BINARY PHASE SHIFT KEYING (BPSK) MODULATOR & DEMODULATOR USING ESIM

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28, SEPTEMBER - 2022

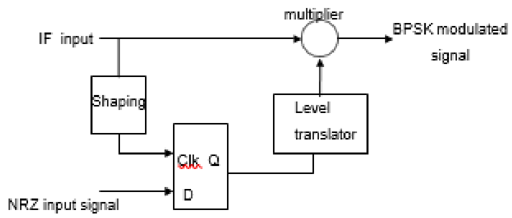
ABSTRACT:

Compared to analog communication, digital communication is more dependable, secure, and effective. In terms of signal power, BPSK is the most significant and effective approach in digital communication. In this study, the hardware description language (VHDL) is solely used to design the BPSK modulator and demodulator, which is then implemented on a esim. Introducing myself A significant shift from analog to digital modulation techniques has taken place over the last few years, and it is evident in every aspect of wireless communication, including satellite and cellular networks. An analog communication system is less dependable than a digital one. A channel modulator and a demodulator make up BPSK.

DESCRIPTION:

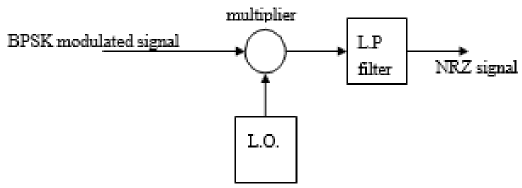
The 0s and 1s in a binary message are represented by two different phase states in the carrier signal in the Binary Phase Shift Keying (BPSK) two-phase modulation scheme: = 0degree for binary 1 and =180degree for binary 0. Two ASK generation circuits one of which generates the waveform for logic 1 and the other of which generates the waveform for logic 0 are present in the circuit. These waveforms are fed to a differential amplifier. Phase shift keying (PSK) is a signal that uses a differential amplifier to subtract a two-input signal, causing a 180degree phase shift at the positive and negative edges of the message signal. The original message signal broadcast is then recovered by demodulating this PSK signal with the use of summing amplifier-envelope detector comparator stages..

MODULATION BPSK:



Modulation Binary Phase Keying Shift (BPSK) uses a serialised numerical signal to phase modulate an intermediate frequency with two potential states. Because there is no relationship between the Intermediate Frequency and the modulating signal in terms of either frequency or phase, one synchronises this one on the IF using a straightforward D latch. The synchronised modulating signal and the FI are applied to an analogue multiplier after a level translation (centred on 0V).

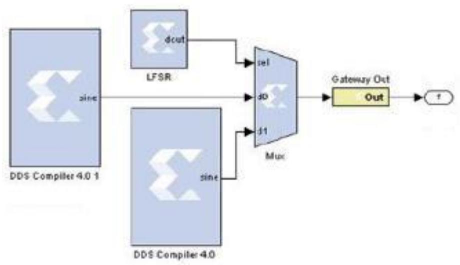
DEMODULATION BPSK :



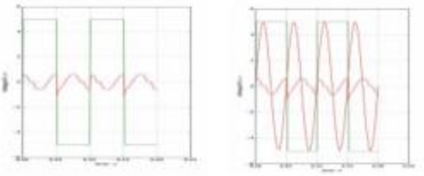
When the reception and the demodulation are synced in frequency and phase with the transmitted frequency, the demodulation is said to be coherent.

BLOCK DIAGRAM

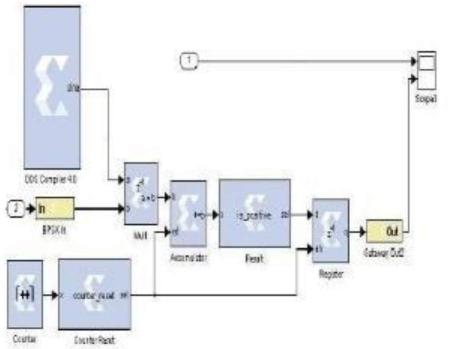
BPSK MODULATOR:



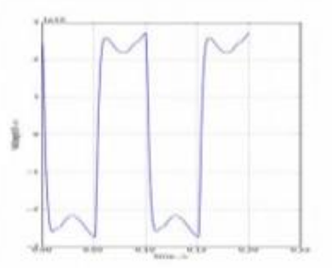
REFERENCE WAVEFORM MODULATOR:



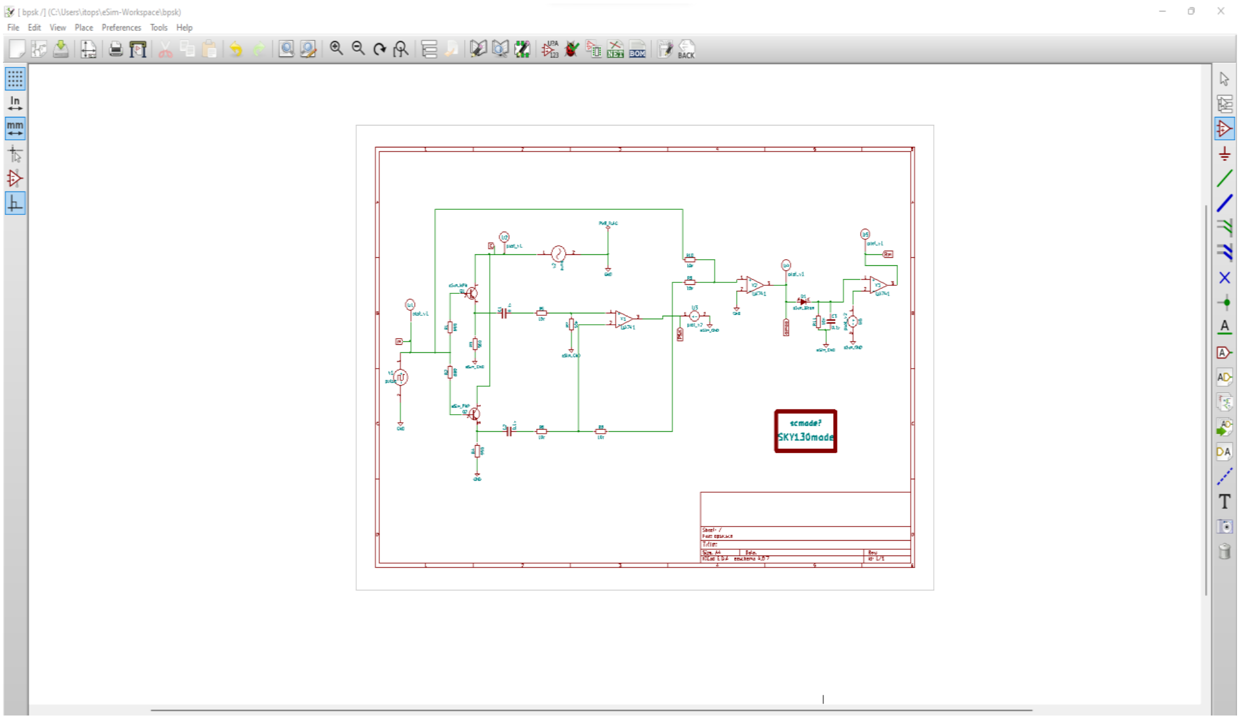
BPSK DE MODULATOR:

