

**NSL Ground Station
License for Additional Satellite CAPSAT-1
Description, Purpose, Scope
March 11, 2022**

Reason for License Application:

The NSL ground station currently supports a number of satellites for the positive control. FCC has indicated that coverage of additional satellites should be covered by a new license, one per satellite. This application is made to address CAPSAT-1

Scope:

Added Satellite	License / Application File Number
CAPSAT-1	0079-EX-CN-2021

The Spacecap API files for CAPSAT-1 has been submitted as an exhibit to this application.

Purpose:

The NSL Ground Station (NSLGS) will provide basic telecommands to experimental satellites, supporting positive control of the transmitters on those satellites.

Location and Description:

The ground station is located near Upland, Indiana, about 2 miles south of Taylor University, in a rural area with a mix of forests and fields. It is a 1.5 meter diameter dish antenna, beam width 5.3 degrees, 30 dBi gain, and will operate on 2467 MHz. The power is 0.04 Watts at the antenna input flange, and the maximum EIRP is 16 dBW.

The elevation will be constrained to 60 degrees or above at all times, to hold Doppler shift within acceptable limits. This elevation constraint also reduces signal strength to the surroundings below a level of concern. See the associated EMC Analysis for details.

The antenna is an L-com Hyperlink Wireless Parabolic Grid Antenna, model HG2430G. It is mounted on a pad at ground level, with the center of the antenna 2 meters above the ground.

The radio transmitter is an NSL Model TC25A.

Future:

In the longer term, use of transmit-only radios on satellites will be phased out, and future satellites will have bi-directional links, and this will supplant the use of the NSL ground station for positive control.