Abstracts

Ultra-Wideband MMIC Active Power Splitters with Arbitrary Phase Relationships

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Novel MMIC active power splitters, which allow arbitrary phase division over wide frequency ranges exceeding an octave in bandwidth, are proposed. An FET's inherent phase inversion properties together with phase adjustment circuits, e.g., common drain FETs followed by phase-shift transmission lines, can be successfully combined for broadband, arbitrary phase division. As an example of this technique, an MMIC active quadrature splitter has been designed and fabricated in a 1.1 mm x 0.7 mm chip area. A phase error of less than 5° with a magnitude imbalance of less than 1 dB has been demonstrated over a double-octave frequency range of 7.2-21.6 GHz. The MMIC active power splitter promises to make possible miniaturized, full MMIC signal processing components.

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