

DESCRIPTION OF MODIFICATION REQUEST

1. Introduction

By the instant application, BAE Systems Information and Electronic Systems Integration Inc. ("BAE Systems") requests that the Commission grant a modification of experimental Station WE2XBT to add the following three new bands, with the specified carve-outs:

- | | |
|-----------------|---|
| 108.5-118.4 MHz | [Carve-Outs: No transmissions within +/- 25 kHz of the following frequencies (all in MHz): 109.1; 109.7; 109.95; 110.6; 111.15; 111.7; 112.7; 112.9; 113.6; 114.4; 114.7; 115.6; 116.2; 116.5; 117.1; 117.4; 118.025] |
| 228.8-328.6 MHz | [Carve-Outs: No transmissions within +/- 25 kHz of the following frequencies (all in MHz): 228.9; 233.7; 239.025; 243; 251.075; 253.5; 254.25; 254.3; 255.5; 260.9; 263.05; 264.2; 269.225; 269.3; 269.4; 273.45; 277.4; 279.6; 282.2; 284.75; 290.3; 307.9; 321.3] |
| 336.8-452 MHz | [Carve-Outs: No transmissions within +/- 25 kHz of the following frequencies (all in MHz): 338.2; 341.7; 343.6; 346.4; 348.7; 353.7; 360.6; 370.9; 377.15; 380.15; 381.4; 381.65; 382; 385.45; 408.425] |

2. Purpose of the Operation

BAE Systems Information & Electronic Warfare Systems (IEWS), 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. IEWS is a major producer of electronic warfare systems, protection systems, and tactical surveillance and intelligence systems for all branches of the armed forces. IEWS' 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 testing at the Litchfield Antenna Test Range 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. As a general matter, the purpose of the facilities for which consent is requested herein is to measure individually the performance of full scale model antennas of various types (i.e., loop, monopole, dipole), and measure the performance of the antennas on a large ground plane, in connection with an Airborne Antenna Testing program. The contract number associated with the subject program is as follows:

Contract No.: FA8620-06-G-4028

The relevant agency and Point-of-Contact for the above-referenced contract is the same as previously submitted by BAE Systems to the Commission's Security Office, under applicable submission procedures, in connection with File No. 0014-EX-PL-2006.

In addition, the requested bands are intended to be operated in support of IR&D activities.

3. Requested Frequencies Are Consistent with FAA Coordination

On March 22, 2007, the FAA completed its coordination of File No. 0014-EX-PL-2006 (NG T070158). In that Report (scan attached), the FAA permitted operations in 108.5-118.4 MHz; 228.8-328.6 MHz, and 336.8-452 MHz, subject to the following carve-outs:

- 108.5-118.4 MHz [Carve-Outs: No transmissions within +/- 25 kHz of the following frequencies (all in MHz): 109.1; 109.7; 109.95; 110.6; 111.15; 111.7; 112.7; 112.9; 113.6; 114.4; 114.7; 115.6; 116.2; 116.5; 117.1; 117.4; 118.025]
- 228.8-328.6 MHz [Carve-Outs: No transmissions within +/- 25 kHz of the following frequencies (all in MHz): 228.9; 233.7; 239.025; 243; 251.075; 253.5; 254.25; 254.3; 255.5; 260.9; 263.05; 264.2; 269.225; 269.3; 269.4; 273.45; 277.4; 279.6; 282.2; 284.75; 290.3; 307.9; 321.3]
- 336.8-452 MHz [Carve-Outs: No transmissions within +/- 25 kHz of the following frequencies (all in MHz): 338.2; 341.7; 343.6; 346.4; 348.7; 353.7; 360.6; 370.9; 377.15; 380.15; 381.4; 381.65; 382; 385.45; 408.425]

The instant Modification request is wholly consistent with the March 22, 2007 FAA Report.

