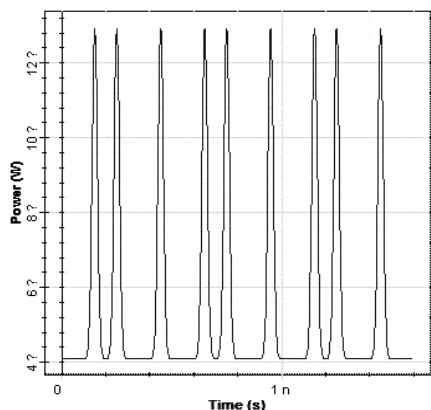


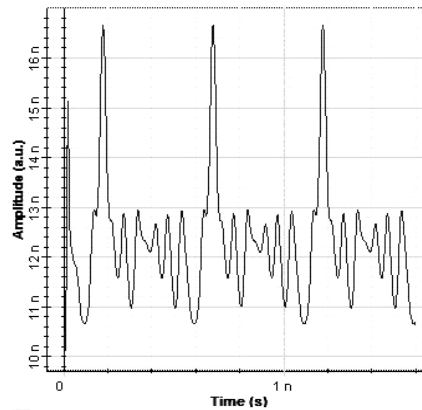
Fig.3 DPSK/ASK orthogonal modulation data extraction system

Time domain waveform of label information after data extraction by AND optical gate based on SOA was shown in Fig.4. The label information was depicted in Fig.4 (a). The extracted data information was depicted in Fig.4 (b). From the extracted data information waveform, pulse information of the

second bit was: "1", the fourth bit was "0", consistent with the theoretical value. Therefore, the method to extraction data information using the AND optical gate based on SOA was feasible.



(a) label information



(b) extracted data information

Fig.4 Time domain waveform of label information

#### IV. CONCLUSION

By using the SOA cross gain modulation, all optical logic AND gate was realized. The AND gate was applied to load DPSK/ label ASK orthogonal modulation system to extract data information. In the simulation experiment, the label information was extracted. Because of the SOA gain suppression incomplete, the "0" output had a pulse fluctuation in the simulation. Further research should be done in order to decrease the pulse fluctuation. Optical data extraction is a way of extraction and recognition optical label in optical domain, and it has extensive application prospect in high speed all-optical networks. The method of this optical data extraction based on optical logic AND gate has high speed of optical data extraction and simple structure. However, the speed of optical data extraction is limited by the carrier recovery time of SOA, this method can only extract optical data lower than 10Gbit/s.

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