

OFDM for Acoustic Transmission

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OFDM

Problem: Transmitting and receiving the data

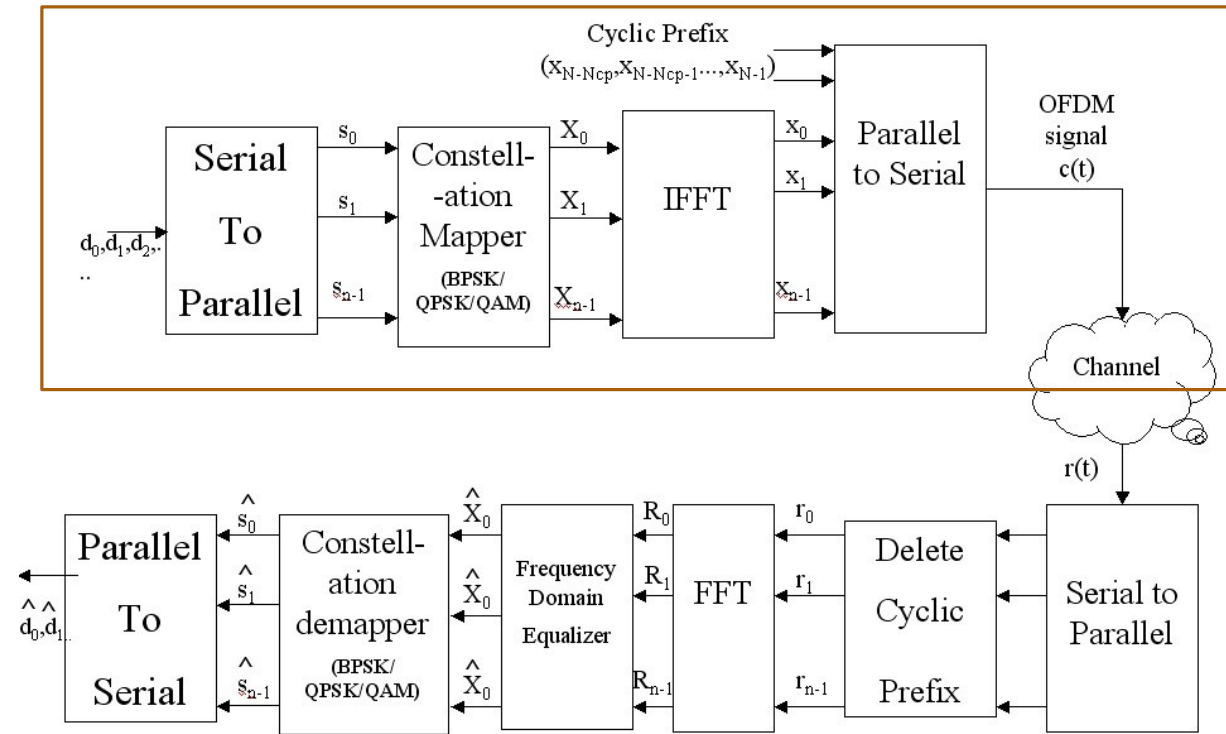
Single carrier systems → Complicated due to frequency selective fading

- Equalization
- Channel estimation

OFDM

- Multi carrier system
- Data split to N parallel streams → Less bandwidth for each stream (B/N)
- Equalization and channel estimation → Much easier

