GM8136/GM8136S

EVB USER GUIDE

User Guide
Rev.: 1.0
Issue Date: September 2014

REVISION HISTORY

GM8136/GM8136S EVB User Guide

Date	Rev.	From	To
Sep. 2014	1.0	-	Original

Printed in Taiwan 2011

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Chapter 1

Introduction

This chapter contains the following sections:

1.1 Overview

GM8136/GM8136S EVB provides a cost-effective and easy-development system for integration and verification of the video application at the early development stage.

This user guide provides the needed information on using the EVB.

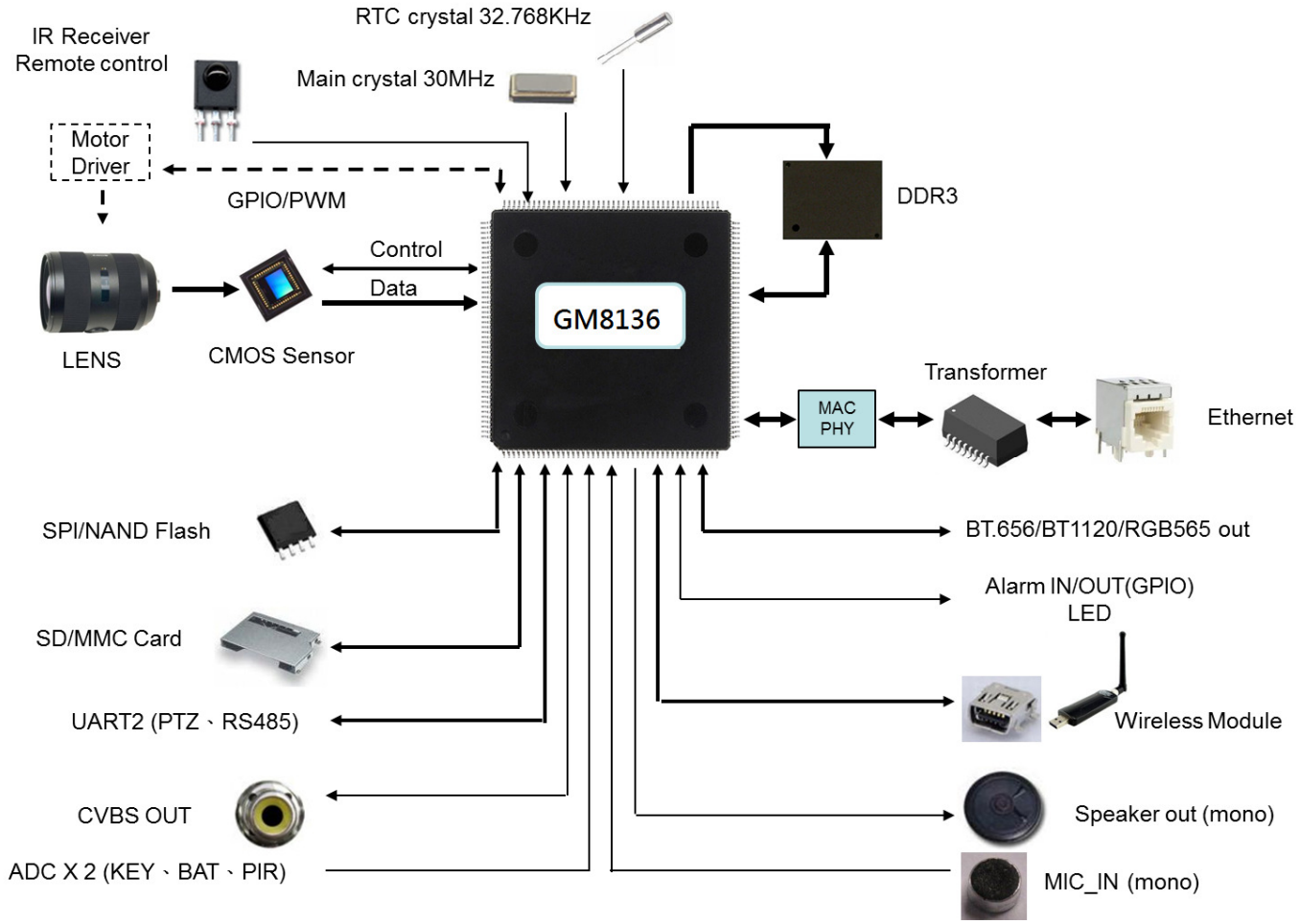


Figure 1-1. Block Diagram of GM8136/GM8136S

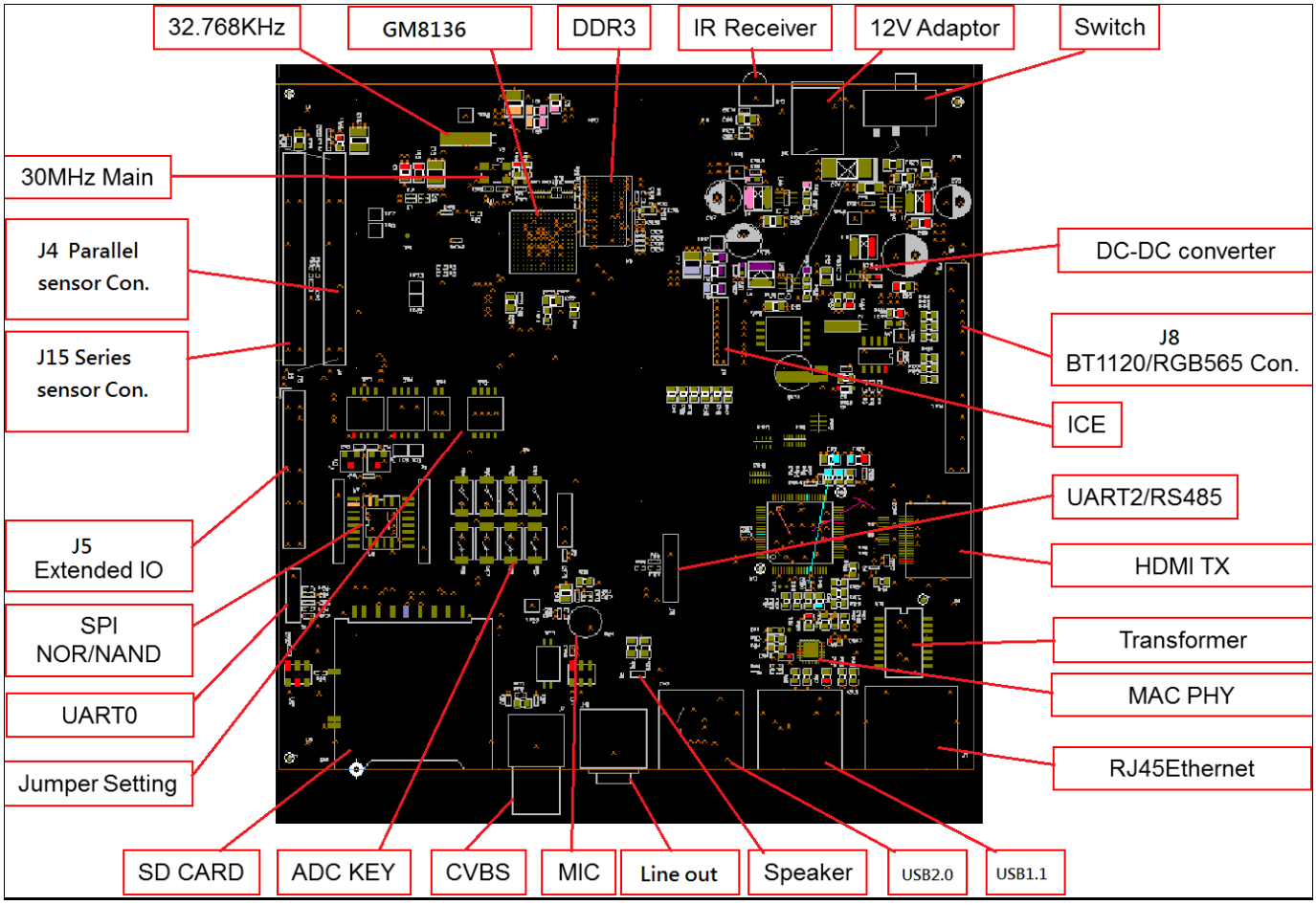


Figure 1-2. GM8136 EVB Layout

