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NASA TECH BRIEF

Improved Frequency Divider Employs Transistor Avalanche Effect

A frequency divider circuit that has been developed can be synchronized over a much wider input control frequency range, has greater phase stability, and is less sensitive to temperature changes than conventional synchronized oscillators used to perform frequency division. The new circuit depends on the avalanche breakdown mode of operation of transistors. Typical characteristics of a divider circuit using the synchronized avalanche oscillator design for a frequency ratio of 57/221 are:

Input frequency, 21.9792 MHz
Output frequency, 5.6688 MHz
Bandwidth (controlled by crystal filter), ±33 kHz (−1 db)
Lock range, > 2 percent
Phase instability, approximately 0.01 deg rms

Note:

Inquiries concerning this circuit may be directed to:

Technology Utilization Officer
NASA Pasadena Office
4800 Oak Grove Drive
Pasadena, California 91103
Reference: B67-10575

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

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Category 01