

# ABSTRACT

A 3.125 Gb/s 5-TAP CMOS Transversal Equalizer

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Recently, there is growing interest in high speed circuits for broadband communication, especially in wired networks. As the data rate increases beyond 1 GB/s conventional materials used as communication channels such as PCB traces, coaxial cables, and unshielded twisted pair (UTP) cables, etc. attenuate and distort the transmitted signal causing bit errors in the receiver end. Bit errors make the communication less reliable and in many cases even impossible. The goal of this work was to analyze, and design an channel equalizer capable of restoring the received signal back to the original transmitted signal. The equalizer was designed in a standard CMOS 0.18  $\mu\text{m}$  process and it is capable of compensating up to 20 dB's of attenuation at 1.5625 GHz for 15 and 20 meters of RG-58 A/U coaxial cables. The equalizer is able to remove 0.5 UI ( 160 ps ) of peak-to-peak jitter and output a signal with 0.1 UI ( 32 ps ) for 15 meters of cable at 3.125 Gb/s. The equalizer draws 18 mA from a 1.8 V power supply which is lower than publications [1, 2] for CMOS transversal equalizers.