

CONFIDENTIAL B

MEDIATEK

Imagiq™ Simulator⁵ ISP Reg Header File Tool



Steps

1. Prepare files
2. Generate BatchRun Excel
3. Edit BatchRun Excel
4. Write
5. Modify Manually

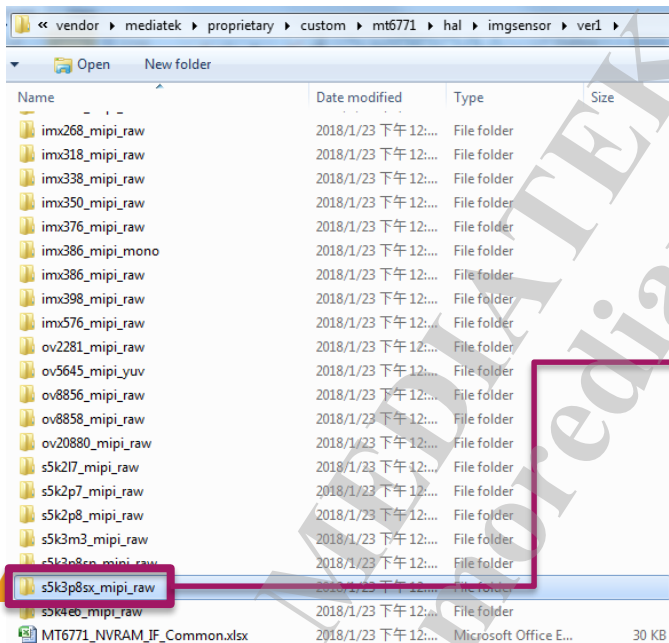
Step1- Prepare Files

- Sync “\$Sensor_mipi_raw” folder from codebase

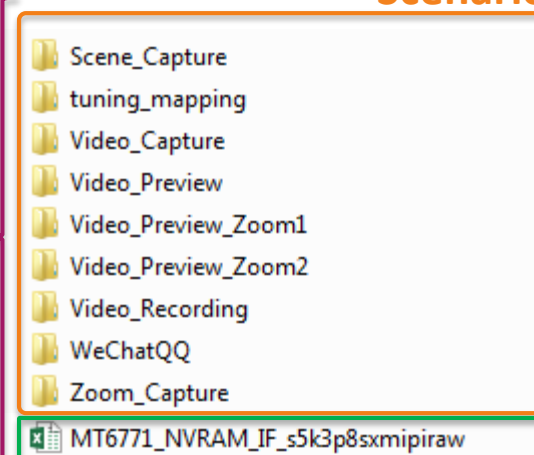
– Includes:

- Scenario folders
- NVRAM_IF Excel file

s5k3p8sx_mipi_raw



Scenario folders

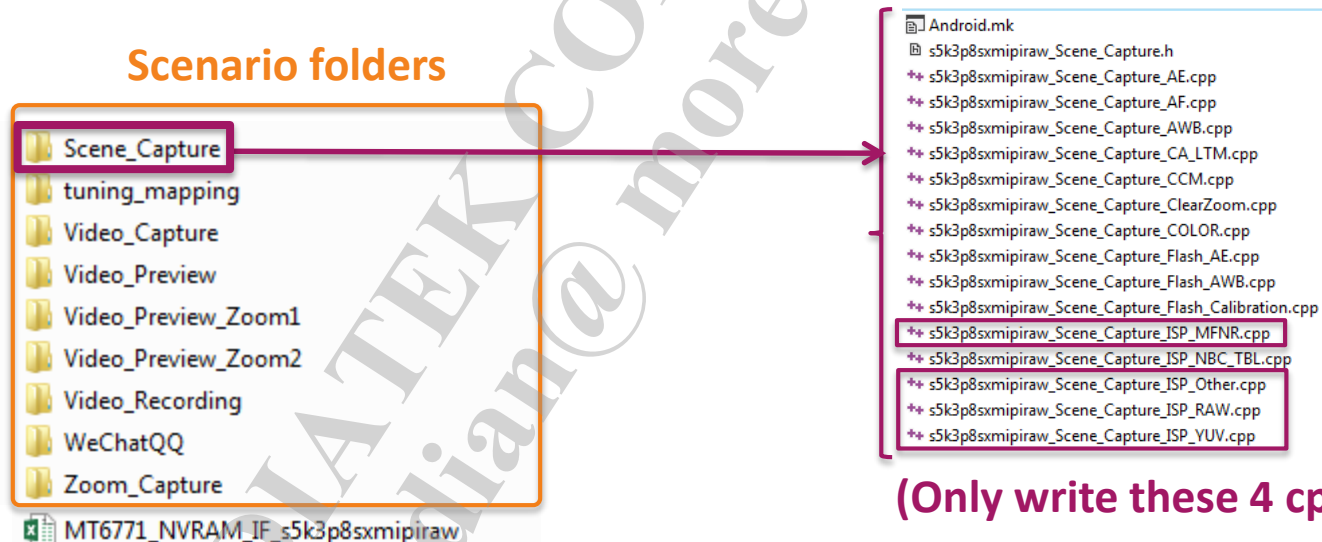


NVRAM_IF Excel file

Step1- Prepare Files

■ Note

- Each scenario folder includes many cpp files



Step2- Generate BatchRun Excel

The screenshot shows the ImagiqSimulator - CANNON interface. The 'Tools' menu is open, and 'ISP Reg Header File Tool' is selected. The 'Write from Dat' option is chosen under 'Register File'. The 'RUN' button is highlighted. The 'More Features' tab is active, showing a list of modules. The 'Generate BatchRun Excel File' button is highlighted. The 'Load' button is highlighted. The 'MT6771_NVRAM_IF_s5k3p8' file is loaded. The 'MT6771_NVRAM_IF_s5k3p8sxmipiraw' file is loaded. The 'MT6771_NVRAM_IF_s5k3p8sxmipiraw_BatchRun' file is loaded.

(1). Load NVRAM_IF excel

(2). Generate BatchRun excel

1. The SHEET "ROW" is the only activated sheet.
2. The COLUMN "A" to "F" are as follows:
Index, Scenario, ON/OFF, DAT_File, ISO, Modules.
3. The ROW starts from row "4",
and through the rows with the valid "Index" column.

