

SUPPORTING STATEMENT

Pursuant to Sections 5.3(b), (d), (e), (f), and (i) and 5.51 of the Federal Communications Commission ("FCC") rules, 47 C.F.R. §§ 5.3(b)(d)(e), (f) & (i), 5.61 (2010), BAE Systems TSS Inc. ("BAE") respectfully requests an experimental license commencing **July 15, 2012**, to conduct design verification testing of Ultra High Frequency (UHF), C-Band, and X-Band Satellite Communications (SATCOM) systems at the company's land-based test facility in support of the United States Navy (USN) Littoral Combat Ship (LCS) program. The systems tested will subsequently be installed on the LCS-6, USS Jackson, and follow on Independence Class of Littoral Combat Ships.

This test will be conducted essentially for the same purpose and in the same manner as the tests conducted under the previous authorizations granted by the FCC to BAE in 2007 and 2010 under OET File Nos. 0814-EX-ST-2006 and 0417-EX-ST-2010. In support of this request, the following is shown:

1) Applicant's Name, Address, and FRN:

BAE Systems TSS Inc.
23481 Cottonwood Parkway
California, MD 20619-9517

FCC Registration Number (FRN): 0010674976

2) Need for Experimental License:

BAE is engaged in testing new generation communications systems for the United States Navy (USN). It is acting as a subcontractor responsible for the integration of communications systems being designed and developed for the USN under United States Government Contract No. N00024-11-C-2301.

BAE requires an experimental license so that it may perform design verification testing and factory acceptance testing of the communications systems for the Austral variant of the USS Independence Class of Littoral Combat Ships.

3) Purpose and Description of Operation:

The experimental authority requested herein will allow BAE to validate system performance and interoperability with commercial and military satellite systems prior to shipyard installation, thus reducing the required shipyard test time and speeding production of the ships to meet the needs of the USN.

UHF SATCOM system testing will be performed using: (a) PSC-5D (RT-1672D) multi-band multi-mission radio (MBMMR) equipment manufactured by Raytheon; and (b) AN/ARC-210 (RT-1747D) radio equipment manufactured by Rockwell Collins. This equipment has been type-certified for UHF SATCOM Demand

Assigned Multiple Access (DAMA) and non-DAMA UHF SATCOM operations by the Joint Interoperability Test Center (JITC).

The UHF SATCOM system for the LCS also includes: (a) high power amplifiers (AM-7565/ARC) manufactured by Raytheon; (b) a SATCOM modem (MD-1324B) manufactured by ViaSat; (c) antennas (AV-2098-12) manufactured by Trivec Avant; and (d) a variety of switches, diplexers, and attenuators.

The integrated UHF SATCOM radio system will be deployed to access existing USN 5 kHz and 25 kHz DAMA and non-DAMA circuits for voice and data transmissions. The test will allow BAE to verify the design and integration of the SATCOM radios, amplifiers, diplexers, switches, receive diversity combiners, and antennas through operability testing.

The C-Band and X-Band test will be performed using the AN/WSC-6(V)9 Multi-Band Satellite Communications Terminal (MSCT) manufactured by Harris and provided to the LCS program as Government Furnished Equipment (GFE) by the Space and Naval Warfare Systems Center, San Diego (SPAWAR).

The MSCT will be deployed to access commercial Intelsat circuits over C-Band channels and military Defense Satellite Communication System (DSCS) circuits over X-Band channels. The manufacturer has already obtained Defense Information Systems Agency (DISA) terminal certification for DSCS satellite access capability. The test at BAE's land-based test facility will allow the company to verify the design and integration of the MSCT with LCS cryptographic systems, multiplexers, and routers, and interoperability of the integrated system with the Navy shore facilities.

4) Dates of Proposed Operation:

July 15, 2012 through July 15, 2014. The testing proposed under this license will occur on a periodic basis over a period of two or more years.

5) Location(s) of Proposed Operations:

44411 Pecan Court
California, MD 20619

Coordinates (NAD 83):
Latitude: 38° 18' 31.2" N;
Longitude: 76° 32' 23.9" W

6) Equipment To Be Used:

V/UHF Radio	Raytheon	RT-1672D (Qty. 3)
UHF Amplifier	Raytheon	AM-7565/ARC (Qty. 4)
V/UHF Radio	Rockwell-Collins	RT-1747D (Qty. 1)
SATCOM Modem	Viasat	MD-1324B (Qty. 1)
C/X-band Satellite Terminal	Harris	AN/WSCV-6(V)9 (Qty. 1)

The company does not propose to use prototype equipment during this trial.

