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# APPLICABILITY TABLE

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<td>GS2K based Modules</td>
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**Note:** The features described in the present document are provided by the products equipped with the software versions equal or higher than the versions shown in the table. See also the Document History chapter.
Revision History

<table>
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<th>Version</th>
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<tr>
<td>1.0</td>
<td>July, 2017</td>
<td>Preliminary Release.</td>
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Chapter 1. Bringing up the Hardware

The OV788 GainSpan EVB hardware operation for evaluation is carried out in 3 steps which is as follows:

1. Flashing S2W
2. Flash OV Binary through S2W
3. Flash GS2K module with latest GS2K Video ADK/SDK binary

1.1 Flashing S2W

1. Put the module in program mode, by pointing switch SW7/PGM towards the module and power ON the module after connecting the USB cables to USB_UART0 and OV_USB_UART.

2. S2W binary is placed in 
   “$(ROOT)/ADK/video_fd_audio/QuickStart/S2W_Ext_Flash_Programmer” directory. S2W is flashed in order to provide a means to write the OV binary into external flash in the evaluation board.
Open GS2K Flash Programmer (gs2k_flashprogram.exe) placed in "$(ROOT)/ADK/video_fd_audio/Tools/GS_programming_tool" directory. Select USB_UART0 to 921K baud and check if the connection is OK. Select the superblock and firmware binaries from path given in step 2 as shown in the following figure:

3. On successful check connection and after the selection of firmware binaries, click 'Erase and Program' flash.
1.2 Flash OV Binary Through S2W

After flashing S2W binaries, perform the following steps:

1. Power OFF and put the module in RUN mode by pointing the switch SW7/PGM power switch.
2. Open the TeraTerm on USB_UART0 to 9600 and Power ON the module. Observe the Serial2WiFi APP banner in the TeraTerm, the Serial2WiFi APP is a pass through to write OV binary to external flash. To fasten the process, increase the baud rate to 921K by issuing At Command ATB=921600.

3. Select TeraTerm baud to 921K.
4. Edit 'ExtFlashWrite.ttl' file placed in “$(ROOT)/ADK/video_fd_audio/QuickStart/OV_binaries" directory by replacing all paths for Control-Block_{0,1,2}.bin, superblock.bin and video.bin. pointing to the package, as seen in the following figure:
5. In TeraTerm, go to 'Control' menu and select 'Macro' option. Select the edited ExtFlashWrite.ttl file as explained in previous step, execute the TTL script. After completion, the macro window will be closed automatically.

6. Once the OV binary writing is finished, it’s time to flash GS2K module with the appropriate Video ADK app binary that uses the OV binary programmed here. Now disconnect the TeraTerm.

NOTE: The binary that is flashed with S2W TTL script cannot be used to perform external flash OTAFU. First time flash, is just normal video.bin created from file system command and is not compatible for OTAFU.
1.3 FLASHING GS2K VIDEO APP BINARY

Once OV binary is Written (as defined in section: - Flash OV Binary through S2W). Program the video ADK app binary by performing the following steps:

1. Put the module in Program mode, by pointing the switch SW7/PGM towards the module and power ON the module after connecting the USB cables to USB_UART0 and OV_USB_UART.

2. Video binary is placed in “$(ROOT)/ADK/video_fd_audio/QuickStart/OV_VIDEO_ADK_binary” directory.

3. Open GS2K Flash Programmer (gs2k_flashprogram.exe) placed in “$(ROOT)/ADK/video_fd_audio/Tools/GS_programming_tool” directory and select USB_UART0 with 921K baud. Check if the connection is OK. Select superblock and firmware binaries from path given in step 2.

4. On successful “Check connection”and selection of firmware binaries, click ’Erase and Program’ flash.
Serial2WiFi APP
ath=921600
AT+EXFLASHSPICONF=1.6.3.0
OK
AT+EXFLASHSPICONF=2.7.3.0
OK
AT+EXFLASHSPICONF=4.13.0.0
OK
AT+EXFLASHSPICONF=8.5.3.0
OK
AT+EXFLASHINIT=0
OK
AT+EXFLASHERASE
OK
Chapter 2. OV OTAFU Firmware to External Flash

Once OV binaries are generated from OV SDK viz, dsif_boot_loader.bin and dsif_slave.bin. The binaries are made compatible to GainSpan's flash file system and OTAFU. The steps are sequential and should not be skipped.

2.1 Making Flash Compatible

1. Both the binary files “dsif_boot_loader.bin” and “dsif_slave.bin” have to be copied to “$(ROOT)/ADK/video_fd_audio/QuickStart/S2W_Ext_Flash_Programmer/FILEDIR” directory.

2. The binary files “dsif_boot_loader.bin” and “dsif_slave.bin” which were copied to FILEDIR directory should be renamed as “dsif.bt.bin” and “dsif.sl.bin” respectively. FILEDIR directory MUST have only these two files with exact names as shown in the following figure:

3. There is a safe-imager.exe application that needs to be executed to generate a “video.bin” file, as shown in the following figure:

4. The “video.bin” is the input to make it OTAFU-able binary.

NOTE: This video.bin can be copied to “$(ROOT)/ADK/video_fd_audio/QuickStart/OV_binaries” directory by replacing the existing old OV binary. For further use the binary can be flashed directly with the “ExtFlashWrite.ttl script”. 
2.2 Making Flash Binary to OTA FU-able Binary

The video.bin file created in section (Making Flash compatible) is made compatible to perform Over-the-Air-Firmware-Upgrade for OV. By placing the control blocks and code blob at appropriate offsets.

1. Execute ‘extflash_otafu.exe’ in
   “$(ROOT)/ADK/video_fd_audio/QuickStart/S2W_Ext_Flash_Programmer/” directory. This application takes "video.bin" and gives out OTA FU-able video_otafu_new.bin, as shown in the following figure:

   ![Image of the command output]

   **Input File:** video.bin  
   **Output File:** video_otafu_new.bin

2. The binary “video_otafu_new.bin” is uploaded to external flash OTA FU which is explained in the next section.

   **NOTE:** Customers with architecture issues on “extflash_otafu.exe” have to re-compile the C source with the command “gcc extflash_image_otafu_create.c -o extflash_otafu” in the respective architecture’s Cygwin terminal.
2.3 PERFORMING OV OTAFU

1. Power OFF and put the module in RUN mode by pointing the switch SW7/PGM power switch.

2. Open two TeraTerm instances on UART0 and OV_USB_UART with 115K as the baud rate and power ON. The sample logs are shown in the following figure:
3. Once the Video binary is loaded, GainSpan module comes up in limited-AP with “SSID GS_PROV_VIDEO<last-3-octets-of-GS-mac>”. Connect the laptop to this SSID, open the web browser with the link http://<IP-of-GS-LAP>/extotafu.html. For example: http://192.168.240.1/extotafu.html as shown in the following figure:

4. From the external OATFU webpage, click ‘Choose file’ and select ‘video_otafu_new.bin’ and press “Upload”.
5. After the upload, software reset occurs with the following information as shown in the figure:

![Image]

6. This completes OV OTAFU.