



**PE4210/4220/4230**  
**EVALUATION KIT**  
**USER'S MANUAL**

6175 Nancy Ridge Drive, San Diego, CA 92121  
(858) 455-0660, Fax (858) 455-0770  
<http://www.peregrine-semi.com>

© Copyright 2000 Peregrine Semiconductor Corp. All rights reserved. Printed in the United States of America. No part of this publication may be reproduced, photocopied, stored in a retrieval system, or transmitted by electronic, mechanical or any other means without prior written permission of Peregrine Semiconductor Corp.

Peregrine Semiconductor Corp., the Peregrine logotype, and UTSi are registered trademarks of Peregrine Semiconductor Corp. PE4210, PE4220 and PE4230 are trademarks of Peregrine Semiconductor Corp.

Peregrine Semiconductor Corp. reserves the right to make improvements to the hardware, firmware or software described in this manual at any time and without notice. While the accompanying material has been carefully reviewed to insure the most accurate information possible, the data are not warranted for absolute accuracy or completeness and are subject to change without notification.

### **Peregrine Semiconductor Corp. Life Support Policy**

Peregrine Semiconductor Corp. products are not intended for use in life-critical situations, or as critical components in life-support devices or systems.

Life-support devices or systems are defined as devices or systems that are intended for surgical implant into the body, or that support or sustain life, and whose failure to perform when used in accordance with the instructions provided by the manufacturer, might result in injury to the user.

This device is intended for use only in a research and development environment. It has not been tested for compliance with FCC regulations regarding interference with radio frequency energy. It might cause harmful interference with radio communications. The user assumes responsibility for any interference caused by this device.

## **Applications Support**

If you have a problem with your evaluation kit or the software, or if you have applications questions call (858) 455-0660 and ask for applications support.

You may also contact us by fax or e-mail:

Fax: (858) 455-0770

E-Mail: [help@peregrine-semi.com](mailto:help@peregrine-semi.com)

## **FCC Labeling Requirement**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

## Table of Contents

Special Handling.....	4
DC Bias Requirements.....	4
Table 1: DC Input Bias Conditions .....	4
DC Connection.....	4
RF Connection and Attached Data.....	5
Table 2: RF Inputs.....	5
Calibration.....	5
Figure 1: 42XX SPDT RF Switch Evaluation Board.....	5
Switch Test Setup.....	6
Figure 2: Switch Test Setup.....	6

## Special Handling

The following precautions should be taken when handling these devices to prevent ESD/EOS damage:

- These devices are ESD sensitive and should be handled using acceptable ESD handling procedures.
- The PE4210, PE4220 & PE4230 were designed to operate with a 3.0V DC supply. Care should be taken to avoid operating the part below 2.7V and above 3.3V.
- RF power levels should be restricted to below 33dBm maximum available power for the PE4230, 23dBm for the PE4220 and 17dBm for the PE4210.
- Testing must be restricted to above 50MHz.

## DC Bias Requirements

The switch has three DC connections described in the following table.

When the device is powered up  $V_{DD}$  current should be between 20-40uA for the PE4230 and PE4220 and < 1uAmp for the PE4210.

Table 1 below describes how to DC bias the PE42XX RF Switch samples. Voltages should be restricted to 2.7-3.3 Volts for  $V_{DD}$ . Voltages should be 0 or  $V_{DD}$  for the Ctl voltage. All attached RF data is for  $V_{DD}$ =3.0Volts (nominal supply)

**Table 1: DC Input Bias Conditions**

DC Connection	Where	Voltage
$V_{DD}$	$V_{DD}$ on PCB	3.0Volts at (20-40uAmps for the 4230 and 4220...) (<1uAmp for the 4210)
Ctl	Ctl on PCB	3.0Volts for RFin to RF1 0.0Volts for RFin to RF2 (Less than 1uAmp)  RFin is J1 on PCB RF1 is J3 on PCB RF2 is J4 on PCB
GND	Even number pins on J2 (connector J2 is clearly marked on the PCB)	0.0Volts or ground.