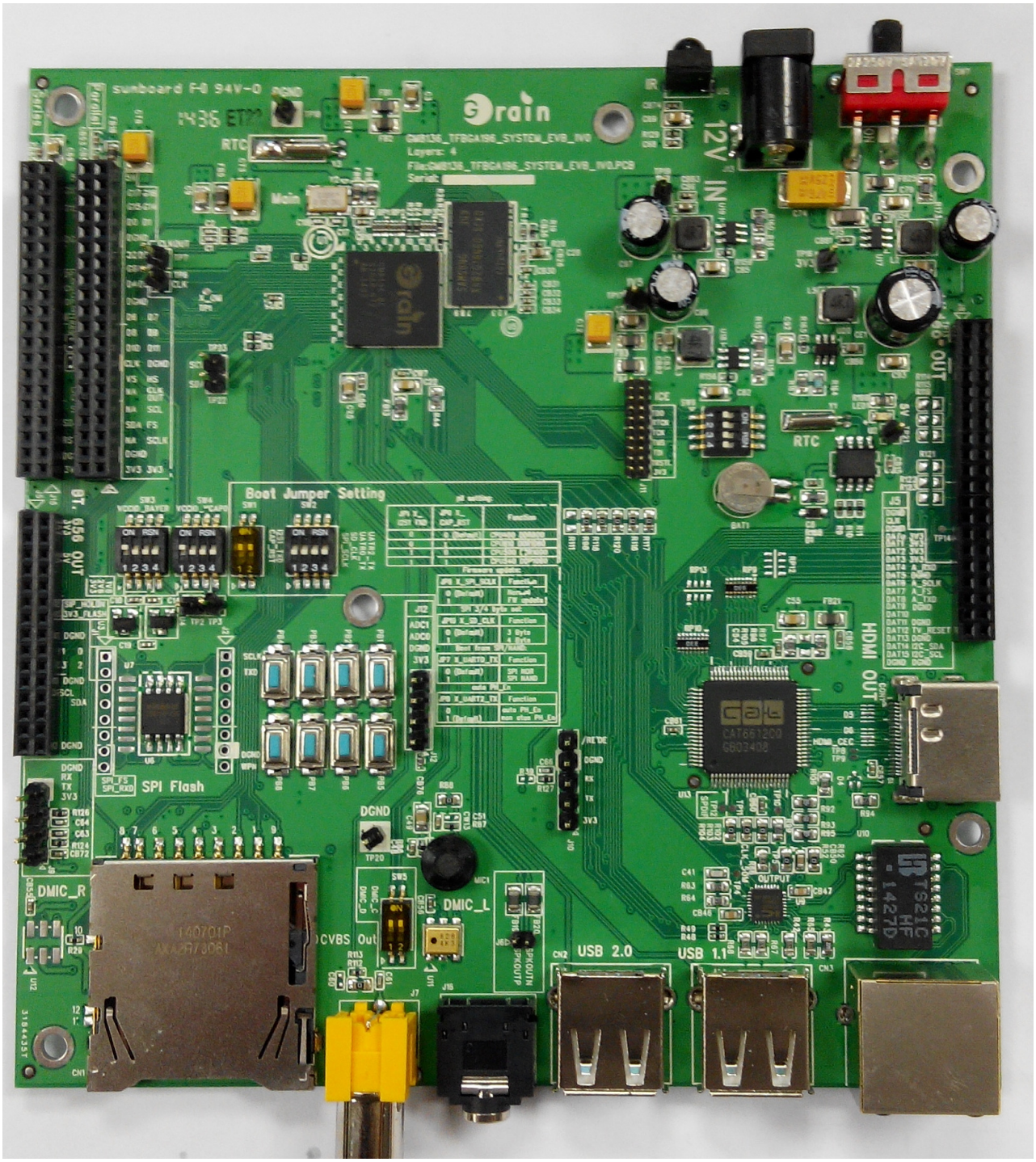


Figure 1-3. Top View of GM8136 EVB

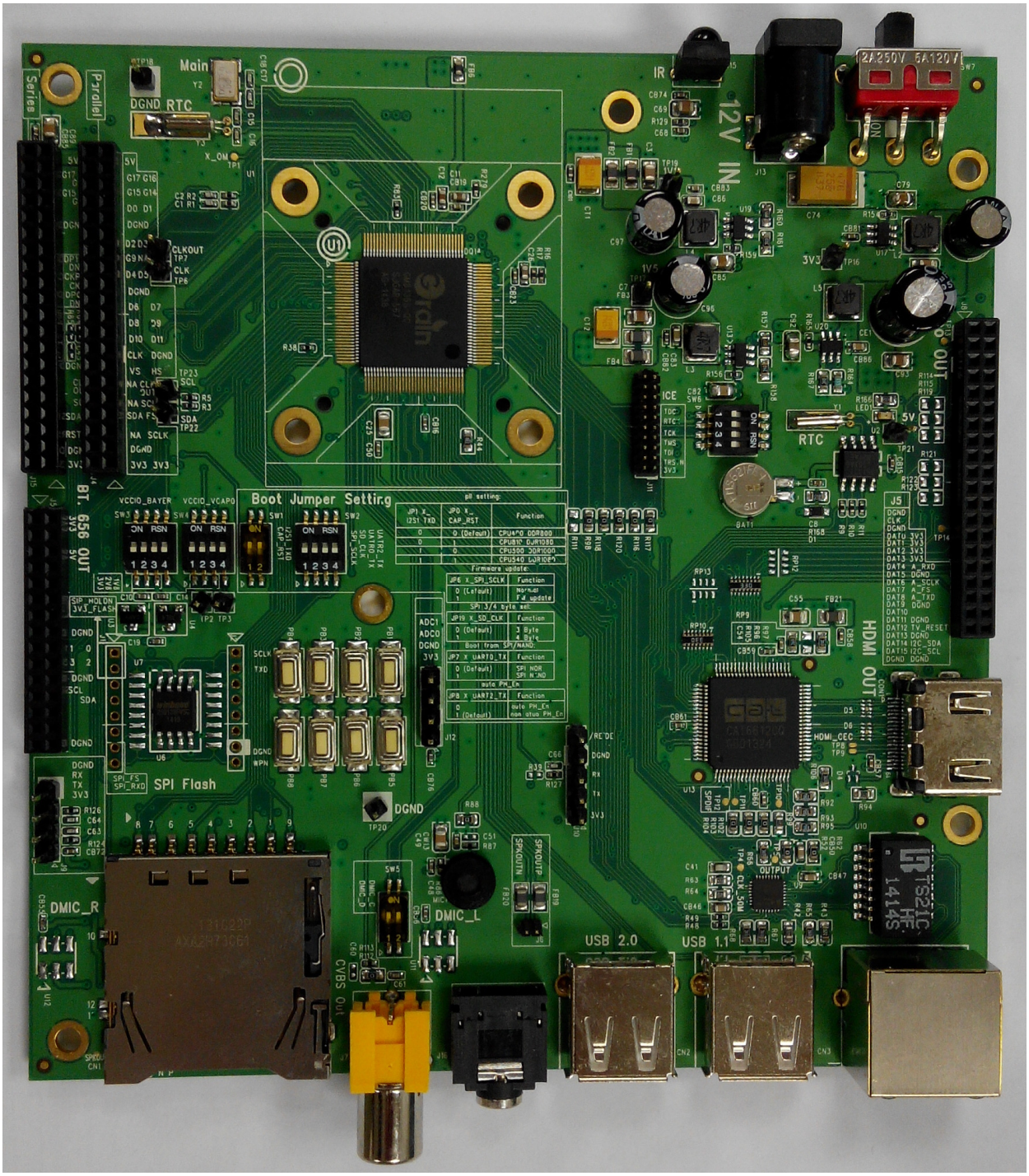


Figure 1-4. Top View of GM8136S EVB

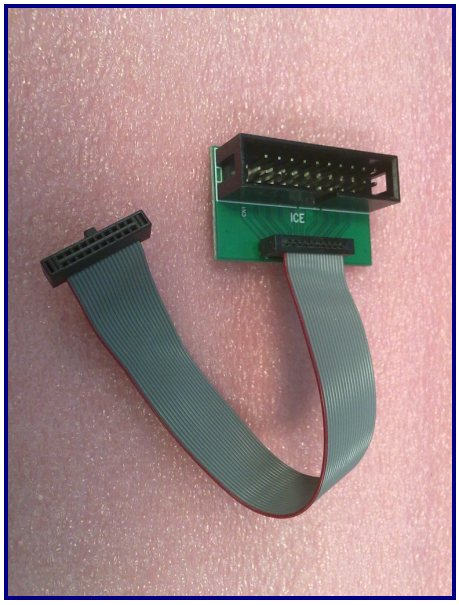


Figure 1-6. ICE Daughter Board

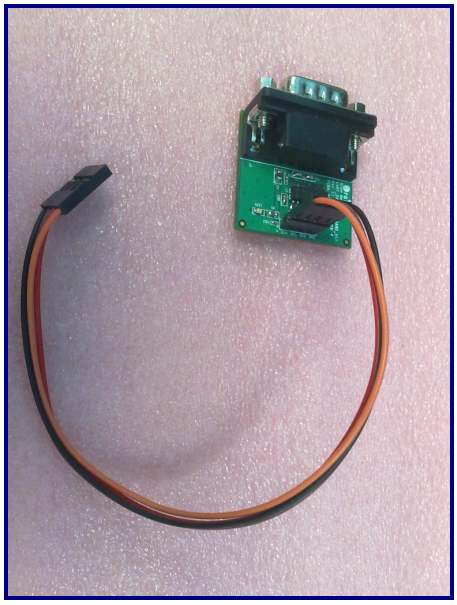


Figure 1-7. RS232 Daughter Board

1.2 Features

This EVB contains the following features:

- DDR3 SDRAM of 2G bits (128 Mx16) for GM8136, 1G bits (128Mx16) for GM8136S
- 16M byte SPI Flash memory
- ICE connector
- CMOS sensor interface connector
- Extended I/O connector
- 10/100 Ethernet RJ45 connectors
- SD card socket
- USB 2.0 HOST connector (OTG)
- USB 1.1 Device connector
- RCA (CVBS output) connector
- Audio codec (MIC in, line out, and speaker output)
- UART interfaces for asynchronous serial data transfer
- ADC keypads
- PWM
- GPIO
- I^2S interface
- IR remote control receiver
- DMIC

Chapter 2

System Hardware

This chapter contains the following sections:

2.1 Description of EVB Connectors

2.1.1 Jumper Settings

GM8136/GM8136S EVB contains several jumper settings .JP0, JP1 can be found in Switch SW1. JP6, JP7, JP8, JP19 can be found in Switch SW2. When the reset signal changes from low to high, GM8136/GM8136S will latch the logic value of the jumper settings. These latched values will affect the behavior of GM8136/GM8136S. For the IPCAM application, the value of JP6 must be logic low. As for JP7, JP8, JP19 depend on the user application. The definitions of the jumper settings are listed and described in Table 2-1.

Table 2-1. Function List of Jumper Settings

Pin No.	Signal Name	Description
JP0 (Internal pull-low)/ JP1 (Internal pull-low)	PLL1 setting	00：CPU400 MHz DDR800 MHz (Default) 01：CPU810 MHz DDR1080 MHz 10：CPU500 MHz DDR1000 MHz 11：CPU540 MHz DDR1080 MHz
JP6	Firmware update mode	0：Normal (Default) 1：Firmware update mode
JP7 (Internal pull-low)	SPI / parallel NAND flash selection	0：SPI NOR Flash (Default) 1：SPI NAND Flash
JP8 (Internal pull-up)	Power on Heat	0：auto PH_En 1：non auto PH_En (Default)
JP19 (Internal pull-low)	SPI flash 3/4-byte mode selection	0：select 3 byte mode (Default) 1：select 4 byte mode

2.1.2 CPU ICE Connector

CPU ICE connector (J11) can be connected to Open-ICE or Multi-ICE. Table 2-2 and Table 2-3 list and describe the pin definition of the CPU ICE connector.

Table 2-2. Pin Definition of CPU ICE Connector

Pin No.	Signal Name	Pin No.	Signal Name
1	3V3	2	3V3
3	ICE_TRSTn	4	GND
5	ICE_TDI	6	GND
7	ICE_TMS	8	GND
9	ICE_TCK	10	GND
11	ICE_RTCK	12	GND
13	ICE_TDIO	14	GND
15	ICE_SRSTn	16	GND
17	NC	18	GND
19	NC	20	GND

Table 2-3. Signal Description of CPU ICE Connector

Signal Name	Description
ICE_TCK	ICE clock input
ICE_TMS	ICE mode select
ICE_TDIO	ICE data
ICE_TDI	ICE data input
ICE_DBGRQ	External device enters ICE after de-activating the reset.
ICE_RTCK	Pull low with a 4.7-kΩ resistor
ICE_TRSTn	Active-low reset signal for the boundary scan logic Pull low with a 4.7-kΩ resistor
3V3	3.3-V power
GND	Ground

2.1.3 CMOS Sensor Interface Connector

The CMOS Sensor interface connectors (J4) (J15)provide a video input port for the Parallel sensor. Please refer to Table 2-4 for the details if J4 is used for the Parallel signals. Please refer to Table 2-5 for details if J15 connector is used for the Series signals.

Table 2-4. Pin Definition of Parallel sensor interface connector

Pin No.	Signal Name	Pin No.	Signal Name
1	3V3	2	3V3
3	DGND	4	DGND
5	I2S_SCLK	6	CAP_RST
7	I2S_FS	8	I2C_SDA
9	I2C_SCL	10	NC
11	BAYER_CLKOUT	12	NC
13	BAYER_HS	14	BAYER_VS
15	DGND	16	BAYER_CLK
17	BAYER_D11	18	BAYER_D10
19	BAYER_D9	20	BAYER_D8
21	BAYER_D7	22	BAYER_D6
23	NC	24	DGND
25	BAYER_D5	26	BAYER_D4
27	NC	28	GPIO0_9
29	BAYER_D3	30	BAYER_D2
31	DGND	32	DGND
33	BAYER_D1	34	BAYER_D0
35	GPIO0_14	36	GPIO0_15
37	GPIO0_16	38	GPIO0_17
39	5 V	40	5 V

Table 2-5. Pin Definitions of Series sensor interface connector

Pin No.	Signal Name	Pin No.	Signal Name
1	3V3	2	3V3
3	DGND	4	DGND
5	NC	6	CAP_RST
7	NC	8	I2C_SDA
9	I2C_SCL	10	NC
11	CAP_CLKOUT	12	NC
13	NC	14	NC
15	DGND	16	NC
17	DN0	18	DP0
19	CKN	20	CKP
21	DN1	22	DP1
23	DGND	24	DGND
25	NC	26	NC
27	NC	28	NC
29	NC	30	NC
31	DGND	32	DGND
33	NC	34	NC
35	NC	36	NC
37	NC	38	NC
39	5 V	40	5 V

2.1.4 Video output Interface Connector

The Video output interface connector (J8) provides a video output port for BT.656, BT.1120 and RGB565 interface. Please refer to Table 2-6 for the details.

