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## Compact wideband multi-section quarter-wave-like transformers

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## Abstract

This paper proposes a novel design technique of the compact wideband transformer based on the quarter-wave-like transformer (QWLT) theory and the approximate theory of small reflections (ATSR). The ATSR for multi-section QWLTs is applied for analysing characteristics of multi-section QWLTs. The prototypes of two-section QWLTs operating at 2.4GHz with 25% physical size reduction, comparing to that of the corresponding wideband multi-section quarter-wave transformer (QWT), are implemented. It is found that measured results are matched reasonably well with results of the ATSR for multi-section QWLTs. In addition, the two-section QWLT prototypes provide slightly less bandwidth compared to that of the corresponding wideband multi-section QWT.

## Keywords

**Author Keywords:** Approximate theory of small reflections; quarter-wave transformer; quarter-wave-like transformer; wideband multi-section transformer

**KeyWords Plus:** IMPEDANCE TRANSMISSION-LINES; POWER DIVIDERS; DESIGN; FILTERS

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# Compact wideband multi-section quarter-wave-like transformers

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## ABSTRACT

This paper proposes a novel design technique of the compact wideband transformer based on the quarter-wave-like transformer (QWLT) theory and the approximate theory of small reflections (ATSR). The ATSR for multi-section QWLTs is applied for analysing characteristics of multi-section QWLTs. The prototypes of two-section QWLTs operating at 2.4 GHz with 25% physical size reduction, comparing to that of the corresponding of wideband multi-section quarter-wave transformer (QWT), are implemented. It is found that measured results are matched reasonably well with results of the ATSR for multi-section QWLTs. In addition, the two-section

QWLT prototypes provide slightly less bandwidth compared to that of the corresponding wideband multi-section QWT.

KEYWORDS: Approximate theory of small reflections, quarter-wave transformer, quarter-wave-like transformer, wideband multi-section transformer

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## Disclosure statement

No potential conflict of interest was reported by the authors.

