Abstracts

Phase-Controlled Circular Array Heating Equipment for Deep-Seated Tumors: Preliminary Experiments

G. Sato, C. Shibata, S. Sekimukai, H. Wakabayashi, K. Mitsuka and K. Giga. "Phase-Controlled Circular Array Heating Equipment for Deep-Seated Tumors: Preliminary Experiments." 1986 Transactions on Microwave Theory and Techniques 34.5 (May 1986 [T-MTT] (Special Issue on Phased Arrays for Hyperthermia Treatment of Cancer)): 520-525.

This paper presents some preliminary results on the development of a circular phased-array equipment for heating deep-seated tumors. It is shown that radiators having sharp directivity are needed to realize excellent focusing of SAR. Moreover, moment method calculations indicate that linearly polarized helical radiators inversely wound with double wires possess the desired directivity and the near field pattern. Field patterns were measured in phantom (plastic cylinders containing saline water) with a circular array formed by four pairs of azimuthally positioned radiators. Excellent focusing of SAR was observed. The ratio of valley to peak value was 0.74. Steering of SAR maximum by phase control was observed and the distance of movement coincided with that estimated from phase variation.

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