

**1. Introduction**

By the instant application (“Application”), BAE Systems Information and Electronic Systems Integration Inc. (“BAE Systems”) requests that the Commission grant a 2 year conventional experimental license to operate the facilities specified in the instant Application.

**2. Purpose of the Operation**

As a general matter, the testing conducted by BAE Systems 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. This particular experiment will be conducted in support of activities under the following government contract:

Agency: Defense Advanced Research Projects Agency (DARPA)  
Contract No.: N65236-20-C-8015  
Contract POC: Rachel Florea 571-218-4410

This experiment – a continuation of the operations previously authorized under STA (WR9XLR) - will involve preliminary testing of a transportable very low frequency (VLF) transmitter system. The US Navy uses VLF signals to communicate. This is a critical capability for the Navy. As the wavelengths at these frequencies are 10’s of km, the conventional transmitter/receiver systems use antenna facilities that are acres in area, so they cannot be easily transported. DARPA is sponsoring research into the development of significantly smaller systems.

BAE Systems’ approach is to implement a monopole antenna attached to a lifting body, specifically a hybrid helium balloon / kite system known as a Helikite™. As part of the development process, BAE Systems will test the transmitter system, performing a preliminary evaluation of the performance of a transmitter with an antenna with a maximum height of 950 m.

All antennas used will be omnidirectional, so there is no preferred orientation.

A waiver of the Station ID requirements of 47 CFR §5.115(a) is respectfully requested.

This test is coordinated with a DoD spectrum request for the same program, identical frequencies, and some overlapping dates. The EL-CID submittal of that document is NMSC Submittal Reference Routing Slip number (RS#): RS2020-U938.

**3. Interference Mitigation**

BAE Systems is well aware of its obligations under Part 5 of the Commission’s rules to avoid interference to co-channel licensees in non-experimental services, and will take all steps to ensure compliance with this obligation. In addition, the following factors will help mitigate any interference issues:

- VLF Operation will take place only at single frequencies at any point in time, with bandwidths less than 950Hz. This is inherent in the system – because the antenna is very

electrically short ( $< 1/10$  of a wavelength), it will only radiate appreciably over a very small range of frequencies that will depend on precise tuning of the matching variable-inductor.

- Initial system operations will consist of very low power validation testing, to ensure unintentional radiation is adequately suppressed. Additionally BAE Systems, and associated government team members, will be monitoring spectral impact, and will stop transmission if any unacceptable out of band transmission is observed.
- This application is being submitted with the full knowledge and approval of the government customer, who has asked BAE Systems to coordinate with the Navy test team so that they can handle frequency management issues, if any.

#### 4. **Stop Buzzers**

The following will be available by wireless telephone and will act as the “stop buzzer” if any issues arise during testing:

PRIMARY:	James Dolan: 202-580-5311
SECONDARY:	Greg Nannig: 617-470-4992
ALTERNATE:	BAE Systems Emergency Services Center: 603-885-3842
ALTERNATE:	Matt Thoren: 603-320-6808