Title (en)

THERMALLY-COMPENSATED MICROWAVE RESONATOR UTILIZING VARIABLE CURRENT-NULL SEGMENTATION

Publication

EP 0155296 B1 19900307 (EN)

Application

EP 84903381 A 19840604

Priority

US 50957283 A 19830630

Abstract (en)

[origin: WO8500698A1] In a microwave resonator (100 in Fig. 1), a variable cavity-wall segmentation (105) along the location of a propagational current null is employed for thermalcompensation purposes by utilizing it in conjunction with supplemental mechanisms (170, 175) which operate to counteract thermally-induced variations in the resonator's characteristic geometry. Because dimensional variations at a current null will have minimum impact on resonator coupling parameters, a variably-configured current-null segmentation serves in a minimal-impact fashion to absorb those thermally-induced dimensional variations which occur transverse to the null. Of the three specific mechanisms disclosed for variational counteraction in the typical context of a resonator having both longitudinal and transverse extent with respect to a propagational axis, the first is a thermally-invariant assembly which provides thermal stabilization by inhibiting variations in the resonator's characteristic longitudinal extent. The second is a thermally-responsive structure (470 in Fig. 4) configured to provide thermal compensation by affirmatively introducing longitudinal variations which are inversely proportional to otherwise-uncompensated transverse variations. The third mechanism, which may be employed in conjunction with either of the other two and which may take the form of thermally-invariant inserts configured as part of the resonant cavity's longitudinal walls, provides a further degree of thermal stabilization by inhibiting thermally-induced variations in the resonator's characteristic transverse dimensions.

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