Abstracts

Quasi-Optical Stabilisation of Millimetre Wave Sources

G.M. Smith and J.C.G. Lesurf. "Quasi-Optical Stabilisation of Millimetre Wave Sources." 1992 MTT-S International Microwave Symposium Digest 92.2 (1992 Vol. II [MWSYM]): 699-702.

A novel tunable quasi-optical scheme is presented co provide stabilisation of both fundamental and second-harmonic oscillators at W-band (75-110GHz), with excellent isolation from the load. A reduction of phase noise by more than 40dB on free-running Gunn oscillators at 90GHz is demonstrated with SSB phase noise better than - 120dBc/Hz at 100kHz away from the carrier. This stabilisation scheme uses external high Q transmission and reaction stabilising cavities, where coupling is achieved using beam-splitters with low power loss. The technique can be directly applied to improve the performance of existing oscillators and is easily applicable at higher and lower frequencies. When used in conjunction with active locking it can provide state of the art performance.

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