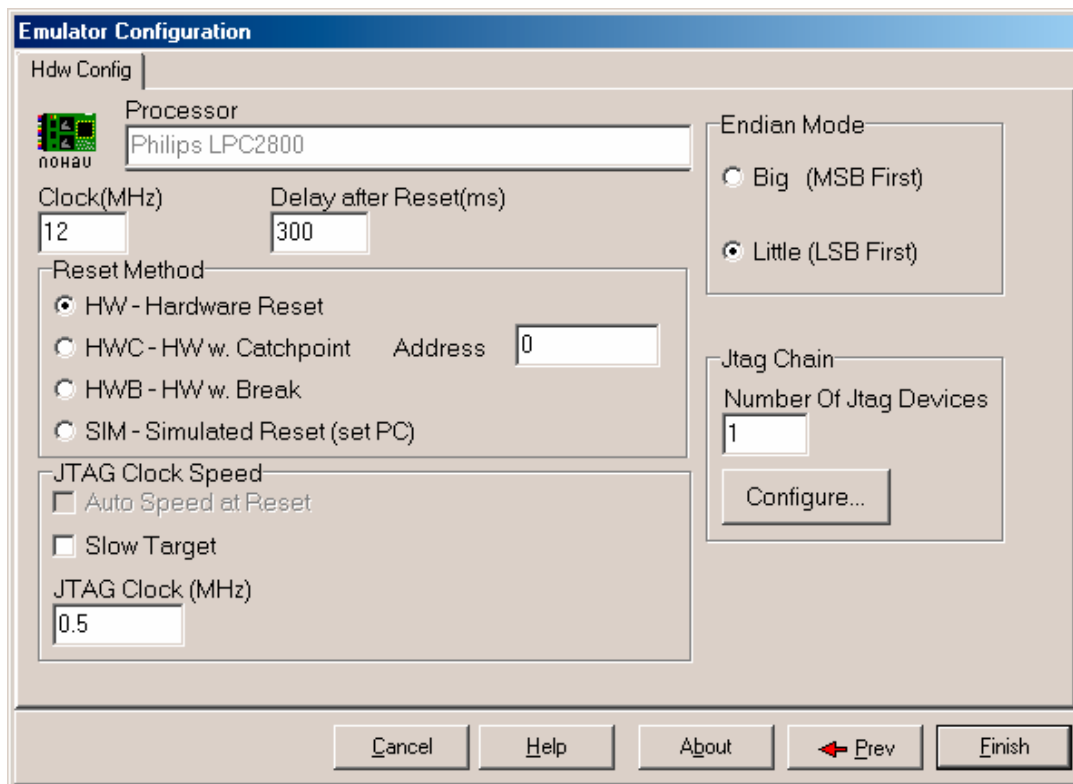5. Click **Next**. The **Hdw Config** tab opens (Figure 2-15).

Figure 2-15: Emulator Configuration Window Displaying the Hdw Config Tab

• The initial configuration settings are read from the Startup.bas file when the debugger initializes.

After the initial startup and configuration of Seehau, the configuration parameters are saved in the Startup.bas file (located in the Macro subdirectory). The next time the emulator is started, the configuration parameters are read from the Startup.bas file and compared with the default parameters on the chip.

4. **Processor:**
   Shown for reference only. This is the selected processor. If you need to change the processor, click **Prev**.

5. **Clock(MHz):**
   This is used for the trace timestamp only. Enables you to set the clock speed.

6. **Delay after Reset (ms):**
   Used to set the time to wait after reset before accessing the hardware. This allows the target to complete reset operations such as loading the logic into an FPGA.

7. **Remap:**
   This is used in the ARM chip for remapping the starting address of RAM. When this is selected, the remap bit will be set at reset. On devices that do not provide this, it is not set and will therefore be grayed out.

8. **Reset Method**
   HW – Hardware Reset:
   Sets a hardware break at address 0 and asserts reset.
   HWC – HW w Catchpoint:
   Inserts a jump to itself at the address specified.
   HWB – HW wBreak:
   This reset method asserts reset, waits for the set time as determined by the Delay after Reset, then stops execution.
   SIM – Simulated Reset (set PC):
   This reset method sets the Program Counter to 0 and does not assert hardware reset.

Note

• For a more detailed description of the Reset Method, refer to the Reset Method document called ARM_Reset located in the document folder.

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9. **JTAG Clock Speed**
   Auto Speed at Reset:
   Allows EMUL-ARM to bring the target up to full speed automatically. Not implemented for all MCUs.
   Slow Target:
   A special slow target communication mode is entered. Do not use this unless really necessary, since it will slow down target communication significantly. This does not affect the JTAG clock.
   JTAG Clock (KHz):
   Sets the JTAG clock speed.

10. **Endian Mode:** This is used to configure the endianess -- byte ordering -- for your chip.
   Big (MSB First):
   Select this if your target has the Most Significant Byte (MSB) first.
   Little (LSB First):
   Select this if your target has the Least Significant Byte (LSB) first.

