

UNCLASSIFIED

J/F 12/09112

SECURITY SUMMARY & SPECIAL HANDLING REQUIREMENTS

The title of this application is: Freewave Technologies P-501X005 Transceiver

The overall classification of this application is: **UNCLASSIFIED**

The following Special Handling summary lists the applicable markings for the printed page(s). It is your responsibility to place all Special Handling markings on the cover page of the application.

If an Entire Application was printed, the following Special Handling summary lists the applicable markings for the Entire Application.

If an Individual Page (TX, RX, ANT, etc.) was printed, the following Special Handling summary lists the applicable markings for the printed page. It is your responsibility to make certain that any Special Handling markings that are unique to the Individual Page are also reflected on the cover of the Entire Application.

If the "!" code is shown below, the "SEE REMARKS" refers to the REMARKS block on the applicable page.

Refer to your Security Manual for further guidance.

No Application Level Special Handling

No Page Level Special Handling

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ADMINISTRATIVE INFORMATION PAGE

1. SYSTEM IDENTIFIER: (U) C

2. EQUIPMENT FUNCTION: (U) C CD CT

3. EQUIPMENT NOMENCLATURE: (U) SCAN EAGLE UAV TELEMTRY (U)
(U) (U)
(U) (U)
(U) (U)

4. ECI CODE: (U)

5. MCEB USE: (U) O (C:CONCEP; E:EXPER; D:DEVELOP; O:OPER; N:NOTED)

6. MCEB LOCATIONS: (U) COUNTRY STATE CITY
USP
AFG
BHR
EGY
HTI
HND
IRQ
KWT
NCG
OMA

7. HOST COUNTRY: COUNTRY DATE MESSAGE DTG
(U) US 12-20-2006
(U) AF 12-20-2006
(U) EG 12-20-2006
(U) HTI 12-20-2006
(U) HND 12-20-2006
(U) IRQ 12-20-2006
(U) KW 12-20-2006
(U) NC 12-20-2006
(U) OM 12-20-2006
(U) PHL 12-20-2006