## RF Connection and Attached Data

The 42XX switches have three RF connections. Table 2 below describes how to connect RF to the SMA connectors of the PCB. Note that RFin is connected to RF1 for Ctl= V<sub>DD</sub> and RFin is connected to RF2 for Ctl=0.0Volts.

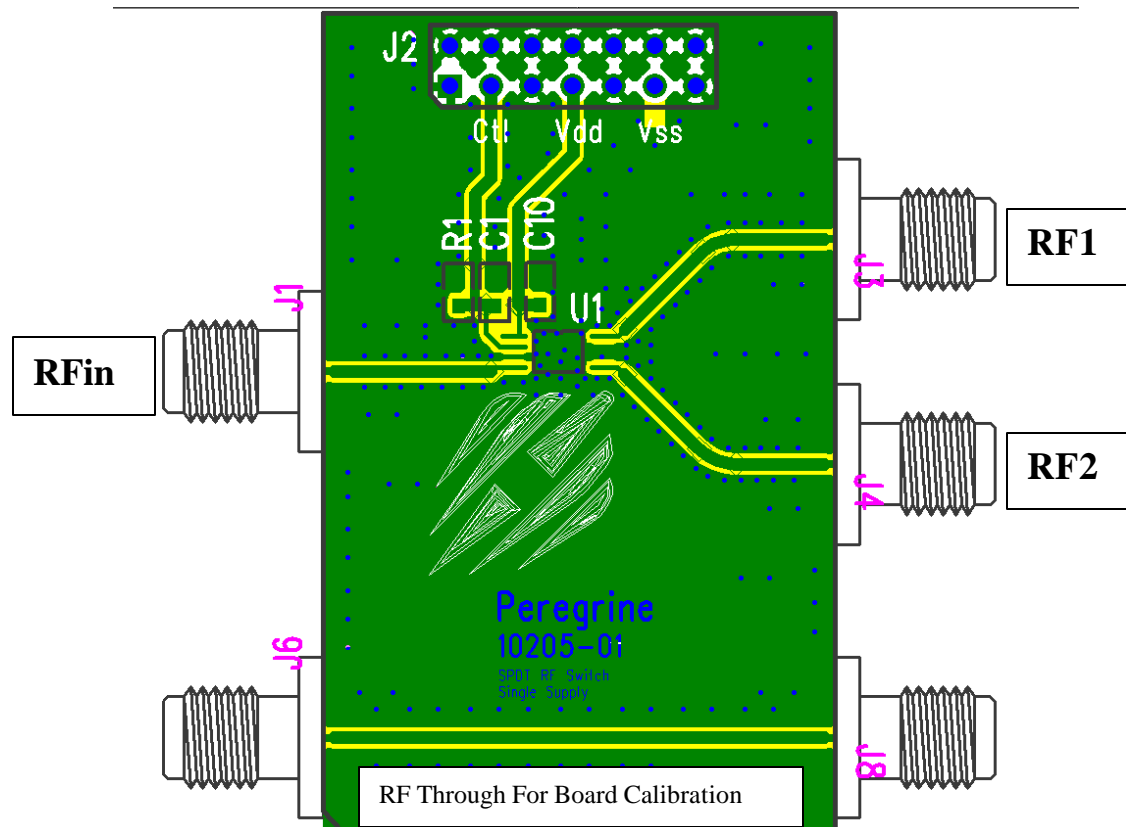
**Table 2: RF Inputs**

RF Connection	Where
RFin	SMA connector J1
RF1	SMA connector J3
RF2	SMA connector J4

## Calibration

When the test fixture is calibrated the thru on the demo board should be used (J6 & J8 in Figure 1). In the attached data all small signal parameters and the 1dB compression point were determined using standard calibration with the demo board used as the thru.

