Abstracts

Open-Ended Circular Waveguide with a Curved Corrugated Disk at its Aperture as a Diathermy Applicator (Short Papers)

P.S. Neelakantaswamy and A. Rajaratnam. "Open-Ended Circular Waveguide with a Curved Corrugated Disk at its Aperture as a Diathermy Applicator (Short Papers)." 1982 Transactions on Microwave Theory and Techniques 30.11 (Nov. 1982 [T-MTT]): 2005-2008.

A direct-contact type of diathermy applicator consisting of an open-ended circular waveguide loaded with a curved (concave) corrugated disk at its aperture is described. The waveguide is dimensioned to support the dominant TE/sub 11/ mode. Performance characteristics of this applicator are compared with those of an identical structure having a flat corrugated disk at the aperture rim. Also, the superiority of the proposed applicator in respect of improved beam symmetry and reduced edge-diffraction effect (leakage) is indicated. Experimental results on the near-field distributions in the principal planes of a test applicator are presented and are compared with relevant results obtained from a flat-disk loaded applicator of identical dimensions. Also, to get improved input VSWR performance (VSWR less than 1.6), off-setting the corrugated disk (flat or curved) behind the aperture is suggested and is also demonstrated experimentally. Furthermore, as a design flexibility and to simplify fabrication, filling the corrugation grooves with a suitable dielectric material is suggested and explained. Lastly, the feasibility of using a simple corrugated circular waveguide as an alternative direct-contact type of applicator is discussed.

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