

Fig. 5. (a) BER measurement of the demultiplexed signal from 640 Gbit/s wavelength converted RZ with PRBS length of  $2^7-1$ , four neighbouring channels demultiplexed from 640 Gbit/s NRZ with PRBS length of  $2^7-1$ , as well as channel 1 demultiplexed from 640 Gbit/s NRZ with PRBS length  $2^{31}-1$ . (b) BER results with PRBS length of  $2^7-1$  for channel 1 demultiplexed from 640 Gbit/s NRZ with 1 and 4 m DCFs, and a demultiplexed tributary from the 640 Gbit/s wavelength converted RZ signal with 1 m DCF.

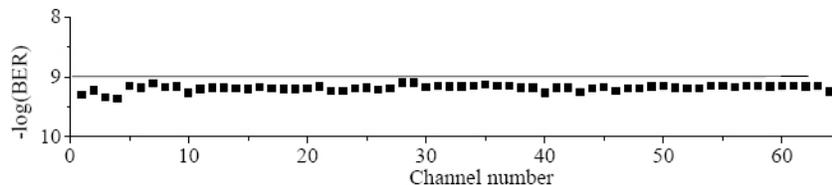


Fig. 6. Verification that all 64 OTDM tributaries demultiplexed from the 640 Gbit/s NRZ signal exhibit error free performance at a receiver power of -30 dBm.

## Conclusion

A 640 Gbit/s NRZ OTDM signal has been successfully generated for the first time by performing RZ-to-NRZ format conversion of a 640 Gbit/s RZ OTDM signal using a silicon microring resonator with FSR of 1280 GHz, Q value of 638, high extinction ratio and low coupling loss to optical fiber. Bit error rate measurements show very good performance for all the OTDM tributaries of the 640 Gbit/s NRZ signal, and improved dispersion tolerance compared to the wavelength converted RZ OTDM signal.

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