Test cases:
1. Reset;
2. 0 0 : stay at S0;
3. 0 1 : S0->S1;
4. 1 0 : S1->S0;
5. 1 1 : S1-> S2, y=1;
6. 1 1 1 : S2-> S1 non-overlapping pattern detection
7. 1 1 0 : S2->S0

All state transfers tested.