7) Frequencies Desired:

Frequency	Station Class	Emission Designator(s)	Proposed Peak Power
249-270 MHz	FX	7K20G1D	60.26 W (ERP)
		5K00G1D	
		25K0F1D	
		25K0G1D	
		25K9F1D	
292-312 MHz	FX	5K00G1D	60.26 W (ERP)
		7K20G1D	
		25K0F1D	
		25K0G1D	
		25K9F1D	
3.7-4.2 GHz	FX	2M64G7W	1.28 MW (ERP)
5.85-6.425 GHz	FX	2M64G7W	1.28 MW (ERP)
7.25-7.75 GHz	FX	3M98G7W	2.83 MW (ERP)
7.9-8.4 GHz	FX	3M98G7W	2.83 MW (ERP)

The following frequencies +/- 12.5 kHz are excluded to protect FAA and Coast Guard operations in the area: M251.050; M254.250; M254.350; M255.400; M255.400; M256.800; M257.200; M257.600; M257.700; M257.800; M257.875; M260.900; M263.025; M269.000; M269.425; M269.500; M269.525; M270.275; M291.625; M303.250; M306.300; M307.200; M307.900.

8) Power Levels:

<u>UHF SATCOM:</u>	<u>C-Band:</u>	<u>X-Band:</u>
TPO: 125 Watts (via HPA)	TPO: 800 Watts (via HPA)	TPO: 1000 Watts (via HPA)
EIRP: 20 dBW (Peak)	EIRP: 63.25 dBW (Peak)	EIRP: 66.69 dBW (Peak)
ERP: 60.26 Watts (Peak)	ERP: 1.28 MW (Peak)	ERP: 2.83 MW (Peak)

9) Type of Emission, Modulation Technique, and Bandwidth Required:

<u>UHF SATCOM:</u>	<u>C-Band:</u>	<u>X-Band:</u>
7K20G1D, 5K00G1D	2M64G7W	3M98G7W
25K0F1D, 25K0G1D		
25K9F1D		

Other emission modes and modulation techniques may be utilized, but in no event will the emissions extend beyond the frequency bands requested.

10) Antenna Information:

Overall Height of Antenna(s) Above Ground

HAAT: UHF SATCOM: ≤ 11 meters

HAAT: C/X-Band : ≤ 12 meters

Antenna Configuration

Width of beam at the half-power point:

UHF SATCOM: 75° (nominal)

SHF: 2° (nominal)

Orientation in the horizontal plane: 360°

Orientation in the vertical plane: 90°

Maximum overall height above ground to tip of antenna: 12 meters

Elevation of ground at antenna site above mean sea level: 35.8 meters

Distance to nearest aircraft landing area: 0.5 km

Natural formations of existing of existing man-made structures which would tend to shield the antenna from aircraft: trees

11) Restrictions on Operation:

As noted above, BAE does not propose to use prototype equipment during this test. The authorization will support testing to be conducted under United States Government Contract No. N00024-11-C-2301. BAE is acting as a subcontractor for the integration of communications systems into ships to be built for the United States Navy under this contract. As such, the equipment will not be marketed to non-federal entities. BAE understands that: (a) permission to operate has been granted under experimental authority issued by the Federal Communications Commission, is strictly temporary, and may be cancelled at any time; and (b) operation is subject to the condition that it not cause harmful interference.

12) Interference Protection/Stop Buzzer Contact Information:

BAE recognizes that the operation of any equipment under experimental authority must not cause harmful interference to authorized facilities. It therefore will coordinate its activities with any licensees in the proposed bands in accordance with FCC requirements. Should interference occur, the company will take immediate steps to resolve the interference, including if necessary arranging for the discontinuance of operation. In any event, BAE submits that its experimental operations are unlikely to cause interference. The company proposes to limit the power and transmitting times to the minimum necessary to evaluate the equipment.

BAE advises the Commission that Greg Howard (BAE Systems - LCS Communications, Test Engineering Lead) will be personally responsible for the tests and will be available at his office at (301) 862-7173 or by mobile telephone at (301) 481-5588. Mr. Howard will act as a "stop buzzer" if any issues regarding interference arise during testing.

13) Compliance With Human Exposure Limits:

BAE certifies that it will operate under this authorization in full compliance with IEEE C95.1 - 1991, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz".

14) Application Contact Information:

Company Contact:

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