COMPARISON OF DIFFERENT TYPES OF PHYSICAL LAYER SECURITY TECHNIQUES IN WIRELESS COMMUNICATION SYSTEMS: A REVIEW

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ABSTRACT

The physical data transportation methods are different in wireless communication as compared to wired communication networks. The main difference between these communication is how to secure the channel during the broadcasting from the attacks such as interference, eavesdropping and jamming. Previous traditionally proposed techniques are not suitable to secure the physical layer of wireless communication system. In this paper we identified the different types of threats that attack the physical layer when the channel is open and broadcasting a message signal. Then we give the comprehensive overview of different types of security techniques that are used to secure the physical layer, these techniques are categorized in three types: time domain, spatial domain and frequency domain based. Furthermore, we analyze the pros and cons of currently using technologies in each category.

Keywords: Wireless Sensor Networks (WSNs), Direct Sequence Spread Spectrum (DSSS), Single-Input Multiple-Output (SIMO), Multiple-Input Multiple-Output (MIMO), low probability of interception (LPI), Coordinate Interleaved Orthogonal Designs (CIOD), Orthogonal Frequency Division Multiplexing (OFDM), Frequency Hopping Spread Spectrum (FHSS).