Abstracts

Field Theory Design of a Corrugated Septum OMT

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This paper presents a rigorous design method for corrugated septum orthomode transducers (OMTs) which combine the advantage of the stepped septum structure compactness with that of the phase matching potential of corrugated waveguide polarizers. Based on the modal scattering matrix method, the design takes into account the influences of both, the finite septum thickness and the higher order mode interaction at all discontinuities. Computer optimized design data are given for a Ku-band waveguide corrugated septum polarizer achieving a return loss of more than 20dB together with 90°+ 0°/-3° differential phase shift for about 10% bandwidth. The theory is verified by own measurements and those of other authors.

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