**Figure 1: 42XX SPDT RF Switch Evaluation Board**

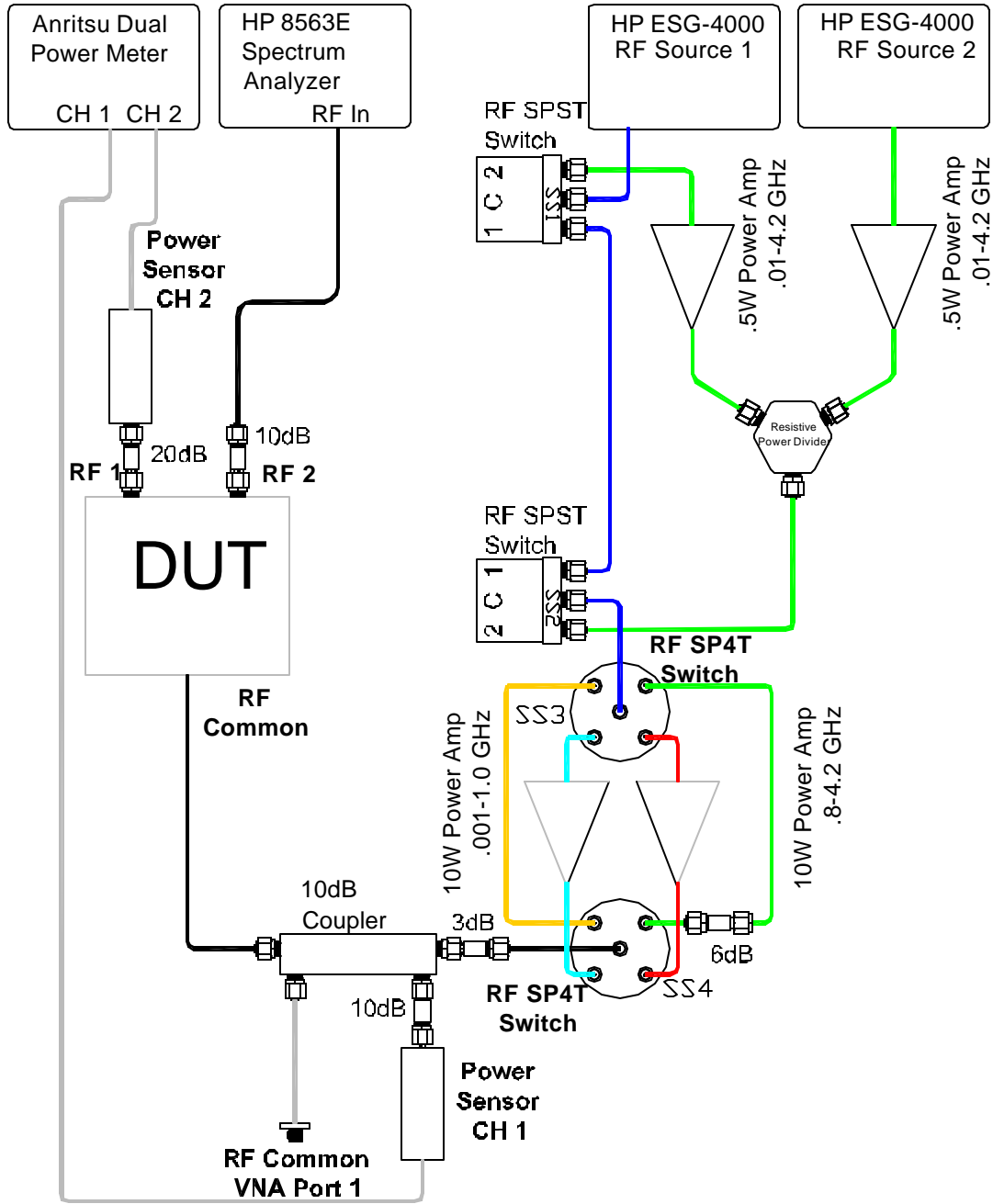


### ***Switch Test Setup***

Figure 3 below shows the test configuration used by Peregrine to evaluate the 42XX. The data included with the 42XX evaluation kit was taken using the test configuration below.

