

ABSTRACT

The technology development on data, voice, and video transmission between one terminal and another, have been growing, and the consequently, it needs a transmission medium that can transmit high rate of data, voice and video. Fiber optic is one of medium that can transmit high rate of data, voice, and video. Single mode fiber has larger bandwidth if we compare with multimode fiber. For distance product bandwidth efficiency, we have to use SCM technique.

SCM is a technique that can modulate data signal, voice, and video from low to high frequency. Subcarrier signal f_i is added with combiner power microwave. Signal in electrical domain will be modulated to optic frequency. Therefore this technique can make single mode fiber transmit high data rate.

One of the technology that can use SCM technique is Definition Television (HDTV). In HDTV, the transmitted video quality is better if it is compared with analog television. HDTV has 1,5 Gbit/s bitrate, bitrate will become 19,3 Mbit/s, if we do compressing. For HDTV transmission, it can use Hybrid Fiber Coax (HFC) network technology. Hybrid Fiber Coax (HFC) network technology is an integration technology between fiber optic transmission medium at Head End side to distribution point side and coaxial transmission medium at distribution point side to customer.

The parameters that be analysed in SCM technique are BER and Q-Value where minimum standard value base on FCC specification section 76.605(a) are 10^{-9} dan 6 with rise time budget system, with consider CSO and CTB effect at external modulator. Analysis and simulation are done with various sum of subcarrier to find out performance changing at single mode fiber with using SCM technique. Therefore, it is found sum of maximum input channel are 66 channel using BPSK Modulation. Simulation be done with using matlab R2007a software.