Chapter 1 Install Driver

Before using lpc_dfusec, it must install WinUSB correctly driver. Download this driver from http://www.lpcware.com/content/project/dfu-download-programming-utility-and-security-lpcdfusec-tool/winusb-driver-installat.

After download, unpack driver compression packet to D: \winusb_drivers(or any other path, here as a show). And then begin installing driver, steps are as follows:

(1) Set start mode of LPC18XX/43XX board as USB boot (set DIP switches 1-4: LHLH). Then connect board to computer by USB cable, and there will be a new USB device in Device Manager (LPC):

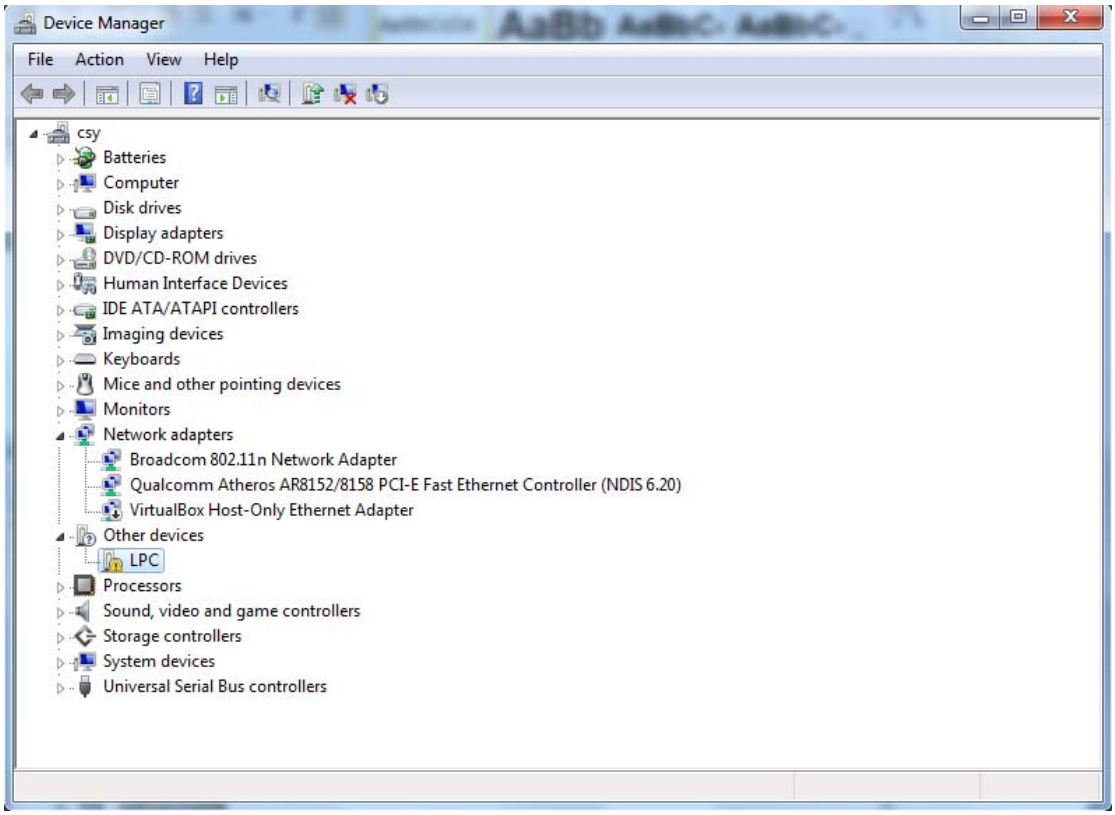

Figure 1-1

(2) Right click device, select "Update Driver Software", and then select "Browse my computer for driver software ":