8. NOTE-TO-HOLDER:
(U) 03-19-2008
(U) 09-01-2010
(U)
(U)
(U)
(U)
(U)
(U)
(U)
(U)

9. JSC MEMO DATE: (U) 12-20-2006

10. USING AGENCIES: (U) 1:AR 2:AF 3:CG

11. PROCURING AGENCY: (U) N

12. APPLICATION STATUS: (U) 1 (1:APPROV; 2:CANCEL; 3:SUPERSE; 4:NOTED; 5:WITHDR; 6:PEND)

APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION		CLASSIFICATION UNCLASSIFIED	DATE 09/30/2005	J/F 12/09112
				Page 1 of 22 Pages
DOD GENERAL INFORMATION				
TO Navy & Marine Corps Spectrum Center 2461 Eisenhower Ave., Suite 1202 Alexandria, VA 22331-1400		FROM MARCORSYSCOM 2200 Lester St. Quantico, VA 22134-6050		
1. APPLICATION TITLE (U) Freewave Technologies P-501X005 Transceiver				
2. SYSTEM NOMENCLATURE (U) Scan Eagle UAV Telemetry				
3. STAGE OF ALLOCATION (U) ☐ a. STAGE 1 CONCEPTUAL ☐ b. STAGE 2 EXPERIMENTAL ☐ c. STAGE 3 DEVELOPMENTAL ☒ d. STAGE 4 OPERATIONAL				
4. FREQUENCY REQUIREMENTS a. FREQUENCY(IES) (U) 1350 MHz - 1390 MHz b. EMISSION DESIGNATORS (U) 230KF1D				
5. TARGET STARTING DATE FOR SUBSEQUENT STAGES				
a. STAGE 2 (U)		b. STAGE 3 (U)		c. STAGE 4 (U) ASAP
6. EXTENT OF USE (U) Day and night operations.				
7. GEOGRAPHICAL AREA FOR				
a. STAGE 2 (U) NA				
b. STAGE 3 (U) NA				
c. STAGE 4 (U) See Remarks				
8. NUMBER OF UNITS				
a. STAGE 2 (U)		b. STAGE 3 (U)		c. STAGE 4 (U) 16
9. NUMBER OF UNITS OPERATING SIMULTANEOUSLY IN THE SAME ENVIRONMENT (U) 2				
10. OTHER J/F 12 APPLICATION ID(S) TO BE (U) ☐ a. SUPERSEDED ☐ b. RELATED		11. IS THERE ANY OPERATIONAL REQUIREMENT AS DESCRIBED IN THE INSTRUCTIONS FOR PARAGRAPH 11? (U) ☒ a. YES ☐ b. NO ☐ c. NAVAIL		
12. NAMES AND TELEPHONE NUMBERS (U)				
a. PROGRAM MANAGER CWO2 Arthur R. DeLeon		(1) COMMERCIAL 703-693-3476	(2) DSN 223-3476	
b. PROJECT ENGINEER CWO2 Arthur R. DeLeon		(1) COMMERCIAL 703-693-3476	(2) DSN 223-3476	
13. REMARKS (U) Scan Eagle is a small long-endurance UAV supporting intelligence, surveillance and reconnaissance (ISR) and communications relay. Telemetry and command uses a frequency-hopped data link with maximum 115 kbps data rate and hop duration of 10 msec. The Marine Expeditionary Forces deploy two Scan Eagle mobile deployment units (SMDUs). Each SMDU is equipped with 8 aircrafts and can support flight operations of 2 aircrafts at the same time. The telemetry downlinks for the various aircraft can share the hopping bandwidth; the radios can be programmed to operate within specific subbands of the 1350 - 1390 MHz band, or restricted to single-channel operation, if required.				
DOWNGRADING INSTRUCTIONS				J/F 12/09112
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DOD REMARK OVERFLOW PAGE

In addition to the SMDUs, there will be 10 small mobile units (Forward Eyes) that can operate in a receive-only mode, and may operate with a low duty cycle command uplink for camera control.

Item 7c: DoD Test & Training Ranges in US&P, Afghanistan, Bahrain, Bosnia-Herzegovina, Egypt, Haiti, Honduras, Iraq, Japan, Kuwait, all NATO member countries, Nicaragua, Oman, Qatar, Philippines, Republic of Korea, Saudi Arabia, Switzerland, Thailand, and United Arab Emirates.

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ANTENNA EQUIPMENT CHARACTERISTICS			
1. (U) ☐ a. TRANSMITTING ☐ b. RECEIVING ☒ c. TRANSMITTING AND RECEIVING			
2. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) Not Available		3. MANUFACTURER'S NAME (U) Teksharp, Inc.	
4. FREQUENCY RANGE (U) 1350 MHz - 1390 MHz		5. TYPE (U) Quarter-wave Monopole	
6. POLARIZATION (U) Vertical		7. SCAN CHARACTERISTICS	
8. GAIN		a. TYPE (U) FIXED	
a. MAIN BEAM (U) 3 dBi		b. VERTICAL SCAN (U) NA	
b. 1st MAJOR SIDE LOBE (U) (See Remarks)		(1) Max Elev (U) NA	
9. BEAMWIDTH		(2) Min Elev (U) NA	
a. HORIZONTAL (U) 360 deg		(3) Scan Rate (U) NA	
b. VERTICAL (U) 45 deg		c. HORIZONTAL SCAN (U) NA	
		(1) Sector Scanned (U) NA	
		(2) Scan Rate (U) NA	
		d. SECTOR BLANKING (U) ☐ (1) YES ☒ (2) NO	
10. REMARKS (U) Item 2: This antenna is used for the small mobile units, Forward Eyes. Item 8b: Not Available.			
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1. (U) ☐ a. TRANSMITTING		☐ b. RECEIVING		☒ c. TRANSMITTING AND RECEIVING	
2. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) MD 06-010-0721		3. MANUFACTURER'S NAME (U) RADIAL			
4. FREQUENCY RANGE (U) 1350 MHz - 1390 MHz		5. TYPE (U) 3/4 WAVE DIPOLE			
6. POLARIZATION (U) Vertical		7. SCAN CHARACTERISTICS			
8. GAIN		a. TYPE (U) FIXED			
a. MAIN BEAM (U) 5.5 dBi		b. VERTICAL SCAN (U) NA			
b. 1st MAJOR SIDE LOBE (U) NA		(1) Max Elev (U) NA			
9. BEAMWIDTH		(2) Min Elev (U) NA			
a. HORIZONTAL (U) 360 deg		(3) Scan Rate (U) NA			
b. VERTICAL (U) 90 deg		c. HORIZONTAL SCAN (U) NA			
		(1) Sector Scanned (U) NA			
		(2) Scan Rate (U) NA			
		d. SECTOR BLANKING (U) ☐ (1) YES ☒ (2) NO			

