WBStickerMaker_G User's Manual

(version 3.03)

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History:

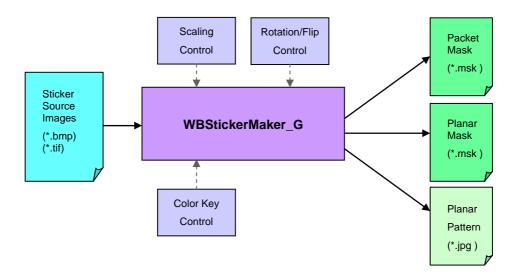| Revision	Date	Comment
0.1	2003/08/19	Draft
3.03	2005/08/03	Integrated version for both W99685 and W99702

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1. Introduction and Startup

StickerMaker is one of the characteristic functions provided by Winbond DSC chip "W99685" and Winbond MultiMedia Chip "W99702", which makes it possible to decorate a captured image with another image attaching on it. This decoration process is so-called Sticker Making. (For convenience, the term "Object Images" is referred to as the captured images or those images that are going to be decorated, and "Sticker Images" is refered to as the decorators in this document.)

In addition to "Sticker Images", W99685/W99702 also needs MASK files to complete the StickerMaker function. The sticker images and mask files are usually created and well prepared in storage before performing sticker making. For saving the space of storage, the sticker images are all saved in form of JPEG format. (The detail format of the mask files is listed in section 4.)
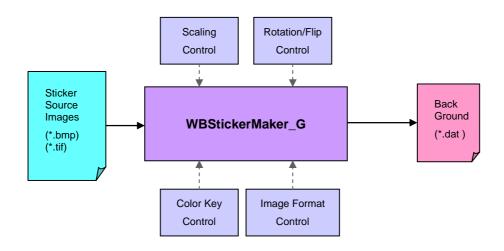
WBStickerMaker_G is a win32 application that is built to facilitate the Sticker Making for W99685 and W99702.   The [Diagram1], [Diagram2], and [Diagram3] show the conceptual flow of operations for sticker maker.

WBStickerMaker_G takes the Bitmap or TIFF as the source images to generate the pattern and mask files which are needed by baseband to perform sticker maker function **[Diagram1]**. The user can also simulate the result of the sticker maker on PC. Before the simulation, the user must use WBStickerMaker_G to generate the backgroud data file as shown in **[Diagram2]**. And then the user can use the object image file along with the mask and background files as the input to WBStickerMaker_G to simulate the result of StickerMaker **[Diagram3]**. Please refer to the section 3 for the details of operations.

Scaling Control

Rotation/Flip Control

Sticker Source Images (*.bmp) (*.tif)

WBStickerMaker_G

Color Key Control

Packet Mask (*.msk)

Planar Mask (*.msk)

Planar Pattern (*.jpg)

[Diagram1] The Creation of the Pattern and Mask Files

Scaling Control

Rotation/Flip Control

Sticker Source Images (*.bmp) (*.tif)

WBStickerMaker_G

Color Key Control

Image Format Control

Back Ground (*.dat)

[Diagram 2] Generation of the Background Files

Object Image (*.jpg) (*.bmp) (*.tif)

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[Diagram 3] Simulation of the result of the Sticker Maker

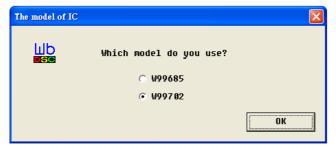1110-0001-08-A

2. Features of WBStickerMaker

- An Image Viewer for JPEG, BITMAP, TIFF, and numerous RGB/YUV raw data formats including:

  - PACKET_RGB565
  - PACKET_RGB555
  - PACKET_RGB332,
  - PACKET_RGB444,
  - PACKET_RGB565_SWAP
  - PACKET_RGB555_SWAP
  - PACKET_RGB444_SWAP
  - PACKET_YUV422
  - PLANAR_RGB444
  - PLANAR_YUV444
  - PLANAR_YUV422
  - PLANAR_YUV420
  - PLANAR_YUV411

- Basic Geometrical Transformations including:

  - Scaling
  - 90 degree rotation (clockwise and counter-clockwise)
  - Flip (vertically and horizontally)

- Image File Transformations between different formats, for example:

  - Save the image into the JPEG file.
  - Save the image into the Bitmap file.
  - Save the image into the TIFF file.

