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FACULTY OF EGINEERING AND TECHNOLOGY

WSN (MCS-033)

LECTURE -8

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OUTLINE

- Modulation Method Classification
- ASK (Amplitude Shift Keying)
- FSK (Frequency Shift Keying)
- O-QPSK (Offset-Quaternary Phase Shift Keying)
- OFDM (Orthogonal Frequency Division Multiplexing)
- DSSS (Direct Sequence Spread Spectrum)
- MCQ
- Reference

Modulation Method Classification

Modulation is the process of converting data into electrical signals optimized for transmission. Modulation techniques are roughly divided into four types: Analog modulation, Digital modulation, Pulse modulation , and Spread spectrum method.

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Analog modulation is typically used for AM, FM radio, and short-wave broadcasting.

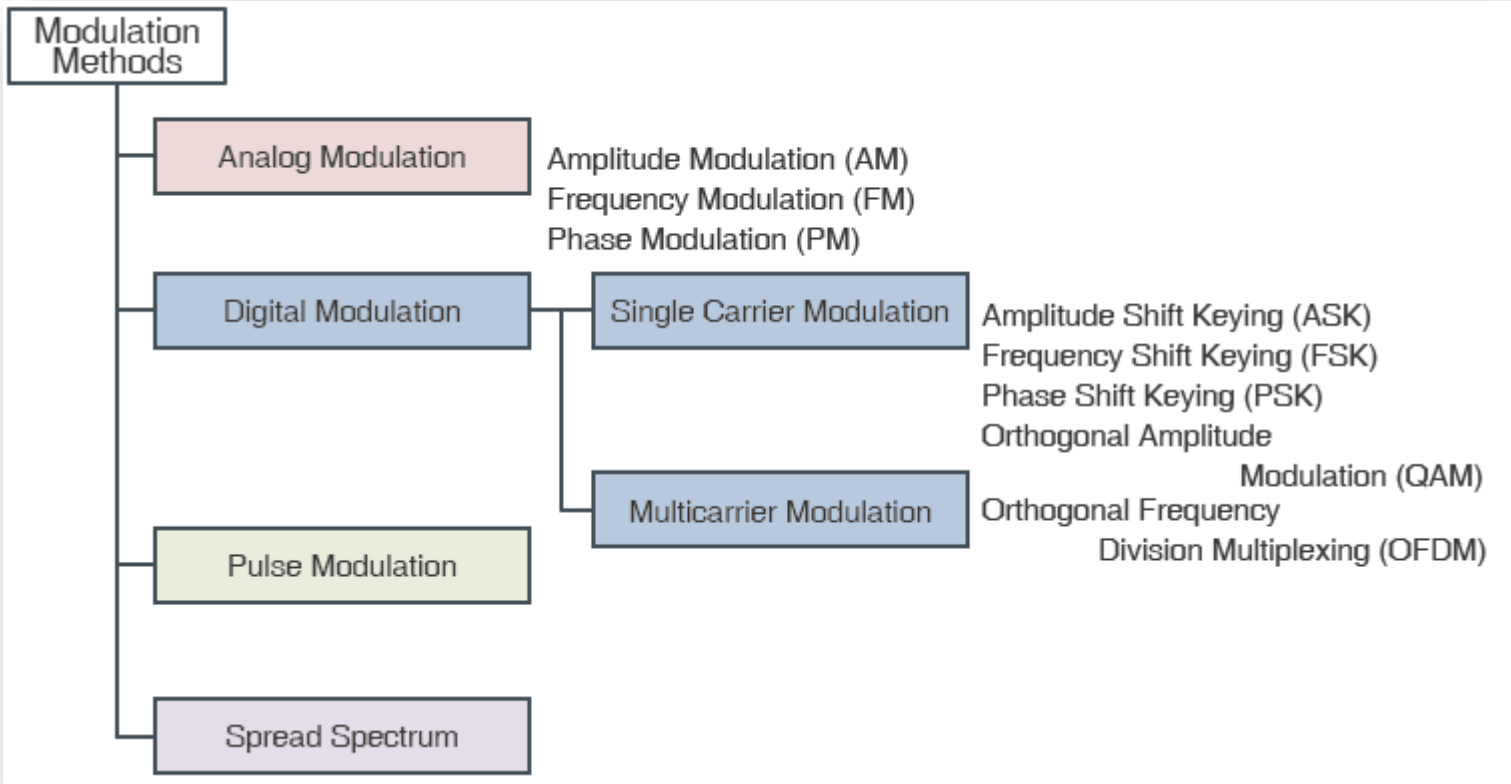
Digital modulation involves transmission of binary signals (0 and 1).

Digital modulation involves transmission of binary signals (0 and 1).This method is divided into single carrier modulation, by which the carrier occupies the entire bandwidth (i.e. amplitude, frequency, and phase), and a multicarrier scheme that modulates and transmits different data on multiple carriers.

In addition, there is a pulse modulation technique used to change the pulse width and spread spectrum method that spreads the signal energy over a wide band.

MODULATION METHOD CLASSIFICATION

Modulation Method Classification



MODULATION METHOD CLASSIFICATION

Modulation Method Definitions

In wireless communication, information is transmitted by encoding voice and data on radio waves of certain frequencies.

This section outlines the modulation methods adopted by ROHM's short-range wireless lineup.

