

High reliability and low latency are critical performance targets in the fifth-generation cellular networks. How does a full-duplex decode-forward relay fare in this context? To answer this question, we analyze the outage and (average) decoding-delay for both joint and sequential sliding window decoding. For comparison, we also analyze decoding delay of backward decoding and consider its existing outage analysis. In our analysis, we consider a block fading channel with full channel state information (CSI) availability at receivers and with limited CSI at transmitters and outage events at both relay and destination and channel variation over different blocks in sliding window decoding. Moreover, by analyzing the asymptotic performance at high SNR, we prove that both joint and sequential decoding achieve a full diversity order of two and derive the coding gain gaps between backward decoding and joint and sequential sliding window decoding. To see the benefits of full-duplex relaying, we also include the performance of half-duplex schemes and conclude that the preferred scheme depends on the rate, outage, and delay requirements for a specific service.