

NARRATIVE STATEMENT

Raytheon TI Systems, Inc. ("Raytheon TI") is seeking an experimental radio license to begin operations on **May 1, 1998**, to research, develop, and test wideband high-speed data transmission elements (antennas, terminals, components, etc.) for use in future low orbit earth satellites and stratospheric systems, and to determine such elements' applicability and characteristics in an operating environment.

Operation as proposed would involve a ground station and an aircraft station. The ground station will utilize a parabolic antenna with a 1.2-meter diameter and a receive gain of 45.5 dBi and half power beamwidth of 0.83 degrees, and a transmit gain of 48.5 dBi and half power beamwidth of 0.56 degrees. The G/T will be 22 dB/K and the EIRP will be 78.5 dBm. The airborne station will utilize a linearized parabolic antenna with a 12-inch diameter and a receive gain of 33.3 dBi and half power beamwidth of 3.3 degrees, and a transmit gain of 36.7 dBi and half power beamwidth of 2.2 degrees. The G/T will be 2.1 dB/K and the EIRP will be 53.28 dBm.

65K per STA

The airborne station will operate at altitudes of up to 24,000 feet. The **primary** area of operation will be in north central Texas. Aircraft flight pattern is planned to be centered north of the Plano/McKinney area at 33-11-00 N, 96-36-00 W, and operating within a 100-Nm radius of those coordinates. The **secondary** area of operation will be within a 100-Nm radius of Mojave, California. The **general** area of operation will be within the continental United States.

The ground station will use a modification of an ACTS satellite terminal to provide wideband high-speed data to demonstrate and characterize switching and multiplexing, network interfaces, and video transmission. The airborne station consists of a small gimbal stabilized parabolic antenna, amplifier, transceiver, and modulator/demodulators for wideband high-speed digital signals.

Coordination with NASA. The experimentation will use signals with bandwidth which would not extend beyond the specific frequencies requested. Raytheon TI has coordinated with NASA regarding the proposed experimentation. A copy of Raytheon TI's correspondence with NASA is attached. The stations will be operated so as not to interfere with NASA's operations.

RF Radiation Exposure Compliance. The proposed fixed station will simulate a satellite earth station. Note that the fixed station antenna will be located on the roof pointing away from the ground of a secure site to which access is strictly controlled and access by the general public is prohibited, thereby limiting access only to those who would be considered to be within a controlled area. The ladder accessing to the roof will incorporate an appropriate sign to limit access to the antenna so that personnel will not be likely to come in contact. The airborne antenna will be mounted in such a manner that the controlled area guidelines are never exceeded in the aircraft.

Raytheon TI submits that a grant will serve the public interest, convenience, and necessity because the work to be carried out under this authority will advance the state-of-the-art in ground terminals.