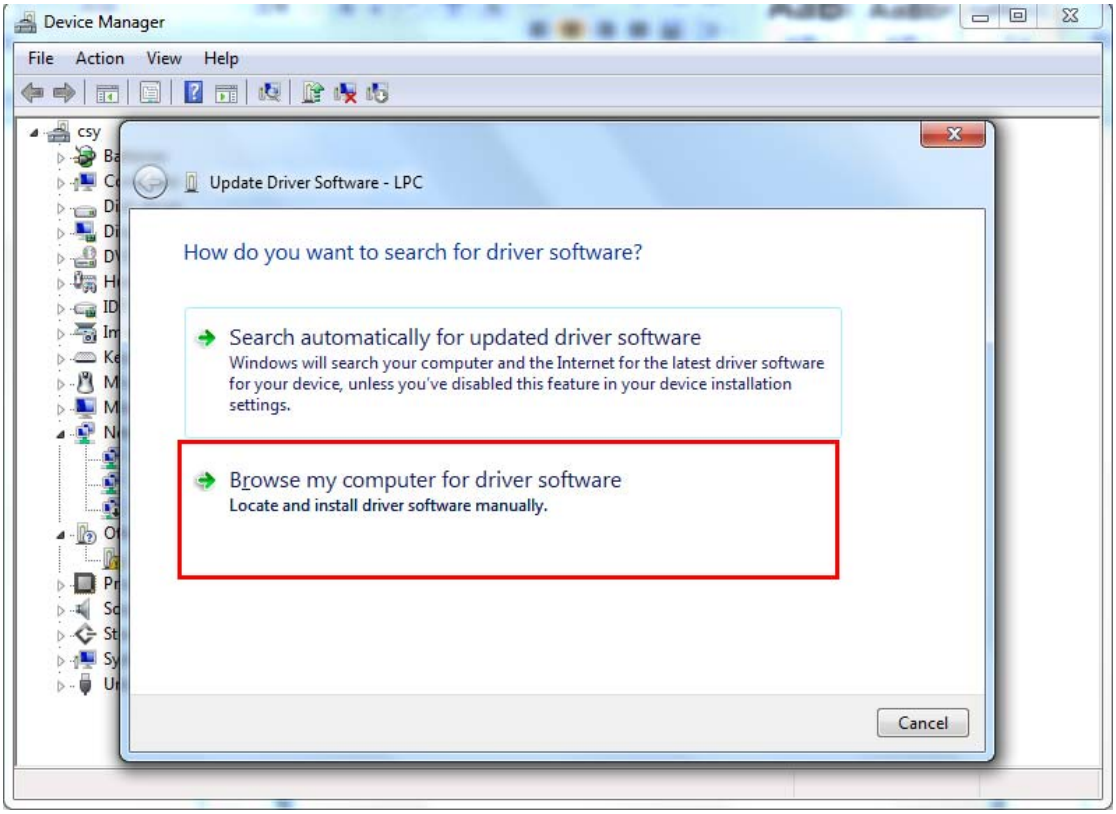

Figure 1-2

(3) Select driver directory, here is D: \ winusb_drivers, and then click Next:

