

# Cable Technology Meets Requirements for High Data-Rate Applications



W. L. Gore & Associates has introduced the next generation in cable technology for high data-rate applications. This technology consists of a new differential cable design with lower SCD21 (differential-to-common-mode conversion) and a very high level of signal fidelity. Additionally, it provides the only cable solution that addresses the degradation in performance caused by SCD21. Engineered for InfiniBand and other high data-rate applications, this new design has yielded SCD21 values that are typically below -40 dB and consistently well below -25 dB across a 20 GHz bandwidth.

SCD21 is a differential s-parameter matrix element that represents the unwanted conversion between differential mode and common mode in a transmission line. This conversion reduces the signal's energy in differential mode, which causes unpredictable phase delays and skin-effect losses across frequencies. In coupled differential cables, the conversion results in differential-mode jitter. If these effects are not taken into account, the signal may not be recovered.

According to Russ Hornung, Gore Cable Product Manager, "In the past year, we have seen more applications employing advanced serializer/deserializer (SERDES) technologies and signal recovery processing that should include a specification for SCD21 performance; however, SCD21 currently is not addressed in most manufacturer or industry specifications. This new technology allows for faster digital data rates that can exceed 20 Gbps without signal integrity being compromised."

Available in cables with smaller gauge sizes (AWG24 to AWG32), Gore's low SCD21 technology allows for very precise cancellation of signals of equal amplitude and differential polarity, with very little phase difference between the differential legs. Using proprietary materials for the cable jacket and dielectric has enabled Gore to engineer the smallest, most flexible cables for high-speed data rate applications.

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