

Abstract Submitted  
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**Recovering single-mode operation from multi-transverse mode VCSEL by wavelength-selective optical feedback**<sup>1</sup> DA-LONG CHENG, Department of Computer and Communication, SHU-TE University, Kaohsiung, Taiwan 824, R.O.C., TSU-CHIANG YEN, CHUAN-PI HSU, Department of Physics, National Sun Yat sen University, Kaohsiung, Taiwan 804, R.O.C., KUO-SHENG KAO, Department of Computer and Communication, SHU-TE University, Kaohsiung, Taiwan 824, R.O.C. — It is known that VCSEL can emit multiple high-order transverse modes due to spatial hole burning. The multi-transverse mode character of VCSEL is useful for applications in high-speed multimode data links and networks. However, for numerous applications in optical interconnects, optical recording, and optical communications, single-mode operation is essential. This work presents a self-seeding configuration of VCSEL by wavelength selective element (Etalon). Experimental results show that the laser was retrieved to a single high-order mode with low intensity noise and high spectrum purity. Selection of a particular high-order transverse mode has been achieved. The shorter feedback distance (10 cm) significantly increases the stability and the applicability of this technology in conventional laser systems.

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