Investigation of Electromagnetic Interference and Geo-Spatial Encroachment of Radio-Frequency Based Infrastructures around Ibadan Airport

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Certification

This is to certify that this study was conducted under my supervision by **Olalekan Jimmy Lawal** (**LCU/PG/001836**) for the award of Master of Science Degree (M.Sc.) in Computer Science, Faculty of Basic Medical and Applied Sciences**,** Lead City University, Ibadan, Oyo State, Nigeria

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Date

Dedication

This project is dedicated to Almighty God, in whom I found strength and courage to continue this program even when it seems impossible to do so. To Him alone be the glory.

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Abstract

Airport is a piece of land with facilities used purposely for commercial air transportation and or training. There are usually facilities to park and maintain aircraft, a control tower and a stretch of land for landing or take-off. Therefore operating an airport is extremely complicated, with a rigorous system of aircraft support services, passenger services, and aircraft control services contained within the operation. The Airport is also a site of operation for heavy machinery, a number of regulations and safety measures have been implemented in airports, in order to reduce hazards. Additionally, airports have major local environmental impacts, as both large sources of air pollution, noise pollution, exposure to dangerous radiation and other environmental impacts, making them sites that acutely experience the environmental effects of aviation. Airports are also vulnerable to electromagnetic radiations. Maintaining accurate cockpit reading in flight especially during taking off and landing is crucial to flight operation. Electromagnetic interference from installations in the vicinity of the Airfield has been a major challenge. Selecting the right location for land based signal generator/receiver in hope of meeting a right location that offers zero interference to accurate instruments reading would be highly desirable for the safety of lives and property. The vast land set aside for Airports in the early eighties are now choked with urban and suburban developmental infrastructures, such as Telecommunication base station, Television and Radio stations, Medical Facilities such as X-Rays and Computerized Tomography Scanners, Nuclear Power Plant , Research Laboratories, Manufacturing and Construction companies among other EMF sources. These EMF based infrastructures are mostly kept far below 15Km step-back stipulated by NCC as Airport Setback. The straying electric and magnetic fields interfere with the operation of the aircraft microprocessor memories and instruments, causing trifling disorder in the deck display or more seriously shutdown the aircraft engine. To investigate the level of electro-spatial encroachment and interference of the stray electric and magnetic fields around Ibadan Airport's environment, hence this study.

Table of Contents

List of Tables

Table **Page**

List of Figures

Figure **Page**