

APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION	CLASSIFICATION	DATE 03/26/99	<i>Form Approved OMB No. 0704-0188</i>
			PAGE 1 OF 8 PAGES

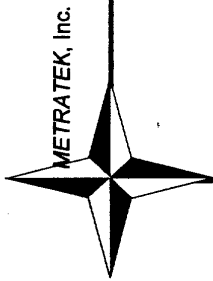
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DOD GENERAL INFORMATION			
TO		FROM	
1. APPLICATION TITLE DATALINK for UNMANNED AERIAL VEHICLE Synthetic Aperture Radar			
2. SYSTEM NOMENCLATURE TBD			
3. STAGE OF ALLOCATION (X one) ☐ a. STAGE 1 - CONCEPTUAL ☒ b. STAGE 2 - EXPERIMENTAL ☐ c. STAGE 3 - DEVELOPMENTAL ☐ d. STAGE 4 - OPERATIONAL			
4. FREQUENCY REQUIREMENTS a. FREQUENCY(IES) 12950-13050 MHz , 14774-14874 MHz, 14950-15050 MHz, 15125-15225MHz b. EMISSION DESIGNATOR(S) G1D90M0 G1D90M0 G1D90M0 G1D90M0			
5. TARGET STARTING DATE FOR SUBSEQUENT STAGES a. STAGE 2 04/09/99 b. STAGE 3 09/06/99 c. STAGE 4 11/08/99			
6. EXTENT OF USE Used only as required to demonstrate system to the government			
7. GEOGRAPHICAL AREA FOR a. STAGE 2 Warrenton-Fauqueir Airpark, Midland, VA and From Delaware Bay to Cape Hatteras, NC b. STAGE 3 Same as above c. STAGE 4 TBD			
8. NUMBER OF UNITS a. STAGE 2 1 b. STAGE 3 1 c. STAGE 4 1			
9. NUMBER OF UNITS OPERATING SIMULTANEOUSLY IN THE SAME ENVIRONMENT 1			
10. OTHER J/F 12 APPLICATION NUMBER(S) TO BE a. SUPERSEDED J/F 12/ b. RELATED J/F 12/		11. IS THERE ANY OPERATIONAL REQUIREMENT AS DESCRIBED IN THE INSTRUCTIONS FOR PARAGRAPH 11? a. YES ☒ b. NO ☐ c. N/A ☐	
12. NAMES AND TELEPHONE NUMBERS a. PROGRAM MANAGER Dr. Dennis Trizna, Office of Naval Research (703) 696-8380 (1) COMMERCIAL (2) AUTOVON b. PROJECT ENGINEER Chris O'Brien (703) 293-9040 (1) COMMERCIAL (2) AUTOVON			
13. REMARKS The DATALINK is a prototype for downlinking the digitized radar echo from a synthetic Aperture radar to a ship station for recording, processing and analysis and will be for development and demonstration under contract in response to DOD program solicitation 97.2, Small Business Innovation Research (SBIR) Program, Topic # N97-104.			
DOWNGRADING INSTRUCTIONS		CLASSIFICATION	

