APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION	CLASSIFICATION	DATE	FORM APPROVED OMB No. 0704-0188
	UNCLASSIFIED	3 Mar 2012	Page 1 of 6

DOD GENERAL INFORMATION

TO	FROM
Army Spectrum Management Office (ASMO) 6913 Cooper Avenue Ft. Meade, MD 20755-7091	Army Rapid Equipping Force 10236 Burbeck Road, Bldg 361T Ft. Belvoir, Virginia 22060-5852

1. APPLICATION TITLE
Ibis Tek, LLC WDL Model iWDL4860 Wireless Data Link

2. SYSTEM NOMENCLATURE
Ibis Tek, LLC WDL Model iWDL4860 Wireless Data Link

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) 4800 – 6000 MHz
b. EMISSION DESIGNATOR(S) 5M33G1D 10M7G1D

a. STAGE 2	b. STAGE 3	c. STAGE 4
NA	NA	November 2012

6. EXTENT OF USE
Intermittent

7. GEOGRAPHICAL AREA FOR
a. STAGE 2
b. STAGE 3
c. STAGE 4 Yuma Proving Grounds (YPG), Aberdeen Test Center

8. NUMBER OF UNITS

a. STAGE 2	b. STAGE 3	c. STAGE 4
NA	NA	2

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☐ a. SUPERSEDED J/F 12/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/ 9697

11. IS THERE ANY OPERATIONAL REQUIREMENT AS DESCRIBED IN THE INSTRUCTIONS FOR PARAGRAPH 11?
☐ a. YES ☒ b. NO ☐ c. NAvail

12. NAMES AND TELEPHONE NUMBERS

	(1) COMMERCIAL	(2) AUTOVON
a. PROGRAM MANAGER Gary Frost | Joe Rozmeski	(703) 704-9497 | (703) 704 - 4708	NA
b. PROJECT ENGINEER Alexander Lee	(703) 704-4196	NA

13. REMARKS

Item 1: The wireless data link will be used for command and control of RHex Robot as well as transmit video data from the RHex Robot to the Operator Control Unit (OCU).

DOWNGRADING INSTRUCTIONS	CLASSIFICATION	
N/A	UNCLASSIFIED	

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TRANSMITTER EQUIPMENT CHARACTERISTICS

1. NOMENCLATURE, MANUFACTURER'S MODEL NO.
iWDL4860

2. MANUFACTURER'S NAME
Ibis Tek, LLC

3. TRANSMITTER INSTALLATION
UGV, Man-portable

4. TRANSMITTER TYPE
Phase Communications

5. TUNING RANGE
4800 MHz – 6000 MHz

6. METHOD OF TUNING
Crystal Controlled Synthesizer

7. RF CHANNELING CAPABILITY
4800 MHz, 5 MHz Increments

8. EMISSION DESIGNATOR(S)
5M33G1D, 10M7G1D

9. FREQUENCY TOLERANCE
10 ppm

10. FILTER EMPLOYED *(X one)*
☒ **a. YES** ☐ **b. NO**

11. SPREAD SPECTRUM *(X one)*
☒ **a. YES** ☐ **b. NO**

12. EMISSION BANDWIDTH *(X and complete as applicable)*
☐ **CALCULATED** ☒ **MEASURED**

13. MAXIMUM BIT RATE
9 Mbps

14. MODULATION TECHNIQUES AND CODING
(See remarks)

a. -3 dB:	4.5 MHz	7.5MHz
b. -20 dB:	5.0 MHz	12.5 MHz
c. -40 dB:	12.6 MHz	25 MHz
d. -60 dB:	28.1 MHz	53.3 MHz
e. OC - BW:	5.0 MHz	10 MHz

