Responses to Question 6 on FCC License Application:

6. *

Is this authorization to be used for providing communications essential to a reasearch project? (The radio communication is not the objective of the research project)? If "YES", include as an exhibit the following information:

a. A description of the nature of the research project being conducted.

The University of Texas at Austin is performing a space mission known as RACE (Radiometer Atmospheric CubeSat Experiment) to conduct spaceborne validation of an Indium Phosphide (InP) radiometer. The spacecraft is a 3-unit CubeSat which will be deployed into a Low Earth Orbit with an orbit lifetime of less than 12 months. During that time, the mission team will communicate with the satellite and receive scientific measurements from the satellite while it is in orbit. The mission is sponsored by the California Institute of Technology/Jet Propulsion Lab.

b. A showing that the communications facilities requested are necessary for the research project.

It is necessary for the satellite to communicate with the mission operators so that commands can be sent to the satellite and scientific measurements can be received. Without this capability there would be no scientific return from the experiment. Therefore, the satellite is required to have a radio capable of space to ground communications. The radio chosen is manufactured by Astronautical Development, Model Number He-100, also known as the “Helium” radio. This radio was chosen because it operates at the appropriate frequencies and fits within the design envelope for a CubeSat spacecraft.

c. A showing that existing communications facilities are inadequete.

There no other communication facilities on the satellite, therefore the existing communication facilities are inadequate.

The satellite will communicate with a ground station at The University of Texas at Austin. The station has call sign KE5DTW. UT-Austin has a fully redundant operational ground station located on the top floor of the W. R. Woolrich building on the university campus. The ground station includes two UHF/VHF Yagi antennas with 16.8 dB of gain. Ground station hardware includes ICOM – 910H VHF/UHF transceivers, ICOM PS-125 transceiver power supplies, and 3 plasma display screens. The primary ground station software was developed by UT-Austin students and allows for remote control access and recording of passes on both stations.