Gysel Power Divider With Efficient Second and Third Harmonic Suppression Using One Resistor

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Gysel Power Divider With Efficient Second and Third Harmonic Suppression Using One Resistor

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Abstract

A Gysel power divider/combiner with the second and third harmonic suppression using one resistor is proposed. Three open-circuit stubs are used to suppress the second and third harmonics. To calculate the values of the design parameters, the closed-form design equations are derived. A sample power divider is designed at 1 GHz to verify the design procedure. The measured results are nearly in agreement with the simulation results. The proposed Gysel power divider provides a high power-handling advantage over Wilkinson power divider. Moreover, it has a fractional bandwidth of 30% and harmonic suppression of 25 and 35 dB at the second and third harmonics, respectively.

Keywords: Gysel power divider, harmonic suppression, high power-handling capability, isolation resistor

1. Introduction

Power dividers and combiners are absolutely essential components in various communication systems including modulators, power amplifiers, feeding networks of antenna arrays, mixers, etc [1],[2],[3]. The Wilkinson power divider (WPD) [4],[5] is one of the most commonly reported in-phase power dividers because of its good electrical characteristics, including acceptable frequency

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