A Thesis On

Chaotic Encrypted Medical Image Transmission over LTE System

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The project entitled "**Chaotic Medical Image Transmission over LTE Systems**", submitted by Roll no: ASH1201004M and ASH1201050M has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Bachelor of Science in Computer Science and Telecommunication Engineering as B.Sc. Engineering (CSTE) to be awarded by the Noakhali Science and Technology University.

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Statement of Originality

It is hereby declared that the content of this project is original and any part of it has not been submitted elsewhere for the award of any degree or diploma of the university or other institute of higher learning.

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Signature of the Supervisor

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ABSTRACT

In present world, applications require various kinds of images and pictures as sources of information for interpretation and analysis. In medical science, medical imaging has impacted positively the health care system around the world by helping doctors perform visual diagnostics of the human body. This research studies medical image transmission over LTE system. It is very challenging to design an efficient wireless communication system, because of many factors, affecting the performance of a typical wireless communication system. This research studies the efficient image transmission over Single Carrier Frequency Division Multiple Access (SC-FDMA) system. The performance of Discrete Fourier Transform (DFT) based SC-FDMA system and Discrete Cosine Transform (DCT) based SC-FDMA system is studied to select the proper technique for efficient image transmission. We also propose a chaotic interleaving scheme to be used with SC-FDMA for efficient image transmission. Simulation of both systems using Matlab program is presented, and the experimental results show that QPSK based DFT SC-FDMA system achieves higher Peak Signal to Noise Ratio (PSNR) values in the received images than the DCT based SC-FDMA system.

Keywords*: LTE, SC-FDMA, DFT, DCT, CHAOTIC INTERLEAVING, PSNR.*

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LIST OF ABBREVIATION

Abbreviation	Description
ITU	International Telecommunication Union
3GPP	3rd Generation Partnership Project
LTE	Long Term Evolution
OFDM	Orthogonal Frequency Division Multiplexing
OFDMA	Orthogonal Frequency Division Multiple Access
SC-FDMA	Single Carrier Frequency Division Multiple Access
FFT	Fast Fourier Transformation
DFT	Discrete Fourier Transform
DCT	Discrete Cosine Transform
SNR	Signal-to-noise Ratio
PSNR	Peak Signal-to-noise Ratio