

REQUEST FOR SPECIAL TEMPORARY AUTHORITY

1. Introduction

By the instant request (“Application”), BAE Systems Information and Electronic Systems Integration Inc. (“BAE Systems”) requests that the Commission grant Special Temporary (STA) to operate the facilities specified in the Application.

2. Purpose and Nature of the Operation

BAE Systems manufactures and tests RF systems as well as antennas for DOD as well as other governmental customers. The testing specified in this Application will be conducted by BAE Systems Information and Electronic Systems Integration Inc., which is a major producer of electronic warfare systems, protection systems, and tactical surveillance and intelligence systems for all branches of the armed forces. This unit’s lines of business include Electronic Warfare/Electronic Protection, Electronic Warfare/Information Warfare, Integrated Defense Solutions, and Mission Electronics with products and services spanning the whole electromagnetic spectrum.

The experiment for which this STA is requested will involve proof of concept for next generation airborne RADAR and multi-INT sensors for UAV’s. Specifically, this experiment will involve a RADAR subsystem illuminating various ground targets and background operating on a manned aircraft flying around the test centerpoint located in Pembroke, New Hampshire. A communication link between the aircraft and a fixed ground location will be used for data transmission.

3. Description of Ground-Based and Airborne Transmissions

The Application seeks authority for a flight test with communication transmissions originating from the ground at the test area centerpoint, and radar and communication link transmissions originating from the air within the airspace described as follows:

A. Ground-Based Transmissions

i. Ground Location

Temporary fixed ground-based operations within a .1km radius around the test area centerpoint coordinates: 43°11’45”N; 71°28’38”W.
Ground elevation above sea level is 109 m (357 feet) at this location.

B. Airborne Transmissions

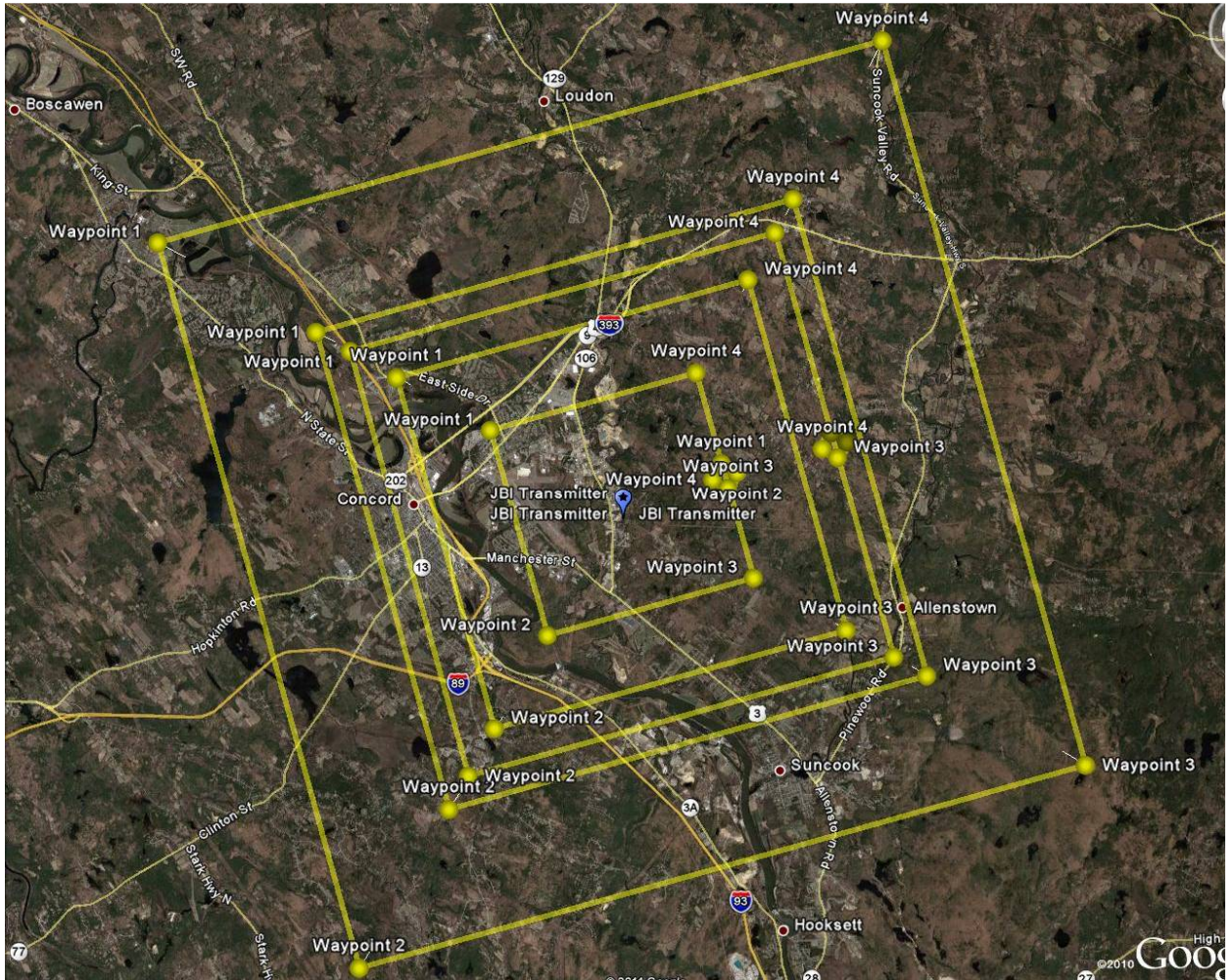
i. Airborne Transmissions Around Pembroke, NH

