ABSTRACT

Spread spectrum is one of transmission, where one single signal uses bigger bandwidth than the minimum bandwidth required to transmit the message. One of spread spectrum is Direct Sequence-Spread Spectrum (DS-SS) which has spread out signal bandwidth. Type of spread spectrum used in Code Division Multiple Access (CDMA) technology is Direct Sequence Spread Spectrum (DS-SS) where users are identified by different codes so it is possible to multiple users are able to access the information on the same frequency and the same time and free from interference and jamming. DS-SS CDMA is one of the applications from BPSK.

This final project is designed and deployed in DS-SS CDMA kit for three users. Three users transmit different data on the frequency and at same time. They are identified by multiplying their data with certain codes. Each data are generated by 8 shift register using bitrates 12.89 kbps while the codes are generated by 5 shift register using 400 kbps which is 31 times from data bitrates, since the processing gain is 31. This code multiplying causes bandwidth spread out with the same bitrates (400 kbps). The result from multiplying each data with certain codes is combined using combiner. In the receiver, the sum of the signals is multiplied again with the same code in the transmitter for each user to get the message from each user.

In the final project, assumed that the synchronization codes are perfect, and there are no errors in canal, so by controlling the voltage comparator at the ideal reference voltage, the same data are received from the transmitter in bitrates 12.89 kbps. This can be viewed on the oscilloscope for transmitted data and received data.