15. MAXIMUM MODULATION FREQUENCY
(See remarks)

16. PRE-EMPHASIS *(X one)*
☐ **a. YES** ☒ **b. NO**

17. DEVIATION RATIO
NA

18. PULSE CHARACTERISTICS

a. RATE	**NA**
b. WIDTH	**NA**
c. RISE TIME	**NA**
d. FALL TIME	**NA**
e. COMP RATIO	**NA**

19. POWER

a. MEAN	**282 mW**	**282 mW**
b. PEP	**NA**	

20. OUTPUT DEVICE
FET

21. HARMONIC LEVEL

a. 2nd
-40 dB

22. SPURIOUS LEVEL
-60 dB

b. 3rd
-60 dB

23. FCC TYPE ACCEPTANCE NO.
NA

c. OTHER (4th Level)
-60 dB

24. REMARKS

Item 10: Stripline Filter

Item 14:

5M33G1D
OFDM: BPSK or QPSK
Number of Sub-Carriers 48 + 4 pilot Sub-Carriers; Sub-Carrier Frequency Spacing: 78.125 kHz

10M7G1D
OFDM: BPSK or QPSK
Number of Sub-Carriers 48 + 4 pilot Sub-Carriers; Sub-Carrier Frequency Spacing: 156.25 kHz

Item 15:

5M33G1D: 75 kHz
10M7G1D: 150 kHz

RECEIVER EQUIPMENT CHARACTERISTICS

1. NOMENCLATURE, MANUFACTURER'S MODEL NO.
iWDL4860

2. MANUFACTURER'S NAME
Ibis Tek, LLC

3. RECEIVER INSTALLATION
UGV, Man-portable

4. RECEIVER TYPE
Superheterodyne

5. TUNING RANGE
4800 MHz - 6000 MHz

6. METHOD OF TUNING
Crystal Controlled Synthesizer

7. RF CHANNELING CAPABILITY
4800 MHz, 5 MHz Increments

8. EMISSION DESIGNATOR (S)
5M33G1D 10M7G1D

9. FREQUENCY TOLERANCE
10 ppm

10. IF SELECTIVITY	**1st**	**2nd**	**3rd**
a. -3 dB	4.25 MHz	**NA**	**NA**
b. -20 dB	4.375 MHz	**NA**	**NA**
c. -60 dB	6.125 MHz	**NA**	**NA**

11. RF SELECTIVITY (X and complete as applicable)
☒ **CALCULATED** ☐ **MEASURED**

a. -3 dB: 1200 MHz

b. -20 dB: 1400 MHz

c. -60 dB: 1600 MHz

d. Preselection Type Stripline Filter

12. IF FREQUENCY

a. 1st 20 MHz

b. 2nd NA

c. 3rd NA

13. MAXIMUM POST DETECTION FREQUENCY
150 kHz

14. MINIMUM POST DETECTION FREQUENCY
NA

16. MAXIMUM BIT RATE
9 Mbps

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

17. SENSITIVITY

a. SENSITIVITY
-97 dBm

b. CRITERIA
S/N = 6 dB

c. NOISE FIG
4 dB

d. NOISE TEMP
NA

18. DE-EMPHASIS *(X one)*
☐ **a. YES** ☒ **b. NO**

19. IMAGE REJECTION
60 dB

20. SPURIOUS REJECTION
45 dB

21. REMARKS
The receiver has two different IF filters. One is for the 5.33 MHz signal and the other is for the 10.7 MHz signal. The IF selectivity selection takes place in the Digital Signal Processing (DSP) section of the receiver.

Item 10:
10.7 MHz IF selectivity
-3 dB = 8.57 MHz
-20 dB = 8.75 MHz
-60 dB = 12.25 MHz

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ANTENNA EQUIPMENT CHARACTERISTICS

1.

