

EXHIBIT #3 as part of
FCC FORM 442 – APPLICATION FOR NEW RADIO STATION UNDER PART 5 OF FCC RULES
– EXPERIMENTAL RADIO SERVICE (OTHER THAN BROADCAST)

submitted by ARTEMIS, INC. File # 0342-EX-PL-2009

This exhibit provides: MODULATING SIGNAL DESCRIPTION

The proposed radiating device is a synthetic aperture radar (SAR) system being developed by ARTEMIS, INC. For the remainder of this document, it will be referred to as “SlimSAR-Ku,” which is an ARTEMIS, INC. internal designation for this project. This document describes the SlimSAR-Ku transmitted waveform.

Transmitted Signal

The SlimSAR-Ku transmits a continuous wave (CW) which is frequency modulated by a periodic “chirp” -- so called because the frequency increases linearly over the period of the modulating chirp. Mathematically, one period of the transmitted waveform may be expressed as

$$s_t(t) = A_0 \cos \left[2\pi \left(f_0 t + \frac{k_r}{2} t^2 \right) \right]$$

where A_0 is a constant amplitude, f_0 is the starting frequency of the chirp and k_r is the chirp rate. The chirp rate is defined as the ratio of the bandwidth of the transmitted signal to the period of the chirp, or $k_r = B/T_p$. In other words, the transmitted signal is a sinusoid whose frequency begins at either $f_0 = 15780$ MHz or $f_0 = 16759.4$ MHz and linearly increases to $f_1 = 16540.6$ MHz or $f_1 = 17520$ MHz over a period of time T_p , which is arbitrary. The signal is repeated with no break. Illustration 1 shows a frequency versus time spectrogram of the SlimSAR-Ku transmitted signal.

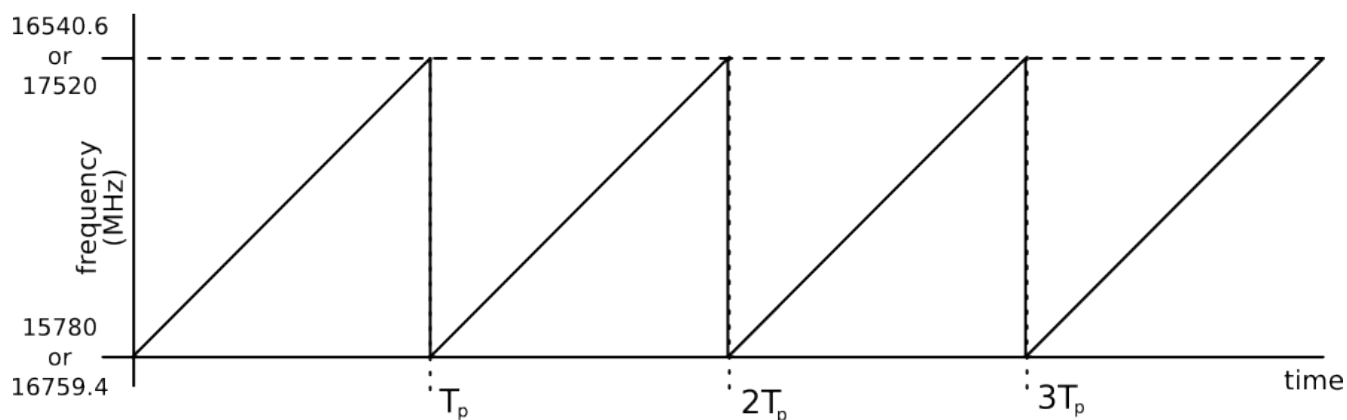


Illustration 1: Spectrogram of the SlimSAR-Ku transmitted signal.