

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) Expeditionary Warfare Center (EWC), 8650 Balboa Ave. San Diego CA. 92123, San Diego County, state of California. Integration laboratory coordinates are; 32.821510 North Latitude, 117.141349 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
 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

Figure 1: The 4400-4940 MHz Channel Plan

4400 - 4940 MHz CHANNEL PLAN																											
Lower Band														Upper Band													
4 GHz Channel Bandwidths														4 GHz Channel Bandwidths													
4,400 GHz														4,940 GHz													
4,670 GHz														4,670 GHz													
4,640 GHz														4,700 GHz													
40.00 MHz (A)														40.00 MHz (A')													
30.00 MHz (B)														30.00 MHz (B')													
20.00 MHz (C)														20.00 MHz (C')													
10.00 MHz (D)														10.00 MHz (D')													
5.00 MHz (E)														5.00 MHz (E')													
2.50 MHz (F)														2.50 MHz (F')													
1.25 MHz (G)														1.25 MHz (G')													
One-Way Applications														One-Way Applications													

CENTER FREQUENCIES OF THE UNPAIRED OR SINGLE CHANNELS

Table 8: The Center Frequencies for the Unpaired or Single Channels in the 4400-4940 MHz Channel Plan

5 MHz Channels (First Priority E-Channels)		
E49 (4642.5)	E53 (4662.5)	E57 (4682.5)
E50 (4647.5)	E54 (4667.5)	E58 (4687.5)
E51 (4652.5)	E55 (4672.5)	E59 (4692.5)
E52 (4657.5)	E56 (4677.5)	E60 (4697.5)