11. **JTAG Chain** configuration is used if the ARM device is not the only chip connected to the JTAG, or if the chip has multiple JTAG controllers (Figure 2-16).
   Number of JTAG devices:
   This is the total number of devices connected to the JTAG Scan Chain. If only one device is present, nothing needs to be configured.
   Configure:
   This button is used to configure the number of devices and the Instruction Length for each device. This is only available during the intial configuration. If you click the **Configure** button, Figure 2-16 or Figure 2-17 appears depending on the number of devices that were entered.
   Number of Devices:
   This is used to set the total number of devices in the JTAG Scan Chain (Figure 2-17).
   Active Device Position:
   This is used to set which device in the ARM chip the JTAG will connect to.
12. **Instruction Reg Size:** There will be a drop down list for each of the devices. If the number of devices is set to more than one, there will be a drop down list for each device (Figure 2-17).
   Device1 (Active):
   The Instruction Register size for the active device, which is automatically configured. (ARM7 = 4, ARM9 = 5)
   Device2(Bypass):
   This is where the Instruction Register Length is set for the device in the chain that will be bypassed.

Configuring the Emulator Options From Within Seehau

• In Seehau, open the Emulator Configuration window. From the **Config** menu select **Emulator**. The Emulator Configuration window opens displaying the **Hdw Config** tab (Figure 2-18).

• Only the differences from the initial configuration will be discussed here.

• The **Emulator Configuration** window contains three tabs. When selected, each tab allows you to set the following options:

Hdw Cfg:	Set up emulator hardware options.
Misc Setup:	Select reset options.
Map Config	Used to manually set the address ranges where Thumb code is stored.

Buttons Common to All Tabs

13. **OK:**   Saves the settings for the tab and exits the dialog box.

14. **Apply:**   Saves the settings for the tab.

15. **Cancel:**   Exits without saving the settings for the dialog box.

16. **Help:**   Displays the Seehau Help file.

17. **Refresh:**   Allows you to retrieve and view the current emulator hardware
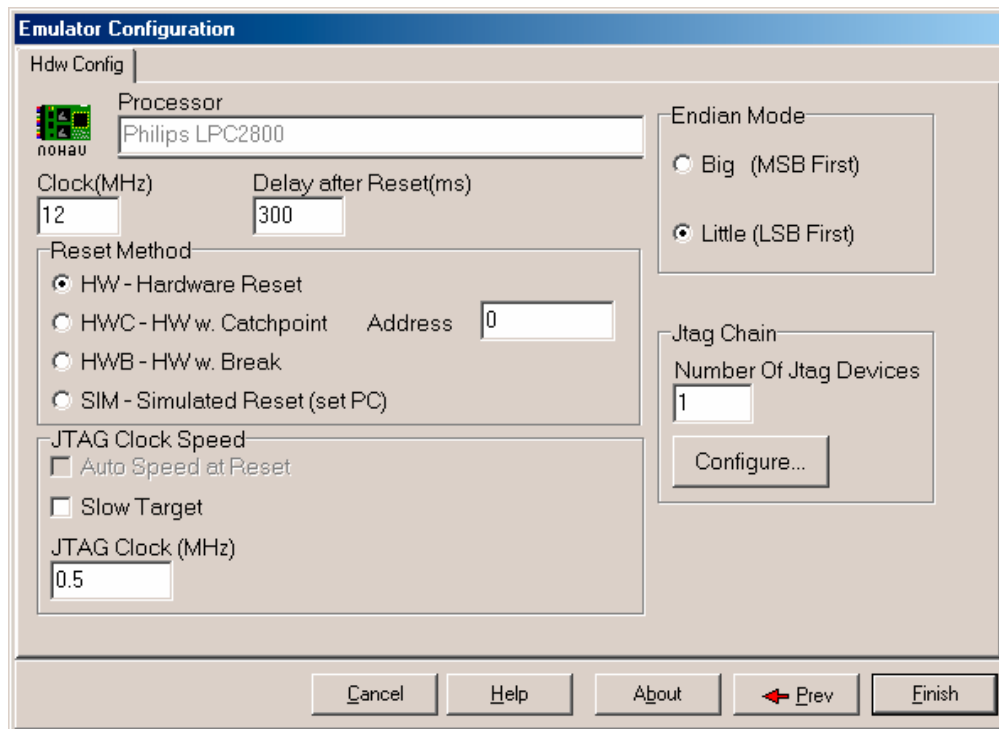   configuration settings.

Figure 2-18: Emulator Configuration Window Displaying the Hdw Config Tab

Hardware Configuration Tab
18. JTAG Chain

The **View** button is used to check the current configuration. The configuration can only be changed during the initial configuration.

Miscellaneous Setup Tab

• The **Misc Setup** tab (Figure 2-19) is accessible only after the initial software configuration.

19. **Reset chip after load file:**

Sets the ARM core to issue a reset after the code is loaded.