Table 2-6. Pin Definition of Video output interface connector

Pin No.	Signal Name	Pin No.	Signal Name
1	DGND	2	NC
3	TV_CLK	4	TV_VS/RGB_VS
5	DGND	6	TV_HS/RGB_HS
7	TV_DAT0/RGB_B3	8	3V3
9	TV_DAT1/RGB_B4	10	3V3
11	TV_DAT2/RGB_B5	12	3V3
13	TV_DAT3/RGB_B6	14	3V3
15	TV_DAT4/RGB_B7	16	I2S1_RXD
17	TV_DAT5/RGB_G2	18	DGND
19	TV_DAT6/RGB_G3	20	I2S1_SCLK
21	TV_DAT7/RGB_G4	22	I2S1_FS
23	TV_DAT8/RGB_G5	24	I2S1_TXD
25	TV_DAT9/RGB_G6	26	DGND
27	TV_DAT10/RGB_G7	28	NC
29	TV_DAT11/RGB_R3	30	DGND
31	TV_DAT12/RGB_R4	32	TV_RESET
33	TV_DAT13/RGB_R5	34	DGND
35	TV_DAT14/RGB_R6	36	I2C_SDA
37	TV_DAT15/RGB_R7	38	I2C_SCL
39	DGND	40	DGND

2.1.5 Extended I/O Connector

The Extended I/O connector (J5) provides a peripheral interface.

Table 2-7 lists and describes the pin definition of the extended I/O connector.

Table 2-7. Pin Definition of Extended I/O Connector (J5)

Pin No.	Signal Name	Pin No.	Signal Name
1	3V3	2	3V3
3	DGND	4	DGND
5	NC	6	5V
7	NC	8	NC
9	NC	10	NC
11	I2S1_SCLK	12	I2S1_TXD
13	I2S1_FS	14	I2S1_RXD
15	DGND	16	DGND
17	PWM1	18	PWM0
19	PWM3	20	PWM2
21	DGND	22	DGND
23	I2C_SCL	24	I2C_SDA
25	NC	26	NC
27	NC	28	NC
29	DGND	30	DGND

2.1.6 UART/RS485 Connector

The GM8136/GM8136S EVB offers two DIN connectors (J9, J10) for the applications of UART and RS485. Please refer to Table 2-8 and Table 2-9 for the details on the pin definition of the UART and RS485 connectors.

Table 2-8. Pin Definition of UART0 Connector (UART0 Connector: J9)

Pin No.	Signal Name	Description
1	3V3	Power
2	TXD	UART0 transmit
3	RXD	UART0 receive
4	DGND	GND

Table 2-9. Pin Definition of UART1/RS485 Connector (UART1/RS485 Connector: J10)

Pin No.	Signal Name	Description
1	3V3	Power
2	TXD	UART1 transmit
3	RXD	UART1 receive
4	DGND	GND
5	/RE, DE	Control signal of RS485

2.2 Description of Power Switch

Table 2-10. List of Power Switches on EVB

Legend	Function
J13	This is 12V DC inlet, which connects to an external power adaptor.
SW7	Power source switch

2.3 Description of Push Buttons

Table 2-11. List of Push Buttons on EVB

Legend	Function
PB1 ~ PB8	ADC0 keypads

2.4 Description of LED Indicators

Table 2-12. List of LED Indicators on EVB

Legend	Function
LED1	5V Power source indicator

Chapter 3

IP Cam Demonstration Setup

This chapter contains the following sections:

3.1 Setting GM8136/GM8136S EVB

Setup procedure:

Step 1: Use the Ethernet cable to connect the GM8136/GM8136S EVB Ethernet port to PC

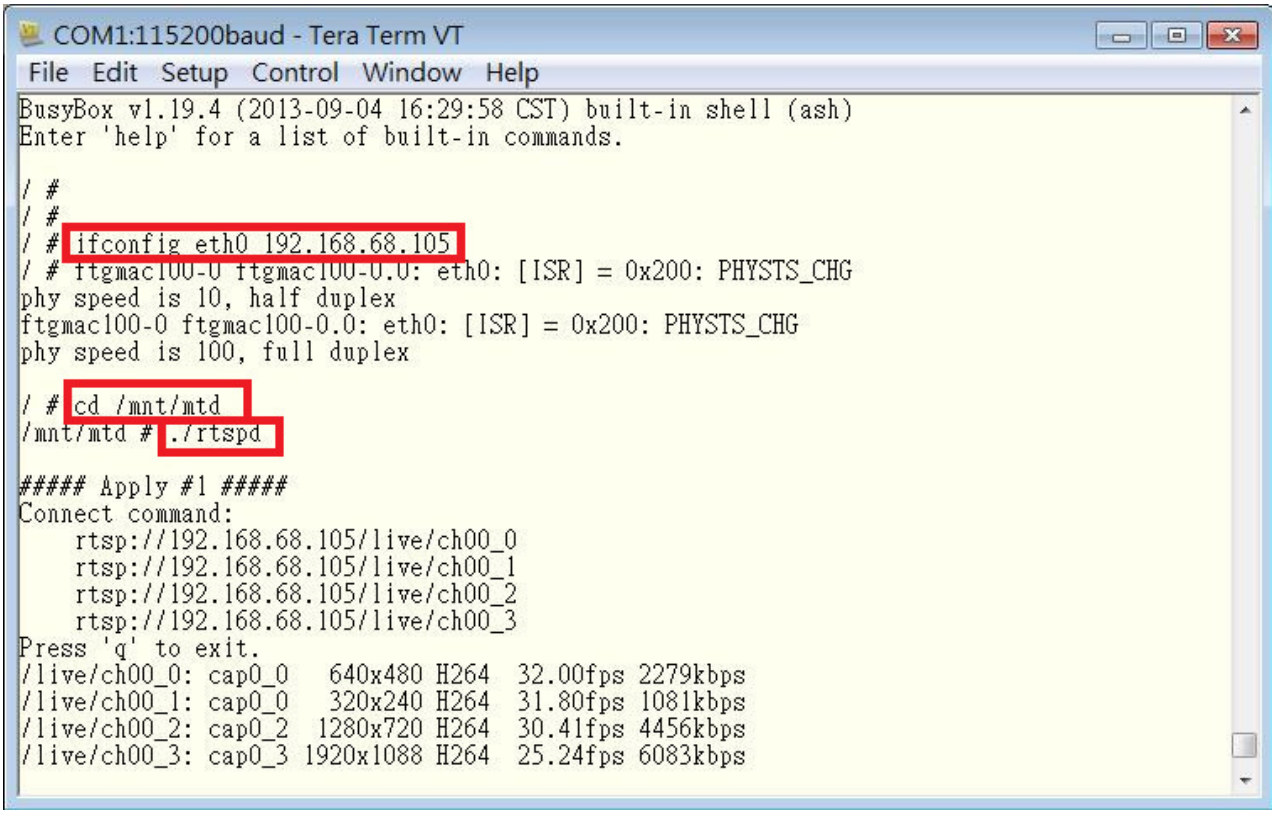
Step 2: Use the RS-232 cable to connect the GM8136/GM8136S EVB UART port to PC. The RS-232 baud rate is 115200.

