

**United States of America
FEDERAL COMMUNICATIONS COMMISSION
EXPERIMENTAL
SPECIAL TEMPORARY AUTHORIZATION**

EXPERIMENTAL

(Nature of Service)

XT FX

(Class of Station)

WQ9XRC

(Call Sign)

0979-EX-ST-2020

(File Number)

NAME Applied Research Associates, Inc.

This Special Temporary Authorization is granted upon the express condition that it may be terminated by the Commission at any time without advance notice or hearing if in its discretion the need for such action arises. Nothing contained herein shall be construed as a finding by the Commission that the authority herein granted is or will be in the public interest beyond the express terms hereof.

This Special Temporary Authorization shall not vest in the grantee any right to operate the station nor any right in the use of the frequencies designated in the authorization beyond the term hereof, nor in any other manner than authorized herein. Neither the authorization nor the right granted hereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934. This authorization is subject to the right of use of control the Government of the United States conferred by Section 706 of the Communications Act of 1934.

Special Temporary Authority is hereby granted to operate the apparatus described below:

Purpose Of Operation:

Perform an RF field mapping experiment in an outdoor environment to characterize the uniformity and field level of the EM fields emitted by our CWI antenna system.

Station Locations

(1) San Antonio (BEXAR), TX - NL 29-32-48; WL 98-40-14

Frequency Information

San Antonio (BEXAR), TX - NL 29-32-48; WL 98-40-14

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
0.1-1000 MHz	FX	1K00N0N 1K00N0N	632 W (ERP)	0.001 %
0.1-1000 MHz	FX	1K00N0N	632 W (ERP)	0.001 %
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This authorization effective August 07, 2020 and
will expire 3:00 A.M. EST November 01, 2020

**FEDERAL
COMMUNICATIONS
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		1K00N0N		
		1K00N0N		
		1K00N0N		

Special Conditions:

- (1) In lieu of frequency tolerance, the occupied bandwidth of the emission shall not extend beyond the band limits set forth above.
- (2) Licensee should be aware that other stations may be licensed on these frequencies and if any interference occurs, the licensee of this authorization will be subject to immediate shut down.
- (3) Applied Research Associates, Inc. shall not operate in 928-929 MHz, 932-935 MHz, and 941-946 MHz bands to protect Fixed Microwave Services.
- (4) Applied Research Associates, Inc. shall notch out the following Broadcast Auxiliary Service (BAS) frequency bands from 0.1 MHz to 1000 MHz:
 - 25.67-26.48 MHz
 - 54-72 MHz
 - 76-88 MHz
 - 152.855-154 MHz
 - 157.45-161.775
 - 162.0375-173.2 MHz
 - 174-216 MHz
 - 450-456 MHz
 - 470-608 MHz
 - 614-698 MHz
 - 941-960 MHz

Special Conditions:

- (5) The following frequency bands must be notched out for this operation:
- 190-530 kHz
 - 74.6-75.4 MHz
 - 108-137 MHz
 - 242.9-243.1 MHz
 - 328.6-335.4 MHz
 - 975- 1000 MHz
 - 225-328.6 MHz
 - 335.4-399.9 MHz
- (6) This authorization is issued for the express purpose of conducting experimental operations described in the related application and required by U.S. Government Contract with the Defense Threat Reduction Agency, Contract Number HDTRA1-14-D-0003-HDTRA1-18-F-0059. The use of this radio station in any other manner or for any other purpose will constitute a violation of the privileges herein authorized. Except as subsequently authorized by the Commission, this radio station shall not be operated after the expiration date of the contract designated in the related application and enumerated above.
- (7) Stop Buzzer: Mr. Kyle Lyke
Office: (210) 681-8208 Ext. 3
Email: klyke@ara.com
- (8) Applied Research Associates, Inc shall notch out the following frequency bands:
- 5.9-6.2 MHz,
 - 7.2-7.45 MHz,
 - 9.4-9.9 MHz,
 - 11.6-12.1 MHz,
 - 13.57-13.87 MHz,
 - 15.1-15.8MHz,
 - 17.48-17.9MHz,
 - 18.9-19.02MHz,
 - 21.45-21.85MHz,
 - 25.67-26.1MHz,
- (9) Please note that the frequencies and/or frequency bands that require to be notched out take priority.

