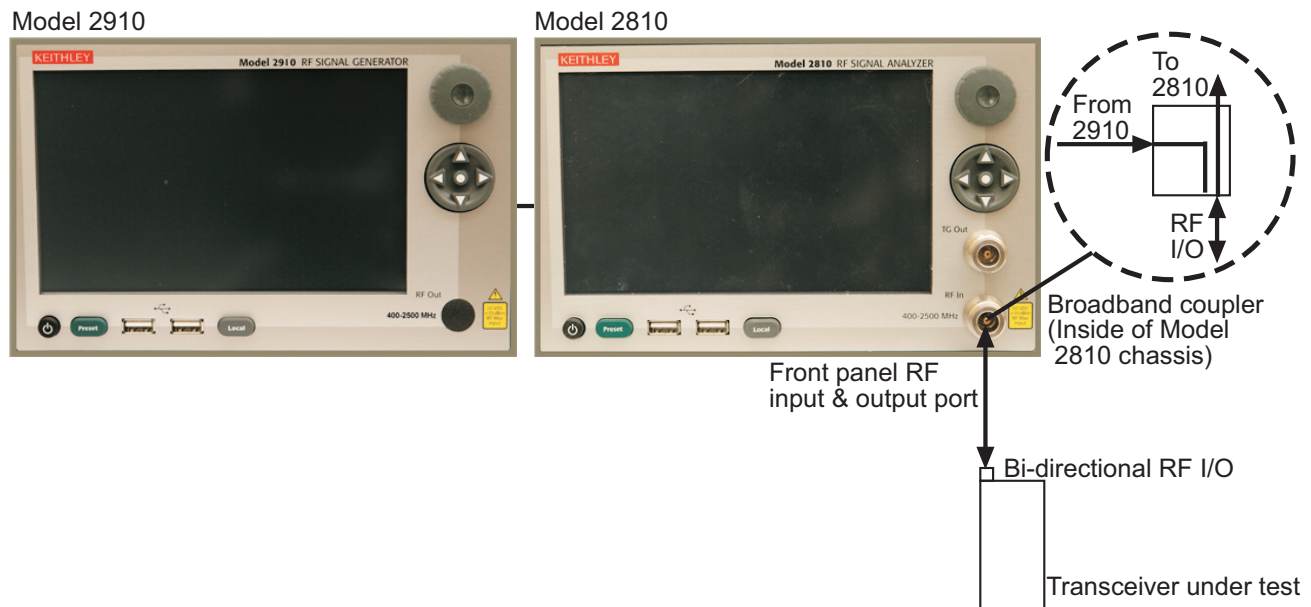


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Description

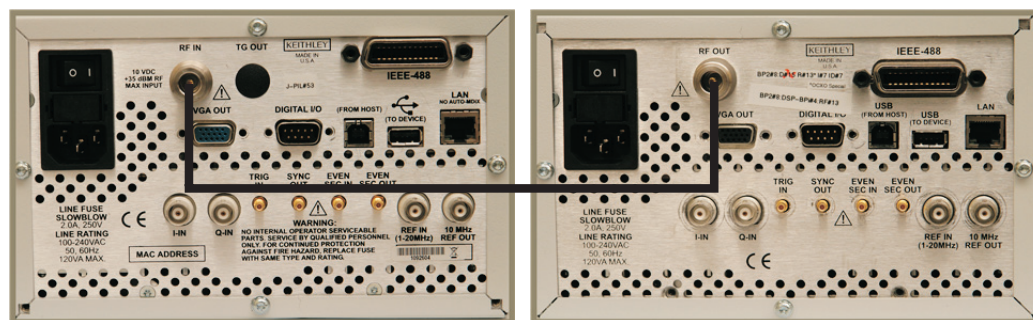
The single-port interface (SPI) is available with instrument option 2810-SPI. The single-port interface allows the user to employ a complete RF test configuration for testing of RFIC transceivers (receiver-transmitters) or end products such as mobile phones. See Figure 1 for a front panel view and a block diagram of the hardware modification for SPI.

Figure 1
Front view



See Figure 2 for the SPI RF configuration.

