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 VehicleLocation: 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

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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
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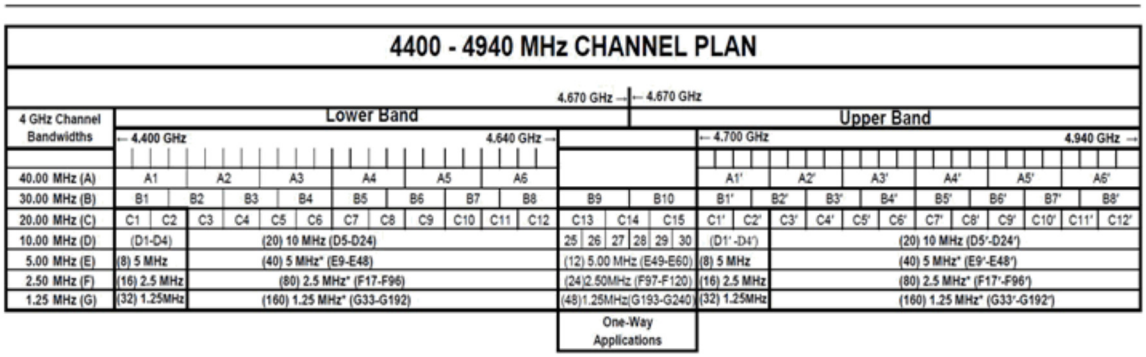
Antenna Type: Gain: 9 dBi
Feed Point Height: 22 ft Orientation: Vertical and horizontal pairs Polarization:
Beam Width: ___TBD_____ Elevation 25 ft

Figure 1: The 4400-4940 MHz Channel Plan



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)