Block Diagram



Implementation – Transmitter

Mapping with QPSK

Parallelization of Symbols

Adding Training Symbols

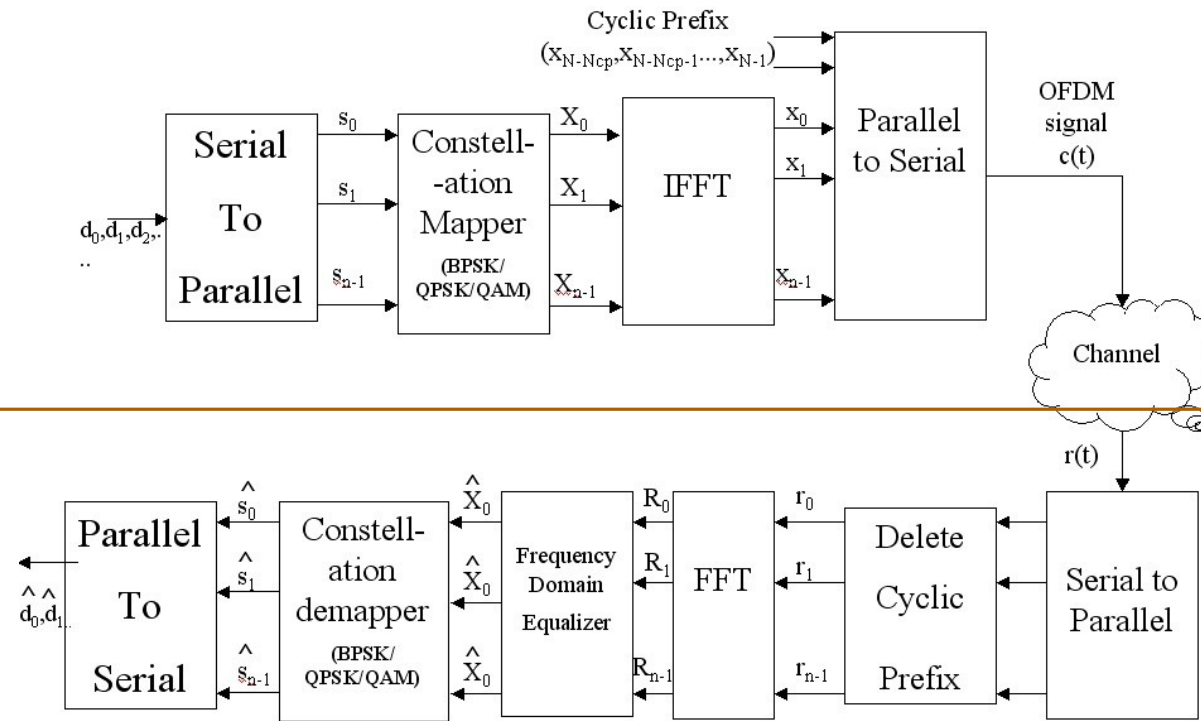
IFFT

Cyclic Prefix

Preamble

Upconversion

Block Diagram



Implementation – Receiver

Downconversion

Finding the beginning of the data

Discarding cyclic prefix

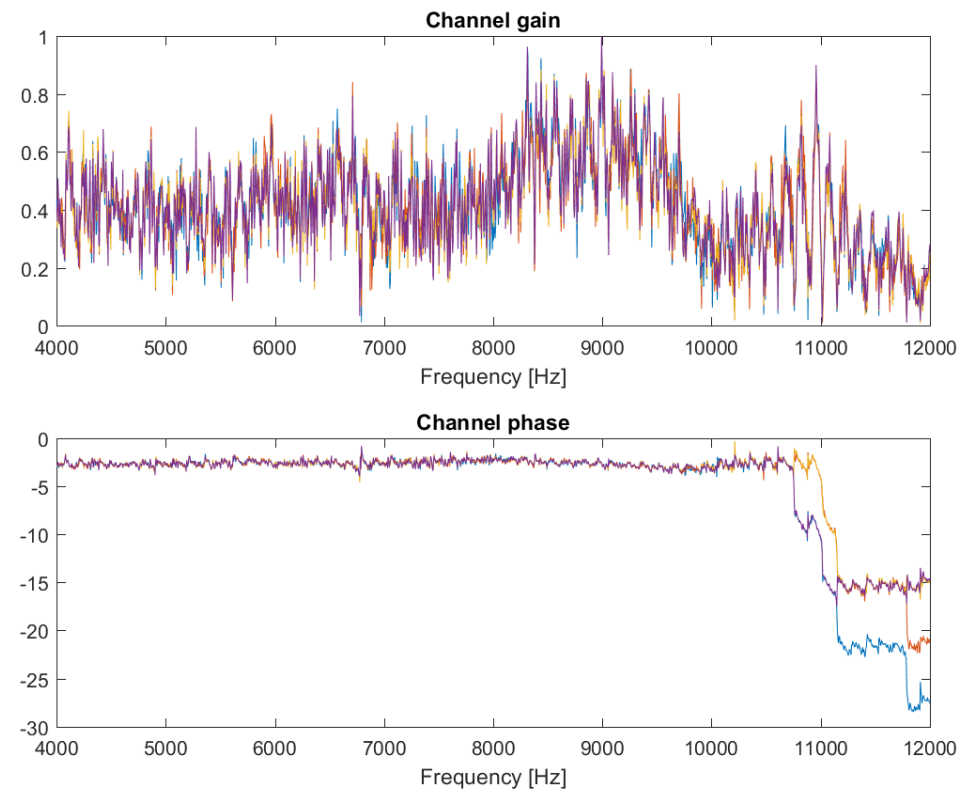
FFT

Channel Estimation

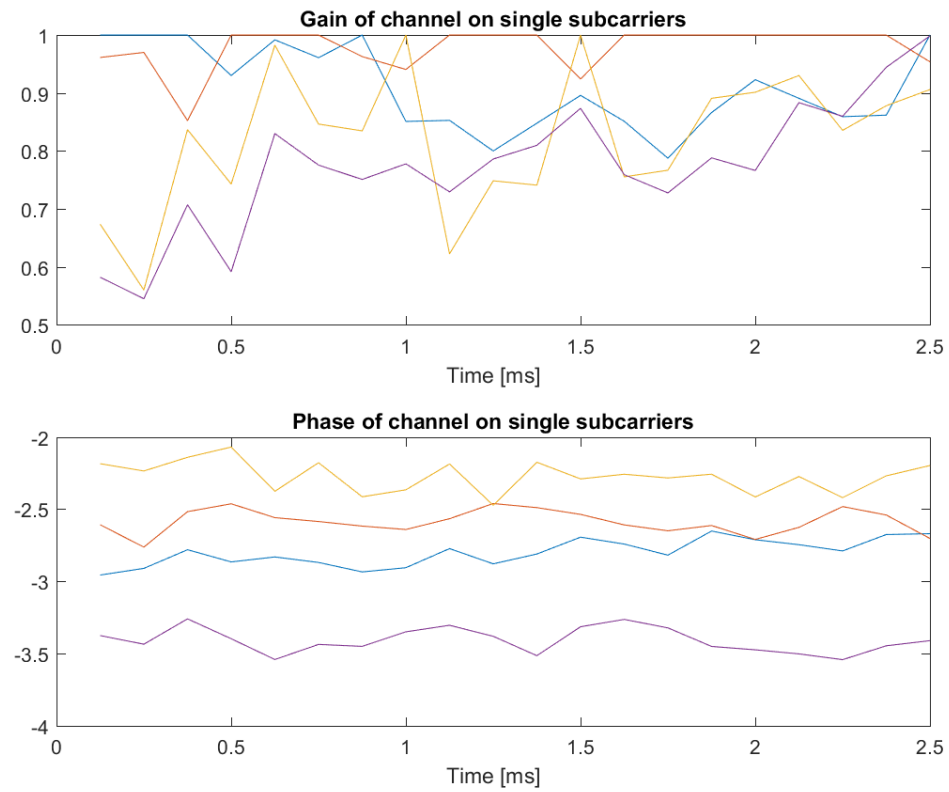
Equalization

Demapping

Results



Results



Results

