

This experimental license application is to request the use of a transmit frequency of between 800- 806 MHz to accomplish military training at the Eglin AFB range. The equipment used was built by Southwest Research Institute for demonstrating the concept of translating a Low Probability of Intercept (LPI) Direct Sequence Spread Spectrum (DSSS) burst signal to another frequency. The translator hardware for which the experimental license is requested is residue from a completed Government contract, but that contract scope was not to provide these translators to the range. The range personnel are simply exploiting the availability of the translator hardware to easily and inexpensively provide coverage over the entire Eglin range.

There are two research aspects this project.

1. The translator does not demodulate the signal. The data modulated on the signal, although encrypted, contains classified information. If the signal were demodulated by the translator, the device would require protection as a Controlled Cryptographic Item (CCI). There is some skepticism that a frequency translation can be made linear enough to maintain the fidelity of the original signal, reradiated on a different frequency and successfully received and decoded. The receiver for these translated signals requires very precise control of the waveform.
2. The Eglin range is very large. The transmitters whose signals these devices are repeating operate in a frequency range in which propagation is line of sight. Although the receiver which demodulates the signal is very sensitive, the size of the range makes it difficult to receive signals from transmitters which might be carried by personnel who are in wooded areas very distant from the receiver or who are oriented very unfavorably relative to nearby obstructions and the ground itself. The goal of this experiment is to provide coverage in the distant parts of the range by placing these devices on existing towers where the line of sight paths from the transmitters to the translator and the path from the translator to the receiver are unobstructed (or less obstructed). However, for some locations on the range, transmissions may be received by more than one translator. As a result, the receiver will receive multiple copies of the same DSSS signal which are separated only slightly in time. Hence, it is to be determined through use and experimentation if the receiver can correctly receive and demodulate such closely spaced copies of the same signal.