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PII: S1434-8411(17)31495-4  
DOI: <https://doi.org/10.1016/j.aeue.2018.03.011>  
Reference: AEUE 52264

To appear in: *International Journal of Electronics and Communications*

Received Date: 16 June 2017  
Accepted Date: 6 March 2018

Please cite this article as: E. Moradi, A-R. Moznebi, K. Afrooz, M. Movahhedi, Gysel Power Divider With Efficient Second and Third Harmonic Suppression Using One Resistor, *International Journal of Electronics and Communications* (2018), doi: <https://doi.org/10.1016/j.aeue.2018.03.011>

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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

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## 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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