Figure 2
SPI RF configuration



To use your Keithley Instruments Model 2810-SPI Vector Signal Analyzer (VSA) in a conventional mode, it is necessary to install a Type-N, 50Ω termination on the rear panel RF IN connector. See Figure 3.

Figure 3
Model 2810-SPI with 50Ω termination



User Flatness

Since there are signal level losses between the Model 2910 rear panel RF Output and the Model 2810 front panel RF Input and Output port, a user flatness utility is offered within the Model 2910.

The user flatness capability is introduced into the Model 2910 with software Version 2.0. If you have software Version 1.0.X on your Model 2910, you can download Version 2.0 from the Keithley Instruments website (www.keithley.com). With this feature, you can create or open a user flatness data file to implement a level offset that compensates for cabling loss and coupler loss in the Model 2810-SPI. The nominal loss from the rear panel RF IN connector to the DUT test port is 20dB. The exact loss can be measured with a power meter such as the Keithley Instruments Model 3500 Portable RF PowerMeter®.

Access the user flatness dialog box using one of the following methods:

- From the front panel interface, select **Menu > Settings > User Flatness....**
- From the right-hand pane of the instrument front panel interface, press, or left-click with a USB connected mouse, the label **Amplitude:**
- Once you have initiated a user flatness offset (by loading a file and activating the green On button), the word (**Offset**) appears in blue text in the right-hand pane next to the word **Amplitude:** From the right-hand panel of the instrument front panel interface, press, or left-click with a USB connected mouse, the blue word (**Offset**).

When you open a data file or create a new one, the application checks for the following requirements:

- The maximum of 10 rows is not exceeded.
- The frequencies are listed in ascending order.
- The frequencies listed are within the limits of 0Hz to 100GHz.
- The minimum frequency spacing of 1KHz is maintained.
- All offsets are within the limits of ±100dB.

The following control buttons are on the top of the user flatness dialog box:

- **Data File** allows manipulation of files with the following choices:
 - **Open...** opens a file browser window to enable you to select a file from the "user" folder, a USB memory stick, or a shared network folder. The name of the opened file appears (in brackets) in the title bar. If an open file is modified, an asterisk appears next to the file name. If you choose to create a new file or open another existing file, you are prompted to save the modified file. If you select "No," the new file table or the selected file is opened and your modifications to the last file are not saved.
 - **New...** opens a blank file table that you can modify by inserting and modifying rows. Once you have created a new frequency/offset table, you can save and name it.
 - **Save...** saves the current active file under the bracketed name displayed in the upper-left title bar (next to the label User Flatness). When no previously saved file is open, this choice is grayed out.
 - **Save as...** allows saving a new or modified file under a new name.
- **Insert Above** creates the first row in a table, or if you first select an existing row, a new row is inserted above it with data in the Frequency(Hz) and Offset(dB) columns. By default the new row is 1KHz lower in frequency than the row below it and has the same offset.
- **Insert Below** creates the first row in a table or if you first select an existing row, a new row is inserted below it with data in the Frequency(Hz) and Offset(dB) columns. By default the new row is 1KHz higher in frequency than the row below it and has the same offset.
- **Delete** deletes an existing row. As rows are deleted, the row above the deleted one becomes the selected row. If the user flatness file is turned On, you can delete all but the last row. If the last row is deleted, the user flatness feature is turned Off.
- **On/Off** toggles the amplitude offset On and Off.

You can use the standard controls (front panel knob, or puck) to modify the contents of any cell on the file table. If you double-click on any cell within the file table the number pad is called up to set the frequency or offset of that cell.

Once a file has been opened and modified, an asterisk appears next to the file name in the title bar.

There are two SCPI commands related to user flatness:

- `[:SOURce]:UFlatness:LOAD` selects and loads the user flatness data file. Recognizes short forms. The default file extension is .csv.
- `[:SOURce]:UFlatness:STATE` switches the user flatness on/off.

Under remote programming, no courtesy messages (for example, "Do you want to save changes before continuing?") are present if a new file is called up after changes have been made to the previous file.