10. REMARKS (U)

APPLICATION FOR SPECTRUM REVIEW	CLASSIFICATION UNCLASSIFIED	PAGE 11
NTIA GENERAL INFORMATION		
1. APPLICATION TITLE (U) Freewave Technologies P-501X005 Transceiver		
2. SYSTEM NOMENCLATURE (U) Scan Eagle UAV Telemetry		
3. STAGE OF ALLOCATION (U) ☐ a. STAGE 1 CONCEPTUAL ☐ b. STAGE 2 EXPERIMENTAL ☐ c. STAGE 3 DEVELOPMENTAL ☒ d. STAGE 4 OPERATIONAL		
4. FREQUENCY REQUIREMENTS a. FREQUENCY(IES) (U) 1350 MHz - 1390 MHz b. EMISSION DESIGNATORS (U) 230KF1D		
5. PURPOSE OF SYSTEM, OPERATIONAL AND SYSTEM CONCEPTS (U) The uplink provides UAV flight management, differential global positioning system (DGPS) correction information, and camera control. The downlink provides UAV health and status, location and sensor pointing information. (WARTIME USE) ☒ a. YES ☐ b. NO		
6. INFORMATION TRANSFER REQUIREMENTS (U) Uplink and downlink loading is typically less than 10 Kbps and 30 Kbps, respectively.		
7. ESTIMATED INITIAL COST OF THE SYSTEM (U) \$20,000,000		
8. TARGET DATE FOR		
a. APPLICATION APPROVAL (U) ASAP	b. SYSTEM ACTIVATION (U) ASAP	c. SYSTEM TERMINATION (U) 12/31/2016
9. SYSTEM RELATIONSHIP AND ESSENTIALITY (U) System will support the Marine Expeditionary Forces at DoD Test & Training Ranges in US&P and in other COCOMs' AOR.		
10. REPLACEMENT INFORMATION (U) None		
11. RELATED ANALYSIS AND/OR TEST DATA (U) None		
12. NUMBER OF MOBILE UNITS (U) Two		
13. GEOGRAPHICAL AREA FOR		
a. STAGE 2 (U) NA		
b. STAGE 3 (U) NA		
c. STAGE 4 (U) See Remarks		
14. LINE DIAGRAM (U) See Page(s) 9	15. SPACE SYSTEMS (U) See Page(s)	
16. TYPE OF SERVICE(S) FOR STAGE 4 (U) Aeronautical Mobile Mobile	17. STATION CLASS(ES) FOR STAGE 4 (U) FA MOD MA MOEB	
18. REMARKS (U) Scan Eagle is a small long-endurance UAV supporting intelligence, surveillance and reconnaissance (ISR) and communications relay. Telemetry and command uses a frequency-hopped data link with maximum 115 Kbps data rate and hop duration of 10 msec. The Marine Expeditionary Forces deploy two Scan Eagle mobile deployment units (SMDUs). Each SMDU is equipped with 8 aircrafts and can support		
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NTIA REMARK OVERFLOW PAGE

flight operations of 2 aircrafts at the same time. The telemetry downlinks for the various aircraft can share the hopping bandwidth; the radios can be programmed to operate within specific subbands of the 1350 - 1390 MHz band, or restricted to single-channel operation, if required.

