Exhibits relating to FCC form 442 – Question 6

Question 6: ***Is this authorization to be used for providing communications essential to a research 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.***
- ***b. A showing that the communications facilities requested are necessary for the research project.***
- ***c. A showing that existing communications facilities are inadequate.***

The Surrey Satellite Technology US LLC (SST-US) 'Orbital Test Bed' (OTB) mini-satellite is a small LEO experimental satellite that will provide an in-orbit test bed for the experimentation and demonstration of scientific; research and prototype payloads, subsystems and equipments. The OTB mini-satellite will accommodate eight experimental payloads, including a number of 'hosted' payloads are sponsored by external parties which support their research programs:

1. Deep Space Atomic Clock (DSAC) – sponsored by the Jet Propulsion Laboratory under JPL subcontract No 1468935. http://www.nasa.gov/mission_pages/tdm/clock/

2. iMESA-R – A space weather monitor built by the USAF Academy and sponsored through AFRL. http://www.usafa.edu/df/dfe/dfer/centers/sparc

3. Modular Solar Array (MSA) – built by Vanguard and sponsored through AFRL. http://www.vst-inc.com

4. CUSP - A microprocessor and memory storage experiment from the University of Colorado Boulder www.colorado.edu

5. SSC Electronics Test Bed – An experiment designed to monitor the effects of spaceflight on new electronics components, co-sponsored by the Surrey Space Centre at the University of Surrey and SST-US. This experiment is designed to understand the effects of radiation on a variety of commercial-off-the-shelf components to assess whether they are suitable for spaceflight.

In addition, SST-US primary payloads are also included which support the technical development of space technologies:

1. FlexRx – A new spacecraft RF receiver design sponsored by SST-US. The receiver will be tested to assess its RF reception characteristics in space. It does not radiate RF signals.

2. Radiation Monitor – A new spacecraft radiation monitor sponsored by SST-US. This experiment is designed to provide data on the long-term radiation environment experienced in LEO. It helps calibrate the effects of radiation on other payloads.

3. Custom Experimental Solar Panel – A new solar panel sponsored by SST-US.

The spacecraft will operate for 5 years, although a number of payloads may operate for a shorter time and will be switched off as required. No testing of the payloads will alter the orbital; physical or RF characteristics of the OTB mini-satellite from nominal during their testing, as such they should be regarded as 'passive' in operation. None of the payloads separately radiate RF signals.

All data generated from the various payloads are multiplexed within the OTB spacecraft and down linked via the single, high rate, S-band; 4.07Mbits/s data link to the ground station.

SST-US will require one 5 minute RF link session every day for satellite Telemetry & Tele-Command (TT&C) and to download satellite status information and payload data. This is the minimum practical to ensure spacecraft health and retrieve the experimental data. The satellite will not radiate any RF signals at any other time.