Abstracts

30-GHz-Band Periodic Branching Filter Using a Traveling-Wave Resonator for Satellite Applications

H. Kumazawa and I. Ohtomo. "30-GHz-Band Periodic Branching Filter Using a Traveling-Wave Resonator for Satellite Applications." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 683-687.

A periodic branching filter consisting of three directional couplers, a traveling-wave resonator, and connecting waveguides is used as a band diplexer with a broad 3-dB bandwidth and sharp selectivity for a satellite communication system application. This paper describes a theoretical analysis, a design method, and experimental results for this periodic branching filter. The fabricated periodic branching filter for separating the 30-GHz frequency band 27.0-29.2 GHz into two subbands of equal 3-dB bandwidth of about 900 MHz has sharp frequency selectivity. Measured branching losses and relative delay time are 0.35-0.5 dB and 0.4 ns, respectively, within each frequency subband (f /sub 1,2/ /spl plusmn/ 300 MHz). The 96-g diplexer is made of thin-walled aluminum. Its size is 15 x 9 x 4 cm.

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