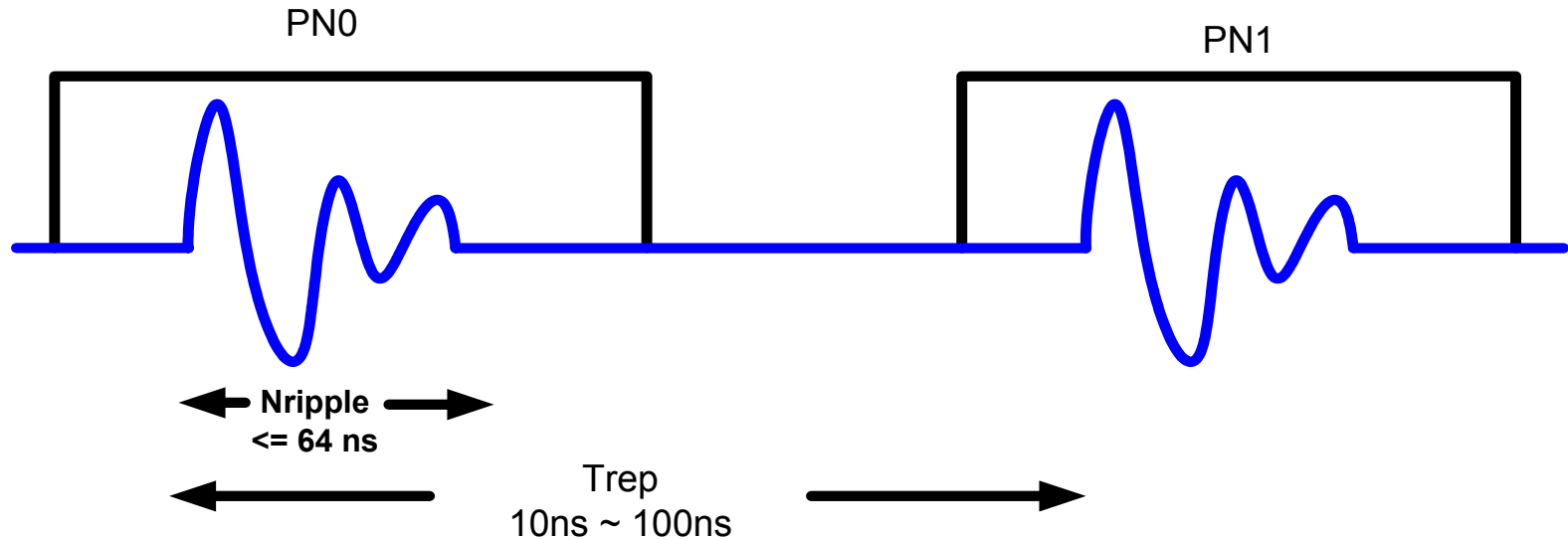
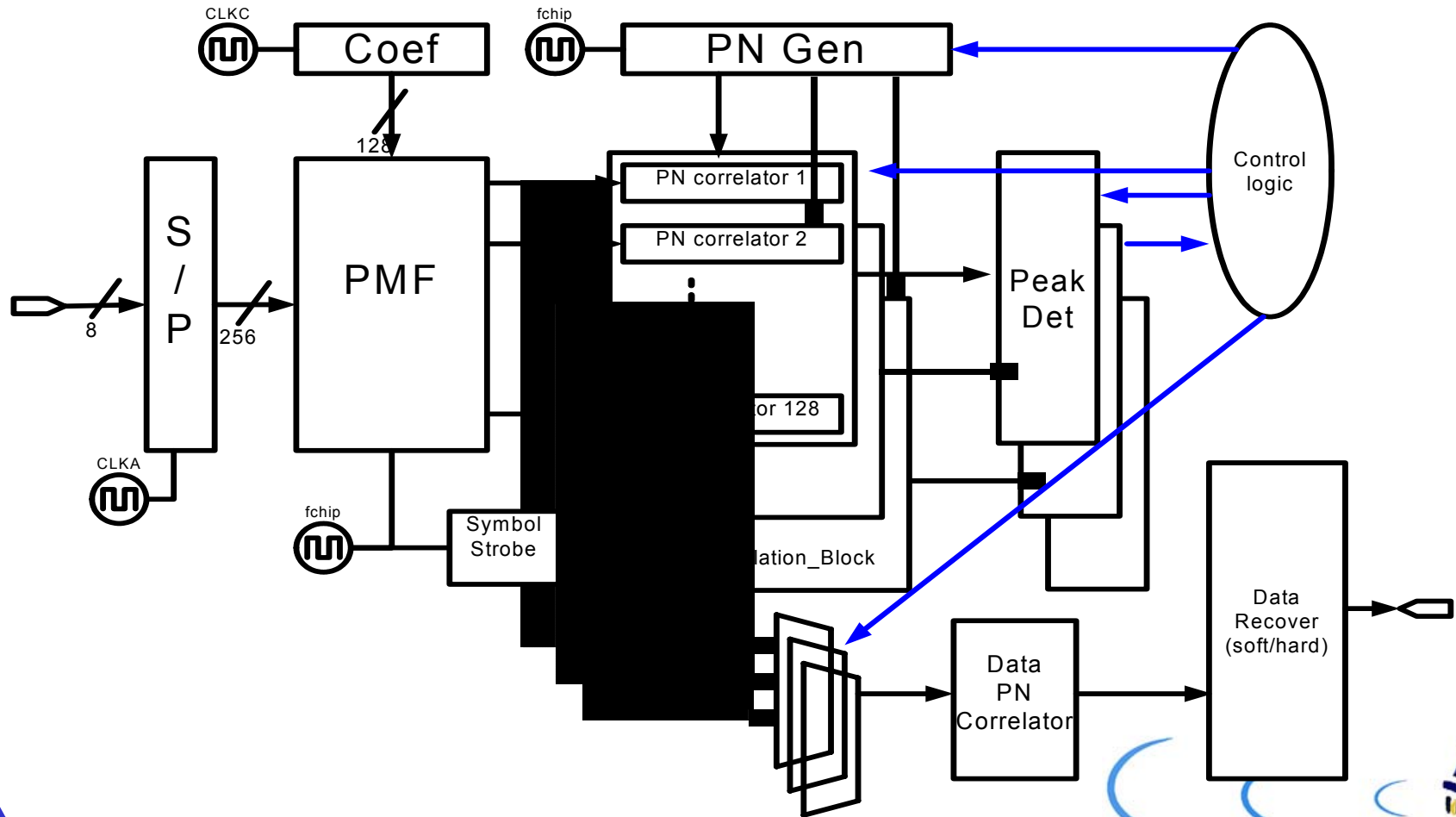


