APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION	CLASSIFICATION	DATE 03-24-2005	J/F 12/09063
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DOD GENERAL INFORMATION

TO	FROM
NAVEMSCEN 2461 Eisenhower Ave., Suite 1202 Alexandria, VA 22331-1400	NAVAL AIR WARFARE CENTER DIVIS BLDG 2118 23029 CEDAR POINT ROAD NAWCAD PATUXENT RIVER, MD 20670

1. APPLICATION TITLE (U) Aerolight Unmanned Aerial Vehicle Data Link

2. SYSTEM NOMENCLATURE (U) Aerolight Unmanned Aerial Vehicle Data Link

3. STAGE OF ALLOCATION (U)

	a. STAGE 1 CONCEPTUAL	X	b. STAGE 2 EXPERIMENTAL		c. STAGE 3 DEVELOPMENTAL		d. STAGE 4 OPERATIONAL

4. FREQUENCY REQUIREMENTS
a. FREQUENCY(IES) (U) 430 MHz - 440 MHz
b. EMISSION DESIGNATORS (U) 15K0F1D

5. TARGET STARTING DATE FOR SUBSEQUENT STAGES

a. STAGE 2 (U) NA	b. STAGE 3 (U) NA	c. STAGE 4 (U) NA

6. EXTENT OF USE (U) Intermittent 6 hrs/day, 5 days/wk

7. GEOGRAPHICAL AREA FOR

a. STAGE 2 (U) Patuxent River, MD; China Lake, CA; Point Mugu, CA.

b. STAGE 3 (U) NA

c. STAGE 4 (U) NA

8. NUMBER OF UNITS

a. STAGE 2 (U) 2	b. STAGE 3 (U) NA	c. STAGE 4 (U) NA

9. NUMBER OF UNITS OPERATING SIMULTANEOUSLY IN THE SAME ENVIRONMENT (U) NA

10. OTHER J/F 12 APPLICATION ID(S) TO BE (U) a. SUPERSEDED X b. RELATED J/F 12/06043	11. IS THERE ANY OPERATIONAL REQUIREMENT AS DESCRIBED IN THE INSTRUCTIONS FOR PARAGRAPH 11? (U) a. YES b. NO X c. NAVAIL

12. NAMES AND TELEPHONE NUMBERS (U)

a. PROGRAM MANAGER Mr. Nick Patregami	(1) COMMERCIAL 301-342-4350	(2) DSN 342-4350
b. PROJECT ENGINEER Mr. Andy Pontzer	(1) COMMERCIAL 301-995-8023	(2) DSN 995-8361

13. REMARKS (U)

DOWNGRADING INSTRUCTIONS	J/F 12/09063
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DD Form 1494, MAY 91   S/N 0102-LF-001-4941

TRANSMITTER EQUIPMENT CHARACTERISTICS

1. NOMENCLATURE, MANUFACTURER'S MODEL NO.	2. MANUFACTURER'S NAME
(U) HorstBecker Data Transmitter 550107	(U) Horst Becker

3. TRANSMITTER INSTALLATION	4. TRANSMITTER TYPE
(U) Ground Station	(U) FM Data

5. TUNING RANGE
(U)   430 MHz - 440 MHz

6. METHOD OF TUNING
(U)   Crystal Controlled Synthesizer

8. EMISSION DESIGNATORS
(U)   15K0F1D   (U)   (U)

7. RF CHANNELING CAPABILITY
(U)   430 MHz, 100 KHz increment

12. EMISSION BANDWIDTH

	[ ] CALCULATED	[X] MEASURED

9. FREQUENCY TOLERANCE
(U)   10 ppm

12. EMISSION BANDWIDTH		
a. -3 dB (U) 5 KHz	(U)	(U)
b. -20 dB (U) 20 KHz	(U)	(U)
c. -40 dB (U) 40 KHz	(U)	(U)
d. -60 dB (U) 70 KHz	(U)	(U)
e. OC-BW (U) 15 KHz	(U)	(U)

10. FILTER EMPLOYED
(U)   [X] a. YES   [ ] b. NO

11. SPREAD SPECTRUM
(U)   [ ] a. YES   [X] b. NO

13. MAXIMUM BIT RATE
(U)   9600 bps

15. MAXIMUM MODULATION FREQUENCY
(U)   10 KHz

14. MODULATION TECHNIQUES AND CODING
(U)   Frequency Shift Keying(FSK)

17. DEVIATION RATIO
(U)   1.0

18. PULSE CHARACTERISTICS

18. PULSE CHARACTERISTICS		
a. RATE (U) NA	(U)	(U)
b. WIDTH (U) NA	(U)	(U)
c. RISE TIME (U) NA	(U)	(U)
d. FALL TIME (U) NA	(U)	(U)
e. COMP RATIO (U) NA	(U)	(U)

