successful data transmission. Testing configuration illustrated in Fig. 7(a). Recorded bit error rate (BER) as a function of received power is plotted in Fig. 7(b). At 10^{-9} bit error rate, all channels have less than 2.6 dB power penalty compared to the commercial laser. We note that the eye diagrams and receiver sensitivity from different channels are slightly non-uniform most likely because the relative position of the RSOA and silicon chip was drifting over the period of the BER measurement. This drift could be eliminated by bonding the RSOA and silicon chips together using epoxy or by upgrading our alignment stages.

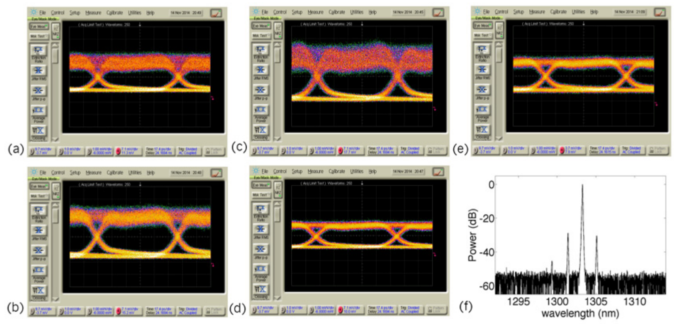

Fig. 6. (a)-(d) corresponds to channel 1-4, (e) is control experiment using commercial DFB, and (f) is one filtered spectrum.

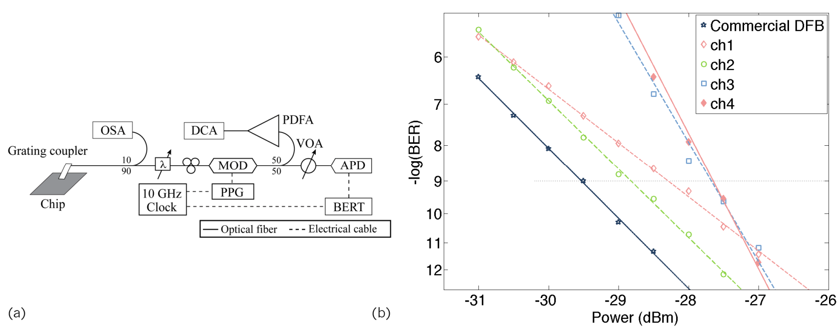

Fig. 7. Testing configuration diagram and bit error rate as a function of received power.

4. Conclusion

To conclude, we demonstrate a hybrid external cavity multi-wavelength laser using a QD RSOA and a silicon photonics chip. Four lasing mode at 2 nm spacing and less than 3 dB power non-uniformity were observed, with over 20 mW of total output power. We also show that each lasing peak can be successfully modulated at 10 Gb/s. At 10^{-9} BER, the receiver power penalty is less than 2.6 dB compared to a commercial laser. This work demonstrates the possibility of using silicon photonics to build a comb laser source for WDM transmission in future optical interconnection systems.

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