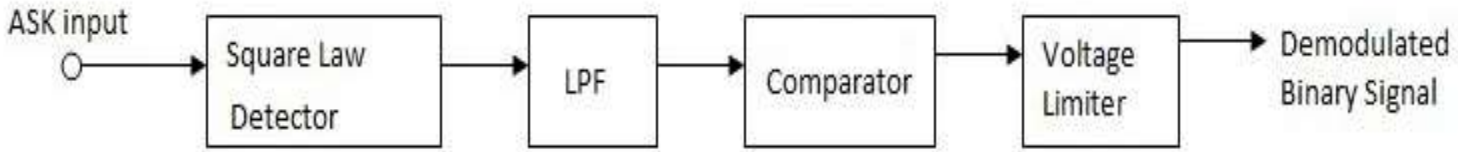
Non coherent Detection

ASK

This demodulation process can be completed by using with square law device. The output signal which is generating from the square-law device can be forwarded through a low pass filter to reconstruct the original binary signal.



FSK

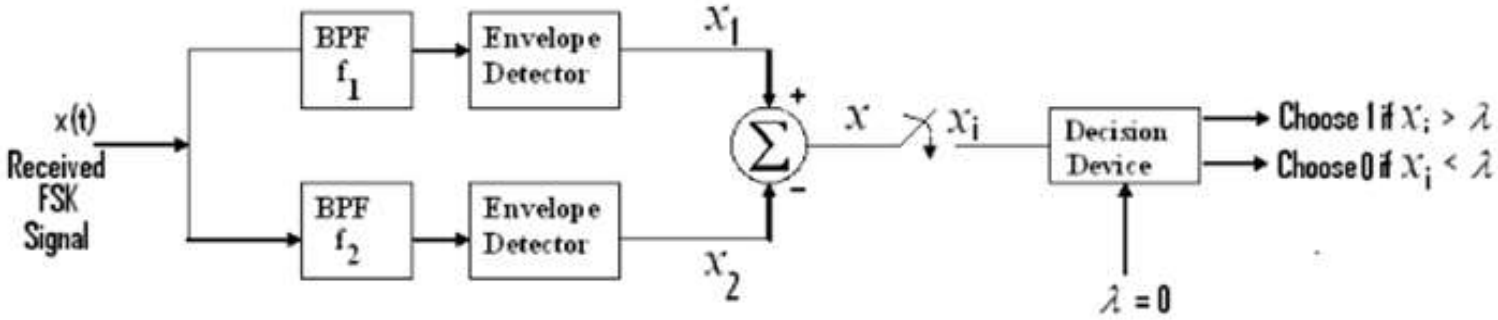


Fig : Non coherent detection

Optimum demodulation of non-coherent FSK can be achieved by envelope detection of the signal filter outputs in a filter-type demodulator.

The outputs of the BPF filters are envelope-detected and then compared to determine which has greater magnitude.

Phase information is not required.

For the “rectangular” modulation of FSK, the right shape is a sinc function bandpass filter centered about the desired tone.