16. PRE-EMPHASIS
(U)   [ ] a. YES   [X] b. NO

19. POWER

a. MEAN (U) 10 W	(U)	(U)
b. PEP (U) NA	(U)	(U)

20. OUTPUT DEVICE
(U)   BiPolar Transistor,Class C,Common Base

21. HARMONIC LEVEL

a. 2nd	(U) -50 dB
b. 3rd	(U) -60 dB
c. OTHER	(U) -60 dB

22. SPURIOUS LEVEL
(U)   -80 dB

23. FCC TYPE ACCEPTANCE NO.
(U)   NA

24. REMARKS (U)   Item # 10:   Band Pass filter

DD FORM 1494, MAY 91   S/N 0102-LF-001-4941

RECEIVER EQUIPMENT CHARACTERISTICS

1. NOMENCLATURE, MANUFACTURER'S MODEL NO.
(U)   HorstBecker 550107

2. MANUFACTURER'S NAME
(U)   Horst Becker

3. RECEIVER INSTALLATION
(U)   Aircraft

4. RECEIVER TYPE
(U)   Dual Conversion Superheterodyne

5. TUNING RANGE
(U)   430 MHz - 440 MHz

6. METHOD OF TUNING
(U)   Crystal Controlled Synthesizer

8. EMISSION DESIGNATORS
(U)   15K0F1D

7. RF CHANNELING CAPABILITY
(U)   430 MHz, 100 KHz increment

11. RF SELECTIVITY

	CALCULATED	X	MEASURED

9. FREQUENCY TOLERANCE
(U)   10 ppm

a. -3 dB	(U)	30 KHz
b. -20 dB	(U)	40 KHz
c. -60 dB	(U)	50 KHz
d. Preselection Type	(U)	Fixed Tuned

10. IF SELECTIVITY	1st (U)	2nd (U)	3rd (U)
a. -3 dB	1 MHz	30 KHz	NAvail
b. -20 dB	5 MHz	40 KHz	NAvail
c. -60 dB	NAvail	50 KHz	NAvail

13. MAXIMUM POST DETECTION FREQUENCY
(U)   10 KHz

12. IF FREQUENCY

a. 1st   (U)   31.5 MHz

b. 2nd   (U)   455 KHz

c. 3rd   (U)   NAvail

14. MINIMUM POST DETECTION FREQUENCY
(U)   NA

16. MAXIMUM BIT RATE
(U)   9.6 Kbps

15. OSCILLATOR TUNED	1st (U)	2nd (U)	3rd (U)
a. ABOVE TUNED FREQUENCY			
b. BELOW TUNED FREQUENCY	X		
c. EITHER ABOVE OR BELOW THE FREQUENCY			

17. SENSITIVITY

a. SENSITIVITY   (U)   - 110 dBm

b. CRITERIA   (U)   10 dB SNR

c. NOISE FIG   (U)   6 dB

d. NOISE TEMP   (U)   NA

18. DE-EMPHASIS

(U) | | a. YES | X | b. NO

19. IMAGE REJECTION
(U)   60 dB

20. SPURIOUS REJECTION
(U)   60 dB

21. REMARKS (U)

CLASSIFICATION   UNCLASSIFIED

ANTENNA EQUIPMENT CHARACTERISTICS

1. (U)   [X] **a. TRANSMITTING**   [ ] **b. RECEIVING**   [ ] **c. TRANSMITTING AND RECEIVING**

2. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) UHF Omni Antenna	**3. MANUFACTURER'S NAME** (U) Andrew Corporation
	5. TYPE (U) Discone
4. FREQUENCY RANGE (U) 430 MHz - 440 MHz	**7. SCAN CHARACTERISTICS**
	a. TYPE (U) FIXED
6. POLARIZATION (U) Vertical	**b. VERTICAL SCAN** (U) NA
8. GAIN	**(1) Max Elev** (U) NA
a. MAIN BEAM (U) 2 dBi	**(2) Min Elev** (U) NA
	(3) Scan Rate (U) NA
b. 1st MAJOR SIDE LOBE (U)	**c. HORIZONTAL SCAN** (U) NA
9. BEAMWIDTH	**(1) Sector Scanned** (U) NA
a. HORIZONTAL (U) 360 deg	**(2) Scan Rate** (U) NA
b. VERTICAL (U) 72 deg	**d. SECTOR BLANKING** (U) [ ] **(1) YES** [X] **(2) NO**

