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(12) **United States Patent**  
**Aker et al.**

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(54) **DOPPLER COMPLEX FFT POLICE RADAR WITH DIRECTION SENSING CAPABILITY**

(56) **References Cited**

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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This patent is subject to a terminal disclaimer.

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(57) **ABSTRACT**

**Related U.S. Application Data**

(63) Continuation of application No. 10/005,553, filed on Nov. 7, 2001, now Pat. No. 6,646,591, which is a continuation of application No. 09/690,179, filed on Oct. 16, 2000, now abandoned, which is a continuation of application No. 09/120,542, filed on Jul. 21, 1998, now Pat. No. 6,198,427.

A series of police Doppler single mode radars and a multi-mode police Doppler radar, all with direction sensing capability are disclosed. A quadrature front end which mixes received RF with a local oscillator to generate two channels of Doppler signals, one channel being shifted by an integer multiple of 90 degrees in phase relative to the other by shifting either the RF or the local oscillator signal being fed to one mixer but not the other. The two Doppler signals are digitized and the samples are processed by a digital signal processor programmed to find one or more selected target speeds. Single modes disclosed are: stationary strongest target; stationary, strongest, fastest target; stationary, strongest and fastest targets; moving, strongest, opposite lane; moving, strongest, same lane; moving, fastest, opposite lane; moving, fastest and strongest, opposite lane; moving, fastest, same lane; moving fastest and strongest, same lane.

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(52) **U.S. Cl.** ..... 342/114; 342/104; 342/115; 342/147; 342/192; 342/194; 342/195; 342/196

(58) **Field of Classification Search** ..... 342/104, 342/105, 107, 109, 113–115, 118, 127, 133, 342/146, 147, 175, 192–197; 375/222; 340/939

See application file for complete search history.

**12 Claims, 37 Drawing Sheets**