Specs for Baseband



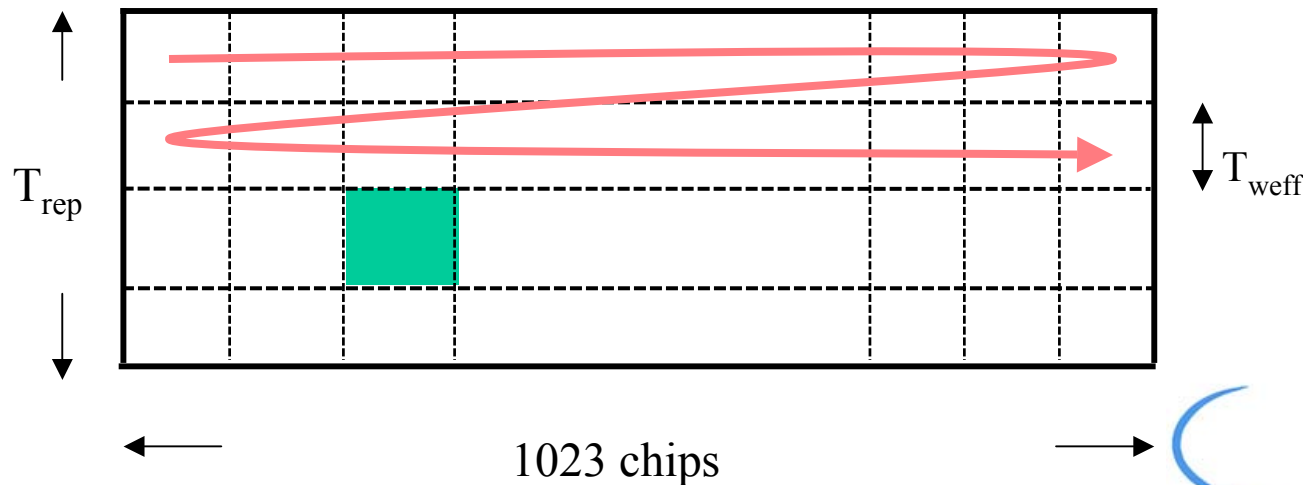
- Pulse Repetition Rate: 100MHz to 1 MHz
- Maximum receivable Pulse ripple length (Nripple=Npulse+Nspread): < 64 ns (128 samples)
- Sampling rate: 2 GHz
- PN spreading is ranging from 1 to 1024 chips

