

Exhibit 1

1. Introduction

By the instant application (“Application”), BAE Systems Information and Electronic Systems Integration Inc. (“BAE Systems”) requests that the Commission grant, on an expedited basis, Special Temporary Authority (“STA”) to permit BAE Systems to operate on a single frequency allocation – as a supplement to the recently granted STA under call sign WH9XRT (File No. 0636-EX-ST-2014).

This STA seeks operating authority at 350 MHz – with an emission designator of 28M0G1D (e.g., an effective range of 336 to 364 MHz) - at an ERP of 0.008W.

In the prior granted STA under call sign WH9XRT, the Commission authorized operation on 350 MHz at .5W ERP, with a “NON” emissions designator. However, Special Condition 5 to the STA Grant imposed a “notch-out” of the frequency 350 MHz for the requested additional emissions of “40M1X1X”. Pursuant to ongoing discussions with FAA, BAE Systems now seeks authority for 350 MHz at a substantially reduced power level of 0.008W.

BAE Systems requests authority for this supplemental frequency assignment, subject to completion of coordination with FAA, which BAE Systems expects to be completed shortly.

2. Purpose of the Operation

The testing at the Merrimack Antenna Test Facilities is a critical part of the manufacture and delivery of military systems provided to the Armed Forces in support of Homeland Security as well as war efforts.

Specifically, BAE Systems seeks authority to evaluate the Retroactive Array for Coherent Transmission (ReACT) system. ReACT is an experimental development system funded by DARPA. The ReACT system has two components: 1) AS2, which is common to all configurations operating at 350 MHz, and 2) CLW, which operates in multiple frequency bands, depending on the configuration. This demonstration will be conducted to show that physically separated phased arrays can aggregate coherently combined power on a location through the use of precise timing and localization information distributed over a wireless network. ReACT will dramatically change the way in which arrays are fielded, allowing small arrays on disconnected platforms to be “stitched together”, as if they were nodes on a single network.

Waiver of the Station ID rules set forth at Section 5.115 is respectfully requested.

The contract information applicable to this experiment is as follows:

Agency: Defense Advanced Research Projects Agency (DARPA)
Contract No. HR0011-14-C-0064
Contract POC:
N. Tina Stuard
675 N. Randolph Street
Arlington, VA 22203-2114
571-218-4621
tina.stuard@darpa.mil

BAE Systems requests that the Commission authorize operations to support the above contract activity as well as IR&D activity. Accordingly, it is requested that the Station Class be specified as "XT" or "XD" to allow operation not only for the DARPA contract specified above, but also for Internal Research & Development activity.

3. Other Issues

A. Transmitting Equipment

Mfg.	Model Number	No. of Units	Experimental?
Ettus*	CBX	8	Yes
Ettus*	SBX	8	Yes
Microhard Systems, Inc.	IP2421 Series with Enclosure	8	No

*A National Instruments Company

The Ettus USRP (Universal Software Radio Peripheral) boards above are assembled with the amplifiers listed below.

B. Additional Signal Amplification

Mfg.	Model Number	No. of Units	Experimental?
Minicircuits	GVA-84+	8	Yes
Hittite Microwave	HMC453ST89	2	Yes

C. Description of Array Self Synchronization and Signal Levels Local to the Test Site

The ReACT system operates with multiple nodes, each node consists of an Array Self Synchronization (AS2) module and a Coherent Lock Waveform (CLW) module. The AS2 is a means for the nodes to adjust their internal oscillators to operate at the same frequency. It does this by exchanging a 1023 chip binary BPSK code between the master node and the other (slave) nodes. The chipping rate is 17.5 Mchips/sec, which creates the 28 MHz spectrum on the 350 MHz carrier. Each transmission is during a time slot assigned as part of a time division multiple access (TDMA) protocol. The TDMA protocol ensures that only one station is transmitting at any given time, so from an interference perspective only the power level of a single station need be considered. Therefore the revised emission designator requested for this STA is 28M0G1DBT.

The RF power of the AS2 is 0.008W (+9dBm) with a +2dBi antenna, yielding an ERP of +11dBm (0.0126 Watts). The portion of the spectrum in the ILS band is -32.1 dBc and at the nearest airport (Boire Field) the level is -115 dBm. The portion of the carrier power in a UHF voice grade channel (VGC) is -26dBc. So again at Boire Field, the level is -110.2 dBm.

D. Prevention of Interference

BAE Systems hereby advises the Commission that the tests to be conducted under the requested Commission authorization are to be conducted near the center of BAE Systems' Merrimack, New Hampshire facilities. Such location will result in the separation of the test facilities from other existing transmit or receive facilities.

ReACT will be tested initially in a laboratory environment without free space radiation. When operating out of doors, transmissions will be limited in duration, most often a few hours over a 12 hour daylight period. In addition, there will be periods of days or weeks between outdoor testing.

Testing will also be limited to specific bands. That is, in conjunction with the prior STA grant under call sign WH9XRT (File No. 0636-EX-ST-2014), BAE Systems will test VHF for a few days, then several weeks later test at UHF, then several weeks later test at L-Band, etc. up to C-Band; possibly repeating a specific band. It is very unlikely that BAE Systems will operate in multiple bands simultaneously.

E. Stop Buzzers

Primary: Primary: George Moynihan - (603) 689-8630

Alternate: BAE Systems Emergency Services Center - (603) 885-3842