JOURNAL UNCLASSIFIED of DEFENSE RESEARCH

Special Issue 82-2, October 1982

SPACE-BASED RADAR

GUEST EDITOR: CHARLES E. HEIMACH, COLONEL, USAF

Prepared by Battelle Columbus Division for the Defense Advanced Research Projects Agency under Contract MDA 903-81-C-0309. Printed by the U.S. Government Printing Office, Washington, D.C.

Use of funds for printing this publication approved by the Director of the Office of Management and Budget (Sept. 22, 1980).



6

UNCLASSIFIED

CONTENTS

JOURNAL OF DEFENSE RESEARCH, SPECIAL ISSUE 82-2

Published October 30, 1982

Introduction (U) ---

Charles E. Heimach

1

REQUIREMENTS

Space-Based Radar in the NORAD Environment (U)----Robert A. Roode

SPACE-FED LENS ANTENNA DEVELOPMENTS

	Phased Array Lens Analysis for Space-Based Radar Application (U) Harvey K. Schuman, Donald R. Pflug, and Larry Thompson	
	Interim Results of the Phased Array Radiating Membrane Development Program	
	G. F. Gallegro, W. E. Simpson, and G. D. Jacobson	
	A Single-Layer Microstrip Membrane for Space Radar (U)	
	R. R. Henry and J. G. Fisher	
	Development of Active Popup Lens Antenna (U)	

MODULE DEVELOPMENT PROGRAMS

Monolithic Silicon-on-Sapphire Radar Transceiver Component Development (U) Ronald J. Naster, Ying-Chen Hwang, and Simon A. Zaidel	113
Silicon-on-Sapphire Transceiver Module Components for L-Band and S-Band (U) Dave G. Laighton, John P. Sasonoff, and John R. Selin	121

GaAs Monolithic Microwave Transceiver Module (U) -126 William R. Wisseman

UNCLASSIFIED

UNCLASSIFIED

FEED DESIGN

1

	Hugh L. Southall and Randolph E. Clapp
Low-Sidelobe	Space-Fed Lens Antenna Transform Feed Study (U) Jerome D. Hanfling and Bradley R. Herrich
	EXTERNAL DESIGN CONSTRAINTS
Space-Based I	Radar Environmental Interactions (U) C. P. Pike, G. T. Inouye, R. L. Wax, A. Rosen, and N. L. Sanders
ECM/ECCM	Interactions in Space-Based Radar (U) Donald R. Miedaner and Peter H. Stockmann
Technical Not	e -
Verification o	the Adaptive Nulling Achievable (U)
	SIGNAL PROCESSING
The Advanced	l On-Board Signal Processor (AOSP) in a Space-Based Radar Applica-
	J. R. Samson, Jr.
	SYSTEM VERIFICATION
Deployment I	Demonstration Program (U) Fred D. Kochendorfer and Ivan Bekey
Space-Based F	Radar Antenna Design Verification Study (U)
Ground Verif	ication of Space-Based Radar's Ability to See Aircraft and ALCM

Distribution List and Changes of Address

This publication is issued as a supplement to the *Journal of Defense Research*, which is published quarterly and distributed to individuals and organizations who have completed and submitted an application form as directed. Copies of the standard application form may be obtained by addressing the Director, Defense Advanced Research Projects Agency, 1400 Wilson Boulevard, Arlington, Virginia 22209, Attn: Director, Technical Information Office; telephone (202) 694-5919, Autovon 224-5919. Changes of address can be effected only by filing a new application that shows the new address, just as in making an initial application.

UNCLASSIFIED