Baseband Overview

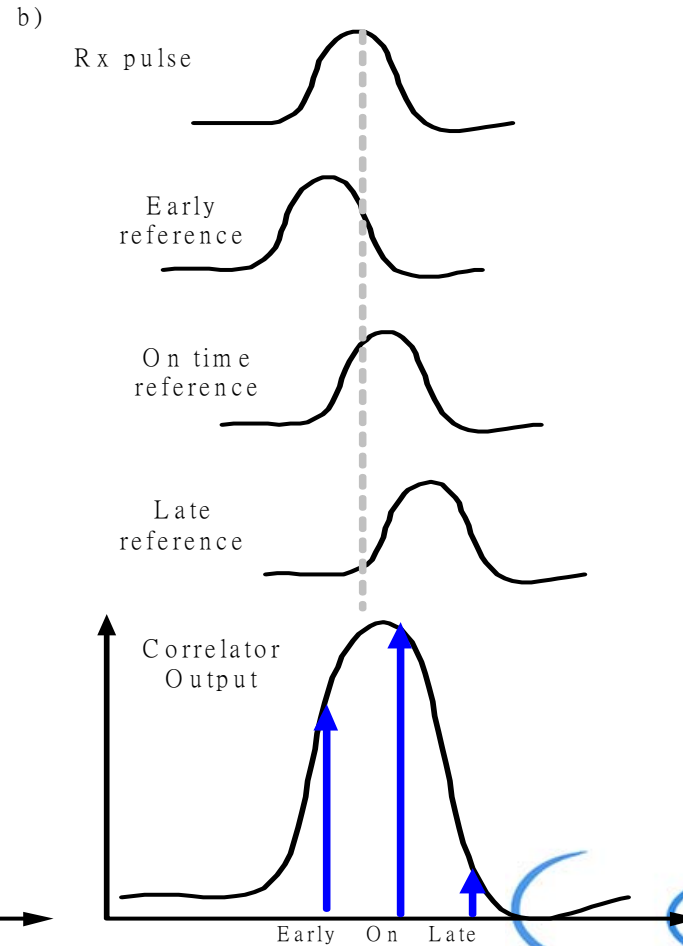
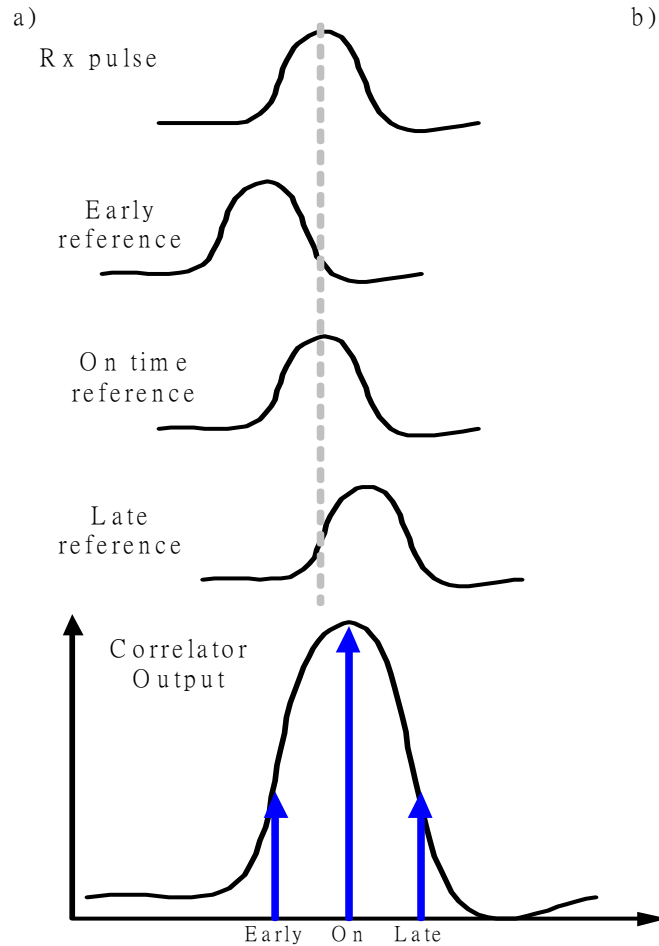


