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Abstract

Satellite communication is currently used in many application both in business and industrial. One type of satellite communication network namely VSAT is considered used very widely. BPSK channel unit is one of vital part for VSAT network.

This thesis proposes practical design of BPSK satellite channel unit including selectable bit rate feature. The test results show that the designed channel unit is very well operational in 52-88 MHz frequency range. The channel unit can be directly integrated to RF portion of satellite earth station. This thesis uses Costas Loop technique to recovery carrier from received signal. The Symbol Timing Recovery (STR) uses Delay And Multiply to recovery clock signal for synchronizing the received data. The method for resolving phase ambiguity is to employ the differential encoding scheme.

The technology know-how and the components available in Thailand can let BPSK channel unit to be designed and produced in Thailand. The channel unit can be produced locally with low price comparing to importing the complete unit from aboard.