Step3- Edit BatchRun Excel

(1). Fill in dat path

short name	user defined scenario name	[ON, OFF]	full path	code name	code names
Index	Scenario	ON/OFF	DAT File	ISO	Modules
1	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-100_xxx.dat	IDX_00	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
2	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-200_xxx.dat	IDX_01	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
3	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-400_xxx.dat	IDX_02	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
4	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-800_xxx.dat	IDX_03	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
5	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-1200_xxx.dat	IDX_04	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
6	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-1600_xxx.dat	IDX_05	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
7	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-2000_xxx.dat	IDX_06	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
8	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-2400_xxx.dat	IDX_07	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
9	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-2800_xxx.dat	IDX_08	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
10	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-3200_xxx.dat	IDX_09	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
11	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-4000_xxx.dat	IDX_10	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
12	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-4800_xxx.dat	IDX_11	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
13	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-5600_xxx.dat	IDX_12	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
14	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-6400_xxx.dat	IDX_13	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
15	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-7200_xxx.dat	IDX_14	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
16	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-8000_xxx.dat	IDX_15	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
17	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-8800_xxx.dat	IDX_16	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
18	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-9600_xxx.dat	IDX_17	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
19	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-11200_xxx.dat	IDX_18	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
20	Scene_Capture	ON	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture-12800_xxx.dat	IDX_19	ADBS_BNR_BPC, BNR_NR1, RNR, UDM, NBC_ANR, NBC_LCE_LINK, NBC2_ANR2, NBC2_ABF, EE, HFG, NR3D
21	Scene_Capture	OFF	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture_MFNR-200.dat	IDX_00	ADBS_BNR_BPC, BNR_NR1, RNR, NBC_LCE_LINK, MFNR_UDM, MFNR_NBC_ANR, MFNR_NBC2_ANR2, MFNR_EE, MFNR_MFB, MFNR_MIXER3, MFNR_HFG
22	Scene_Capture	OFF	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture_MFNR-400.dat	IDX_01	ADBS_BNR_BPC, BNR_NR1, RNR, NBC_LCE_LINK, MFNR_UDM, MFNR_NBC_ANR, MFNR_NBC2_ANR2, MFNR_EE, MFNR_MFB, MFNR_MIXER3, MFNR_HFG
23	Scene_Capture	OFF	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture_MFNR-800.dat	IDX_02	ADBS_BNR_BPC, BNR_NR1, RNR, NBC_LCE_LINK, MFNR_UDM, MFNR_NBC_ANR, MFNR_NBC2_ANR2, MFNR_EE, MFNR_MFB, MFNR_MIXER3, MFNR_HFG
24	Scene_Capture	OFF	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture_MFNR-1200.dat	IDX_03	ADBS_BNR_BPC, BNR_NR1, RNR, NBC_LCE_LINK, MFNR_UDM, MFNR_NBC_ANR, MFNR_NBC2_ANR2, MFNR_EE, MFNR_MFB, MFNR_MIXER3, MFNR_HFG
25	Scene_Capture	OFF	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture_MFNR-1600.dat	IDX_04	ADBS_BNR_BPC, BNR_NR1, RNR, NBC_LCE_LINK, MFNR_UDM, MFNR_NBC_ANR, MFNR_NBC2_ANR2, MFNR_EE, MFNR_MFB, MFNR_MIXER3, MFNR_HFG
26	Scene_Capture	OFF	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture_MFNR-2000.dat	IDX_05	ADBS_BNR_BPC, BNR_NR1, RNR, NBC_LCE_LINK, MFNR_UDM, MFNR_NBC_ANR, MFNR_NBC2_ANR2, MFNR_EE, MFNR_MFB, MFNR_MIXER3, MFNR_HFG
27	Scene_Capture	OFF	\\mediatek.xxx\xxx\01.Scene_Capture\Scene_Capture_MFNR-2000.dat	IDX_06	ADBS_BNR_BPC, BNR_NR1, RNR, NBC_LCE_LINK, MFNR_UDM, MFNR_NBC_ANR, MFNR_NBC2_ANR2, MFNR_EE, MFNR_MFB, MFNR_MIXER3, MFNR_HFG

(2). Turn "ON" to write each dat

Step4 Write

ImagiqSimulator - CANNON

Images Registers Run ISPs **Tools** Others

Show Module: Full

Show Alias: Full Name

Group Collapse

Select All Outputs

Unselect All Output

ISP Reg Header File Tool

ISP Reg Diff Tool

Load Statistics Info

Color Checker Info

Luma Tuning Tool

BitTrue Automation

OnlineTuning Toolkit

5k3p8sx_mipi_raw\MT6771_NVRAM_IF_s5k3p8sxmipiraw.xlsx ... Check

ISP Settings Register Color Table

Register File

☐ Write

☐ Read

☐ Compare

☒ Write from Dat

RUN

Module

☐ UDM

☐ NBC_ANR

☐ NBC_LCE_LINK

☐ NBC2_ANR2

☐ EE

☐ HFG

☐ NR3D

☐ DBS

☐ ADBS

☐ OBC

☐ BNR_BPC

☐ BNR_NR1

☐ BNR_PDC

☐ RMM

☐ RNR

☐ NBC2_CCR

☐ NBC2_ABF

☐ MFNR_MFB

☐ MFNR_MIXER3

☐ MFNR_UDM

☐ MFNR_NRC_ANR

☐ All Modules

A. Select DAT Files

The file names must be post-fixed with -[Scenario]-[ISO]

B. Select Batch Run EXCEL

MT6771_NVRAM_IF_s5k3p8sxmipiraw_BatchRun.xlsx ...

