DESIGN AND SIMULATION OF A COMPACT RADIATING SYSTEM FOR HIGH POWER MICROWAVES IN THE 4 TO 6 GHZ RANGE

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ABSTRACT

As high power microwave technologies have advanced, demands have called for sources and radiators to become more compact. The University of Missouri has designed and simulated a compact radiating system for a compact virtual cathode oscillator. The radiating system has been developed to efficiently radiate high power microwaves in the 4 to 6 GHz range from an input mode of TE_{11}. The system produces a radiation pattern with a directivity of approximately 10 to 15 dB. Utilizing finite element modeling techniques, the behavior of these high power electromagnetic waves can be accurately described inside the radiating system as well as in the near and far field regions. These techniques in turn improve the quality of high power experiments performed on the compact structure. Presented are the modeling results of the electromagnetic parameters in the compact structure, in the near, and in the far field regions.