DPSK

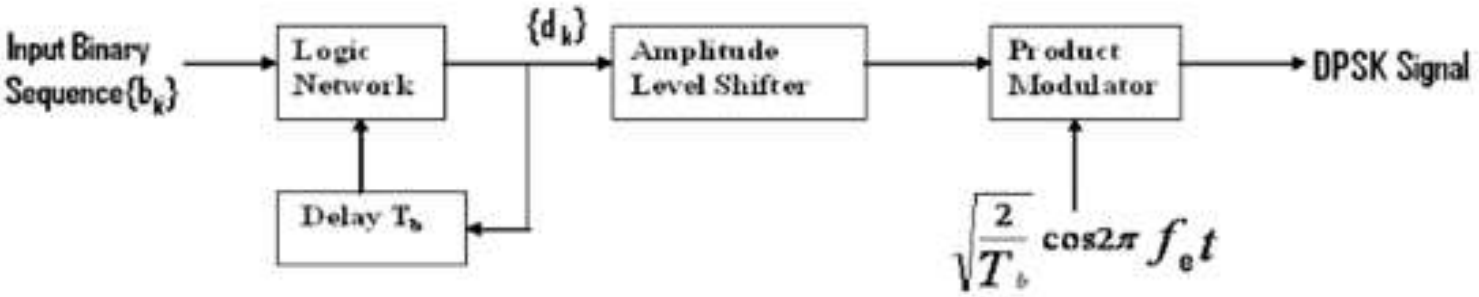


Fig a: Transmitter

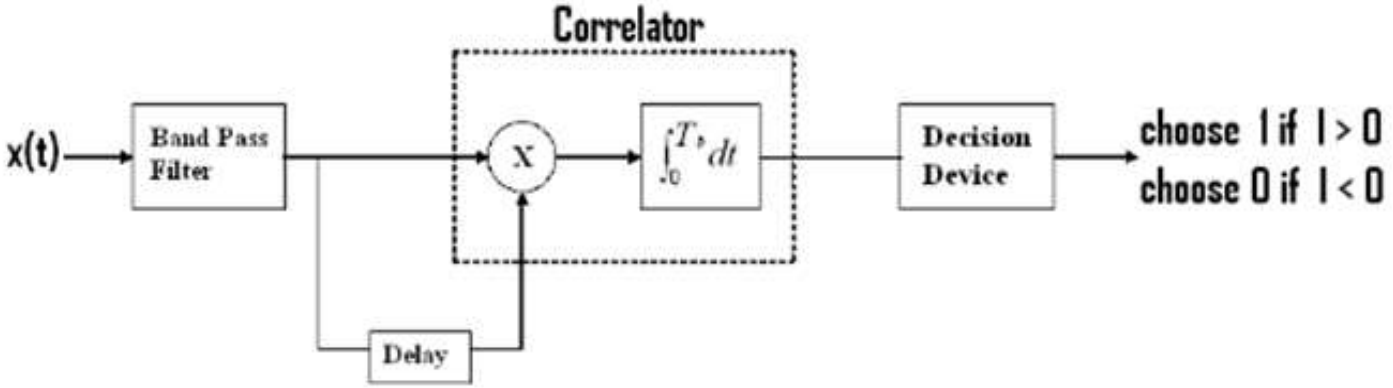


Fig b: Receiver

A DPSK system may be viewed as the non coherent version of the PSK. It eliminates the need for coherent reference signal at the receiver by combining two basic operations at the transmitter

(1) Differential encoding of the input binary wave and

(2) Phase shift keying

Hence the name differential phase shift keying [DPSK]. To send symbol '0' we phase advance the current signal waveform by 180^0 and to send symbol 1 we leave the phase of the current signal waveform unchanged.

The differential encoding process at the transmitter input starts with an arbitrary first but, securing as reference and thereafter the differentially encoded sequence $\{d_k\}$ is generated by using the logical equation.

$$d_k = d_{k-1} b_k \oplus \overline{d_{k-1}}\ \overline{b_k}$$

Input Binary Sequence $\{b_K\}$		1	0	0	1	0	0	1	1
Differentially Encoded sequence $\{d_K\}$	1	1	0	1	1	0	1	1	1
Transmitted Phase	0	0	Π	0	0	Π	0	0	0
Received Sequence (Demodulated Sequence)		1	0	0	1	0	0	1	1

A DPSK demodulator is as shown in fig(b). The received signal is first passed through a BPF centered at carrier frequency f_c to limit noise power. The filter output and its delay version are applied to correlator the resulting output of correlator is proportional to the cosine of the difference between the carrier phase angles in the two correlator inputs. The correlator output is finally compared with threshold of '0' volts .

If correlator output is +ve -- A decision is made in favour of symbol '1'

If correlator output is -ve --- A decision is made in favour of symbol '0'