

C815493 : MAJOR ELECTRICAL ENGINEERING
KEY WORD: CLOSED CAPTION DECODER / THAI-ENGLISH DISPLAY

KRIT ATHIKULWONGSE : DEVELOPMENT OF A THAI-ENGLISH CLOSED CAPTION
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ISBN 974-636-573-8.

A closed caption system is a system that provides audio-related data by inserting them between normal composite video signal frames. Hence, the data are not visible on ordinary television receivers. To view these data, a special device called "closed caption decoder" must be used to decode them and produce captions on the screen. Closed captioning on the NTSC TV system was initiated in the United States of America about 20 years ago. Its main purpose is to help the deaf and hearing-impaired persons to understand the informations they can not hear. In Thailand, the closed caption system has not been provided due to its different TV standards and its necessity to support both Thai and English languages.

This thesis presents a detailed study of the closed caption system used in the United States of America and a development of a PAL closed caption decoder which can display captions in Thai and English. The main component in this decoder is a special purposed integrated circuit chip designed to decode the caption data and produce video signal of the caption characters. This chip is called "Thai-English closed caption processor." Due to its complicated functions, this processor is designed by using VHDL models and synthesized on an FPGA chip with an equivalent complexity of about 10,000 gates. Using this processor, only a small number of additional IC components are needed to build a closed caption decoder. They are a voltage comparator, a read only memory (ROM), a random access memory (RAM) and a video overlay synchronizer.

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