

Stanford University Dept. of Aeronautics and Astronautics  
Experimental License Application  
Stanford University  
Stanford, California

## EXHIBIT 1

In this Exhibit, Stanford University Dept. of Aeronautics and Astronautics presents an explanation of the spectrum which is proposed to be used under this experimental license.

The Global Positioning System (GPS) currently broadcasts on two frequencies (1575.42 MHz and 1227.60 MHz). These are known as the L1 and L2 frequencies, respectively. A third frequency (1176.45 MHz), known as L5, has been approved for future use. Stanford University Dept. of Aeronautics and Astronautics requests an experimental license to broadcast signals at these frequencies to be used by GPS receivers of current design to improve their navigation accuracy and reliability. This application is for use of the L1 frequency at 1575.43 MHz.

The existing GPS satellite signals are spread spectrum signals occupying a band 24 MHz wide centered on each of the above frequencies. The signal from each satellite occupies essentially the entire band. Signals from individual satellites are distinguished using Code Division Multiple Access (CDMA) techniques.

Stanford University Dept. of Aeronautics and Astronautics intends to experiment with signals identical to the existing GPS satellite signals, occupying the same bandwidth. Stanford University Dept. of Aeronautics and Astronautics also intends to experiment with signals slightly different than the existing GPS satellite signals, with the goal of minimizing interference with the satellite signals. Exhibit 2 describes these signals in detail.

Because the intent of this experiment is to broadcast signals identical or similar to the existing GPS satellite signals on the L1 frequency, Stanford University Dept. of Aeronautics and Astronautics requests an experimental license covering the same spectrum as those existing signals (i.e. 24 MHz centered on 1575.42 MHz).

In an experimental license application filed in the spring of 1999, file number 0097-EX-PL-1999, IntegriNautics Corporation applied for experimental use on the same spectrum, in conjunction with the same tests Stanford University Dept. of Aeronautics and Astronautics is proposing to undertake. Attached as Attachment A to IntegriNautics application is information from the FAA regarding the project that led to the experiments with pseudolites. Stanford University Dept. of Aeronautics and Astronautics will be experimenting with this spectrum, taking the results of the IntegriNautics tests to expand upon the research. This experiment will test, among other factors, whether an array of pseudolites can use radio signalling to be self-calibrating, thus enhancing navigation systems. This experiment will use only pulsed signals.