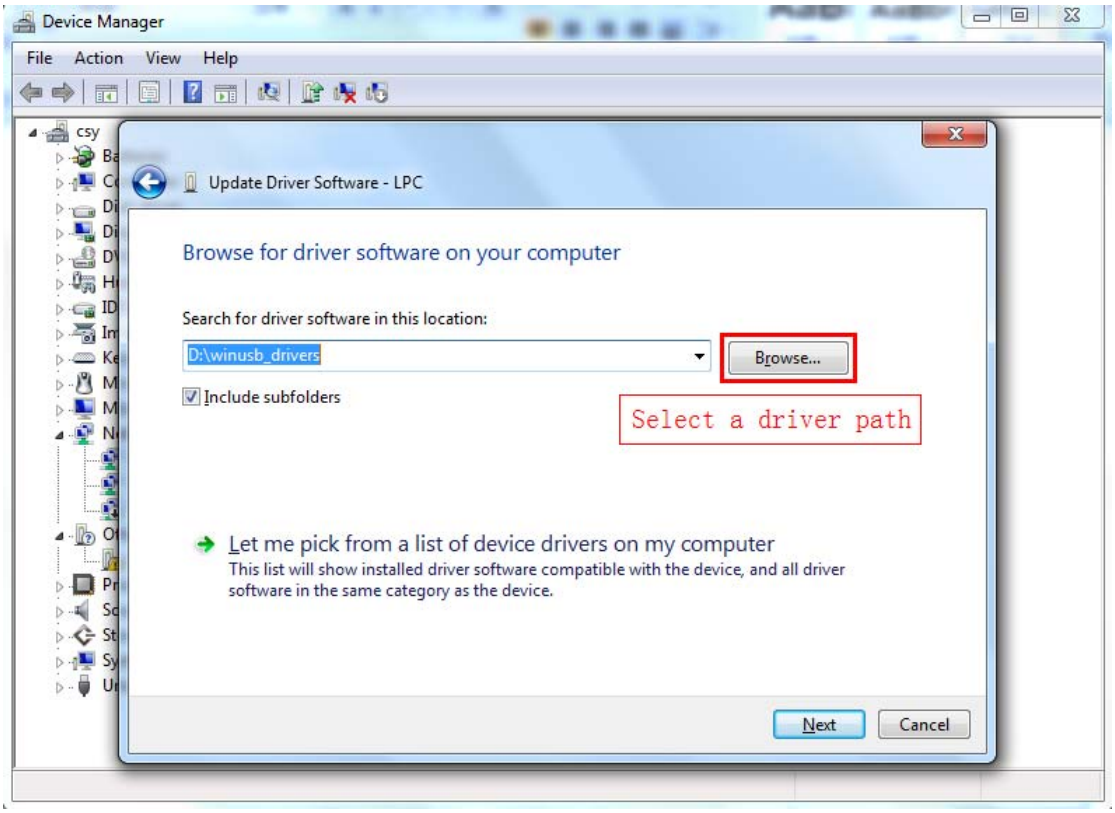

Figure 1-3

(4) If pop-up security warnings, select "Install this driver software ":

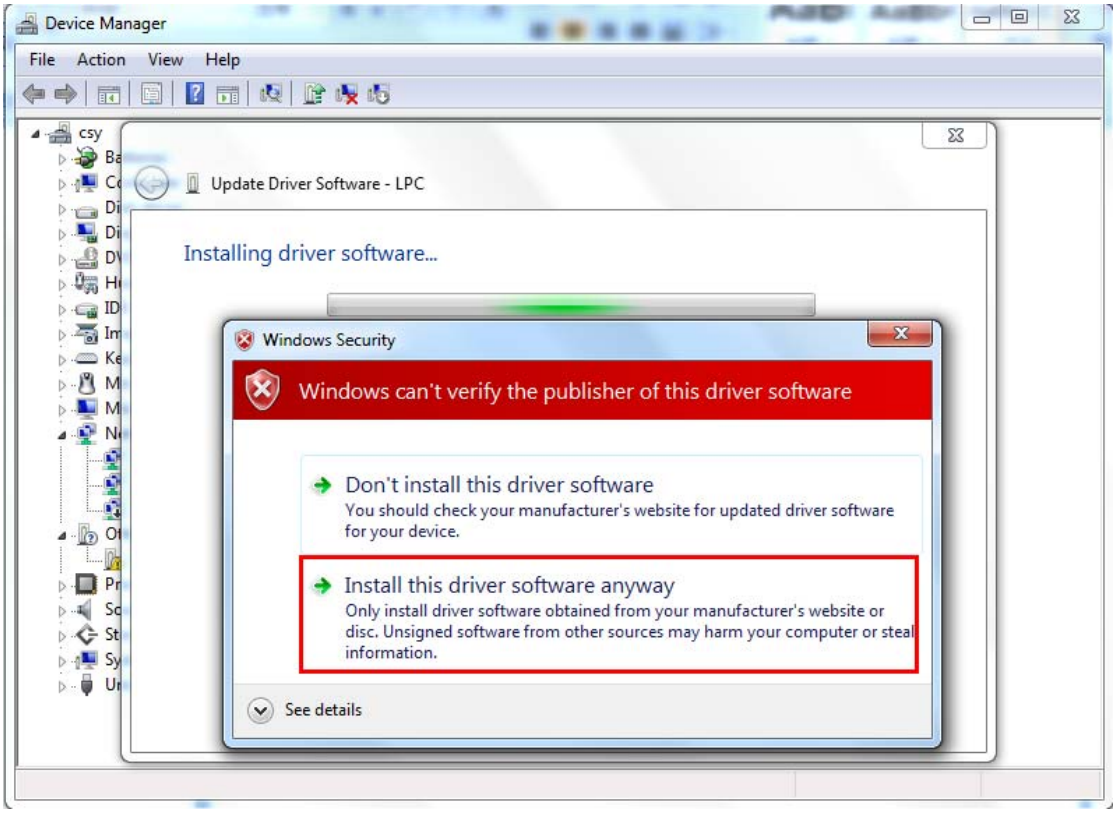

Figure 1-4

(5) After finishing installation, if there will be a "LPC based USB device" device in Device Manager, it means driver has been installed successfully:

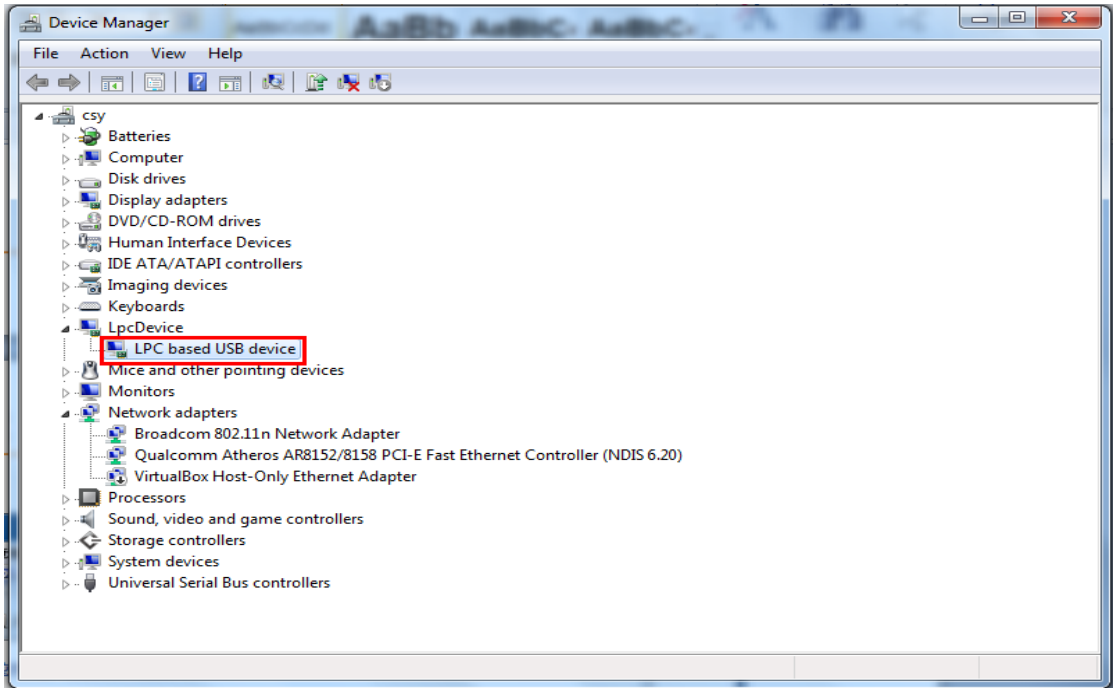

Figure 1-5

Chapter 2 lpc_dfusec Download

After install driver, connect board to computer by USB cable, download image file to board by lpc_dfusec tool.

Lpc_defsec supports HDR / RAW mode and Program mode.

2.1 HDR/RAW Mode

In HDR/RAW mode, download and run executable image file by DFU /USB when chip is reset. Image file is downloaded to internal RAM and executed directly, it will be lost when chip reset or power off. Steps are as follows:

(1) Start lpc_dfusec：

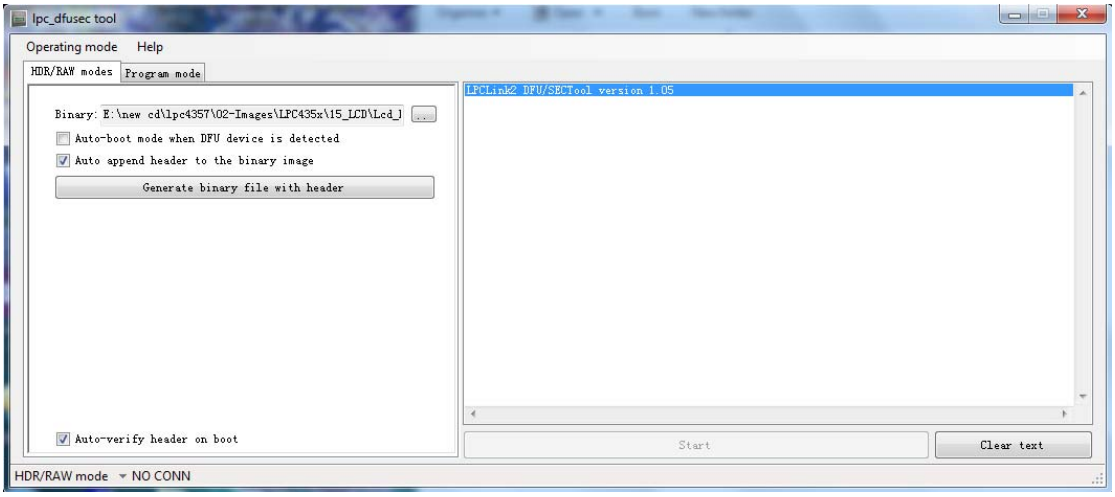

Figure 2-1

(2) Select "HDR/RAW modes" in Mode tab, connect board to computer by USB cable, "NO CONN" will become "HIGH SPEED USB" in status bar at the bottom of window.

