Abstracts

Frequency Stability of L-Band, Two-Port Dielectric Resonator Oscillators (Dec. 1987 [T-MTT])

M.J. Loboda, T.E. Parker and G.K. Montress. "Frequency Stability of L-Band, Two-Port Dielectric Resonator Oscillators (Dec. 1987 [T-MTT])." 1987 Transactions on Microwave Theory and Techniques 35.12 (Dec. 1987 [T-MTT] (1987 Symposium Issue)): 1334-1339.

Dielectric resonator oscillators operating at 1.5 GHz and 2.0 GHz, based on a two-port resonator design incorporated into a basic feedback loop oscillator configuration, were evaluated and show state-of-the art, close-to-carrier phase noise performance. Typically, at 1-kHz carrier offset frequency the single-sideband phase noise levels were -130 dBc/Hz and -120 dBc/Hz for the 1.5-GHz and 2.0-GHz oscillators, respectively. Vibration sensitivity was also investigated and the resonators show fractional frequency changes per g in the range of 10/sup -7/ to 10/sup -9/ for the 1.5-GHz and 2.0-GHz designs. Finally, measurements were performed to characterize both the static and dynamic temperature sensitivities of the 2.0-GHz dielectric resonator oscillator design. The static temperature coefficient was found to be approximately -1.40 ppm/°C, while the dynamic temperature coefficient was nominally -3000 ppm/°C/s, at 27.5°C.

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