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Conducting a wide-range single-transverse mode operation in a commercial multi-mode VCSEL by beam-profile transferred optical feedback[1] CHUAN-PI HSU, TSU-CHIANG YEN, Department of Physics, National Sun Yat-sen University, DA-LONG CHENG, Department of Computer and Communication, SHU-TE University, WANG-CHUANG KUO, Department of Physics, National Sun Yat-sen University — In this research, a beam-profile transferred optical feedback (BTOF) method was employed to conduct a wide range single-transverse mode operation of a commercial multi-mode VCSEL. In BTOF, a spatial modulation optical system was used to reconfigure the spatial distribution of the feedback beam, and to control the laser's transverse mode. Experimental results indicated that, over a range of about 8.7 times of the laser's threshold current, BTOF could conduct the laser to output a single-transverse mode with high spectra purity and low intensity noise. While, without optical feedback, the solitary laser exhibited a multi-mode output with a complicate variation in mode distribution as the laser's current was tuned. More special features of BTOF will be presented in the report.

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