SSR Oversampling Channelizer with Spatial Overlap Design Example

1.0 Design Example Datasheet

Description

This design is a subset of wideband SSR (Super Sample Rate) Oversampling Channelizer. The implementation architecture of an oversampling channelizer can be very different depends on the input sample rate, number of channels and number of overlapping samples. If the number of FFT channels is low, the number of overlapping samples may be less than the number of parallel paths. Overlapping inputs happen across the wires, thus the term 'spatial overlapping'. More precisely, in this architecture, the number of parallel phases or wire count must be an integer multiple of overlapping samples.

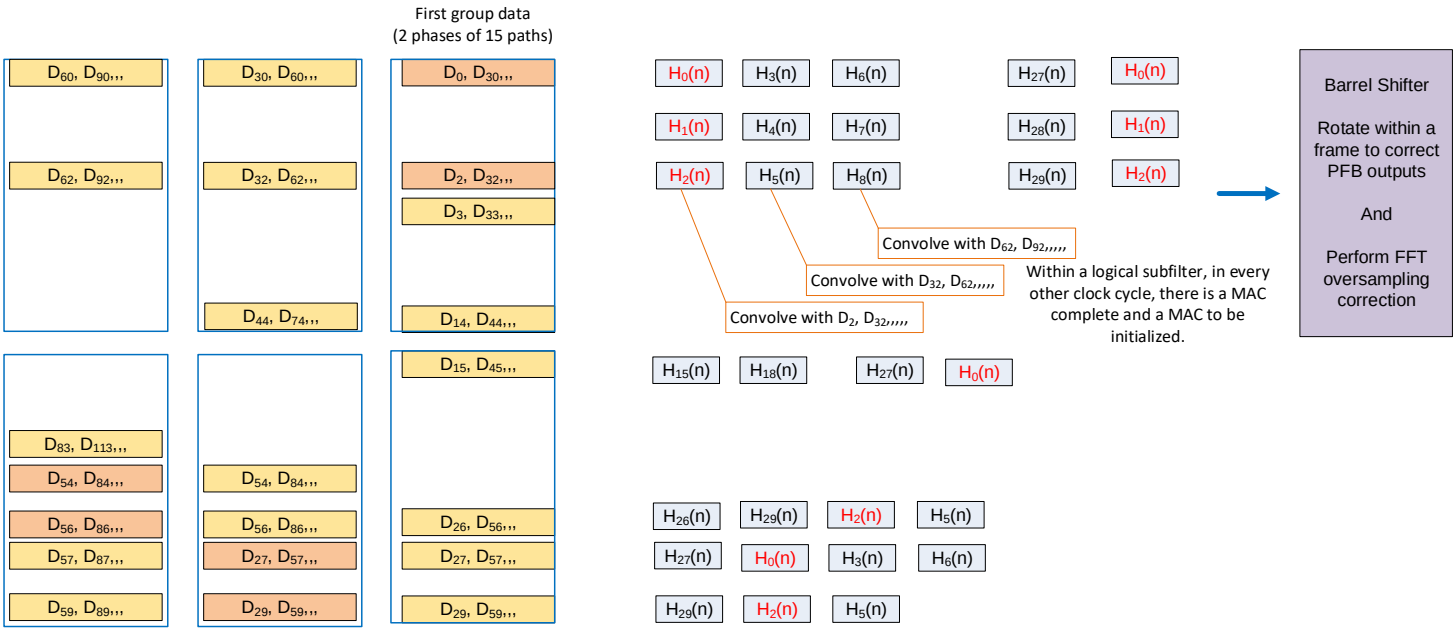
The data flow of design is similar to other channelizer – data scheduler, polyphase filter, circular Shift, then FFT. However, the alignment of data and coefficients in the Polyphase FIR must be performed spatially, as shown in the figure below.

Features

- Efficient architecture for low FFT channel count and low overlapping input count
- Operating clock independent of sampling rate
- Complex or Real input
- Natural channel order output
- Using 20 and 30 FFT channel over 10 and 15 parallel phases in this example

Applications

- Communication Systems
- Radar, Radio Astronomy
- Electronic Countermeasures



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