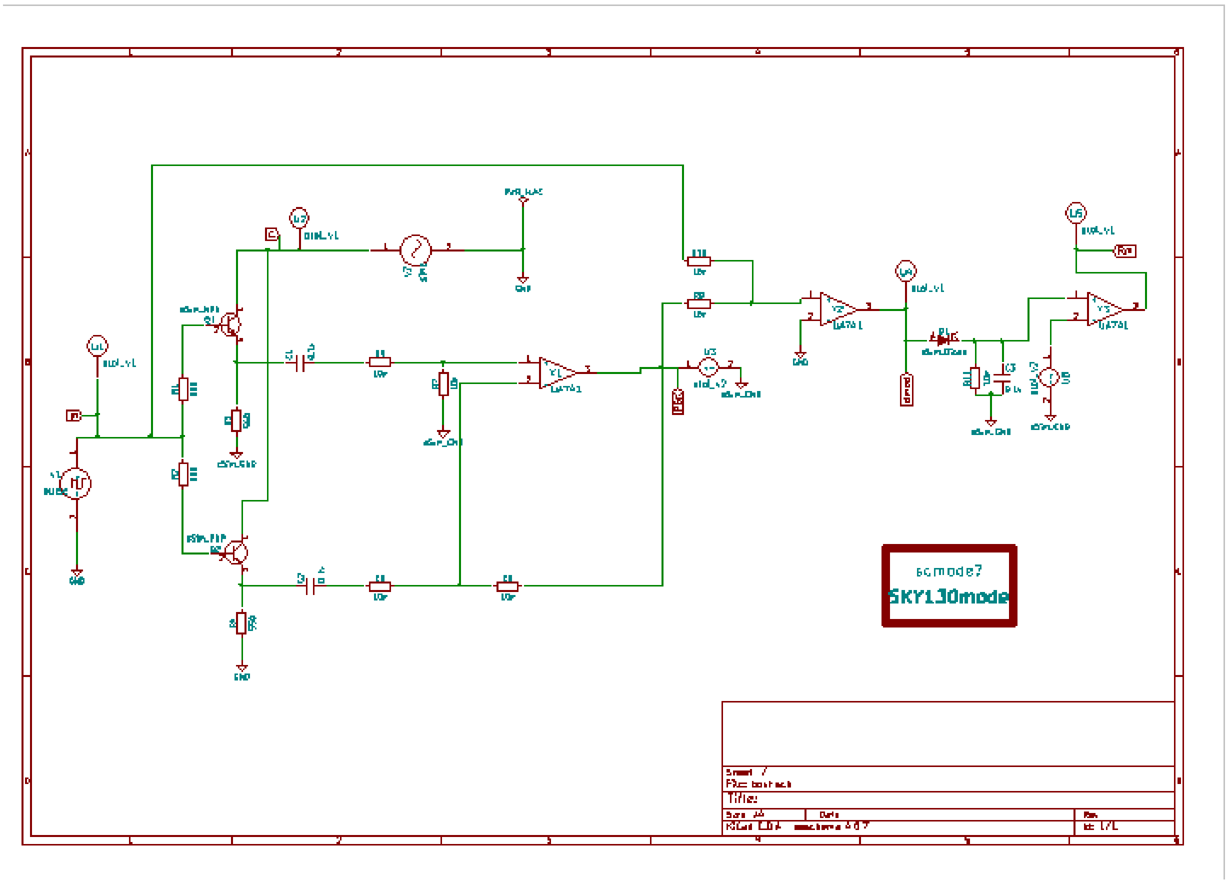


DE MODULATOR:

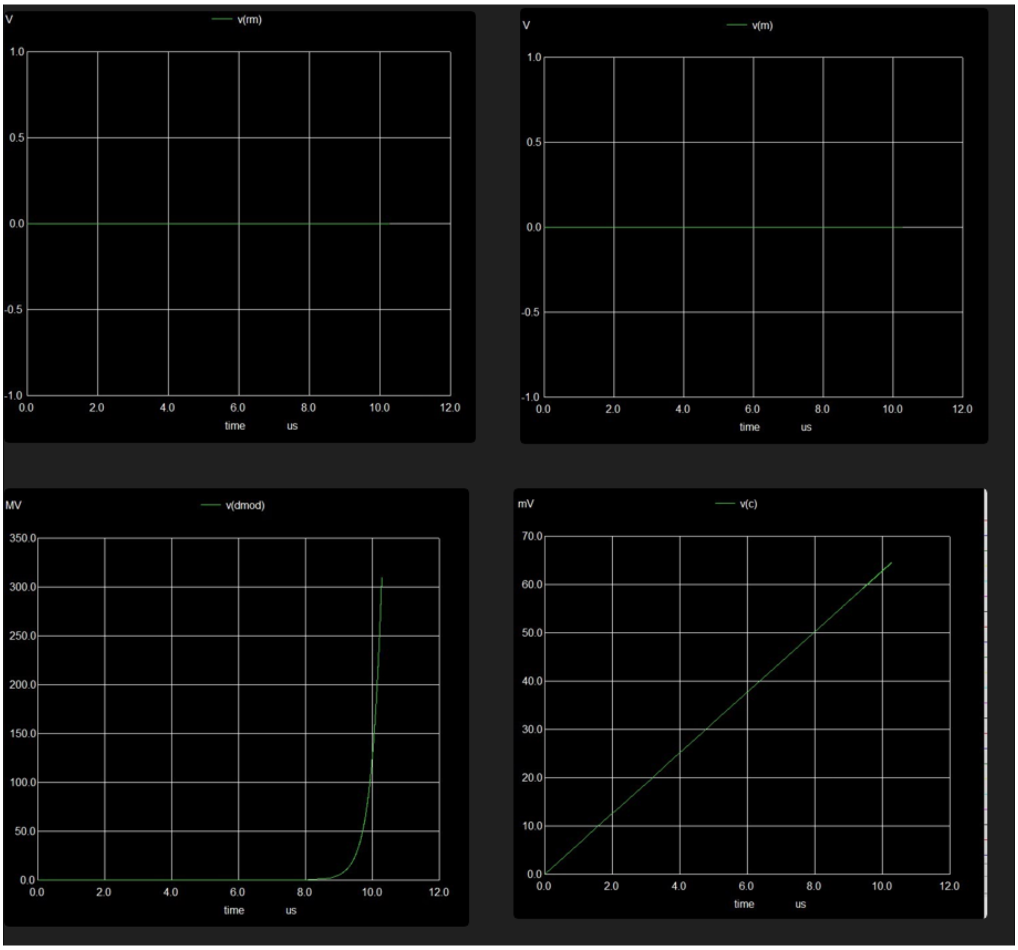


CIRCUIT:





OUTPUT:



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TECHNIA International Journal of Computing Science and Communication Technologies, VOL. 3, NO. 1, July 2010. (ISSN 0974-3375)“ANALOG & DIGITAL MODULATION TECHNIQUES: AN OVERVIEW