20. Override at Reset

The **Program Counter** option selects the value that the program counter will be set to after the reset sequence has completed. Enter the program counter value in the box. The **Stack Pointer** option selects the value that the stack pointer will be set to after a reset. Enter the stack pointer value in the box.
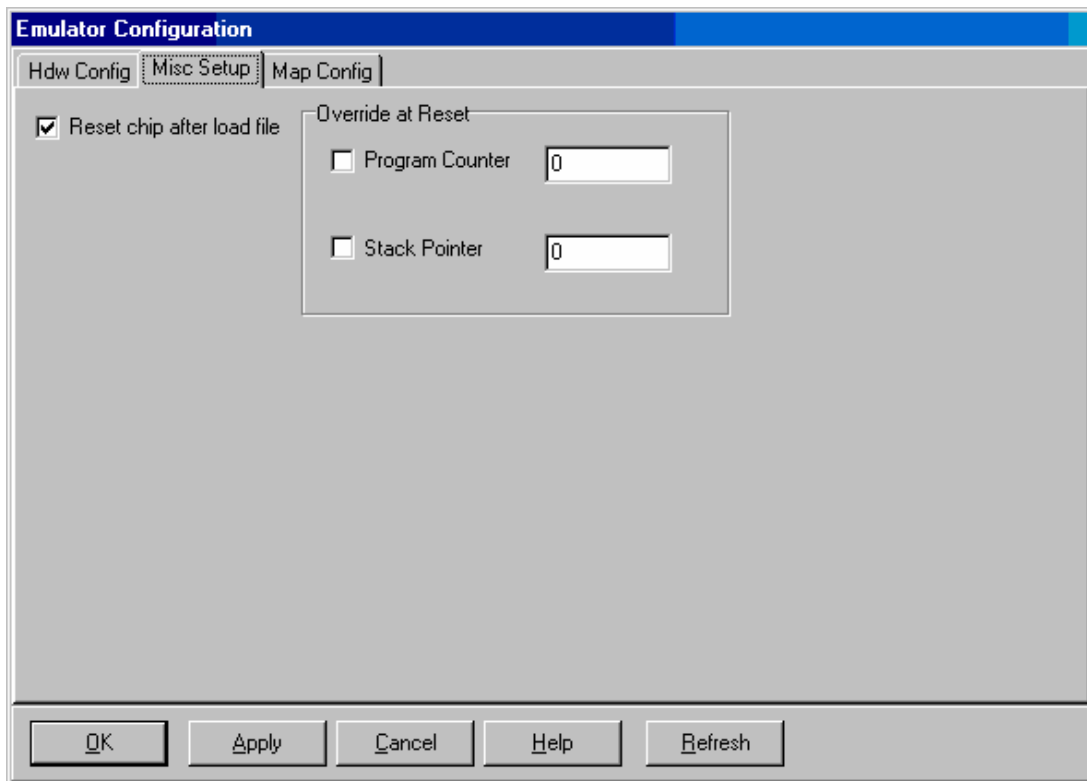

Figure 2-19: Emulator Configuration Window Displaying the Misc Setup Tab

Map Config TAB

•Figure 2-20 is accessible only after the initial software configuration. The file loader will automatically map THUMB regions defined in the output file. This mapping window provides a manual override for THUMB regions. The large open area displays the address ranges that contain THUMB code.

21. The **Add** button is used to add a range of memory that is used for THUMB code.

22. The **Edit** button is available only when a range is selected. The range values may be changed.

23. The **Remove** button is used to delete one memory range from the table.

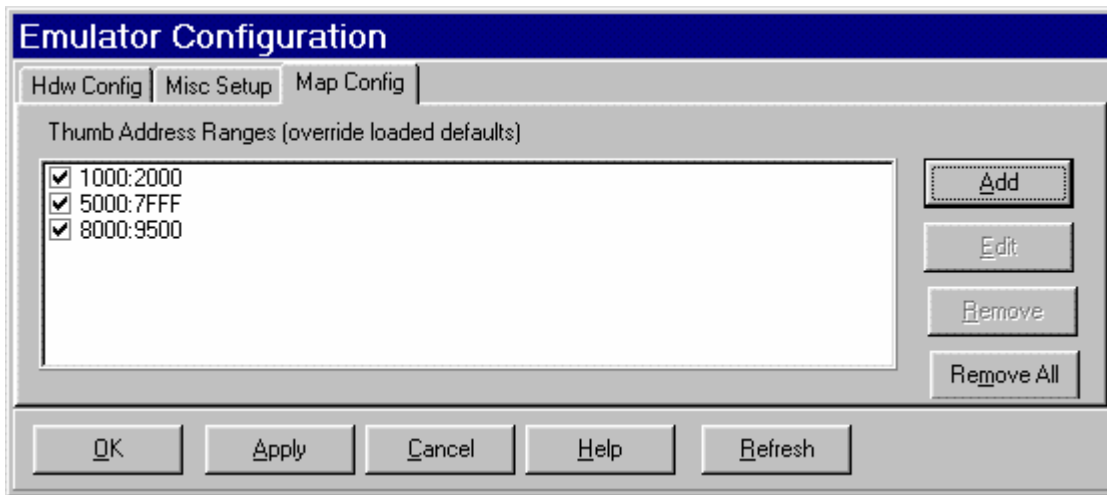24. The **Remove All** button is used to delete all the memory ranges from the table.

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Figure 2-20: Emulator Configuration Window Displaying the Map Config Tab