4. Other Issues

A. Information Regarding Non-Directional (Omni-directional) Antenna (all below 6m)

Manufacturer	Model #	Quantity	Gain (Nominal)	3dB BW E (Vertical)	3dB BW H (Horizontal)
Sanders	TASES 24	2	-31.5 to +1.1 dBi	OMNI	N/A
Sanders	1/4Mon	4	-5.2 dBi	OMNI	N/A
Sanders	TASES 36	2	-60 to -5dBi	OMNI	N/A
Sanders	TASES 12	2	-10 to -5	OMNI	N/A
Sanders	Slant	1	-20 to -5	OMNI	N/A

B. Directional Antennas (all below 6m)

Manufacturer	Model #	Quantity	Gain (Nominal)	3dB BW E (Vertical)	3dB BW H (Horizontal)
SA	26-0.1	1	+8 dBi	60°	120°
SA	29-0.1	2	+8 dBi	60°	120°
SA	27-1.0/8	1	+8 dBi	9°	1.5°
SA	28-1.0/8/10	1	+8 dBi	9°	4.5°
Sanders	1/2 Horn	1	+8 dBi	60-30°	N/A
Sanders	Dual Horn	1	+8 dBi	60-30°	60-30°
Sanders	1/2 Horn	1	+8 dBi	60-45°	N/A
Condor	AS-48461	1	+5-18 dBi	60-10°	60-10°
AEL	H-1498	1	+8-12 dBi	60-30°	60-30°
SA	28-2.0/8/10	1	+8 dBi	60-30°	60-30°

C. Note Regarding Output Power/ERP Figures

For the purpose of completion of the attached form, antenna efficiency has been assumed to be 100%. Therefore, the transmitter power and the radiated power are reported as equal (i.e., both the Output Power and the ERP are reported as “.007 W”). In practice the antenna efficiency and cable loss between the transmitter and the antenna will be considered and the transmitter power adjusted to achieve the approved output radiated power level.

D. Note Regarding “Mean” Power Designation

In the attached form, the power levels are reported as a “Mean” value. The transmitter will not be left on continuously due to the nature of the experiment and the need to physically reposition the unit under test between measurements, cycle through frequencies, change elevation angles of the transmit antenna, etc. where the transmit power is reduced to zero. The actual duty cycle of the transmit system is approximately 7%. Mean power is therefore a more accurate representation of the applicant’s proposed activity.

E. Transmitting Equipment

The following information is provided with respect to the transmitting equipment to be involved in the experiment. It is noted that each of these transmitters is non-experimental in nature:

Manufacturer	Model	Quantity
HP	HP8753D	2
HP	HP8753E	2
HP	HP8753A	2
HP	HP8510B	1
HP	HP8510C	1
HP	HP8340B	1
HP	HP8341	1
HP	HP8643A	1

F. Additional Signal Amplification

Due to the low gain of the transmit antennas, an additional signal amplification may be utilized as follows:

Power Amplifiers	Model	Frequency Band	Power Output	Quantity
ENI	510L	1.7MHz to 500MHz	9.5W	2
OPHIR	5069	.5MHz to 500MHz	8W	1
OPHIR	5094	1MHz to 1000MHz	3W	1
OPHIR	5160	.8GHz to 4.2GHz	7W	1
ENI	603L	.8 MHz to 1000MHz	3W	1

G. Prevention of Interference

BAE Systems hereby advises the Commission that the tests to be conducted under the requested Commission authorization are to be conducted solely on the campus of BAE Systems' Litchfield, New Hampshire facilities. Such location will result in the separation of the test facilities from other existing transmit or receive facilities. BAE Systems' Richard C. Ball will be personally conducting the test and will be available by wireless telephone at (603) 318-6913. Mr. Ball will act as a "stop buzzer" if any issues regarding interference arise during testing.



March 22, 2007

Jeffery E. Rummel, Esq.
Arent Fox LLP
1050 Connecticut Ave, NW
Washington, DC 20036-5339

Mr. Rummel:

Subject: Response for request of FAA Coordination BAE Systems FCC File No.0014-EX-PL-2006.