Step 3: Power on the GM8136/GM8136S EVB

Step 4: In the PC console, you can see the booting log.

After completing the booting, please enter the following commands.

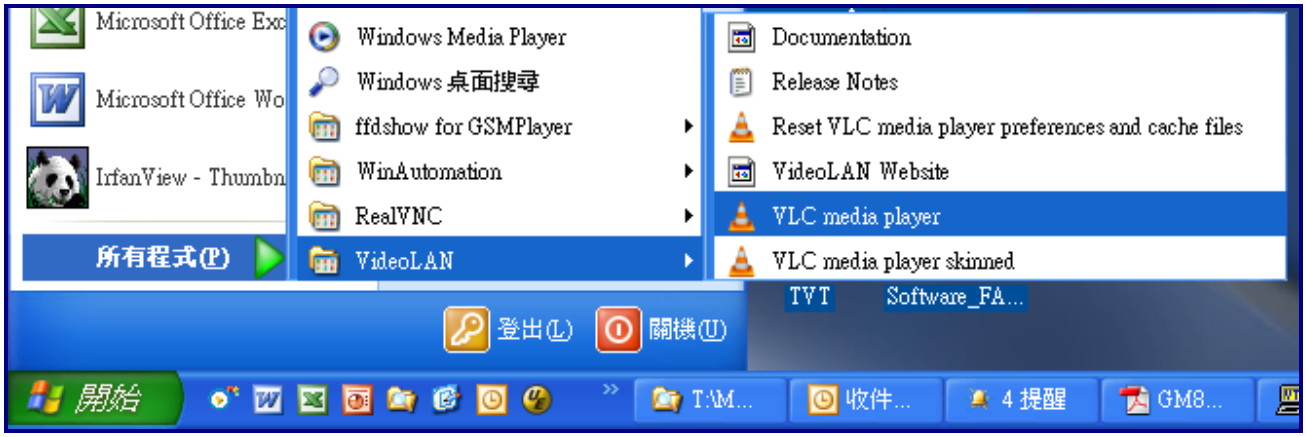
```
# ifconfig eth0 xxx.xxx.xxx.xxx (for example: 192.168.68.105)
# cd /mnt/mtd
# ./rtspd
```



3.2 Setting VLC Media Player in PC Site

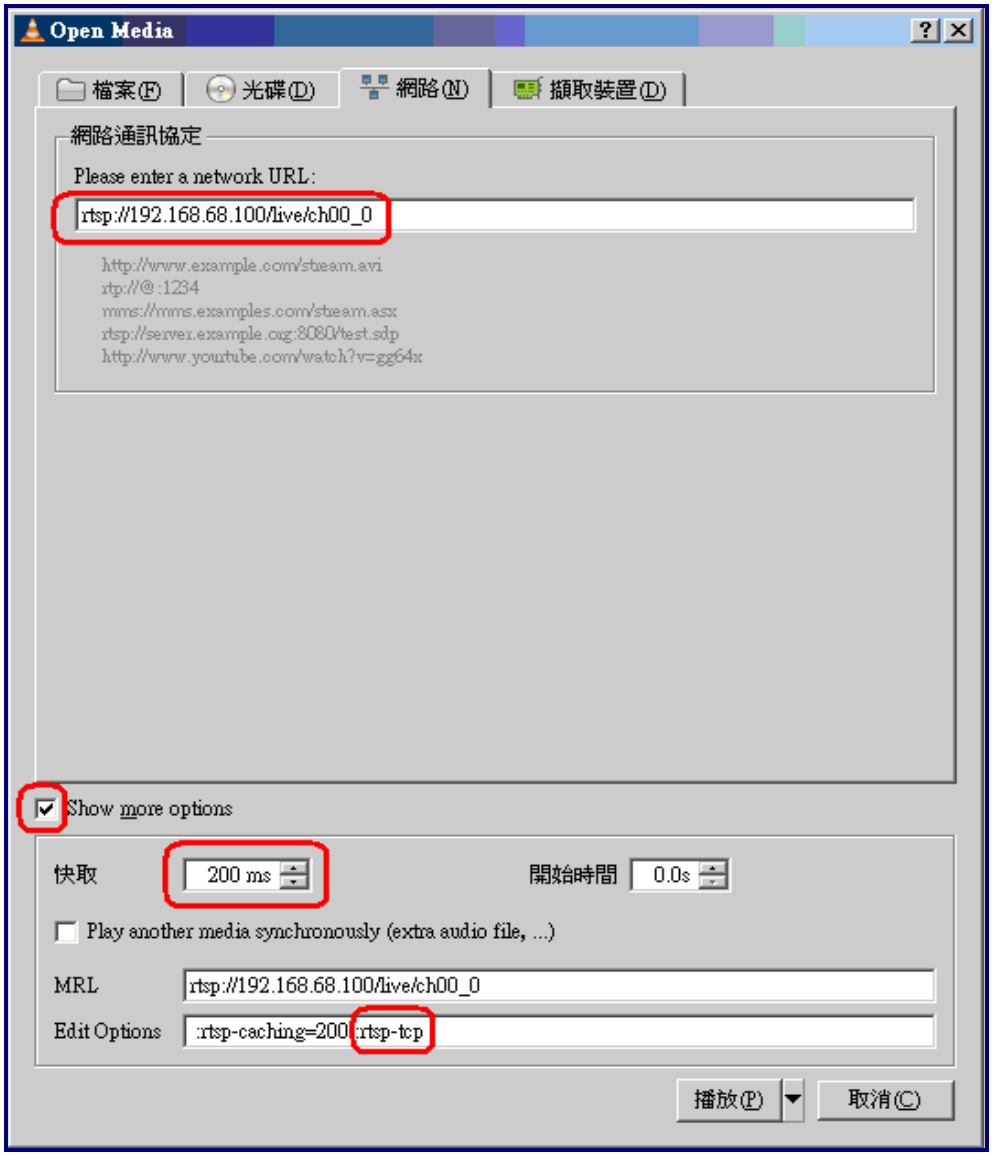
Setup procedure:

Step 1: Execute the VLC media player



Step 2: Select Media→ Open the network stream

Step 3: Fill in the network URL information and other related settings



Hint:

Edit options: □ rtsp-caching = 200; □:rtsp-tcp

"□" means space.

Step 4: Now, users can see the video of the IP Cam.

Chapter 4

EVB Firmware Update

This chapter contains the following sections:

4.1 Setting of GM8136/GM8136S EVB

Setup procedure:

Step 1: Set switch SW2 pin1 to logic low (Short JP6 jumper). GM8136/GM8136S will enter the firmware update mode.

If the content of the SPI Flash is empty, users can skip this step.

Step 2: Use the USB cable for connecting the GM8136/GM8136S EVB USB port to PC.

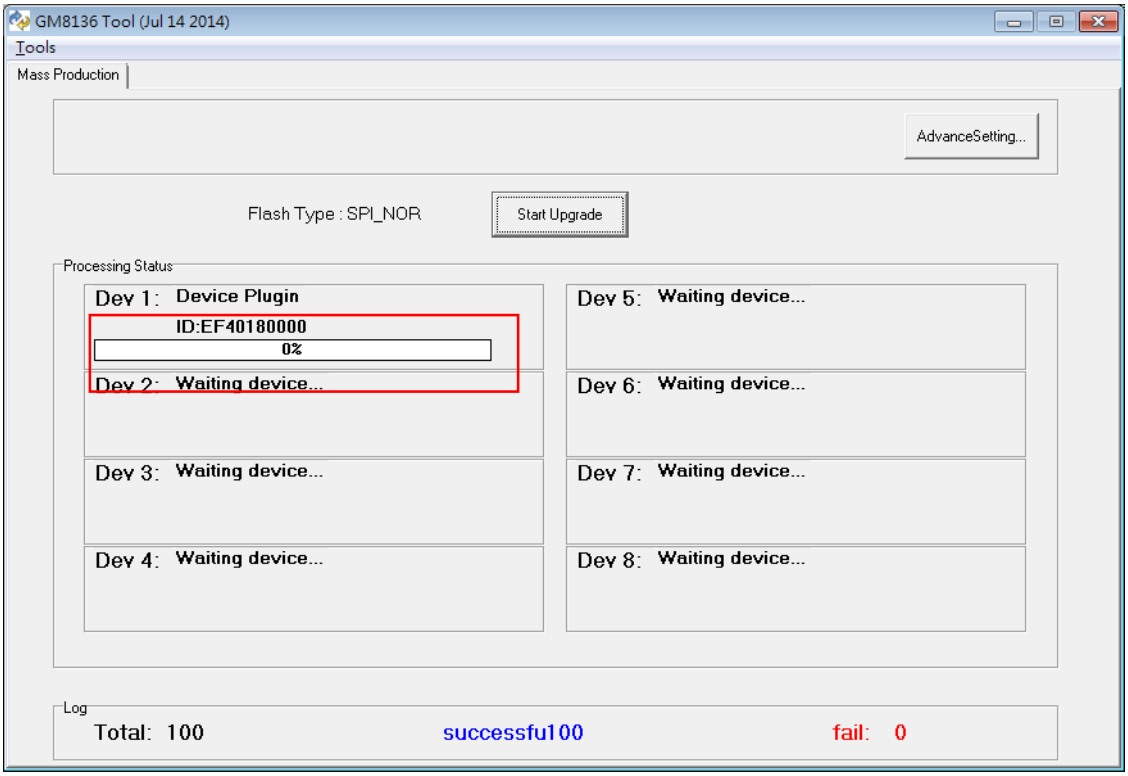
Step 3: Power-on the GM8136/GM8136S EVB.