- The Creation of Sticker Mask Files

- The Creation of Sticker Background Files

- Preview of Sticker Result

3. Operations

3.1. Starting WBStickerMaker_G

Double-click the the icon ![WBStickerMaker_G.exe] from the Explorer. A dialog box will popup waiting for the user to choose the model of IC [FIG0]. At current version (3.03), 2 models, W99685 and W99702, are supported.

[FIG0] The dialog box for model selection.

After choosing the model of IC the mainframe window of WBStikerMaker_G will show up in the screen [FIG1].

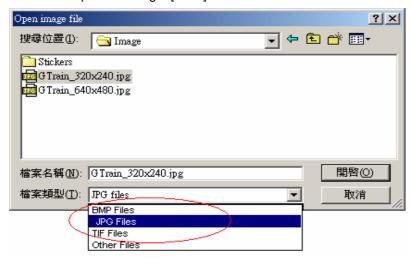[FIG1] The mainframe window of WBStickerMaker.

3.2. Viewing Images

3.2.1. Viewing JPEG, Bitmap, or TIFF files

1. Select the menu "File" and then the "Open Image File" open the "Open Image file" dialog box.

2. Set the "Files of type" to be "JPG files", "BMP files", or "TIF files". And then select the file from the file list to open the image. [FIG2]
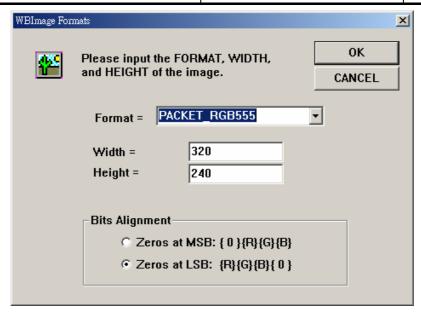

[FIG2] The "Open image file" dialog box

3.2.2. Viewing RGB or YUV raw data files

The procedure to view RGB or YUV raw data files is quite similar as described in 3.2.1, except that the "Files of Type" must be set to "Other Files." [FIG2].

After choose the filename from the file dialog box [FIG2], there will popup a "WBImage Formats" dialog box. Users must specify which format and what size the image exactly is. [FIG3]
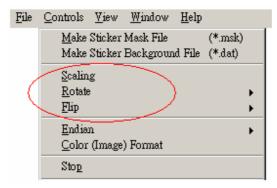
[FIG3] WBImage Format Dialog Box

3.3. Geometrical Transformation

After the image is loaded into WBStickMaker_G, users can select submenu items within the Controls menu to perform the basic geometric transformation.
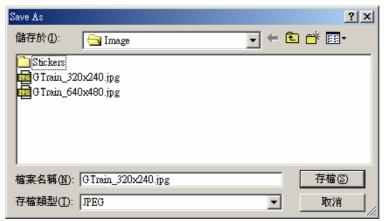

[FIG4] Menu Items for Geometrical Transformation

3.4. Image Format Transformation

When images are loaded for viewing in WBStickerMaker_G, they are all managed internally in a uniform format. Therefore, WBStickerMaker_G provides "Save As" function to transform the Image into different format of file. The steps are listed as following:

1. Choose the menu "File" and then "Save As" to open the "Save as" dialog box. [FIG5]

2. Input the file name with a suitable extension name ".jpg" , ".bmp", or ".tif" (for JPEG, Bitmap, and TIFF format respectively.)

