Abstracts

Superconductive Digital Instantaneous Frequency Measurement Subsystem (Dec. 1993 [T-MTT])

G.-C. Liang, C.-F. Shih, R.S. Withers, B.F. Cole, M.E. Johansson and L.P. Suppan, Jr.. "Superconductive Digital Instantaneous Frequency Measurement Subsystem (Dec. 1993 [T-MTT])." 1993 Transactions on Microwave Theory and Techniques 41.11 (Dec. 1993 [T-MTT] (1993 Symposium Issue)): 2368-2375.

A five bit high-temperature superconductive digital instantaneous frequency measurement (DIFM) subsystem has been constructed for the determination of the frequency of unknown signals over a 500 MHz bandwidth, centered on 4 GHz, with a resolution of ±7.8 MHz. The subsystem contains a cryogenic section with five discriminator modules utilizing superconductive delay lines, GaAs mixers, and power dividers. The subsystem also has a room temperature GaAs limiting amplifier and a silicon postprocessor. With a single tone CW input between -40 dBm and +10 dBm, the frequency quantization boundaries of the subsystem are, on average, 3.1 MHz from their design values. This system demonstrates the potential system level application of high-temperature superconductive electronics in instrumentation, communication, radar, and electronic warfare.

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