Abstracts

New Microwave-Frequency Synthesizers that Exhibit Broader Bandwidths and Increased Spectral Purity (Dec. 1974, Part II [T-MTT])

P.G. Tipon. "New Microwave-Frequency Synthesizers that Exhibit Broader Bandwidths and Increased Spectral Purity (Dec. 1974, Part II [T-MTT])." 1974 Transactions on Microwave Theory and Techniques 22.12 (Dec. 1974, Part II [T-MTT] (1974 Symposium Issue)): 1246-1254.

A superior microwave-frequency synthesis technique is treated in this paper, emphasizing improved spectral purity with octave bandwidths in the microwave region. The microwave-frequency synthesizer is discussed in two sections each corresponding to a system unit. The driver unit specifications are analyzed in the first section, showing its voltage-controlled crystal oscillator (VCXO) L(f) output to be -130 dBc/Hz at 10 kHz. In the second section, the driver VCXO output is translated in the microwave unit to the final X-band frequency by means of a phase-locked loop. An analysis of this phase-locked loop, as described in this paper, shows the final L(f) equal to -101 dBc/Hz at 10 kHz. Since a worst case situation was assumed, the final L(f) is quite superior for octave bandwidth microwave-frequency synthesizers.

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