

World View
Experimental STA Application
File No.: 0288-EX-ST-2020

Explanation of Experiment and Need for STA

Company Description/Overview:

World View, a Tucson, Arizona based company, was founded to build and launch stratospheric, lighter-than-air balloons carrying a range of payloads. See Figure 1 below for an image of a Stratollite. World View's customers range from the US Department of Defense to private citizens to commercial enterprises looking to take advantage of a platform that can bring them to the edge of space.

World View is seeking this authorization to operate a radio system that will carry telemetry data from its stratospheric balloon during its mission. To prepare properly for a safe launch and operation, this application also seeks authorization for ground-based testing prior to the launch.

Need for an STA:

World View has recently purchased a new radio system for this testing. It has some customer missions scheduled in late 2020, and it needs to integrate the radio system into the Stratollite and test its operations as soon as possible to ensure proper operation before the customer missions. Therefore, testing needs to start as soon as possible. For that reason, World View is seeking an initial six-month testing period.

Technical Synopsis:

- Spectrum requested: 2480-2500, signal centered at 2490 with 20MHz wide link.
- Power levels: 8 W mimo operations, with 5 dBi gain
- Limited time of use: ground testing just a few hours, airborne only during flights
- Balloon will operate at 50,000 to 75,000 feet
- Radio operations are directional

Description of Operations:

World View is seeking authorization for operation of a data link system to transmit information from its Stratollite to a mobile ground station that tracks the balloon while it is in flight. The proposed test flights will operate in Arizona and New Mexico, in the area depicted below in Figure 2.

The radios will be tested to see how far the radio links will reach while delivering reliable information, and the radios will be tested to determine the speed of the data transmissions that can be achieved across various distances. This testing will give World View much

better information regarding how to configure its technology to deliver performance to its customers.

Data link: After the launch, the data link will be in use during the desired transmission periods. The downlink will be used to transmit high-resolution imagery and other telemetry data from the balloon to the ground station. The downlink will use the 2490 radio to transmit at 8 watts, with an ERP of 15.4 Watts. Given the altitude of the balloon, which will be 10 miles or more from earth, the signal at ground level will be very low



Figure 1. World View Stratospheric Balloon

Area of Operation: see *Figure 2* below:

Portions of Arizona
Portions of Western New Mexico

The oval shaded area below is where these operations will take place. The Stratollite movement is controlled by upper atmosphere wind patterns, so each flight will be

somewhat different. The estimated flight will be 150 miles or so, which is the length of the green line stretching from Tucson east into New Mexico. The oval area is needed to accommodate the variability of the winds.

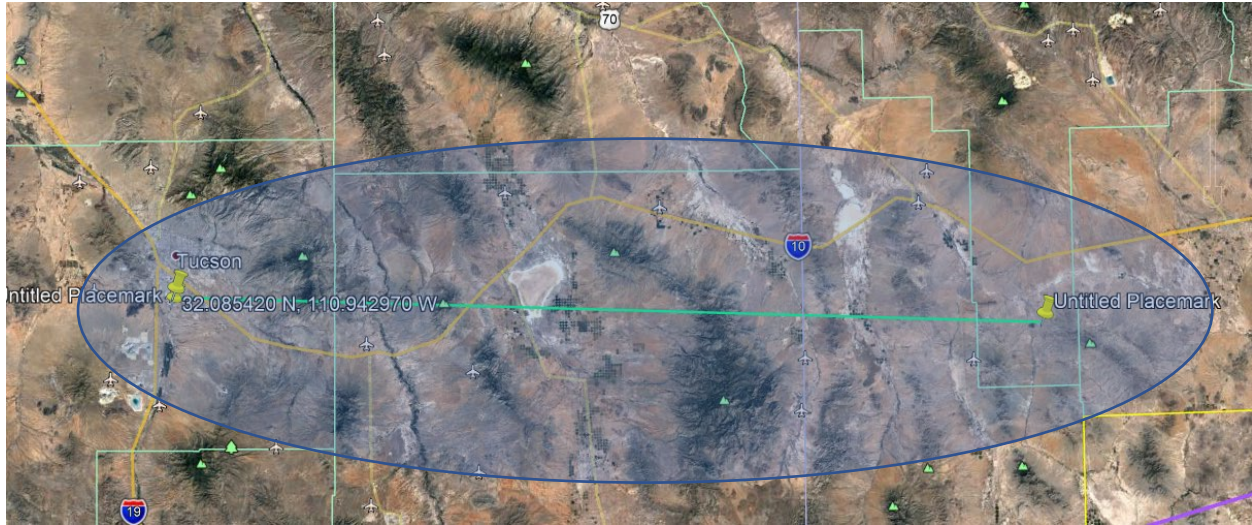


Figure 2. Proposed area of operations
(The blue outline above shows the area of operations).

To optimize the functioning of the radio systems, World View has built a mobile command center that uses a directional antenna to track and receive telemetry information from the transmitter on the Stratollite.

Minimization of risk of interference:

To minimize any potential interference, World View has worked to design a system that puts the most gain into the receive antenna rather than adding power to the transmitter. Further, World View has conducted a preliminary search of licensees in the band in this geographic area, and the initial search does not show any likelihood of interference to any licensed operators.

While the Stratollite will operate at a very high elevation, because it is below orbit, its footprint will be far more limited than satellites operating on the same spectrum. With the directional antenna employed, the signal is not expected to cover a large footprint.

Further, the signal level proposed should attenuate significantly due to free space pathloss before the signal reaches the ground. This will also minimize any potential for the signal to cause harmful interference to any licensed operators.

Stop Buzzer Point of Contact:

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Conclusion:

World View continues to develop its stratospheric balloon platform for a range of government and an emerging sector of commercial customers. As part of the development of the balloon, World View needs to test a new radio system to determine what can be achieved over distances and varying altitudes. The proposed testing will allow World View to expand its experimentation to cover much greater distances, allowing more adaptations for weather and allowing study of the effects of distance on radio throughput and transmit speeds.

If there are any questions about this application, please contact Anne Cortez, WFS, 520-360-0925 or alc@conspecinternational.com.