4.2 Setting of PC Tool

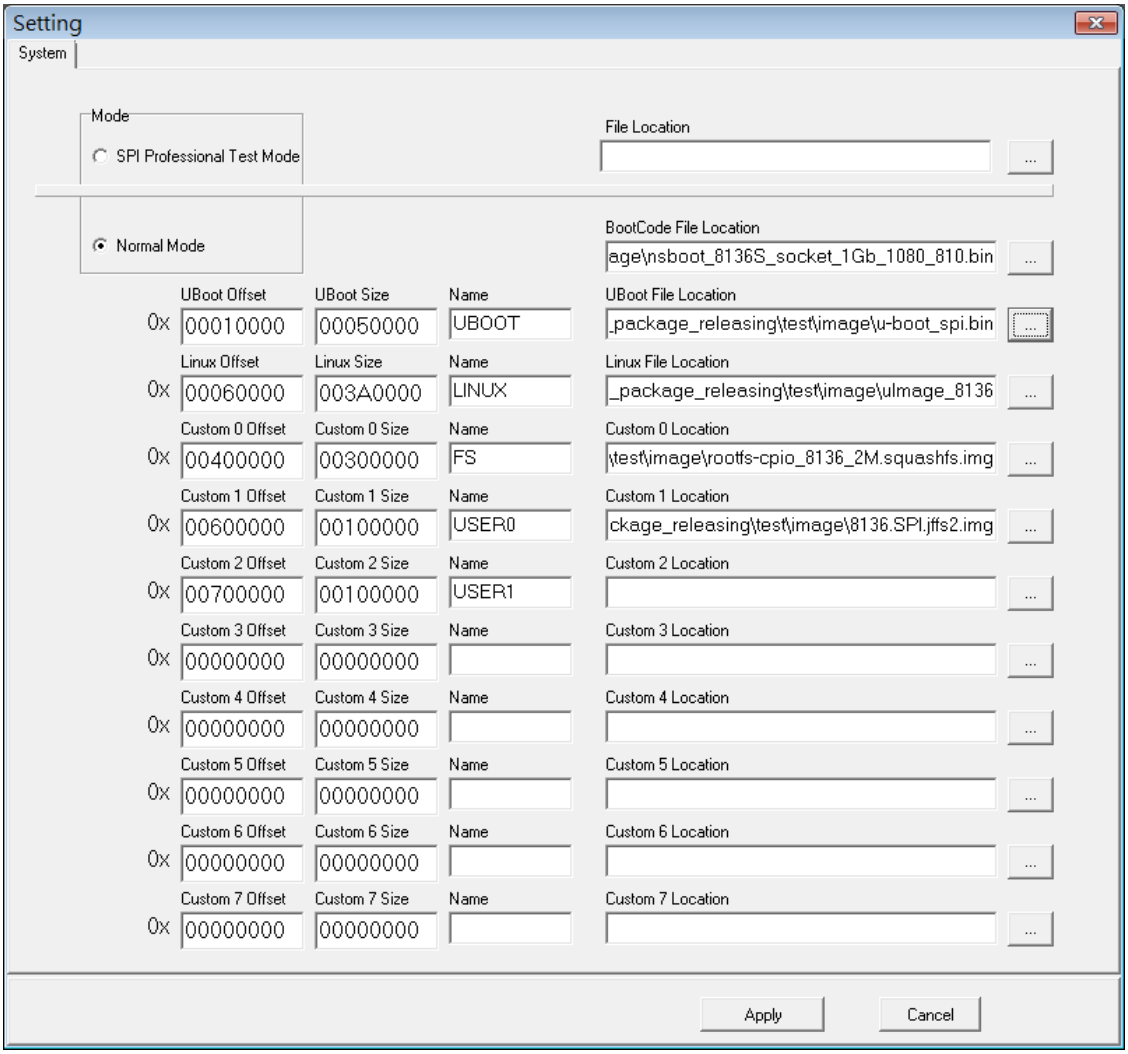
The firmware update tool "**fusblink8136.exe**" can be found in the SDK.

Setup procedure:

Step 1: After the PC tool utility (fusblink8136.exe) is executed, PC will show the following window. The Flash ID may be shown in the window if the SPI flash is detected.

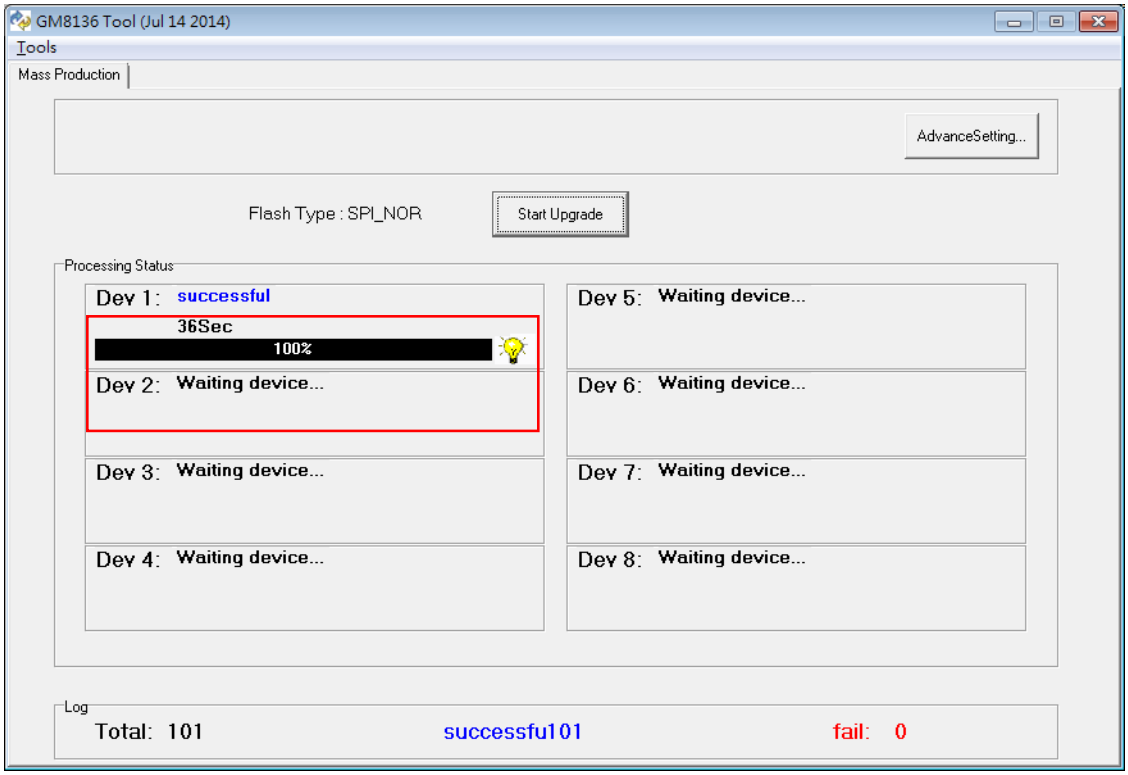


Step 2: Press the “Advance Setting…” button and specify the following location paths of files.



Step 3: Press the “Start Upgrade” (開始升級) button.

If upgrade is finished successfully, the device information bar will show “100%”.



Step 4: Set SW1 pin2 to logic high

Step 5: Reboot

Step 6: Please refer to Section 3.1 for detailed information of settings of the GM8136/GM8136S EVB.