

**THREE-PROBE REFLECTOMETER ALGORITHM FOR  
CALCULATION OF COMPLEX REFLECTION COEFFICIENT  
OF LIQUIDS**



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## ABSTRACT

This paper describes a technique for measurement of complex reflection coefficient of liquids using slotted line (implemented in waveguide form). In order to make precision measurement of magnitude and phase of reflection coefficient, the Three-Probe Reflectometer Algorithm has been used (which was implemented on the personal computer using Visual Basic 6 programming). The setup between hardware and software will provide a real-time measurement system of complex reflection coefficient.

The measurement of magnitude and phase of reflection coefficient by the prototype instrument were compared with standard calculated values from Maple programming in order to find the correlation between them.

The experimental tests have confirmed that the prototype instrument is able to yield measurement accuracies of within  $\pm 0.1$  for magnitude and  $\pm 5^\circ$  for phase. By adding two more additional probes this prototype measurement system can be used as an automated instrument for measurement of dielectric properties of the material under test.

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