Special Conditions:

(10) Applied Research Associates, Inc. must notch out the following:

a. (+/- 1.2 kHz) 240.6 MHz, 242.65 MHz

b. (+/- 1.4 kHz) 2183.4 kHz, 2187.5 kHz, 2660.4 kHz, 2679.4 kHz, 2749.4 kHz, 3024.4 kHz, 3054.4 kHz, 3057.4 kHz, 3120.4 kHz, 3123.4 kHz, 4126.4 kHz, 4177.5 kHz, 4207.5 kHz, 4572.5 kHz, 4576.4 kHz, 4731.4 kHz, 4734.4 kHz, 4821 kHz, 5108 kHz, 5681.4 kHz, 5694.4 kHz, 5697.4 kHz, 5700.4 kHz, 5885 kHz, 5943.5 kHz, 6216.4 kHz, 6268 kHz, 6517.4 kHz, 6312 kHz, 6502.4 kHz, 6710.4 kHz, 6743.4 kHz, 7419.5 kHz, 7630.5 kHz, 7669.5 kHz, 7736 kHz, 7743 kHz, 7747 kHz, 7775 kHz, 7793 kHz, 7821 kHz, 8292.4 kHz, 8414.5 kHz, 8765.4 kHz, 8981.4 kHz, 8984.4 kHz, 9035.4 kHz, 9038.4 kHz, 10774 kHz, 10810 kHz, 10891 kHz, 10918 kHz, 11197.4 kHz, 11200.4 kHz, 11203.4 kHz, 12081.5 kHz, 12291.4 kHz, 12520 kHz, 12577 kHz, 13219.4 kHz, 13222.4 kHz, 13434 kHz, 13493 kHz, 13496 kHz, 14428.5 kHz, 14461 kHz, 15640.5 kHz, 16027.5 kHz, 16421.4 kHz, 16695 kHz, 16804.5 kHz, 17989.4 kHz, 17922.4 kHz, 18186.5 kHz, 20137 kHz, 20247.5 kHz, 20330 kHz, 20843 kHz, 20882.5 kHz, 20985 kHz, 23074 kHz, 23077 kHz, 23091 kHz, 23094 kHz, 23840.5 kHz, 24228.5 kHz, 24793.5 kHz, 26582.5 kHz, 26640.5 kHz, 27590.5 kHz

c. (+/- 1.5 kHz) 5107 kHz, 5108.5 kHz, 5110 kHz, 5215.5 kHz, 5217 kHz, 5221.5 kHz, 5223 kHz, 5224.5 kHz, 5264.5 kHz, 5266 kHz, 5267.5 kHz, 5270.5 kHz, 5272 kHz, 5418 kHz, 5419.5 kHz, 5421 kHz, 5931 kHz, 5934 kHz, 5941 kHz, 5942.5 kHz, 5944 kHz, 6961 kHz, 7439 kHz, 7577 kHz, 7617 kHz, 7626 kHz, 7754.5 kHz, 7845 kHz, 7884 kHz, 7909 kHz, 8459 kHz, 8503.9 kHz, 8682 kHz, 9110 kHz, 9169 kHz, 9291 kHz, 9332 kHz, 10297.5 kHz, 10338.5 kHz, 10354.5 kHz, 10378 kHz, 10675 kHz, 10759 kHz, 10788 kHz, 10929.5 kHz, 10935.5 kHz, 11024 kHz, 11045 kHz, 11157.5 kHz

d. (+/- 3 kHz) 121.5 MHz, 122.9 MHz, 123.1 MHz, 243 MHz, 282.8 MHz, 303.25 MHz, 326.15 MHz, 379.05 MHz

e. (+/- 5.5 kHz) 149.2 MHz, 150.7 MHz, 155.805 MHz, 179.9875 MHz, 411.8125 MHz, 415.0875 MHz

f. (+/- 6 kHz) 1610 kHz

g. (+/- 8 kHz) 41.15 MHz, 156.525 MHz, 156.6 MHz, 156.75 MHz, 156.8 MHz

h. (+/- 12.5 kHz) 162.7 MHz, 164.575 MHz, 165.725 MHz, 166.3125 MHz, 166.375 MHz, 167.675 MHz, 169.625 MHz, 170.075 MHz, 170.750 MHz, 172.5875 MHz, 408.5125 MHz, 417.5125 MHz

i. (bands) 190-530 kHz, 73-74.6 MHz, 74.6-75.4 MHz, 108-137 MHz, 225-328.600 MHz, 328.6-335.4 MHz, 335.4-399.9 MHz, 608-614 MHz, 975-1000 MHz

(11) Applied Research Associates, Inc. shall notch out the 700 MHz Band 14 spectrum (758-768/ 788-798 MHz).