In addition to the SMDUs, there will be 10 small mobile units (Forward Eyes) that can operate in a receive-only mode, and may operate with a low duty cycle command uplink for camera control.

Item 13c: DoD Test & Training Ranges in US&P, Afghanistan, Bahrain, Bosnia-Herzegovina, Egypt, Haiti, Honduras, Iraq, Japan, Kuwait, all NATO member countries, Nicaragua, Oman, Qatar, Philippines, Republic of Korea, Saudi Arabia, Switzerland, Thailand, and United Arab Emirates.

APPLICATION FOR FOREIGN SPECTRUM SUPPORT	CLASSIFICATION UNCLASSIFIED	PAGE 14
FOREIGN COORDINATION GENERAL INFORMATION		
1. APPLICATION TITLE (U) Freewave Technologies P-501X005 Transceiver		
2. SYSTEM NOMENCLATURE (U) Scan Eagle UAV Telemetry		
3. STAGE OF ALLOCATION (U) ☐ a. STAGE 1 CONCEPTUAL ☐ b. STAGE 2 EXPERIMENTAL ☐ c. STAGE 3 DEVELOPMENTAL ☒ d. STAGE 4 OPERATIONAL		
4. FREQUENCY REQUIREMENTS a. FREQUENCY(IES) (U) 1350 MHz - 1390 MHz b. EMISSION DESIGNATORS (U) 230KF1D		
5. PROPOSED OPERATING LOCATIONS OUTSIDE US&P (U) Afghanistan, Bahrain, Egypt, Haiti, Honduras, Iraq, Kuwait, Nicaragua		
6. PURPOSE OF SYSTEM, OPERATIONAL AND SYSTEM CONCEPTS (U)		
7. INFORMATION TRANSFER REQUIREMENTS (U)		
8. NUMBER OF UNITS OPERATING SIMULTANEOUSLY IN THE SAME ENVIRONMENT (U)		
9. REPLACEMENT INFORMATION (U)		
10. LINE DIAGRAM (U) See Page(s) #		11. SPACE SYSTEMS (U) See Page(s) #
12. PROJECTED OPERATIONAL DEPLOYMENT DATE (U)		
13. REMARKS (U)		
DOWNGRADING INSTRUCTIONS		J/F 12/09112 CLASSIFICATION UNCLASSIFIED

accomplished. NTIA recommends that DoD take all practicable steps to:

- a. select operating frequencies for the subject system from the band 1370-1390 MHz, limit operations below 1370 MHz to the fixed-frequency mode, and ensure that any frequency-hopping operations conducted in the band 1350-1370 MHz be limited to 1 MHz increments.
- b. avoid selecting frequencies in the band 1350-1370 MHz for assignments to aircraft stations. In some locations, it may be difficult or impossible to successfully coordinate assignments for aircraft using the band 1350-1370 MHz due to the potential for interference with the operation of authorized long-range surveillance radars.
- c. protect radio astronomy service from harmful interference in the band 1350-1390 MHz in accordance with Footnote US311 to the National Table of Frequency Allocations.
- d. ensure that personnel are protected from radiation levels that exceed generally accepted exposure criteria.

6. Operational use within the appropriate theater commands outside the United States has been initiated. Approval for operational use in the intended deployment area requires appropriate COCOM's statement(s) that the subject system has been deemed frequency supportable. The Host Nation Comments received to date are as follows:

USPACOM 2 DEC 05

USPACOM: The following Note to Holder comments are provided for Philippines and Thailand. Operations permitted on temporary basis subject to normal frequency coordination procedures prior to equipment deployment. Units deploying equipment to the USPACOM AOR must obtain temporary frequency authorization from JFMOPAC Honolulu HI (HQ USPACOM J613), Army/Navy/Air Force/Marine Corps Frequency Management Personnel will initiate request for temporary frequency usage via their appropriate service component or CJTF on behalf of deploying unit. Lead times for PACOM countries should be submitted at least 60 days prior to intended use to allow appropriate foreign frequency coordination.

