EFFECT OF COUPLING YAGI, CURVE AND HELICAL WAVE COLLECTOR AT RECEIVER ON SIGNAL PROPERTIES AND CURRENT CONSUMPTION OF ADS-B SYSTEM

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ABSTRACT

EFFECT OF COUPLING YAGI , CURVE AND HELICAL WAVE COLLECTOR AT RECEIVER ON SIGNAL PROPERTIES AND CURRENT CONSUMPTION OF ADS-B.

In this study, the report on effect of coupling Yagi , Curve and Helical wave collector at receiver separately on signal properties and current consumption of ADS-B System was completed. The study involved of developing simple ADS-B system that consist of the receiver and decoder. The signal harvested from the wave collector will trigger a value of voltage which is differ for the input and the output. .The voltage gain measured is dissimilar for each type of the wave collectors. There is also difference in current consumption if the receiver attached with different type of wave collector.From the experiment, we successfully found that the voltage gain over area of the helical type of wave collector is higher compared to the yagi and curvical. Hence, these results suggest for better signal performance of receiving the radio wave especially for simple ADS-B system.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

Previous study have been carried out on the large series of Automatic Dependent Surveillance-Broadcast(ADS-B), the studies varies from the predicting time using ADS-B, security enhancing and position precision of ADS-B system. Automatic Surveillance-Broadcast(ADS-B) is a system that positoning the air traffic to the display screen of the air traffic controller and pilots. Instead of using radar data to keep aircraft at safe distances from one another, signals from the Global Navigation Sytellite System will take over the job. ADS-B works by having aircraft tranponders recieve satellite signals and using transponder transmissions to determine the precise location of aircraft in the sky. The system converts that position into a unique digital code and combines it with other data from the aircraft's flight monitoring system-such as type of the aircraft, its speed , its flight number and whether it is climbing, turning or decendings. This system operates mainly through two designated frequencies, 978MHz and 1090 MHz.From previous research, Shang Wang et al. [6].has focused thier attention on phase modulated waveforms of radar sensing by trying to optimize the signal.They conclude by applying waveform optimization, it can enhance detection perfomance in the presence of strong interference and clutter. In the study they mainly focused on to get the informations on aircraft that not apply mode-S transponders which is necessary for ADS-B system to function.