Message

Processing...

(Elapsed Time: 436.20 s)

[Batch Run Done]

(2). Press "Run" to write

(1). Load edited BatchRun excel

MT6771_NVRAM_IF_s5k3p8sxmipiraw_BatchRun

Modify Manually (1)- MFNR Threshold

- Set frame-number in “*Scenario*_ISP_MFNR.cpp”
- Set *capture_frame_number* = *blend_frame_number* = 6 (max. frames)
- Set *mfll_iso_th* = minimum MFNR enable ISO
- Frame_num1~7 are individually mapping to iso_level1~7

```
// Gives N, for capturing N frames
.capture_frame_number = 6,
// Gives N, for N-frame blending. E.g. N = 6, 6-frame blending, c
.blend_frame_number = 6,
// Give 0 or 1, 0 for half size MC, 1 for full size MC
.full_size_mc = 1,
.memc_bad_mv_range = 255,
.memc_bad_mv_rate_th = 127,
```

MFNR max frame number: 6 frame

```
// The threshold of doing MFB or not
.mfll_iso_th = 200,
// The threshold of doing Pline changing or not
.pline_iso_th = 200,
// iso range for adaptive frame number mechanism
```

ISO \geq 200 \Rightarrow MFNR on

```
.iso_level1 = 200,
.iso_level2 = 400,
.iso_level3 = 800,
.iso_level4 = 3200,
.iso_level5 = 4000,
.iso_level6 = 4000, // reserved for extension
.iso_level7 = 4000, // reserved for extension
// at least to set blend frame number  $\geq$  2
```

ISO $<$ 200 \Rightarrow 4 frame

```
.frame_num1 = 4,
.frame_num2 = 4,
.frame_num3 = 4,
.frame_num4 = 4,
.frame_num5 = 5,
.frame_num6 = 6,
.frame_num7 = 6, // reserved for extension
```

3200 $<$ ISO $<$ 4000 \Rightarrow 5 frame

Modify Manually (2)- SWNR Threshold

■ Single

- Filename (NVRAM): *\$scenario*_ISP_Other.cpp

```
const NVRAM_CAMERA_FEATURE_SWNR_THRES_STRUCT $sensor_SWNR_THRES_0000 = {  
    400  
};
```

(Single)

ISO > 400 => SWNR on

■ MFNR

- Filename (NVRAM): *\$scenario*_ISP_MFNR.cpp

```
const NVRAM_CAMERA_FEATURE_SWNR_THRES_STRUCT $sensor_SWNR_THRES_0001 = {  
    1600  
};
```

(MFNR)

