

Unmanned Surface Vehicle (USV) Request Special Temporary Authority (STA)

1. Purpose of Operation

To test of the Qirsh Unmanned Surface Vehicle

Raytheon will Participate in Demonstration of the Unmanned Surface Vehicle Location: Raytheon Integrated Defense Systems (IDS) St Petersburg Florida, Integration laboratory coordinates are; 27-53-11 North Latitude, 082-51-11 West Longitude, and the area, also include St. Petersburg, Florida off shore and coastal areas. Frequency Stop: 4.680 Type: GHz Emission Bandwidth: 6 Mhz Emission: COFDM using; BPSK, QPSK and 16QAM modulations Supplementary Details: Intended Use: Integration testing of a Maritime Unmanned Surface Vehicle (USV) mission equipment.

Description of Requirement: demonstrate reliable RF communications between Unmanned Surface Vehicle (USV) and Base Station.

Comments:

A radius of operation of 10,000 meters around above listed coordinates is desired for integration and testing purposes.

It should be noted that a small public airfield, Montgomery Field is located 500 meters to the south of the EWC integration lab location.

Point of Contacts

Requester Name: Mr. Daniel Salazar, (858) 522-4087, Daniel.Salazar@raytheon.com

Requester Organization: Raytheon Company

Files Number: 0611-EX-ST-2016

__ Class of Station: FIXED/ Mobile

__ Station Location: FIXED/ Mobile

__ Effective Date: 5/16/2016

__ Expiration Date:11/15/2017

2. Experimental Explanations

Raytheon will conduct developmental testing and evaluation on the Unmanned Surface Vehicle (USV). Additional Information:

Program / Project Name: Qirsh Unmanned Surface Vehicle (USV)

Security Classification; Unclassified, Raytheon Company Proprietary

Equipment Transmitter: NETNode-MIMOR-440500, Manufacturer; Cobham Tactical Communications Ltd

Number of Equipment: 2 transceivers and 8 antenna units

Radar Tunability: N/A

Power: 2 Watts

Antenna Type: Gain: 9 dBi

Antenna part number; OA9-4.6V/1701

Elevation, 25 ft: Antenna Distance: 50 ft

Feed Point Height: 22 ft Orientation: Vertical and horizontal pairs Polarization:

Beam Width: _____ TBD _____

Receiver: NETNode-MIMOR-440500 Sensitivity, - 98 dBm

Antenna Type: Gain: 9 dBi

Feed Point Height: 22 ft Orientation: Vertical and horizontal pairs Polarization:

Beam Width: ____ TBD _____ Elevation 25 ft

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4400 - 4940 MHz CHANNEL PLAN																												
4.670 GHz ←												→ 4.670 GHz																
4 GHz Channel Bandwidths	Lower Band												Upper Band															
	← 4.400 GHz						4.640 GHz →						← 4.700 GHz						4.940 GHz →									
40.00 MHz (A)	A1	A2	A3	A4	A5	A6													A1'	A2'	A3'	A4'	A5'	A6'				
30.00 MHz (B)	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B1'	B2'	B3'	B4'	B5'	B6'	B7'	B8'										
20.00 MHz (C)	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C1'	C2'	C3'	C4'	C5'	C6'	C7'	C8'	C9'	C10'	C11'	C12'	
10.00 MHz (D)	(D1-D4)				(20) 10 MHz (D5-D24)				25	26	27	28	29	30	(D1'-D4')				(20) 10 MHz (D5'-D24')									
5.00 MHz (E)	(8) 5 MHz				(40) 5 MHz* (E9-E48)				(12) 5.00 MHz (E49-E60)				(8) 5 MHz				(40) 5 MHz* (E9'-E48')											
2.50 MHz (F)	(16) 2.5 MHz				(80) 2.5 MHz* (F17-F96)				(24) 2.50MHz (F97-F120)				(16) 2.5 MHz				(80) 2.5 MHz* (F17'-F96')											
1.25 MHz (G)	(32) 1.25MHz				(160) 1.25 MHz* (G33-G192)				(48) 1.25MHz(G193-G240)				(32) 1.25MHz				(160) 1.25 MHz* (G33'-G192')											
												One-Way Applications																