

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

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(54) **WIDEBAND FREQUENCY DOMAIN REFLECTOMETRY TO DETERMINE THE NATURE AND LOCATION OF SUBSCRIBER LINE FAULTS**

|                 |         |                    |         |
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(75) Inventors: **David E. Dodds**, Saskatoon (CA);  
**Bernardo Celaya**, Saskatoon (CA);  
**Terence Monteith**, Saskatoon (CA)

(73) Assignee: **Telecommunications Research Laboratory**, Edmonton, Alberta (CA)

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*Primary Examiner*—Ronald Abelson

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(74) *Attorney, Agent, or Firm*—Adrian D. Battison; Michael R. Williams; Ryan W. Dupuis

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(57) **ABSTRACT**

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**H04J 3/14** (2006.01)

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(58) **Field of Classification Search** ..... None  
See application file for complete search history.

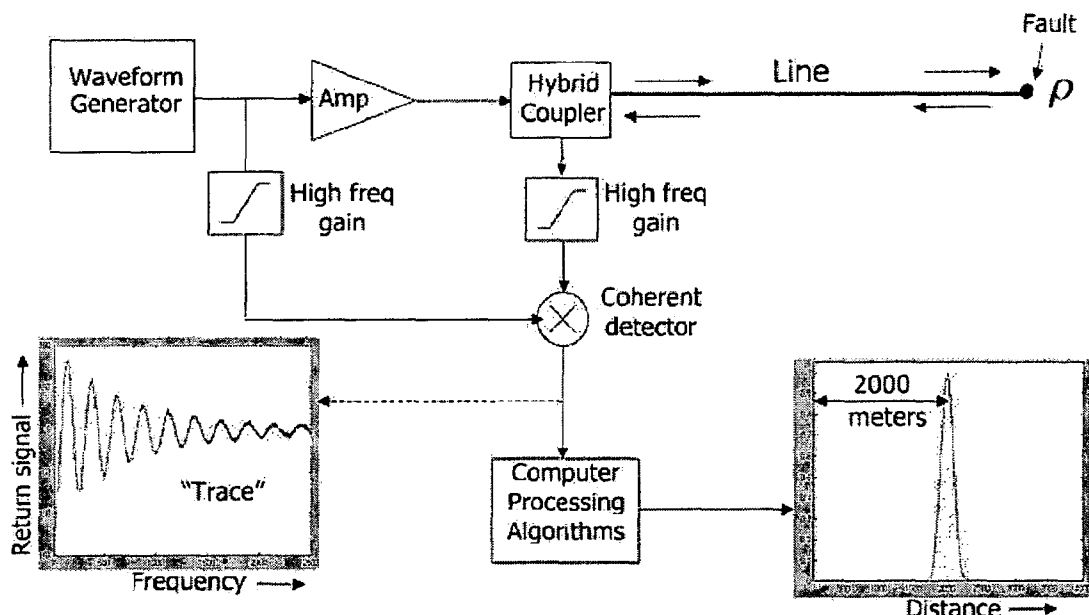
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A technique for estimating distances and the nature of irregularities and faults on a telephone subscriber line is disclosed. Reflected test signals are measured as a function of frequency. The measurements are compensated for variable propagation velocity and variable line attenuation and then weighted before transformation with the Fourier transform. The amplitude and phase of peaks in the spectral domain identify the distances to the irregularities and the magnitude and phase angle of the reflection coefficients.

**15 Claims, 6 Drawing Sheets**



**Instrument Block Diagram**