

1. Introduction

By the instant application ("Application"), BAE Systems Information and Electronic Systems Integration Inc. ("BAE Systems") requests that the Commission grant a two year experimental license to permit BAE Systems to operate the facilities (the "Facilities") specified in the instant application.

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, this demonstration, a continuation of the operations previously authorized under STA in File No. 0121-EX-ST-2013 (with some frequency modifications to adjust for frequencies which are no longer required), will be conducted both as part of meeting requirements of a government contract as well as internal research and development efforts. The previous STA was used to investigate, install, and refine an expanded capability of an outdoor antenna range. Now that the capability has been proven by operation under the STA, BAE Systems is seeking a two year license for testing of deliverable product.

The purpose of this testing is the collecting and recording of antenna patterns to perform system calibration and capability verification at an outdoor antenna range.

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

3. Contract Information/"XT" Station Class Request

BAE Systems is aware that the request includes frequencies associated with the MAG (Military Assignment Group) bands, and is providing the following contract information to support the request for those frequencies.

There are several contracts (spaced out over 3 years) that applies to this effort:

- Contract Number FA8620-AA-G-4029/0006
- Contract Number FA8620-AA-G-4029/0014
- Contract Number FA8620-AA-G-4029/0019
- Contract Number FA8620-11-G-4029/0022

Contract POC:

Mr. Louis J Winder, JF
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520-228-9083
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Although the above contracts will be associated with MAG frequency operation, it is requested that the license be issued with Station Class "XT" because the remaining frequencies will be used to support internal research and development efforts.

4. Other Issues

A. Transmit Directionality

The experiment requires transmission from either end of the MER04 outdoor antenna range located at the BAE Systems facility in Merrimack, NH. The station locations are

Station	North Latitude	West Longitude	Reference	Transmit Direction
1	42-48-40	71-29-24	Building 4	+/- 90 deg from 12 deg Azimuth line of bearing
2	42-48-46	71-29-23	Tower	192 deg Azimuth line of bearing

Station 2 is a 58 foot antenna tower located in the center of the BAE Systems campus in Merrimack NH. The highest point of the antenna on this tower will be 60 feet above the ground. Several natural formations and man-made structures serve to shield this tower from aircraft:

- This tower is situated 20 feet from a 2-story office building.
- The closest trees are located at 130 feet from the tower.
- A 40 foot high building is located 600 feet from the tower.
- A 70 foot high tower on the campus is located 1200 feet away.

B. Antenna Data

For the convenience of the Commission, the following chart defines certain specifications relating to the directional antennas that are to be used in the experiment:

Mfg.	Model Number	Frequency Range	Gain	BW
Sunol Sciences	JB1	30 – 2000 MHz	< 0 dBi below 100 MHz, < 5 dBi below 200 MHz, 7 dBi max 200-2000 MHz	Freq E-Plane H-Plane
				<u>MHz</u> <u>deg</u> <u>deg</u>
				30 90 Omni
				200 60 100
				1000 50 100
ETS Lindgren or Equivalent	3164-06	300 – 6000 MHz	< 5 dBi below 500 MHz, < 10 dBi below 3000 MHz 13 dBi max 3000-6000 MHz	2000 50 100
				Freq E-Plane H-Plane
				<u>MHz</u> <u>deg</u> <u>deg</u>
				300 65 105
				1000 35 65
				2000 50 45
				6000 20 20

C. RF Source

Agilent N5230A PNA-L Network Analyzer or equivalent

D. Additional Signal Amplification

Additional signal amplification is necessary to achieve a useful signal to noise ratio for the received signal. The output power of the system will be measured and verified to meet the radiated output power limits set forth in the license.

Mfg.	Model Number	Frequency Range	Gain
RF Lambda or equivalent	RFLUPA01M06G	100 – 6000 MHz	38 dB, typical
Wenteq or equivalent	ABL0600-01-3240	10 – 6000 MHz	34 dB, typical

E. Frequency Requests

BAE Systems is aware that some requested frequencies and frequency bands may contain other licensees, and as always, BAE Systems will comply with all restrictions and special conditions imposed by the Commission. For the requested frequency bands, BAE Systems could satisfy test requirements with a small number of frequency points spaced within the band, and for the discrete frequencies, BAE Systems has attempted to avoid conflicts by selecting frequencies that in the past have allowed for higher than typical ERP levels. In the instance of a frequency conflict for a discrete frequency or a frequency range, BAE Systems would appreciate the opportunity to review any available frequencies and accept special conditions limiting operation to said frequencies.

F. 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.

G. Stop Buzzers

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

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