Operation Mode - Acquisition

- Y-axis is the sampling window phase; X-axis is the code phase.
- Find the right code phase by searching through all possible orderings of the PN sequence and all possible sampling window phases. Finally, find the sample that gives the peak energy within the sampling window.

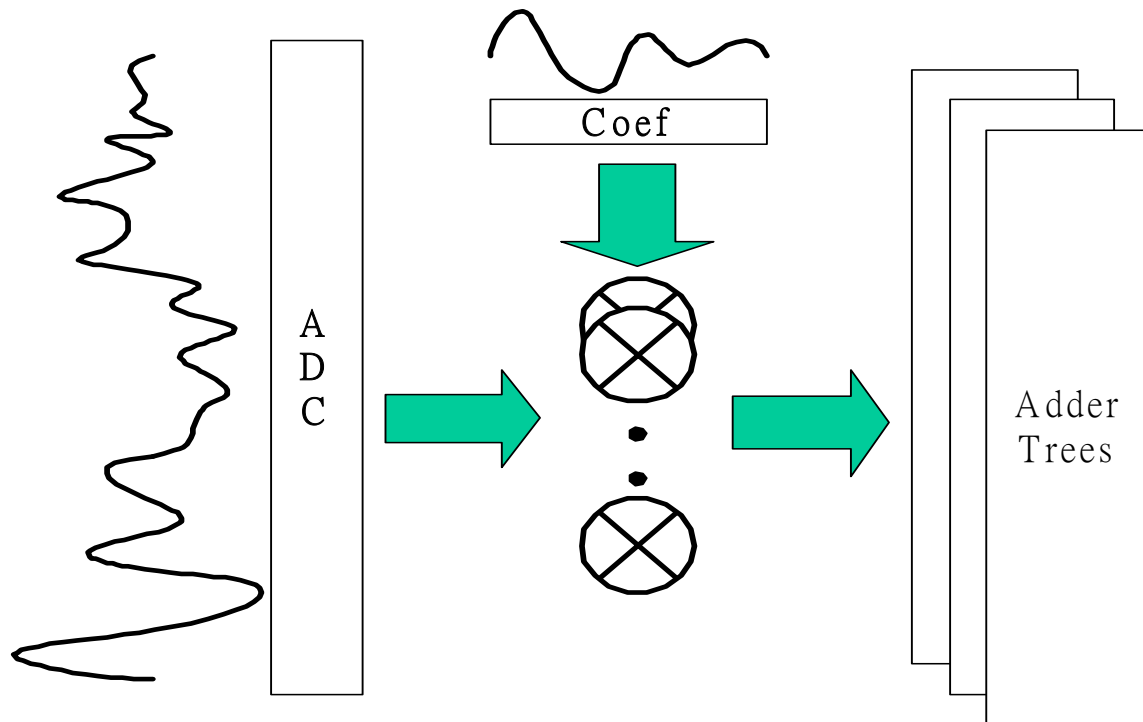


Operation Mode - Tracking



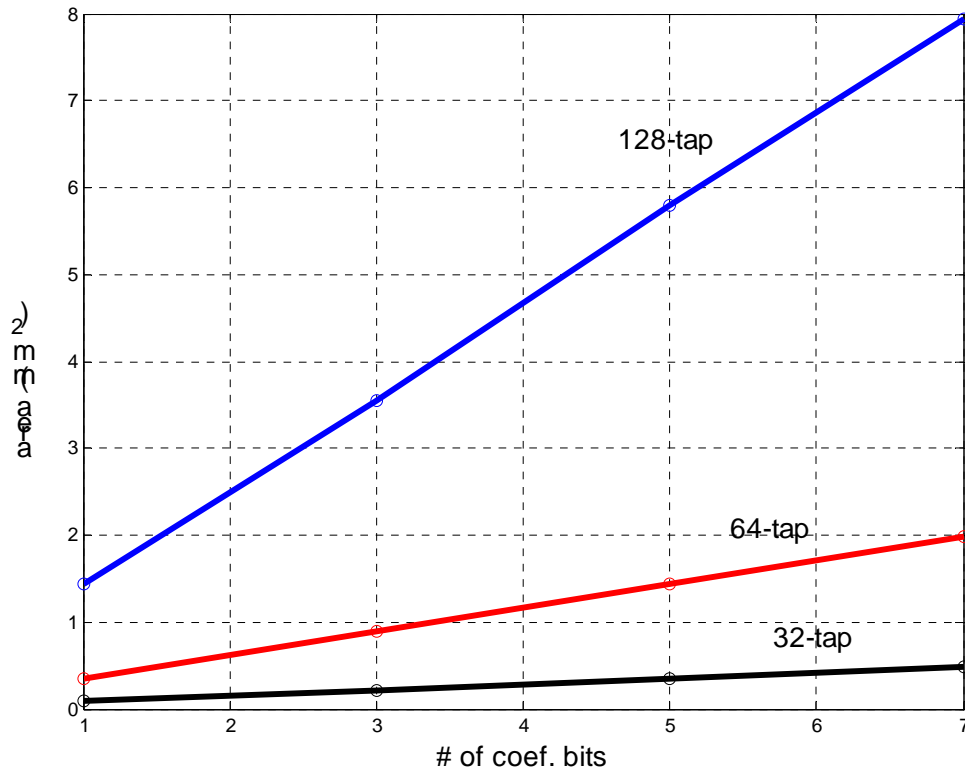
Pulse Matched Filter

- Carry save adder trees is the most efficient implementation in terms of area and delay.

