EXHIBIT #3 for Modification of License WF2XCV

submitted by ARTEMIS, INC. File # 0027-EX-ML-2013

MODULATING SIGNAL DESCRIPTION

Transmitted Signal

The SlimSAR transmits 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 a low frequency and linearly increases to the upper bound of the occupied bandwidth during the pulse length, T_p , which is calculated based on aircraft altitude and desired radar performance. The signal is repeated at the pulse repetion frequency (PRF) which is on the order of 800 Hz for the X-Band Sea Dragon application. Pulse length varies from approximately 4 microseconds for low-altitude operation to nearly 40 microseconds in high-altitude operation. The transmit duty cycle of the system is less than 5% which greatly reduces the average effective radiated power. While the peak ERP for the high-gain, high-power system is 30 kW, the average ERP is 1.5 kW or less. Additionally, the spread-spectrum nature of the transmitted signal minimizes the chance of harmful interference to other narrow-band users of the spectrum.