Pocket-Size Micro-Projector

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Overview

The use of visual information in a presentation was a burdensome task requiring advanced preparation of slides, overhead projector materials, and projection system availability at a venue. To solve this problem, manufacturing a powerful and portable projector is needed; a good choice is the LCD micro-projector which is small enough to be portable and has a brilliant image quality. As a result, this report plans to build a pocket-sized micro-projector with high resolution.

There are two main objectives of the project:

1. To increase the compatibility of the projector,
2. To display a clear image without flickering problem

According to the objectives, the major tasks of the project are:

1. To design a controller for VGA (640x480) input and SVGA (800x600) output,
2. To design a controller for S-video (720x480) input and SVGA (800x600) output.
3. To modify the frame rate frequency
### System

**Fig. 1 System Block Diagram**

<table>
<thead>
<tr>
<th>Part Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD9883</td>
<td>A complete 8-bit, 140MSPS, monolithic analog interface optimized for capturing RGB graphics signals from personal computers and workstations</td>
</tr>
<tr>
<td>TVP5150</td>
<td>An ultra low power NTSC/PAL/SECAM video decoder. It converts NTSC, PAL and SECAM video to 8-bit ITU-R BT.656 format</td>
</tr>
<tr>
<td>t-0947</td>
<td>A chip converts PC/Mac/SUN and TV/HDTV video signals for flat panel display. It performs image scaling on true color RGB or YUV data stream and feeds the scaled pixels to LCD panel</td>
</tr>
</tbody>
</table>
Result

Fig. 2 output Vsyn total
Output Vsyn total
= 8.3295ms
= 8.3295ms / (1 / 75.8944 kHz)
= 632.16 Hsyn

It is the same as our setting of Vsyn total which is 632 Hsyn

Fig. 3 Output Hsyn active width
Output Hsyn active width
= 11.7727us / (1 / 68.025 MHz)
= 800.84 clk

It is the same as our setting of Hsyn active wide which is 800clk

Fig. 4 Output image