3. Press "OK" button. WBStickerMaker will generate the image in the desired format into the file.

4. If JPEG is chosen at step2, the user should choose what further jpeg format he wants: YUV422 or YUV420. [FIG5.1]

[FIG5] The "Save As" dialog box

[FIG5.1] The JPEG formats: YUV420 or YUV422

3.5. Generating the Pattern and Mask files

1. Load the Sticker Image:

Follow the steps listed in section 3.2 to load the sticker image into WBStickerMaker.
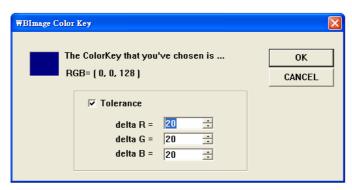
2. Set the Color Key for the Sticker Image:

Move the mouse cursor to choose a reference pixel from within the sticker image. And click down mouse's right button to popup the "Set Color Key" menu [FIG6]. Select the menu item. And there will popup the reconfirmation dialog box [FIG7].

Those pixels in color close to the ColorKey chosen by the user will be regarded as "ColorKey Pixels". The ColorKey Pixels specifies the transparent regions of the sticker and the Object Image (or Preview Image in the real chip) will be seen at these region.

In the example of [FIG7], those pixels with the color ranged from RGB(0, 0, 128-20) to RGB(0+20, 0+20, 128+20) will be the "ColorKey Pixels."
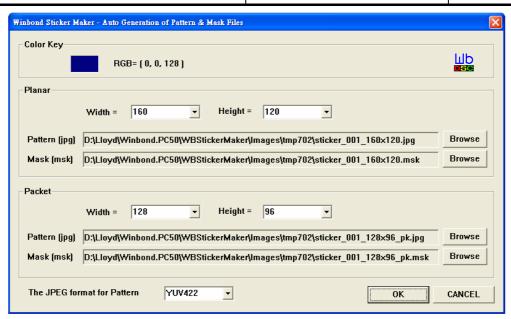

[FIG6] Using Right-Button of mouse to set the color key.

[FIG7] The color key reconfirmation.

3. Click from the tool bar. The dialog box as shown in [FIG8] will popup.

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[FIG8] The dialog box of "Auto Generation of Pattern & Mask Files"

This dialog box will generate 4 files: the **planar mask** file, the **planar pattern** file, the **packet mask** file, and the packet pattern file. In the general case for the stick-maker usage of the real chip (W99702 or W99685), only the first 3 files are needed to be stored in the Baseband (please refer to camera module commands: SendStickerMakerPacketMask, SendStickerMakerPlanarMask, and SendStickerMakerPattern.)

The width and height of the planar mask and pattern will decide the target size of the picture going to be captured and stickered by the real chip, whereas the width and height of the packet mask must exactly be the same values as the ones of the **preview** area going to be set in the real chip.

The "JPEG format for pattern" combo box is only available for the W99702 which allows baseband to decide which format, YUV422 or YUV420, of the target picture going to be captured and stickered. (W99685 always use YUV422 for sticker maker.)

3.6. Generating the Sticker Background Files

1. Load the source image:

    Follow the steps listed in section 3.2 to load the image into WBStickerMaker.

2. Set the format of the background file:

Select menu "Controls" and then "Color (Image) format" [FIG10] to popup the "WBImage Format" dialog box [FIG3]. Specify the target format and size for the background file. Press "OK" to start making the sticker background file.

[FIG10] The menu item "Make Sticker Background File"

3.7. Simulation of the Sticker Result

1. Load the source image: Follow the steps listed in section 3.2 to load the image into WBStickerMaker_G.

2. Press the "Sticker" icon from the tool bar [FIG11]

3. Specify the Mask file and Background file in the dialog box [FIG12].

4. The "WBImage Format" dialog box [FIG3] will appear again. Specify the correct format and size for the background file.

