

SBIR 06.2 PHASE I - AWARD DETAILS	
ORGANIZATION	CERDEC
TOPIC NUMBER	A06-103
CONTRACT NUMBER	
YEAR OF AWARD	
AWARD START DATE	
AWARD COMPLETION DATE	
PROPOSAL NUMBER	A062-103-2536
TITLE	A Novel low-noise, fast-tuning, wideband Tuner based on Tunable Opto-Electronic Oscillator
PROJECT MANAGER	Jack Salerno (781) 935-1200 jsalerno@agiltron.com
COMPANY	Agiltron Corporation 15 Cabot Road Woburn MA 01801-1003 Minority Owned: No Veteran Owned: No Number of Employees: 50
KEYWORDS	Opto-electronic Oscillator, Electronic Warfare (EW), Photonic RF Filter, Low Phase Noise, Fast-Tuning
ABSTRACT	Leveraging Agiltron's recent breakthrough in manufacturing low cost fiber optic digital delay lines and variable optical attenuators as well as the drastic improvement in cost and performance of commercial optical components, and the leadership of M/A-COM in the ELINT tuner, we propose to develop a low-noise, fast-tuning, wideband tuner based on opto-electronic oscillator and photonic tunable high-Q wideband RF filter for the US Army's EW applications. Agiltron proposes to develop a novel photonic microwave signal generator that will replace the conventional electronic generator in established tuner designs from M/A-COM. The proposed approach provides a tunable source with ultra-high purity signal from 20 MHz to 20 GHz, potentially up to 75GHz for fast tuning. The practicality of such an opto-electronic oscillator module including high-Q tunable filter will be demonstrated in this program. A working testing tuner module is targeted in Phase I for the evaluation of the technical approach, and a low phase noise (<-140dBc/Hz at 10 KHz offset), fast tuning tuner module will be demonstrated in Phase II. Success in this program will significantly reduce mission cost and increase performance and utility of future radar systems.
BENEFITS	The primary military use will be in radar, communication, RF/microwave measurement, electronic warfare antenna signal processing systems. Wideband applications including Electronic Countermeasures (ECM), radar, tunable microwave filtering and high spectral purity tunable source are key military insertions for this technology. The new class of high performance tunable RF source and fast tuner will enable advanced radar, electronic warfare (EW), and communications to support global intelligence, surveillance, and

	reconnaissance (ISR), global strike, and homeland security capabilities. One potential application of such delays is the construction of packet-switched optical networks. Variable optical delay can also be used to control the phase for phased array antenna, as the speed migrates to 75 GHz.
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