Abstracts

Dual-mode helical resonators

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High performance and compact size are the most important criteria in filter-based products for satellite communication systems. Succeeding the superconducting and dielectric resonators, the conventional single-mode helical resonator ranks favorably on its high unloaded-Q per volume. Improvement of the performance has been demonstrated by operating the helical resonator at a higher order (n>0) mode. In addition, these resonators can also be fabricated onto a high dielectric-constant material to further reduce the size of the filter structure. Detailed design considerations of the dual-mode wire-wound helical resonator filter, as well as implementation of the dual-mode dielectrically loaded helical resonator filter structure, are presented in this paper.

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