

Supplementary Note to the PE42920 Evaluation Kit



Application Note 46

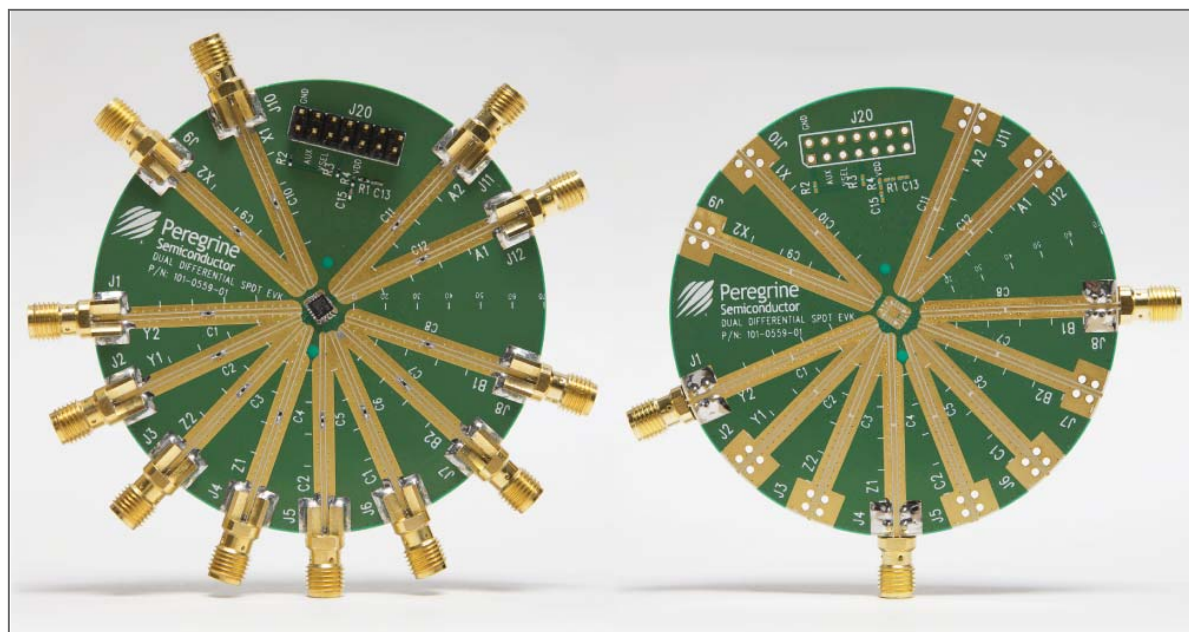
Summary

This application note serves as a supplement to the evaluation kit (EVK) instructions in the PE42920 product specification datasheet.

Introduction

The DDSPDT switch evaluation board was designed to ease customer evaluation of Peregrine's PE42920. The evaluation kit contains two boards, the main evaluation board and the de-embedder (**Figure 1**). The de-embedder is provided for thru-line calibration since the calibration structures are available on the bottom side of the main board.

Figure 1 • Main Evaluation Board and De-embedder for PE42920



PE42920 EVK Instructions

Please see the PE42920 product specification datasheet for operational details.

RF Connector Care

CAUTION! The RF connectors used on the PCB are 3.5 mm SMA high frequency, high quality launches. When connecting to 50Ω SMA cables, do not spin the cable. To avoid mechanical damage to the connector and PCB, when making an SMA connection, hold the connector body to minimize applied torque.

DC Blocking

The PCB is by default populated with 0Ω series resistors on the RF ports. Peregrine recommends the following broadband external SMA DC block:

Mini-circuits

BLK-89-S+ DC-BLOCK 50Ω

<http://www.minicircuits.com/pdfs/BLK-89+.pdf>

REMINDER: Use external DC blocking at all RF ports.

Measurement Procedure

To confirm common mode voltage on RF pins:

- 1) Connect external SMA DC blocks.
- 2) Connect ground to any header GND pin.
- 3) Connect voltage logic control.
 - a) Use AUX header pin (this is actually VSEL (PCB label is incorrect).
 - b) A jumper can be used, as described in the datasheet.
- 4) Connect voltage supply V_{DD} to header pin (2.93–3.63V).
- 5) Confirm common mode voltage is present on all RF pins ($V_{CM} = V_{DD} / 3$).

Calibration and Generation of Data

Reported insertion loss, isolation and return loss data was derived using THRU line scalar de-embedding. Differential data was generated from single ended measurements and mathematically converted to differential. DC insertion loss was calculated from R_{ON} measurements.

THRU Line

The main evaluation board and de-embedder can be used to calibrate a differential signal path. Any scalar de-embedding should account for the external DC blocks as well.

The return loss is <-20 dB at 8 GHz.

The insertion loss is 1.8 dB at 7 GHz.

C17 = C19 = 0Ω 0402 resistors (same as on the product evaluation RF traces).

Sales Contact

For additional information, contact Sales at sales@psemi.com.

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