AEROSPACE & FLIGHT TEST RADIO COORDINATING COUNCIL
616 E 34th Street North, Wichita, KS 67219
Telephone: (316) 821-9516 Fax: (316) 838-0015

EXPERIMENTAL LICENSE or SPECIAL TEMPORARY AUTHORITY

All requests for frequency coordination by AFTRCC are subject to the Coordination Terms and Conditions. A **MEMORANDUM** describing the purpose and duration of the license, the make and model of all transmitters and transmitting antennas and their Geographical Coordinates, the desired frequency and all of its associated emissions, **MUST** accompany a completed and signed copy of this form. A copy of the FCC license application should be included with the memorandum whenever possible.

NOTE: PROPRIETARY DATA/CLASSIFIED INFORMATION SHOULD NOT BE SUBMITTED.

If the applicant received this form in response to a coordination request**, it must be completed, signed and returned per the included instructions **before AFTRCC can continue processing the request.

Date of Request:	12/26/2019	Identity Control No.	To be completed by AFTRCC
Name of Applicant:	Persistent Systems, LLC	Address:	Booth, Freret & Imlay, LLC, 14356 Cape May Road, Silver Spring, MD 20904-6011
Phone Number:	c/o 301-384-5525	Email:	chris@imlaylaw.com
Coordination Site(s):	Virginia Beach, VA	Dates of Operations:	4/13/2020 5/13/2020

Requested Bands:

- ☐ HF Band (2851.0-21931.0 kHz)
- ☐ L-Band (1435-1525 MHz)
- ☐ VHF Band (123.125-123.575 MHz)
- ☒ S-Band (2360-2395 MHz)
- ☐ C-Band (5091-5150 MHz)

COORDINATION TERMS AND CONDITIONS

AFTRCC provides recommendations to the Federal Communications Commission (FCC) for non-government use of flight test voice and telemetry frequencies. AFTRCC's role is strictly advisory; in all cases the FCC makes the decision whether to issue a license.

Applicants are advised that no representations or warranties, express or implied, are made as to the interference-free nature of any given frequency or frequencies which AFTRCC coordinates, or as to whether any given frequency recommendation is best suited for the Applicant's purposes.

Applicants should also be aware that frequencies coordinated by AFTRCC are shared with other users; no one user is entitled to exclusive use of a frequency in any given area. Multiple users may be, and often are, licensed or have government assignments for use of the same frequencies. Hence, notwithstanding FCC issuance of a license to the Applicant, transmission or any given frequency may be subject to day-to-day, hour-by-hour scheduling with Government Area Frequency Coordinators (AFCs) or other agencies.

In return for AFTRCC's processing of the Applicant's request, the Applicant agrees to release and hold harmless AFTRCC, its officers, directors, agents, representatives, and member companies (and their respective officers, directors, employees, owners, and agents) from and against any and all claims, losses, liabilities, damages or expenses which may arise now or in the future as a result of the Applicant's acceptance of AFTRCC's recommendation, or its use of the recommended frequency(ies).

Information supplied in support of a coordination request represents part of the FCC application process. Accordingly, this information is considered public record material.

Signature: ☒ By checking the signature box, the applicant confirms that they are the duly authorized official named below; and that they accept and acknowledge the above limitations and conditions.

Print Name: Christopher D. Imlay

Title: Communications Counsel

Date: 12/26/2019

MEMORANDUM OF OPERATION
Persistent Systems, LLC
Coordination application for STA application
FCC File Number 2412-EX-ST-2019

This STA seeks, for a very limited time period, the use of a single, 20 megahertz bandwidth channel centered at 2377 MHz to be used for testing a mobile networking (MANET) system, terrestrial only, using a 20M0D1D emission at up to 10 watts TPO and an ERP up to 96 watts. This is for a Navy contract and is for proof of concept tests. A similar STA application was coordinated in April of 2019 by AFTRCC. See, ICN 1249-19/7782 (Persistent Systems STA/System Demo-Virginia Beach VA).

The complete STA application with narrative explanation of operation is attached hereto.

All of the transmit locations specified herein are each located on either of two Military installations, Joint Expeditionary Base Fort Story and Joint Expeditionary Base Little Creek, in Virginia Beach. Most locations are fixed, one is a mobile van. All operation is terrestrial. Antenna heights will vary among less than 6 meters AGL, 12.19 meters AGL, 47.55 meters AGL and 106.68 meters AGL depending on location. In the technical portion of the application, the worst-case configuration is listed.

Questions should be directed to undersigned communications counsel, who can be reached as follows:

Christopher D. Imlay
Booth, Freret & Imlay, LLC
14356 Cape May Road
Silver Spring, MD 20904-6011
(301) 384-5525 office telephone
(301) 384-6384 facsimile
(301) 351-3795 mobile
chris@imlaylaw.com

FEDERAL COMMUNICATIONS COMMISSION
APPLICATION FOR SPECIAL TEMPORARY AUTHORITY

Applicant Name

Name of Applicant: Persistent Systems, LLC

Address

Attention: Leslie Hulser
Street Address: 303 5th Ave Suite 306
P.O. Box:
City: New York
State: NY
Zip Code: 20904-6011
Country:
E-Mail Address: lhulser@persistentsystems.com

Best Contact

Give the following information of person who can best handle inquiries pertaining to this application:
Last Name: Imlay
First Name: Christopher
Title: communications counsel
Phone Number: 3013845525

Explanation

Please explain in the area below why an STA is necessary:
Testing and evaluation of terrestrial, high-speed data transmission to support ongoing Navy operations, now under development. The communications system is not yet equipment authorized and the frequency range is not available for unlicensed or licensed, non-government operation.

