Abstracts

A Range of 2 and 1 Millimeter Waveguide Components

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A variety of components have been made in wave-guides RG136 and RG139 by techniques which include the use of extruded waveguide, copper-gold eutectic bonding, precision milling and, in particular, of electroforming. Performances of several RG136 components are given, together with the loss in RG139 waveguide and in oversized guide tapered from RG139. Ferrite devices, including isolators, 3 port switches and amplitude modulators, using Ferramic R1, have been quite successful. A typical isolator has an insertion loss of 1 ¼ db and an isolation of 30 db, magnetically tunable over at least 133 to 145 Gc. An RG136 slotted line, at a coupling ratio of 20 db, has an inherent mismatch of 1.05 with good reproducibility over the 2 ½ wavelengths traverse of the one-mil Wollaston wire probe. The main waveguide is milled and broached from brass and gold plated. Electroformed matched hybrid tees in RG136 split power to ±¼ db, have a discrimination of 30 db, a loss of 1 ¼ db and a match looking into any arm of better than 1.4. Rotary and flap-type attenuators, phase shifters, variable short circuits, matching units, crystal diodes and their mounts, bolometers and dry calorimeters, etc., have been made, and for transmission over moderate distances the vastly overmoded TE/sub 01/ waveguide was used.

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