The FAA concurs with your proposed experimental application provided:

1. The station class on the license is changed from FX to XT.
2. Under no circumstances is the ERP to exceed 0.007 Watts.
3. The applicant strictly adheres to ALL restrictions in the attached spreadsheet that identifies what frequencies are **prohibited to transmit on**, including bandwidth listed in +/- kHz or MHz around each frequency where there are to be no emissions.
4. The applicant agrees to accept and implement any future modifications to their operation as directed by the FAA to include ceasing operations, or adding additional frequency restrictions so that future FAA operational requirements can be supported.
5. These conditions must be listed in the license issued by the FCC

Failure to comply with any of these conditions will render a non-concur by the FAA to the issuance of the requested experimental license. Provided that the applicant can and agrees to adhering to the above conditions, please provide the FAA coordination number NG T070158 along with these conditions and the attached spreadsheet to the FCC for them to include in the application that goes to NTIA.

David Harris
Technical Operations, Eastern Service Area
Spectrum Policy & Management
FAA / ANE- 474 / FMO
11 Murphy Dr. Nashua, NH.0306

FAA coordination response to BAE Systems
FCC File No. 0014-EX-PL-2006
Frequency Restrictions with Bandwidths

ANALYSIS OF BAE SYSTEMS REQUEST TO TRANSMIT 0.007 WATTS ACROSS LARGE PORTIONS OF THE SPECTRUM BETWEEN 15 MHZ AND 1200 MHZ

LOCATION: LITCHFIELD, NH 424822N 712533W

REQUESTED BAND 15MHZ TO 29.9 MHZ

CRITERIA: RLOS BETWEEN 36 FOOT BAE ANTENNA AND 100 FOOT HF ANTENNA TIMES 3 TO ACCOUNT FOR GROUND WAVE PROPAGATION.

RLOS (IN NM):	19.68
PROTECTION CRITERIA (IN NM):	59.04

NO TRANSMISSIONS WITHIN +/- 3 KHZ OF THE FOLLOWING FREQUENCIES (ALL IN KHZ)

3242.5000K	5321.5000K	11029.5000K
3332.4000K	5515.4000K	11635.6000K
3411.4000K	5861.4000K	11638.4000K
4056.4000K	5861.5000K	13455.6000K
4056.5000K	7375.0000K	13458.4000K
4473.5000K	7476.5000K	13628.4000K
4476.4000K	7476.5000K	13631.4000K
4476.5000K	7609.6000K	13631.5000K
4623.6000K	7612.4000K	15849.6000K
4626.4000K	8121.5000K	15852.4000K
5321.5000K	8123.5000K	16346.4000K
5515.4000K	8126.5000K	16349.4000K
5861.4000K	9076.0000K	19408.6000K
4623.6000K	9912.6000K	19411.4000K
4626.4000K	9915.4000K	20853.5000K

REQUESTED BAND 108.5 MHZ TO 118.4 MHZ

CRITERIA: RADIUS OF THE VOR OR LOCALIZER SERVICE VOLUME PLUS 5 NM. REASON IS TO PROTECT AN AIRCRAFT AT THE EDGE OF ITS SERVICE VOLUME AND IT TAKES 5 NM FOR THE SIGNAL TO DROP BELOW -84 dbm FOR THOSE FREQUENCIES THAT FALL INTO THE VHF COMM BAND ABOUT 118 MHZ, THE CRITERIA IS THE SERVICE VOLUME PLUS 4 NM PLUS 10 NM. THIS IS TO PROTECT AN AIRCRAFT RECEIVER AT THE EDGE OF ITS SERVICE VOLUME AND IT TAKES 4NM FOR THE SIGNAL TO DROP BELOW -82 dBm, PLUS AN ADDITIONAL 10 NM TO ALLOW ATC TO HAND OFF THE AIRCRAFT.

NO TRANSMISSIONS WITHIN +/- 25 KHZ OF THE FOLLOWING FREQUENCIES (ALL IN MHZ):

109.1	114.4
109.7	114.7
109.95	115.6
110.6	116.2
111.15	116.5
111.7	117.1
112.7	117.4
112.9	118.025
113.6	

REQUESTED BANDS 125.6 MHZ TO 129.2 MHZ AND 129.5 MHZ TO 135.2 MHZ

CRITERIA: RADIUS OF THE VHF COMM SERVICE VOLUME PLUS 4 NM PLUS 10NM. THIS IS TO PROTECT AN AIRCRAFT AT THE EDGE OF ITS SERVICE VOLUME AND IT TAKES 4NM FOR THE SIGNAL TO DROP BELOW -82 dBm, PLUS AN ADDITIONAL 10NM TO ALLOW ATC TO HAND OFF THE AIRCRAFT.

