High-Definition Projection Display

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Nowadays, high resolution projection displays are widely used in the world. They are commonly found in our daily life, for example, in theatres, exhibitions, seminars and even inside MTR station. Therefore, the project displays are important to our daily life and its market is substantial.

Our projection display has the following features:

- Displaying images at a higher frequency
- Able to support both VGA and composite sources

Thus, not only a stable and smooth image can be generated, but also it can be made more user-friendly.

**Overview**

Firstly, our projection display can display images at a higher frequency in order to minimize the flickering problem through the use of Synchronous Dynamic Random Access Memory (SDRAM). SDRAM can read the data twice and hence our projection display can generate two frames at each time (double frame). Then the problem of flickering is minimized and hence users can view the images comfortably.

Secondly, by using the “Xilinx Webpack” to program Xilinx Spartan 2 and SDRAM, our projector display can support different sources such as VGA and composite.

Our projection display driver board is shown below:
INPUT Composite (from VCD/DVD)

Micro-display Driver (Xilinx + SDRAM x2) + (A/D converter)

ISDTV704C-1
One panel driver

Color management, optics and prism

Illustration of one panel driver by system block diagram

Figure A Photo of the projection display (with optical instrument)
As shown in Figure B, in the logic high period of each DISP pulse, there are two SCLK pulses. This is the characteristic of the composite video source.

Refer to Figure C, there are two first line mark (FLM) for each period of mode. This can show that the projection display is working under double frame mode.

As shown in Fig D, this is an image from composite source (VCD) with double frame rate. The image was refreshed 120 times in a second.