

ABSTRACT

Digital television standard that has been used in Indonesia is Digital Video Broadcasting Terrestrial Second-Generation (DVB-T2) by European Telecommunications Standards Institute (ETSI). The standard was developed due to importance of jitter-free broadcast and high resolution video. In order to implement digital television system which is reliable and able to overcome error bit, channel coding is necessary. Channel coding is a technique used in communication system with main purpose to detect and correct errors. Channel coding that has been used in DVB-T2 is Forward Error Correction (FEC) encoding with a concatenation of two code, thus are Low Density Parity Check (LDPC) code and Bose Chaudhuri Hocquenghem (BCH) code. It is expected to obtain lower Bit Error Rate (BER) with the use of concatenation code rather than usage of only one code.

This thesis implement DVB-T2 blocks based ETSI EN 302 755 V1.3.1 in GNURadio software. Implementation in GNURadio software is done using number of subcarrier 6817, mapper 64-QAM, guard interval 1/8, and LDPC code rate 1/2, 3/5, 3/4, 4/5 and 5/6 while in BER simulation software is done with LDPC code rate 1/2 and 3/5. Simulation results Signal-to-Noise Ratio (SNR) and Energy Bit per Noise Ratio (E_b/N_0) in AWGN channel. The DVB-T2 system is also implemented in BER simulation software in order to obtain value of Bit Error Rate (BER), result of BCH and LDPC code combination.

Simulation result smallest E_b/N_0 value obtained in LDPC code rate 1/2 with E_b/N_0 0.79 dB and coding gain 8.64 dB toward theoretical BER curve in BER 10^{-5} and biggest E_b/N_0 obtained in LDPC code rate 3/5 with E_b/N_0 1.2 dB.

Keywords: *DVB-T2, channel coding, GNURadio, Digital TV, code rate.*