

L-3 Communications Satellite Networks
FCC Form 442
Application for Experimental Authorization

Exhibit 1

L-3 Communications Satellite Networks (“L-3”), pursuant to Sections 5.3 and 5.51 of the Commission’s rules, 47 C.F.R. §§ 5.3, 5.51, is filing this experimental license application in order to perform research and development and gather operational data to make improvements in the performance on the military Flyaway Tri-Band Terminal (FTSAT) AN/USC-60A, a 2.4 meter antenna which has the capability to operate on the C-band, Ku-band, Ka-Band and the military X-band. It has the ability to operate using Intelsat, Eutelsat, Panamsat and Domsat satellite systems. The system is hub-independent for set-up, signal acquisition, and operation, and interoperable and compatible with all GMF, MCIS and DSCS Gateway modems and baseband subsystems. It provides high data rates based on frequency band, with local and/or remote operation. It is used primarily in support of the military Joint Deployable Support System (JDISS).

The antenna being used will have the following width of beam in degrees at the half-power point:

C-Band	-	1.42 deg.
Ku-Band	-	0.61 deg.
X-Band	-	1.1 deg.
Ka-Band	-	0.29 deg.

The orientation in the horizontal plane will be 7.5 degrees and 90 degree elevation, and the orientation in the vertical plane will be 90 degrees due East.

One of the two tests to be conducted at the L-3 facilities in Hauppauge, New York, focuses on the ratio of the antenna gain to the noise temperature test. Under this procedure, the “figure of merit” of the satellite terminal will be measured at maximum power, while lowering the antenna to an elevation angle of 7.5 degrees in a direction away from the geosynchronous satellite arc. The gain to the noise temperature will be compared with the transmitter on and then off. The length of time that the facilities will be turned on will be less than five minutes in duration in each of the three frequency bands. The carrier

transmitter during the test will be unmodulated at fixed frequencies and at set power levels, as detailed in the Form 442 application.

The second test, the Bit Error Ratio (“BER”) Loop-back, requires the positioning of the antenna at a zenith away from the geosynchronous arc and the military satellite arc. The following modulations and forward error correction (“FEC”) rate will be used in the four following bands for testing:

C-Band

Carrier modulated using 64 kbps QPSK with a FEC rate of $\frac{1}{2}$, and then transmitted and centered about a frequency of 6137.5 MHz and an EIRP of 61 dBw.

Ku-Band

Carrier modulated using 256 kbps OQPSK with a FEC rate of $\frac{1}{2}$, and then transmitted and centered about a frequency of 14,250 MHz and an EIRP of 66.5 dBw.

Ka-Band

Carrier modulated using 1 mbps QPSK with a FEC rate of $\frac{1}{2}$, and then transmitted and centered about a frequency of 30,500 MHz and an EIRP of 68 dBw.

X-Band

Carrier modulated using 128 kbps OQPSK with a FEC rate of $\frac{1}{2}$, and then transmitted and centered about a frequency of 8,150 MHz and an EIRP of 64 dBw.

The necessary bandwidth was determined as follows:

Bandwidth	=	$1.25/(\text{Symbol Rate})$
Symbol Rate	=	$R/N*\text{FEC}$
R	=	Data Rate
N	=	Number of bits per symbol (N = 2 for QPSK and OQPSK)
FEC	=	Forward Error Correction

L-3 submits that the public interest would be well served by the grant of this experimental license extension. With the continued need for military vigilance, testing the operations FTSAT will help L-3 and the United States military remain at the forefront of technological developments and provide the rapid response and improvement necessary in military application. Therefore, acting favorably on this application will allow for the use

of telecommunications to provide for an improved national defense in an efficient and orderly manner.