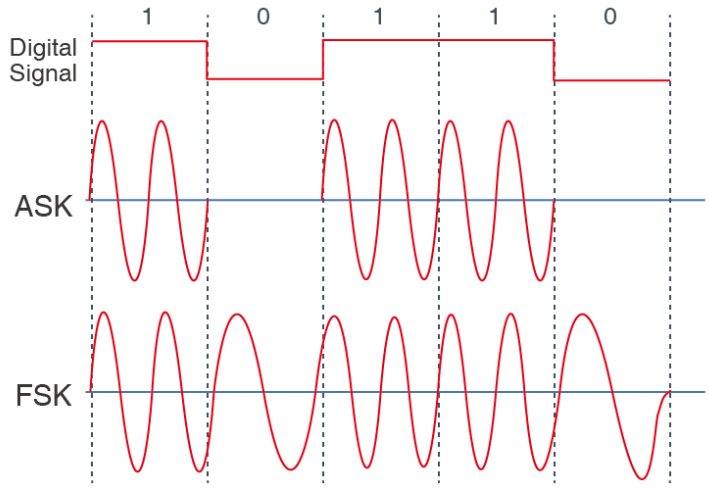
ASK (Amplitude Shift Keying)

A digital modulation method that sends transmission data by varying the presence/absence of analog signals.

FSK (Frequency Shift Keying)

This technique utilizes the difference in the amplitude of analog signals to modulate digital signals by switching between low frequency and high frequency in order to represent 0 and 1.

[ASK and FSK]



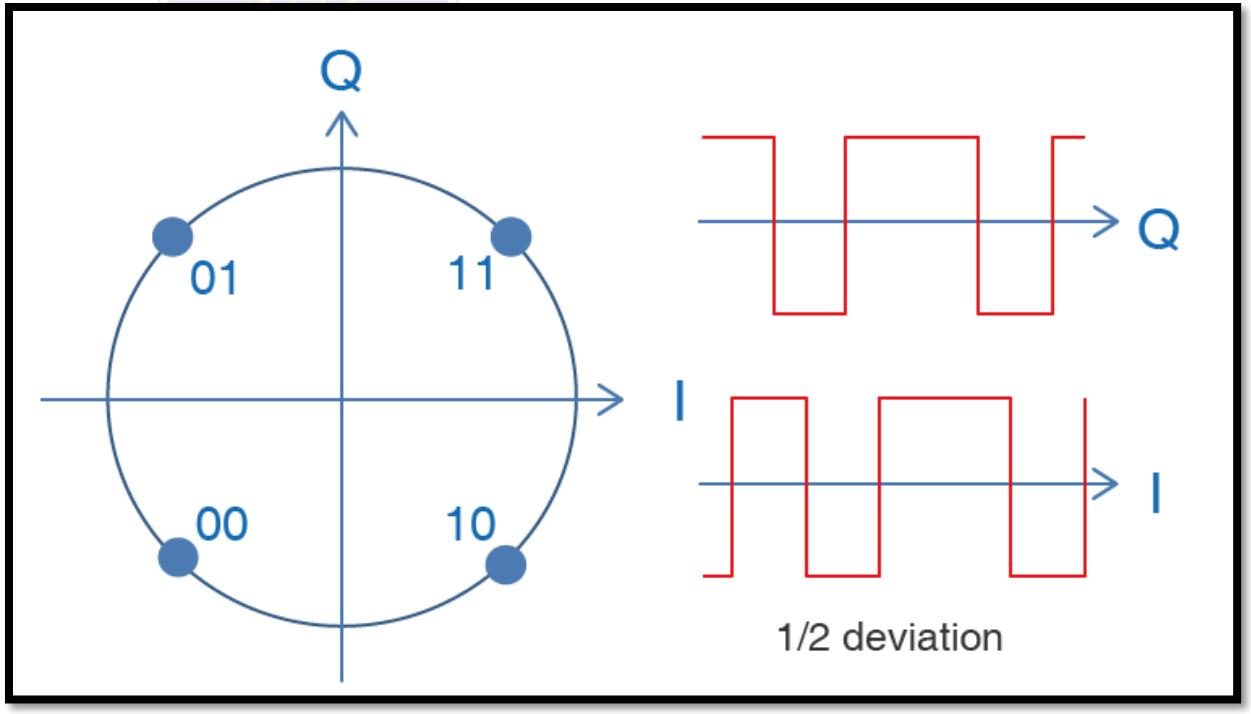
MODULATION METHOD CLASSIFICATION

O-QPSK (Offset-Quaternary Phase Shift Keying)

A digital modulation scheme that performs data transmission by phase-modulating a reference signal. The timing of the in-phase component (I) and quadrature component (Q) are shifted by 1/2 from QPSK, which performs phase modulation in 4 steps.

*A spatial signal diagram is a representation of a data signal on a two-dimensional plane.

[O-QPSK Signal Space Diagram*].



MODULATION METHOD CLASSIFICATION

OFDM (Orthogonal Frequency Division Multiplexing)

A multicarrier digital modulation method that transmits large amounts of data over multiple closely spaced data streams.

DSSS (Direct Sequence Spread Spectrum)

A type of spread spectrum method utilizing a direct spread technique. Data signals are spread over a wide frequency band at low power.

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