

ABSTRACT

The need for digital television content broadcasting in Indonesia is increasing. The transition of analogue to digital technology provides the consequence of providing more television programs in its quantity. Broadcast digital technology should be able to overcome the problem of frequency limitations to create a new television program. The organization of the digital TV broadcasting system has changed in terms of channel utilization. So it takes the efficiency of using frequency channels such as the use of one channel for more than one TV program. However, the frequency spectrum usage efficiency makes the inter-channel distance close enough to allow ICI to occur. The solution is DVB-T2 technology by using OFDM (Orthogonal Frequency Division Multiplexing) modulation of DVB-T2 technology. OFDM is a transmission technique that uses multiple carrier frequencies (multicarriers) in one channel where each carrier frequency is perpendicular (orthogonal). However OFDM has a challenge namely the high PAPR that causes power efficiency to be bad.

In this final project, the implementation of OFDM system using GnuRadio software which signal carrier with variation of FFT size (1K, 2K, 4K, 8K, 16K, 32K), constellation 16 QAM and coderate 1/2. Signals implemented with OFDM and Spectrum Analyzer systems measure signal quality transmitted on RF Front End using USRP N210. The received carrier signal power is compared to the noise. Thus, it can be seen the performance of OFDM system with the effect of FFT size on the result of signal sent. Based on the result of FFT size, the best is 16 K with 42.06766289 dB and E_b / N_0 is 36.40179 dB. For the biggest PAPR value, it is found in FFT size 32K which is 8.738547 dB.

Keywords: DVB-T2, OFDM, FFT size, GnuRadio.