Special Conditions:

- (12) Prior to commencing any operations in the frequencies below, the applicant must obtain consent from the following within 50 miles of the contours of the testing area:
- Paging Service licensees in 35 MHz
 - Paging Service licensees in 43 MHz
 - Paging Service licensees in 152 MHz
 - Paging Service licensees in 158 MHz
 - Paging Service licensees in 152 MHz/158 MHz
 - AMTS Licensee (217-218 MHz/219-220 MHz)
 - 218-219 MHz Service licensees
 - 220-222 MHz Service licensees
 - Paging Service licensees in 454 MHz/459 MHz
 - General Aviation Air-Ground Service in 454 MHz/459 MHz
 - 700 MHz Lower Band licensees (698-746 MHz)
 - 700 MHz Upper Band licensees (746-758 MHz and 775-788 MHz)
 - SMR licensees (809-824 MHz/854-869 MHz)
 - B/ILT licensees (809-824 MHz/854-869 MHz)
 - Cellular licensees (824-849 MHz/869-894 MHz)
 - Commercial Air-Ground licensee (849-851 MHz/894-896 MHz)
 - SMR licensees (896-901 MHz/935-940 MHz)
 - B/ILT licensees (896-901 MHz/935-940 MHz)
 - Narrowband PCS licensees (901-902/930-931/940-941 MHz)
 - Location & Monitoring Service licensees (902-928 MHz)
 - Paging Service licensees in 929 MHz and 931 MHz

- (13) Prior to commencing any operations in the 137 -138 MHz and 148-150.05 MHz frequency bands, the applicant must notify the earth station licensees listed below of its test dates and provide a stop buzzer in case of interference:
- File Number: SES-MOD-20060106-00014
Callsign: E940534
Name: ORBCOMM License Corp.
Phone Number: 703-433-6300
Fax Number: 202-783-5851
E-Mail: Franco.Brad@ORBCOMM.com
Attention: B rad Franco

Name: Stephen L. Goodman
Company: Wilkinson Barker Knauer, LLP
Phone Number: 202-783-4141
Fax Number: 202-783-5851
E-Mail: sgoodman@wbklaw.com
Relationship: Legal Counsel

Special Conditions:

- (14) Prior to commencing any operations in the 137.0250 -138 MHz and 148.25-149.95 MHz frequency bands, the applicant must notify the earth station licensees listed below of its test dates and provide a stop buzzer in case of interference:
File Number: SES-LIC-20190612-00769
Callsign: E190490
Name: Swarm Technologies, Inc. Phone Number: 425-753-3349
E-Mail: sophie@swarm.space
Attention: D r. Sophie Arlow
Name: Kalpak Gude Phone Number: 202-437-4484
E-Mail: kalpak@swarm.space
Attention: Kalpak Gude
- (15) Prior to commencing any operations in the 156.0125-162.0375 MHz (AIS) frequency band, the applicant must notify Iridium Constellation LLC (Name: Ms Maureen C McLaughlin, Phone Number: : 703-287-7518 E-Mail: : maureen.mclaughlin@iridium.com) or Name: Jennifer Hindin Phone Number: 2027194975 E-Mail: jhindin@wileyrein.com) of its test dates and provide a stop buzzer in case of interference.
- (16) Prior to commencing any operations in the 156.7625-156.7875 MHz (Automatic Identification System (AIS) (AIS 3)), 156.8125-156.8375 MHz (AIS 4), 161.9625-161.9875 MHz (AIS 1), 162.0125-162.0375 MHz (AIS 2), 161.9375-161.9625 MHz (Application Specific Messages (ASM) (ASM 1)), 161.9875-162.0125 MHz (ASM 2) frequency bands, the applicant must notify Spire Global, Inc. (Name: Jonathan Rosenblatt, Phone Number: 628-221-5324 E-Mail: jonathan.rosenblatt@spire.com) of its test dates and provide a stop buzzer in case of interference
- (17) Prior to commencing any operations in the 156.7625-156.7875 MHz (Automatic Identification System (AIS) (AIS 3)), 156.8125-156.8375 MHz (AIS 4), 161.9625-161.9875 MHz (AIS 1), 162.0125-162.0375 MHz (AIS 2) frequency bands, the applicant must notify HawkEye 360, Inc. (Name: Mr. Rob Rainhart, Phone Number: 571-203-0360 E-Mail: rob@he360.com or Mr. Michael Mineiro Phone Number: 571-203-0360 E-Mail: michael.mineiro@he360.com) of its test dates and provide a stop buzzer in case of interference
- (18) Prior to commencing any operations in the 161-163 5 MHz frequency band (Automatic Identification System (AIS)), the applicant must notify ORBCOMM License Corp. (Name: Walter H. Sonnenfeldt, Phone Number: 585-461-3018, Fax Number: 585-461-3476, E-Mail: sonnenfeldt.walter@orbcomm.com or Name: Stephen L. Goodman, Phone Number: 202-607-6756, E-Mail: Stephenlgoodman@aol.com) of its test dates and provide a stop buzzer in case of interference