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On Secrecy Performance in Underlay Cognitive Radio Networks with EH and TAS over α - μ Channel

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Abstract: This paper investigates the secrecy outage performance of Multiple Input Multiple Output (MIMO) secondary nodes for underlay Cognitive Radio Network (CRN) over α - μ fading channel. Here, the proposed system consists of one active eavesdropper and two primary nodes each with a single antenna. The power of the secondary transmitter depends on the harvested energy from the primary transmitter to save more energy and spectrum. Moreover, a Transmit Antenna Selection (TAS) scheme is adopted at the secondary source, while the Maximal Ratio Combining (MRC) technique is employed at the secondary receiver to optimize the quality of the signal. A lower bound closed-form expression for the secrecy outage performance is derived to demonstrate the effects of the channel parameters. In addition, numerical results illustrate that the number of source transmit antennas, destination received antenna, and the eavesdropper received antenna have significant effects on improving the secrecy performance.