Abstracts

Wide-band low-loss high-isolation microstrip periodic-stub diplexer for multiple-frequency applications

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This paper introduces a three-port microstrip multifrequency diplexer used in a phased-array transceiver system that employs band-stop filters with open-circuited stubs for band selection and separation. The diplexer is designed to take 10, 12, 19, and 21 GHz into port 1 and to separate 10 and 19 GHz to port 2 and 12 and 21 GHz to part 3 with minimal dispersion. The insertion loss for each frequency varies from 0.4 to 3.4 db and the return loss is better than 10 dB. The isolation between channels at the four frequencies is greater than 50 dB. Each passband created between adjacent stopbands has a bandwidth over 1 GHz. The microstrip diplexer is designed using periodic stubs that collectively have the advantages of low insertion loss, high isolation and rejection, wide-band performance on each channel, and easy fabrication. This type of diplexer has many applications in multifrequency transceivers for communication systems.

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