Mobile airborne transmissions originating from a manned aircraft flying square-shaped flight patterns centered on the test area centerpoint of Pembroke, NH

(coordinates 43°11'45"N; 71°28'38"W), with the furthest waypoints lying on a radius of 12.24 km about the centerpoint. The maximum flight ceiling planned is 1595 m (5232 ft) above mean sea level (MSL). The nearest airport to the centerpoint coordinates is the Concord Municipal Airport (CON) 2.167 km (1.17 nm) from the centerpoint coordinates.

ii. **FAA-Approved Flight Operations Area**

A graphic description of the Flight Operations Area is attached hereto. The waypoints of the largest square pattern lie on a radius arc of 12.234 km about the centerpoint coordinates.



4. Transmitting Equipment/Transmit Antennas

10.250 GHz (Radar)

	Manufacturer/Description	Model No.	# Units	Experimental
Transmitting Equipment	ImSAR LLC	NanoSAR B (1 Watt)	1	No

	Manufacturer/Description	Model No.	# Units	Experimental
Transmit Antenna	ImSAR LLC Patch antenna array, integral to the radar system, to be mounted on aircraft	N/A	1	No

1626-1660 MHz

1760-1840 MHz

	Manufacturer/Description	Model No.	# Units	Experimental
Transmitting Equipment	L3 Comm Systems West	Bandit L-Band Transmitter (1 Watt)	1	No

	Manufacturer/Description	Model No.	# Units	Experimental
Transmit Antenna	ImSAR LLC Viper LS (Bandit) Comm Link Parabolic Dish Antenna	1.2 m dish	1	No

2365-2445 MHz

	Manufacturer/Description	Model No.	# Units	Experimental
Transmitting Equipment	L3 Comm Systems West	Bandit S-Band Transmitter (2 Watt)	1	No

	Manufacturer/Description	Model No.	# Units	Experimental
Transmit Antenna	GSM Antenna Products Monopole Antenna mounted on an aircraft	GSM P/N 501-017 (S-Band)	1	No

5. Directionality of Antennas

In response to the question “Is a directional antenna (other than radar) used?”, the reply “Yes” has been inserted for the radar to be operated at 10.250 GHz and the parabolic dish antenna operated between 1626-1660 MHz and 1760-1840 MHz. (The monopole antenna is non-directional). In the interest of full disclosure, the following is provided for the transmissions which are directional in nature:

Antenna Location	Freq	Antenna Gain	Horizontal (Azimuth) BW	Vertical (Elevation) BW
Aircraft Mounted	10.250 GHz	17 dBi	10 degrees	45 degrees
Ground Based	1626-1660 MHz 1760 – 1840 MHz	21 dBi	10 degrees	10 degrees

6. Mitigation of Interference/Stop Buzzer.

A. Mitigation of Interference

Interference potential is mitigated due to the following factors:

The highly directional transmit antenna for the radar will be located on the bottom of the aircraft, pointing approximately perpendicular +/- 20 degrees to direction of travel and down approximately 45 degrees from horizontal, illuminating both experimental targets in the vicinity of the fixed area center point, and background.

B. Stop Buzzer

BAE Systems advises that the following will be available by wireless telephone as the “stop buzzer” if any issues regarding interference arise during testing:

Primary: Paul Nuccio – (603) 897-9764

Alternate: Jayson Burak – (508) 373-3082

For the foregoing reasons, BAE Systems respectfully submits that approval of this Application is in the public interest, convenience and necessity.