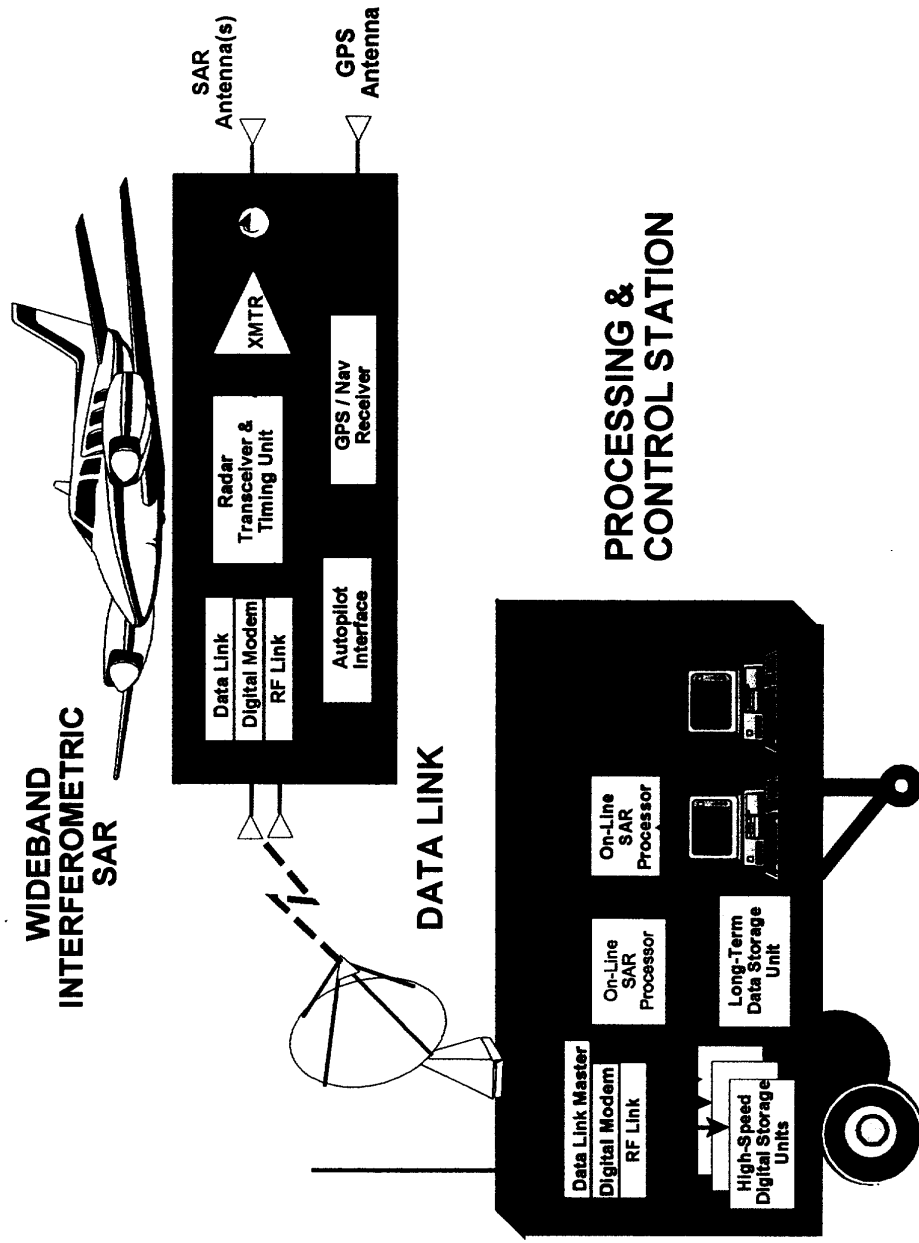
APPLICATION FOR SPECTRUM REVIEW		CLASSIFICATION	PAGE 2
NTIA GENERAL INFORMATION			
1. APPLICATION TITLE DATA LINK for Unmanned Aerial Vehicle Synthetic Aperture Radar			
2. SYSTEM NOMENCLATURE TBD			
3. STAGE OF ALLOCATION (X one) ☐ a. STAGE 1 - CONCEPTUAL ☒ b. STAGE 2 - EXPERIMENTAL ☐ c. STAGE 3 - DEVELOPMENTAL ☐ d. STAGE 4 - OPERATIONAL			
4. FREQUENCY REQUIREMENTS a. FREQUENCY(IES) 12950-13050 MHz, 14774-14874 MHz, 14950-15050 MHz, 15125-15225 MHz b. EMISSION DESIGNATOR(S) G1D90M0			
5. PURPOSE OF SYSTEM, OPERATIONAL AND SYSTEM CONCEPTS (WARTIME USE) (X one) ☐ a. YES ☒ b. NO To Downlink the digitized radar echo from a synthetic aperture radar to a ship station for recording, processing and analysis. Also to uplink UAV and sesor control data.			
6. INFORMATION TRANSFER REQUIREMENTS 45 Msymbols/sec eb/no=12.2 db			
7. ESTIMATED INITIAL COST OF THE SYSTEM 150 K			
8. TARGET DATE FOR			
a. APPLICATION APPROVAL 04/09/99	b. SYSTEM ACTIVATION 09/06/99	c. SYSTEM TERMINATION 03/01/00	
9. SYSTEM RELATIONSHIP AND ESSENTIALITY This system will be a prototype DATA LINK which will demonstate the ability to downlink synthetic aperture radar data from an unmanned aerial vehicle for ship station processing recording, and analysis.			
10. REPLACEMENT INFORMATION N/A			
11. RELATED ANALYSIS AND TEST DATA N/A			
12. NUMBER OF MOBILE UNITS 1			
13. GEOGRAPHICAL AREA FOR			
a. STAGE 2 Warrenton-Fauqueir Airpark, Midland, VA and From Delaware Bay to Cape Hatteras, NC			
b. STAGE 3 Same as above			
c. STAGE 4 TBD			
14. LINE DIAGRAM (See Page(s)) Pages 6,7,8		15. SPACE SYSTEMS (See Page(s)) N/A	
16. TYPE OF SERVICE(S) FOR STAGE 4 OR		17. STATION CLASS(ES) FOR STAGE 4 XC	
18. REMARKS			
DOWNGRADING INSTRUCTIONS		CLASSIFICATION	

