

**STA REQUEST
AND DESCRIPTION OF OPERATIONS**

1. **Introduction**

By the instant application ("STA Request"), BAE Systems Information and Electronic Systems Integration Inc. ("BAE Systems") requests that the Commission grant special temporary authority ("STA") to permit BAE Systems to operate the facilities (the "Facilities") specified in the instant STA Request. STA is requested for a period of six (6) months from the date of grant of this STA Request. In this case, a start date of December 8, 2005 has been proposed by BAE Systems.

2. **Purpose of the Operation**

BAE Systems Communication, Navigation, Identification and Reconnaissance (CNIR), a business unit of the Information and Electronic Systems Integration Sector (IESI) within BAE Systems Inc., will conduct the testing specified in this STA Request. CNIR is a leader in building technical systems for the U.S. Department of Defense and our allies in avionics, navigation, and military communications. CNIR's lines of business include C3I systems and communication systems integration, guidance and navigation, electronic identification, and reconnaissance systems.

The testing at BAE Systems' Greenlawn campus will support the contract with the Boeing Company to design/develop, fabricate, test, and deliver a series of low Radar Cross Section (RCS) communication, navigation and identification antennas. Boeing will install these on a demonstrator unmanned air vehicle, the X-45C, which will be used in an early operational assessment of system capabilities, under a joint DARPA/Air Force/Navy effort. BAE Systems antenna testing is a critical part of the Joint Unmanned Combat Air Systems (J-UCAS) program. The relevant contract information is as follows:

Contractor – The Boeing Company, prime contractor to DARPA
Boeing Prime Contract number - MDA972-99-9-0003
BAE Systems Subcontract Number - Z20592.
Boeing Contact - Alice Heidbrink, 314-232-8206

3. **Why STA is in the Public Interest**

STA is being requested in order to obtain processing as expeditiously as possible so that the commencement of operation of the proposed facilities can occur as soon as possible. As a leader in technological advancements, BAE Systems continually drives new research efforts in support of the war fighter. As explained above, BAE Systems antenna testing is a critical part of the Joint Unmanned Combat Air Systems (J-UCAS) program. This joint DARPA/Air Force/Navy effort will demonstrate the technical feasibility, military utility, and operational value of a networked system of high-performance, weaponized unmanned air vehicles to effectively and affordably prosecute 21st century combat missions, including Suppression of Enemy Air Defenses (SEAD), electronic attack, surveillance, and precision strike within the emerging global command and control architecture.

Pursuant to the requirements of the relevant contracts and projects, evaluation of the performance of the antenna is currently scheduled to commence as soon as Commission grant is obtained. Grant of an STA in this instance will permit BAE Systems to meet this near-term scheduling requirement. For the foregoing reasons, approval of this STA Request is in the public interest, convenience and necessity.

4. Transmitting Equipment and Additional Technical Information

In response to Item No. 8 in the Administrative portion of the STA Request, the following information is provided with respect to the transmitting equipment and antennas to be involved in the experiment. All listed transmitters are commercial, not experimental in nature.

Transmitter Manuf. Model # Quantity	Source Antenna Manuf. Model #	Frequency Band	3 dB BW Vertical	3 dB BW Horizontal
Fluke 6060A Quantity: 1	BAE Systems N/A	225-400 MHz	65°	100°
Fluke 6060A Quantity: 1	BAE Systems N/A	405-450 MHz	65°	100°
Wavetek 2520A Quantity: 1	BAE Systems N/A	960-1220 MHz	65°	100°
Wavetek 2520A Quantity: 1	EMCO 3105	1212.6-1242.6 MHz	100°	60°
Wavetek 2520A Quantity: 1	EMCO 3105	1435-1535 MHz	80°	48°
Wavetek 2520A Quantity: 1	EMCO 3105	1560.42-1590.42 MHz	75°	45°
GigaTronics 905 Quantity: 1	EMCO 3105	5400-5900 MHz	20°	12°

Additional technical information regarding the proposed transmissions is as follows:

- The requested authority for the J-UCAS Program will permit BAE Systems to test the performance parameters of several different J-UCAS antennas at several different frequency bands. To measure the J-UCAS antenna parameters, each of the J-UCAS antennas serves as a receiving antenna of the radiation from a respective source antenna. The several source antennas transmit the radiation for which this license is required.

- The transmitter output is connected to the source antenna through 60 feet of coaxial cable, reducing the power at the source antenna terminal by the amount of cable loss.

RG-214 coaxial cable between transmitter and source antenna, 60 feet

<u>Frequency MHz</u>	<u>db/100ft</u>	<u>Loss for 60ft (db)</u>
225	3.1	1.9
312	3.7	2.2
400	4.3	2.6
405	4.3	2.6
427.5	4.5	2.7
450	4.6	2.8
960	7.1	4.3
1082	7.6	4.6
1220	8.2	4.9
1212	8.1	4.9
1227	8.2	4.9
1242	8.3	5.0
1435	9.0	5.4
1485	9.2	5.5
1535	9.4	5.6
1560	9.5	5.7
1575	9.5	5.7
1590	9.6	5.7
1435	9.0	5.4
1485	9.2	5.5
1535	9.4	5.6
5400	20.8	12.5
5650	21.4	12.8
5900	22.0	13.2

- 225-400 MHz Carve-Outs

The Commission has previously granted to BAE Systems authority to operate in the 228.4-454 MHz band in a number of situations (See, e.g., File No. 0010-EX-ST-2005). In such grants, a number of specific frequencies were “carved-out” in that band as a Special Condition, as follows:

Use of the following frequencies within plus or minus 10 kHz was prohibited: 228.9, 239.025, 243.000, 254.25, 255.40, 260.9, 263.05, 279.60, 307.90 330.50, 331.40, 331.550, 332.60, 333.20, 333.50, 333.65, 338.20, 348.70, 360.60, 364.20, 370.90, 381.40, 385.45 and 406.100 MHz.

BAE Systems hereby confirms that it is willing to agree to similar restrictions with respect to the requested 225-400 MHz band in the instant STA Request.

5. Note Regarding Output Power/ERP Figures

For the purpose of completion of the attached form, antenna efficiency has been assumed to be 100% and the cable losses have been accounted for in the ERP. In practice, there will be some small reflection losses that will reduce the reported transmitter power to the antenna as well as the effective radiated power, by the amount of these losses.

6. Prevention of Interference

BAE Systems' Michael Latham will be personally conducting the test and will be available by telephone at (631) 261-7000, ext. 3802. Mr. Latham will act as a "stop buzzer" if any issues regarding interference arise during testing.