Purpose of Operation

Please explain the purpose of operation: Testing and evaluation of high speed data transmission system for United States Navy. See attached narrative.

Information

Callsign:
Class of Station: FX
Nature of Service: Experimental

Requested Period of Operation

Operation Start Date: 04/13/2020
Operation End Date: 05/13/2020

Manufacturer

List below transmitting equipment to be installed (if experimental, so state) if additional rows are required, please submit equipment list as an exhibit:

Manufacturer	Model Number	No. Of Units	Experimental
Persistent Systems, LLC	WR5100(MPU5)	20	No

Certification

Neither the applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. The applicant hereby waives any claim to the use of any particular frequency or electromagnetic spectrum as against the regulatory power of the United States because of the prvious use of the same, whether by license or otherwise, and requests authorization in accordance with this application. (See Section 304 of the Communications Act of 1934, as amended.) The applicant acknowledges that all statements made in this application and attached exhibits are considered material representations, and that all the exhibits part hereof and are incorporated herein as if set out in full in this application; undersigned certifies that all statements in this application are true, complete and correct to the best of his/her knowledge and belief and are made in good faith. Applicant certifies that construction of the station would NOT be an action which is likely to have a significant environmental effect. See the Commission's Rules, 47 CFR1.1301-1.1319.

Signature of Applicant (Authorized person filing form): Leslie Hulser
Title of Applicant (if any): Director of Programs
Date: 2019-12-26 00:00:00.0

Station Location

City	State	Latitude	Longitude	Mobile	Radius of Operation
Virginia Beach	Virginia	North 36 55 25	West 76 0 3	Fort Story and Little Creek, Virginia	50.00

Datum: NAD 83

Is a directional antenna (other than radar) used? Yes

Exhibit submitted: Yes

(a) Width of beam in degrees at the half-power point:

(b) Orientation in horizontal plane:

(c) Orientation in vertical plane:

Will the antenna extend more than 6 meters above the ground, or if mounted on an existing building, will it extend more than 6 meters above the building, or will the proposed antenna be mounted on an existing structure other than a building? Yes

(a) Overall height above ground to tip of antenna in meters: 106.68

(b) Elevation of ground at antenna site above mean sea level in meters: 1.52

(c) Distance to nearest aircraft landing area in kilometers: 9.76

(d) List any natural formations of existing man-made structures (hills, trees, water tanks, towers, etc.) which, in the opinion of the applicant, would tend to shield the antenna from aircraft: See attached narrative and technical operating parameters graph.

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
Modified	2310.00000000-MHz	FX	10.000000 W 96.610000 W	M	4.00000000 %	20M0D1D	

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	2377.00000000-MHz	FX	10.000000 W 96.610000 W	P	4.00000000 %	20M0D1D	

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	4700.00000000-MHz	FX	6.000000 W 23.080000 W	P	4.00000000 %	20M0D1D	

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
Modified	4880.00000000-MHz	FX	6.000000 W 23.080000 W	P	4.00000000 %	20M0D1D	

Persistent Systems, LLC
Request for Grant of Special Temporary Authority
File No. 2412-EX-ST-2019

NARRATIVE EXPLANATION OF OPERATION

Persistent Systems, LLC requests a grant of special temporary authorization for terrestrial-only testing and demonstration of a high speed data transmission system to fulfill a contract for the United States Navy at nine locations at and near Virginia Beach, Virginia. It is urgent to conduct point-to-point testing of embedded modules utilizing various embedded antennas to and from various locations within a 50-km radius of Virginia Beach, Virginia. The antennas will be both omnidirectional with between 3 and 8 dB of gain, directional antennas with 22 dB of gain, and sector antennas with up to 12 dB gain. The center frequencies at each location will be 2310 MHz, 2377 MHz, 4700 MHz and 4880 MHz with a 20 megahertz occupied bandwidth. Power levels will be either 6 or 10 watts TPO with ERP levels at either 6.50 W, 23.08 W, 38.46 W, 96.61 W or in the case of the directional antenna, 579.63 W. All of the transmit locations specified herein are each located on either of two Military installations, Joint Expeditionary Base Fort Story and Joint Expeditionary Base Little Creek, in Virginia Beach, most at fixed locations. Antenna heights will vary among less than 6 meters AGL, 12.19 meters AGL, 47.55 meters AGL and 106.68 meters AGL depending on location. In the technical portion of the application, the worst-case configuration is listed, but the attached spreadsheet shows all particulars.

Also attached are antenna site sketches of each location.

This application is very similar to one granted in early 2019. See, WO9XKF, File No. 0623-EX-ST-2019.

AFTRCC Coordination for the channel 2377 MHz has been applied for and coordination will be filed when received. It is understood that all operation pursuant to this STA is on a strict non-interference basis to Flight Test telecommunications and only terrestrial operation is proposed. The stop buzzer contact information will be provided to DODAFCMIDLANT at least one week prior to commencement of STA operation.

Throughout the testing period, complete shutdown of all antennas can be accomplished immediately. Should any interference be reported, all testing and evaluations will cease immediately and will not resume unless and until all such interference is resolved to the reasonable satisfaction of the complainant.

The *stop buzzer contact for this operation is Mr. Anthony Maringo*, whose mobile number is 732-829-2805. Other questions should be directed to undersigned communications counsel, who can be reached as follows:

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