☐ **a. TRANSMITTING** ☐ **b. RECEIVING** ☒ **c. TRANSMITTING AND RECEIVING**

2. NOMENCLATURES, MANUFACTURER'S MODEL NO. MA-WO55-10NH	**3. MANUFACTURER'S NAME** Mars Antennas and RF Systems
4. FREQUENCY RANGE 4800 MHz - 6000 MHz	**5. TYPE** Omnidirectional
6. POLARIZATION Vertical	**7. SCAN CHARACTERISTICS**
	a. TYPE Fixed
8. GAIN 10 dBi	**b. VERTICAL SCAN NA**
a. MAIN BEAM NA	**(1) Max Elev** **NA**
b. 1st MAJOR SIDE LOBE **NA**	**(2) Min Elev** **NA**
	(3) Scan Rate **NA**
9. BEAMWIDTH	**c. HORIZONTAL SCAN** NA
a. HORIZONTAL 360 deg	**(1) Sector Scanned** **NA**
b. VERTICAL 10 deg	**(2) Scan Rate** **NA**
	d. SECTOR BLANKING *(X one)* ☐ **(1) YES** ☒ **(2) NO**

10. REMARKS

This antenna mounts near, and is connected to, the Operator Control Unit (OCU).

CLASSIFICATION	
UNCLASSIFIED	

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ANTENNA EQUIPMENT CHARACTERISTICS

1.

☐ **a. TRANSMITTING** ☐ **b. RECEIVING** ☒ **c. TRANSMITTING AND RECEIVING**

2. NOMENCLATURES, MANUFACTURER'S MODEL NO.

P/N: 5W-4.00-6.00P-XTM-5-SL

3. MANUFACTURER'S NAME

Antcom Corp.

4. FREQUENCY RANGE

4800 MHz - 6500 MHz

5. TYPE

Omni directional

6. POLARIZATION

Vertical

7. SCAN CHARACTERISTICS

a. TYPE Fixed

8. GAIN

b. VERTICAL SCAN NA

a. MAIN BEAM
2-3 dBi

(1) Max Elev
NA

b. 1st MAJOR SIDE LOBE
NA

(2) Min Elev
NA

(3) Scan Rate
NA

9. BEAMWIDTH

c. HORIZONTAL SCAN NA

a. HORIZONTAL
360 deg

(1) Sector Scanned
NA

b. VERTICAL
80 deg

(2) Scan Rate
NA

d. SECTOR BLANKING *(X one)*
☐ **(1) YES** ☒ **(2) NO**

10. REMARKS

Item 6: This antenna mounts horizontally on the robot for improved invertibility.

APPLICATION FOR SPECTRUM REVIEW	CLASSIFICATION: UNCLASSIFIED	PAGE Page 6 of 6

NTIA GENERAL INFORMATION

1. APPLICATION TITLE
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2. SYSTEM NOMENCLATURE
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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) 4800 MHz - 6000 MHz

b. EMISSION DESIGNATORS 5M33G1D 10M7G1D

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

The system will support the RHex robot to provide a secure, video link between an operator control unit (OCU) and a remotely controlled RHex Robot while operating under hostile conditions. The RHex is a small unmanned ground vehicle designed for reconnaissance missions for dismounted Warfighters.

6. INFORMATION TRANSFER REQUIREMENTS up to 9 Mbps of QPSK Data.

7. ESTIMATED INITIAL COST OF THE SYSTEM
$120K per robot.

8. TARGET DATE FOR

a. APPLICATION APPROVAL	b. SYSTEM ACTIVATION	c. SYSTEM TERMINATION
03-16-2012	03-16-2013	NAvail

9. SYSTEM RELATIONSHIP AND ESSENTIALITY
Same as item 5.

10. REPLACEMENT INFORMATION
NA

11. RELATED ANALYSIS AND/OR TEST DATA
NA

12. NUMBER OF MOBILE UNITS
4

13. GEOGRAPHICAL AREA FOR

a. STAGE 2

b. STAGE 3

c. STAGE 4 Yuma Proving Grounds (YPG), Aberdeen Test Center

14. LINE DIAGRAM	15. SPACE SYSTEMS
See Page 8	**NA**
16. TYPE OF SERVICE(S) FOR STAGE 4	**17. STATION CLASS(ES) FOR STAGE 4**
Land Mobile	**MLP MLD ML**

18. REMARKS

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DOWNGRADING INSTRUCTIONS	CLASSIFICATION UNCLASSIFIED	

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