

## TDOA Signal Generation

Generates data for simulated signals received at 3 distant receivers for performing TDOA computations

Mark Patten  
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### Notes:

Define sample rate= 1 MHz, therefore simulation time is in microseconds  
Generate FM signal at baseband modulated w/ gaussian noise filtered to 0.2 (200 kHz) BW  
Each sample corresponds to approx. 300 meters at best geometry  
For 30 meters TDOA accuracy, need to determine time delay with approx. 0.1 sample rate resolution:

Estimate TDOA accuracy using CRLB equation  $t = 1/(B_n B_s T \text{ SNR})$   
 $B_n = B_s = 200 \text{ kHz}$ ,  $\text{SNR} = 10^{(20 \text{ dB}/20)} = 10$ , desired  $t = 0.1/1 \text{ MHz} = 100 \text{ nsec}$ ,  
therefore  $T = 1/[(1e-7)(2e5)(2e5)10] = 4e-4$  seconds, 400 samples @ 1 MHz