CLASSIFICATION		PAGE 4	
ANTENNA EQUIPMENT CHARACTERISTICS			
1. ☒ a. TRANSMITTING ☒ b. RECEIVING ☒ c. TRANSMITTING AND RECEIVING			
2. NOMENCLATURE, MANUFACTURER'S MODEL NO. a. Rozendal Assoc. Omni 14.4-15.36 GHz b. Rozendal Assoc. Omni 10.6-13.3 GHz c. MA/Com 17-186		3. MANUFACTURER'S NAME a. Rozendal Associates b. Rozendal Associates c. MA/Com	
4. FREQUENCY RANGE a. 14.4-15.36 GHz b. 10.6-13.3 GHz c. 8-18 GHz		5. TYPE a. dipole b. dipole c. Parabolic dish	
6. POLARIZATION All are Vertical		7. SCAN CHARACTERISTICS	
8. GAIN a. 5 db b. 5 db c. 46 db a. MAIN BEAM a. 5 db b. 5 db c. 46 db b. 1ST MAJOR SIDE LOBE a. N/A b. N/A c. 1.6°		a. TYPE b. VERTICAL SCAN (1) MAX ELEV 180° (2) MIN ELEV -5° (3) SCAN RATE 0-20°/sec 3.3/min	
9. BEAMWIDTH a. HORIZONTAL N/A b. VERTICAL a. omni hemispheric coverage b. omni hemispheric coverage c. 1°		c. HORIZONTAL SCAN (1) SECTOR SCANNED 360° (2) SCAN RATE 0-20°/sec 3.3/min d. SECTOR BLANKING (X one) ☐ (1) YES ☒ (2) NO	
10. REMARKS Antennas (a.) and (b.) will be fixed and mounted on the aircraft. Antenna (c.) will be mounted on a positioner which will be on the ground or ship and will be pointed at the aircraft to maintain a datalink. Antenna (c.) will be pointed at the aircraft by using position data and will follow the aircraft along it's flight path until the aircraft is out of range. Antenna (c.) will be only positioned at that aircraft and will not rotate in a 360° path. It will not scan in azimuth nor elevation.			
CLASSIFICATION			

CLASSIFICATION					PAGE	
					5	
RECEIVER EQUIPMENT CHARACTERISTICS						
1. NOMENCLATURE, MANUFACTURER'S MODEL NO. DATALINK				2. MANUFACTURER'S NAME METRATEK, Inc.		
3. RECEIVER INSTALLATION one in aircraft one in ground or shipboard shelter				4. RECEIVER TYPE Dual conversion heterodyne		
5. TUNING RANGE 14.764-15.225 GHz				6. METHOD OF TUNING N/A		
7. RF CHANNELING CAPABILITY 200 MHz Continuous				8. EMISSION DESIGNATOR(S) G1D90M0		
9. FREQUENCY TOLERANCE 10 ppm						
10. IF SELECTIVITY	1ST	2ND	3RD	11. RF SELECTIVITY (X and complete as applicable)		
a. -3 dB	400 MHz	N/A	N/A	☒ CALCULATED ☐ MEASURED		
b. -20 dB	480 MHz	N/A	N/A	a. -3 dB 400 MHz		
c. -60 dB	600 MHz	N/A	N/A	b. -20 dB 480 MHz		
				c. -60 dB 600 MHz		
				d. PRESELECTION TYPE Filtered		
12. IF FREQUENCY				13. MAXIMUM POST DETECTION FREQUENCY		
a. 1ST 950-2150 MHz				125 MHz		
b. 2ND N/A				14. MINIMUM POST DETECTION FREQUENCY		
c. 3RD N/A				5 MHz		
15. OSCILLATOR TUNED	1ST	2ND	3RD	16. MAXIMUM BIT RATE		
a. ABOVE TUNED FREQUENCY				123.75 MHz		
b. BELOW TUNED FREQUENCY				17. SENSITIVITY		
c. EITHER ABOVE OR BELOW TUNED FREQUENCY	X			a. SENSITIVITY -76 to -68 dBm		
18. DE-EMPHASIS (X one)				b. CRITERIA 12 db Sinad		
☐ a. YES ☒ b. NO				c. NOISE FIG 2-5 dB		
19. IMAGE REJECTION 60 db				d. NOISE TEMP N/A Kelvin		
20. SPURIOUS REJECTION 60 db						
21. REMARKS						
CLASSIFICATION						



Datalink System Overview





Data Link System Block Diagram

METRATEK, Inc.