FAA coordination response to BAE Systems
FCC File No. 0014-EX-PL-2006
Frequency Restrictions with Bandwidths

NO TRANSMISSIONS WITHIN +/- 25 KHZ OF THE FOLLOWING FREQUENCIES (ALL IN MHZ):

125.825	132.4
125.925	132.725
126	132.9
126.5	133
126.75	133.2
127.2	133.325
127.35	133.425
127.825	133.45
128.2	133.925
128.325	134.7
128.4	134.75
132.05	134.95
	135

REQUESTED BAND 164.0 MHZ TO 173.60 MHZ

CRITERIA: RADIUS OF THE LAND MOBILE RADIO OPERATION PLUS 2NM. IT TAKES 2 NM FOR THE SIGNAL TO DROP BELOW -80 dBm.

NO TRANSMISSIONS WITHIN +/- 25 KHZ OF THE FOLLOWING FREQUENCIES (ALL IN MHZ):

169.3	172.9
169.325	172.9125
169.35	172.925
	172.95

REQUESTED BANDS 228.8 MHZ TO 328.6 MHZ AND 336.8 MHZ TO 452.0 MHZ

CRITERIA: RADIUS OF THE VHF COMM SERVICE VOLUME PLUS 4 NM PLUS 10NM. THIS IS TO PROTECT AN AIRCRAFT AT THE EDGE OF IT'S SERVICE VOLUME AND IT TAKES 4NM FOR THE SIGNAL TO DROP BELOW -82 dBm, PLUS AN ADDITIONAL 10NM TO ALLOW ATC TO HAND OFF THE AIRCRAFT.

NO TRANSMISSIONS WITHIN +/- 25 KHZ OF THE FOLLOWING FREQUENCIES (ALL IN MHZ):

228.9	263.05	284.75	360.6
233.7	264.2	290.3	370.9
239.025	269.225	307.9	377.15
243	269.225	321.3	380.15
251.075	269.3	338.2	381.4
253.5	269.4	341.7	381.4
254.25	273.45	343.6	381.65
254.3	277.4	346.4	382
255.4	279.6	348.7	385.45
260.9	282.2	353.7	408.425

REQUESTED BAND 940.4 MHZ TO 1200.0 MHZ

CRITERIA: RADIUS OF THE DME/TACAN'S SERVICE VOLUME PLUS 1 NM. THIS IS TO PROTECT AN AIRCRAFT AT THE EDGE OF IT'S SERVICE VOLUME AND IT TAKES 1 NM FOR THE SIGNAL TO DROP BELOW -83 dBm. A SEPARATE SYSTEM WITHIN THIS BAND IS THE ATCRB SYSTEM THAT OPERATES ON 1030 MHZ AND 1090 MHZ. THESE TWO FREQUENCIES NEED TO BE PROTECTED ABOVE 500FT IN ALTITUDE WHERE TRANSMISSION LEVELS CANNOT EXCEED -78 dbm WITHIN +/- 10.MHZ

**FAA coordination response to BAE Systems
FCC File No. 0014-EX-PL-2006
Frequency Restrictions with Bandwidths**

**NO TRANSMISSIONS WITHIN +/- 1 MHZ OF THE FOLLOWING FREQUENCIES
WITH EXCEPTION OF 1030 MHZ AND 1090 MHZ. WITHIN +/- 10 MHZ OF 1030 AND 1090 MHZ
SIGNAL LEVELS CANNOT EXCEED - 78dbm ABOVE 500FT IN ALTITUDE.**

962	1135
979	1156
984	1159
989	1161
992	1163
1004	1170
1030	1178
1055	1181
1079	1190
1090	1196
1114	1199
1134	