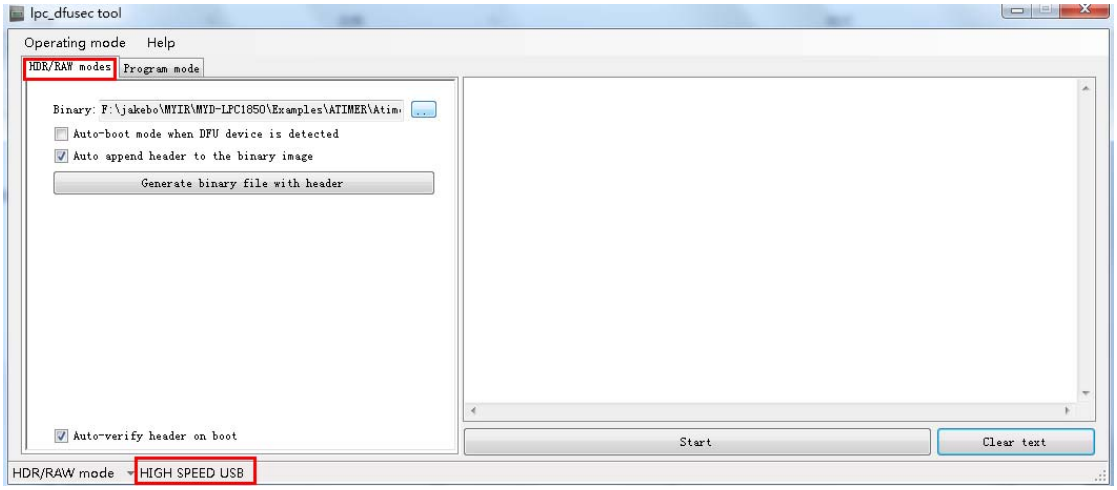

Figure 2-2

(3) Choose .bin file downloaded in "Internal SRAM" in corresponding directory. If file already has file header, it doesn't need to select "Auto the append header to the binary image" option. Otherwise select option which is generally required to check default:

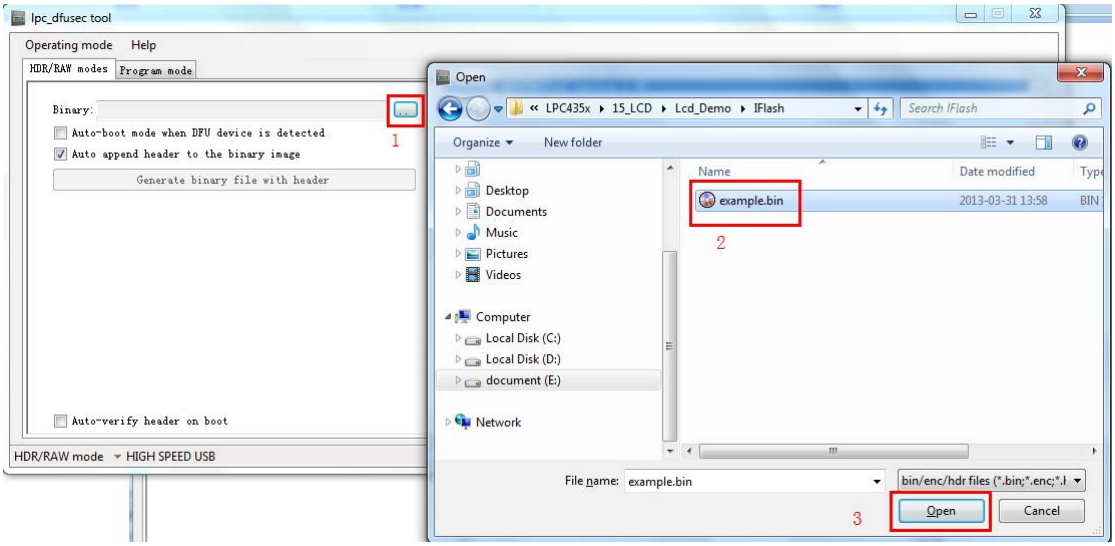

Figure 2-3

(4) Click the "Start" button to download program. When download is complete, board will reset automatically and run. "HIGH SPEED USB" in the status bar will change to "NO CONN". Reset board or power on board, lpc_dfusec will identify board:

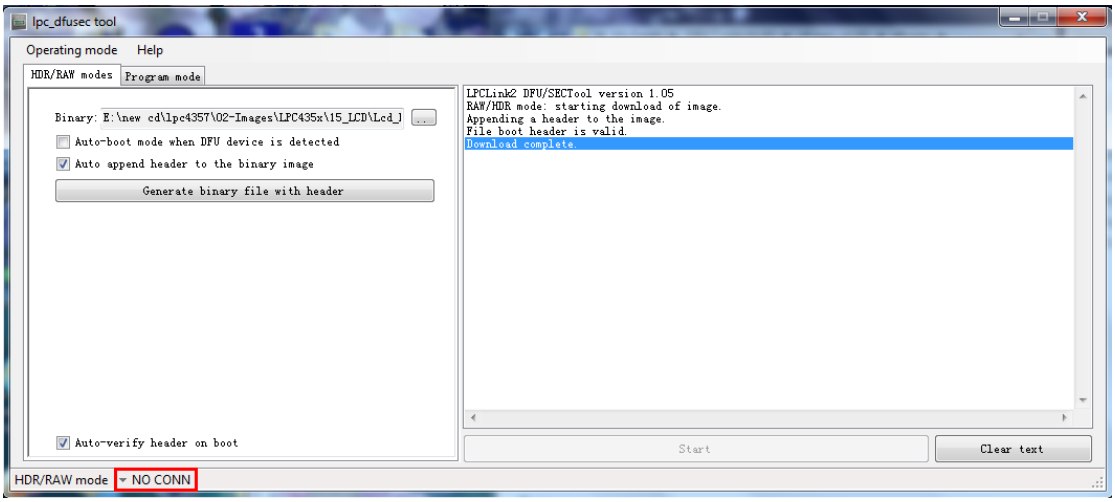

Figure 2-4

Lpc_dfusec also can give no file header files to add file header, click the "Generate binary file with header" button in original file directory, a same name file with an ".Hdr" will be generated.

2.2 Program Mode

In this mode, it should program image files into the on-chip or off-chip non-volatile memory. Pre-built algorithms are provided, they are the Internal Flash algorithm, 32MB/64MB SPI Flash algorithm and IRAM based algorithm, corresponding algorithm file is as shown in table 2-1:

Storage medium	Download the algorithm file
Internal Flash	dfusecp_iflash_18xx43xx.bin.hdr
SPIFI 128MB	dfusecp_spiflash_18xx43xx.bin.hdr
IRAM	dfusecp_emiram.bin.hdr

Table 2-1

In program mode, steps are as follows:

(1) Start lpc_dfusec:

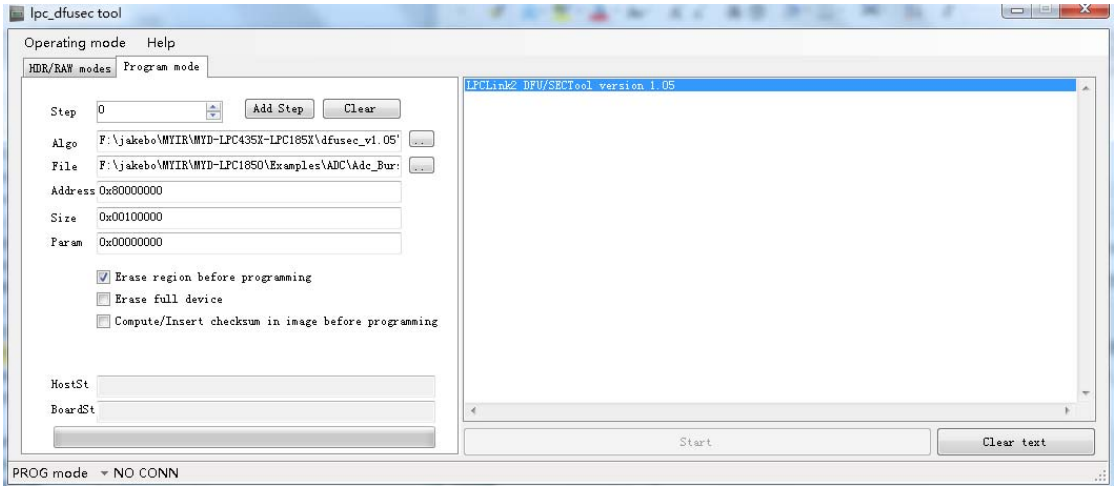

Figure 2-5

(2) Select "Program mode" in Mode table and connect board to computer by USB cable. "NO CONN" will become" HIGH SPEED USB" in status bar at the bottom of window:

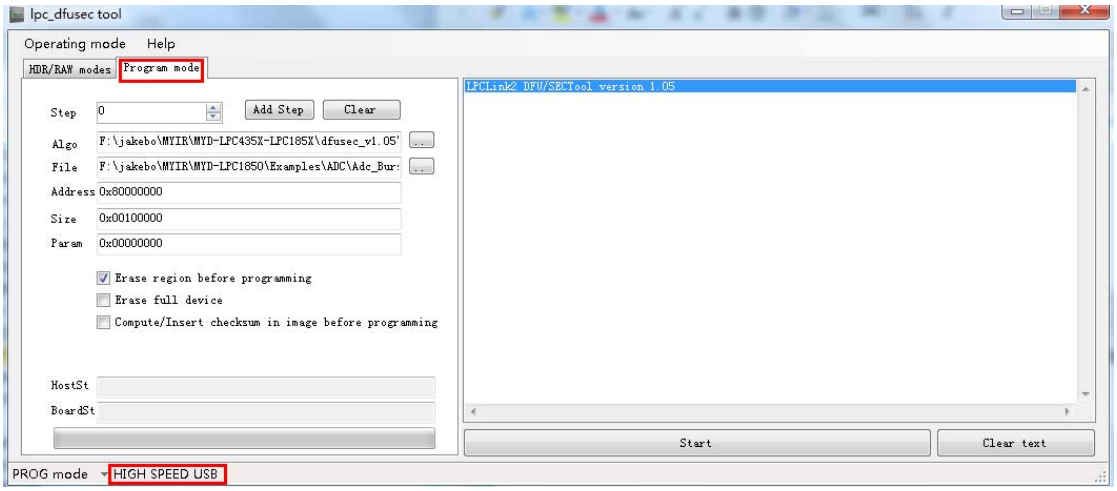

Figure 2-6

(3) Fill in the necessary items in "Program mode" tab panel.

Now, if want to download image files to SPI FLASH, select the corresponding SPI Flash algorithm files and SPIFI binary files (bin file in the project directory SPIFI 128MB file folder). Then set starting address: 0X80000000, size: 0X00100000.

If want to download image files to Internal Flash (Note: only MYD-LPC1857/4357 have Internal Flash), select corresponding Internal Flash algorithm file and IFlash binary file (bin file in the project directory IFlash file folder). Set starting address: 0X1A000000, size: 0X00040000.

Panel identification is as shown below:

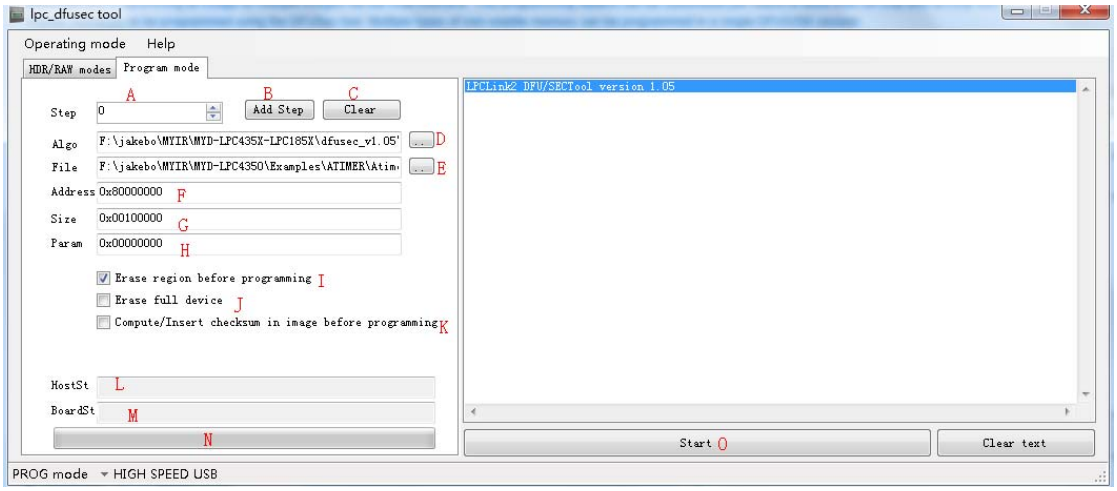

Figure 2-7

Figure description is as shown below:

Parameter name	Description	Mark
Step number	Indicates the number of steps of programming sequence. At the beginning of each step, step number will be passed to programming algorithm and be used by algorithm when needing.	A
Step add button	Button will add a new step to column at the end of programming sequence. Use up down buttons to select step and only add up to 10 steps at most.	B
Step(s) clear button	Click the button will clear all subsequence steps after this step. E.g. a sequence of six steps (0-5), currently select 2, when clicking the button, 3 -5 steps will be cleared. Only two steps left	C
Programming algorithm file	Current step programming algorithm file is a binary file that can be run on the target	D

	board, mainly used to identify target device, and execute programming operation DFUSec tools issued.	
Image to program	A programming image file is in current step. Each step has a unique image file, a unique burning address and a unique programming algorithm.	E
Program/erase region address	The address is appointed beginning address for burning or erasing. Please note different requirements for address alignment and sizes between burning and erasing operations. This is a hexadecimal number.	F
Program/erase region size	The value specifies erasable area size. Only used in conjunction with erase flag. This is a hexadecimal number.	G
Optional parameter	Optional parameters can pass a value to programming algorithms. Internal FLASH SPI FLASH algorithm doesn't need it. This is a hexadecimal value.	H
Region erase flag	If check box is checked, the area, its beginning address and size specified by program/erase region size, will be erased before programming.	I
Full device erase flag	If check this box, entire device will be erased before programming.	J
Compute/Insert checksum in image before	Checksum calculated and appended into binary file, can be used to check data integrity after download.	K

programming		
Host operational status	Box shows last host information, such as can be used by DFUSec to diagnose problems according to program cycle.	L
Device operational status	Box shows last board information, such information and program cycles on target board can be used to diagnose problems.	M
Progress bar	Progress bar is filled according to download progress, it is reset at the beginning of each step and is filled when download finished.	N
Start/download button	If support device is detected, press button to start programming cycle. When problems occur or button is not active, it can try to reset or to re-power board.	O

Table 2-1

(4) Click the "Start" button to start program, when finished, result is shown in figure 2-8.

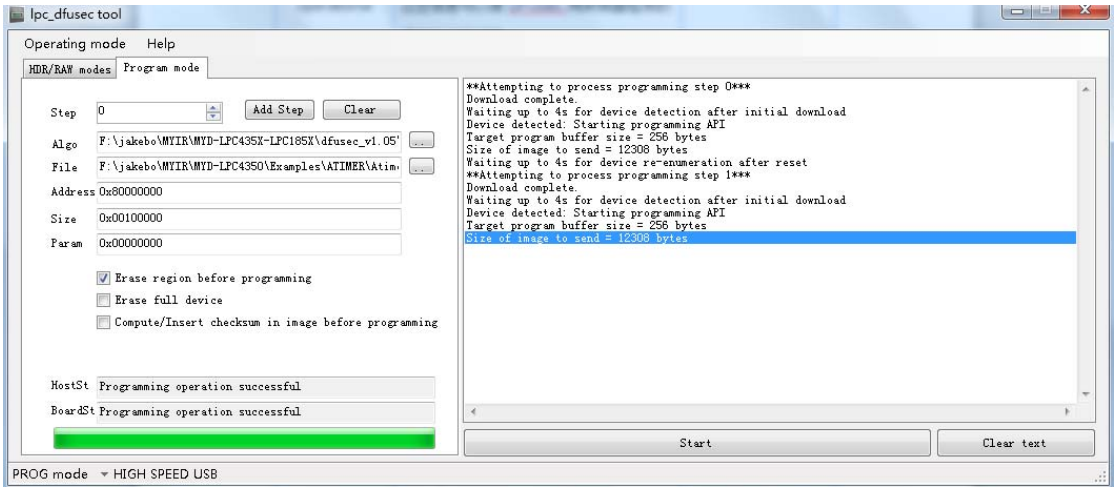

Figure 2-8

(5) Select startup mode after programmming is finished, reset board to start programs.

Note: If Internal Flash has had burned effective programs, programs will be executed automatically when restarting board, and BOOT set will be ignored. Internal Flash use, please refer to user manual pdf in 3.4.2 MDK Internal Flash to use in the CD-ROM directory 01-Documents/UserManual/Chinese/MYD-LPC435x-185x.