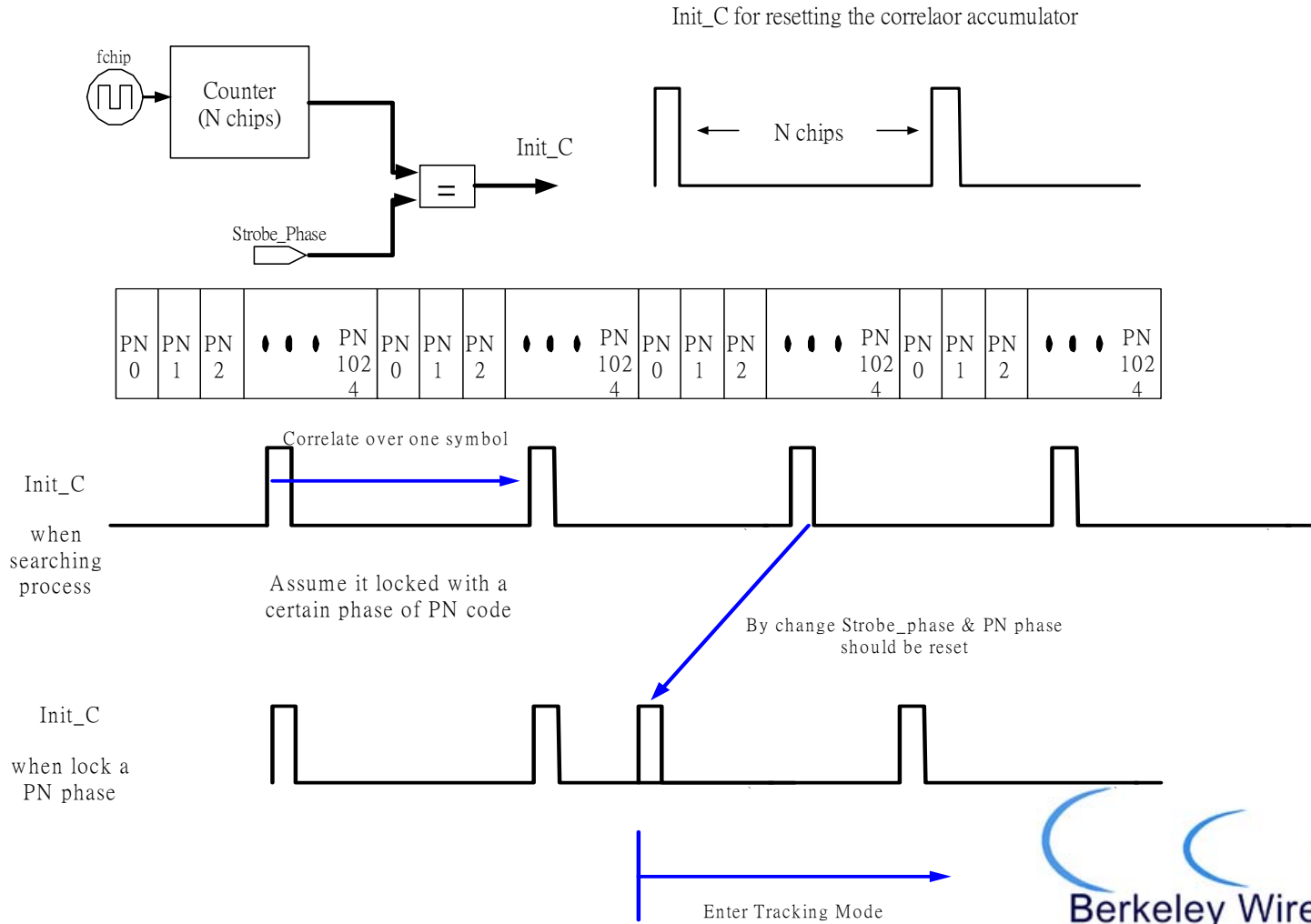


Area of PMF

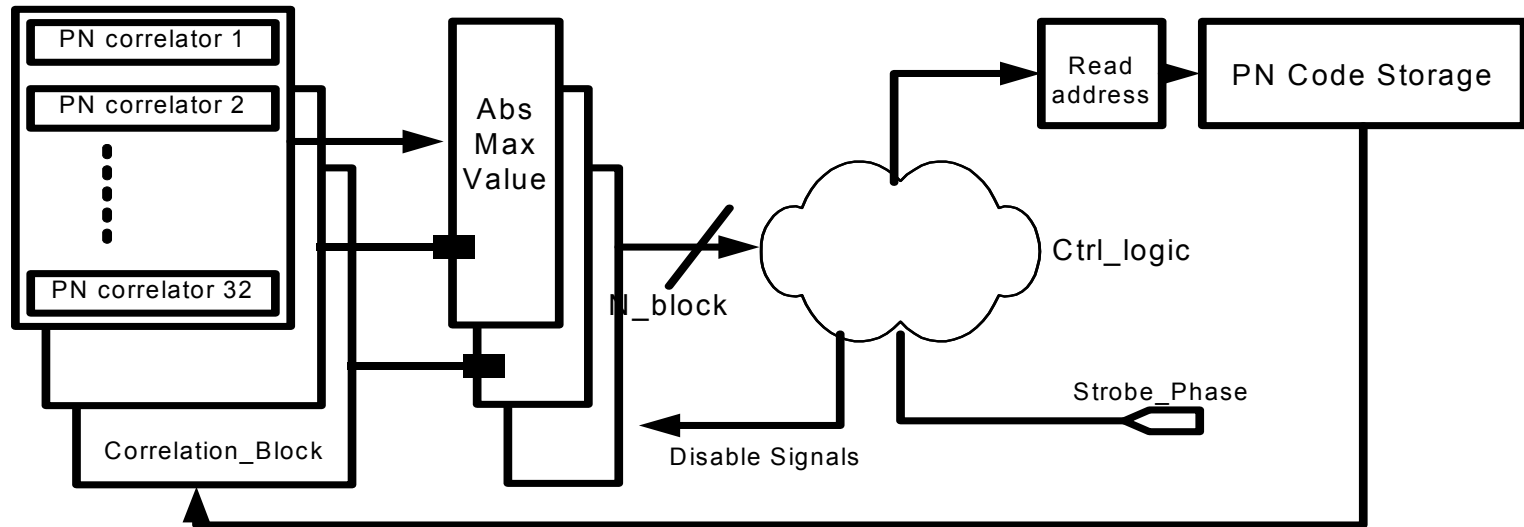
- The area varies with the number of taps and bits of pulse matched filter.



Symbol CLK



Control logic



- A reading clock to fetch the PN phase and a programmable PN length is needed.
- Strobe_phase signal is used to define the symbol boundary after entering tracking mode.
- An enable/disable control bus is needed for gated clock in PN correlators for power saving purpose.

Control logic in Stateflow

