ANALYSIS OF TARGET RADAR CROSS-SECTON USING CST SOFTWARE

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ACKNOWLEDGEMENT

ABSTRACT

This project intends to design and analyze a target radar cross-section and far-field simulation for radar application by using CST MWS software. FSR enhanced a radar target cross-section and more reliability to detect and track target compared to conventional radar. The simulations indicate different radar target and its simulation. The radar target model are designed with exact size as real car from Perodua blueprint .The comparison of radar cross-section between the different type of car model with different frequencies and target position are been analyzed. The radar target are simulated with a different frequencies which are 64Mhz, 150Mhz and 400Mhz. Different angle of planar wave propagate will resulting different radar cross-section and far-field region to radar target.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.1   BACKGROUND

FSR have enhancement of target radar cross section compare to the traditional radar. Forward scattering radar was a bistatic radar, where the target radar are crossed the baseline in between the separated transmitter and receiver. Radar cross section was the cross-sectional area of a perfectly reflecting sphere that would produce the same strength reflection. The radar cross section of a radar target was the hypothetical area required to intercept the transmitted power density of the target. Factor that affect target radar cross section are the size of the target, the material the target are made, its shape and orientation,

The FSR system application can be design with combination of radar and wireless networks system in to provide small and stealth detection. For the size, the larger an object the stronger its Radar reflection and thus the greater its RCS. Materials such as metal are strongly radar reflective and tend to produce strong signals. If the targets are flat and very angled, the radar will forward-scattered. The relief of a surface could contain indentations that act as corner reflectors that can increase radar cross-section from many orientations.