Figure 2: Switch Test Setup

# RFIC Tester Matrix Switch



SUNSTAR 商斯达实业集团是集研发、生产、工程、销售、代理经销、技术咨询、信息服务等为一体的高科技企业，是专业高科技电子产品生产厂家，是具有 10 多年历史的专业电子元器件供应商，是中国最早和最大的仓储式连锁规模经营大型综合电子零部件代理分销商之一，是一家专业代理和分销世界各大品牌 IC 芯片和电子元器件的连锁经营综合性国际公司，专业经营进口、国产名厂名牌电子元件，型号、种类齐全。在香港、北京、深圳、上海、西安、成都等全国主要电子市场设有直属分公司和产品展示展销窗口门市部专卖店及代理分销商，已在全国范围内建成强大统一的供货和代理分销网络。我们专业代理经销、开发生产电子元器件、集成电路、传感器、微波光电元器件、工控机/DOC/DOM 电子盘、专用电路、单片机开发、MCU/DSP/ARM/FPGA 软件硬件、二极管、三极管、模块等，是您可靠的一站式现货配套供应商、方案提供商、部件功能模块开发配套商。商斯达实业公司拥有庞大的资料库，有数位毕业于著名高校——有中国电子工业摇篮之称的西安电子科技大学（西军电）并长期从事国防尖端科技研究的高级工程师为您精挑细选、量身订做各种高科技电子元器件，并解决各种技术问题。

微波光电部专业代理经销高频、微波、光纤、光电元器件、组件、部件、模块、整机；电磁兼容元器件、材料、设备；微波 CAD、EDA 软件、开发测试仿真工具；微波、光纤仪器仪表。欢迎国外高科技微波、光纤厂商将优秀产品介绍到中国、共同开拓市场。长期大量现货专业批发高频、微波、卫星、光纤、电视、CATV 器件：晶振、VCO、连接器、PIN 开关、变容二极管、开关二极管、低噪晶体管、功率电阻及电容、放大器、功率管、MMIC、混频器、耦合器、功分器、振荡器、合成器、衰减器、滤波器、隔离器、环行器、移相器、调制解调器；光电子器件和组件：红外发射管、红外接收管、光电开关、光敏管、发光二极管和发光二极管组件、半导体激光二极管和激光器组件、光电探测器和光接收组件、光发射接收模块、光纤激光器和光放大器、光调制器、光开关、DWDM 用光发射和接收器件、用户接入系统光收发器件与模块、光纤连接器、光纤跳线/尾纤、光衰减器、光纤适配器、光隔离器、光耦合器、光环行器、光复用器/转换器；无线收发芯片和模组、蓝牙芯片和模组。

更多产品请看本公司产品专用销售网站：

商斯达微波光电产品网：[HTTP://www.rfoe.net/](http://www.rfoe.net/)

商斯达中国传感器科技信息网：<http://www.sensor-ic.com/>

商斯达工控安防网：<http://www.pc-ps.net/>

商斯达电子元器件网：<http://www.sunstare.com/>

商斯达消费电子产品网：<http://www.icasic.com/>

商斯达实业科技产品网：<http://www.sunstars.cn/> 射频微波光电元器件销售热线：

地址：深圳市福田区福华路福庆街鸿图大厦 1602 室

电话：0755-83396822 83397033 83398585 82884100

传真：0755-83376182 (0) 13823648918 MSN: SUNS8888@hotmail.com

邮编：518033 E-mail: [szss20@163.com](mailto:szss20@163.com) QQ: 195847376

深圳赛格展销部：深圳华强北路赛格电子市场 2583 号 电话：0755-83665529 25059422

技术支持：0755-83394033 13501568376

欢迎索取免费详细资料、设计指南和光盘；产品凡多，未能尽录，欢迎来电查询。

北京分公司：北京海淀区知春路 132 号中发电子大厦 3097 号

TEL: 010-81159046 82615020 13501189838 FAX: 010-62543996

上海分公司：上海市北京东路 668 号上海赛格电子市场 D125 号

TEL: 021-28311762 56703037 13701955389 FAX: 021-56703037

西安分公司：西安高新开发区 20 所(中国电子科技集团导航技术研究所)

西安劳动南路 88 号电子商城二楼 D23 号

TEL: 029-81022619 13072977981 FAX: 029-88789382