Abstracts

Micromachined Self-Packaged W-Band Bandpass Filters

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Experimental and theoretical results are presented for membrane supported W-band bandpass filters which utilize silicon micromachining technology to create self-packaged, shielded circuits. A coupled line shielded microstrip implementation of a 5-element 0.5 dB equal ripple Chebyshev filter achieves a minimum insertion loss of 3.4 dB with a 6.1% bandwidth centered at 94.7 GHz. The measured filter performance shows very sharp cutoff with out of band attenuation better than 25 dB and input return loss better than 8 dB. Results are also presented for a 5-element filter that achieves a minimum insertion loss of 2.2 dB with an 11.3% bandwidth centered at 94.7 GHz, and a 3-element filter with 1.3 dB insertion loss and 16.4% bandwidth at 94.9 GHz. Efforts to model filter performance using commercially available software and FDTD techniques are discussed.

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