ISO >= 1600 => SWNR on

Appendix

Note1

Group	ISP					
Scenario	ISP_YUV	ISP_RAW	ISP_Other	ISP_MFNR	ISP_NBC_TBL	ClearZoom
Scene_Capture	Scene_Capture	Scene_Capture	Scene_Capture	Scene_Capture	Scene_Capture	Scene_Capture
Face_Capture	Face_Capture	Scene_Capture	Scene_Capture	Face_Capture	Scene_Capture	Scene_Capture
Zoom_Capture	Zoom_Capture	Scene_Capture	Scene_Capture	X	Scene_Capture	Scene_Capture
Professional_Capture	Professional_Capture	Scene_Capture	Scene_Capture	X	Scene_Capture	Professional_Capture
Flash_Capture	Flash_Capture	Scene_Capture	Scene_Capture	X	Scene_Capture	Scene_Capture
FaceBeauty_Capture	FaceBeauty_Capture	Scene_Capture	Scene_Capture	FaceBeauty_Capture	Scene_Capture	FaceBeauty_Capture
HDR_Capture	HDR_Capture	Scene_Capture	Scene_Capture	X	Scene_Capture	Scene_Capture
Panorama_Capture	Panorama_Capture	Scene_Capture	Scene_Capture	X	Scene_Capture	Scene_Capture
Video_Capture	Video_Capture	Scene_Capture	Scene_Capture	X	Scene_Capture	Scene_Capture
Capture_Preview_cap	Capture_Preview	Capture_Preview	Capture_Preview	X	Scene_Capture	Capture_Preview
Capture_Preview_prv	Capture_Preview	Capture_Preview	Capture_Preview	X	Scene_Capture	Capture_Preview
Capture_Preview_Zoom1_cap	Capture_Preview_Zoom1	Capture_Preview	Capture_Preview	X	Scene_Capture	Capture_Preview
Capture_Preview_Zoom1_prv	Capture_Preview_Zoom1	Capture_Preview	Capture_Preview	X	Scene_Capture	Capture_Preview
Capture_Preview_Zoom2_cap	Capture_Preview_Zoom2	Capture_Preview	Capture_Preview	X	Scene_Capture	Capture_Preview
Capture_Preview_Zoom2_prv	Capture_Preview_Zoom2	Capture_Preview	Capture_Preview	X	Scene_Capture	Capture_Preview
Video_Preview	Video_Preview	Video_Preview	Capture_Preview	X	Scene_Capture	Video_Preview

(Only write these 4 cpp files)

Note2

YUV.cpp appear in Face_Capture folder

But no RAW.cpp in Face_Capture folder
(it will be in Scene_Capture folder)

Group	ISP					
Scenario	ISP_YUV	ISP_RAW	ISP_Other	ISP_MFNR	ISP_NBC_TBL	ClearZoom
Scene_Capture	Scene_Capture	Scene_Capture	Scene_Capture	Scene_Capture	Scene_Capture	Scene_Capture
Face_Capture	Face_Capture	Scene_Capture	Scene_Capture	Face_Capture	Scene_Capture	Scene_Capture
Zoom_Capture	Zoom_Capture	Scene_Capture	Scene_Capture	X	Scene_Capture	Scene_Capture
Professional_Capture	Professional_Capture	Scene_Capture	Scene_Capture	X	Scene_Capture	Professional_Capture
Flash_Capture	Flash_Capture	Scene_Capture	Scene_Capture	X	Scene_Capture	Scene_Capture
FaceBeauty_Capture	FaceBeauty_Capture	Scene_Capture	Scene_Capture	FaceBeauty_Capture	Scene_Capture	FaceBeauty_Capture
HDR_Capture	HDR_Capture	Scene_Capture	Scene_Capture	X	Scene_Capture	Scene_Capture
Panorama_Capture	Panorama_Capture	Scene_Capture	Scene_Capture	X	Scene_Capture	Scene_Capture
Video_Capture	Video_Capture	Scene_Capture	Scene_Capture	X	Scene_Capture	Scene_Capture
Capture_Preview_cap	Capture_Preview	Capture_Preview	Capture_Preview	X	Scene_Capture	Capture_Preview
Capture_Preview_prv	Capture_Preview	Capture_Preview	Capture_Preview	X	Scene_Capture	Capture_Preview
Capture_Preview_Zoom1_cap	Capture_Preview_Zoom1	Capture_Preview	Capture_Preview	X	Scene_Capture	Capture_Preview
Capture_Preview_Zoom1_prv	Capture_Preview_Zoom1	Capture_Preview	Capture_Preview	X	Scene_Capture	Capture_Preview
Capture_Preview_Zoom2_cap	Capture_Preview_Zoom2	Capture_Preview	Capture_Preview	X	Scene_Capture	Capture_Preview
Capture_Preview_Zoom2_prv	Capture_Preview_Zoom2	Capture_Preview	Capture_Preview	X	Scene_Capture	Capture_Preview
Video_Preview	Video_Preview	Video_Preview	Capture_Preview	X	Scene_Capture	Video_Preview