5. If the simulation successes, there will be another window showing the sticker result [FIG13]

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[FIG11] The Icon "Sticker"

[FIG12] Specify the background and mask file name
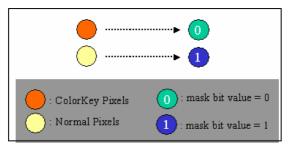

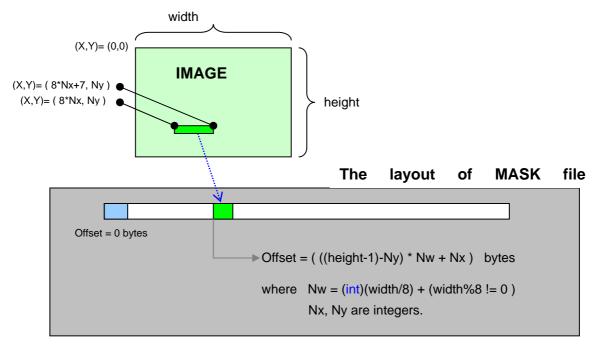[FIG13] An example of "The simulation of the Sticker Result"

Appendix 1. The Format of Sticker MASK Files for W99702

The sticker mask file of W99702 maps every single pixel of the sticker image into 1 single bit value. [FIG14]

[FIG14] The way W99702 maps the ColorKey pixel to the mask bit value

The layout of the mask file must be y-coordinate descending and every 8 pixels of the sticker image are mapped into 1 byte in the file. [FIG15]
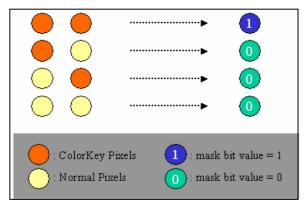

Offset = (((height-1)-Ny) * Nw + Nx)   bytes

where   Nw = (int)(width/8) + (width%8 != 0)
Nx, Ny are integers.

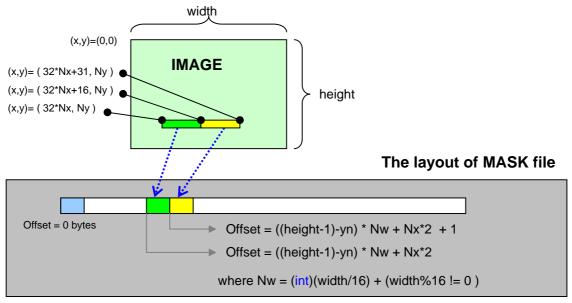[FIG15] The layout of mask file (W99702)

Appendix 2. The Format of Sticker MASK Files for W99685

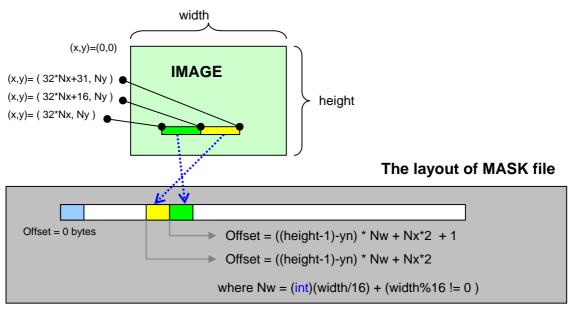The sticker mask file of W99685 maps every 2 pixels of the sticker image into 1 single bit value. [FIG16]

[FIG16] The way sticker image pixels mapping to the mask bit value

The layout of the mask file must be y-coordinate descending and every 16 pixels of the sticker image are mapped into one byte in the file. In order to support the configurations of little endian and big endian, there are 2 different layouts of mask file (please refer to [FIG17] and [FIG18])

width

(x,y)=(0,0)

IMAGE

(x,y)= (32*Nx+31, Ny)
(x,y)= (32*Nx+16, Ny)
(x,y)= (32*Nx, Ny)

height

The layout of MASK file

Offset = 0 bytes

Offset = ((height-1)-yn) * Nw + Nx*2 + 1

Offset = ((height-1)-yn) * Nw + Nx*2

where Nw = (int)(width/16) + (width%16 != 0)

[FIG17] The layout of mask file (W99685 little endian)

width

(x,y)=(0,0)

IMAGE

(x,y)= (32*Nx+31, Ny)

(x,y)= (32*Nx+16, Ny)

(x,y)= (32*Nx, Ny)

height

The layout of MASK file

Offset = 0 bytes

Offset = ((height-1)-yn) * Nw + Nx*2 + 1

Offset = ((height-1)-yn) * Nw + Nx*2

where Nw = (int)(width/16) + (width%16 != 0)

[FIG18] The layout of mask file (big endian)

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