



### Doppler Option for Fiber Optic Delay Lines.

EOX delay lines are well suited as target simulators for many radar applications. The following write-up describes a method for adding Doppler to the radar transmit pulses.

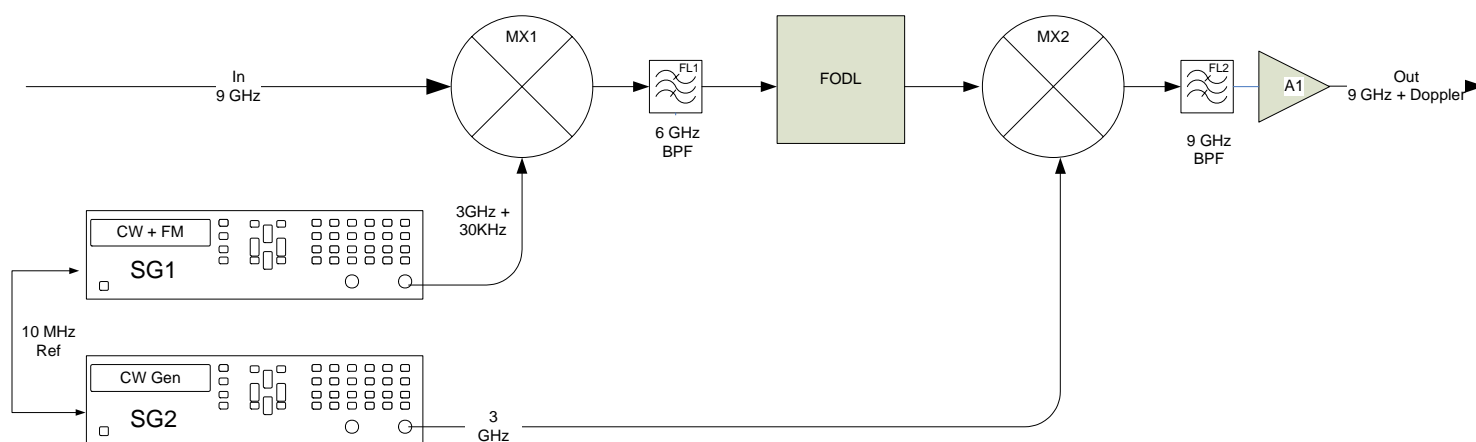
In addition to RF components described below, two RF signal generators will be required, ( for dynamic Doppler addition, one of which needs to have internal arbitrary waveform generator (Aeroflex 3410) capable of FM-ing the output signal). These units are referenced locked using the same clock (10/100 MHz). For this explanation assume a fixed 30KHz Doppler frequency.

### Doppler Insertion Components Described:

- Mixer # 1 is used to down-convert the 9 GHz Radar pulse to about 6,000,030,000 Hz by using the doppler added 2,999,970,000 Hz signal generator.
- Band Pass Filter #1 is used to limit mixing products to the FODL.
- Output of FODL goes through Mixer 2 which mixes the delayed Doppler signal with a 3.0GHz CW Signal from Generator #2 produces the 9GHz output frequency.
- BP Filter #2, removes unwanted mixing products prior to optional gain compensation Amplifier 1.
- Output of the system is the customers radar pulse with 30KHz Doppler added.

## Delay Line with added Doppler

Approach 1 for discussion purposes



#### Drawing Information

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#### Notes:

1. Sig Gen #1 Adds FM to signal simulating Doppler.
2. Sig Gen #2 is just a CW source and is phase locked to #1

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