10. REMARKS (U)

CLASSIFICATION   UNCLASSIFIED

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ANTENNA EQUIPMENT CHARACTERISTICS

1. (U)   [ ] **a. TRANSMITTING**   [X] **b. RECEIVING**   [ ] **c. TRANSMITTING AND RECEIVING**

2. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) AeroLight 500 Antenna	**3. MANUFACTURER'S NAME** (U) APL/JHU, Laurel MD
	5. TYPE (U) Stub
4. FREQUENCY RANGE (U) 420 MHz - 450 MHz	**7. SCAN CHARACTERISTICS**
	a. TYPE (U) FIXED
6. POLARIZATION (U) Vertical	**b. VERTICAL SCAN** (U) NA
	(1) Max Elev (U) NA
8. GAIN	**(2) Min Elev** (U) NA
a. MAIN BEAM (U) 0 dBi	**(3) Scan Rate** (U) NA
b. 1st MAJOR SIDE LOBE (U)	**c. HORIZONTAL SCAN** (U) NA
9. BEAMWIDTH	**(1) Sector Scanned** (U) NA
a. HORIZONTAL (U) 360 deg	**(2) Scan Rate** (U) NA
b. VERTICAL (U) 90 deg	**d. SECTOR BLANKING** (U) [ ] **(1) YES** [X] **(2) NO**

10. REMARKS (U)

APPLICATION FOR SPECTRUM REVIEW	CLASSIFICATION **UNCLASSIFIED**	PAGE 6

NTIA GENERAL INFORMATION

1. APPLICATION TITLE   (U)   Aerolight Unmanned Aerial Vehicle Data Link

2. SYSTEM NOMENCLATURE   (U)   Aerolight Unmanned Aerial Vehicle Data Link

3. STAGE OF ALLOCATION   (U)

	a. STAGE 1 CONCEPTUAL	X	**b. STAGE 2** EXPERIMENTAL		**c. STAGE 3** DEVELOPMENTAL		**d. STAGE 4** OPERATIONAL

4. FREQUENCY REQUIREMENTS

a. FREQUENCY(IES)   (U)   430 MHz - 440 MHz

b. EMISSION DESIGNATORS (U)   15K0F1D

5. PURPOSE OF SYSTEM, OPERATIONAL AND SYSTEM CONCEPTS   (WARTIME USE)   ☐ **a. YES**   ☒ **b. NO**

(U)   To provide control functions from a ground control station to the AeroLight Unmanned Aerial Vehicle.

6. INFORMATION TRANSFER REQUIREMENTS(U)   Continuous Signal

7. ESTIMATED INITIAL COST OF THE SYSTEM (U) $10K

8. TARGET DATE FOR

a. APPLICATION APPROVAL (U) 02/10/2005	**b. SYSTEM ACTIVATION** (U) 05/12/2005	**c. SYSTEM TERMINATION** (U) 01/01/2006

9. SYSTEM RELATIONSHIP   (U)   This data link is essential for the AeroLight UAV to carry out its mission.
AND ESSENTIALITY

10. REPLACEMENT INFORMATION   (U)   None

11. RELATED ANALYSIS AND/OR TEST DATA   (U)   None

12. NUMBER OF MOBILE UNITS   (U)   2

13. GEOGRAPHICAL AREA FOR

a. STAGE 2   (U)   Patuxent River MD; China Lake CA; Point Mugu CA

b. STAGE 3   (U)   NA

c. STAGE 4   (U)   NA

14. LINE DIAGRAM (U) See Page(s) 6	**15. SPACE SYSTEMS** (U) See Page(s) NA
16. TYPE OF SERVICE(S) FOR STAGE 4 (U) Aeronautical Mobile	**17. STATION CLASS(ES) FOR STAGE 4** (U) FAT

18. REMARKS (U)   Item #5:   System is strictly experimental, will enforce NTIA 7.11 during operation.

DOWNGRADING INSTRUCTIONS

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CLASSIFICATION **UNCLASSIFIED**