Abstracts

Dielectric Measurement of Reference Liquids and Tissue Equivalent Materials with Non-Invasive Sensors

A.W. Preece, R.H. Johnson, A.A. Craig, J.L. Green, R.N. Clarke and A.P. Gregory. "Dielectric Measurement of Reference Liquids and Tissue Equivalent Materials with Non-Invasive Sensors." 1994 MTT-S International Microwave Symposium Digest 94.2 (1994 Vol. II [MWSYM]): 1061-1064.

Dielectric permittivity and conductivity measurements are compared for a standard 14 mm diameter open-ended coaxial line sensor and similar calculable sensors fitted to cylindrical cells with defined sample diameters from measurements of complex reflection coefficient. These measurements are compared with results obtained from a resonant sensor. This is designed as a portable low-cost system, using measurements of resonant frequency and Q-factor (made under computer control) to avoid the requirement for a costly vector reflectometer. The resonant system is potentially the basis of an inexpensive portable measurement system. The standard sensor and sensors fitted with cells are traceable to UK National Standards and can be used to calibrate other systems such as the resonant sensor.

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