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AN-0006

14 Real World Applications for Microwave Delay Lines.

General – FODL (Fiber Optic Delay Line) Technology. Eastern Optx delay lines take advantage of the low insertion loss of fiber optic cables. We AM modulate a 1550nm laser with the users microwave signal, put this Lightwave signal through precise lengths of fiber optic cable and recover the microwave at the output of the FODL.

Basic Specs – frequency range up to 40GHz, delay range to hundreds of usec, discreet (single delay), progressive where multiple delays are placed in series and each delay can be switched in/out via front panel or remote programming,

1. General Purpose Test – There are many applications where a test or engineering lab might like to have the ability to delay a microwave signal. Most common is target simulation.
2. Propagation simulation – Eastern OptX delay lines have built in programmable attenuators that are programmed to set attenuation levels based on standard “range formula”.
3. Up to 8X8 full duplex radios simultaneously communicating over programmable delay ranges of up to 170 miles.
4. Target Simulation – fixed or moving with dynamic Doppler frequency addition.
5. Scenario generation – Flight path, dynamic Doppler, rate of climb, decent can all be programmed into our scenario generator.
6. Replaces outdoor range testing – repeatable, secure and accurately allows for range testing to be done under controlled, indoor conditions.
7. Radar Altimeter Calibration / Verification. Accurate and repeatable altitudes to 5 digits allow user to have confidence the altimeters display. Extremely usefull in vertical landing aircraft, missiles and UAV’s.
8. Moving Targets. Simulated flight patterns with moving targets up to 600mph have been delivered with dynamic Doppler addition taking into account for all angular changes of moving aircraft in relation to the radar.
9. Transponder testing at various range distances. Bidirectional full duplex delay lines for testing dynamic range of MW transponders. Range formula control of insertion loss simulates real world environment. A second variable attenuator allows for additional loss simulation due to weather conditions.
10. EW/ECM - Capture, delay and retransmit hostile signals effectively jamming the enemy’s radar with his own signal
11. Multipath – all applications where MW are propagated through the air will suffer from the effects of multipath. The Eastern OptX multipath simulation products provide up to 8 dynamically variable time and amplitude paths combined at the output.
12. Radar Decoy Emulation – Eastern OptX Doppler Generator can be used along with our delay lines to provide not just variable range but also Doppler shifts associated with engine blade rotation.

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13. Radar repeater. Battery operated systems with circulator and horn antenna can be used in lieu of bore site towers with the advantage of being portable. Optional GPS available for precise locations reporting of the repeater.
14. Air Traffic Control Radar range simulation. Provides multiple fixed targets at various ranges for validation of Radars accuracy.

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