

Titan Aerospace
Project Scope
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The Titan Aerospace Solara program will develop solar/electric unmanned systems for eventual high altitude, long endurance (HALE) flights. The Solara is the first aircraft system in a series. It is intended to explore flight characteristics and aircraft control systems, provide crew training and market survey. Solara will be followed by subsequent aircraft systems that will reach higher altitudes and longer durations.

As part of the backup communications between the Solara and the ground station, a 5.8 GHz link has been selected to provide high bandwidth video and secondary autopilot communications. The 5.8 GHz frequency was selected due to its sparse use to prevent interference, the availability of hardware and ease of use.

Our craft is designed to fly long distances under perpetual solar power, the goal is to get it to 20km and fly for over 2 weeks straight. In order to do this we require that link that's reliable. According to a number of link calculations, with FCC limitations on the 5.8GHz spectrum, only 2 km are obtainable. With the equipment available theoretical distances reach over 50 km, which is required to complete the project.

Our equipment setup is as followed:

- 34 dBi gain 5.8 GHz Parabolic antenna and 18 dBi gain 900 MHz Yagi antenna on the ground station tracking the aircraft

- 3 dBi gain Omni antenna on the aircraft (900 MHz & 5.8 GHz)

- Microhard 5.8 GHz radios with 28 dBm of transmission power

- Microhard 900 MHz radios with 30 dBm transmission power