USSOUTHCOM 7 DEC 05

USSOUTHCOM: This system is spectrum supportable by Haiti, Honduras and Nicaragua.

USCENTCOM 8 DEC 05

USCENTCOM: 1. In accordance with ITU regulations, band 1350-1400 MHz is allocated for fixed and mobile services in region 1 and radiolocation in region 3. Administrators are urged to take all practicable steps to protect the radio astronomy service operating in 1330-1400 MHz from harmful interference; emissions from airborne stations can be particularly serious sources of interference to this service.

USPACOM 21 JUL 2006

JAPAN

- "1. The frequency band 1350-1390MHz is used for the weather radar and radiolocation service stations.
2. Therefore, TB will be able to support use of your system with following conditions:
 - The use of the frequency band is from 1370MHz to 1390MHz.

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US MILITARY COMMUNICATIONS ELECTRONICS BOARD
WASHINGTON, DC 20301

NH J/F 12/09112/1

19 MAR 08

NOTE TO HOLDERS
OF

J/F 12/09112/1

Freewave Technologies P-501X005 Transceiver

Holders of the subject Navy document dated 20 Dec 2006 are requested by
the Navy to note the following Host Nation comments:

Section 2: Operating Location: Add "Japan"

Section 3: Add the following:

USPACOM 21 JUL 2006

JAPAN

"1. The frequency band 1350-1390MHz is used for the weather radar and
radiolocation service stations.

2. Therefore, TB will be able to support use of your system with
following conditions:

- The use of the frequency band is from 1370MHz to 1390MHz.
- The use of the frequencies with code M. (Code M - frequencies, the
use of which are NIB to Japanese use.)

3. This approval for equipment support is not an authorization for
frequency use. Separate technical liaison channel document requesting
frequency support is necessary to complete this action.

4. Failure to submit requests for frequency clearance within 90 days of
the date of this memorandum (20JUL06) will result in cancellation of this
equipment support."

STEERING MEMBER
ESG Working Group
MCEB Frequency Panel

cc: MCEB J-12
Distribution List

NH J/F 12/09112/1

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US MILITARY COMMUNICATIONS ELECTRONICS BOARD
WASHINGTON, DC 20301

NH J/F 12/9112/1
NH J/F 12/9112

SEP 01 2010

NOTE TO HOLDERS

OF

J/F 12/9112/1
and
J/F 12/9112

Freewave Technologies P-501X005 Transceiver

Holders of subject Navy, Coast Guard, Air Force, and Army document dated 20 December 2006 and 30 September 2005, respectively, are requested by the Navy to note the following changes:

J/F 12/9112/1

Section 3, Paragraph 5 - Add the following subparagraph:

"d. ensure that personnel are protected from radiation levels that exceed generally accepted exposure criteria."

IRAC/SPS Number:

Change "Doc. 34919/2" to "Doc. 34919/3".

Change "SPS-15350/2" to "SPS-15350/3".

J/F 12/9112

Add the attached Antenna Equipment Characteristics page:

STEERING MEMBER
ESG Working Group
MCEB Frequency Panel

cc: MCEB J-12 Distribution List

NH J/F 12/9112/1

NTIA ADMINISTRATIVE PAGE

(U) SPS #: 15350/3

(U) SIN #:

(U) AGENCY: N

(U) STAGE: 4

(U) PREVIOUS CERTIFICATION:

(U) STATUS: DATE: ACTION:

(U) REMARKS:

IRAC Doc. #: 34919/3

(U) SPS RELATED DOCUMENTS: DATE: DOCKET #: DESCRIPTION:

(U) SPS RECOMMENDATIONS:

(U) NTIA CERTIFICATION: