Three Dimensional Goggle Based on Silicon Microdisplay

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Introduction

Nowadays, many new designs of goggles and HMDs have been researched and manufactured; they are able to ensure a high resolution display and provide much entertainment to the user. However, the existing 3D goggles/HMDs could be improved. More functions could be added to the goggle to provide more entertainment for the user. In our Final Year Project, the focus was to add a new function to the goggle to extend its functionality and to optimize its resolution. It was decided to extend the goggle’s functionality so that it could be used to watch TV.

System block diagram of the goggle
Design and Implementation phase

The main board (which can accept Y/C or composite input) of the goggle was produced, and then its resolution was optimized by tuning the brightness and contrast of the Video Decoder (TVP5150A) with the use of the debugger and the CRO.

The main board of the goggle

A TV tuner was then added by inserting a circuit to enable TV viewing, and through the use of Assembly Language, a program for \( I^2C \) setting was written to tune the channels. Also, a EEPROM and buttons was added to the circuit to change the channels.

The layout design of the TV Tuner
Result

The final product is a goggle through which the viewer view NTSC and PAL signals from VCD, DVD players, personal computers and TV. For the TV, the user can hear sound through the earphone and change channels by pressing a button.

Series of pictures captured from the eyepiece of the goggle

The merit of our goggle, compared to goggles/HMDs available on the market is that it can be used to watch TV directly through the antenna. There is no need for a TV set.