

AST&Science
Application for Conventional Experimental License
(Public Version)

AST&Science seeks experimental authority to test a novel satellite system with testing conducted of transmissions between a ground antenna and a cubesat orbiting above the earth. The purpose of the test will be to conduct technical radio research and demonstrate equipment and techniques to determine the performance of the ultimate system. Additionally, AST&Science will test the equipment in conjunction with its production, which will occur at the same facility.

The cubesat that will be used in the testing will operate under the authority of Papua New Guinea. Therefore, AST&Science is not asking for authorization to operate the cubesat.

AST&Science seeks authority to operate the antenna that will be located at its manufacturing facilities in Midland, Texas, located on a platform built approximately two (2) meters above the ground.

The system will be operated as a ground station, and will communicate to and from the cubesat. The system will track the satellite during its transit through the sky.

The cubesat will orbit approximately 600-700 km above earth. The ground system will connect with the cubesat at a scanning angle of 35°, tracking the cubesat until the signal is lost. Communications will occur when the cubesat passes over Midland for approximately 10 minutes, twice per day. Testing will be intermittent, however, and will take place on an “as needed” basis, not daily.

AST&Science intends to operate this experiment on two channels, specifically 846.5-849.0 MHz and 891.5-894.0 MHz. **AST&Science has obtained permission from the license holder to use these specific frequencies for its testing.**

The maximum available power is about 600 W. However, the power will be backed off for linear operation and the output will be controlled to maintain the EIRP at approximately 38 dBW EIRP. Detailed technical specifications are as follows:

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| ➤ Site Location: | Midland International Air and Space Port |
| ➤ Site Coordinates: | 31°56'30" N, 102°12'17" W |
| ➤ EIRP: | 38 dBW |
| ➤ Antenna Diameter: | 4.5m |
| ➤ Output power: | 10 W |
| ➤ Antenna Gain: | 28 dBi |

A point of contact for this testing will be physically located at the Midland, TX site and will ensure that operations will cease in the event that any licensed users experience interference or as otherwise directed by the FCC. **The AST&Science “stop buzzer” contact will be:**

Huiwen Yao, 5825 University Research Court, Building 2, Suite 2300, College Park, MD 20737, (301) 793-3416, hvao@ast-science.com.

Finally, the installation and operation of the equipment will not have a significant environmental impact, and therefore no Section 1.311 environmental assessment is necessary.