ABSTRACT

Along with the development of technology, the human need for speed of access to information has increased rapidly. Visible Light Communication (VLC) is a communication technology that utilizes visible light as a transmission medium and LED lights as a light source. This final project uses Non-Orthogonal Multiple Access (NOMA) which is implemented in VLC because NOMA is more efficient in the multiplexing process. Coded Slotted ALOHA (CSA) was reviewed as a NOMA scheme because of the diversity of codes used for Multiple Access and Successive Interference Cancellation (SIC) coding to reduce interference. The CSA scheme was also introduced as a robust Random Access scheme on MAC frames. This CSA scheme is generalized from the Irregular Repetition Slotted ALOHA (IRSA) technique which is based on simple repetition of user collisions.

This final project focuses on the throughput and Packet Loss Ratio (PLR) values generated when the offered load (G) or decoding threshold uses the T-Fold method with the IRSA scheme. The test was carried out in a closed room with a Line of Sight (LOS) channel model with a room size of 6 x 6 x 6 meters. There are 11, 13, and 15 users with random positions and 100 simulated timeslots

Through analysis, the results showed that the use of the T-Fold IRSA method using the VLC channel, the more variations in the degree distribution, the higher the G value. The increase in the Throughput value was ±20% and in PLR the increase was up to two times in the ratio of users who decoded can be obtained using 15 users and 6 degrees.

Keywords: VLC, Irregular Repetition Slotted ALOHA (IRSA) , Successive Interference Cancellation (SIC), T-Fold.