Abstracts

A Compact Light-Weight Gaussian-Beam Launcher for Microwave Exposure Studies

P.S. Neelakantaswamy, K.K. Gupta and D.K. Banerjee. "A Compact Light-Weight Gaussian-Beam Launcher for Microwave Exposure Studies." 1978 Transactions on Microwave Theory and Techniques 26.9 (Sep. 1978 [T-MTT]): 665-666.

A new type of compact light-weight Gaussian-beam launcher for producing a focused-microwave exposure field in biological experiments is described. This launcher is identical to the structure described by the authors elsewhere, except that a simple circular waveguide aperture, instead of a corrugated pipe is used to illuminate a dielectric sphere lens with the result that a considerable weight and size reduction of the launcher is achieved. The proposed structure consists of a simple cylindrical waveguide excited with a balanced mixture of complementary modes and the diffracted field due to this waveguide aperture is made to illuminate a dielectric sphere (lens). It is shown that a near-circular Gaussian beam is then pruduced in the image space of the sphere with a high focusing factor. Design details, theoretical calculation, and experimental results concerning a practical launcher are presented. Suitability of this compact structure for diathermy applications at a frequency of 2450 MHz is mentioned.

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