Abstracts

Radiometric Technique for Measuring Changes in Lung Water (Short Papers)

M.F. Iskander, C.H. Durney, T. Grange and C.S. Smith. "Radiometric Technique for Measuring Changes in Lung Water (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): 554-556.

In this paper, we describe a new approach to continuous, noninvasive monitoring of changes in lung-water content based on radiometry. It is shown theoretically, as based on a planar model of the lung, that a one-percent change in lung-water content corresponds to a 0.260-K change in brightness temperature, which is within the detection sensitively of available radiometers. Practicably, taking into account reflections at the tissue interfaces and attenuation in the chest wall, it is estimated that it is possible to detect a three to four-percent change in lung-water content. Initial experimental measurements at 1 GHz also have shown promising results. Some of the basic problems associated with the adaptability of the radiometric technique for clinical use have been identified and are discussed along with suggested solutions.

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