Abstracts

A Local Field Study of a Water-Immersed Microwave Antenna Array for Medical Imagery and Therapy

T.C. Guo, W.W. Guo and L.E. Larsen. "A Local Field Study of a Water-Immersed Microwave Antenna Array for Medical Imagery and Therapy." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 844-854.

A water-immersed microwave array system for medical imaging is described, and a theoretical analysis of its Iocal field pattern is presented. The theoretical study also applies to similar systems for medical therapy purposes. It is shown that, using a technique of phase and amplitude conjugations, a satisfactory three-dimensional focusing for targets located in the neighborhood of the array may be achieved. The focusing resolutions for transverse and Iongitudinal directions are approximately lambda/2 and lambda , respectively, where lambda is the wavelength in the dielectric. By increasing the element spacing of the array, the resolutions can be as good as 5.3 and 11.7 mm, respectively, at the operating frequency of 3 GHz.

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