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Master Thesis Defence

Entitled

*DESIGN AND APPLICATION OF CIRCULAR EDGE-FED LINEARLY POLARIZED PATCH ANTENNA
WITH ENHANCED BANDWIDTH AND GAIN FOR RESPIRATORY MONITORING SYSTEMS*

By

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Abstract

This Master's thesis explores the design and application of a circular edge-fed patch antenna for respiratory monitoring systems. The antenna, fabricated from a thin copper adhesive sheet, demonstrates compatibility with textile materials of low thickness and a relative permittivity of 1.3. Using CST Studio Suite 3D EM simulation software, the antenna's design was optimized through extensive trials, achieving improved bandwidth and gain. Our findings indicate that the antenna successfully differentiates between various breathing patterns, including slow, normal, and fast breathing rates. The study's managerial and research implications extend to healthcare, wearable technology sectors, and the broader scientific community. The research not only presents novel insights within the field of antenna design for respiratory monitoring but also establishes a robust foundation for future exploration in this domain.

Keywords: Circular Edge-fed Patch Antenna, Respiratory Monitoring Systems, CST Studio Suite 3D EM simulation, Bandwidth, Gain, Breathing Patterns, Healthcare, Wearable Technology.